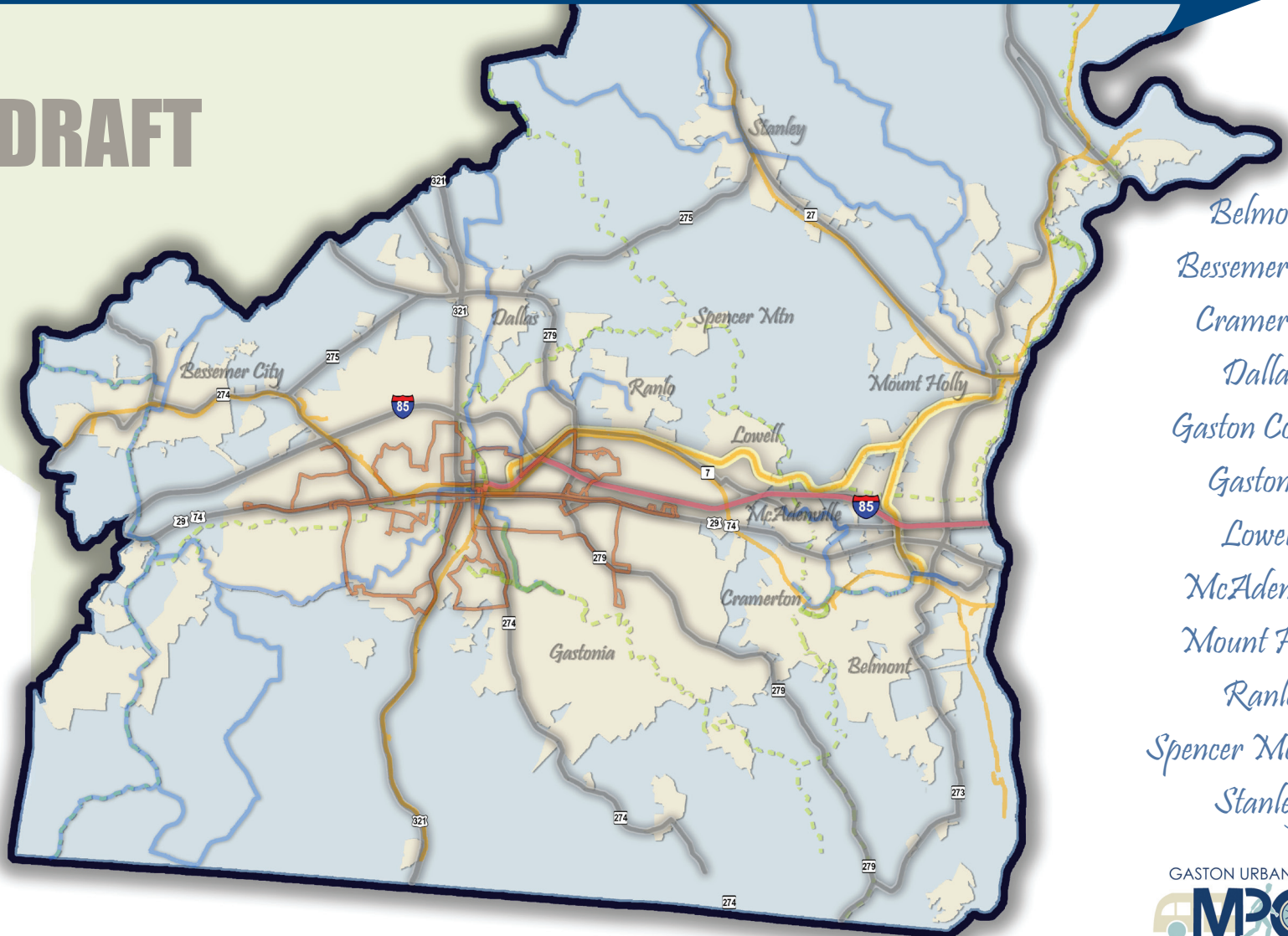


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2035 LONG RANGE TRANSPORTATION PLAN

DRAFT



- Belmont
- Bessemer City
- Cramerton
- Dallas
- Gaston County
- Gastonia
- Lowell
- McAdenville
- Mount Holly
- Ranlo
- Spencer Mountain
- Stanley

GASTON URBAN AREA METROPOLITAN PLANNING ORGANIZATION





Gaston MPO TCC Members

City of Gastonia- Planning
Jack Kiser, AICP, Planning Director
Jason Thompson, Senior Planner

City of Belmont
Adrian Miller, Sr Planner, TCC Vice-Chair
Barry Webb, City Manager

City of Bessemer City
Kevin Krouse, Planner, TCC Chair
Allan Farris, City Manager

Town of Cramerton
Michael Peoples, City Manager
Steve Baucom, Director of Planning

Town of Dallas
Steve Miller, Town Manager
David Kahler, Planner

Gaston County - Planning
David Williams, AICP, Director
Willie King, Senior Planner

Gaston County - Gaston County Transportation
Mark Lamphiear, Director EMS
Margaret Darby-Taylor, Director Access

City of Gastonia - Transportation Engineering
Don Lowe, Traffic Engineer
Thorne Martin, P.E., Assistant City Engineer

City of Gastonia-Gastonia Transit
Debby Key, Director of Fleet Services
Bob, Pulkkinen, Transit Supervisor

City of Lowell
Ben Blackburn, City Manager
Scott Attaway, Planning Director

Town of McAdenville
Gene McCombs, Town Manager
Terry Carrell, Assistant Clerk

City of Mount Holly
Brian DuPont, Transportation Planner
Greg Beal, Planning Director

Town of Randle
Cathy Lewis, Commissioner
Donna Hulsey, Town Clerk

Town of Spencer Mountain
Eugenia Dellinger, Town Clerk

Town of Stanley
Tom Datt, Town Manager

Gaston Economic Development Commission
Mark Bolick, Project Administrator

NCDOT, Urban Area Coordinator
Shannon Ransom, Gaston MPO Coordinator
Jamal Alavi, P.E., Group Supervisor

Metrolina Regional Model Staff
Anna Brigman, P.E., Regional

Gaston Urban Area MPO
James "Hank" Graham, Jr., AICP, Coordinator
Bernie Yacobucci, Transportation Planner 1



Gaston MPO TAC Members

City of Belmont

Ron Foulk, Councilperson
Martha Stowe, Councilperson

City of Bessemer City

Joe Will,, Councilperson, TAC Vice-Chair
Becky Smith, Councilperson

Town of Cramerton

Houston Helms, Commissioner
Ronnie Worley, Mayor

Town of Dallas

Rick Coleman, Mayor
Hoyle Withers, Alderman

Gaston County

Joe Carpenter, County Commissioner, TAC Chair
Mickey Price, County Commissioner

City of Gastonia

Dave Kirlin, Councilperson
Brenda Craig, Councilperson

City of Lowell

Ricky Bush, Councilperson
Charles "Chad" Hawkins, Councilperson

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Terry Carrell, Town Clerk

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Brian Hough, Mayor
Perry Toomey, Councilperson

Town of Ranlo

Jason Williams, Commissioner

Town of Spencer Mountain

Eugenia Dellinger, Town Clerk

Town of Stanley

Chad Brown, Mayor
Bud Pate, Councilperson

NCDOT

Robert Collier, Esq., NCDOT Board Member
Michael Holder, Division 12 Engineer

NCDOT - Transportation Planning Branch

Shannon Ransom, Gaston Urban Area Coordinator
Jamal Alavi, P.E. Group Supervisor

NCDOT - Transit & Pedestrian

Jack Flaherty, Transportation Planner II

Federal Highway Administration

John F. Sullivan, III, Division Head
Loretta Barren, Community Planner

Gaston MPO Staff

James "Hank" Graham, Jr., AICP, Coordinator
Bernie Yacobucci, Transportation Planner 1
Jon Barrett, Transportation Planner 1
Cathleen Roberts, Administrative Assistant III



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2035 Long Range Transportation Plan (8-Hour Ozone Standard)

*Gaston Urban Area
Metropolitan Planning Organization*

*Prepared by the Gaston Urban Area
Technical Coordinating Committee, and Gaston Urban Area MPO Staff*

*Adopted by the Gaston Urban Area Technical Advisory Committee
March 23, 2010*



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Chapter 1: Introduction

1.0 INTRODUCTION

This document is the 2035 Long Range Transportation Plan (LRTP) for the Gaston Urban Area Metropolitan Planning Organization (GUAMPO). GUAMPO is the federally designated regional transportation planning entity for the urbanized area of Gaston County, North Carolina – excluding the northwest corner.

In 1962 Congress enacted a federal law that initiated a requirement that a continuing, cooperative, and comprehensive (3-C) transportation planning process be established for all urban areas with greater than 50,000 in population to qualify for federal transportation funds. The law referenced-above is Title 23 of the United States Code Section 134(a) and reads as follows:

“General Requirements.-

(1) Findings - It is in the national interest to encourage and promote the safe and efficient management, operation, and development of surface transportation systems that will serve the mobility needs of people and freight and foster economic growth and development within and through urbanized areas, while minimizing transportation-related fuel consumption and air pollution.

(2) Development of plans and programs - To accomplish the objective stated in paragraph (a),

metropolitan planning organizations designated under subsection (b), in cooperation with the State and public transit operators, shall develop transportation plans and programs for urbanized areas of the State.

(3) Contents - The plans and programs for each metropolitan area shall provide for the development and integrated management and operation of transportation systems and facilities (including pedestrian walkways and bicycle transportation facilities) that will function as an intermodal transportation system for the metropolitan area and as an integral part of an intermodal transportation system for the State and the United States.

(4) Process of development - The process for developing the plans and programs shall provide for consideration of all modes of transportation and shall be continuing, cooperative, and comprehensive to the degree appropriate, based on the complexity of the transportation problems to be addressed.”

GUAMPO JURISDICTIONS

The Gaston Urban Area Metropolitan Planning Organization (MPO) was designated following the 1970 Census and has been working to implement a continuing, coordinated and comprehensive planning process ever since. The metropolitan area boundary has been extended several times and now includes the

cities of Belmont, Bessemer City, Gastonia, Lowell, and Mount Holly; the towns of Cramerton, Dallas, McAdenville, Ranlo, Spencer Mountain and Stanley; and a portion of the unincorporated area of Gaston County.

Gaston County is located in the South-Central Piedmont section of North Carolina. It is bounded on the east by the Catawba River and Mecklenburg County, on the west by Cleveland County, on the north by Lincoln County and on the south by York County, South Carolina. Gaston was formed from the lower portion of Lincoln County in 1846. Today, Gaston County is part of the Greater Charlotte metropolitan area.

The 2000 Census shows that Gaston County ranks eight (8th) in statewide county population with 190,365 persons. The county also has the distinction of having fifteen incorporated towns, the most of any county in North Carolina. Approximately 88 percent of the population of Gaston County is included in the Gaston Metropolitan Planning area. Figure 1-1 displays the Gaston Urban Area MPO boundary with the location of each member municipality in the MPO.

Each of the seventeen (17) North Carolina MPOs, with the cooperation of the North Carolina Department of Transportation (NCDOT), shall develop a Long Range Transportation Plan (LRTP). The LRTP is a comprehensive Transportation Plan that defines a



collaboration between the Mecklenburg – Union MPO, NC; Gaston MPO, NC; Cabarrus – Rowan MPO, NC; and Rock Hill – Fort Mill Transportation Study, SC.

The most pronounced changes to this LRTP include revisions to the socioeconomic data forecasts and the financial plan. Since population and economic growth often occur in ways that are unexpected, it is necessary to review the dwelling unit and employment forecasts every four years and to make adjustments as needed. In addition, the 2000 Census data was released during this update process. A detailed description of the dwelling unit, population and employment forecasts are included in the appendix. The Financial Plan describes the expected revenue and expenditures for the Gaston Urban Area and outlines funding resources and how this money will be spent to implement the Long Range Transportation Plan. Assumptions regarding the amount of funds were developed regionally through collaboration between the four MPOs and two Rural Planning Organizations (RPO's). The detailed Financial Plan is included in Chapter 7.

The remaining chapters cover each of the model elements of the LRTP as well as Public Involvement, Federal Transportation, Conclusions and Plan Implementation. Each of these chapters have

been updated. Recently-implemented projects are highlighted and changes in policy are noted in each section. Examples of recent projects include the adoption of a bicycle route map, the implementation of the Community Transportation Services Plan (CTSP) recommendations, and a Multi-Modal Transit Alternatives study that provides recommendations for Gaston County to tie into the Charlotte Area Transit System's West Corridor.

In addition to the LRTP, there are other required documents that the MPO must follow: the yearly Planning Work Program (PWP), the Metropolitan Transportation Improvement Program (MTIP), and the Gaston Urban Area Unmet Needs list. The PWP describes all of the tasks and projects that the MPO will embark on each fiscal year, including the amount of funds allocated to each work task. The State Transportation Improvement Program (STIP) is established through NCDOT's Board of Transportation to allocate funds to highway, transit, enhancements, transit and other transportation programs within a 6 year funding cycle. The Gaston Urban Area Unmet Needs list is comprised of an unfunded roadway projects list prioritized by adopted criteria.

The Unmet Needs list is a listing of all un-funded projects, ranked in order of need, based on a

methodology that evaluates each project equally to determine the needs to improve the transportation network.

1.1

RELATED PLANS AND PROGRAMS

The City of Gastonia is the Lead Planning Agency for the Gaston MPO. The City's Transportation Planning Division serves as the MPO staff. Responsibilities of the staff include conducting planning studies, forecasting travel demand and patterns, and preparing meeting materials for and implementing directives of the Transportation Advisory Committee, Technical Coordination Committee, and the Transportation Steering Committee. In addition, Staff provides technical expertise to all of the member MPO jurisdictions. For a complete list of previous and current planning activities visit www.gastonmpo.org.

As required by federal law, the 3-C process in each urban area is carried out by its Metropolitan Planning Organization. A Memorandum of Understanding (MOU) signed by the participating local governing bodies as well as NCDOT and Federal Highway Administration (FHWA), established the specific framework for how each MPO operates.



1.2

TRANSPORTATION POLICY BOARDS

In North Carolina, each urban area's MPO is defined as an "umbrella" organization which includes all member local governments, NCDOT, USDOT, and any other providers of transportation services, such as airports, and transit operators. The MPO organizational structure has three main components:

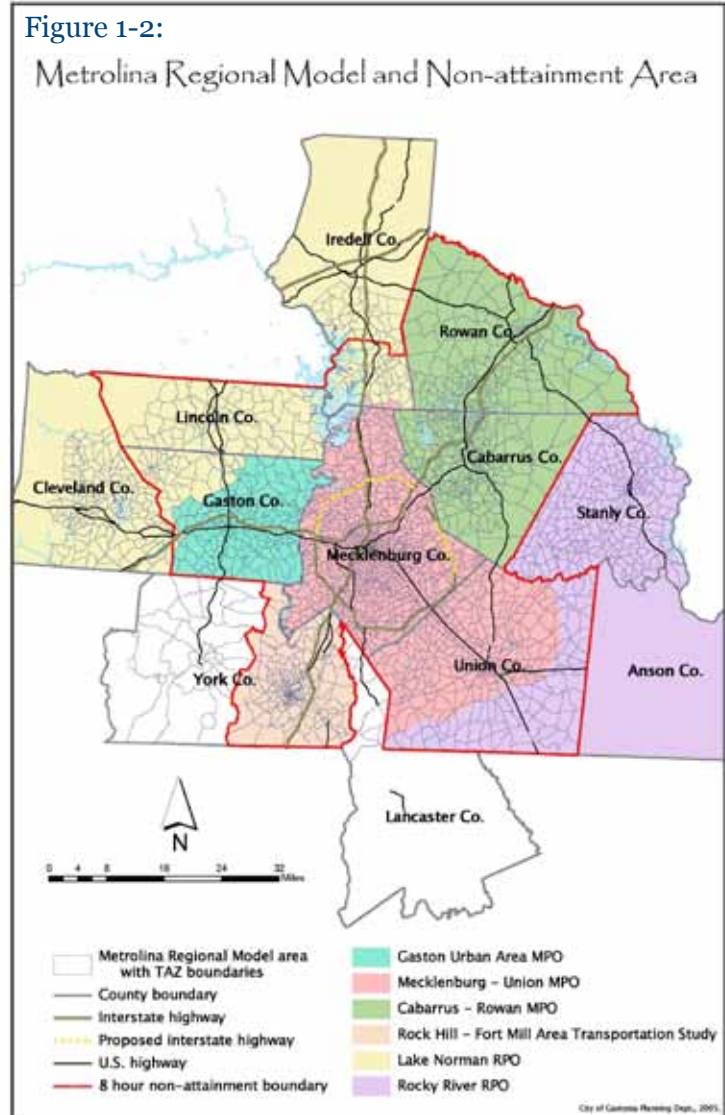
- ⦿ **Transportation Advisory Committee (TAC)**
 The TAC is the governing policy board for the MPO. The membership includes elected officials from each member local government, the area's representative on the Board of Transportation, and an advisory non-voting member from FHWA. The Transportation Advisory Committee provides policy direction for the planning process, facilitates communication and coordination among the member jurisdictions and guides the development of a comprehensive multimodal transportation program for the urban area. The TAC directs the 3-C process through its annual review and approval of the Planning Work Program, the MPO's local Metropolitan Transportation Improvement Program, and through review and approval of changes to the 2035 Gaston Urban Area LRTP.

- ⦿ **Technical Coordinating Committee (TCC)**
 The TCC is comprised of staff representatives of the

various member governments, NCDOT, FHWA, and other agencies with an interest in transportation planning. The TCC has the responsibility of supervising and coordinating the 3-C process by making technical recommendations to the Transportation Advisory Committee on decisions pertaining to that process.

- ⦿ **Lead Planning Agency (LPA)**
 The City of Gastonia is the LPA for the Gaston Urban Area MPO and provides local funding match and staff support to the MPO. The LPA develops the draft documents, prepares TAC and TCC meeting materials, schedules meetings, administers the distribution of federal transportation planning funds to member governments, and carries out the directives of the TAC and TCC.

In addition to the federal and state required components, in 2001 the Gaston MPO implemented a Participatory Memorandum of Understanding (PMU) to join the Charlotte Regional Alliance for Transportation (CRAFT). This organization is a regional alliance comprised of all the MPOs and RPOs in the Metrolina Region.





CRAFT's role is to enhance communication among jurisdictions, promote awareness of regional concerns, and to provide an educational forum in the Charlotte metropolitan bi-state region that addresses significant common issues.

⦿ North Carolina Board of Transportation (BOT)
Besides local and regional involvement, there is a statewide Board that oversees the transportation infrastructure in North Carolina. In 1931, North Carolina took ownership of all county and local roads in order to construct, manage, maintain and plan for a transportation network. At that time, the state established the State Highway Commission to control and take responsibility as the governing body for the transportation network. In 1973, they changed the name to the NC Board of Transportation. Each Highway Division has a representative on the Board to represent their area.

The Governor of the State of North Carolina appoints the Board of Transportation. They adopt the State Transportation Improvement Program (STIP), the seven-year investment program determining how state and federal transportation funds will be spent statewide. They then award contracts for construction concurrent with the MTIP. They set policies for state maintained and operated transportation systems regardless of mode. The Board has 19 members (plus the non-voting Transportation Secretary).



Chapter 2: Goals & Objectives

2.0

GOALS & OBJECTIVES

The Gaston MPO has many goals and policies relating to various responsibilities placed on the organization. One goal is for the development and direction of a continuing, comprehensive transportation planning process implemented cooperatively by the state of North Carolina, through its Department of Transportation, and local communities in Gaston County in conformance with federal guidelines for transportation planning within the Gaston Metropolitan Area. In addition, the MPO is responsible for the general review, guidance, and coordination of the transportation planning process for the Gaston Urban Area, the facilitation and coordination between the various urban area jurisdictions of the North Carolina Department of Transportation, developing MPO alternative transportation plans, and adopting a finalized transportation plan for the metropolitan planning area.

2.1

MISSION

Programs and projects recommended for implementation by this Long Range Transportation Plan (LRTP) were selected by assessing future travel conditions and a variety of land development and environmental factors. The assessment was based on

the Goals and Objectives for the Gaston Urban Area described in the following pages.

The Gaston MPO will provide a system of transportation modes that are consistent with the development and growth desired for the jurisdictions that comprise the Gaston Urban Area Metropolitan Planning Organization (GUAMPO). The system of roadway, transit, bicycles, and pedestrian travel modes will deliver safe and efficient movement of people and goods. GUAMPO will strive to implement transportation choices and mobility that positively coexist with the natural and built environments and strengthen the economic prosperity of the region.

2.2

GOALS

- Provide a safe, comprehensive, and efficient transportation system that allows the movement of goods and people within Gaston County and from Gaston County to other places.
- Improve the quality of life for residents of the Gaston MPO area.
- Provide a transportation system that affords the public with mobility choices including walking, bicycling, and transit options.
- Provide a transportation system that is sensitive to significant features of the natural and human environment.

- Provide equitable transportation options to low income and minority neighborhoods.
- Engage the public and stakeholders.
- To satisfy the Safe Accountable Flexible Efficient Transportation Equities Act - A Legacy for Users (SAFETEA-LU) federal transportation bill, a section pertaining to freight planning was included in the 2035 GUAMPO Long Range Transportation Plan.

2.3

OBJECTIVES

2.3.1 Mecklenburg County Connectivity Catawba River Crossing

- Require and promote transportation improvements to better connect Gaston County to other cities in the region, particularly Charlotte and Mecklenburg County.
- Promote additional bridge crossings (Gaston East-West Connector, Mount Holly North Loop and widen existing crossings) over the Catawba River to handle increases in traffic on I-85 and US 29/74.
- Strengthen Gastonia's connection to the regional transportation network.



2.3.2 Land Use

- Promote land use patterns that combine different uses such as industrial, retail, public and residential.
- Require right-of-way dedication or require payments in lieu of construction if the development lies within a Thoroughfare's path. Installation of transportation improvements may be required when warranted for new development.
- Promote efficient land development that improves both cost benefit and functional efficiency of the MPO's transportation system.
- Always evaluate the impact of land use on the transportation system when new development plans are adopted and policy decisions are made.
- Promote and implement Context Sensitive Solutions, taking into consideration safety, mobility, community, and environmental goals in all projects.

2.3.3 Streets and Highways

- Develop an efficient street and highway network capable of providing an appropriate level of service for a variety of transportation modes.
- Develop streets and highways in a manner consistent with adopted Land Use Plans. Improve access to city and town centers.
- Enhance mobility by increasing the connectivity of

the existing street network.

- Develop regionally significant streets and highways in a manner which minimizes travel times and distances.
- Optimize the inter-city, inter-regional and intra-regional capacities of major transportation corridors
- Develop streets and highways that are accessible to, or compatible with, multiple modes of transportation.
- Develop visually attractive corridors.
- Minimize accident potential and severity
- Incorporate sidewalks and bicycle facilities into the design of roadways to accommodate and encourage pedestrian and bicycle travel
- Efficiently manage the existing transportation system by reducing delay and congestion caused by weather events and incidents and by implementing intelligent transportation systems and relatively low-cost improvements such as signal operation and maintenance and travel demand management.
- Ensure that all planning studies and design standards for future facilities incorporate specific features that are known to reduce crashes, fatalities, or injuries.
- Improve access to all modes in the transportation system.

2.3.4 Public Transportation

- Promote an integrated multimodal local and regional public transit system.
- Promote a safe, efficient and diverse public transportation system that is accessible to various segments of the population.
- Operate safe and efficient scheduled transit service that minimizes travel times and distances.
- Implement and use strategies that maximize the potential for transit patronage and coverage.
- Develop and use land density criteria for transit centers and corridors.
- Establish programs and incentives that encourage ridesharing and/or eliminate barriers thereto.
- Enhance the visibility and public image of the Gastonia Transit system.
- Serve the elderly and transportation disadvantaged populations with convenient transportation to needed services.
- Increase transit's patronage as a percentage of total trips.
- Maximize transit's coverage area to the extent feasible.
- Reserve designated rail and transit corridors for future needs.
- Consider alternative transportation solutions to relieve congestion and accommodate customer choice for movement of people, goods, and freight in high-growth corridors.



- Support ridesharing programs, park-and-ride programs, telecommuting programs, and transit benefit programs to increase peak-period travel options and reduce the rate of growth of vehicle miles traveled.

2.3.5 Pedestrian and Bicycle Transportation

- Develop a transportation system that integrates pedestrian and bicycle modes of transportation with motor vehicle transportation and encourages the use of walking and bicycling as alternative modes.
- Increase the design sensitivity of specific transportation projects to the needs of pedestrians and bicyclists.
- Assist the development of pedestrian and bikeway systems for both recreation and transportation purposes.
- Improve the transportation system to accommodate pedestrian and bicycle access along roadways through design and facility standards.
- Increase pedestrian and bicycle safety through public awareness programs.
- Provide linkages for pedestrians and/or bicyclists between neighborhoods, employment centers, services, cultural facilities, schools, parks, and businesses.

2.3.6 Rail and Air Transportation

- Maximize rail and air transportation opportunities.
- Support expansion opportunities for the Charlotte/Douglas International Airport that will increase the attractiveness of the airport as a major passenger and cargo facility.
- Maintain the airport's ongoing long range planning function.
- Promote future opportunities for inter-regional mobility with enhancements to inter-city rail service and the provision of high-speed rail service.
- Promote a new airport in Gaston County in order to provide relief to the Charlotte-Douglas International Airport.

2.3.7 The Environment

- Develop a transportation system that preserves and coexists with the natural and built environments.
- Develop transportation systems and programs that maintain or improve air quality.
- Design transportation facilities that minimize transmission of traffic noise to surrounding properties.
- Design transportation systems and facilities that preserve and complement the areas natural features.
- Plan transportation facilities that promote

systems that reinforce the communities standard of appearance.

- Plan transportation facilities that minimize neighborhood disruption and related impacts.
- Designate safe routes with minimal urban exposure for the transport of hazardous materials.
- Designate truck routes that minimize exposure to neighborhoods and historic and cultural resources.
- Identify, protect, and/or acquire future right-of-way as early as possible to minimize negative impacts on communities and the natural environment.
- Reduce the impact of transportation facilities on air and water quality, watersheds, and ecosystems, working to identify and avoid or mitigate impacts to irreplaceable natural resources.

2.3.8 Freight and Goods Movement

- Support and promote a freight transportation system which supports the movement of goods.
- Develop a transportation system supporting Charlotte's position as a major distribution center, improving and maintaining access for freight to other markets via a network of highways, railroads and airways.
- Develop streets and highways that are accessible to and compatible with multiple modes of transportation.



- Facilitate coordination among transportation modes through the establishment of intermodal facilities.
- Identify opportunities to share rail corridors with transit.
- Support expansion opportunities at Charlotte/Douglas International Airport that increase the attractiveness of the airport as a major cargo facility.
- Designate safe routes, with minimal urban exposure, for the transport of hazardous materials.
- Designate truck routes that minimize exposure to neighborhoods and to historic and cultural resources.
- Identify and build high-impact projects that connect transportation modes seamlessly so that people and freight can move efficiently around and through the region.
- Identify the Gaston Urban Area's freight network.
- Determine the freight impact on existing infrastructure.
- Assess the community's perception of freight.
- Identify existing transportation projects with freight impact.
- Create a freight planning strategy.
- Promote competitive freight options by improving existing transportation facilities in strategic corridors.

2.3.9 Financial

- Make investment decisions for transportation modes that make the most efficient use of limited public resources.
- Minimize implementation and operation costs of transportation projects.
- Develop transportation projects that enhance the local and regional economies.
- Actively explore new sources of revenue.
- Work with the local legislative delegation to revise the State's Highway Equity Formula and Highway Trust Fund to increase the amount of road dollars that come to the Gaston MPO Area.

2.3.10 Public Involvement

- Actively engage the public and regional stakeholders in all phases of planning.
- Actively engage minority and disadvantaged communities in identifying transportation needs, developing alternative strategies to meet those needs, and implementing solutions that are affordable and sensitive to a community's heritage and supportive of local economic institutions.
- Build new and stronger partnerships, public and private, to develop and finance transportation projects that maximize public investments and support community and regional growth

strategies.

- Coordinate transportation investment strategies with other state agencies to support balanced economic growth across the Metrolina Region with particular focus on tourism and similar industries that are highly dependent on the transportation system.



Chapter 3: Public Involvement Activities

3.0

PUBLIC INVOLVEMENT ACTIVITIES

Since its inception in the mid 1970's, the Gaston Urban Area Metropolitan Planning Organization has recognized the importance of involving the public in the planning process. In order to put this belief into action, a document entitled "Public Involvement in the Planning Process" was adopted by the TAC in 1990. This document was amended in 2001 and 2005 to more adequately address specific planning efforts. The current version of the public involvement plan document is included as an Appendix.

MPO staff advertised and conducted drop-in public-input sessions on the update of the Long Range Transportation Plan.

Beyond the public input session, MPO staff advertised revisions to the socio-economic data, financial plan and Thoroughfare Plan map modifications and made the information available to the public. The draft forecasted data, as well as thematic maps of housing units and employment by Traffic Analysis Zones (TAZ), were included on the City of Gastonia's website for viewing by the general public.

The last step in the public involvement process is a 30-day public comment period to be held following agency review. During this time frame, staff will receive

comments and answer questions about the draft plan and conformity determination report. Comments received will be addressed as applicable.

Finally, it should be noted that outside of the effort undertaken as a part of this plan update, MPO staff receives and responds to a significant amount of informal public comments. This comes through phone calls, email, attendance at regularly scheduled MPO meetings and at other community events. A good example of this is the MPO's participation in meetings related to the Gaston County Comprehensive Plan. Throughout this process, citizens have made comments related to the need for increased public transportation, more sidewalks and bicycle facilities and the widening of some roads.

A. Contact Database

A contact database of Organizations within and contiguous to Gaston County was compiled by merging a variety of existing databases with new contacts. The contact database includes federal, state, county and city agencies, neighborhood and homeowners associations, environmental justice and traditionally underserved organizations, cultural and social groups, faith-based and volunteer organizations, English and non-English speaking groups, advocacy groups, and interested citizens with no specific affiliation.

The database is intended to be as inclusive as possible in order to engage as many segments of the population as possible. The database will evolve and change as

new issues and projects are addressed, and new groups and individuals are identified. Because of its ever-changing makeup, it was used not only in the LRTP update process but can also be used in subsequent GUAMPO activities and efforts.

B. Public Meetings

A public meeting was held in November 2004 for organizational leaders and MPO members, and the general public. The purpose of the meeting was to conduct a ranking survey of LRTP objectives and roadway and transit projects. In addition, the meetings served to:

- Gather input on the Goals, Objectives and Policies of the LRTP;
- Present some of the projects under consideration for inclusion within the LRTP;
- Educate the public about GUAMPO, its activities and its role in the transportation planning process; and,
- Inform citizens on how they can get more involved and keep updated on GUAMPO activities.

More detailed information about the public meetings, the survey, and its responses can be found in the Appendix.

C. Gaston MPO Brochure

A full-color 8.5 X 14 quad-fold brochure was produced to serve several purposes including:





- Introduce the Gaston MPO, the MPO’s Policy Board and the LRTP;
- Explain their functions;
- Describe opportunities for the public to participate in the LRTP update;
- Identify avenues to obtain additional information about Gaston MPO activities; and,
- Provide Gaston MPO contact information.

The brochure was mailed to those on the contact database, distributed to attendees at public meetings and small group sessions, and made available at the James B. Garland Governmental Service Center (City Hall Annex) and other town halls throughout the Gaston MPO area. A copy of the brochure can be found in the Appendices section.

3.1 Assessment of Transportation Networks on Environmental Justice Populations

Presidential Executive Order 12898, **Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations**, directs federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. Presidential Executive Order 13166, **Improving Access to Services for Persons with Limited**

English Proficiency, requires federal agencies to improve access to federally conducted and assisted programs and activities for persons who, as a result of national origin, are limited in their English proficiency. Both Executive Orders are based on Title VI of the Civil Rights Act of 1964, which prohibits discrimination on the basis of race, color, sex, or national origin, by government agencies that receive federal funding. The number of U.S. residents for whom English is a second language is increasing, and minority and low-income populations frequently have limited English proficiency and/or literacy.

To respond to the ever-changing demographics of our population we must use a range of methods to reach all populations. The end goal is to involve minority, low-income, and limited English proficiency populations in the transportation decision-making process. To do this we must find adequate, effective, and meaningful participation by understanding unique needs, cultural perspectives, and financial limitations of different socioeconomic groups. This includes, but is not limited to the groups outlined below.

- Blacks – a person having origins in any of the black racial groups of Africa.
- Hispanics – a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.
- Asian Americans – a person having origins in any of the original peoples of the Far East, Southeast

Asia, the Indian subcontinent, or the Pacific Islands.

- American Indians and Alaskan Natives – a person having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition.
- Low-income – a person whose household income (or in the case of a community or group, whose median household income) is at or below the U.S. Department of Health and Human Services poverty guidelines.

Involving Traditionally Underserved Populations

Gaston MPO staff will make concerted efforts to engage communities that have traditionally not been participants in the transportation process. Traditional non-participants are persons who are low-income, minority (listed above), elderly and disabled, have no vehicles, have low literacy or limited English proficiency, etc. MPO staff will identify opportunities and strategies that will provide these communities greater access to the transportation planning process. These opportunities will allow MPO staff to build relationships with key leaders and organizations within the communities. Public Outreach activities will include efforts to involve traditionally underserved groups in the transportation planning process. These efforts may include, but are not limited to, the following:



- Identifying areas in the Gaston Urban Area MPO region with concentrations of minority, elderly, and low income populations.
- Including organizations that deal directly with minority groups on the Stakeholder list.
- Posting notification of meetings, public hearings, and open houses in areas frequented by citizens and our website.

3.2 VISUALIZATION TECHNIQUES

As part of the requirement to provide “interested parties with a reasonable opportunity to comment on the transportation plan” and the TIP Public Participation, MPOs are required to describe all plans, programs and processes. To comply with all programs and processes GUAMPO follows these requirements. Amended 23 U.S.C.134(i)(5)(B) &(j)(4).

The GUAMPO has met these requirements and will continue working to improve its use of visualization in all aspects of the planning process. The GUAMPO staff specialists in GIS, graphic arts, publications and website development have contributed to many innovative uses of visualization to convey planning information to decision makers and the public. For the 2035 Long Range Transportation Plan the use of visualization included the following:

- The Gaston Urban Area MPO uses its website, www.gastonmpo.org, to visually display plans, maps, programs and processes.
- Full color maps incorporated into the plan document and appendices depicting features of the region and displaying thematic information. A video highlighting key aspects of the plan -- used in presentations and posted on the GUAMPO website.
- A CD accompanying the plan, featuring multimedia materials and a menu system for accessing both summary and technical documents.
- An executive summary using text and graphics to convey regional trends that underpin the plan.
- Photos taken by GUAMPO staff highlighting key locations and projects incorporated into the plan, CD and slide show.

Other uses of visualization in the planning process include the following:

- GIS maps being used in workshops and forums for the Strategy Evaluation process.
- A display booth with maps and graphics used at conferences and public meetings.
- The GUAMPO online Interactive Zone which enables users to interactively query and map projects in the TIP, LRTP, and Traffic Counts.
- An array of technical reports published and posted



on the website using GIS maps to graphically convey planning data. This includes reports on freight trends, demographic trends and commuting patterns.

In terms of electronic distribution, all key planning documents are made available through the GUAMPO website. This site is undergoing a major redesign and restructuring that will facilitate public access and



improve ADA compliance (including insuring that web images and text can be interpreted by audible reading devices used by visually impaired persons). The GUAMPO Unified Planning Work Program incorporates tasks to bolster the use of visualization and electronic distribution, both for key planning documents and the larger planning process. A partial listing of documents available in electronically accessible format, as well as in print, include:

- Newsletters
- Multimodal Center Site Suitability and Conceptual Design Study
- Gaston County Freight Study

- Franklin Boulevard Corridor Study
- Federal Project Authorizations
- Public Involvement Plan
- Transit Expansion Study
- State Transportation Improvement Plan
- Transportation Improvement Plan
- Metropolitan Transportation Improvement Program
- Conformity Determination Report
- Marietta Street Improvement Project Booklet
- Current Long Range Transportation Plan
- I-85/US 321 Interchange Feasibility Study
- Gastonia Rapid Transit Alternatives Study



The GUAMPO will continue to bolster its compliance with the visualization and electronic distribution requirements of SAFETEA-LU, relying on its capabilities in GIS, graphic arts, publications, and website development.



Chapter 4: Methodology

4.0

INTRODUCTION

The following methodology explains how the Gaston Urban Area MPO developed population and employment projections for the years 2010, 2020 and 2030. The updated projections for the Horizon Years of 2015, 2025, and 2035 were based on this process.

For the 2030 LRTP update, the four MPO's and surrounding counties within the regional travel demand model area (which includes all non-attainment designated counties) established a regional socio-economic development committee. This committee, along with the assistance of the University of North Carolina at Charlotte (UNCC) – Urban Land Institute, developed a methodology utilizing economic forecasters, local building permit trends, census data, and local land development knowledge comprising current and future land use, utility improvements, economic development potential and land availability. All of these factors influence where housing and employment growth will take place throughout the urban area.

Population and employment projections for the Gaston Urban Area MPO Area were derived using both a top-down approach, beginning with projections for the eleven (11) county modeling region and a bottom up approach, using a variety of local data sources.

The socioeconomic data forecasts were compiled through the use of an expert panel, made up of local planners, real estate representatives, economic developers and utility providers. Staff collected building permit data, performed a land availability and assumption study, and identified employment closings, layoffs and expansions for the panel's review. During panel discussions, growth rate, location and intensity of development were discussed and mapped to determine where and when all development would occur. The complete methodology is attached in the Appendices.

4.1

GASTON MPO POPULATION AND EMPLOYMENT PROJECTION METHODOLOGY

The following methodology explains how Gaston developed population and employment projections for the years 2010, 2020 and 2030.

Land Use

The Gaston MPO developed a land use layer utilizing the Gaston County tax parcel GIS. The county tax parcel layer identified every parcel found within the county and designated a use for each parcel. The uses ranged from single family to multifamily residential to fabrics manufacturing to retail to gasoline service stations to

vacant. Staff also verified the designations using aerial photography, existing zoning classifications and field observations. These designated uses were then placed into their associated Standard Industrial Codes (SIC's) as well as their developed classification.

In order to determine parcels that are developed or for development in either residential or non-residential classification, staff overlaid floodplain, wetland and slope data to determine the parcels/parts of parcels that would be un-developable. This step allowed staff to determine how many acres throughout the MPO area are either un-developable (due to environmental constraints or existing development) or developable for future uses.

Once staff determined which parcels were available for future development or re-development through the tax parcel designations, staff designated those parcels as either DVABLE 1 or DVABLE 2, through various factors. The factors utilized to determine how a parcel would be developed were: existing and future water and sewer service areas, existing and proposed thoroughfares, access to thoroughfares, existing zoning and future land use plans. This provided staff with an understanding of which Transportation Analysis Zones (TAZs) had potential development for residential and non-residential uses. Staff then prepared a map depicting the parcels deemed developable for residential and non-residential per TAZ. The map



provides a preliminary picture of where development potential areas (DPAs) are located.

Expert Panel

Technical Coordinating Committee (TCC) members, a real estate appraiser and a county economic development commission representative served on the expert panel. This panel analyzed the developable parcel designations map in order to designate DPAs and provide the percent growth of each DPA per horizon year. The expert panel utilized development factors and local knowledge of on-going projects and recent trends. The expert panel also determined that the household size would remain the same as in the past for all three horizon years.

Residential Development Opportunities

Other development factors that were used to distribute population and housing units includes proposed thoroughfares, proposed water and sewer extensions, and recent trends. During the horizon years of 2020 and 2030, the Garden Parkway was instrumental in luring housing units, as well as the 2030 horizon year of providing water and sewer lines to the southeastern portion of the county, which would then increase the development densities.

Persons per Household Calculation

A necessary step in the process is to determine the persons per household (PPH) number to calculate

total population within each TAZ. After reviewing past census data, the expert panel chose to remain consistent with the 2000 Gaston County census result, of 2.53 persons per household. Their decision was to remain consistent with current trends and data and the lack of compelling reasons that the current trend would change. The number of units projected per TAZ was then multiplied by the PPH figure for each horizon year to determine the total population per TAZ.

EMPLOYMENT PROJECTIONS

Developing employment projections is not as simple as developing population projections. Many factors contribute to where employment will locate. They range from utility services, to available land, to population localities, to the economic trends. Staff was provided regional control totals for employment by Standard Industrial Classification (SIC) code from a consultant. Staff analyzed the control totals. Staff noticed a few unusual trends. The consultant projected a loss in high service for the year 2010, loss in office/government employees by 2010 and a loss in banking for the horizon year 2030. Education also was projected to gain employment, which is not uncommon with the amount of growth projected, however, the amount of employment is questionable given the circumstances in constructing new schools and the financial capability for the county school district. The consultant also projected a loss in employment in the industrial sector for the year 2010, however, this projection is not unusual given the

current trends in the textile industries. Staff evaluated these variances in projections and alternative totals were established locally to replicate the thoughts of the expert panels and local trends.

The expert panel and local staff established development areas for employment through factors such as projects in the works, future employment business/industrial park locations, existing and future water and sewer services and economic trends.

Staff first analyzed the service and retail sectors of employment for the MPO area. In order to get an understanding of what type of employee ratio between low service/high service/retail/highway retail there is within the Gaston MPO area for the shopping centers, staff broke down each location by employment type and employees. This analysis allowed staff to develop an average per site to carry through the horizon years when informed of future shopping centers being built. Granted, each site is different in size and tenant, however, the analysis allows staff to develop a general perception of employment locations and size. This analysis provided staff with a process in designating employment type and employees to certain TAZs that were determined to encompass these types of jobs.

The panel believes that 3 large retail centers will be developed by 2010. All three are currently in the pipelines. The consultant does not provide enough





retail and services (low and high) employment numbers to account for the large retail centers that will be on the ground by 2010. For this reason, employment categories numbers have been adjusted in TAZs 25, 35 and 101. In addition, other significant retail centers will follow within or near those TAZs since there are developable and re-developable lands near the shopping centers.

The county's second largest employer is the City of Gastonia. Gaston County also has 13 other jurisdictions, not including the County itself. The loss of employees in the government sector would be contradictory, but possible, to the actual growth of municipal services required to serve the growing residential population. In addition, office parks are beginning to sprout up throughout the area and many of the expert panels see the area growing in terms of office development. For this reason, the office/governmental employment numbers have been adjusted to take in account for the growth in municipal services and office park construction. The Gaston Memorial Hospital is also expanding the hospital, which relates to additional office and medical employment opportunities by 2010 (TAZ 40).

Gaston County has seen a vast decline in industrial employment, however, the trends have slowed down regarding the number of textile mill closings. One reason for this is that there are a limited number of

mills still in operation and those remaining are the last of the major mills owned by the textile companies. Those that are left operating will be the ones producing goods until the entire textile company closes. Our expert panels continue to express that industrial jobs/companies will grow, but through a different sector than textiles. There are vast industrial parks available throughout the area to provide growth in this sector. For this reason, industrial employment numbers have been adjusted to take into account the change in industrial focus and available land.

With the knowledge and information from the expert panels about all types of residential and non-residential projects on the horizon, staff allotted numbers and adjusted employment projection numbers to TAZ's utilizing existing land use classifications, future land use plans, thoroughfare improvements, known site plans in the works, potential residential developments, and by development thematic maps signifying where the population is predicted over the three horizon years.

Population Data

Overall, projections of population increased for the urban area for each of the three horizon years (2010, 2020 and 2030). These detailed datasets are included in the Appendix. From this process it became obvious that the greatest residential growth took place in the eastern portion of the county, specifically in Mount

Holly, Belmont and southeast Gastonia. This can be attributed to the availability of public water and sewer and quick access to Charlotte via major thoroughfares.

Employment Data

As with the development of the dwelling units, staff consulted with the expert panel members regarding changes to our economic area. These meetings provided MPO staff with perspective on both economic growth and recent downsizing, and helped to adjust the projections. Staff of the Gaston County Economic Development Commission (EDC) provided listings of recent industrial job losses, which were utilized in adjusting the datasets. They also shared insight as to likely locations for growth to occur as well as the type of employment which is expected.

The new projections show a sizable drop in employment occurring from 2000-2010 resulting from the many mill and manufacturing closings in the last several years. It is anticipated that there will be some rebounding in this sector by 2020, although it is unlikely that the jobs will be in the textile industry. Instead, local economic development officials are working to bring new types of industry to Gaston County. The resulting employment data is shown in Figure 6-1.

Updating the Projections for 2015, 2025, and 2035

The following is an explanation of the methodology that the Gaston MPO used to develop population and



employment projections for the years 2015, 2025 and 2035. Before any new projections were attempted, staff compared the projections from the 2030 plan to the 2006 certified projections from the North Carolina's State Demographics (NCSD) web site. The 2030 plan estimated 2005 county population to be 194,083 while the certified estimates from the NCSD for mid 2006 was 197,232. Staff concluded that since the numbers were so close that the population projections from the 2030 plan were still valid and that the new numbers for the 2035 plan could be extrapolated from them. Staffs also assessed the employment estimates and were satisfied that they too could be extrapolated from the previous plan estimates.

Therefore, the new draft estimates for 2015 were extrapolated from the years 2010 and 2020 in the previous projection. The 2025 estimates were extrapolated from the years 2020 and 2030 in the previous projection. The 2035 projections were based on the average growth rates between 2010-2020 and 2020-2030. The average population growth rate for those two decades is approximately 15 percent per decade while the average employment growth rate for those two decades is approximately 12 percent per decade. The results of the aforementioned procedure formed the initial draft population, employment, and household estimates.

Land Use/Population Adjustments

In order to determine the amount of land still available for development, staff overlaid floodplain, floodways, wetland, steep slopes of twenty-five percent or more, and parks to determine the parcels/parts of parcels that would be un-developable because of environmental constraints. This step allowed staff to determine how many acres throughout the MPO area is either un-developable (due to environmental constraints or existing development) or developable for future uses. Staff then overlaid all known developing and proposed developments over the parcel layer and 2007 ortho layer to analyze the TAZs. For the developments that were in the process of being constructed, the number of houses constructed were subtracted from the total number to be built in that development to arrive at the future remaining construction for that development.

Developments were assumed to take approximately 8 to 12 years to complete. So, population estimates in the developments that were currently in the process of construction were usually assigned to the year 2015. Future population in new developments that were not yet in the process of construction were generally split between the years 2015 and 2025.

Populations for the TAZs were determined by using the current residential units statistics contained in the parcel layer plus any units that would be completed by a development. The remaining developable land was

determined from subtracting the committed land for developments from the total developable land.

To account for vacancies in the housing units in the years 2015, 2025, and 2035, population estimates were reduced by 2% for each projected year.

Employment Projections

As previously discussed, employment estimates for the years 2015 and 2025 were extrapolated from the 2010, 2020, and 2030 projections. For the year 2035 employment estimates were based on the average increase of employment for 2010-2020 and 2020-2030. These estimates were generally around 12% for each decade. Therefore, 2035 employment was derived by multiplying the 2025 employment by 12%. Any additional employment adjustments to a particular TAZ were distributed throughout that TAZ by the same employment category ratio that was originally in that TAZ.

Final Projections

The draft projections were then distributed by TAZ to the local government members for their review. Local government members reviewed the draft TAZ projections and adjusted the projections based on their local knowledge. The final TAZ numbers were presented to the Technical Coordinating Committee (TCC) for their final comments, adjustments, and endorsement. After addressing any comments from the TCC, the final TAZ numbers were then presented





to Transportation Advisory Committee (TAC) for their comment and endorsement. The TCC and TAC approved the demographic numbers on March 12, 2008 and March 25, 2008 respectively.



Chapter 5: The Environment

5.1

CURRENT ISSUES

American cities seem to be spilling over their traditional boundaries and covering surrounding areas with low-density development at an astounding pace. Such development is changing the landscape before people's eyes. Cities, suburbs, and neighboring rural areas are all feeling the impact - but differently. For many cities, it has meant concentrated poverty and decay at their core. In older suburbs, being sandwiched by new development has brought increased traffic, pollution, and the problems that initially affected inner cities. And those who earlier moved out to enjoy closer access to countryside and natural beauty are seeing those very qualities fade as others attempt to enjoy them.

In spite of this national attention, however, sprawl is often misunderstood and the magnitude of the problem is hard to assess. For one thing, land is abundant in the United States. Although millions of acres of rural land were transformed to development during the past two decades, only 7 percent of nonfederal land in the country is built up, according to the U.S. Department of Agriculture. Most agree that, even in the face of rapid development, urbanization is not a threat to food production nationally for the foreseeable future.

Yet, there is a sense in which sprawl is wasteful. The Charlotte Metro Area shows Charlotte as going through

a gentrification period where the suburbs are no longer the primary choice for everyone, but a lifestyle choice selected by different housing and job markets. Because people continue to choose suburban life in the Charlotte MSA, areas adjacent to Mecklenburg County such as Gaston County have become the suburbs, where some city problems become worse and infrastructure is duplicated or abandoned. And the way in which development takes place — regardless of how much land is available — can impose costs on others. Sprawling, low-density development has been associated with many issues, most notably:

- traffic congestion,
- tax increases,
- greater cost of providing services,
- environmental degradation (i.e., air pollution, water quality),
- inner-city decay, and
- reduced access to open space.

Mitigating New Transportation Facility Improvements

One of the greatest difficulties in dealing with sprawl is that there is no consensus about what it is. Like pornography, it is something that people claim to recognize when they see it but cannot always clearly define.

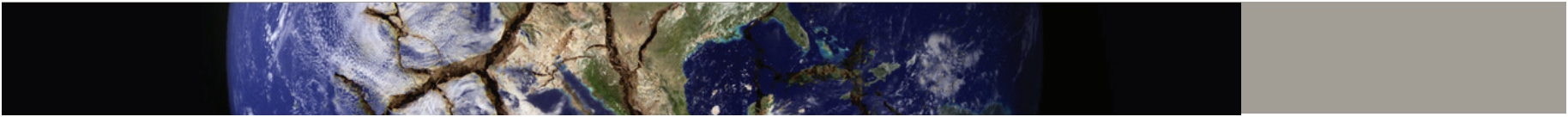
For instance, when people say they are against both infill development and suburban sprawl, part of what they are reacting to is a lack of access to open space. Green areas provide opportunities for recreation and variety to a built-up environment that can otherwise seem never-ending. Thus, some measures proposed to address sprawl attempt to include public parks and green spaces in city design. Yet, doing this could actually lower the density or increase the absolute area a city occupies.

The Four-Wheeled Culprit

Probably the most agreed-upon source of encouragement to sprawl lies in our favorite mode of transportation. Sprawl would not be possible without the car. And, “motor vehicle use in metropolitan areas is vastly underpriced,” says economist Edwin Mills. Figures of the extent of subsidies to car use vary widely depending on whether items such as the costs of accidents and “global warming” damages are tallied. But just looking at public expenditures for highway infrastructure and services, a federal study found that car users paid for only 62 to 72 percent of total expenditures in 1990.

Over a long enough period of time, this type of subsidy has probably affected the way cities developed. European cities have remained more compact than most U.S. cities, partly because they have made higher investments in mass transit and charge much higher





prices for automobile use, according to Pietro Nivola, a senior fellow at the Brookings Institution.

“Thanks to scant taxation of gasoline, the price of automotive fuel in the United States is almost a quarter of what it is in Italy. Is it any surprise that Italians would live closer to their urban centers, where they can more easily walk to work or rely on public transportation?” he asks.

Use of the car also imposes costs not covered by drivers such as air pollution and traffic congestion. People who choose to live farther out from the city and drive to work suffer some of the congestion consequences of that decision. But they do not pay for the cost they impose on other drivers, as each additional car lowers the travel speeds and increases congestion for everyone on the road. Similarly, drivers do not have to pay for the pollution that they create in the air everyone breathes.



Mitigation Process Improvements

Process Steps		
First Step in Current Process:	Identification of impacts (beginning of compensatory mitigation)	
Steps Included in Current Process:	Identify, evaluate, and select sites: site search, conduct feasibility study, select mitigation site(s)	
	Coordinate, develop, and approve mitigation plan	
	Issue permit (linkage to permitting process)	
	Develop detailed plans and construct site(s)	
	Monitor mitigation site(s)	
Last Step in Current Process:	Certification of success by regulatory agencies and dispose of property	
	Key Customer Identified Internal and/or external	What Product or Service does the Customer Receive?
Internal Customers:	COE, DENR, DOT	1) Approved mitigation site that replaces impacted functions 2) Mitigation credits 3) Permits
External Customers:	Public, local government, USFWS, NCWRC, NMFS, EPA	1) Mitigation sites delivered in an environmentally responsible manner and in compliance with regulations 2) Conservation of natural resources 3) Implemented transportation plans



DRAFT Mitigation Toolbox

RESOURCE	DURATION	EFFECT	POTENTIAL ISSUES	MITIGATION MEASURES
Archeological/ Cultural Resources	Long-term	Direct	Long-term impacts would be the loss or deterioration of cultural/archaeological resources that may exist in the roadway alignment. Coordination with cultural resources review boards will occur as necessary.	Avoid sensitive areas where possible and report incidence of cultural resources discovery during construction phase when necessary.
Air Quality	Short and long-term	Direct and Indirect	Short-term emissions from construction vehicles and construction dust likely to be insignificant. Long-term impacts may include the potential reduction of ambient air quality of potential significance in already-impacted airsheds.	Implementation of dust-abatement programs on as-needed basis during construction.
Floodplains	Long-term	Direct and Indirect	Direct impacts to floodplains are likely to be insignificant. Indirect impacts to floodplains may be associated with increased imperviousness and fill associated with adjacent developments.	Avoid 100-year floodplains where possible and minimize construction disturbance in floodplains.
Noise	Short and long-term	Direct	Impacts from construction noise may occur during construction phases in close proximity to community centers, particularly in residential areas. Long-term noise impacts are likely to be below thresholds requiring specific mitigation.	Limit construction activities in sensitive districts to daylight/business hours as possible. Retain or enhance vegetative or build noise barriers where feasible.

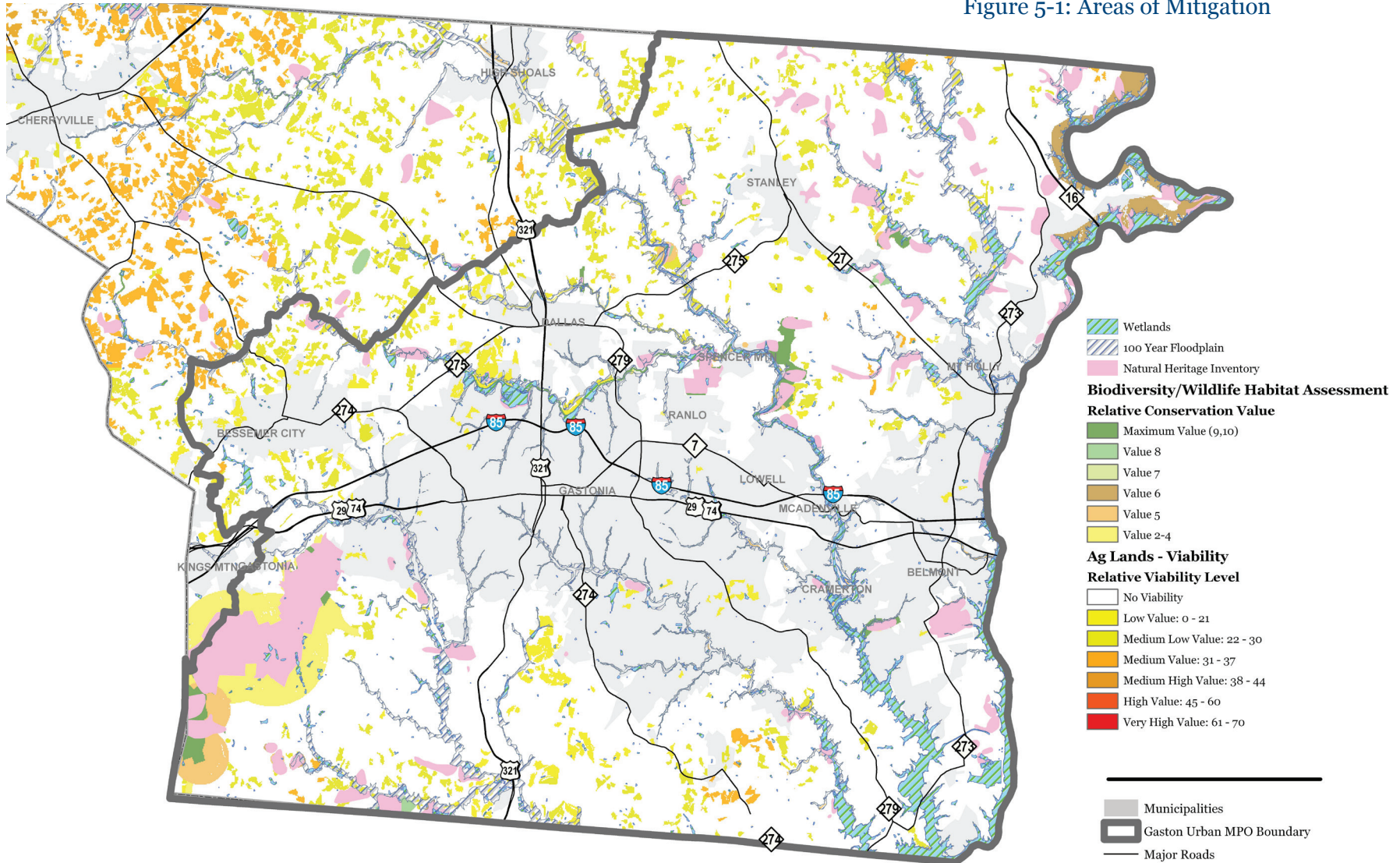


DRAFT Mitigation Toolbox

RESOURCE	DURATION	EFFECT	POTENTIAL ISSUES	MITIGATION MEASURES
Prime Farmland	Long-term	Direct	Impacts may include the loss or deterioration of prime farmlands existing within or adjacent to the proposed roadway alignment.	Avoid prime farmland areas where possible, and limit ground disturbing activities to boundaries or edges of prime farmland areas if possible.
Riparian Habitats	Short and long-term	Direct and Indirect	Roadway construction may cause impacts to riparian habitats. Indirect impacts to riparian habitats from increased stormwater flows, pollutant loading, and bank destabilization may also adversely affect riparian resources.	Avoid riparian habitats where possible and minimize construction disturbance in riparian areas where possible.
Species of Special Concern	Long-term	Direct and Indirect	Impacts to species of special concern could result from direct impacts of construction, and indirect impacts due to habitat loss, habitat degradation, or impacts to migratory corridors. Threatened and Endangered species surveys may occur prior to construction. Mitigation for habitat loss and/or degradation may be required.	Where Possible: Avoid construction during nesting or breeding periods for sensitive species. Limit construction disturbance areas to minimum required for construction activities. Limit impacts to critical habitat areas and migration corridors.
Wetlands	Short and long-term	Direct and Indirect	Roadway construction may impact wetlands. Indirect impacts may occur from increased stormwater flows and pollutant loading. Wetland surveys and proposed mitigation may occur prior to construction.	Avoid wetland areas where possible and minimize construction disturbance in wetland habitats. If possible provide mitigation for impacted resources.



Figure 5-1: Areas of Mitigation





5.2

FUTURE ISSUES

Greenhouse Gases (GHG's)

In December 2009, the US Environmental Protection Agency (EPA) issued two findings that will have an impact on the Gaston MPO's transportation planning process in the future. The EPA found that:

- 1) The mix of atmospheric concentrations of six, well-mixed greenhouse gases threatens both the public health and the public welfare, both now and in the future. The six greenhouse gases are:
 - a. carbon dioxide (CO₂)
 - b. methane (CH₄)
 - c. nitrous oxide (N₂O)
 - d. hydrofluorocarbons (HFCs)
 - e. perfluorocarbons (PFCs)
 - f. sulfur hexafluoride (SF₆)

The EPA stated that these greenhouse gases in the atmosphere constitute "air pollution" and that they threaten the public health and welfare. This finding was labeled the "Endangerment Finding."

- 2) The combined greenhouse gas emissions from new motor vehicles and motor vehicle engines contribute to the atmospheric concentrations of these key greenhouse gases and hence to the threat of climate change. This finding was labeled the "Cause or Contribute Finding."

The greenhouse gas emissions from the six sources mentioned above account for just over 23 percent of total U.S. greenhouse gas emissions. Greenhouse gas emissions from on-road vehicles are the second largest greenhouse gas emissions source in the United States, behind the electricity generating sector. EPA's determination treats the emissions of the six key greenhouse gases collectively as an "air pollutant" under the Clean Air Act and paves the way for regulating emissions from cars.

Prior to this announcement, the EPA announced in May 2009 that it would coordinate with the Department of Transportation (DOT) to set the first ever federal emissions standards for greenhouse gases by proposing standards for passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. These vehicle categories are responsible for almost 60 percent of all U.S. transportation-related greenhouse gas emissions

Climate Change

Climate change is an increase in the near surface temperature of the earth most often as a result of increased Greenhouse Gases (GHG's).

Climate change can be addressed in transportation planning with mitigation and adaptation efforts. "Mitigation of climate change means reducing the major causes of climate change: GHG's released by human activity. Adaptation to climate change means minimizing the potential impacts on the transportation system from climate changes such as rising temperatures, increased intensity of storms, rising sea levels and increases in overall climate variability." (Federal Highway Administration, "Highways and Climate Change")

Many Federal, State and local transportation agencies are incorporating climate change issues in various plans and processes. The Federal Highway Administration has identified four primary strategies to reduce GHG emissions from transportation:

1. Improve system and operational efficiencies: traffic flow, fuel efficiency, and maintenance, etc.
2. Reduce growth in vehicle miles traveled (VMT): land use strategies, HOV lanes, transit options, pedestrian and bicycle facilities, etc.
3. Transition to lower GHG fuels: use of biodiesel and natural gas
4. Improve vehicle technologies: more fuel



efficient-vehicles; hybrids, Corporate Average Fuel Economy (CAFE) standards.

GHG Reduction Efforts

The Gaston Urban Area MPO and its regional partners have already employed a number of noteworthy GHG reducing activities, several of which are described below:

1. Fast Lanes Study

The Fast Lanes Study was a multi-county evaluation of the feasibility of implementing managed lanes, including high occupancy vehicle (HOV) and high occupancy toll (HOT) lanes, throughout the Charlotte region. The study was initiated in part due to the public's acceptance of the HOV lanes along ten miles of I-77 between Charlotte and Huntersville in Mecklenburg County. HOV and HOT lanes emphasize person movement rather than vehicle movement, thereby improving a roadway's ability to transport more people in fewer vehicles.

2. Gaston Urban Area MPO Street Design Guidelines

The Gaston Urban Area MPO is currently reviewing "complete streets" philosophy, which emphasizes that the transportation network should be multi-modal, thereby making alternative modes more viable and

lessening the community's reduction on every trip requiring the use of a car.

3. Connectivity Policy

In recent years the Gaston MPO has put an emphasis on a system of streets providing multiple routes and connections between origins and destinations. Connectivity is important because a highly connected street network can greatly reduce trip lengths, thereby reducing vehicle miles travel which in turn results in reduced emissions.

4. Transit Planning

The City of Gastonia is planning for a new multimodal transportation center. The modes served at the proposed facility would be local bus, county Para-transit, express commuter bus, Greyhound, automobiles, pedestrians, bicycles, Amtrak and potential future commuter rail.

5. Congestion Mitigation & Air Quality (CMAQ) Funds

GUAMPO member jurisdictions have used CMAQ funds for a variety of purposes that will result in a reduced use of GHG fuels:

- Intersection improvements-to assist in congestion and idling
- Street connectivity-to reduce trip length

- Park and Ride lots for 85x express bus

This plan does not include a quantitative assessment of GHG; however, as more consistent methods to measure GHG emissions are developed, and as legislative and regulatory mandates emerge (i.e., SAFETEA-LU reauthorization), GUAMPO will address them accordingly. In the meantime, GUAMPO will place more emphasis on education about transportation and its effects on climate change.



Chapter 6: Existing Conditions

6.0

EXISTING CONDITIONS

Gaston MPO's existing transportation network is extensive. Thoroughfares range from two-lane minor thoroughfares to eight-lane major freeways. The main Norfolk Southern Rail line running between Atlanta and Baltimore and the Amtrak's Crescent Line from New Orleans to New York traverses Gaston County. The CSX line between Wilmington and Louisville also traverses Gaston County. The City of Gastonia also provides intra-city bus service, through Gastonia Transit. There are eight (8) transit routes running on forty-five (45) minute headways. There is also a regional bus line between Gastonia and Charlotte for commuters.

6.1

POPULATION AND EMPLOYMENT DATA

The regional travel demand model, upon which the transportation plan is based, requires the projection of three types of socioeconomic data: general population, student population, and employment. Both datasets are, to some extent, inter-related. Employment, especially in the retail and service sectors, grows along with new residential development. Other types of employment, such as large-scale industrial employment, could spur a need for housing in

an under-served residential area. In addition to population and employment, two other data inputs are used as model inputs: 1) commercial vehicles, which are owned by certain types of businesses and may increase as employment does and 2) traffic count data, which depicts the current volumes of traffic along the transportation network.

New base year data was developed by extrapolating the data from both the 2000 Census and the 2030 plan. In addition, employment and commercial vehicle data were collected through a comprehensive survey conducted in 2001. Thematic maps depicting the 2005 base year employment (Figure 7-2) and population (Figure 7-6) by TAZ are included in Chapter 7. Population and employment totals for the year 2005 thru 2035 are shown in Figure 6-1.

6.2

TRANSPORTATION NETWORKS

6.2.1 Highway Network

Since the adoption of the 2005 Thoroughfare Plan by the Gaston Urban Area MPO and the North Carolina Board of Transportation, MPO staff has worked to implement the proposals called for in that plan. With the limited availability of state and local funding for

thoroughfare construction, it is more important than ever to work with municipal staff and developers to acquire right-of-ways (ROW) for future corridors. This is done through the review of site plans for appropriate setbacks and subdivision plans for impacts on thoroughfares proposed for widening or for new

Gaston MPO & Regional Population Employment				
Year	2005	2015	2025	2035
Population	194,083	216,628	267,443	299,202
Employment	71,978	73,267	83,821	94,532

alignment. While there have been some difficulties on specific corridors, there has also been significant progress in this area. Many of the member governments have adopted right-of-way protection measures as a part of their subdivision ordinances therefore requiring those developing property to participate in the task of providing infrastructure. In some cases, the alignments of new facilities shown on the Thoroughfare Plan map have been adjusted to cause less disruption to property owners and to better incorporate the facility into the design of a development. Examples of Thoroughfare





Plan projects that have been protected through these efforts are a portion of the Clearwater Lake Road extension, the Mount Holly North Loop, Gaston Day School Road extension, North Ranlo Loop, Belmont – Mount Holly Southern Loop, and the Forbes Road extension.

Staff has also worked to complete corridor studies for several corridors that are considered most threatened by development, two of which are the Gastonia-Mount Holly Connector and the southern portion of the Belmont-Mount Holly Loop. A functional design has been completed for the Gastonia-Mount Holly Connector, and further design efforts are underway to develop functional designs for the Belmont-Mount Holly Loop, Forbes Road Extension and Gaston Day School Road Extension. Additional proposed thoroughfares, such as the North Ranlo Loop and the Union Road Re-alignment, will eventually have a functional design developed. Further, other projects on the Gaston Urban Area priority list for funding have been included on the State Transportation Improvement Program for feasibility studies. Such studies provide an assessment of project need and a discussion of appropriate alternatives. Feasibility studies of the Titman Road – Cramerton Road Connector and the Mount Holly North Loop have been completed.

Other changes include several new roads that have opened to traffic or been widened since the adoption of the 2001 Thoroughfare Plan. These include the NC 27 Bridge over the Catawba River, Armstrong Park Road/Gaston Day School Road extension and widening, Hudson Boulevard (completion of a four lane divided facility from York Road to S. New Hope Road) and the extension of Hoffman Road from Gaston Day School Road to Hudson Boulevard (four lanes divided). Some of these projects were completed with significant financial input from the City of Gastonia.

6.2.2 Public Transportation Facilities

A. Gastonia Transit

The City of Gastonia has operated Gastonia Transit since 1978 when it acquired the assets of a private transit company. There are two types of service provided by Gastonia Transit, fixed route and complementary ADA para-transit services. As its name suggests, the fixed route system follows the same schedule on each trip, arriving at set locations at pre-determined times. The para-transit system, however, is designed to be flexible and serves disabled members of the community who lack access to the fixed route system. The service area is confined to the city limits of Gastonia, serving a population of approximately 72,000 people. A single ticket fare is \$1.00 dollar and transfers are free; seniors and disabled citizens ride for 50 cents and ADA Paratransit is \$2.00 dollars a trip.

The fixed route service uses eight routes operating on 45 minute headways (the time between buses passing a single point on a route) from 5:00 a.m. to 6:30 p.m. Monday through Friday. A limited schedule of service, comprised of five routes, runs on Saturday from 8:00 a.m. to 6:00 p.m.. No service is available on Sundays. In June 2009, Gastonia Transit purchased 5 low-floor 35-foot buses fueled by clean diesel fuel. Gastonia Transit also utilizes a 40-foot low floor bus that operates on compressed natural gas (CNG).

Since the passage of the Americans with Disabilities Act in 1991 (ADA) many physical changes have been made to the transit system. New buses are now equipped with wheelchair lifts and the bus transfer station is handicapped accessible. The two Gastonia Transit para-transit vans are equipped to handle the special needs of disabled patrons and operate the same hours as the fixed route system. While geared towards the physically or mentally challenged, the service is open to the general public. The cost is \$2.00 per trip.

A central transfer point is located at Bradley Station in downtown Gastonia. Most of the routes are operated as one-way loop routes and operate on a “pulse” schedule system so that all the buses arrive and depart from the station at the same time. This allows for easy transfers between routes as well as greater service coverage, however, the indirect routing results in increased travel times for some passengers.





Since the 2005 LRTP update, the Gaston MPO, along with NCDOT, Gastonia Transit, Gaston County ACCESS and other community organizations participated in a transit expansion study. The consultant studied the existing route structure and determined the need for a revision of the existing route structure. Following this evaluation, several changes were made to the system. Changes to the Marietta Route allowed service to be extended to the BiLo Shopping Center on Hudson Boulevard and Martha Rivers Park (on Saturdays only), changes to the Hospital Route allowed service to expand to a residential neighborhood in north Gastonia, changes to the Arlington Route allowed service to expand to an industrial park on the northwestern section of Gastonia and changes to one of the Westfield Routes allowed service along Garrison Boulevard. The eight routes that make up the current fixed route system are outlined in Figure 6-2. The Gastonia Transit Map of all routes is included as Figure 6-4.

The Gastonia Transit fixed route transit system has experienced a slight decline in ridership over the past few years. From FY 2005 to FY 2006, the number of annual passengers decreased from 286,868 to 268,818 indicated in Figure 6-3. This decrease in ridership was attributed to an increase in bus fares and revisions to service routes that were

**Figure 6-2:
Current Gastonia Transit Routes**

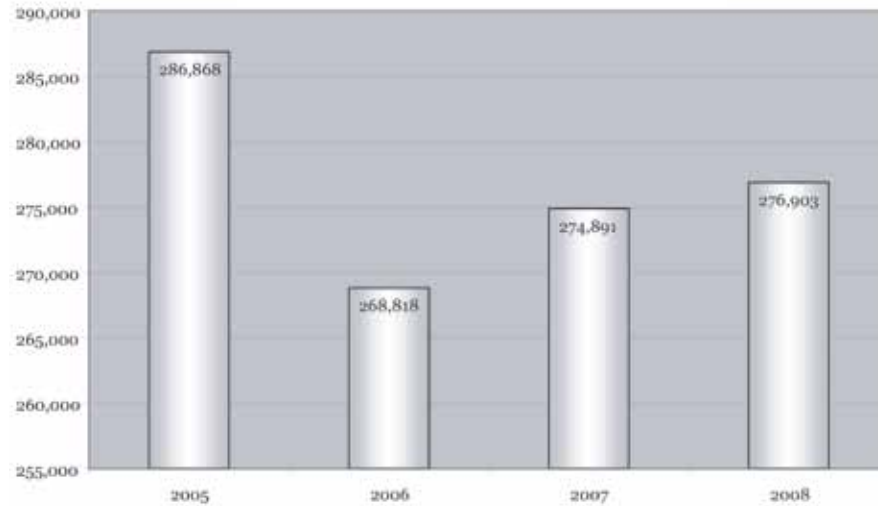
Route #(Name)	Service locations	Headway M-F	Headway Sat
Route 1 (Franklin Boulevard)	Dixie Village Shopping Center, Center City, Westfield Mall, Gaston Mall, Wal-Mart	60 min	N/A
Route 2 (South New Hope)	Center, Center City, Westfield Mall, Gaston Mall, Wal-Mart, Bradford Heights, Ashbrook High School, Schiele Museum, Lineberger Park	45 min.	1.5 hr
Route 3 (South Marietta)	Center City, Salvation Army, Aldi Grocery Store, Bi-Lo Grocery Store, Ferguson Park, Lingerfeldt Elementary School	30 min.	1.5 hr.
Route 4 (South York)	Lingerfeldt Elementary School, Gaston County Health Dept., Phillips Center, Dixie Village Shopping Center	45 min.	1.5 hr.
Route 5 (Edgewood)	Linwood Terrace Apartments, Dixie Village Shopping Center, Wal-Mart West, Food Lion	45 min.	1.5 hr
Route 6 (Bessemer City Road)	Affinia-WIX Corp., Employment Security Commission, Wal-Mart West, Dixie Village Shopping Center	30 min	1.5 hr.
Route 7 (Highland)	Dixie Village Shopping Center, Wal-Mart West, Highland School of Technology, Sims Park, Center City, Erwin Center	30 min	2 hr.
Route 8 (Hospital/ Westfield)	Center City, Westfield Mall, Summit Crossing Medical, Gaston Memorial Hospital, Social Security Office	1 hr.	2 hr

initialized in 2004. There is also reason to attribute the decline as the result of higher unemployment rates in Gaston County, coupled with a change in the location of publicly-subsidized housing from transit

routes. Despite this ridership downturn, Gastonia Transit and MPO staff are optimistic that ridership will again increase and work is underway to adjust routes to best serve both the transit dependent and non-transit



Figure 6-3:
Gastonia Transit Annual Ridership
Totals, Fiscal Years 2005-2008



dependent commuter population.

The Gastonia Transit Expansion Study was undertaken by the Gaston Urban Area MPO and funded locally by the City of Gastonia to determine opportunities for expanded public transit services in Gastonia and throughout Gaston County. Currently, transit services operated by Gastonia Transit (the local urban transit system) are limited to the area inside the city limits of Gastonia. Some general public transportation is provided by Gaston County ACCESS (the local community transit system), but it is limited in scale and scope. ACCESS primarily serves clients of human service agencies and other customers with special

transportation needs.

Gaston County is experiencing growth pressures, and local leaders have expressed an interest in studying the potential need for expanded transit services. In recognition of the limited financial resources for transit, there is also a desire to explore opportunities to expand the reach of transit through increased coordination between Gastonia Transit and Gaston County ACCESS, as well as with systems in neighboring counties. This study was envisioned primarily to assess the feasibility of expanding current transit operations to better serve other municipalities outside of Gastonia in Gaston County; however, it is also taking a more comprehensive

look at service needs in general, including the need for additional hours of operation, improvements to the frequency of service, development of expanded services to neighboring counties, and other enhancements.

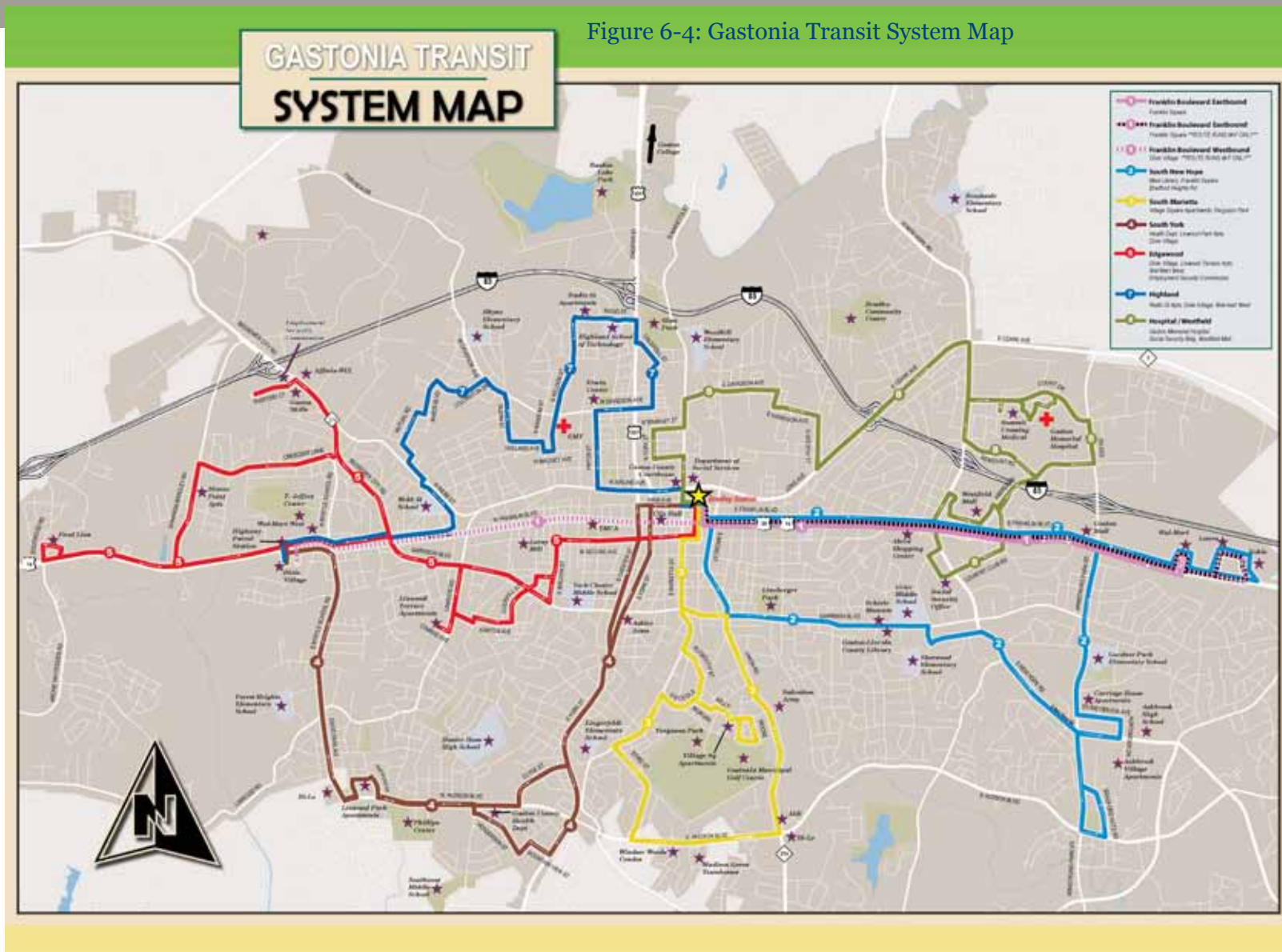
In addition to improving the overall mobility of the residents of Gaston County, expanding the transit system may also help the region address its non-attainment status for ambient air quality and emissions, as well as issues related to limited or lack of funding for road improvements. One of the goals of the study is to identify transit system improvements that will encourage a mode shift from the automobile to transit, in an effort to address these issues.

B. Gaston County ACCESS

Gaston County "ACCESS" Central Transportation is a community transportation system and is operated as a service to the citizens of Gaston County. The ACCESS point-deviation system is used to transport human service agency clients and the general public on a daily basis to work, school and structured workshops through direct provision of service and agreements with local transportation providers. Among the human service agencies served are the Gaston County Health Department, the Gaston County Department of Social Services, Gaston Skills (Vocational Rehabilitation), Pathways, and Gaston County Schools. Additional trips in or out of the county can be arranged for



Figure 6-4: Gastonia Transit System Map





passengers receiving medical care outside of Gaston County to places such as Charlotte, Shelby, and Chapel Hill. These trips can be coordinated with neighboring service providers to make the best use of available resources.

Services to some non-agency customers are provided with assistance from the North Carolina Department of Transportation's Rural Operators Assistance Program (ROAP) grant which is the Elderly and Disabled Transportation Assistance Program, (EDTAP) Rural General Public (RGP) program, and WorkFirst. These demand-response passengers are incorporated onto existing routes when possible to increase efficiency. The fare for general public service is based on location and destination. The current fee is \$1 per trip for pick-up and drop-off at locations outside the City of Gastonia, with higher fares for service to or from outlying areas of the county, which are set on a case-by-case basis. ACCESS staff reports that most of the demand for RGP service is to the local community college. RGP service demand also includes trips from the Belmont, Stanley, Lowell, and Cramerton area and to and from the Gaston County Health Department, and the Metrolina Kidney Center. Trips within the City of Gastonia are provided primarily for customers who do not have geographic access to Gastonia Transit.

The ACCESS transportation system has 28 vehicles of various sizes, designed to carry a maximum of 7, 12,

14 or 24 passengers. Of these, a total of 15-20 vehicles operate subscription routes on a daily basis, with another 2-5 vehicles utilized for demand-response service. The 26 drivers operate from 5:00 a.m. to 6:00 p.m., Monday through Friday. Private transportation companies are utilized to transport employees to third shift jobs or for other qualifying night and weekend trips. For those in need of specialized transport, lift equipped vehicles are available. Annual trip counts are shown in Figure 6-5.

Year	Passenger Trips
2004	130,224
2005	190,483
2006	235,023
2007	192,924
2008	128,720

Following years of discussion and requests by citizens, ACCESS initiated service from the Bradley Transfer Station to Gaston College in September 2001. ACCESS runs a deviated fixed route from the transfer station daily that serves Gaston College and the town of Dallas.

This route starts at 7:30 AM from the Bradley Station to Gaston College, and then stops at several locations within the town of Dallas. This route also serves the Modena area of Gastonia and the two apartment complexes off of Modena. As with any new service, the initial ridership for this route was low, but now our daily ridership when the college is in session averages from 10 to 15 passengers per day. Increased marketing and more convenient service times should improve overall ridership. These recommendations are discussed in greater detail in the following section.

C. Express Bus Service – Gastonia Express (85X)

In 1996, the Gaston MPO conducted a survey of citizens regarding transportation issues. According to that survey, over 50 percent of residents used or would be willing to use, alternatives to the single-occupancy vehicle, including staggered work hours, bus service, and car/vanpooling. Further, a Route and Schedule Evaluation performed by the Institute for Transportation Research and Education found that peak hour service (6:30 AM to 9:00 AM and 3:00 PM to 5:30 PM) constituted only 30 percent of all trips on Gastonia Transit. This is significant in that it shows that the traditional work commuter is not using transit service. According to the 2000 census, approximately 16,500 Gaston County residents commuted to Mecklenburg County for employment, and this figure is likely to have grown in the past decade.



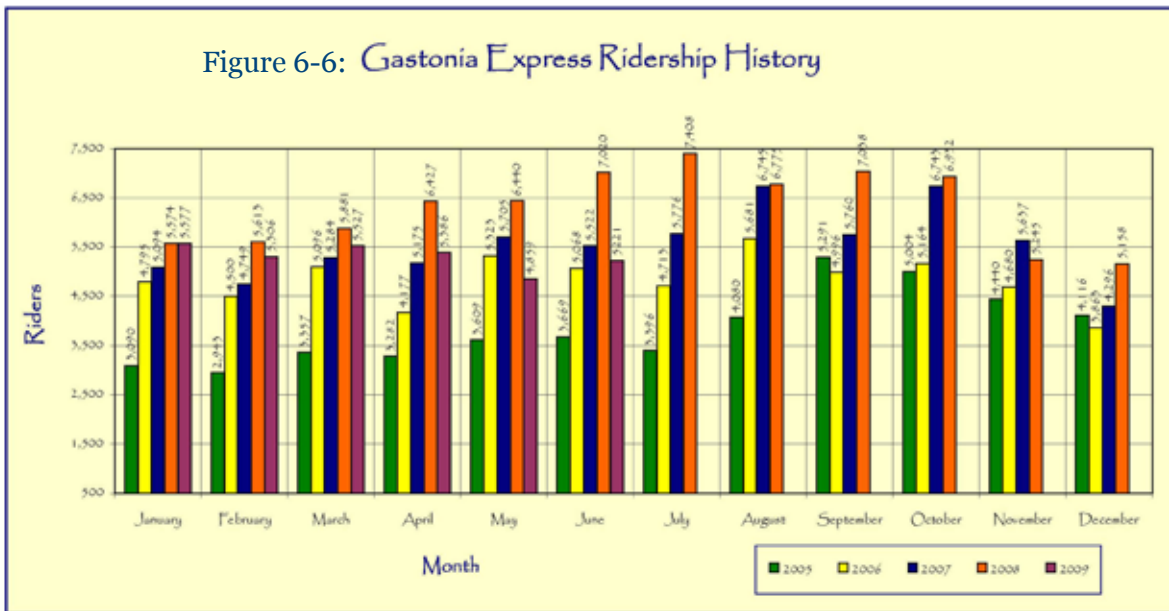


The idea of implementing an express bus service to Charlotte came forward during the last LRTP process as a way of increasing vehicle occupancy and reducing congestion thereby working towards improved air quality. Since the adoption of that plan in July 2002, this idea has been put into action, with the first Gastonia Express route leaving Bradley Station on March 5, 2001. This service is a combined effort of the Charlotte Area Transit System (CATS) and the City of Gastonia, with CATS operating and marketing the service and Gastonia contributing 50 percent of the operating costs.

The Gastonia Express provides commuters with four departure times from Gastonia every weekday morning (5:15, 6:35, 6:55 and 7:20). After making a stop at Belmont’s Abbey Plaza, the route travels along Interstate 85 to Freedom Drive and makes several stops in uptown Charlotte. The bus departs uptown Charlotte each afternoon at 4:03, 4:33, 5:03 and 6:05, taking roughly one hour. For those patrons who have an emergency during the workday and need to return home early, the CATS Guaranteed Ride Home Program is available.

Over the past four years, Gastonia Express ridership has increased annually as indicated in Figure 6-6. In January of 2005, there were 3,090 riders, compared to January of 2009 where there are 5,557 riders per month. Over the past few years, the service has become a welcome service for commuters.

Figure 6-6: Gastonia Express Ridership History



The regular fare for the service is \$3.00 each way or \$6.00 round trip; monthly passes are available for \$120.00. Children, senior citizens and the disabled can ride for \$1.50. Transfers to CATS local service is free, while a transfer to the Gastonia Express from CATS local service is \$1.50. Free parking is available at both park-n-ride locations.

D. Vanpools

Augmenting the Gastonia Express is the vanpool service, which runs between Gaston and Mecklenburg Counties. This service is organized by Charlotte

Area Transit System (CATS), which purchases fifteen passenger vans, provides insurance to the drivers and passengers, and coordinates the effort. Vanpools run Monday through Friday, and the vehicles are parked in Charlotte during the day. Vanpool participants pay \$45-\$50 per month, and are guaranteed a ride home (by taxi) in case of emergency.

Several years ago three vanpools originated in Gaston County, however, with the inception of the Gastonia Express service. Only one vanpool travels from Gastonia’s Bradley Station to uptown Charlotte each





day. CATS continues to track requests for vanpools originating in Gaston County and hopefully in the future, types of vanpools will become more common, being coordinated by either local government agencies or private citizens or both.

In addition to the CATS vanpool services; there is also room for private citizens to organize their own vanpools. The convenience, relatively low cost and dependability of a vanpool can draw hundreds of commuters to this mode of transportation. The most obvious benefit to the local government is that private citizens can lease these vans themselves and collect “fares” from their passengers. Other than offering support for vanpools in terms of coordination and marketing, municipalities would have very little involvement or costs. In our on-going discussion of alternate forms of transportation, planners must not overlook the significant traffic flows between Gaston County and Lincoln, Cleveland, and York Counties.

E. Private Transportation Carriers

In addition to the local fixed route transit and human services based transportation, several private operators exist within the Gaston Urban Area. Specifically, taxis are available for local trips and inter-city bus services can accommodate long-distance travelers.

There are eight taxicab companies in Gaston County, six located in Gastonia and two in Mount Holly. Yellow Cab and American Taxi companies serve both the City

of Gastonia and the entire county and have ten and twelve vehicles, respectively. The remaining companies average two vehicles each.

Inter-city bus service is available through Greyhound. A small terminal is located in downtown Gastonia just off Franklin Boulevard. Eight daily westbound departures are available to locations such as Asheville, Greenville, SC and points beyond; six daily eastbound departures are available to Charlotte and points beyond.

6.2.3 Bicycle Facilities

Making transportation corridors truly multi-modal is a priority for the Gaston MPO. The best if not the only way to reduce automobile trips is to make other modes more viable. In an effort to educate the citizens of Gaston County about roads most appropriate for bicycling, the Gaston MPO has worked with the NCDOT Bicycle and Pedestrian Division to create a map of recommended bicycle routes in the urban area. The goal was to identify and sign routes on streets that would be safe for the average rider, while providing a connection between popular local attractions. MPO staff compiled many route options and received input from an interested citizens group. The result was the adoption of the Gaston County Bike Route Network at the September 2001 TAC meeting. A professional cartographer developed a Gaston County Bicycle Route Map in 2003. MPO staff continues to work with the NCDOT Bicycle and Pedestrian Division to mark these routes with signage. A map of these routes is included as Figure 6-7.

To further make the transportation network safe for bicyclists, it has been the policy of MPO staff to encourage NCDOT engineers to design roads with lanes wide enough to accommodate bicyclists; there has been some recent success in this regard. In conjunction with recent widenings or resurfacing, the City of Gastonia has requested that NCDOT make bicycling a safer option by striping the road to allow an extra foot on each outside lane. These streets are then marked with “Share the Road” signs, making motorists aware that this facility is designed to accommodate both automobiles and bicycles. Additionally, the MPO also has recently hired a contractor to install 24 bike racks throughout Gaston County. The TCC developed a location listing, NCDOT provided the funds, and a contractor installed the bike racks. Bike racks will enhance public use for bicycles by providing safe lockable racks to ensure safety for bicycles.

Finally, the completion of the Avon and Catawba Creek Greenway further enhances the mobility of bicyclists, making it possible for users of this mode to travel outside of their automobiles. In general, such facilities can accommodate people wanting to make a quick trip to the store by bicycle or even to and from their jobs. Because of the greenway’s connectivity to community attractions such as Lineberger Park, the Schiele Museum and the library, bicycling has become a viable mode of transportation for certain trips. With future expansion of the greenway system, the possibility





of making this mode of transportation a more viable option will increase. The Gaston Urban Area MPO also provides strong support for the regional greenway system (The Carolina Thread Trail - CTT).

While the accomplishments outlined above greatly improve the ability of citizens to bicycle in our community, there remains work to be done. Connect Gaston, a Gastonia citizen based organization, made the following recommendations regarding bicycle facilities in the City of Gastonia:

- Implementing a series of neighborhood meetings to design appropriate daylight hour parking regulations and traffic re-striping to create a city-wide grid of bicycle-safe streets, which connect significant cultural, educational, recreational and civic points within Gastonia.
- Developing city-wide guidelines and regulations to mark safe bike lanes in every public parking facility.
- Re-marking traffic lanes with a 2 foot wide edge of pavement lines on the Freedom Mill-Linwood Road-Neal Hawkins-Robinson Road-New Hope Road route; on the Gardner Park-Armstrong Park-Garrison Boulevard to Union Road route on Union Road; on the Redbud connector; and on New Hope Road from the Stowe Botanical Garden to NC 7.
- Creating regulations to ensure adequate lockable bicycle storage racks at all malls, schools, clinics,

apartment complexes, and public offices.

- Creating a group of school, city and county officials to ensure adequate bicycle awareness safety training is incorporated into school programs, drivers' training courses, and parental information leaflets.

Source: Connect Gaston: Report of the Gastonia Committee for Greenways, Sidewalks, and Bikeways Committee

6.2.4 Pedestrian Facilities

In our auto-centered society, citizens frequently consider only one modal option, the private automobile, to carry them to and from their destinations. Most trips, however, no matter the mode, begin with a walking trip. Whether it is on either end of an automobile trip, or to and from a transit stop, it is imperative that pedestrians are accommodated with safe, accessible pathways. As transportation professionals, we also endorse this concept in the hope that improved pedestrian facilities will relieve the burden on congested roads by encouraging alternate forms of transportation. To this end, several cities within the Gaston Urban Area have implemented sidewalk policies for inclusion with new development. The municipalities which require sidewalks as a part of their subdivision regulations are listed below.

- The **City of Belmont** requires sidewalks to be placed on both sides of all commercial and residential streets.
- The **Bessemer City** ordinance reads, "Sidewalks

shall be constructed on one side of all new subdivision streets, including the extension of previously platted unopened streets, in order to provide safety to pedestrians. Sidewalks shall be constructed within the street right of way and installed in accordance with city specifications and standards."

- The **City of Gastonia** subdivision ordinance was amended in 2004 to implement a more proactive policy on sidewalks. It now requires that sidewalks be placed on the abutting side of major and minor thoroughfare streets and along one side of new and existing collector and local streets (may be required on both sides of a collector and local street upon review from the technical review committee). The ordinance also states that for unified residential developments, sidewalks shall be constructed on one side of internal streets in addition to sidewalks along adjacent public streets. For non-residential unified developments, sidewalks shall be constructed on one side of major stem streets and public streets.
- The **City of Mount Holly** subdivision ordinance requires sidewalks on both sides of the street for residential streets and both sides of the street for collector streets. The ordinance also requires sidewalks along the frontage of a minor or major thoroughfare. Commercial and industrial streets require sidewalks on both sides of the street.
- The **Town of Stanley** subdivision ordinance





allows the Planning Board or Town Board to determine the necessity of building sidewalks in subdivisions. They may be required on either or on both sides of the street “in order to promote the free flow of vehicular traffic and to provide safety to pedestrians”.

In order to increase pedestrian accessibility through established neighborhoods and shopping areas, some municipalities have adopted a schedule of improvements to add sidewalks where they did not previously exist.

In 1993, the **City of Mount Holly** compiled a list of desired sidewalk projects, both short term and long term. Since that time, sidewalks have been installed on Belmont-Mount Holly Road (from Rose Street to Blanche Street), on North Main Street (from Walnut Avenue to Sadler Street) and on Tuckaseegee Road (from S. Main Street to Broome Street). Some of the remaining projects on the short-term list are on Woodlawn Avenue, West Charlotte Avenue, East Catawba Avenue and South Main Street.

The **City of Gastonia** has also shown a continued effort to fund sidewalk improvements on state-maintained roads. The most recent General Obligation Bond issuance provided funding for nearly \$845,000 in sidewalk improvements. Some of the more significant expenditures were for Gaston/Airline Avenue (NC 7),

Robinwood Road (SR 2457), Redbud Drive (SR 2329), Marietta Street (SR 2278), Hoffman Road (SR 2446), and in the vicinity of Brookside Elementary School. In addition, funding to sidewalks on Union Road (NC 274), Davidson Avenue and Armstrong Park Drive (SR 2466) were allocated for construction for sidewalks along those facilities.

Using the state formula for matching project funds, the Cities of Bessemer City and Gastonia have participated with NCDOT to share the cost of constructing sidewalks as a part of programmed STIP projects. Examples and funding amounts of this cooperative effort by the City of Gastonia are the Cox Road Extension (\$169,200), New Hope Road (\$77,520) and Bessemer City Road (\$172,200). Beyond these matching expenditures, the City of Gastonia currently spends \$15,000-\$25,000 per year for miscellaneous sidewalk improvements.

Connect Gaston, a report and initiative established from the 1996 citizens advisory group called the Greenways, Sidewalks and Bikeways Committee, continues to play a key role in advocating for bicycle and pedestrian amenities and safety. The mission statement of the Greenways, Bikeways, and Sidewalks Committee was, “to recommend plans, policies, and community actions that synthesize the desires, needs, and opinions of the citizens of Gastonia for recreational and transportation greenways, bikeways and sidewalks.” This mission was pursued, including a significant amount of public

involvement, with the intention of linking places of interest in the community. The Sidewalks Work Group recognized the need for facilities that allow people to walk to schools, churches, stores, employment centers, and recreational facilities, and made the following recommendations:

- ⦿ Implement a program to fill in missing gaps in the existing sidewalk system, with priorities to school areas, public facilities and linking neighborhoods to commercial areas.
- ⦿ Identify intersections in need of safety improvements such as re-striping, crossing lights, and medians.
- ⦿ Identify areas in need of a comprehensive pedestrian overhaul.
- ⦿ Review all development related ordinances to identify those that are not pedestrian friendly. Add provisions to encourage the construction of pedestrian accessible neighborhoods and commercial areas.
- ⦿ Control the speed of traffic through neighborhoods and commercial areas by stricter enforcement, amending road design, public service promotions, and physical improvements.
- ⦿ Adopt a new standard design for sidewalks, which complies with ADA requirements and provides a buffer from high-speed traffic.
- ⦿ Recommend to City Council that a policy requiring sidewalks on both sides of new and redesigned





- thoroughfares be adopted.
- ① Formalize a process by which staff can review all city and state road projects in order to ensure pedestrians are accommodated.
- ① Plan a program to fund sidewalk improvements within the capital budget.
- ① Upgrade bus stop areas so that accessibility and location are convenient and safe.
- ① Protect neighborhoods from widened roads by providing sidewalks.
- ① Support efforts to strengthen NCDOT's pedestrian policy, while continuing to fund sidewalks as a part of all highway projects.

Source: Connect Gaston: Report of the Gastonia Committee for Greenways, Sidewalks, and Bikeways Committee

Similarly, the Greenways Work Group was concerned with selecting potential greenway sites that would link various community attractions with large concentrations of housing. They selected the following six areas, that would make good locations for greenways:

- ① Lineberger Park to the Armory Trail in central and southeast Gastonia
- ① Catawba Creek Trail in southeast Gastonia
- ① Blackwood Creek Trail covering west to south Gastonia
- ① Schiele Museum to Burtonwood Drive Connector in east Gastonia
- ① Duhart Creek Trail in southeast Gastonia

① Uptown Gastonia to the Gaston College Loop

While some feel that greenways are purely recreational features, local transportation planners believe that they can serve a transportation purpose as well. As congestion of our roads continues, along with skyrocketing construction costs and an inability for further thoroughfare widenings, staff recognizes the need to pull as many vehicles as possible from the road system.

Greenways can accomplish this goal, while at the same time protecting watersheds and providing natural recreational opportunities in urban areas. Connect Gaston has identified over thirty possible greenway and bike route locations throughout Gaston County. From this list a pilot project was chosen, the 2.5 mile Avon and Catawba Creek Greenway, opened to the public in December 2001. The recent update of the City of Gastonia's Parks and Recreation Plan in 2004 includes the long range plan for City-wide greenway trails (Figure 6-8).

The Avon and Catawba Creek Greenway is the only facility of its kind in Gaston County. It is a 2.5-mile trail that begins at Lineberger Park, travels along Avon and Catawba Creeks, and ends at the Southeast Recreation Center on Robinwood Road. The ten foot wide asphalt trail is surrounded by a ten foot vegetated buffer in most areas and crosses the two creeks several times. Greenway underpasses at Hudson and Garrison

Boulevards are key features of this project.

The greenway is located in the high-density population center of Gastonia with an estimated 15,000 people within a one-mile radius. Connections to Lineberger Park, the flagship center-city recreation facility located just five blocks from the central business district and the Southeast Recreation Center which is host to a variety of community events make the greenway an attractive option for citizens utilizing these facilities. Further, through sidewalk connections, the greenway provides links to other facilities such as the Schiele Museum of Natural History and Planetarium, the Gaston County Main Branch Library, Grier Middle School, and Gastonia's central business district.



Figure 6-7: Gaston County Bike Trail Network

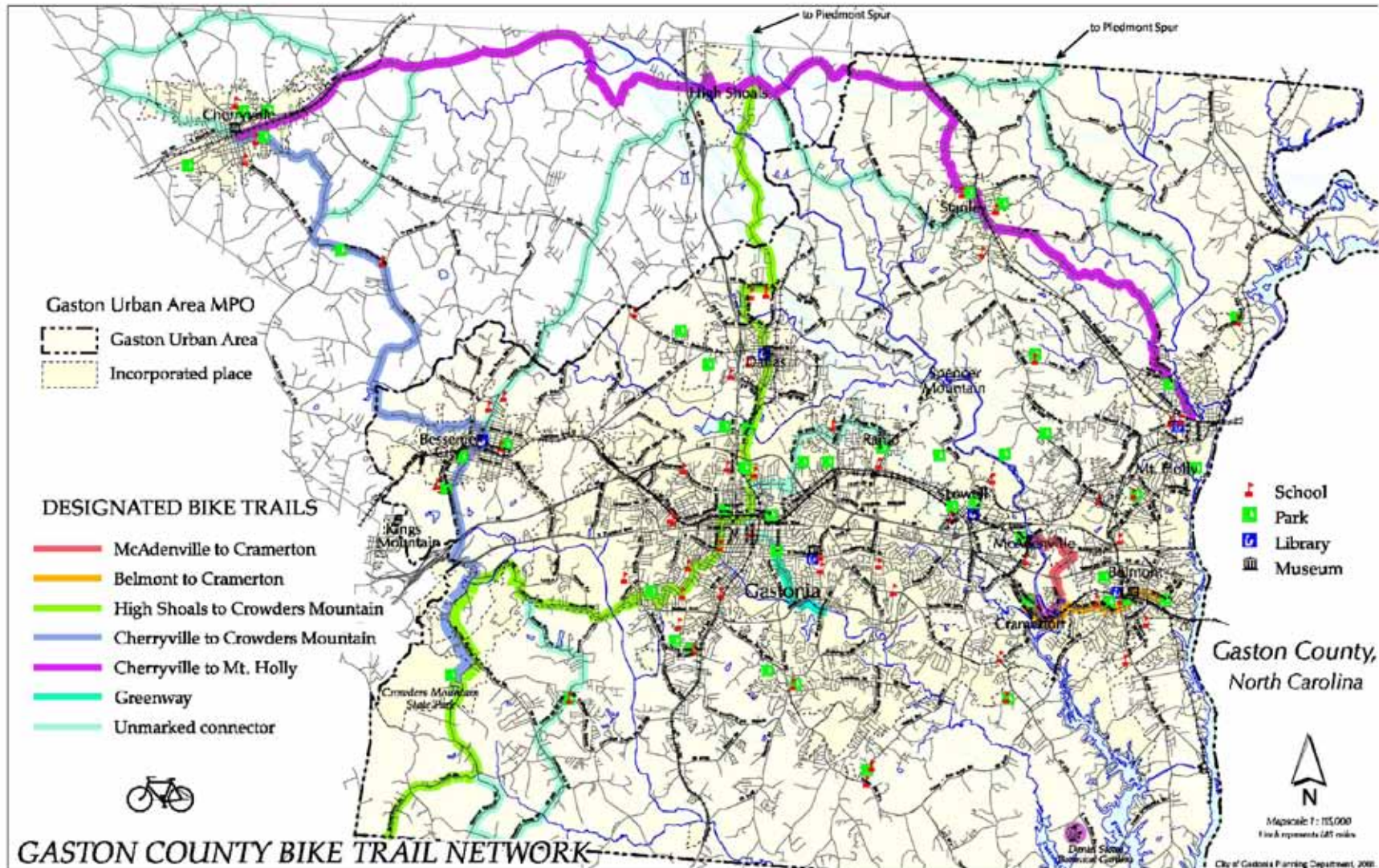


Figure 6-8: Gastonia's Greenway Plan

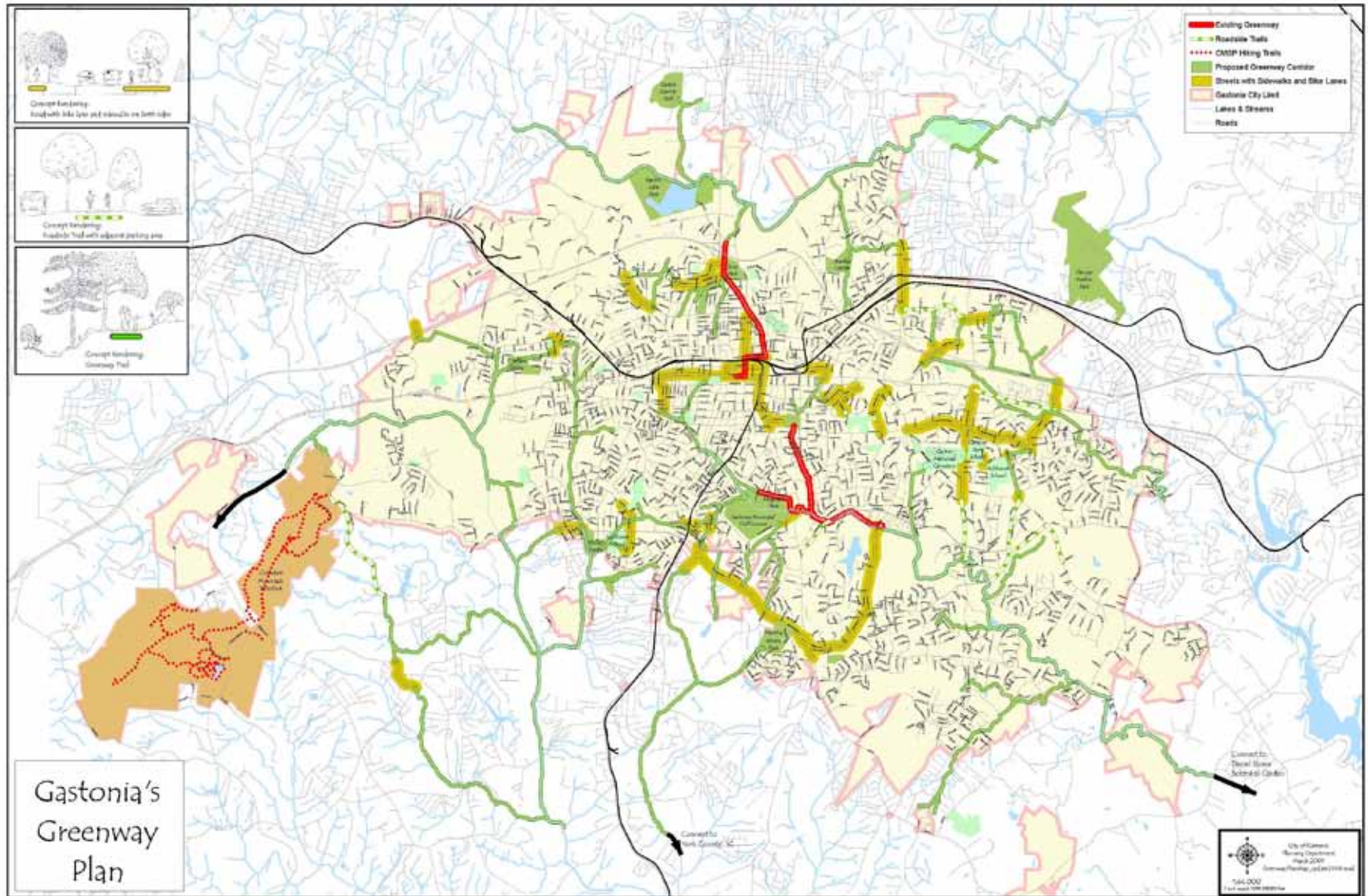


Figure 6-9: Gaston County Greenways

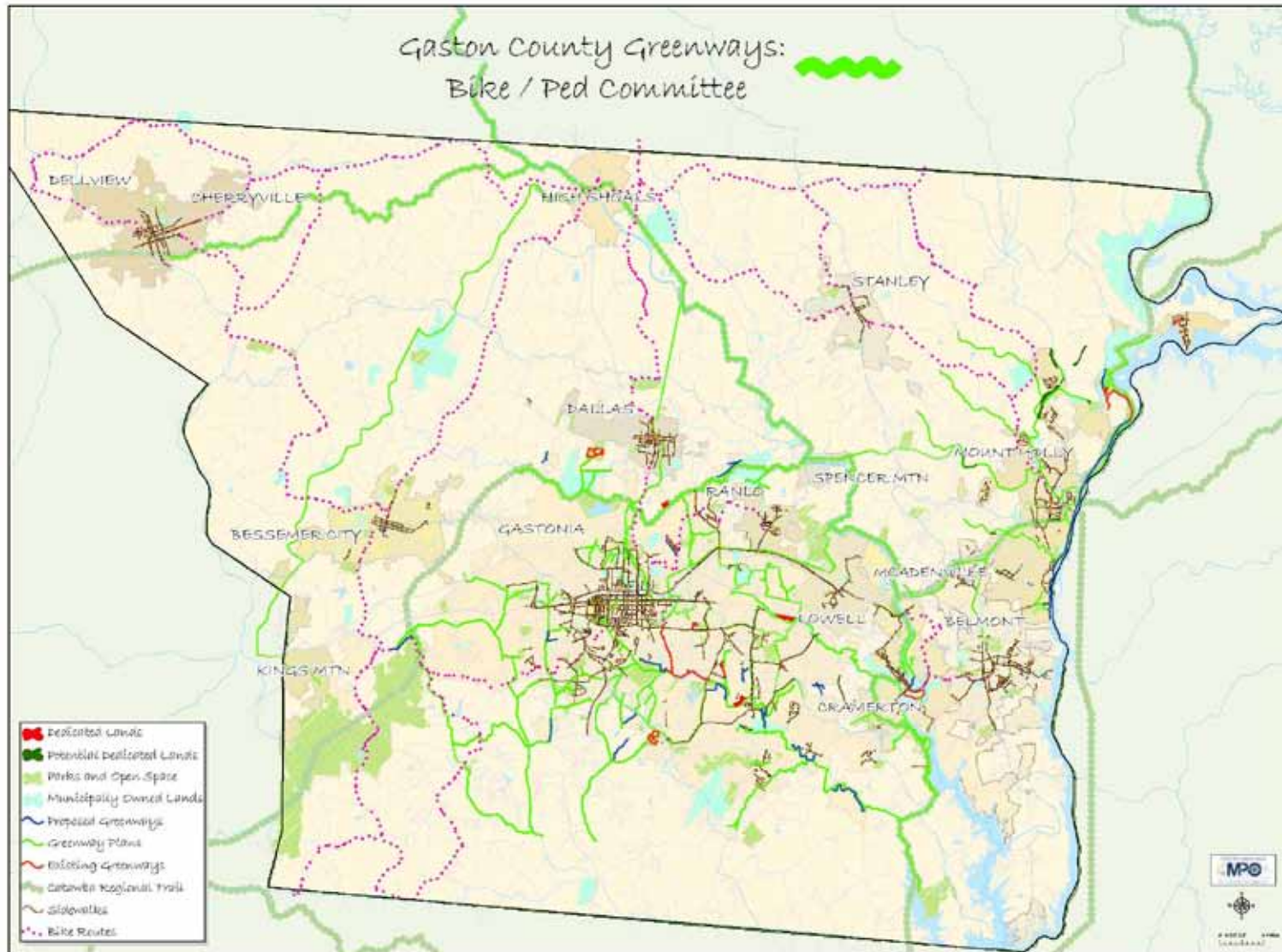
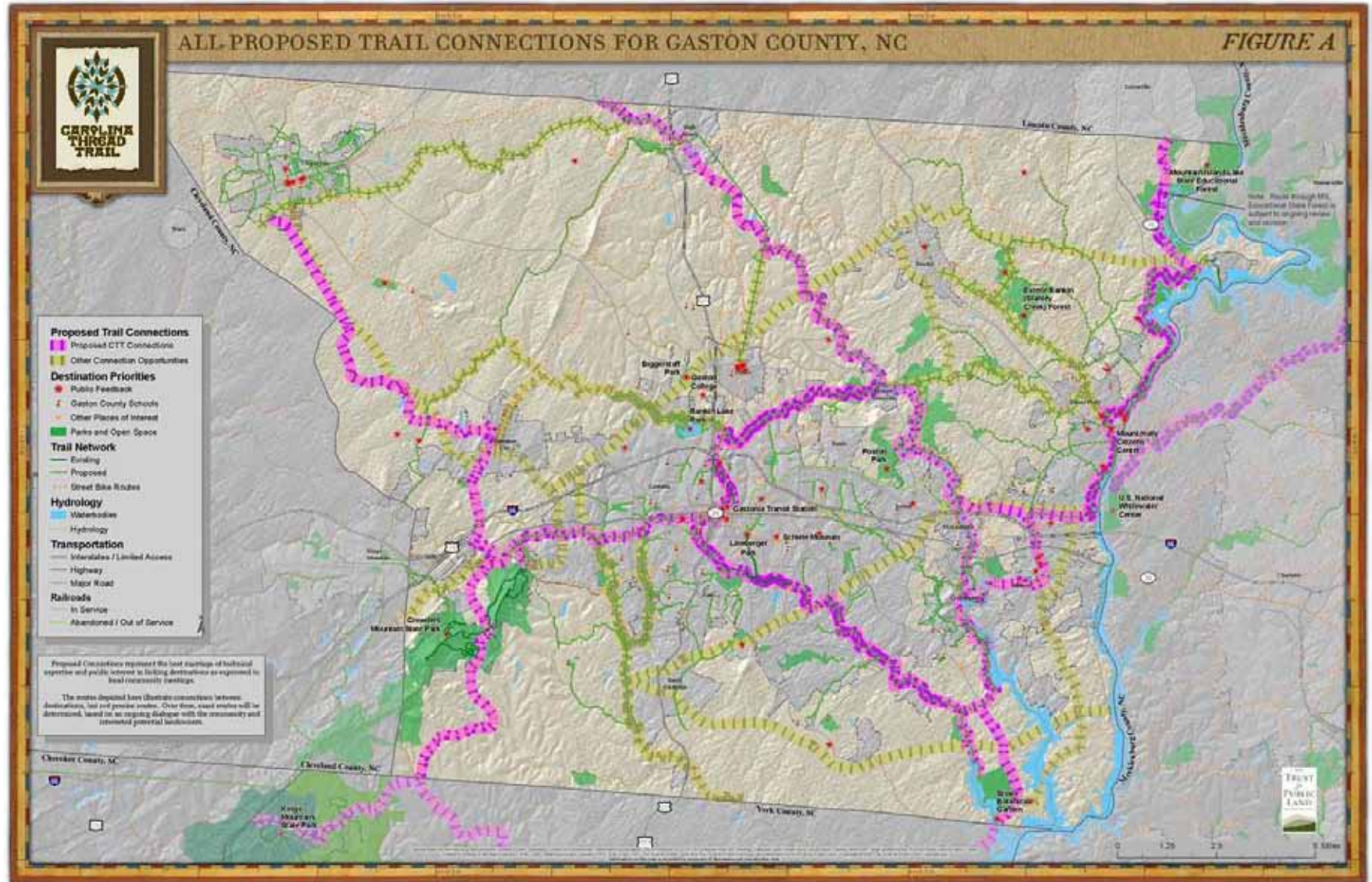


Figure 6-10: Carolina Thread Trail for Gaston County





6.2.5 Passenger Rail

For inter-city travel, Gaston Urban Area residents have the option of utilizing Amtrak, which stops in Gastonia twice per day. The Crescent Rail Line currently runs from New Orleans to New York, with stops in Atlanta, Baltimore, Birmingham, Charlotte, Greensboro, Philadelphia and Washington, D.C. The figures in Figure 6-11 show the number of people who used Amtrak's Crescent Line, including those who boarded in Gastonia, in the last four years. It is interesting to note the increase in both the number of overall passengers and those using the station in Gastonia. An Amtrak employee noted negative impacts to the Gastonia Station due to the shifting of group departures from Gastonia to Charlotte because Gastonia is an unstaffed station and the timing of the arrivals and departures are inconvenient. The northbound train passes through Gastonia at 12:43 a.m. and the southbound train at 4:24 a.m.

6.2.6 Freight Network

Metropolitan Planning Organizations (MPO) are required to follow the Federal Highway Administration's (FHWA) regulations when addressing transportation. The FHWA prepared an MPO transportation planning guidance document to address updated and new regulatory requirements of the SAFETEA-LU of 2006. However, The Metropolitan Transportation Planning Process: Key Issues A briefing Notebook for Transportation

Figure 6-11: Amtrak Crescent Line Passenger Totals

Year	Crescent Line Passengers	# Using Gastonia Station
2005	520,698	1,073
2006	567,472	1,582
2007	579,569	1,716
2008	694,290	1,815

Decision Makers, Officials, and Staff states that "... the MPO is responsible for making sure that freight movement is considered in the overall transportation planning process".

The Gaston Urban Area Metropolitan Planning Organization (GUAMPO) initiated a freight planning study during the spring of 2007 to incorporate freight related issues into planning activities. In addition, the results of the freight study will be incorporated into the current 2035 Long Range Transportation Plan (LRTP). This study's efforts included three tasks: project coordination, freight assessment, and strategy development. The Project Coordination included working with planning partners and the community to assess freight issues and develop solution strategies. The Freight Assessment involved analyzing freight related data and determining the relationship between existing plans and their impact to the movement of

freight. The Strategy Development included solution strategies to address the freight issues identified during the Freight Assessment. The following sections of this report document the tasks completed during the freight study. GUAMPO recognizes that freight planning activities must be integrated into the transportation planning process; therefore freight related data will be updated on a regularly scheduled basis and strategy solutions will be revisited in the future. Establishment of a working group GUAMPO staff established an Advisory Working Group consisting of stakeholders and technical professionals to provide information and feedback throughout the planning process. The group included representatives from local Planning, Public Works, and Community and Economic Development departments, and played an important role in shaping the organizational direction of the Freight Planning study. The working group participated in the development of the study's goals and objectives through the project coordination process.

The objectives were reviewed during the strategy development task to ensure that the recommendations supported the objectives, and then used as qualitative evaluation measures for the study.

RAIL NETWORK

Railroads first came to Gaston County in the 1870s, with the introduction of the Charlotte & Atlanta Airline Railroad (now the Norfolk Southern Railroad). This



was followed by the Piedmont and Northern Railroad (P&N) connecting Gastonia and Charlotte, and the Chester and Lenoir Narrow Gauge line, which became the Carolina and Northwestern Railroad. Obviously, railroads have played a major role in the growth and development of Gaston County. Today, the urban area is criss-crossed with rail lines owned by CSX and Norfolk Southern.

The Norfolk Southern line runs from east to west, entering the county north of Kings Mountain and roughly paralleling NC 161, NC 274 and NC 7 to the McAdenville area. The Norfolk line then turns southeast, snaking through Cramerton and crossing the South Fork River into Belmont. In Belmont, the line splits, with tracks bridging the Catawba River into Mecklenburg County as well as turning southward, running down the peninsula to serve the Duke Energy facility.

Another major line, the Carolina and Northwestern, is now owned by Norfolk Southern and runs north-south through Gaston County. Running to the right side of US 321, it passes through the center of both Gastonia and Dallas before entering Lincoln County.

The CSX line has several components in Gaston County. The former P&N line begins in downtown Gastonia and runs almost parallel to the Norfolk Southern until it moves north of McAdenville and Interstate 85. It runs

through north Belmont and crosses the Catawba River into Mecklenburg County. The old P&N also operated the “Belmont Spur” which diverges from the mainline in north Belmont and heads south through the heart of Belmont.

From downtown Mount Holly, the CSX has a branch which turns northeast paralleling NC 273 towards the Lincoln County line. It diverges to serve the generating plant near Mountain Island Lake. A separate branch parallels NC 27, crossing from Mecklenburg County into Gaston County and running northwest to Stanley and into Lincoln County.

Rail System Freight Profile

Although trucks move the majority of freight in the U.S., rail also plays a crucial role in freight movements. According to the AASHTO Freight Transportation Network, the freight rail system currently carries 16 percent of the U.S. freight by tonnage. Without rail hauling freight, 92 billion miles of truck travel would be added to the trucking industry, costing approximately \$64 billion to the highway system for road improvements over the next 20 years. However, with continued investment in the rail industry, rail is expected to continue moving its fair share of freight. Significant investment and improvements to the current rail system would allow freight rail to carry 17 percent of freight tonnage in 2020, as compared to the 16 percent it carries today.

Federal Railroad Administration data indicates that rail movements generally link production centers to consumption areas, the exception being shipments of coal and grains. Most rail traffic with an origin or destination within North Carolina has traveled through more than one state. A summary of railroad shipments having either an origin or destination in North Carolina is presented in Figure 6-12.

As previously discussed, the state freight transportation system network moves a variety of commodities, including minerals, lumber and wood products, chemicals, food products, and secondary traffic (defined as freight flows to and from distribution centers or

Year	1998	2010	2020
By weight (tons)	79	104	121
By Value (billions)	\$15	\$26	\$41

Source: Federal Highway Administration, Management and Operations, Freight Analysis – North Carolina. Accessed July 2006.

through intermodal facilities). A summary of the top commodities shipped to, from, and within North Carolina, by all modes of transportation, including rail, is included in Figure 6-13 and Figure 6-14.



Figure 6-13: Top Five Commodities by Weight Shipped To, From, and Within North Carolina*

Commodity	1998 (in tons)	2020 (in tons)
Nonmetallic Minerals	120,000,000	161,000,000
Secondary Traffic	75,000,000	211,000,000
Lumber/Wood Products	46,000,000	96,000,000
Chemicals/Allied Products	41,000,000	66,000,000
Farm Products	38,000,000	43,000,000

*Includes all modes of transportation (air, highway, rail, and water). Source - Federal Highway Administration, Management and Operations, Freight Analysis – North Carolina. Accessed July 2006.

Figure 6-14: Top Five Commodities by Value Shipped To, From, and Within North Carolina*

Commodity	1998 (in billions)	2020
Secondary Traffic	\$77	\$324
Textile Mill Products	\$49	\$59
Chemicals/Allied Products	\$45	\$110
Transportation Equipment	\$41	\$109
Food/Kindred Products	\$34	\$119

*Includes all modes of transportation (air, highway, rail, and water). Source : Federal Highway Administration, Management and Operations, Freight Analysis – North Carolina. Accessed July 2006.

Norfolk Southern Overview

Norfolk Southern (NS) has two lines through Gaston County, NC. One is the former Southern Railway Washington to Atlanta mainline which runs geographically east and west through the middle of the county. The other line is the former Carolina and Northwestern Railway which runs north and south. Both lines connect in the city of Gastonia to the NS mainline.

Mainline

The former Southern Railway mainline, now NS, crosses the Catawba River into Gaston County at milepost 387.4 and exits the western border of the county at milepost 409.0 for a distance of 21.6 miles. This line has a mixture of general merchandise freight and is a main route for double stack trains from the Newark, NJ area to southeast GA and beyond. This line also hosts the northbound and southbound Amtrak Crescent which runs during the night with a scheduled stop in Gastonia. The northbound Crescent is scheduled to leave Gastonia at 12:56 am and the southbound at 3:12 am.

The mainline is located on the proposed U.S. DOT Southeast High Speed Corridor which would link Richmond, VA, Raleigh, NC, Atlanta and Macon, GA via Charlotte, NC. The Georgia, South Carolina and North Carolina Departments of Transportation are currently evaluating the overall suitability and costs of developing high speed passenger train service between Charlotte, NC and Macon, GA. The Southeast High

Speed Corridor extends from Washington, D.C. to Jacksonville, FL.

The mainline through Gaston County is single track with sections of double main track. The first section of double main begins at milepost 390.6 and ends at milepost 402.3. The other double track section begins at milepost 408.6 and continues past milepost 409.0. Maximum tonnage handled in 2006 was 31 million gross tons (MGT). Approximately 34 trains a day operate on this line.

Maximum timetable speed through Gaston County is 50 MPH for freight and 60 MPH for passenger trains. Maximum curvature on the mainline is five degrees with maximum track super elevation of five inches. There are several areas where speed is slightly restricted due to curvature and due to turnouts where the track changes from single to double track and vice versa. Train movements on the mainline are governed by signals which are controlled from the Piedmont Division dispatcher’s office located in Greenville, SC.

According to the 2003 Piedmont Division track chart, there are 30 at grade crossings located on the NS mainline through Gaston County. Twenty-eight of the 30 crossings are public crossings, with 26 of those crossings protected by active (flashing) signals and two protected by passive cross buck signs. The remaining two crossings are designated private crossings or other and do not require cross buck signs. According to the Federal Railroad Administration’s (FRA) grade crossing





database there are three at-grade crossings along this line (May Street, Hancock Street, and Marietta Street) within the City of Gastonia that have had five or more accidents.

C&NW Line

The section of former Carolina and Northwestern Railway currently in operation in Gaston County at one time ran from York, SC to Chester-Lenoir, NC. In Gaston County, the milepost limits ran from HG-37.0 to HG-58.3. The section officially in operation now is that part between Crowders Mountain (milepost HG-37.5) and Gastonia (milepost HG-45.0). The track south of Crowders Mountain is abandoned and the section north of milepost HG-52.0 near Dallas to just south of Newton is owned by NCDOT. Maximum gross ton miles handled between Crowders Mountain and Gastonia in 2006 was 0.16 MGT.

The portion between Gastonia and Dallas is currently out of service and NS has filed with the Surface Transportation Board (STB) for abandonment. The city of Gastonia is in negotiations with NS for the section between milepost HG-45.0 and HG-47.0 for use as a greenway. The remainder of the line, between HG-47.0 and HG-52.0 will revert to the adjacent property owners pending abandonment approval.

The eight miles of former C&NW in operation has no through traffic and is considered a branch line with

approximately three trains operating on it per week. Train movements on this line are controlled by Track Warrant Control (TWC). Track Warrants are issued by the Piedmont Division dispatcher.

There are 58 at grade crossings located on the C&NW line, according to the 2003 Piedmont Division track chart, on both the active and out of service sections in Gaston County. Forty-four of the 58 crossings are public crossings, 15 of those crossings are protected by active (flashing) signals, and 29 are protected by passive cross buck signs. The remaining 14 crossings are designated private or other and do not require cross buck signs.

CSX Transportation

CSXT has several lines through Gaston County. One is the former Seaboard Coast Line (originally Seaboard Air Line) track that originates in Monroe and goes through Charlotte, Mount Holly and on to Bostic, NC where it connects with CSXT's former Clinchfield RR. This line is designated as the Charlotte Subdivision. The second line is the Terrell Subdivision (formerly Piedmont and Northern Railway) which runs between Mt. Holly north to Terrell, NC. The third line is the former P&N which ran from Charlotte, through Mount Holly to Gastonia, with a spur from Mount Holly to Belmont.

CHARLOTTE Subdivision

The Charlotte Subdivision crosses the Catawba River and enters Gaston County at Mount Holly, near milepost SF-341.60; from there, it travels in a northwesterly direction and crosses the Lincoln County line near Alexis at approximately milepost SF-352.46 to Lincolnton. The Charlotte Subdivision reenters Gaston County again at approximately milepost SF-368.25 and travels in a southwesterly direction through Cherryville where it enters Cleveland County at milepost SF-374.75. The total distance in Gaston County for this line is 17.36 miles for both segments. Maximum tonnage handled in 2006 was 27.5 million gross tons (MGT). Approximately 12 trains a day operate on this subdivision.

CSXT Florence Division Timetable dated April 1, 2003 shows that the Charlotte Subdivision is a single track main with sidings. There are three sidings in Gaston County, a 10,100 foot long siding located at Mount Holly (milepost SF-341.8), a 8,421 ft long siding at Duke (milepost SF-344.4) and a 8,570 ft long siding at Cherryville (milepost SF-363.6). Maximum timetable speed is 40 MPH with a 25 MPH speed restriction through Mount Holly. Train movements on this line are governed by Direct Train Control (DTC) blocks. Permission for trains to occupy block(s) is obtained from the CSXT dispatcher based in Jacksonville, FL.



There are 42 at grade crossings located on the Charlotte Subdivision in Gaston County according to the U.S. DOT Crossing Inventory website. Thirty-two are public crossings, of which 25 are protected by active (flashing) signals and 7 are protected by passive cross buck signs only. The remaining 10 are designated private or pedestrian crossings and do not require cross buck signs.

TERRELL Subdivision

The Terrell Subdivision of the former Piedmont and Northern Railway branches off the Charlotte Subdivision in Mount Holly at approximately milepost SF-341.80. It runs northward to Terrell and enters Catawba County at approximately milepost SFE-8.16. This line is single track with several spurs coming off the line to serve Duke Energy power generating facilities located off this subdivision including Plant Marshall, which is also served by Norfolk Southern. Maximum tonnage handled in 2006 was 12.5 MGT. The number of trains operated on this subdivision averages about two a day.

Maximum speed on the Terrell Subdivision is 25 MPH with two 10 MPH restrictions, one in Mount Holly and the other near Cowans Ford Spur between milepost SFE-7.3 and SFE-7.4. Train movements on this line are also governed by DTC blocks. There are 13 at grade crossings located on the Terrell Subdivision in Gaston County according to the U.S. DOT Crossing Inventory website. Four are public crossings, of which

two are protected by active (flashing) signals and two are protected by passive crossbuck signs only. The remaining nine are designated private crossings and do not require crossbuck signs.

Former P&N Trackage

The Piedmont and Northern Railway was created in 1914 as a result of combining two Duke Power Company owned rail lines, the Piedmont Traction Company in North Carolina and the Greenville, Spartanburg, and Anderson in South Carolina. The P&N was a heavy electrically powered interurban passenger and freight railroad. By 1951 all passenger service was discontinued and in 1954 the electrification was abandoned in favor of diesel operation. CSXT predecessor Seaboard Coast Line Railroad acquired the P&N on July 1, 1969.

The former P&N North Carolina Division operated between Charlotte and Gastonia with a branch from Mount Holly to Terrell (now the Terrell Subdivision) and a spur between Mount Holly and Belmont. The former P&N main line generally parallels the former Seaboard Coast Line trackage between Charlotte and Mount Holly. The line crossed the Catawba River into Gaston County on its own bridge as it does currently. Most of the remaining trackage of the former P&N in Gaston County except for the Terrell Subdivision is now owned by the North Carolina DOT which bought the trackage on December 5, 1991. According to the NCDOT website, milepost limits of the sale were from

SFC-11.39 to SFC-23.00 (Mount Holly - Gastonia) and SFE-0.13 to SFE 3.13 (Mount Holly - Belmont). The two segments are part of the NCDOT's ongoing program to preserve rail corridors for interim or future use.

From satellite photos, the rail and bridges on the former mainline from Mount Holly to Gastonia appears to be in place as well as the Mount Holly - Belmont branch line. Before any decision is made to resume rail service on these lines, a thorough inspection of the track and bridges will be needed. The right of way in most places appears to be clear of brush or any large trees in the track structure.

Norfolk Southern

The proposed Southeast High Speed Rail Corridor will require additional capacity and speed improvements to the Norfolk Southern's rail infrastructure so freight and passenger traffic can be handled effectively. The corridor will extend from Washington D.C to Atlanta, passing through Gastonia using the Norfolk Southern's rail corridor. The proposed intermodal facility at the Charlotte Douglas International Airport would also require capacity improvements to the Norfolk Southern rail corridor.

Railroad/Highway At-Grade Crossings

GUAMPO will continue to work with NCDOT Rail Division and the railroad companies to identify





potential at-grade crossings that can either be improved, eliminated, or grade separated. GUAMPO currently has three railroad / highway crossing projects in their 2030 Long Range Transportation Plan, which include:

- Lowell-Bethesda Road-Groves Street Connection
- 13th Street Railroad Underpass Replacement
- 8th Avenue Railroad Underpass

Recently a fatality occurred at the railroad underpass at Robinson Road/US 321 South. This is a one-lane underpass that should be added to the 2035 Long Range Transportation Plan and programmed for funding.

As part of this study the GUAMPO now has a complete grade crossing database that includes all relevant information for each grade crossing in Gaston County. NCDOT uses an exposure index to determine if a grade separation structure is warranted at highway/rail grade crossings. The exposure index is calculated by multiplying the number of trains per day by the number of vehicles per day that use the crossing. As a general rule, grade separations should be evaluated in RURAL areas when the exposure index is 15,000 or more. In URBAN areas grade separations should be evaluated when the exposure index is 30,000 or more (refer to Figure 6-21). According to the train and vehicular data found in the grade crossing database for Gaston County, Figure 6-15 indicates at-grade crossings that have an exposure index greater than 30,000 in the GUAMPO area.

There are numerous other factors that need to be considered besides exposure index when evaluating the feasibility of a grade separation at a specific location. These include accident history, topography, adjacent land uses, construction impacts, and costs. A comprehensive engineering study is recommended when evaluating any location for a grade separation.

Figure 6-15: At-grade Crossings with Exposure Index greater than 30,000

At-Grade Crossing No.	Railroad	Street/City	Exposure Index
631818N	CSX	Main Street/Mt. Holly	114,000
631820P	CSX	Hawthorne Street/Mt. Holly	43,200
631831C	CSX	McLurd Drive/Stanley	48,804
631832J	CSX	Chestnut Street/Stanley	72,000
716193G	NS	Main Street/Belmont	245,140
716195V	NS	Eagle Road/Cramerton	172,720
716205Y	NS	S. Main Street/Lowell	176,460
716212J	NS	Cox Road/Gastonia	132,260
716215E	NS	Hancock Street/Gastonia	64,600
716219G	NS	Broad Street/Gastonia	120,000
716221H	NS	Marietta Street/Gastonia	112,800
716224D	NS	York Street/Gastonia	264,000
716226S	NS	Trenton Street/Gastonia	51,000
716232V	NS	Jenkins Road/Gastonia	86,870
716233C	NS	Northwest Blvd./Gastonia	138,822
716236X	NS	Jenkins Dairy Road/Gastonia	136,000
716243H	NS	8th Street/Bessemer City	112,200
716245W	NS	12th Street/Bessemer City	68,000
915966V	NS	Maine Ave./Bessemer City	136,000

The grade crossing database also includes the accident history for each grade crossing in Gaston County. Data from the FRA April 2007 crossing database shows that there are seven at-grade crossings that have had five or more accidents. These seven crossings are included in Figure 6-16. These crossings should be monitored to see if the accident problems still exist and if any roadway or rail improvements need to be made.

Figure 6-16: At-Grade Crossings with Greater than 5 Accidents

At-Grade Crossing No.	Railroad	Street/City	Total No. of Accidents
631813E	CSX	Lee Street/Mt. Holly	7
631819V	CSX	First Street/Mt. Holly	5
631820P	CSX	Hawthorne Street/Mt. Holly	5
631830V	CSX	Dallas Road/Stanley	6
716215E	NS	Hancock Street/Gastonia	7
716221H	NS	Marietta Street/Gastonia	6
716230G	NS	May Street/Gastonia	17



Figure 6-17: Existing Traffic Volumes		
Segment	ADT (vpd)	Details
Interstate 85	48,000–120,000	Lowest volumes are in the farthest western portion of the county; highest volumes are found in the central to eastern portion of the county around major business and commercial interchanges.
US 29/74	9,000 – 35,000	Lowest volumes are in the western portion of the corridor; highest volumes are east of downtown Gastonia, near the I-85 interchange at Cox Road.
US 321	8,700 – 47,000	Lowest volumes are in the southern portion of the corridor at the South Carolina border; highest volumes are found at the I-85 corridor interchange.
NC 7	950 – 12,000	Lowest volumes are near Gaston/ Mecklenburg County line; highest volumes are near the City of Gastonia at the Ozark Avenue intersection.
NC 16	3,600 – 19,000	Lowest volumes are near the Gaston County/Mecklenburg County line; highest volumes are located around the NC 16 Bypass to the Gaston County/ Lincoln County line.
NC 27	2,400 – 11,000	Lowest volumes are located in the north-eastern portion of the county, near the county line: highest volumes are located near the town of Mt. Holly.
NC 161	4,400 – 6,400	Volumes are relatively consistent along this corridor.
NC 273	4,300 – 24,000	Lowest volumes are in the southern section of the corridor; highest volumes are around the I-85 corridor.
NC 274	4,300 – 22,000	Lowest volumes are in the northern section of the corridor; highest volumes are around Robinwood Road, south of the I-85 corridor.
NC 275	4,900 – 18,000	Lowest volumes are north of Bessemer City; highest volumes are around the US 321 interchange.
NC 279	4,900 – 24,000	Lowest volumes in are the northern section of the corridor; highest volumes are around the City of Gastonia, downtown.

Table 5 Source - NCDOT Traffic Survey Unit

Figure 6-18: Traffic Volumes, 2035		
Segment	ADT (vpd)	Details
Interstate 85	44,600 – 84,500	Lowest volumes are in the farthest western portion of the county; highest volumes are found in the farthest eastern portion of the county around the Gaston County/ Mecklenburg County line.
US 29/74	30,700 – 46,600	Lowest volumes are in the central portion of the corridor, near Gastonia and the US 321 intersection; highest volumes are in the farthest eastern portion of the county around the Gaston County/ Mecklenburg County line.
US 321	11,900 – 40,100	Lowest volumes are in the northern portion of the corridor near the Gaston County line; highest volumes are found at the I-85 corridor intersection.
NC 7	1,400 – 13,5000	Lowest volumes are near the Gaston Mecklenburg County line: highest volumes are near the City of Gaston at the Ozark Avenue intersection.
NC 16	NA	
NC 27	12,700 – 19,000	Lowest volumes are in the northeastern portion of the county, near the county line; highest volumes are near the town of Mt. Holly.
NC 161	7,900 – 12,900	Lowest volumes are near the southern portion of the corridor near the Gaston County line; highest volumes are in the central portion of the corridor, near the town of Kings Mountain.
NC 273	12,100 – 26,000	Lowest volumes are in the northern section of the corridor; highest volumes around the I-85 corridor.
NC 274	4,900 – 28,500	Lowest volumes are in the southern section of the corridor; highest volumes are around Chester Street/York Street, near downtown Gastonia.
NC 275	7,100 – 17,100	Lowest volumes are north of Bessemer City; highest volumes are near the town of Dallas.
NC 279	10,400 – 35,100	Lowest volumes are in the northern section of the corridor; highest volumes are around the I-85 interchange, east of downtown Gastonia.
Garden Parkway (future)	18,900 – 57,000	Lowest volumes are anticipated near the northern terminus/ intersection with US 321; highest volumes are anticipated near the Gaston County/Mecklenburg County line.
Belmont/Mt. Holly Loop (future)	9,400 – 23,500	Lowest volumes are anticipated near the southern terminus/ intersection with NC 27; highest volumes are anticipated near the intersection with US 29/74.
Gastonia-Mt. Holly Connector (future)	12,300 – 28,100	Lowest volumes are anticipated near the southern terminus/ Aberdeen Blvd; highest volumes are anticipated near the Mecklenburg County line.

Table 6 Source - 2030 data provided by Metrolina Regional Travel Demand Model. Some of the roadways experience decreases in traffic volumes in 2030; this can be attributed to new roadway facilities that were included in the regional model and are planned to be completed by the year 2030, such as the Garden Parkway and completion of Interstate 485.





6.2.7 Freight Trucking Properties Traffic Volumes

Traffic data was reviewed to profile existing traffic volumes along the regional freight corridors. Interstate 85 accommodates the largest volumes of traffic in Gaston County, with the US Highways also carrying large volumes. NCDOT performs traffic counts for each location every two years, the latest traffic counts available during the freight study incorporated into this plan were from the 2004-2006 time period. A summary of the latest Average Daily Traffic (ADT) volumes, measured in vehicles per day (vpd) is summarized in Figure 6-17.

Future traffic data was also reviewed to profile projected traffic volumes along the regional freight corridors. Interstate 85 would continue to accommodate the largest volumes of traffic in Gaston County, with the proposed Garden Parkway also carrying large volumes.

A summary of future ADT volumes is summarized in Figure 6-18.

Speed Limits

The existing speed limits along regional freight corridors are as follows in Figure 6-19.

Vehicle Mix

The U.S. Department of Transportation projects that the national freight volume, including truck, rail, water,

Segment	Speed Limit (mph)
Interstate 85	60 - 65
US 29/74	35 - 55
US 321	35 - 65
NC 7	20 - 45
NC 16	35 - 55
NC 27	20 - 55
NC 161	35 - 55
NC 273	35 - 50
NC 274	35 - 45
NC 275	25 - 45
NC 279	25 - 55
Garden Parkway (future)	65
Belmont/Mt. Holly Loop (future)	45
Gastonia-Mt. Holly Connector (future)	45

Source: Data provided by Metrolina Regional Travel Demand Model.

and air mode transportation volumes, will more than double by 2020. The Federal Highway Administration projects that truckers will see a 75 percent increase in freight tonnage by 2020. The percentage of truck volumes projected to travel on Gaston County roadways by 2030 is in Figure 6-20.

The North Carolina Department of Transportation's Traffic Survey Unit prepared the following table (Figure 6-21) which shows travel activity by vehicle type based on roadway functional classifications in North Carolina.

Segment	Truck ADT (vpd)	Percentage of Total ADT
Interstate 85	4,359 - 9,569	5.2 - 11.3
US 29/74	920 - 3,752	2.0 - 8.0
US 321	638 - 4,243	1.6 - 10.6
NC 7	68 - 864	0.9 - 7.9
NC 16	Not available	Not available
NC 27	478 - 1,625	2.5 - 8.6
NC 161	722 - 1,696	5.6 - 13.1
NC 273	448 - 2,091	1.7 - 8.0
NC 274	20 - 1,503	0.0 - 5.4
NC 275	517 - 1,890	3.0 - 11.0
NC 279	750 - 2,023	2.1 - 5.8
Garden Parkway (future)	1,245 - 4,421	2.2 - 7.8
Belmont/Mt. Holly Loop (future)	717 - 1,704	3.1% - 7.3
Gastonia-Mt. Holly Connector (future)	1,104 - 3,014	3.9% - 10.7

Source: 2030 data provided by Metrolina Regional Travel Demand Model.

According to the NCDOT data, truck traffic currently contributes to 17.2% of the total traffic on interstate highways in urban areas, such as Gaston County, and 7.2% on arterial roadways.





Figure 6-21: Travel Activity by Vehicle Type, 2004

Functional System	PERCENT OF TRAVEL						
	Motorcycles (optional)	Passenger cars (2 axle, 4 tire)	Light trucks (Other 2 axle, 4 tire)	Buses	Single-unit trucks	Combination Trucks	Total
RURAL							
Interstate	0.5	56.8	10.8	1.1	5.2	25.6	100
Other Arterial	0.4	69.9	16.4	0.7	4.9	7.7	100
Other Rural	0.4	73.5	17.1	0.6	4.7	3.7	100
URBAN							
Interstate	0.4	68.6	12.9	0.9	4.2	13.0	100
Other Arterial	0.3	77.4	14.6	0.5	3.6	3.6	100
Other Urban	0.4	79.9	14.1	0.5	3.5	1.6	100

Source: NCDOT Traffic Survey Unit

Utilizing the referenced NCDOT data (Figure 6-21) and the Metrolina Regional Travel Demand Model, existing and future truck volumes on major road networks in Gaston County are estimated in Figure 6-20. The data shows that I-85, US 321, and US 29/74 are the current primary corridors for carrying the largest volumes of truck traffic.

Transporting Commodities

The U.S. Department of Transportation developed the Freight Analysis Framework (FAF), a comprehensive tool for freight data and analysis. The FAF provides data regarding highway freight shipments to, from, and within North Carolina (U.S. Department of Transportation, U.S. Department of Commerce, 2004).

Current (1998) truck traffic within the Charlotte region is exhibited in Figure 6-21. As evidenced by the data, truck traffic is expected to grow substantially by the year 2020, with much of that growth occurring in urban areas and on interstate highway systems (see Figures 6-20 and 6-21).

Truck traffic accounted for approximately 13 percent of the 1998 average annual daily truck traffic (AADT) on the FAF road network. Of those, approximately 14 percent involved in-state shipments, and 10 percent involved trucks traveling across state lines to other markets. Within Gaston County, Interstate 85 and US Highway 321 are shown as the primary truck traffic corridors. A summary of highway shipments having either an

Figure 6-22: Highway Shipments To, From, and Within North Carolina

Year	1998	2010	2020
By weight (tons)	426	641	808
By Value (billions)	\$381	\$719	\$1,152

Source - Federal Highway Administration, Management and Operations, Freight Analysis – North Carolina. Accessed July 2006.

origin or destination in North Carolina is presented in Figure 6-22. The state freight transportation system network moves a variety of commodities, including minerals, lumber and wood products, chemicals, food products, and secondary traffic (defined as freight flows to and from distribution centers or through intermodal facilities). A summary of the top commodities shipped to, from, and within North Carolina, by all modes of transportation was included previously in Figure 6-13 and Figure 6-14.

Physical Constraints

Currently Surface Transportation Assistance Act (STAA) dimensioned vehicles are not allowed to access US 321 because of the current capacity and configuration of the I-85/US 321 Interchange. These vehicles include twin-trailers and 48-53 foot long single trailers. This restriction forces STAA vehicles to use I-85, I-77, and I-40 to access Hickory and points westward. This diversion creates increased travel time and fuel consumption.





The Metrolina Regional Travel Demand Model for the year 2030 currently includes all of the projects in the Transportation Improvement Program (TIP) and GUAMPO's Long Range Transportation Plan (LRTP). As funding or priorities change that impact projects being built, such as the Garden Parkway, greater pressure from automobile and freight traffic will occur on existing facilities like I-85, US 29/74, and US 321. According to a report generated by the Rand Corporation (Increasing the Capacity of Freight Transportation, 2007), examples of physical constraints to the trucking industry include weather, accidents, and increased security inspections. Other physical constraints in Gaston County may include urban (residential neighborhood) exposure for the transport of hazardous materials, variable transit times, congestion, construction delays, and connectivity.

Air Cargo Freight Profile

The air cargo freight profile includes an assessment and description of the region's air cargo operations. The assessment also includes the identification of airports in the region that handle significant air cargo volumes, capacity of each air cargo handling facility, constraints of each facility, planned improvements, historical air cargo volumes for each airport, and major air cargo carriers.

Air Cargo Facilities

Gaston County houses one airport, the Gastonia

Municipal Airport. It provides only general aviation services to Gaston County, including private planes, flying lessons and aerial photography. There are no freight services, commuter services, or charter services available at the Gastonia Municipal Airport. Charlotte-Douglas International Airport (CDIA) is located east of Gaston County in Charlotte, North Carolina. CDIA supports 10 major passenger airlines and seven commuter airlines. CDIA is the region's air cargo facility and accommodates 20 cargo airlines. Major carriers include Federal Express, United Parcel Service, Emery Worldwide, BAX Global, Airborne Express, and DHL. The Charlotte area houses facilities for more than 500 foreign-owned companies, and of those, more than 125 are manufacturers.

Capacity

Approximately 83,069 tons of cargo was forwarded worldwide from CDIA in 2005, a 94 percent increase from 2001. Air cargo currently accounts for approximately 9 percent of revenue at CDIA. CDIA projections indicate that cargo will increase to 271,604 tons in 2015.

The CDIA air cargo center currently encompasses approximately 288,000 square feet of facilities and more than 50 acres of aircraft ramp space. Clients have access to eight cross-dock facilities, each with as many as 20 dock doors.

Physical Constraints

As previously mentioned, CDIA projects that air cargo volumes will increase to 271,604 tons in 2015. Approximately four percent of that, or 11,071 tons, will be international cargo. Data from CDIA indicates that more than 30 percent of Charlotte's manufacturers and wholesalers partake in international trade. However, CDIA is not sufficiently served by international air cargo carriers. Currently, cargo is transported by ground to ports along the east coast, and then by boat over-seas.

The CDIA masterplan is estimating an average annual growth rate in freight tonnage of 5.4 percent through 2015. To accommodate growing demand for service, CDIA is currently conducting a Freight Feasibility Study to assess their service to international cargo carriers. The current plan is to expand CDIA's facilities from 288,000 square feet to 1.2 million square feet by 2015. Additionally, a third runway is scheduled to be completed in 2010. The new runway will allow an increase in air service.

INTERMODAL SYSTEM FREIGHT PROFILE

The intermodal system freight profile includes an assessment of the region's intermodal freight and goods movement system including the National Highway System Connectors. This profile provides information on operations, capacity, access issues, and overall infrastructure issues and challenges.



Intermodal Facilities

There are no intermodal facilities located within Gaston County, however five freight intermodal terminals are located in Charlotte, which represent approximately 28% of all the intermodal facilities in the state of North Carolina. The facilities include:

- Charlotte/Douglas International Airport
- Norfolk Southern Intermodal Freight Terminal
- CSX Intermodal Freight Terminal
- North Carolina State Ports Authority
- Pipeline Terminal and Tank Farms

NS is building a new intermodal facility at I-485/Garden Parkway Interchange on CDIA property, planning that will be located near the Charlotte-Douglas International Airport (CDIA). CSX is also planning improvements to their station / line located just off I-85. These improvements will improve trucking access and increase rail service in the area. With the aforementioned improvement the region will have a greater potential to stimulate industry in the area due to their proximity to such valuable transportation lines.

Inland Intermodal Facilities

The North Carolina Ports Authority owns two inland intermodal terminals in North Carolina, one in Greensboro and one in Charlotte. The Charlotte facility is located north of the Charlotte Douglas International Airport and is accessed by both Norfolk Southern and CSXT Railroads, as well as easy access to I-85 and I-77.

Other Freight Profiles

The GUAMPO conducted an analysis regarding the geographic locations of major freight-related companies in order to assess which access routes are experiencing high volume and whether or not the level of service for each route is satisfactory (see Figure 6-23). The LOS included in the table for US 321 and I-85 was taken from the I-85/US 321 Interchange Feasibility Study completed by NCDOT in March 2006. The other roadway LOS was calculated by inputting the existing and future traffic volume numbers used for this study into Highway Capacity Software (HCS).

The analysis revealed, perhaps not surprisingly, that many of the region's freight-related companies are located on or near major highways and interstates. Freight moves to and from these locations often along the same routes. Therefore, a relatively small number of access routes are likely experiencing significant freight travel volumes; however, the levels of service are not always sufficient.

Overwhelmingly, the most highly used major access route in Gaston County is I-85. Virtually every major freight-related company in the county uses I-85, which serves as the region's major connection to Atlanta, Charlotte, and I-77. Unfortunately, the level of service calculated for I-85 through Gaston County is unsatisfactory. Throughout most of the county, I-85 maintains an LOS of E, while elevating to LOS D along a section in Gastonia.

While the LOS of the county's section of I-85 is less than sufficient, most of the state highways experiencing freight traffic from the region's key freight-related companies have satisfactory LOS. Many of the companies access I-85 via NC 274. All of the sections of NC 274 analyzed have a LOS of B. NC 273 also operates at LOS B. NC 16, which is used by the relatively isolated Freightliner of Mt. Holly, has a LOS of A.

Despite not being an STAA route, US 321 also experiences a high freight volume as it is a key access point for many freight-related companies to I-85. US 321 maintains a LOS B in all of the key areas analyzed.

Comprehensive Freight Profile

The comprehensive freight profile was developed to include information from the freight flow database, highway profile, rail profile and airport profile. This profile includes GIS data, which allows the GUAMPO to map areas of concern. During this planning effort it was determined that existing data did not provide enough information to develop the freight flow database, specifically for the Gaston Urban Area. GUAMPO will coordinate with the regional planning partners to purchase freight data from a private vendor. Since freight planning activities are envisioned to be a continuous process, the freight flow database will be added to the comprehensive freight profile when the data is available.





Figure 6-23: LOS of Transportation Facilities Providing Access to Freight Facilities

NAME	Location Description	Existing LOS	2030 LOS
Wix Filtration Corp	Located adjacent to I-85 on southern side; access interstate via NC 274 N	I-85 LOS D NC 274 LOS B	I-85 LOS D NC 274 LOS C
Freightliner of Mt Holly LLC	Location somewhat isolated from major access routes; access interstate via local routes and NC 16	NC 16 LOS A	N/A
Pharr Yarns Inc	Located just south of I-85; access I-85 via NC 7	I-85 LOS E	I-85 LOS E
Freightliner of Gastonia LLC	Located adjacent to I-85 on the northern side; access interstate via US 321	I-85 LOS EUS 321 LOS C	I-85 LOS EUS 321 LOS D
American and Efrid Inc	Located between river and NC 273; access I-85 via NC 273 S	I-85 LOS ENC 273 LOS B	I-85 LOS ENC 273 LOS B
Stabilus Inc	Located adjacent to I-85 on the northern side; access interstate via US 321	I-85 LOS EUS 321 LOS C	I-85 LOS EUS 321 LOS D
Parkdale Mills	Located South of I-85 on US on NC 274; Access Interstate via 274 N and US 321 N	I-85 LOS DNC 274 B	I-85 LOS DNC 274 LOS C
R L Stowe Mills Inc	Located just north of I-85. Access interstate via local routes	I-85 LOS E	I-85 LOS E
Danaher Tool Group	North of I-85 off NC 274; Access I-85 via NC 274 S	I-85 LOS DNC 274 B	I-85 LOS DNC 274 LOS C
Dole Packing	Located just north of I-85. Access interstate via Edgewood Rd.	I-85 LOS E	I-85 LOS E
ABF Freight Systems Inc	Located just north of I-85; Access I-85 via Peach Orchard Rd.	I-85 LOS E	I-85 LOS E
AB Carter	Located on US 321; Access I-85 via US 321 N	I-85 LOS EUS 321 LOS B	I-85 LOS EUS 321 LOS C
Advanced Drainage Systems	Located north of I-85; Access interstate via NC 274	I-85 LOS DNC 274 LOS B	I-85 LOS DNC 274 LOS C
State Line	Access I-85 via US 321 N	I-85 LOS EUS 321 LOS B	I-85 LOS EUS 321 LOS C
Hanesbrands, Inc. (Sara Lee)	Located just south of I-85; access I-85 via Canterbury Rd.	I-85 LOS D	I-85 LOS D
Wal-Mart Associates Belmonts	Located adjacent to I-85 on the southern side; access interstate via local routes	I-85 LOS E	I-85 LOS E
Wal-Mart Associates Gastonia (Franklin Square)	Located south of I-85; access interstate via NC 274 N/Bessemer City Rd.	I-85 LOS DNC 274 LOS B	I-85 LOS DNC 274 LOS C
Wal-Mart Associates Gastonia (Westside)	Located south of I-85; access interstate via NC 273 and NC 7	I-85 LOS DNC 273 LOS B	I-85 LOS DNC 273 LOS C

GIS Information Database

GUAMPO has developed a comprehensive freight profile by combining information from the airport, truck, and rail data described earlier.

The freight data is presented graphically using Geographic Information Systems (GIS). ESRI datasets for ArcGIS have been used as the base mapping data for highways, airports, water, landmarks, and political boundaries. Additional data such as Metropolitan Planning Organization boundaries comes from the Bureau of Transportation Statistics. Freight-related data collected for the Gaston Urban Area’s freight planning system is in the State Plane coordinate system, North Carolina NAD83 (with units in meters). The data includes:

- ⦿ At Grade Crossings
- ⦿ Largest Freight-Related Employers in the urban area
- ⦿ Average Annual Truck Volumes

Truck volume information has been overlaid with locations experiencing heavy congestion in order to understand impediments to truck movements. The database includes two primary facility types: transportation terminals and freight facilities. Transportation terminals include air freight, rail, truck, inter-modal, and truck terminals. There are no transportation terminals within the study area, so these facilities are not mapped, but are included in





the database. Freight facilities include manufacturing, retail, warehouse, wholesale/distribution, and agricultural facilities. These are included in the largest freight-related employers GIS shapefile.

The freight database also includes qualitative information collected from surveying freight stakeholders in the region. This provides information such as the location and severity of operational bottlenecks in the region, the effectiveness of the current truck route system, and likely locations of future freight facilities in the region.

Freight Facilities Database

The freight facilities database is a subset of the GIS database. The location of freight facilities will support a variety of the GUAMPO's planning needs. The database includes two primary facility types: transportation terminals and freight facilities. Transportation terminals include air freight, rail, truck, inter-modal, and truck terminals. There are no transportation terminals within the study area, so these facilities are not mapped, but are included in the database. Freight facilities include manufacturing, retail, warehouse, wholesale/distribution, and agricultural facilities generally with more than 250 employees. The transportation terminals and freight facilities were geocoded based on the street address location of the employer. The facilities were also coded as manufacturing or wholesale/distribution facilities.

Logistical Analysis

The economy of Gaston County was historically based on textile manufacturing. Like most of the country, manufacturing has been declining in recent years. However, manufacturing remains stronger in Gaston County than in many other counties throughout the state. While the textile industry has diminished over the last several years in the county, manufacturing and other freight-related industries still comprise a major component of the regional economy.

Nearly a quarter of Gaston County's workforce was employed in manufacturing in 2006. While manufacturing jobs fell from 16,843 in 2005 to 15,916 in 2006, the number still remains strong compared to the rest of the state. In 2006, manufacturing jobs accounted for 23% of the county's employment, compared with only 14.3% for North Carolina.¹

1. The North Carolina Employment Security Commission, Labor Market Information division, CMEdIS, 3rd Qtr., 2006. Quoted by the Gaston County Economic Development Commission.

In total, nearly a third of the workforce in Gaston County is employed in a freight-related industry. The number of workers employed in the industry listed as "transportation and warehousing" is close to the same for Gaston County as for the state. In 2006, 3.5% of the state's workforce was employed in this industry, compared with 3.1% for Gaston County. The number of workers employed in wholesale trade, also identified as a "freight-related" industry, is less for Gaston County

than for the state, at 3.0% and 4.5%, respectively. However, when the figures for these two industries are combined with those for manufacturing, we find that freight-related industries account for 29.1% of the county's employment, compared to only 22.3% for the state.²

In some cases, retail trade can also be considered "freight-related." Large retailers such as Wal-Mart rely heavily on freight shipments. Wal-Mart is the 6th largest employer in the county and therefore should not be overlooked when assessing the economic impact of freight-related activities on the region. There are three Wal-Mart Super Centers and a Sam's Club in Gaston County, employing approximately 1,400 employees. In total, retail trade employs 9,129 workers in Gaston County, which accounts for 13.2% of the workforce.

Many of the County's largest employers are involved in the transport of goods. Ten of the top 25 employers in the county operate in a freight-related industry, and 5 of those are in the top 10 (see Figure 6-24). Over 50 trucking companies provide freight services to industries in Gaston County, some of which are themselves located in the county, including ABF Freight Systems Inc., Freightliner of Mount Holly, and Freightliner of Gastonia.

Although the number of people employed in Gaston County in the manufacturing and transportation industries is much higher than that of the state at



Figure 6-24: Major Freight Related Employers

Company	County-wide Rank	Number of Employees	Major Product
Freightliner Mt. Holly	3	1,000+	Industrial Truck/Trailer
Wix Filtration Corp	4	1,000+	Filtration Manufacturing & Headquarters
Pharr Yarns, Inc	7	1,000+	Yarn Spinning Mill
American & Efird, Inc	8	1,000+	Thread & Yarn
Freightliner of Gastonia	9	1,000+	Industrial Truck/Trailer
Hanesbrands, Inc. (Sara Lee)	11	500-999	Clothing
RL Stowe Mills, Inc.	18	250-499	Yarn Products
Stabilus	19	250-499	Heavy Gauge Springs
Danaher Tool Group	20	250-499	Hand Tools
Parkdale Mills	21	250-499	Cotton/Polyester Yarns

Source: The North Carolina Employment Security Commission, Labor Market Division 4/2007. Based on 2006 numbers. Quoted from Gaston County Economic Development Commission.

large, wages in these industries are lower in Gaston County. In 2006, manufacturing employees in Gaston County earned a weekly wage of \$748, while the average for the state was \$891. Likewise, Gaston County workers employed in the transportation and warehousing industry earned only \$613 per week, compared to an average of \$725 for the state. The payment gap was greatest in the wholesale trade industry where the weekly wage average for the state was \$1,051, while workers in Gaston County averaged \$823.

The local and regional economy of the Gaston County area is greatly impacted by freight-related industries, as indicated by Figure 6-24. Despite the decline of manufacturing and the relatively low-wages of employment in freight-related industries in Gaston County, freight-related industries provide nearly one third of the county's jobs. The flow of freight through the area is therefore an integral part of the region's economy.

Strategy Development

The U.S. Department of Transportation projects that the national freight volume, including truck, rail, water and air modes, will more than double by 2020. The trucking industry alone will see a 75 percent increase

in freight tonnage by 2020. Several major roadways intersect Gaston County and serve as corridors for truck traffic. Existing traffic data, as well as modeled data, indicate that Interstate 85 accommodates the largest volumes of traffic in Gaston County, with the U.S. Highways (US 29/74 and US 321) also carrying large volumes. Future data likewise indicates the aforementioned networks will be the most heavily used, along with the future Garden Parkway. The purpose of strategy development is to identify the appropriate recommendations to address the findings of the freight assessment. The 2030 LRTP was reviewed to identify projects with significant impact on freight. The project goals and objectives were refined in order to develop a set of freight-related performance measures for GUAMPO to consider when making project evaluations in the future.

Freight Planning Information System

The GIS and freight facilities database will be provided to GUAMPO on CD-ROM. The GIS database can play a key role in the GUAMPO's ability to conduct integrated multimodal transportation planning. The data is in ESRI-compatible shapefile format and readable by ESRI ArcGIS and ArcReader applications. ArcReader is a free, easy-to-use desktop mapping application used to view, explore, and print maps. A standard basemap showing the freight facilities data has been published as an ArcReader map (.pmf file) and is provided on the CD-ROM. ArcReader can be installed on planners'





desktops to assist in making informed, efficient, and effective decisions and investments regarding modal, intermodal and freight needs. In the future, ArcReader can be customized for a freight planning information system with custom queries. After a needs assessment of the hardware, software and data needs of the GUAMPO, the mapping capability of ArcReader/ ArcGIS could become part of a larger project planning Internet/Intranet tool using Microsoft.net and/or ArcIMS (Internet Mapping System). With the purchase of available commercial datasets, this tool could:

- ⦿ Capture data about goods movement, specifically origins and destinations of major freight flows;
- ⦿ Develop commodity flow modeling;
- ⦿ Identify freight bottlenecks and identify potential investment needs based upon infrastructure consumption from freight traffic;
- ⦿ Serve the needs of shippers in the community; and
- ⦿ Support the community's planning process

Metrolina Regional Travel demand Model

It is recommended that GUAMPO work with NCDOT to evaluate the forecasted truck volumes in the model. This may involve collecting more vehicle classification data on the major roadways in Gaston County on a routine basis to establish an accurate baseline. It is also recommended for GUAMPO to investigate

purchasing detailed freight data for the region from an outside vendor. The current version of the Metrolina Regional Travel Demand Model does not include any specific freight modeling components, but does include numbers for trucks. After careful review of those future truck volumes along with a comparison to available classification count data, the model may be low on forecasting the number of trucks on certain roadways in Gaston County. This could be attributed to the limited amount of vehicle classification data that is available to calibrate the model for truck volumes.

Freight Monitoring System

A freight monitoring system should be established for the GUAMPO area. There is very little vehicle classification data being collected on the major freight corridors in Gaston County. GUAMPO and the NCDOT should collaborate and identify locations along major freight corridors/roadways and conduct vehicle classifications counts on a routine basis. The data will allow GUAMPO to monitor the major freight corridors in their area. This information will also be beneficial for the Metrolina Regional Travel Demand model.

As part of a future integrated freight planning system, additional components of the freight plan could be used to monitor freight operations in the region. The first component of the monitoring program would include annual tracking of truck counts using the existing DOT classification counts in the Gaston Urban area. The

truck counts should be integrated with the GIS database to understand and analyze the spatial distribution and growth rate of freight for the region. To understand growth distribution to specific facilities, the monitoring plan would also include annual 72-hour classification counts at major manufacturing facilities, major truck terminals, and big box retailers in the region. Results of the data collection efforts of the study will assist in identifying facilities for monitoring.

Share the Road Program

Many passenger vehicle drivers are uncomfortable driving in the vehicle mix with numerous large trucks. A Share the Road program can assist in increasing public awareness about limitations on trucks such as longer stopping to let citizens experience what it feels like to sit in on actual distances, blind spots, slower acceleration, and large turning radii. Increasing awareness and educating the public can be done through pamphlets, signage, and even interactive programs. An example of an interactive program would be to let citizens experience what it feels like to sit in an actual truck cab and use the mirrors.

GOAL

Maintain and improve regional transportation infrastructure to optimal performance for the movement of people and freight to strengthen and encourage economic vitality for the region.





Objective:

Eliminate conflict points in the movement of goods.

Strategy:

- ⦿ Separate at grade crossings with an exposure index of greater than 30,000 trips per day.
- ⦿ Separate or upgrade at grade crossings with a history of crashes.

Performance Measure:

- ⦿ Monitor all crossings and begin separating crossings with the highest exposure index greater than 30,000.
- ⦿ Monitor all crossings and begin separating crossings with the highest crash rate.

Objective:

Ensure adequate infrastructure is in place from major shipping areas.

Strategy:

- ⦿ Identify and improve bottlenecks in the current transportation system.
- ⦿ Identify areas where major shipping facilities are being developed or may be developed and support the re-use of underutilized properties near existing transportation infrastructure.
- ⦿ Support the development of rail options for long and short routes as well as for local connectivity.
- ⦿ Work with Federal, State, and Local officials and

transportation organizations to emphasize the need for adequate transportation funding.

Performance Measure:

- ⦿ Use traffic monitoring tools (v/c, crash statistics, etc.) to measure improvements in bottlenecks.
- ⦿ Incorporate building permits, development proposals, etc., to monitor land developments and their locations.
- ⦿ Use a scoring method appropriate to monitor use of underutilized or abandoned railways.

These recommendations are grouped into infrastructural (capacity enhancements, road geometry improvements), operational (signal timing improvements, truck route redesign), and institutional strategies (land use and zoning policies, collaborating with other agencies).

Highway Improvements– Existing Facility Improvements

Planned roadway improvements that would help alleviate congestion and/or improve operations along I-85, US 29/74, US 321, NC 273, NC 274, and NC 279 would benefit the movement of freight in the region and should receive priority ranking in the GUAMPO’s LRTP. The existing traffic counts and the Metrolina Regional Travel Demand Model runs for the year 2035 are showing significant volumes on these roads.

The projects listed below have been prioritized in order based upon 2035 projected traffic volumes for these road-ways. The majority of the major manufacturers and freight-related businesses in Gaston County are located along these roadway corridors. The following projects have been included in the 2035 Long Range Transportation Plan along with the existing roadways mentioned previously.

US29/74 - (2030 Projected TRAFFIC: 30,700 – 46,600 ADT)

- ⦿ Franklin Boulevard – Adding an additional westbound through lane from Church Street to Cox Road.
- ⦿ Wilkinson Boulevard over Catawba River – Widen existing 4-lane bridge to 6 lanes and widen existing 4-lane roadway cross section to six lanes from Catawba Street to Catawba River.
- ⦿ Wilkinson Boulevard over South Fork River - Widen existing 4-lane bridge to 6 lanes and widen roadway to 6 lanes between Market Avenue and Albert Avenue.

US 321 – (2030 Projected TRAFFIC: 11,900 – 40,100 ADT)

- ⦿ York Road – Widen 4-lane facility to 5-lane from Hudson Boulevard to Beam Avenue.

NC 273– (2030 Projected TRAFFIC: 12,100 – 26,000 ADT)

- ⦿ South Point Road – Widen existing 2-lane road to



a 4-lane divided facility from Nixon Road to Lower Armstrong Road.

NC 279 – (2030 Projected TRAFFIC: 10,400 – 35,100 ADT)

- South New Hope Road – Widen existing 2-lane road to 5 lanes from Titman Road to Union –New Hope Road.
- NC 279 Dallas-Cherryville Highway – Widen 2-lane road to 5 lanes from old US 321 to Costner School Road.

NC 274 – (2030 Projected TRAFFIC: 2,900 – 28,500 ADT)

- New Hope Road Widening - There are two segments to this project: Widening the existing 4-lane facility to 5-lane and construct center turn-lane from Burtonwood to SR 2466 and from Robinwood Road to Armstong Park Road.
- Union Road – Widening the existing 2-lane facility to 5-lane and construct a new 4-lane divided realignment from Robinson Road to Beaty Road.
- Bessemer City Road – Widening to 5 lanes from Franklin Boulevard in Gastonia to Maine Street in Bessemer City.

New Facilities
The Garden Parkway

The Garden Parkway would serve as a bypass to I-85, US 29/74, and US 321 and would provide an alternative

connection to Charlotte-Douglas International Airport (CDIA), which is the region’s major air freight cargo facility, as well as the future home of the Norfolk Southern Intermodal Facility. The Garden Parkway is a proposed 4-lane divided freeway that will begin in Mecklenburg County in the vicinity of the CDIA and would ultimately tie in to I-85. The length of this new roadway is approximately 21.5 miles to 23.7 miles depending on the final alignment chosen; the project is currently in the Draft Environmental Impact Study phase.

This project is currently one of nine projects being evaluated by the North Carolina Turnpike Authority as a potential toll road. The preliminary cost estimate for this project is \$745 million to \$1.595 billion (April 2007 dollars) so the project may be constructed in three segments. This project would assist in relieving congestion on I-85, US 321, and US 29/74 in Gaston County, as well as the I-85/US 321 Interchange. The Metrolina Travel Demand Model is forecasting that the Garden Parkway will carry 18,900 – 57,000 vehicles per day by the year 2030, including a significant amount of truck traffic.

Gastonia – Mt. Holly Connector

The Gastonia Mount Holly Connector will relieve congestion on US 29/74 and I-85, as well as provide direct access to residents living in the eastern portion of Gaston County. The Gastonia-Mt. Holly Connector is a proposed

4-lane divided facility that will extend from Aberdeen Boulevard (SR 2831) in Gastonia to Catawba Avenue (SR 2040) in Mt. Holly. The Metrolina Travel Demand Model is forecasting that the Gastonia – Mt. Holly Connector will carry 12,300 – 28,100 vehicles per day by the year 2030, including a significant amount of truck traffic.

Belmont/Mt. Holly Loop

This facility will provide relief to NC 273, by creating a new north-south connector. The only other existing, nearby north-south roadway is NC 273 which is experiencing a heavy traffic growth due to surrounding developments, particularly in Belmont and Mt. Holly. The Loop will also provide a direct connection between the cities of Belmont, Cramerton, McAdenville, and Mt. Holly which currently does not exist. This will assist in moving freight to these various cities in this part of the county and gives trucks an alternative to the NC 273. The model shows that this road will have a decent amount of truck traffic on 2030.

Robinson-Clemmer Road / Friday Park Road

It is recommended that GUAMPO request this roadway improvement be modeled in the Metrolina Regional Demand Model so that the overall impacts to the adjacent roadways can be determined. This project would provide an opportunity for trucks to avoid the congestion and restrictions at the I-85/US 321 Interchange by using NC 279 and Robinson Clemmer Road to access US 321.





Robinson Clemmer Road and Friday Park Road are part of the current Gaston Urban Area Thoroughfare Plan and are planned as a 4-lane divided facilities. The proposed project is approximately two miles in length and would consist primarily of widening the existing roadway with some realignment at the new location. This project would provide a direct connection south of Dallas between New Hope Road (NC 279) and the interchange at US 321. Currently this project is unfunded and is not included in the current 2030 Long Range Transportation Plan; therefore no current cost estimate has been calculated and it has not been included in the 2030 Metrolina Travel Demand Model.

Current Issues
I-85/US 321 Interchange

It is recommended that GUAMPO and NCDOT pursue programming and funding improvements to this interchange based on the recommended alternative in the NCDOT 2006 feasibility report; this would add the project to the GUAMPO’s Long Range Transportation Plan and North Carolina’s Statewide Transportation Improvement Program (STIP). Once this interchange has been constructed, it is recommended that the GUAMPO, the City of Gastonia, and NCDOT reevaluate the STAA vehicle restriction on US 321. The existing interchange is a half diamond with ramps and loops in the western quadrants. The current geometry and capacity of the interchange, as well as surrounding traffic signals cause back-ups onto I-85. This interchange also handles

a high volume of heavy truck traffic. Currently Surface Transportation Assistance Act (STAA) dimensioned vehicles are not allowed to access US 321. These vehicles include twin-trailers and 48-53 foot long single trailers. According to North Carolina General Statute 20-115.1 no portion of the State highway system can be designated to allow STAA vehicles within municipal corporate limits without approval by all of the municipalities that are impacted. Between I-85 and I-40, US 321 passes through the cities of Gastonia, Lincolnton, and Hickory. The City of Gastonia was concerned that the additional STAA truck traffic would exacerbate the already congested interchange at I-85/US 321 and did not approve the designation. This restriction forces STAA vehicles to use I-85, I-77, and I-40 route to access Hickory and points westward costing trucking companies in Gaston County, such as ABF Freight System, Inc., time and fuel.

An additional left lane has been constructed creating a triple left from I-85 south to US 321 north. The NCDOT completed a feasibility study for this interchange in 2006 that looked at longer-term solutions and made a recommendation for a reconfigured interchange that was estimated to cost \$29.8 million dollars.

Operational Improvements
I-85/ US 321 Interchange

Once the planned triple left turn lanes are constructed, several concerns need to be investigated and resolved before STAA dimensioned vehicles should be

considered to access the I-85/US 321 interchange.

- The operation of the traffic signals should be considered. It is possible that improvements at one intersection (such as constructing the triple left turn lanes) could cause an increase in delay at the next intersection by increasing the traffic volume. Queuing of vehicles at the Rankin Lake Road intersection could reach the Loop intersection and cause queuing onto I-85. Appropriate signal timing will need to be established before allowing STAA vehicles to use US 321. A coordinated signal timing plan could potentially improve the traffic operations at these two intersections.
- The geometric design of the triple left turn lanes should be considered. Triple left turn lanes are rarely constructed and can be confusing to drivers. Many drivers do not stay within their turn lane while making the left turns. Large trucks must use the outside lane to avoid encroaching on the other left turn lanes. Safety is of great concern when constructing triple left turn lanes. Figures 6-25, 6-26, 6-27 are from the American Association of State Highway and Transportation Officials (AASHTO) Policy on Geometric Design of Highways and Streets and include the turning paths of three types of trailers. Notice that the minimum outside turning radii are all the same, however the inside turning radii vary between each type of trailer. According to the turning path

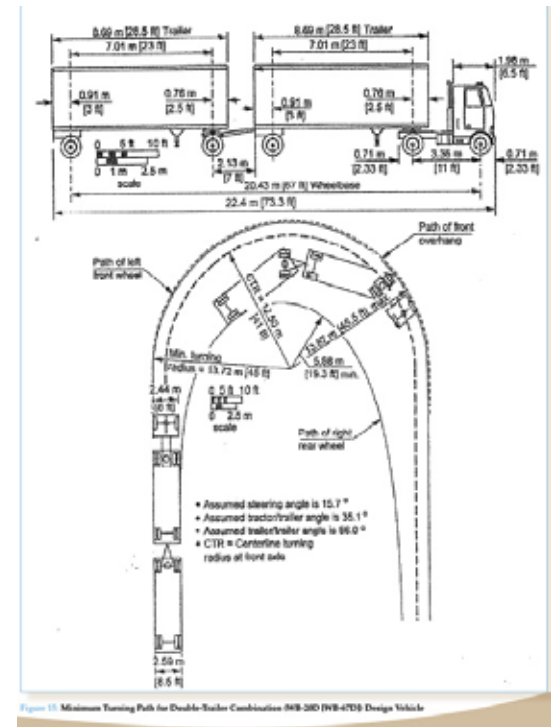
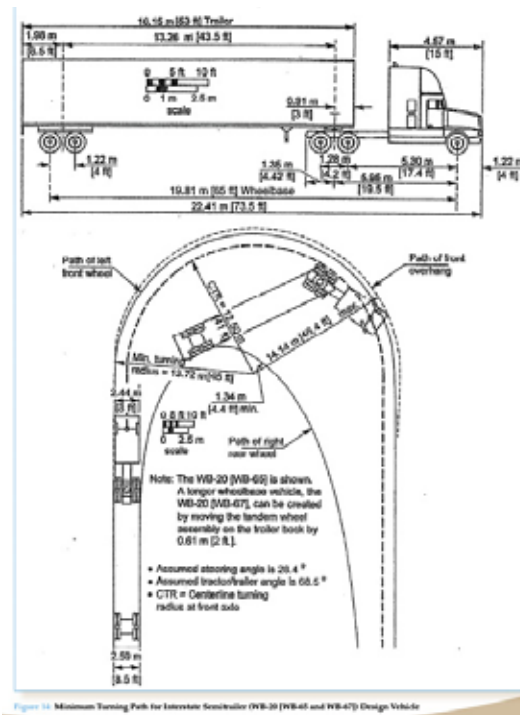
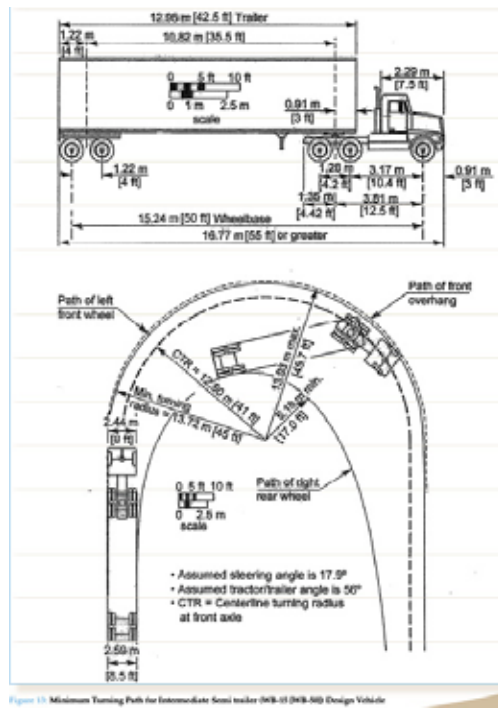


radii, a twin-trailer should be able to maneuver the same radius curves as a regular 42.5-foot trailer. However, 53' trailers may not be able to maneuver the same turns. The geometric design of the intersection must accommodate the turning path of STAA vehicles. Alternate routes that avoid the I-85/US 321 Interchange but allow a connection to US 321 should be investigated. One such route would be for trucks to take New Hope Road (NC 279) to Robinson Clemmer Road/Friday Park Road and then use an existing interchange to

access US 321 south of Dallas. New Hope Road is currently a 5-lane facility, and Robinson Clemmer Road and Friday Park Road, which are part of the current Gaston Urban Area Thoroughfare Plan are planned for a 4-lane divided facility. This project is unfunded and is not included in the current 2030 Long Range Transportation Plan; therefore no current cost estimate has been calculated. This alternate route should be examined in further detail, including the development of a preliminary cost estimate for the widening of Robinson

Clemmer Road/Friday Park Road, to see if it is a viable option.

- The turning radius of large trucks is dependent on speed. Grade also affects the speed of large trucks. The design of the SB I-85 loop may be slowing large trucks down so much that other vehicles are queuing behind them. The detailed plans of the loop should be reviewed to determine whether or not the design of the loop is an issue.



Figures 6-25-6-27: Geometric Design of Highways and Streets; Turning Paths of Trailers



Chapter 7: Future Conditions

7.0

FUTURE CONDITIONS

7.1 Land Use & Demographic Projections

The following methodology explains how the Gaston MPO developed population and employment projections for the years 2010, 2020 and 2030. The updated projections for the horizon years of 2015, 2025, and 2035 were built on this process.

For the 2030 LRTP update, the four MPO's and surrounding counties within the regional travel demand model area (which includes all non-attainment designated counties) established a regional socio-economic development committee. This committee, along with the assistance of the University of North Carolina at Charlotte (UNCC) – Urban Land Institute, developed a methodology utilizing economic forecasters, local building permit trends, census data, and local land development knowledge. such as current and future land use, utility improvements, economic development potential and land availability. All of these factor influence where housing and employment growth will take place throughout the urban area.

Population and employment projections for the Gaston MPO Planning Area were derived using both a top-down approach, beginning with projections for the eleven (11) county modeling region and a bottom

up approach, using a variety of locally available data sources.

The socioeconomic data forecasts were compiled through the use of an expert panel, made up of local planners, real estate representatives, economic developers and utility providers. Staff collected building permit data, performed a land available and assumption study, and identified employment closings, layoffs and expansions for the panel's review. During the panel discussions, rate, location and intensity of development were discussed and mapped to determine where and when all development would occur. The complete methodology is attached in the Appendices.

Gaston MPO Population and Employment Projection Methodology

The following methodology explains how Gaston developed population and employment projections for the years 2010, 2020 and 2030.

Land Use

The Gaston MPO developed a land use layer utilizing the Gaston County tax parcel GIS. The county tax parcel layer identified every parcel found within the county and designated a use for each parcel. The uses ranged from single family to multifamily residential to fabrics manufacturing to retail to gasoline service stations to vacant. Staff also verified the designations using aerial photography, existing zoning classifications and field

observations. These designated uses were then placed into their associated Standard Industrial Codes (SIC's) as well as its developed classification.

In order to determine parcels that are developed or for development in either residential or non-residential classification, staff overlaid floodplain, wetland and slope data to determine the parcels/parts of parcels that would be un-developable. This step allows staff to determine how many acres throughout the MPO area is either un-developable (due to environmental constraints or existing development) or developable for future uses.

Once staff determined which parcels were available for future development or re-development through the tax parcel designations, staff designated those parcels as either DVABLE 1 or DVABLE 2. When placing a developable code for each parcel within the Gaston MPO, residential parcels were given a "o" for un-developable since the parcels are already developable, with the exception of larger parcels along minor and major thoroughfares or where water and sewer services are provided and new subdivisions are nearby. For those sites, staff looks at each parcel to gauge the potential for the parcels to be sold and subdivided. If the staff deemed them unsuitable for such, those parcels were designated a "o" for un-developable. Steep slopes and unsuitable soils were also designated a "o" unless certain parcels had the capability to be cut/



filled for development. Non-residential parcels were designated a “o” if the parcel contained an existing use/building. If a parcel was being used partially, the parcel was then designated a “2” for potential non-residential development. In order to determine if each parcel was vacant, had an existing building located on site, or was under-utilized, staff used current aerials and current zoning to evaluate each parcel throughout the MPO region. The use of aerials and zoning provided a best-guess synopsis, along with planners knowledge in determining if the parcel was un-developable or developable.

Expert Panel

TCC members, a real estate appraiser and a county economic development commission representative served on the expert panel. This panel analyzed the developable parcel designations map in order to designate Development Potential Areas (DPAs) and provide the percent growth of each DPA per horizon year.

Residential Development Opportunities

Throughout the process in determining DPAs and percent growth, there are instances throughout the MPO area where development will exceed the amount of land available within an individual TAZ. Reasons for development to exceed the amount of land available range from rezoning applications increasing densities to proposed and recently approved residential

developments that have not been constructed. Most notably, TAZs 66, 129, & 185 have residential developments proposed that would exceed the available land. In addition, a small number of TAZs have been projected to be built out by 2030 due to the limited number of acres available for development.

Other development factors, as noted above, that were used to distribute population and housing units, were proposed thoroughfares, proposed water and sewer extensions, and recent trends. During the horizon years of 2020 and 2030, the Garden Parkway was instrumental in luring housing units, as well as the 2030 horizon year of providing water and sewer lines to the southeastern portion of the county, which would then increase the density ability.

Persons per Household Calculation

A necessary step in the process is to determine the persons per household (PPH) number to calculate total population within each TAZ. After reviewing past census data, the expert panel chose to remain consistent with the 2000 Gaston County census result of 2.53 persons per household. Their decision was to remain consistent with current trends and data and the lack of compelling reasons that the current trend would change. The number of units projected per TAZ was then multiplied by the PPH figure for each horizon year to determine the total population per TAZ.

Employment Projections

Developing employment projections is not as simple as was population. Many factors contribute to where employment will locate. They range from utility services, to available land, to population localities, to the economic trends. Staff was provided regional control totals for employment by SIC code from a consultant. Staff analyzed the control totals. Staff noticed a few unusual trends. The consultant projected a loss in high service for the year 2010, loss in office/government employees by 2010 and a loss in banking for the horizon year 2030. Education also was projected to gain employment, which is not uncommon with the amount of growth projected, however, the amount of employment is questionable given the circumstances in constructing new schools and the financial capability for the county school district. The consultant also projected a loss in employment in the industrial sector for the year 2010, however, this projection is not unusual given the current trends in the textile industries. Staff evaluated these variances in projections and alternative totals were established locally to replicate the thoughts of the expert panels and local trends.

The expert panel and local staff established development areas for employment through factors such as projects in the works, future employment business/industrial park locations, existing and future water and sewer services and economic trends.





Staff first analyzed the service and retail sectors of employment for the MPO area. In order to get an understanding of what type of employee ratio between low service/high service/retail/highway retail there is within the Gaston MPO area for the shopping centers, staff broke down each location by employment type and employees. This analysis allowed staff to develop an average per site to carry through the horizon years when informed of future shopping centers being built. Granted, each site is different in size and tenant, however, the analysis allows staff to develop a general perception of employment locations and size. This analysis provided staff with a process in designating employment type and employees to certain TAZs that were determined to encompass these types of jobs.

Gaston County has seen a vast decline in industrial employment, however, the trend has slowed down in terms of the number of textile mills closing. One reason for this is that there are a limited number of mills still in operation and those remaining are the last of the major mills owned by the textile companies. Those that are left operating will be the ones producing goods until the entire textile company closes. Our expert panels continue to express that industrial jobs/companies will grow, but through a different sector than textiles. There are vast industrial parks available throughout the area to provide growth in this sector. For this reason, industrial employment numbers have been adjusted to take into account the change in industrial focus and available land.

With the knowledge and information from the expert panels about all types of employment generating projects on the horizon, staff allotted the allocated numbers and adjusted employment projection numbers to TAZ's that had DVABLE 2 parcels by utilizing existing land use classifications, future land use plans, thoroughfare improvements, known site plans in the works, potential residential developments, and developing thematic maps signifying predicted population patterns over the three horizon years.

If a TAZ did not have any DVABLE 2 acres available, and employment was projected within that TAZ, there was either a known site plan approved through a rezoning, or the expert panel members predicted future rezonings to occur due to the criteria established for employment locations.

Updating the Projections for 2015, 2025, and 2035

The following is an explanation of the methodology that the Gaston MPO used to develop population and employment projections for the years 2015, 2025 and 2035. Before any new projections were attempted, staff compared the projections from the 2030 plan to the 2006 certified projections from the North Carolina's State Demographics (NCSD) web site. The 2030 plan estimated 2005 county population to be 194,083 while the certified estimates from the NCSD for mid 2006 was 197,232. Staff concluded that since the numbers

were so close to the population projections from the 2030 plan, they were still valid and that the new numbers for the 2035 plan could be extrapolated from them. Staffs also assessed the employment estimates and were satisfied that they too could be extrapolated from the previous plan estimates.

Therefore, the new draft estimates for 2015 were extrapolated from the years 2010 and 2020 in the previous projection. The 2025 estimates were extrapolated from the years 2020 and 2030 in the previous projection. The 2035 projections were based on the average growth rates between 2010-2020 and 2020-2030. The average population growth rate for those two decades is approximately 15 percent per decade while the average employment growth rate for those two decades is approximately 12 percent per decade. The results of the aforementioned procedure formed the initial draft population, employment, and household estimates.

Land Use/Population Adjustments

In order to determine the amount of land still available for development, staff overlaid floodplain, floodways, wetland, steep slopes of twenty-five percent or more, and parks to determine the parcels/parts of parcels that would be un-developable because of environmental constraints. This step allowed staff to determine how many acres throughout the MPO area is either un-developable (due to environmental constraints



or existing development) or developable for future uses. Staff then overlaid all known developing and proposed developments over the parcel layer and 2007 Orthographic layer to analyze the TAZ's. For the developments that were in the process of being constructed, the numbers of houses constructed were subtracted from the total number to be built in that development to arrive at the future remaining construction for that development.

Developments were assumed to take approximately 8 to 12 years to complete. So, population estimates in the developments that were currently in the process of construction were usually assigned to the year 2015. Future population in new developments that were not yet in the process of construction were generally split between the years 2015 and 2025.

Populations for the TAZ's were determined by using the current residential units statistics contained in the parcel layer plus any units that would be completed by a development. The remaining developable land was determined from subtracting the committed land for developments from the total developable land.

To account for vacancies in the housing units in the years 2015, 2025, and 2035, population estimates were reduced by 2% for each projected year.

Employment Projections

As previously discussed, employment estimates for

the years 2015 and 2025 were extrapolated from the 2010, 2020, and 2030 projections. For the year 2035 employment estimates were based on the average increase of employment for 2010-2020 and 2020-2030. These estimates were generally around 12% for each decade. Therefore, 2035 employment was derived by multiplying the 2025 employment by 12 %. Any additional employment adjustments to a particular TAZ were distributed throughout that TAZ by the same employment category ratio that was originally in that TAZ.

Student Projections

School student population was kept at a set ratio to the overall population based on previous forecasts. In the previous forecasts of 2010, 2020, and 2030 this ratio was generally:

- STU_K8 – 12%
- STU_HS – 5%
- STU_CU – 4%

Final Projections

The draft projections were then distributed by TAZ to the local government members for their review. Local government members reviewed the draft TAZ projections and adjusted the projections based on their local knowledge. The final TAZ numbers were presented to the Technical Coordinating Committee (TCC) for their final comments, adjustments, and endorsement. After addressing any comments from the TCC, the final TAZ numbers were then presented

to Transportation Advisory Committee (TAC) for their comment and endorsement.

Thematic maps depicting the 2005 base year population and employment by TAZ, as well as projected out to 2035 are included on the following pages. Population and employment totals for the Gaston Urban Area are shown in Figure 7-1.

	2015	2025	2035
Population	205,432	238,521	271,610
Employment	70,720	80,857	89,857
Households	80,562	93,538	106,514



Gaston Urban Area
Metropolitan Planning Organization
(MPO)

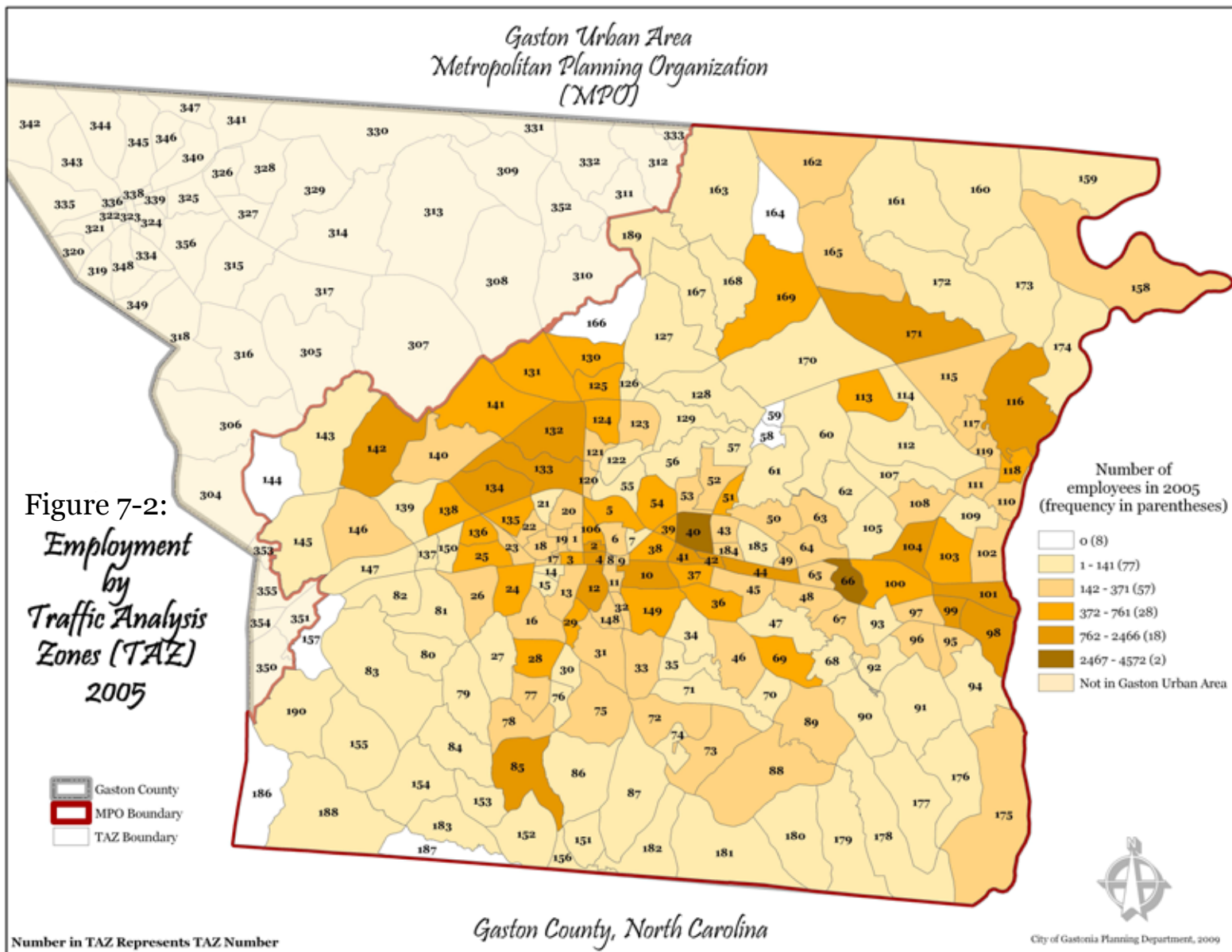
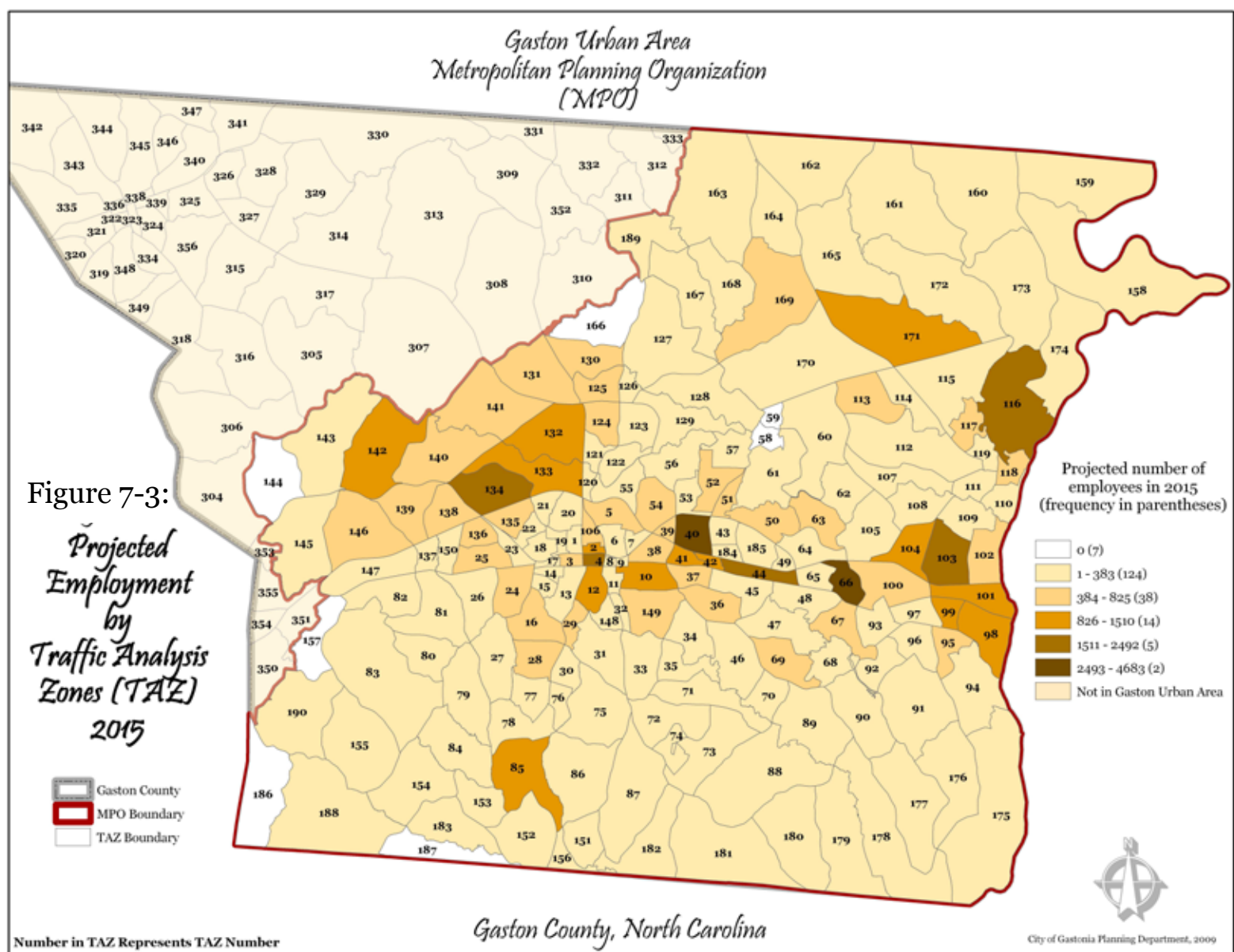
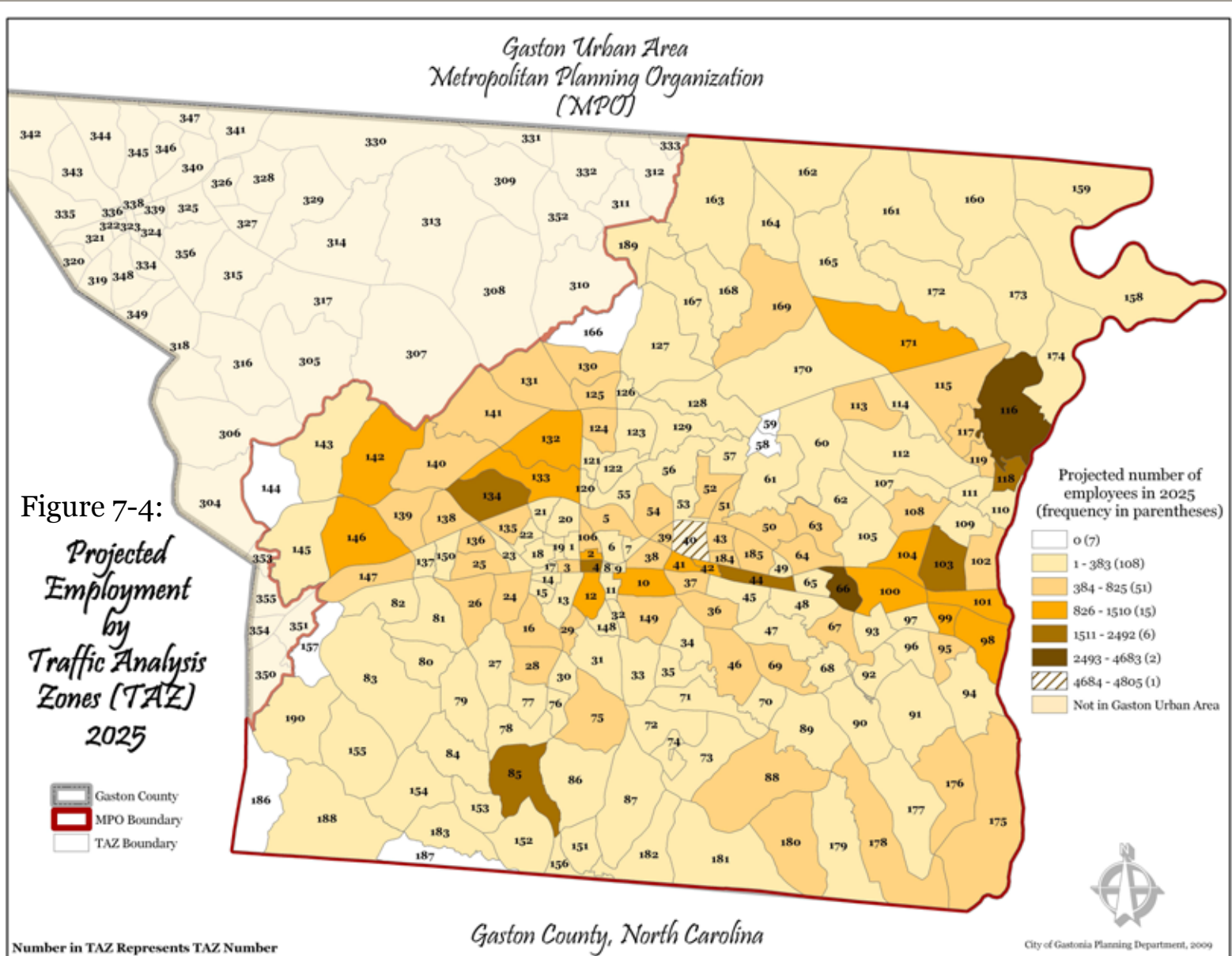
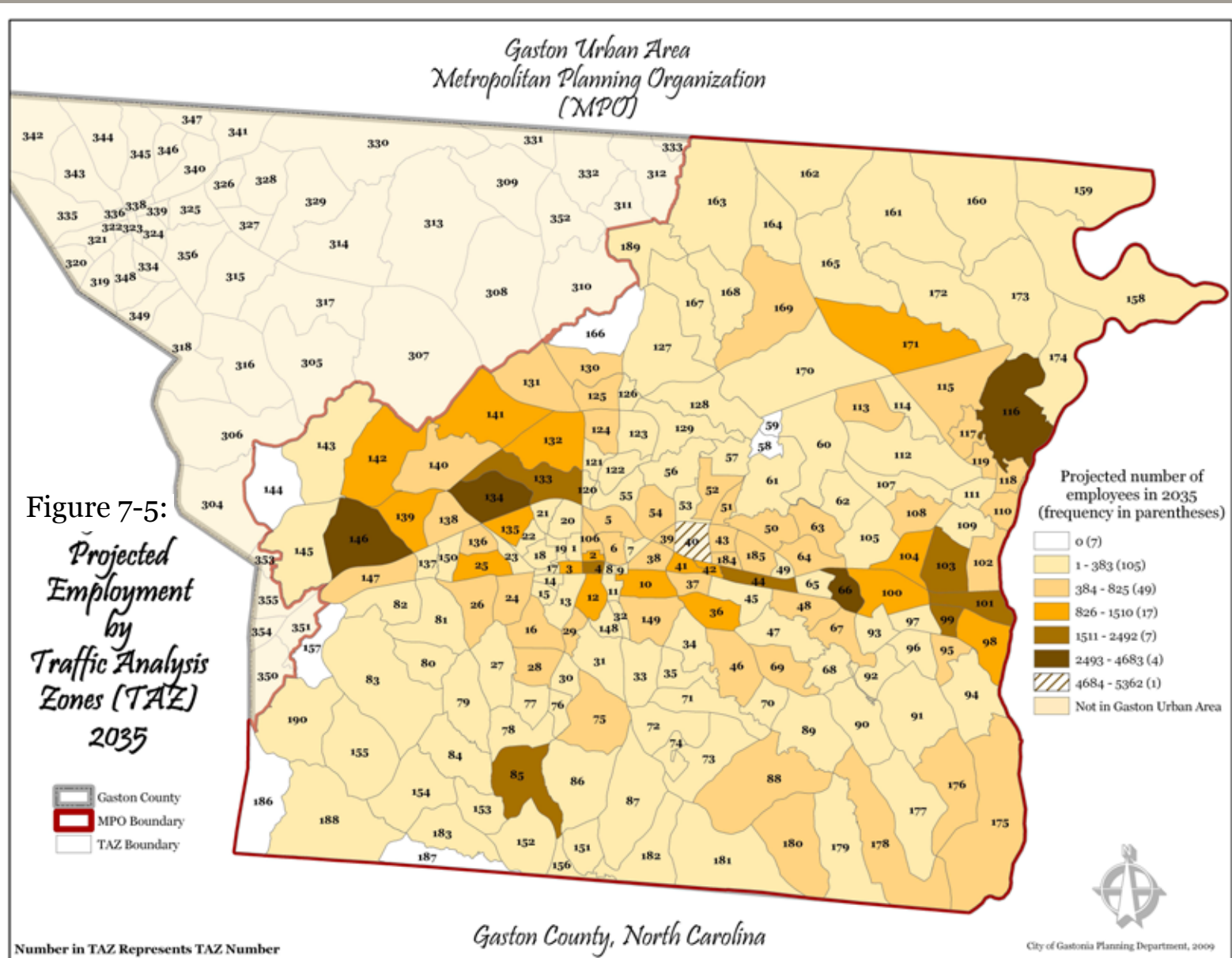


Figure 7-2:
Employment
by
Traffic Analysis
Zones (TAZ)
2005

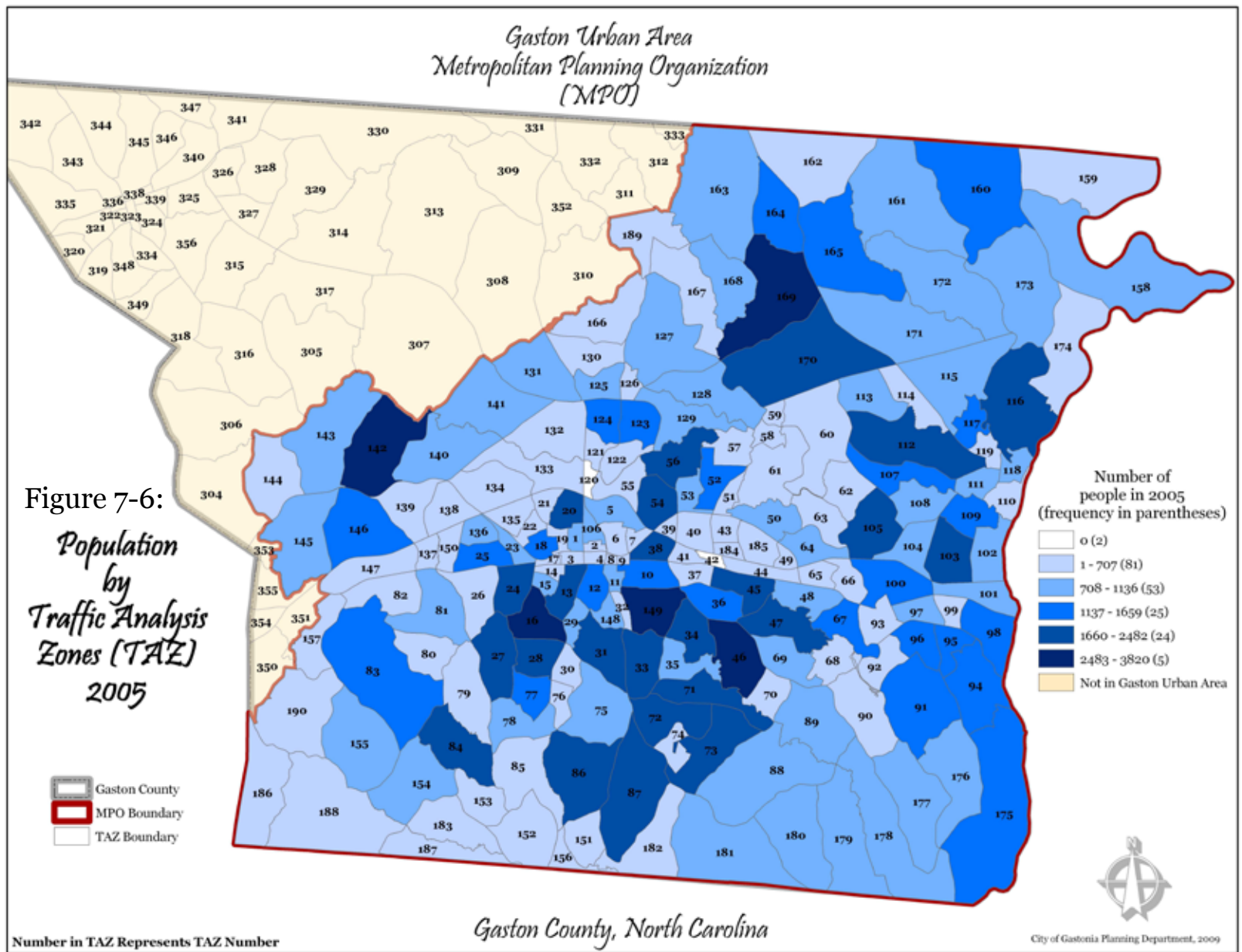








Gaston Urban Area
Metropolitan Planning Organization
(MPO)



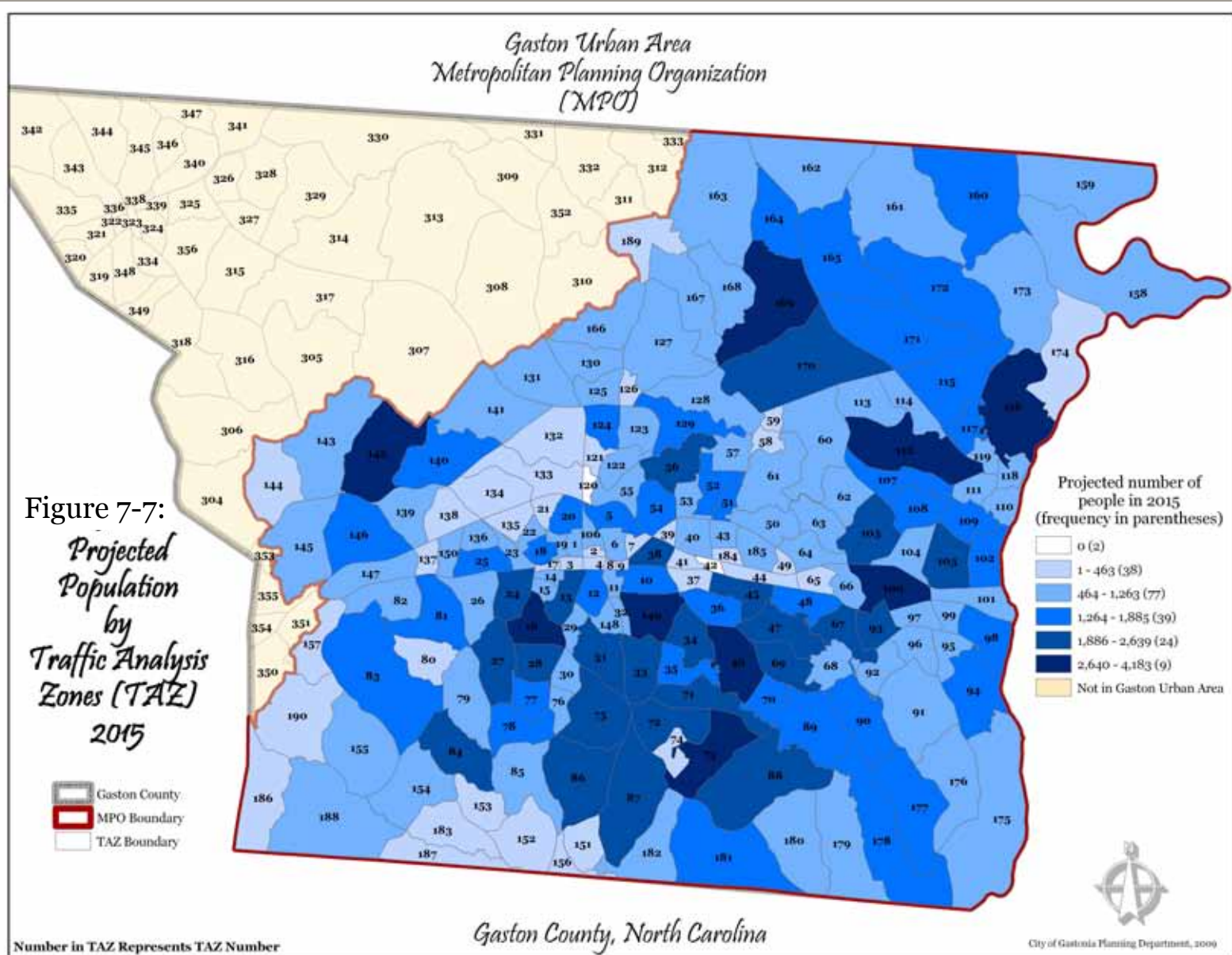
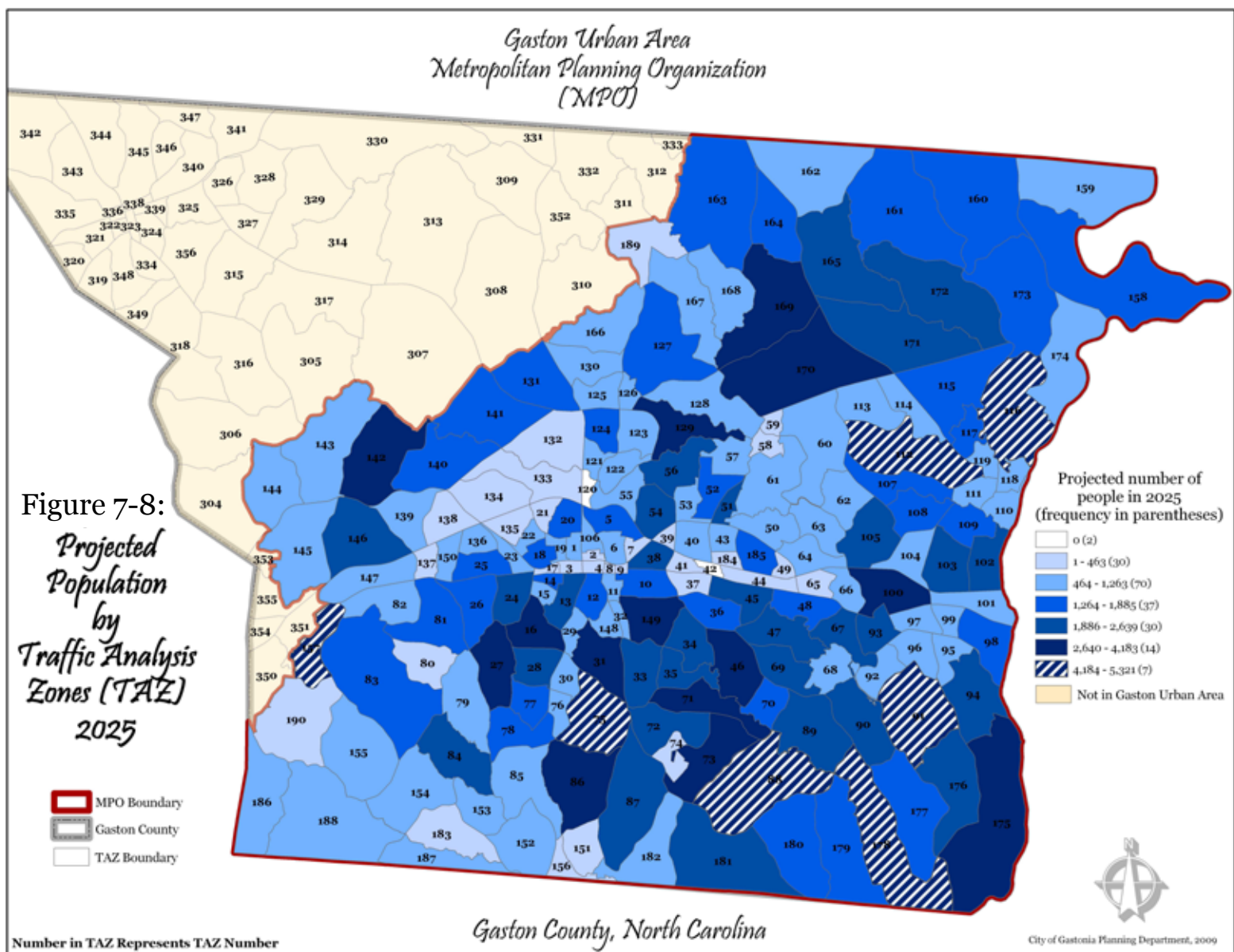
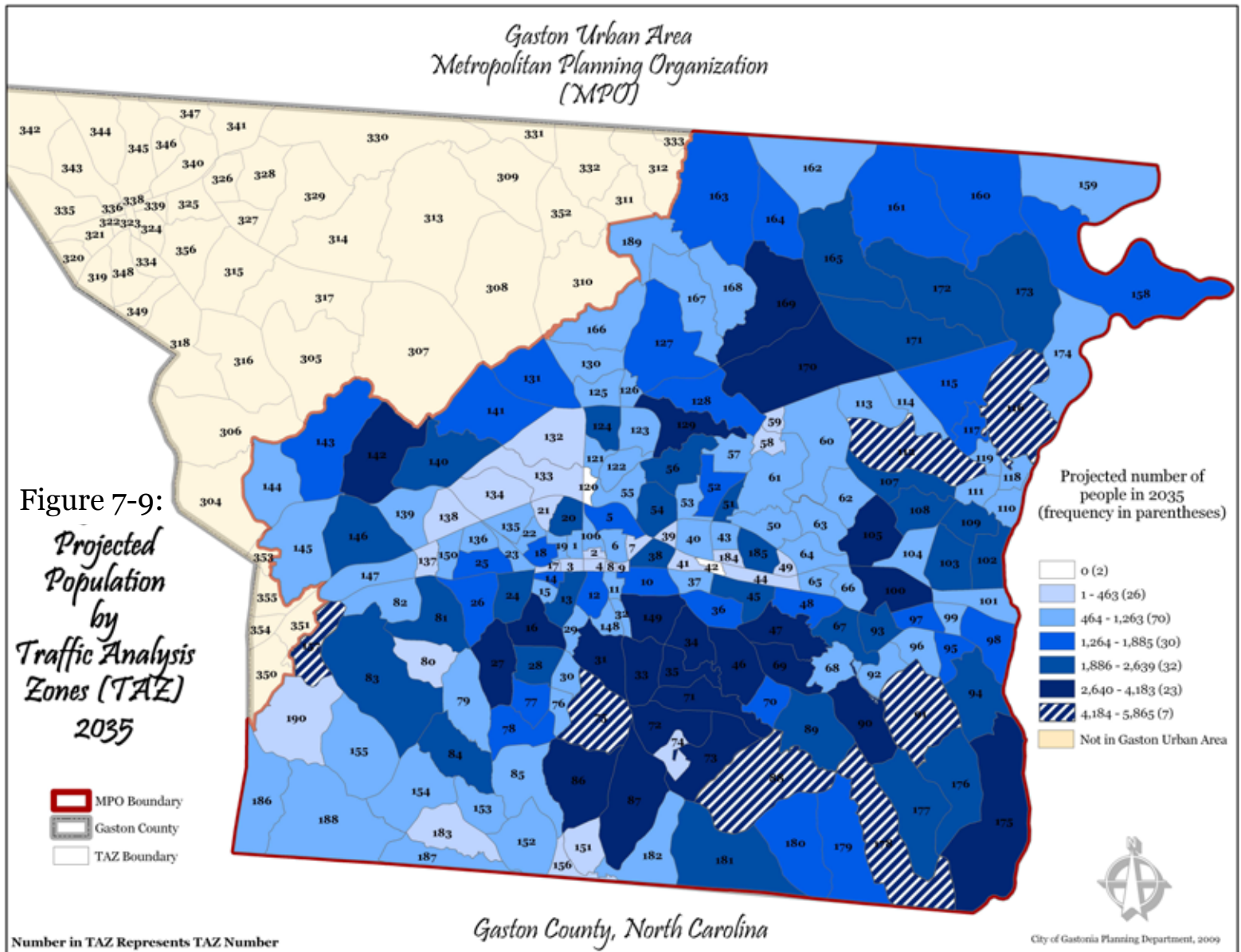


Figure 7-7:
*Projected
Population
by
Traffic Analysis
Zones (TAZ)
2015*







FUNDED THROUGH 2015

7.2 Programmed Transportation Projects

Figure 7-10: Projects Funded through 2015

Project ID	Facility Name	Description	Distance (Miles)	2015 Cost Estimates
U-3321	Garden Parkway	I85 to I 485/NC 160 near the Charlotte Douglas International Airport in Mecklenburg County	@20 (Mileage is from Gaston County Line to I-85)	\$928,300,000
I-5000	I-85/US 321 Interchange Improvements	Geometric Safety Improvements to Interchange	NA	\$21,047,408
C-4934	NC 279 (New Hope Road)	Widen existing four-lane road to a four-lane divided facility: Burtonwood Dr. to Garrison Blvd.	0.53	\$2,368,501
4	NC 279 (New Hope Road)	Widen existing four-lane road to a four-lane divided facility: Robinwood Rd. to Armstrong Park Rd.	0.65	\$6,252,296
U-5103	Titman/Cramerton Road	Widen existing two-lane roads to three-lane, and construct new three-lane connector from NC 279 (S. New Hope Rd.) to US 29/74 (Wilkinson Blvd.)	2.6	\$54,876,916

U-4705	Belmont-Mount Holly Northern Loop	Construct new, four-lane divided facility from NC 27 west of Mount Holly to NC 27 east of Mount Holly	4.0	\$72,025,953
35	Pedestrian Bridge across Catawba River	Pedestrian bridge across Catawba River	0.4	\$5,487,692
U-3405	NC 274 (Gastonia Highway / Bessemer City Highway)	Widen existing facility to five-lanes with curb and gutter from Maine Ave to NC 275	1.4	\$5,200,000
R-3107	NC 279	US 321 to Puetts Chapel Road	3.8	\$27,540,065
R-2720	NC 16 / 273 Connector	NC 273 to NC 16. Two lane connector with two foot paved shoulders on new location	0.7	\$3,461,467
U-3425	Myrtle School Road	Widen existing facility to multi-lanes from US 29/74 (Franklin Blvd.) to Hudson Blvd.	1.8	\$22,091,477
U-2523B	NC 279	Widen to multi-lanes from NC 7 to west of NC 275 in Dallas	3.6	\$15,478,105
U-3633	NC 273 (South Main Street)	Widen to multi-lanes south of Catawba Drive to Highland Street at Rankin Avenue	0.7	\$9,493,707
	Cox Road	Widen to 6 lanes with continuous right turn lane from I-85 to Cox Road	0.21	\$211,065



FUNDED THROUGH 2015

Figure 7-10: Projects Funded through 2015 (Cont'd)

Project ID	Facility Name	Description	Distance	2015 Cost Estimates
B-4517	Crowder's Creek Bridge No. 49	Replace Bridge	NA	\$1,287,720
B-4519	Little Long Creek Bridge No. 155	Replace Bridge	NA	\$363,825
B-4575	Mickley Avenue over Norfolk Southern Railroad. Replace Bridge No. 165	Replace Bridge	NA	\$4,080,591
B-4981	Hoyle's Creek Bridge No. 172	Replace Bridge	NA	\$1,590,023
B-4117	Replace Bridge No. 173	Replace Bridge	NA	\$1,792,665
B-4118	Stanley Creek Bridge No. 200	Replace Bridge	NA	\$949,253
B-4751	Stanley Creek Bridge No. 203	Replace Bridge	NA	\$1,212,750
B-4752	South Fork Catawba River Bridge No. 6	Replace Bridge	NA	\$6,063,750
B-4753	Duhart's Creek Bridge No. 15	Replace Bridge	NA	\$1,455,300
NA	Multi-modal Center	The Gastonia Multimodal Center is envisioned as a regional transportation hub and a catalyst for economic development. Existing transportation facilities are dispersed and need updating; Gastonia is also seeking activity generators for its downtown area.	NA	\$24,597,477

TJ-4935	Gaston	Provide operating assistance to counties and community transportation systems to meet work first and employment transportation needs	NA	\$139,650
TL-4935	Gaston	Provide operating assistance for additional transportation services to elderly and disabled	NA	\$727,650
TR-4935	Gaston	Provide maintenance assistance for community transportation systems to serve the rural general public	NA	\$529,200
TA-5106	Gastonia	Five New Ultra Low Sulphur Diesel Buses	NA	\$2,084,000
TA-4925	Gastonia	Expansion bus	NA	\$486,203
TG-4745	Gastonia	ADA service costs, preventative maintenance and routine capital items	NA	\$2,823,450



FUNDED THROUGH 2025

Figure 7-11: Projects Funded through 2025

Project ID	Facility Name	Description	Distance (Miles)	2025 Cost Estimates
NA	Commuter Rail	Commuter rail from Charlotte to the multi-modal center in downtown Gastonia	22	\$481,411,932
U-2713	Linwood Road	Widen existing facility to multi-lanes with some relocation from Crowder's Creek Rd. to US 29/74 (Franklin Blvd.)	2.2	\$27,923,908
I-5000	I-85/US 321 Interchange Improvements	Geometric Safety Improvements to Interchange	NA	\$20,200,000
U-3608	NC7, I-85 to US 29/74	Widen to five lanes (0.4) mile)	0.4	\$8,251,266
6	US 321 (York Road)	Widen four-lane facility to four-lane divided cross section from Hudson Blvd. to Beam Ave.	0.54	\$7,004,323
7	NC 279 (S. New Hope Road)	Widen existing two-lane road to four-lane divided from Titman Road to Union-New Hope Road	3.8	\$85,537,043
8	NC 274 (Union Road)	Widen the existing two-lane facility to five lanes and construct a new four-lane divided realignment from Robinson Rd. to Beaty Rd.	2.5	\$53,748,550
14	US 29/74 South Fork Catawba River Bridge No. 82	Widen existing four-lane bridge on Wilkinson Blvd to six-lanes, and widen existing four-lane cross section to six-lanes from Market St to Alberta St	1.2	\$68,324,608
17	US 29/74 Catawba River Bridge No. 159	Widen existing four-lane bridge to six-lanes, and widen existing four-lane cross section to six-lanes from NC 7 (Catawba St.) to the east bank of the Catawba River	0.13	\$77,510,613

18	Ratchford Road/US 321 Interchange	Construct Interchange between US 321 and Ratchford Road.	NA	\$30,760,457
37	Belmont Mt. Holly Loop Link	Construct segment between Belmont / Mt Holly northern and central loop (only if Gastonia Mt. Holly Connector is not built.	0.9	\$28,760,726
TJ-4935	Gaston	Provide operating assistance to counties and community transportation systems to meet work first and employment transportation needs	NA	\$154,745
TL-4935	Gaston	Provide operating assistance for additional transportation services to elderly and disabled	NA	\$806,303
TR-4935	Gaston	Provide maintenance assistance for community transportation systems to serve the rural general public	NA	\$586,402
TA-4925	Gastonia	Expansion bus	NA	\$651,558
TG-4745	Gastonia	ADA service costs, preventive maintenance and routine capital items	NA	\$3,128,641
TO-4712	Gastonia	Federal operating assistance and state maintenance	NA	\$8,928,670



FUNDED THROUGH 2035

Figure 7-12: Projects Funded through 2035

Project ID	Facility Name	Description	Distance (Miles)	2035 Cost Estimates
U-3321	Garden Parkway	I85 West of Gastonia to US 321 south of Gastonia	6	\$472,282,225
11b	Belmont-Mount Holly Central Loop	Construct new, four-lane divided facility from Wilkinson Blvd. to the proposed Gastonia-Mt. Holly Connector or to the Belmont Mt. Holly Loop Link if the Gastonia-MT. Holly Connector is not built.	4.34	\$259,584,992
16a	Lowell-Bethesda/Groves St. Connection	Provide direct connection between Lowell-Bethesda Rd. and the intersection with US 29/74 (Franklin Blvd.) and Groves St. The project will also include a grade-separated crossing of the Norfolk Southern Railroad.	0.08	\$43,739,485
16b	Lowell-Bethesda Road/Beaty Road	Widen two-lane to four-lane divided from Westover St. to NC 279 (S. New Hope Rd.)	2.3	\$76,133,598
24	Market Street	Add right turn lane on northbound Market St. to eastbound US 29/74 (Wilkinson Blvd.)	0.25	\$1,742,280
TJ-4935	Gaston	Provide operating assistance to counties and community transportation systems to meet work first and employment transportation needs	NA	\$252,063

TL-4935	Gaston	Provide operating assistance for additional transportation services to elderly and disabled	NA	\$1,313,382
TR-4935	Gaston	Provide maintenance assistance for community transportation systems to serve the rural general public	NA	\$955,187
TA-4925	Gastonia	Expansion bus	NA	\$1,061,319
TG-4745	Gastonia	ADA service costs, preventive maintenance and routine capital items	NA	\$5,096,227
TO-4712	Gastonia	Federal operating assistance and state maintenance	NA	\$14,543,862



UNFUNDED

Figure 7-13: Unfunded Projects

Project ID	Facility Name	Description	Distance (Miles)
10a	North Dallas Bypass East	From Ratchford Road/ US 321 Interchange to NC 279 (Lower Dallas Rd.)	6
R-2608	US 321 Bypass	Construct a new four-lane divided, controlled access facility from I-85 to US 321 (north of Dallas)	7.5
10b	North Dallas Bypass Central	From Ratchford Road/ US 321 Interchange to Gaston MPO boundary	0.67
11c	Belmont-Mount Holly Southern Loop	Construct new, four-lane divided facility from South Point Road to US 29/74 (Wilkinson Blvd)	4.75
12	Gastonia-Mt.Holly Connector	Construct new, four-lane divided facility from Cox Road to NC 27 (Catawba Avenue)	6.5
13	Lineberger Road	Construct four-lane divided facility including bridge over I-85 from US 29/74 (Franklin Blvd.) to the proposed Gastonia-Mt. Holly Connector.	0.95
15	Hudson Blvd. Extension	Hudson Boulevard Extension from Davis Park Road to Chapel Grove Road	1.16
16c	Lowell-Bethesda Road/Beaty Road	Widen two-lane to four-lane divided from NC 279 (S. New Hope Rd.) to NC 274 (Union Rd.)	3.7
19	Puetts Chapel Road Widening	Widen existing two-lane road to a three-lane facility from Maine Avenue to the proposed NC 274 Bypass.	0.9
20	US 29/74 (Franklin Blvd.) Westbound	Add an additional westbound through lane from Church Street to Cox Road	1.2

21	Oakland Street	Widen substandard two-lane road from Trade St. to Carr Rd. to provide standard lane width of 12 feet.	1.6
22	13th Street Railroad Underpass	Replace the 13th Street Norfolk Southern Railroad underpass to allow for safer and more efficient traffic flow.	0.1
23	Eight Avenue Railroad Underpass	Widen existing one-lane underpass bridge to a two-lane underpass bridge from Main Street to 500' past the railroad tracks.	0.1
25	Southridge Parkway North Extension	Extend Southridge Parkway (three-lane facility) north to NC 274 (at Crème Haven Dr.)	0.35
26	Spencer Mountain Road	Widen two-lane road to a three-lane cross section from NC 7 (Ozark Avenue) to Central Ave.	1.2
27	Stanley Southern Connector	Construct new, four-lane divided facility from NC 275 (Dallas-Stanley Highway) to NC 27 (Charles R. Jonas Highway)	1.8
28	NC 273 (South Point Road)	Widen existing two-lane road to a four-lane divided facility from Nixon Road to NC 273 (Lower Armstrong Rd.)	3.4
29	NC 274 Bypass	Construct new, three-lane minor thoroughfare facility from NC 274 (Bessemer City Highway) to Costner School Road.	0.7
30	Southridge Parkway West Extension	Construct a new, three-lane facility from Crowders Man. Rd. to Edgewood Rd.	1.68
32	Robinson Rd/321 Railroad Underpass	Railroad trestle underpass at the intersection of Robinson Road and US 321 (North Carolina - South Carolina Border)	0.1
34	Gaston Day School Road Extension	Construct new four lane divided highway from Kimmere Dr to NC 274 (Union Rd.)	2.8
38	Forbes Road Extension	New four lane divided highway connecting Forbes Rd to the North to Forbes Rd I the South	2.2
36	Union Rd	Niblick to Osceola - widen to add median	1



7.2.1 Highways

The Garden Parkway is a proposed four-lane controlled access freeway that will begin in Mecklenburg County as an extension of NC 160 (West Boulevard) near Charlotte-Douglas International Airport. It will proceed west, cross the Catawba River and reach Gaston County at a point north of the Duke Energy generating plant. From this point it will continue west, passing through the southern tier of the county. At US 321 South, it will turn to the north and end at Interstate 85. A continuation of the Garden Parkway is proposed for construction in later years from I-85 north to US 321 at a point just north of Cloninger Road. The continued segment north of I-85 will serve as a bypass to Interstate 85 and US 321.

7.2.2 Public Transportation Gastonia Multimodal Center

The Gastonia Multimodal Center is envisioned as a regional transportation hub and a catalyst for economic development. Existing transportation facilities are dispersed and need updating. Gastonia is also seeking activity generators for its downtown area that would compliment the multi-modal center.

Transportation functions to be housed at the Multimodal Center include the following:

- Local Bus (Gastonia Transit & Gaston County ACCESS)

- Regional Bus (CATS Express service)
- Intercity bus (Greyhound)
- Intercity rail (Amtrak)
- Taxi connections
- Bicycle / pedestrian connections
- Future commuter rail
- Future high-speed rail

Development opportunities directly related to transportation are limited, but other types of uses are complementary and are needed to encourage activity in and around the Multimodal Center. Possible options for complementary non-transportation uses include the following:

- Gaston College classes
- Post office
- Police substation
- Newsstand
- Visitors Center
- Employment center
- Rail training program

Potential Funding Sources

- Many facilities are funded with significant Federal dollars:
 - 80% Federal funding under FTA Section 5309 bus discretionary program
 - 20% matching requirement from state / local / private sources

- Contributions from facility tenants
 - Amtrak, Greyhound, local agencies
- Joint development opportunities
- ARRA funds administered through FTA

Street / driveway infrastructure & parking:	\$0.7 million
Bus staging area:	\$3.3 million
Rail track improvements:	\$0.9 million
Amtrak platform:	\$1.3 million
Station building:	\$4.3 million
Site utilities:	\$0.2 million
Site preparation and furnishings:	\$0.2 million
Real estate acquisition / relocation:	\$2.5 million
Contractor markups (overhead, fee, bonds):	\$2.9 million
Contingency (20%):	\$2.8 million
TOTAL:	\$19.1 million
Conceptual Range:	\$15.3 - \$26.7 million





Future Site of Multi-Modal Transportation Center

Development Potential

- Opportunities to catalyze development
- Opportunities for mixed use development
- Creates visible gateway to City of Gastonia
- Strong connection to downtown Gastonia
- Ability to phase implementation
- Viable “Phase 1” scenario

Urban Design

- Future expansion capability
- Adequate buildable area
- Site topography
- Impacts to adjacent businesses

Transportation

- Sufficient bus berthing area
- Intercity passenger rail access
- Future commuter rail access and storage
- Freight rail access
- Vehicular access
- Adequate parking
- Pedestrian / bicycle linkages

Future Development

- Future development supported solely by transportation is limited
 - No market analysis conducted in this study
- Vision is for transportation center that is integrated into a larger development project
 - Other market forces must justify associated development
 - Initial phase provides near-term transportation infrastructure; additional development occurs as market dictates



“Phase 1” Multi-Modal Transportation Center

P&N Corridor

The Piedmont and Northern (P&N) rail line has a long history as an important transportation corridor between Gastonia and Charlotte. Beginning nearly one hundred years ago, freight and passenger rail operations connected these cities and other communities along the way. Although the portion of the corridor between Gastonia and Mount Holly has been inactive for nearly twenty years, a renewed interest in rail has focused more attention on how the line could help to meet future freight and passenger mobility needs.

Efforts to re-establish the corridor in Gaston County for limited freight rail operation are ongoing, and local stakeholders are also interested in the possibility of commuter rail along the P&N line, connecting to track owned by CSX Transportation (CSX) between Mount Holly and Charlotte. The City of Gastonia commissioned this study to develop a conceptual assessment of the viability and potential costs of implementing commuter rail service on the former P&N corridor between Gastonia and Charlotte.



P&N Railroad Line with Concrete Plant in background (Gastonia, NC)



As a first step, it is important to identify the key factors that will impact the overall viability of the corridor for commuter rail service. Identifying likely hurdles to implementation, along with the magnitude of these obstacles, provides important perspective for a conceptual cost estimate. This assessment does not approach a full feasibility study, but is a “pre-feasibility” analysis that will help to identify major challenges and cost drivers for the project.

Because no significant planning or design work has been undertaken at this stage, the conceptual cost estimate is presented as a wide range, based on a series of caveats and assumptions. A more detailed feasibility study will be needed to generate a more precise range of potential costs; however, this initial assessment sets the stage for further planning.

Description of Corridor

The former P&N corridor stretches from near Broad Street in downtown Gastonia to the edge of uptown Charlotte near Bank of America Stadium. The approximately 22-mile corridor passes through Ranlo, Lowell, and Mount Holly en route to Charlotte. The rail line is entirely single track, with several industry sidings and yards along the actively-used Mecklenburg County portion.

The P&N line was built in 1911 as an electrified interurban freight and commuter railroad. After nearly



The former P&N corridor stretching from downtown Gastonia to Charlotte, to be used for limited freight operations and possibly future commuter rail

40 years, passenger interurban service ended in 1951. Freight operations continued, but following a decline in business, several portions of the corridor were proposed for abandonment by CSX. In 1991, the North Carolina Department of Transportation (NCDOT) purchased a portion of the railroad right-of-way from CSX and preserved the Gaston County portion of the P&N line as an inactive rail corridor for future transportation use pursuant to the Rail Corridor Preservation Act. NCDOT acquired an 11.6 mile segment between Gastonia and Mt. Holly and a three-mile spur line to Belmont (in Gaston County), along with Cedar Yard and the approximately one-mile Cedar Yard lead in uptown Charlotte (in Mecklenburg County).

which typically handles only a few trains each day, is treated as a secondary track by CSX between Mount Holly, Pinoka, and the end of CSX ownership west of the Cedar Yard. The alignment of this track is close to the former Seaboard Coast Line (SCL), which is now operated as a main line by CSX.

The former P&N line runs to the north of the Norfolk Southern (NS) main line, which provide a more direct connection between Gastonia and Charlotte. However, the NS main line is heavily used for freight operations, and is also used by Amtrak. Furthermore, this corridor has been designated for future high speed rail service.

The segments purchased by NCDOT have remained inactive, with the exception of the Cedar Yard Lead that has been converted to a greenway and is actively used for this purpose. The section between Mount Holly and the Cedar Yard Lead (9.9 miles) remains owned and operated by CSX, and is actively used for freight rail purposes by several industries along the route. This track



Due to the high levels of current and future rail traffic on the NS main line it is not viewed as a viable option for additional passenger operations between Gastonia and Charlotte. Therefore, the focus for commuter rail has shifted to examining opportunities on the former P&N line.

Previous and Current Activities on the Corridor

NCDOT recognized the potential of the P&N line when the agency decided to purchase and preserve the rail line in 1991. Though local discussion of potentially reestablishing passenger rail service of the P&N line has occurred, there has been little formal study. The Gastonia Rapid Transit Alternatives Study (2005) discussed possible use of the P&N corridor for high-capacity transit service. However, the analysis conducted was in the context of providing a connection from Gastonia to the end of the proposed Charlotte Area Transit System (CATS) West Corridor project near the Charlotte-Douglas International Airport, rather than a direct connection into uptown Charlotte.

The Gastonia Rapid Transit Alternatives Study also referred to some conceptual planning work by NCDOT to upgrade the Mecklenburg County portion of the corridor (owned by CSX) to enable shared passenger and freight use. However, NCDOT’s efforts in recent years related to the P&N line have focused strictly on the reactivation of freight service.

NCDOT is currently in the process of initiating a multi-phase upgrade to the former P&N line to restore limited freight service on the Gaston County portion of the alignment. The proposed improvements would enable freight service at speeds up to 25 mph. Initial efforts include the following types of projects:

- ⦿ Replacing / adding siding tracks and spurs;
- ⦿ Installing crossing protection lights and gates;
- ⦿ Repairing drainage structures;
- ⦿ Upgrading road crossings;
- ⦿ Ditching and rip rap;
- ⦿ Reducing superelevation; and
- ⦿ Miscellaneous track repairs such as ballast, surfacing, new crossties, and rail replacement.

A subsequent set of improvements, to be completed when warranted by rail traffic volumes, would include additional sidings and a small section of double track. Construction on the initial upgrades is currently scheduled to begin in Summer 2009, with operations commencing in Fall 2009. On the opposite end of the line near uptown Charlotte, the former P&N line now serves as a portion of the Wesley Heights / Stewart Creek Greenway. This paved walking and bicycling trail is quite popular, and provides connections for residents of the Wesley Heights community to nearby parks (including Seversville Park adjacent to the former rail alignment) and other attractions.



Wesley Heights Greenway in Charlotte

Overall Assessment of Potential Viability

From a design standpoint, the alignment is capable of handling passenger service with an acceptable travel time between Gastonia and Charlotte. The primary concern is the conflict in optimal superelevation rates between passenger and freight service. Additionally, the terminus area in uptown Charlotte presents design challenges to create a viable, passenger-friendly end-of-line station.

From a planning standpoint, the most significant challenges are the establishment of a shared use track agreement with CSX and neighborhood impacts in the Wesley Heights area west of uptown Charlotte. These obstacles must be addressed from the outset of the planning process to further assess project viability.

Estimated Cost Range

The spreadsheet shown on the following pages contains



the conceptual cost estimate for the project. A “low” and “high” unit cost is provided for each line item, reflecting the preliminary nature of this estimate. As planning and design work proceeds, this range will narrow to reflect the increasing level of certainty with regard to the project scope. The conceptual cost for the project is estimated in the range of \$265 million to \$335 million, shown in Figure 7-15.

Costs related to trackwork and vehicles represent two of the largest cost categories, but other elements also have significant costs. Several major project elements are largely unknown at this stage but could have a considerable impact on the overall project cost:

- Shared use agreement with CSX;
- Necessary upgrades to bridge structures, including bridge over the Catawba River;
- Rail connection with proposed North Corridor terminus in uptown Charlotte.

Though the range in the potential project cost is sizeable, it is indicative of the conceptual nature of this assessment that occurred without the benefit of any significant planning or design work. However, it is an order of magnitude estimate that will provide information for local leaders in their consideration of how to proceed.

Figure 7-15: P&N Estimated Cost Range

Cost Category	Low Cost Estimate (in millions)	High Cost Estimate (in millions)
Guideway & Track Elements	\$44.9	\$50.4
Stations	\$21.3	\$27.5
Maintenance Facility	\$18.9	25.1
Sitework & Special Conditions	\$11.8	\$19.4
Systems	\$33.1	\$37.9
Right of Way/ RR Agreements	\$39.0	\$52.5
Vehicles	\$39.4	\$44.0
Professional Services	\$34.7	\$48.8
Unallocated Contingency	\$20.4	\$25.6
Finance Charges	\$1.6	\$4.0
TOTAL	\$265	\$335.2



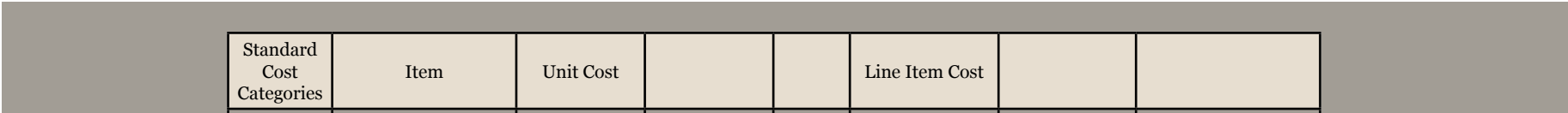
Figure 7-16: P&N Rail Line Restoration Estimated Costs

Standard Cost Categories	Item	Unit Cost		UNIT	Line Item Cost		
		LOW	HIGH		QTY	LOW	HIGH
10	<i>Guideway and Track Elements</i>						
	Track Construction (mainline)	\$230	\$250	TF	120,528	\$27,721,440	\$30,132,000
	Earthwork	\$20	\$30	CY	0	\$0	\$0
	Retaining Walls	\$500	\$750	LF	0	\$0	\$0
	Grade Crossings (2-lane)	\$220,000	\$250,000	EA	38	\$8,360,000	\$9,500,000
	Grade Crossings (4-lane)	\$400,000	\$600,000	EA	1	\$400,000	\$600,000
	Grade Crossings (Private / Trails)	\$50,000	\$100,000	EA	5	\$250,000	\$500,000
	Grade Crossings (Separated)	\$50,000	\$100,000	EA	13	\$650,000	\$1,300,000
	Contingency	20%	20%	LS	1	\$7,476,288	\$8,406,400
	Subtotal					\$44,857,728	\$50,438,400
20	<i>Stations, Stops, Terminals, Inter-modal</i>						
	Parking & Assoc. Site Improvements	\$2,000,000	\$2,500,000	EA	4	\$8,000,000	\$10,000,000
	Platform & Portals	\$1,500,000	\$2,000,000	EA	4	\$6,000,000	\$8,000,000
	Connect to CATS terminal	\$3,000,000	\$4,000,000	EA	1	\$3,000,000	\$4,000,000
	Contingency	25%	25%	LS	1	\$4,250,000	\$5,500,000
	Subtotal					\$21,250,000	\$27,500,000



Standard Cost Categories	Item	Unit Cost		UNIT	Line Item Cost		
		LOW	HIGH		QTY	LOW	
30	<i>Support Facilities</i>						
	Track Construction (yard tracks)	\$200	\$225	TF	2,650	\$530,000	\$596,250
	Turnouts	\$100,000	\$150,000	EA	2	\$200,000	\$300,000
	Admin, Maint.& Inspection Bldgs.	\$15,000,000	\$20,000,000	EA	1	\$15,000,000	\$20,000,000
	Contingency	20%	20%	LS	1	\$3,146,000	\$4,179,250
	Subtotal					\$18,876,000	\$25,075,500
40	<i>Sitework and Special Conditions</i>						
	Utility Relocations	4.0%	5%	LS	1	\$2,804,458	\$4,246,413
	Drainage / Erosion Control	4.0%	5%	LS	1	\$2,804,458	\$4,246,413
	Environmental Mitigation	4.0%	5%	LS	1	\$2,804,458	\$4,246,413
	Landscaping	1%	2%	LS	1	\$701,114	\$1,698,565
	Fencing	1%	2%	LS	1	\$701,114	\$1,698,565
	Contingency	20%	20%	LS	1	\$1,963,120	\$3,227,274
	Subtotal					\$11,778,722	\$19,363,641
50	<i>Systems</i>						
	Train Control and Signaling	\$11,800,000	\$13,200,000	LS	1	\$11,800,000	\$13,200,000
	Traffic Signaling	\$1,200,000	\$1,400,000	LS	1	\$1,200,000	\$1,400,000
	Crossing Protection	\$300,000	\$350,000	EA	39	\$11,700,000	\$13,650,000
	Communication Systems	\$620,000	\$690,000	LS	1	\$620,000	\$690,000
	Safety and Security	\$600,000	\$670,000	LS	2	\$1,200,000	\$1,340,000
	Fare Collections System and Equip.	\$1,100,000	\$1,300,000	LS	1	\$1,100,000	\$1,300,000
	Contingency	20%	20%	LS	1	\$5,524,000	\$6,316,000
	Subtotal					\$33,144,000	\$37,896,000





Standard Cost Categories	Item	Unit Cost		Line Item Cost			
		LOW	HIGH	UNIT	QTY	LOW	HIGH
60	<i>Right of Way, Land, Exist. Improve.</i>						
	Right of Way (main track)	\$50,000	\$100,000	AC	0	\$0	\$0
	Right of Way (stations & facilities)	\$2,000,000	\$3,000,000	LS	1	\$2,000,000	\$3,000,000
	RR Licensing Agreement (CSX)	\$20,000,000	\$25,000,000	LS	1	\$20,000,000	\$25,000,000
	Relocations - Residential	\$200,000	\$400,000	EA	4	\$800,000	\$1,600,000
	Relocations - Commercial	\$200,000	\$400,000	EA	1	\$200,000	\$400,000
	Relocations - Industrial	\$3,000,000	\$5,000,000	EA	1	\$3,000,000	\$5,000,000
	Contingency	50%	50%	LS	1	\$13,000,000	\$17,500,000
	Subtotal					\$39,000,000	\$52,500,000
70	<i>Vehicles</i>						
	Locomotives	\$3,200,000	\$3,500,000	EA	5	\$16,000,000	\$17,500,000
	Coaches	\$2,200,000	\$2,500,000	EA	9	\$19,800,000	\$22,500,000
	Contingency	10%	10%	LS	1	\$3,580,000	\$4,000,000
	Subtotal					\$39,380,000	\$44,000,000
80	<i>Professional Services</i>						
	Preliminary Engineering	3.0%	3.5%	LS	1	\$5,080,411	\$7,267,562
	Final Design	6.0%	6.5%	LS	1	\$10,160,822	\$13,496,900
	Project Management	2.7%	3.0%	LS	1	\$4,572,370	\$6,229,339
	Construction Admin & Management	3.0%	3.5%	LS	1	\$5,080,411	\$7,267,562
	Insurance	2.7%	3.0%	LS	1	\$4,572,370	\$6,229,339
	Legal	1.0%	1.2%	LS	1	\$1,693,470	\$2,491,735
	Surveys, Testing & Inspection	0.4%	0.6%	LS	1	\$677,388	\$1,245,868
	Mobilization / Force Account	0.7%	0.9%	LS	1	\$1,185,429	\$1,868,802
	Start up	1.0%	1.3%	LS	1	\$1,693,470	\$2,699,380
	Subtotal					\$34,716,144	\$48,796,485



Standard Cost Categories	Item	Unit Cost		Line Item Cost			
		LOW	HIGH	UNIT	QUANTITY	LOW	HIGH
90	<i>Unallocated Contingency</i>	10.0%	10.0%	LS	1	\$20,406,319	\$25,644,110
	Subtotal					\$20,406,319	\$25,644,110
100	<i>Finance Charges</i>						
	Finance Charges	0.5%	1.0%	LS	1	\$1,317,045	\$3,312,141
	Contingency	20%	20%	LS	1	\$263,409	\$662,428
	Subtotal					\$1,580,453	\$3,974,570
	TOTAL ESTIMATE COST					\$264,989,365	\$335,188,706





7.2.3 Bicycle Facilities

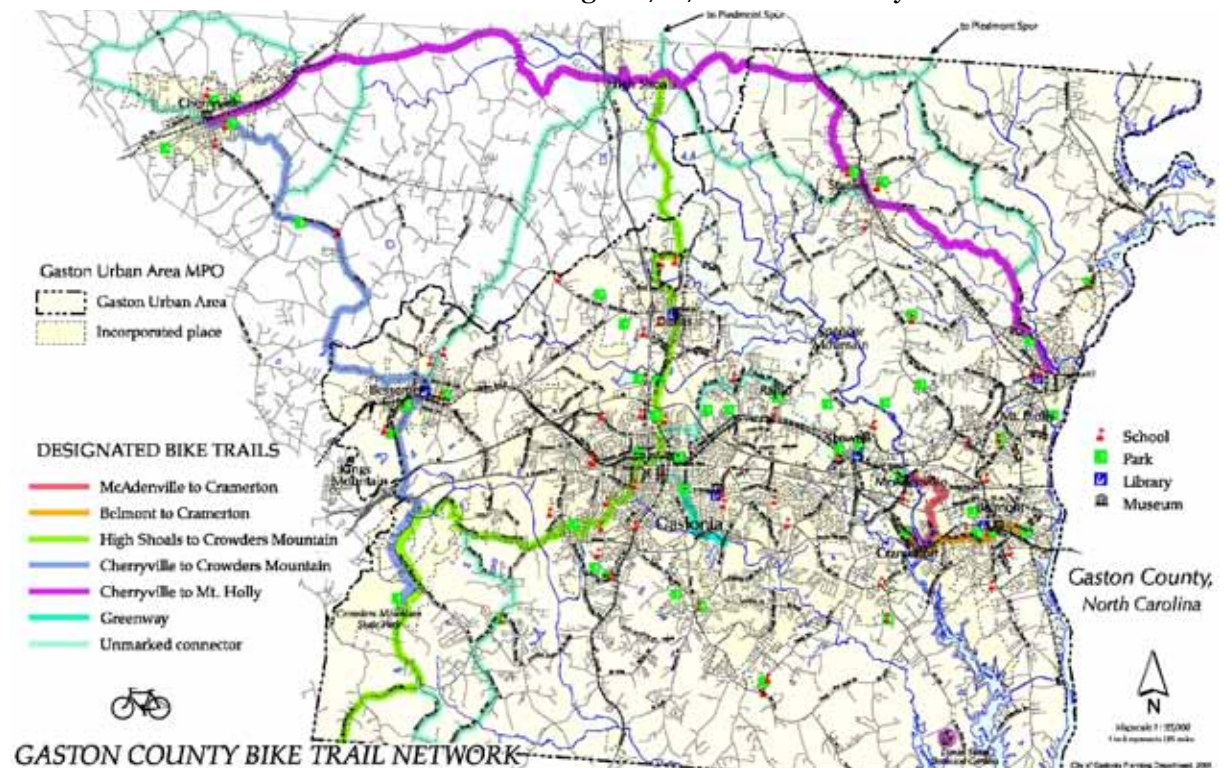
Making transportation corridors truly multi-modal is a priority for the Gaston MPO. The best, if not the only way, to reduce automobile trips is to make other modes more viable. In an effort to educate the citizens of Gaston County about roads most appropriate for bicycling, the Gaston MPO has worked with the NCDOT Bicycle and Pedestrian Division to create a map of recommended bicycle routes in the urban area. The goal was to identify and sign routes on streets that would be safe for the average rider, while providing a connection between popular local attractions. MPO staff compiled many route options and received input from an interested citizens group. The result was the adoption of the Gaston County Bike Route Network at the September 2001 TAC meeting. A professional cartographer developed a Gaston County Bicycle Route Map in 2003. MPO staff continues to work with the NCDOT Bicycle and Pedestrian Division to mark these routes with signage. A map of these routes is included as Figure 7-17.

To further make the transportation network safe for bicyclists, it has been the policy of MPO staff and municipalities in the MPO area to encourage NCDOT engineers to design roads with lanes wide enough to accommodate bicyclists; there has been some recent success in this regard. In conjunction with recent widening or resurfacing, the City of Gastonia has requested that NCDOT make bicycling a safer option

by striping the road to allow an extra foot on each outside lane. These streets are then marked with “Share the Road” signs, making motorists aware that this facility is designed to accommodate both automobiles and bicycles. Additionally, the MPO installed 24 bike racks throughout Gaston County in 2005. The TCC

developed a location listing, NCDOT provided the funds, and a contractor installed the bike racks. Bike racks will enhance public use for bicycles by providing safe lockable racks to ensure safety for bicycles.

Figure 7-17: Gaston County Bike Trail Networks





Finally, the Greenway system in the Gaston MPO area further enhances the mobility of bicyclists, making it possible for users of this mode to travel outside of their automobiles. In general, such facilities can accommodate people wanting to make a quick trip to the store by bicycle or even to and from their jobs. Because of the greenway's connectivity to community attractions such as Lineberger Park, the Schiele Museum and the library, bicycling has become a viable mode of transportation for certain trips. With future expansion of the greenway system, the possibility of making this mode of transportation a more viable option will increase.

While the accomplishments outlined above greatly improve the ability of citizens to bicycle in our community, there remains work to be done. Connect Gaston, a Gastonia citizen based organization, made the following recommendations regarding bicycle facilities in the City of Gastonia:

- Implementing a series of neighborhood meetings to design appropriate daylight hour parking regulations and traffic re-striping to create a citywide grid of bicycle-safe streets, which connect significant cultural, educational, recreational and civic points within Gastonia.
- Developing city-wide guidelines and regulations to mark safe bike lanes in every public parking facility.

- Creating regulations to ensure adequate lockable bicycle storage racks at all malls, schools, clinics, apartment complexes, and public offices.
- Creating a group of school, city and county officials to ensure adequate bicycle awareness safety training is incorporated into school programs, drivers' training courses, and parental information leaflets.

7.2.4 Pedestrian Facilities

In our auto-centered society, citizens frequently consider only one modal option, the private automobile, to carry them to and from their destinations. Most trips, however, no matter the mode, begin and end with a walking trip. Whether it is on either end of an automobile trip, or to and from a transit stop, it is imperative that pedestrians are accommodated with safe, accessible pathways. As transportation professionals, we also endorse this concept in the hope that improved pedestrian facilities will relieve the burden on congested roads by encouraging alternate forms of transportation. To this end, several cities within the Gaston Urban Area have implemented sidewalk policies for inclusion with new development. The municipalities that require sidewalks as a part of their subdivision regulations are listed below.

- The City of Bessemer City, City of Gastonia and Gaston County have adopted a version of the Unified Development Ordinance (UDO) which

states:

A. Sidewalks shall be a minimum of five (5) feet in width along major and minor thoroughfares and four (4) feet in width along other streets. Notwithstanding, in no case shall a sidewalk be required along a publicly maintained alley. Sidewalks shall otherwise be placed and constructed in accordance with specifications on file with the Administrator.

B. Residential Subdivisions (except as otherwise required in TNDs, PRDs PUDs, and Infill Residential developments):

1. Sidewalks shall be constructed on both sides of existing major or minor thoroughfare streets and extensions thereof.

2. Except along cul-de-sacs, sidewalks shall be placed on both sides of all local subdivision streets. As used herein, the term "local subdivision street" shall mean any subdivision street other than a thoroughfare. Where a subdivision abuts an existing street (other than a thoroughfare), a sidewalk shall be provided where the





subdivision abuts said street.

3. Sidewalks shall not be required along cul-de-sac streets that are less than two hundred fifty (250) feet in length. For cul-de-sac streets that are greater than 250 feet in length, sidewalks along the “bulb” of the cul-de-sac may be waived by the plat approval body (without necessitating the issuance of a plat variation) upon determination that such waiver would increase the aesthetics of the subdivision and that there are practical difficulties and unnecessary hardships in placing the sidewalks along the bulb.

4. All sidewalks in subdivisions shall be installed within two years of final plat approval unless a fee in lieu is paid per Section 13.17 of this Ordinance.

C. Traditional Neighborhood Developments (TND) - Sidewalks shall be required on all streets within a TND. Given that TNDs have unique design elements and building relationships, the Administrator shall have the authority to otherwise modify the sidewalk requirements in order to achieve a better layout and design and to support pedestrian activity and access throughout the TND.

Additional development standards for TNDs are found in Section 8.1.13.

D. Planned Residential Developments (PRD) - Sidewalks shall be required in all PRDs. Sidewalk requirements within a PRD shall be as any other subdivision, unless more restrictive provisions are found in Section 8.1.11.

E. Planned Unit Developments (PUD) - Sidewalks within the various residential and non-residential components of the PUD shall be provided in accordance with the standards contained herein for residential subdivisions, multi-tenant developments and other developments.

F. Unified Developments - Within all unified developments, a pedestrian circulation system shall be required. Such system shall provide for the movement of pedestrians within the development and provide for connections to adjacent developments. The pedestrian system should include facilities to encourage bicycle use and transit use.

1. Non-residential Unified developments. Within non-residential unified developments, including but not limited to, office parks

and commercial centers, a five (5) foot wide sidewalk shall be constructed on one side of major stem streets and circumferential and radial connectors as needed to safely move pedestrians throughout the site and to connect pedestrians to adjoining public streets. The provisions for internal sidewalks shall apply to both public and private streets and are in addition to the requirements for sidewalks along adjacent public streets.

2. Residential Unified Developments. Within residential unified developments, including but not limited to, apartment, townhome, and other attached housing projects, a 5’ wide sidewalk shall be constructed on at least one side of internal streets, irrespective of whether the street is public or private. Sidewalks shall be located internally where needed to provide access from residential dwelling units to parking areas, amenity areas, and adjoining destination land uses.

Unified developments within any zoning district which primarily serve industrial-type uses (e.g. warehousing, distribution centers, contractors’ operations centers, welding shops, or machine shops), which generate little or no pedestrian traffic, may be exempt from the





internal sidewalk requirements of this section.

Other municipalities are considering the UDO, but currently have not adopted at this time. Their current regulations are listed below:

- ⦿ The City of Belmont requires 5 feet- wide sidewalks on both sides of residential streets and 8 feet- wide sidewalks on all non-residential streets or in front of non-residential developments. All sidewalks must be placed behind a planting strip that varies from 6'-10' between the curb and sidewalk.
- ⦿ The Town of Cramerton ordinance follows North Carolina Department of Transportation standards for sidewalk construction. It also includes that, "Office Parks, Business Parks, and industrial Parks, Shopping Centers: Sidewalks shall be required on both sides of existing major or minor thoroughfares and extensions thereof. Sidewalks shall be required on one side of major or minor thoroughfare where the street will not function, at the time the subdivision is approved, as a major or minor thoroughfare because of its lack of continuity."
- ⦿ The City of Lowell requires sidewalks for any new development according to the Urban Standards Overlay (USO).
- ⦿ The City of Mount Holly subdivision ordinance requires sidewalks on both sides of the street for

residential streets and both sides of the street for collector streets. The ordinance also requires sidewalks along the frontage of a minor or major thoroughfare. Commercial and industrial streets require sidewalks on both sides of the street.

- ⦿ The Town of Stanley subdivision ordinance allows the Planning Board or Town Board to determine the necessity of building sidewalks in subdivisions. They may be required on either or on both sides of the street "in order to promote the free flow of vehicular traffic and to provide safety to pedestrians".

In order to increase pedestrian accessibility through established neighborhoods and shopping areas, some municipalities have adopted a schedule of improvements to add sidewalks where they did not previously exist.

7.2.5 Greenway Facilities

While some feel that greenways are purely recreational features, local transportation planners believe that they can serve a transportation purpose as well. As congestion of our roads continues, along with skyrocketing construction costs and an inability for further thoroughfare widenings, staff recognizes the need to pull as many vehicles as possible from the road system. Greenways can accomplish this goal, while at the same time protecting watersheds and providing natural

recreational opportunities in urban areas.

A new development for the Gaston MPO and the local municipalities is participating in the development of the Carolina Thread Trail (CTT). The Carolina Thread Trail is a regional trail network that will eventually reach 15 counties and over 2 million people. More than a hiking trail, more than a bike path, the Carolina Thread Trail will preserve our natural areas and will be a place for exploration of nature, culture, science and history. While not every local trail will be part of the Carolina Thread Trail system, it will link the regionally significant trails and many regional attractions. Think of it as a "green interstate system" of major trails and conservation lands created by connecting smaller trail systems throughout the region.

The City of Gastonia received funding from the AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009 (ARRA) for the Marietta Street Bridge Improvement project which includes a Downtown Gastonia Carolina Thread Trail Bicycle/Pedestrian connector. The proposed improvements for the project include:

- ⦿ Project begins at the Highland Rail Trail trailhead (@Broad St. and Long Ave.) and widen existing 5' concrete sidewalk to 10' to the northeast corner of Long Ave. and Marietta St., including street light relocations as needed.
- ⦿ Pedestrian crossing enhancements at the intersection of Long Ave. and Marietta St.- 4-way





- crosswalks.
- Retrofit of west side Marietta St. RR Bridge for enhanced 10' minimum pedestrian walkway (4-lane roadway reduced to 3 lane roadway, pedestrian lighting, planters, decorative fence/railings, etc.).
- Enhance Marietta Street and sidewalk from overpass to Franklin Blvd. according to concept plans prepared (pavement pattern, four lane to three-lane, enhanced sidewalk, etc.).
- Pedestrian crossing enhancements to intersections at Marietta St. and Franklin Blvd. and at Marietta St. and Main St.- 4-way crosswalks.
- Pedestrian crossing enhancements to intersection of South St. and Franklin Blvd.- 4 way crosswalks (this intersection was added because the preferred point for Carolina Thread Trail crossing of Franklin is at South).

Rankin Lake Park and the trails that will be developed as part of that park development; likewise, this trail will provide an important connection to the proposed Carolina Thread Trail.



In addition to the project listed above the City of Gastonia received a design grant from the first Carolina Thread Trail Implementation grant. This grant, coupled with City funds, will be used to expand the City of Gastonia's greenway system. The design will include a segment of the Carolina Thread trail from Rankin Lake Rd to Long Creek (~.52 miles). This segment is known as the "Highland Branch Trail", which is a continuation of the Highland Rail Trail. This will also include design for a trail west along the Long Creek corridor, passing under Highway 321 and connecting to Rankin Lake Park and to the planned trail going around the lake. This greenway will provide an important connection to



Chapter 8 Transportation Plan Components

8.0

TRANSPORTATION PLAN COMPONENTS

8.1 Bicycle plan

Making transportation corridors truly multi-modal is a priority for the City of Gastonia. The best, if not the only way, to reduce automobile trips is to make other modes more viable. Bicycling is an alternative mode of travel. In an effort to educate the citizens of Gastonia and Gaston County about roads most appropriate for bicycling, the Gaston MPO collaborated with the NCDOT Bicycle and Pedestrian Division to create a map of recommended bicycle routes in the urban area. The goal was to identify and sign routes on streets that would be safe for the average rider, while providing a connection between popular local attractions. This Gaston County Bike Route Network was adopted in September of 2001. Gaston County Bicycle Route Maps are available to the public, and the MPO continues to work with the NCDOT Bicycle and Pedestrian Division to mark these routes with signage.

To further make the transportation network safer for bicyclists, it has been the policy of MPO to encourage NCDOT engineers to design roads with lanes wide enough to accommodate bicyclists, which has been

successful on all state roads undergoing improvements. The City of Gastonia requested that NCDOT make bicycling a safer option by striping the road to allow an extra foot on each outside lane. These streets are then marked with “Share the Road” signs, making motorists aware that this facility is designed to accommodate both automobiles and bicycles.

Encouraging bicycles as an alternate mode of transportation creates the need for more bike racks. In 2004, the MPO installed 24 bike racks to enhance public use of bicycles and to provide safe, lockable racks that deter theft of bicycles. Locations in Gastonia include the Erwin Center, Ferguson Park, Phillip’s Park, City Hall, Linwood Park and Hunter Huss High School.



Kevin Millwood Park in Bessemer City

Finally, the completion of the Avon and Catawba Creek Greenway further enhances the mobility of bicyclists, making it possible for users of this mode to travel outside of their automobiles. In general, such facilities can accommodate people wanting to make a quick trip to the store by bicycle or even to and from their jobs. Because of the greenway’s connectivity to community attractions such as Lineberger Park, bicycling has become a viable mode of transportation for certain trips. With future expansion of the greenway system, the possibility of making this mode of transportation a more viable option will increase.

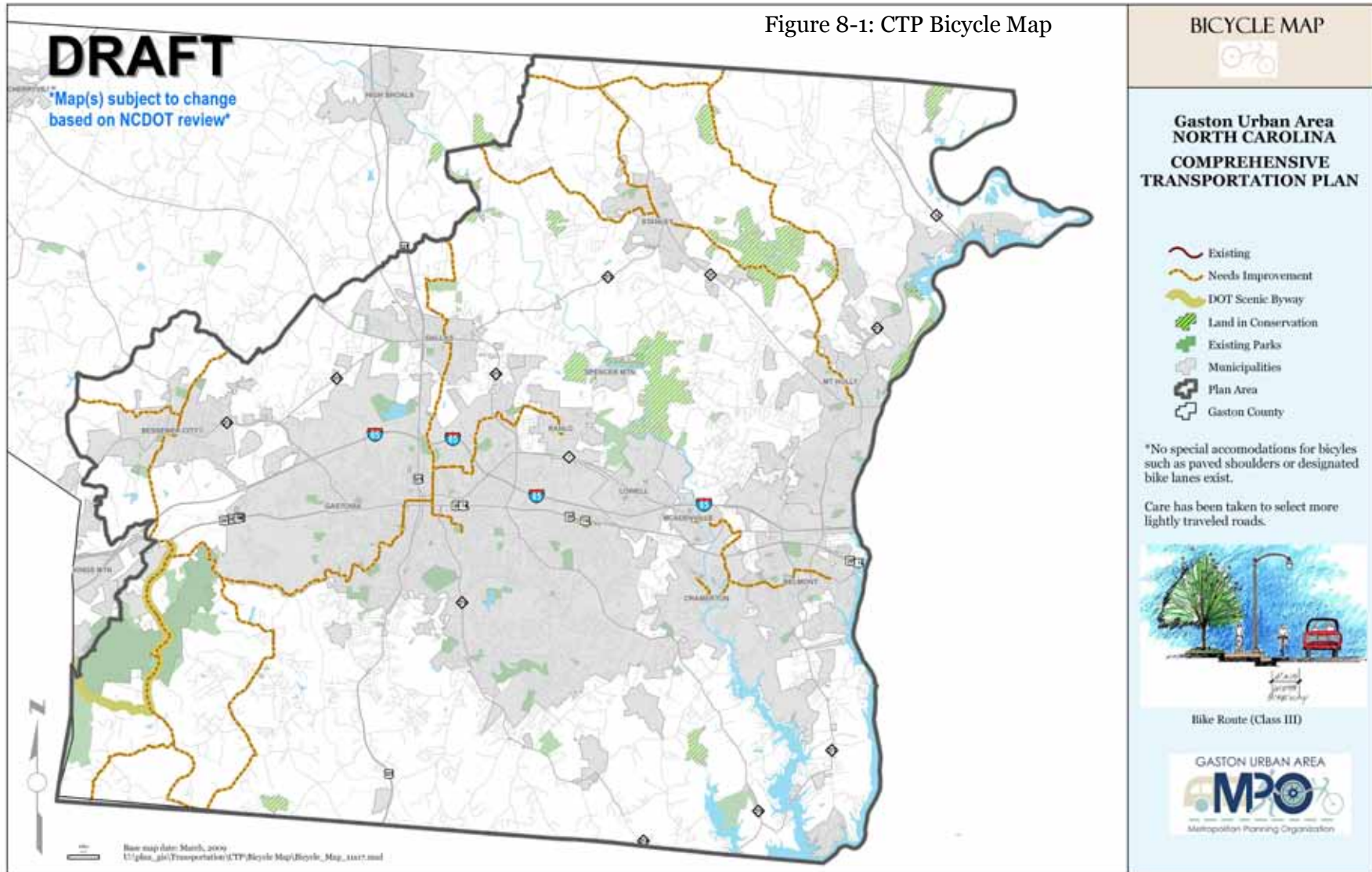
These accomplishments greatly improve the ability of citizens to bicycle in our community. The City of Gastonia should adopt the following recommendations of Connect Gaston:

- Implement a series of neighborhood meetings to design appropriate daylight hour parking regulations and traffic re-striping to create a city-wide grid of bicycle-safe streets, which connect significant cultural, educational, recreational and civic points within Gastonia.
- Develop city-wide guidelines and regulations to mark safe bike lanes in every public parking facility.
- Re-mark traffic lanes with a 2 foot wide edge of pavement lines on the Freedom Mill-Linwood Road-Neal Hawkins-Robinson Road-New Hope





Figure 8-1: CTP Bicycle Map





Road route; on the Gardner Park-Armstrong Park-Garrison Boulevard to Union Road route on Union Road; on the Redbud connector; and on New Hope Road from the Stowe Botanical Garden to NC 7.

- Create regulations to ensure adequate lockable bicycle storage racks at all malls, schools, clinics, apartment complexes, and public offices.
- Create a group of school, city and county officials to ensure adequate bicycle awareness safety training is incorporated into school programs, drivers' training courses, and parental information leaflets.

8.2 PEDESTRIAN PLAN

See Figure 8-2.

8.3 GREENWAY PLAN

A greenway trail system provides an alternate mode of transportation for citizens, which in turn reduces the number of vehicle trips for short distances and increases pedestrian safety. According to a 1990 National Personal Transportation Survey, more

than half of all commuter trips and three out of four shopping trips are less than five miles in length (ideal for bicycling), with forty percent of all trips being less than two miles.

December 1, 2001 marked the ribbon cutting and official opening of the City of Gastonia's inaugural greenway project. The City of Gastonia, Connect Gaston, Inc., the Clean Water Management Trust Fund, NCDOT (TEA-21 Transportation Enhancement Program), NCDENR, several local community foundations and numerous private citizens volunteered their time, and contributed cash, land, and other resources to this community project. The 2 1/2 mile greenway trail, which begins in Lineberger Park, travels within the floodplain of Avon and Catawba Creeks, and ends at the Southeast Recreation Center on Robinwood Road. The ten foot wide asphalt trail crosses the creeks several times and is surrounded by a ten to thirty foot vegetated buffer. The Avon/Catawba Creek Greenway provides many benefits to the community including recreation, wellness and rehabilitation, an improved environment, and an alternate mode of transportation.

Greenway Priorities

There are several major priorities that the city should pursue with respect to the short term development of a greenway system:

1. Expand the Avon/Catawba Greenway system

with connection to and through Ferguson Park to Marietta Street. Study feasibility of extended connection to the Historic Loray Mill Neighborhood. Expand the Greenway southward to connect to and through the city property at former Catawba Creek Wastewater Treatment Plant site. Part of this is now being constructed as part of a shopping center development.

2. Interconnect Phillips Park with All America Park to the north and Davis Park to the south. This is described in further detail in the Phillips Park section.

3. Interconnect Rankin Lake Park with Gaston County Park at Dallas and Gaston College. Consider connection down Long Creek to the proposed abandoned C&NW Line and consider joint action with the Town of Dallas and Gaston County to build a rail trail along this line to connect downtown Gastonia to the Historic Dallas Square.

4. Other strategic opportunities for greenway development as they present themselves.

This plan recommends two capital phases for greenway construction through 2020:

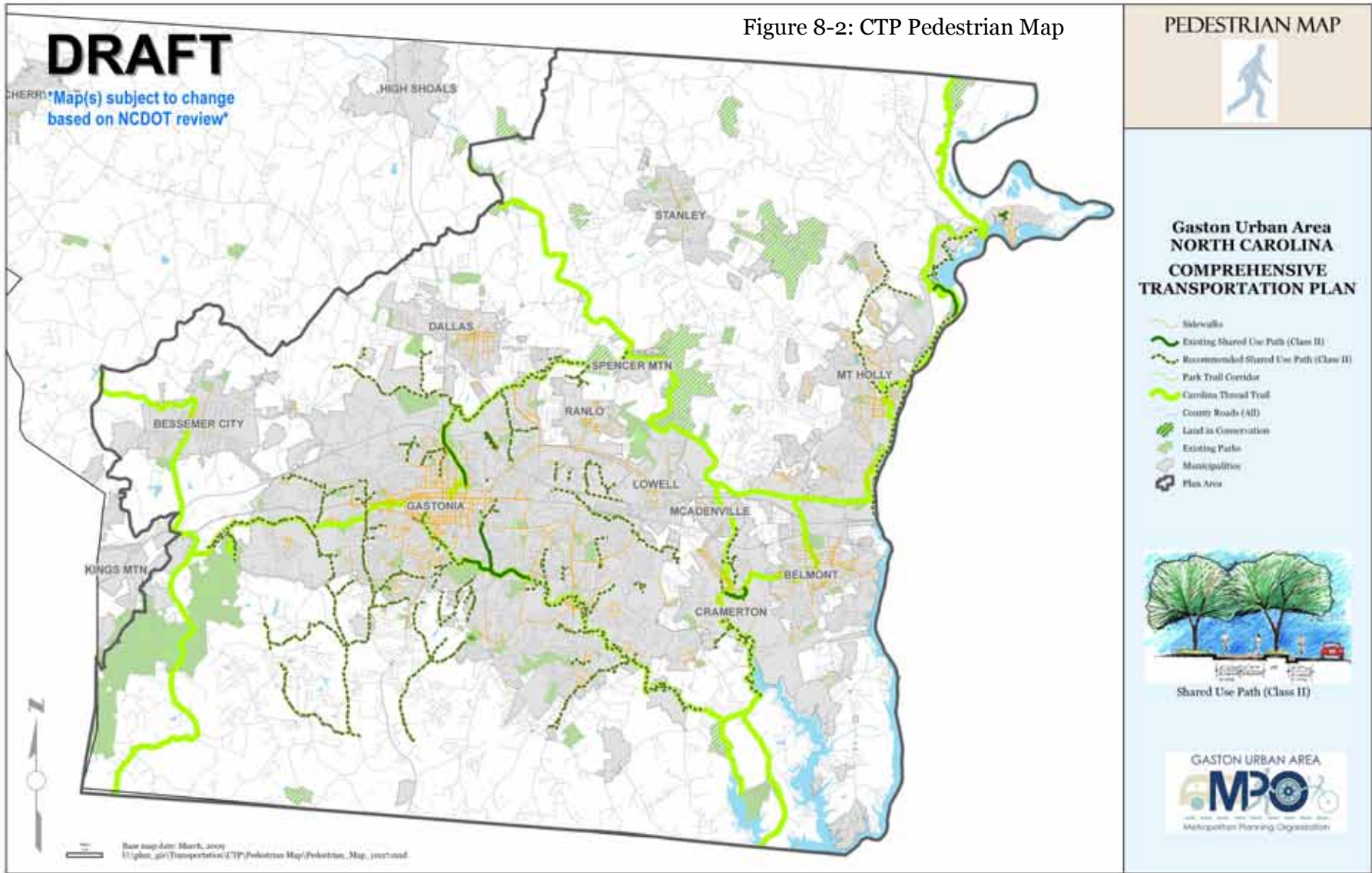
Phase I – 8-12 miles \$3,500,000

Phase II-7-10 miles \$3,500,000





Figure 8-2: CTP Pedestrian Map





The city should strategically seek to leverage its own public resources with funding from public grant agencies, private foundations, and private donations. Greenways are a popular funding target for several public and some private funding programs.

In other words, greenways are hot items when it comes to grants!

Extensions of the Avon and Catawba Creek Greenway will continue the trail underneath Union Road and provide a connection from Niblick Dr. to Stevens Street, skirting the edge of the Municipal Golf Course. The trail will then continue west along Stevens Street to connect down to Ferguson Park. This main trail extension will provide a paved greenway access point for the Elmwood and Creekside neighborhoods and for the many multi-tenant developments on the west side of Union Road.

Since the opening of the Avon and the Catawba Creek Greenway, the City of Gastonia has been heavily focused on applying for funding to extend this heavily used and well-accepted recreational feature. This project has been such a success that greenways are in demand in other parts of the City. Through a recent railroad abandonment, the City of Gastonia has had the opportunity to construct its first rail-trail project. Like the Avon and Catawba Creek Greenway, this trail begins in the Center City, but traverses north through

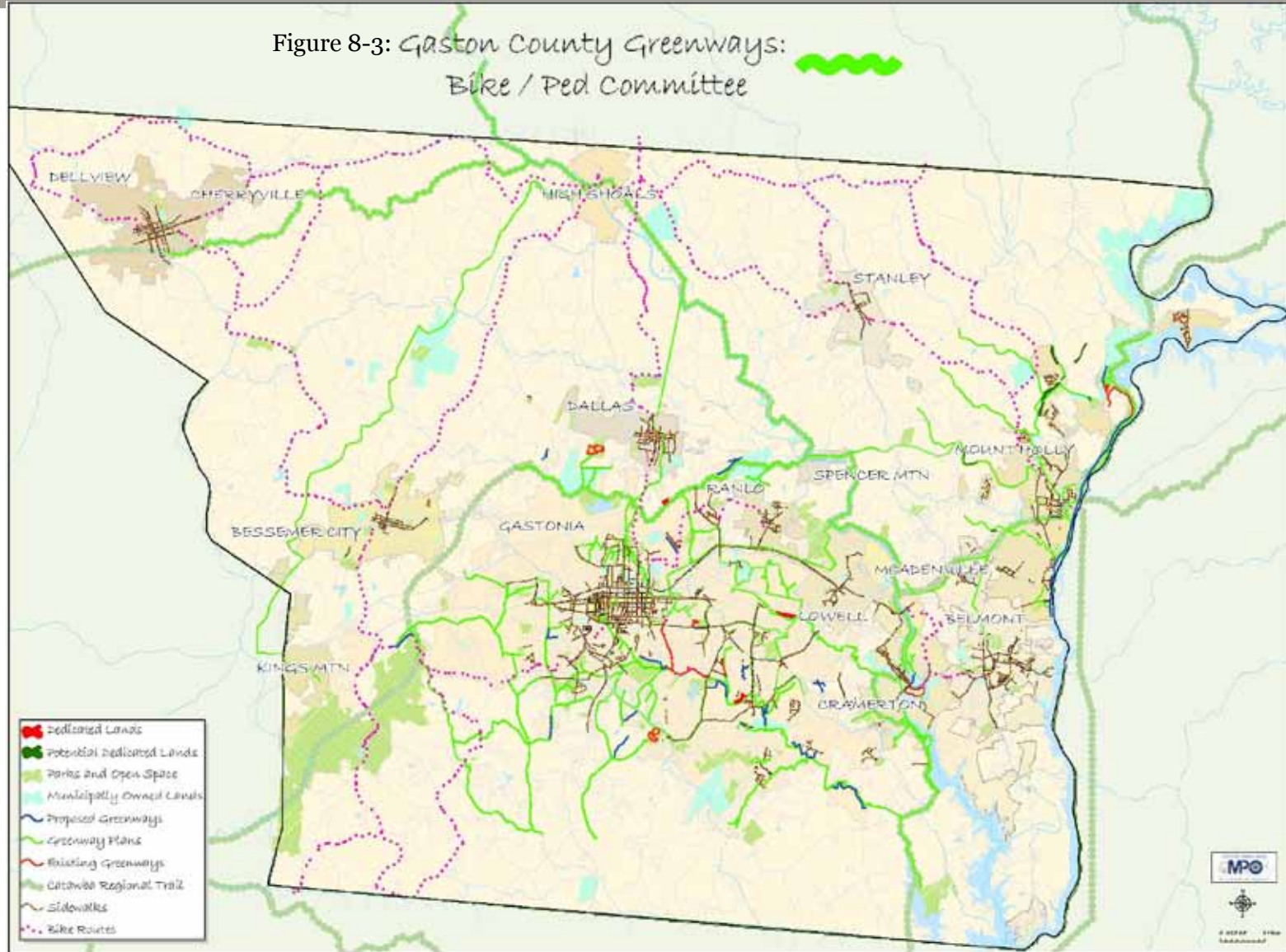
the Highland Community via the historic Norfolk Southern railroad corridor.

With this abandonment of the Norfolk Southern Railroad line and Notice of Interim Trail Use, the City of Gastonia felt that this was a wonderful opportunity to begin a new section of greenway trail that connects north of Interstate 85, which is critical to achieve the overall Greenway Plan for the City of Gastonia.

Phase I of the new rail-trail begins at the City Police Department, at the southern end of the abandonment, with access to public parking and the public sidewalk system. The trail extends north within the abandoned railroad corridor. With the aid of grant funding, this leg of the trail was paved to Marietta Street. With additional grant funding, we've completed Phase II & III of the rail-trail, which continues north along the abandonment and under I-85 with stopping points including Sims Park and Rankin Lake Road. As we continue with the overall plan of this greenway, the trail will continue northwest into Rankin Lake Park, and north through the Technology Park, Gaston College, and the county's Biggerstaff Park.



Figure 8-3: Gaston County Greenways:
Bike / Ped Committee



8.4

OTHER TRANSPORTATION MODES

8.4.1 Intercity Rail

For inter-city rail travel, Gastonia residents have the option of utilizing Amtrak, which stops in Gastonia twice per day. The Crescent Rail Line currently runs from New Orleans to New York, with stops in Atlanta, Baltimore, Birmingham, Charlotte, Greensboro, Philadelphia and Washington, D.C. The decline in Amtrak ridership is a normal trend as people choose more often to drive or fly to their destinations. Accordingly, there has been a decline in both the number of overall passengers and those using the station in Gastonia. The fact that the Gastonia station is unstaffed combined with the timing of arrivals and departures (the northbound train passes thorough Gastonia at 12:43 a.m. and the southbound train at 4:24 a.m.) makes Amtrak travel in Gastonia an unviable mode of travel for many.

However, as Gastonia’s population and traffic grow, development of rail transportation becomes increasingly important as an alternative to auto and air transport for both freight and passengers. The North Carolina Department of Transportation works with local communities and host railroads to plan for future services that will meet these growing transportation

needs.

In October 2002, the Federal Railroad Administration and Federal Highway Administration confirmed and approved the preferred Southeast High-Speed Rail corridor. North Carolina and Virginia are now identifying the next steps necessary to develop high-speed rail in each segment of the corridor and soon will begin more detailed environmental and engineering studies to examine different track configurations.

The Gastonia Rapid Transit Alternatives Study: Corridor and Modal Options identified Light Rail Transit (LRT) as a possible alternative to connect Gastonia with Center City Charlotte. The study identified Wilkinson Boulevard or the Piedmont and Northern (P & N) right-of-way as possible alignment routes for LRT. A link to the Charlotte Area Transit System (CATS) West Corridor service is a significant opportunity for the City of Gastonia to improve residents’ accessibility to and

from other parts of the Greater Charlotte area. Of equal importance, the linkage between transportation and land use is the key to both successful implementation of rapid transit in Gastonia and to improve the quality of life for Gastonia residents for years to come.

According to the Charlotte Chamber of Commerce, the Piedmont Crescent Area, which includes the Gaston Urban Area, is the nation’s largest manufacturing region. In 2001, County Business Patterns ranked Gaston County as one of the top ten (# 7) Piedmont Crescent Counties, based on the number of manufacturing establishments. This makes the Gaston Urban Areas connection to rail an important one.



Amtrak’s Crescent Rail Line travels from New Orleans to New York, making several stops along the way, including stop in Gastonia





Industrial manufacturing firms in the region have good rail connections to North Carolina’s major cities as well as many major cities across the entire eastern seaboard via rail lines owned by Norfolk Southern and CSX.

The Norfolk Southern line runs from west to east, entering the county north of Kings Mountain and roughly paralleling NC 161, NC 274 and NC 7 to the McAdenville area. The Norfolk line then turns southeast, snaking through Cramerton and crossing the South Fork River into Belmont. In Belmont, the line splits, with tracks bridging the Catawba River into Mecklenburg County as well as turning southward, running down the peninsula to serve the Duke Energy facility.

Another major line, the Carolina and Northwestern, is now owned by Norfolk Southern and runs north-south through Gaston County. Running to the right side of US 321, it passes through the center of both Gastonia and Dallas before entering Lincoln County.

The CSX line has several components in Gaston County. The former P&N line begins in downtown Gastonia and runs almost parallel to the Norfolk Southern until it moves north of McAdenville and Interstate 85. It runs through north Belmont and crosses the Catawba River into Mecklenburg County. The old P&N also operated the “Belmont Spur” which diverges from the mainline

in north Belmont and heads south through the heart of Belmont.

From downtown Mount Holly, the CSX has a branch which turns northeast paralleling NC 273 towards the Lincoln County line. It diverges to serve the generating plant near Mountain Island Lake. A separate branch parallels NC 27, crossing from Mecklenburg County into Gaston County and running northwest to Stanley and into Lincoln County.

8.7.2 Taxi Service

With the cost of owning personal transportation rising, more residents of the Gaston Urban Area may turn to taxi-service as a major means of transportation. The Gaston Urban Area has six taxi-cab service companies. All of the companies are located within the city limits of Gastonia. These companies offer local and long distance service. A number of the taxi companies also run shuttle service to the Charlotte Douglas Airport.

Figure 8-4: Taxi Services in Gaston County

A Plus Taxi
AAA Taxi
AAA Transportation
Blue Cabs of North Carolina
City Cab Company
Joseph E. Cook
Metro Cab
Yellow Cab Company

Residents in Gastonia who chose taxi service as a means of transportation are protected under municipal codes which state:

- a) No person owning or operating a taxicab within the city limits may charge fares in excess of those prescribed in the schedule of taxicab fares adopted by resolution of the council, a copy of which shall be on file in the clerk’s office and shall also be available from the administrator.

In order to better prepare for future growth projections, providing additional access for residents to taxi service will need to be addressed. Providing taxicab vouchers for qualifying residents may be an option looked into for the future.



Chapter 9: Safety

SAFETEA-LU expanded the number of planning factors from seven to eight by splitting safety and security into two separate factors. Before SAFETEA-LU, the factor for safety and security read: “increase the safety and security of the transportation system for motorized and nonmotorized users.” Under SAFETEA-LU, the factor now reads: “increase the safety of the transportation system for motorized and non-motorized users” and “increase the security of the transportation system for motorized and non-motorized users.” The goal behind this change was to emphasize the importance of safety in the planning process.

Safety is a primary concern of transportation system management, maintenance, and system expansion. SAFETEA-LU places a greater emphasis on safety at the planning (LRTP) level. One way this emphasis is reflected is in linkages to the North Carolina Strategic Highway Safety Plan (SHSP). As projects are developed, elements from the SHSP will be incorporated.

The key areas of emphasis are:

- Drivers
- Graduated licensing for young drivers
- Ensuring drivers are licensed and fully competent
- Sustaining proficiency in older drivers
- Curbing aggressive driving
- Reducing the number of impaired drivers
- Keeping drivers alert

- Increasing driver safety awareness
- Increasing seat belt usage
- Special Users
- Making walking and street crossing safer
- Ensuring safer bicycle travel
- Vehicles
- Improving motorcycle safety and increasing motorcycle awareness
- Making truck travel safer
- Increasing safety enhancements in high traffic areas

The Gaston Urban Area Metropolitan Organization uses crash data aggressively in our methodology for project selection. Crash data is and will be used in many of the studies GUAMPO conducts. This utilization of crash data is cross-referenced to the adopted goals from the North Carolina Strategic Highway plan. Types and causes of site specific crashes are taken into account during the project development process.

The Safety Program improvements for projects vary from small-scale steps such as installation of signs and/or markings to intersection improvements to initiating various safety features along roadway corridor projects. NCDOT implements a safety program as well, through coordination between Division 12, the office of the Area Traffic Engineer, law enforcement, and the City of Gastonia. Such improvements are reflected in

the Transportation Improvement Program, as well as in the day-to-day work of field forces. GUAMPO is in the process of developing a Congestion Management Process (CMP). The CMP will examine the current and planned future roadway network, identify causes of congestion, and explore options for reducing congestion. In addition to examining capacity constraints, it will identify methodologies for improving system efficiency and providing modal choices. Safety will be a consideration in the CMP, partly because roadway incidents are a significant source of traffic congestion.

Fender Bender Law: The “Fender Bender” law requires motorists to move their vehicles to the shoulder of the road following minor, non-injury crashes. If you don’t follow the law, you could face a \$110 fine and court costs. *GS 20-161*

Move Over Law: Under the “Move Over” law, motorists are required to move over one lane, if possible, or reduce speed for stopped emergency vehicles with flashing lights on the shoulder of the highway, including public service vehicles with amber lights. Violating the law could result in a \$500 fine. *GS 20-157*





Quick Clearance Law: The “Quick Clearance” law centers on getting vehicles out of the roadway. It states that if law enforcement and NCDOT agree that a vehicle and its cargo pose a safety concern, they can move it by any means necessary without facing any liability. *GS 20-161*

The CMP and LRTP recommend continued use of incident management patrols, coordination with law enforcement agencies, and implementation of safety and mobility projects by the City and the NCDOT to respond to safety trends and issues. Additional City and NCDOT strategies aimed at increasing the efficiency of the transportation system without adding additional capacity to the roadways include:

- ⇒ Expansion of transit operations
- ⇒ Advance Traveler Information Systems and Variable Message Signs (VMS)
- ⇒ Gastonia signal coordination system
- ⇒ GUAMPO has concluded studies to expanded regional transit systems, park and-ride lots, and a Fast Lanes Study. The study will determine the technical, financial and institutional feasibility of dedicating lanes on major highways in the Metrolina region for active traffic management

Other safety strategies include:

Highways

- Reducing vehicle-train crashes
- Keeping vehicles on the roadway
- Minimizing the consequences of leaving the road
- Improving the design and operations of highway intersections
- Reducing head-on and across-median crashes
- Designing safer work zones

Emergency Medical Services

- Enhancing emergency medical capabilities to increase survivability

Management

- Improving information and decision support systems
- Creating more efficient processes and safety management systems

The goal of the Strategic Highway Safety Plan is to reduce the number of fatalities and to decrease the economic impact from highway and pedestrian related accidents. This goal is incorporated into the LRTP. The MPO has developed a plan to address the infrastructure and safety needs of bicyclists and pedestrians through

the Gaston Urban Area Bicycle, Pedestrian & Greenway Master Plan.

This comprehensive plan developed in 2006 analyzed the area’s needs and included recommendations and action steps to enhance the safety of bicyclists and pedestrians. Actions taken to date include implementation of prioritized sidewalk projects, a new bike map, bike routes, bike and sidewalk improvements included in local and state roadway projects, detailed recording and analysis of bicycle and pedestrian accidents, and local government / MPO participation in bicycle and pedestrian safety.

Authority for Regional Transportation with state funding, is expanding its Transportation Demand Management Program. By taking cars off the road, this program contributes to enhanced roadway safety for everyone.

Other possible strategies to improve pedestrian and bicycle safety include:

1. Install signs in busy pedestrian corridors.
2. Create billboards that will reinforce these signs and remind motorists, pedestrians and bicyclists of the importance of road safety.
3. Improve walking routes to schools.
4. Visit children at schools and community centers, to discuss crosswalk and pedestrian safety.





5. Have local police forces step up enforcement of pedestrian safety laws.
6. Stiffen the penalties for drivers who fail to yield to pedestrians.
7. Upgrade and improve the visibility of crosswalks at intersections.
8. Rotate speed limit trailers throughout the region to remind speeding drivers to slow down.
9. Issue public service announcements to alert drivers and pedestrians of the three most common pedestrian v. auto accidents intersections.
10. Continue to install curb ramps and “safe haven” zones each year, to improve accessibility for individuals as well as individuals with limited mobility.
11. New marked crosswalks at locations throughout the region
12. Install new pedestrian countdown signals, telling pedestrians how much time they have to cross the street.
13. Increase police and citizen patrols on greenways
14. High visibility enforcement—Local agencies can help to improve driver and pedestrian safety by publicizing enforcement efforts and conducting the enforcement where people will see it. Local news outlets often carry stories on these types of efforts. Highly

- publicized enforcement (of even low-level enforcement) targeted towards a specific behavior is likely to be most effective.
15. Progressive ticketing—Progressive ticketing is a method for introducing ticketing through a three-stage process, to first educate, then warn, then ticket offenders. Issuing warnings allows police to contact up to 20 times as many noncompliant motorists or pedestrians than the writing of citations does. In addition, the high frequency of stops ensures not only that many people directly make contact with law enforcement, but also that many others witness these stops and are prompted to obey the rules.

Transit and Alighting Safety

Bus stop checklists are commonly used to inventory bus stops and roadway characteristics in the area immediately surrounding a stop. They can be used by transit agencies to evaluate their own facilities or by local residents to assess conditions at bus stops. These checklists typically document:

- ⇒ Sidewalk presence and condition near the bus stop.
- ⇒ Roadway crossing treatments near the bus stop (crosswalks, pedestrian signals, pedestrian push-buttons, pedestrian signal timing, audible warning signals).

- ⇒ Path of access between the sidewalk and bus stop boarding area.
- ⇒ Readability of bus stop signs.
- ⇒ Obstructions at bus stop.
- ⇒ Bus stop shelters and seating

Improving pedestrian safety can also be achieved by updating internal policies. Policy actions that can be taken include:

- ⦿ Compile and maintain a detailed inventory of bus stops and their features so that pedestrian safety and access improvement needs can be identified and prioritized.
- ⦿ Incorporate pedestrian features into standard plans and standard designs for transit stops, stations and other transit facilities. Ensure that these features are included in cost estimates and programming details from project conception through construction and maintenance.
- ⦿ Conduct pedestrian safety audits at transit stops and surrounding areas on a regular basis.
- ⦿ Develop or update transit-oriented development guidelines to ensure adequate pedestrian facility design, including sidewalks, pedestrian crossing facilities, and warning and wayfinding signs.





Modify Services and Facilities

Transit agencies typically have the authority to modify their services and facilities. These types of changes have the potential to improve pedestrian safety and access.

Service improvements may include:

- ⇒ Changing bus routes and stop locations to reduce walking distances or facilitate transfers.
- ⇒ Improving coordination between bus and rail schedules to allow for easier transfers and shorter waiting time.

Facility modifications may include:

- ⦿ Moving bus stops to shorten walking distances, reduce street crossings or improve safety at street crossings for pedestrians accessing transit at each stop.
- ⦿ Improving signage, seating, shelter, or lighting at bus stops.
- ⦿ Increasing maintenance (frequency and thoroughness).

Identify Additional Resources

Limited resources are a common challenge for many transit agencies; transit providers frequently struggle to provide service and maintain their vehicles. While there is no dedicated funding source for pedestrian safety improvements near transit stops at the federal level, there are many funding sources that can be leveraged in order to achieve these goals.

Some potential resources include:

- ⦿ Consider allocating some capital improvement resources as matching funds to improve pedestrian safety and access in partnership with cities and the county.
- ⦿ Surface Transportation Program (STP) funds, which are often administered through the NCDOT, can be used to improve and construct pedestrian walkways and bicycle facilities. Ten percent of each state's STP allocation is set aside for "transportation enhancements", which include pedestrian and bicycle facilities.
- ⦿ Bus and Bus Facility Grants (Section 5309) provided by the Federal Transit Administration (FTA) provide capital funding for transit-related improvements, including passenger shelters.
- ⦿ The Congestion Mitigation and Air Quality (CMAQ) Improvement Program, jointly administered by the Federal Highway Administration (FHWA) and the FTA, provides financial and technical resources for transit agencies and GUAMPO seeking to improve air emissions from transportation-related sources. Often these resources are applied to programs or projects that may also have a safety benefit.



Chapter 10: Financial Plan

10.0 FINANCIAL PLAN

Federal regulations require a Financial Plan element for each Metropolitan Planning Organization's Long Range Transportation Plan. The purpose is to demonstrate that proposed investments (revenues and costs) are reasonable for future network years (2015, 2025, and 2035). Meeting this test is called "fiscal constraint."

The 2035 Long Range Transportation Plan for the Gaston Urban Area is fiscally constrained based on the analysis of revenues and costs. The transportation investments proposed to meet metropolitan transportation needs over the planning period are consistent with revenue forecasts. This chapter provides an overview of the forecasted cost and revenue assumptions, along with the detailed research results used to derive these values. The following sections provide more detailed assumptions regarding revenue, capital costs, maintenance costs, and future revenue needs.

10.1 REVENUE FORECASTS

Revenue forecasts were developed after a review of previous state and local expenditures, current funding trends, and likely future funding levels. The revenue forecasts involved consultation with NCDOT and local

partners. All dollar figures discussed in this section were escalated to future-year dollars as noted below. The Gaston Urban Area MPO and its staff discussed the impacts of upcoming increases in the nation's vehicular fuel efficiency standards, scheduled to take effect in 2015. Assuming no other changes, this will reduce revenues for the NCDOT.

Available resources will likely decline after 2015 without changes/increases to the existing revenue sources.

Overall Assumptions for the 2035 LRTP

- 1) The annual transfer of Highway Trust funds to the General Fund will fill the funding gap on future Turnpike Authority projects.
- 2) North Carolina's donor state status regarding return of federal highway dollars increases from 92.5 cents to 95 cents by 2015.
- 3) The Garden Parkway from I-485 across the Catawba River to I-85 in western Gaston County (STIP # U-3321) will be built as a toll facility.
- 4) The level of maintenance of the transportation system will remain constant through the Plan lifespan.

Highway Federal and State Revenues (Equity Formula)

The federal and state revenue forecasts were developed based on past, current, and expected future funding

levels reflected in NCDOT's 2009-2015 TIP. A key assumption is the expected modest growth of federal and state revenue for roadway projects in the Gaston MPO area. Highway, rail, safety, bridges, resurfacing, and enhancement projects listed in the TIP were considered in the calculation of an annual allocation of future revenues.

Bicycle and pedestrian projects that are a component of a roadway project are traditionally funded as part of the roadway project. Stand-alone projects are funded through enhancement funds but due to the recent expiration of the federal transportation authorization bill (SAFETEA-LU), no estimate of future enhancement funds was calculated. It was assumed that Gaston MPO's policy of including bicycle and pedestrian accommodations on all non-highway projects will still be implemented.

Likewise, the Gaston Urban Area receives Congestion Mitigation and Air Quality (CMAQ) funds to address air quality issues, but a projection of funds available through 2035 was not estimated as part of this Plan for the same reason. After a new federal authorization bill is passed, future LRTP updates will include these funding sources in estimating available revenues.



Specific Revenue Assumptions for Each Horizon Year

2009-2015

1) Revenues are based on average annual revenues (approximately \$50 million/year) reflected in the 2009-2015 TIP.

2016-2025

2) Revenues are based on the average annual amounts reflected in the 2009-2015 TIP. State revenue sources are assumed to grow at 2.5% annually.

2026-2035

3) A 2.0% annual growth rate is assumed throughout the remainder of the period. State Highway Trust funds are assumed to decrease by 30% by 2026 as a result of a majority of the urban loop projects being completed, with the Trust funds being re-allocated to Equity projects.

10.1.2 Loop Funds

The North Carolina General Assembly authorized use of the Urban Loop Fund for the proposed Garden Parkway (Toll Road). When the Charlotte Outer Loop (I-485) is complete, including improvements to the existing sections currently over capacity, this funding source will be used by NCDOT to complete other urban loops in North Carolina. As stated earlier, an assumption is being made that Loop Funds will be used to assist with Garden Parkway GAP funding. The amount of urban Loop funding required to pay the remaining gap needed for the final leg of the Garden Parkway is unknown.

Figure 10-1: Summary of Equity Funds, 2009-2035

Equity	2009-2015	2016-2025	2026-2035	Total
Total	\$185,054,425	\$244,906,487	\$273,147,918	\$703,108,830

10.1.3 Toll Gap Funds

“Gap Funding” is the money necessary to help pay for a toll project after anticipated toll revenues are assigned to pay for the project. Toll roads seldom pay for themselves, and a supplemental source is required for the difference, called the “Gap”.

The two toll projects in the Metrolina Region include the Monroe Connector and the Garden Parkway. Both projects are expected to need gap funding. These gap funds will be a combination of TIFIA Loans and Revenue Bonds. In addition, \$35 million dollars over a ten year period from Equity funds are assumed to be needed for the Garden Parkway (HB 2436). The Equity amount for FY 2009-2015 has been reduced by this amount in Table 10-2.

Figure 10.2: Summary of Toll Gap Funds, 2009-2035

Garden Parkway (U-3321)			
Toll Gap	2009-2015	2016-2025	2026-2035
TIFIA	\$386,000,000		
Appropriations Bonds (GAP)	\$571,000,000		
Toll Revenue Bonds	\$208,000,000		
Urban Loop Funds (?)			\$???,000,000.00
Interest Earnings	\$36,000,000		
Total	\$1,201,000,000		\$1,201,000,000.00

10.1.4 Local Funds

The City of Gastonia is the only local government in the Gaston Urban Area to ask its voters to approve transportation improvement bonds for street and road improvements. Gastonia voters have acknowledged the need to locally fund transportation projects, and approved almost \$30 million in 1995. The last bond was



primarily used for improvements on municipal roadways, but now there is a need to

Figure 10-3: Summary of Local Bond Funds, 2009-2035

Local	2009-2015	2016-2025	2026-2035	Total
Gastonia	\$28,000,000	\$50,000,000	\$50,000,000	\$128,000,000

finance improvements to several state roadways and city parks. MPO analysis assumes future bonds will be proposed and approved to meet future demands for some transportation projects. The local revenue forecast assumes enough funding to meet current and future project costs. A 32 million dollar transportation and parks improvement bond package will be presented to Gastonia voters on May 4, 2010, where 28 million is proposed for transportation and 4 million for parks.

10.1.5 State Roadway Maintenance Revenues

State roadway maintenance funds were set to equal expected expenditures based on previous levels of revenues and expenses dedicated to this purpose. State road maintenance costs are based on historical NCDOT funding from 2000 to 2009 in the Gaston MPO area. A conservative 2.0% growth factor was applied to forecast revenues through 2035.

Figure 10-4: Summary of State Maintenance Funds, 2009-2035

State Maintenance	2009-2015	2016-2025	2026-2035	Total
Total	\$80,000,000	\$140,000,000	\$170,000,000	\$390,000,000

10.1.6 Powell Bill Funds

Powell Bill funds are funds that are annually provided to municipalities that maintain NCDOT roads within their jurisdictions. These funds are drawn from state motor fuel tax revenues. NCDOT returns these funds to eligible cities and towns for maintaining, repairing, constructing, reconstructing, or widening municipal streets. Powell Bill funds are also eligible for the construction and maintenance of sidewalks and bikeways located within the rights-of-way of public streets and highways.

Although some consideration had been given to the potential over the long term to redirect some amount of Powell Bill resources to construction activities, this plan makes the conservative assumption that this will not be the case. The amount of these funds distributed to a municipality is based on the number of street-miles maintained and the City's population. The Powell Bill funding for the City of Gastonia was reviewed for the years 2006-2010, with the amount received in 2010 being \$1.97 million.

There is no assumption of an annual growth rate for the City of Gastonia's \$2 million per year Powell Bill funding through 2035 based on the average annual funding level. This relatively flat trend reflects an increase in City-maintained lane-mileage and stagnation in state gas tax revenues.

Figure 10-5: Summary of Gastonia Powell Bill Funds, 2010-2035

Equity	2010-2015	2016-2025	2026-2035	Total
Total	\$10,000,000	\$20,000,000	\$20,000,000	\$50,000,000



10.1.7 Total of All Existing Revenue Sources

Figure 10-6: Summary of Equity Funds, 2009-2035

Equity	2009-2015	2016-2025	2026-2035	Total
Total	\$185,054,425	\$244,906,487	\$273,147,918	\$703,108,830

Figure 10-7: Anticipated Revenues, 2009-2035

CAPITAL	2009-2015	2016-2025	2026-2035	Total
Equity Funds	\$295,000,000	\$484,000,000	\$643,000,000	\$1,422,000
Loop Funds	\$340,000,000	\$395,000,000	\$813,000,000	\$1,548,000
Toll Gap Funds	\$1,074,000,000	\$1,074,000,000		
Local/Private Funds	\$201,000,000	\$215,000,000	\$215,000,000	\$631,000,000
Capital Sub-Total	\$1,909,000,000	\$1,094,000,000	\$1,671,000,000	\$4,675,000,000

Notes:
 Equity for 2009-15 reduced by \$35 million to reflect Equity funds needed for tolls.
 Equity for 2016-25 reduced by \$?? million to reflect GARVEE Bond repayment (2016-2022).

10.1.8 Public Transportation Funds

A description of funding available for public transportation in the Gaston MPO area through 2035 is included in the table below. Gaston County Access operates public social service related demand response transportation service. Access receives funds through New Freedom and Jobs Access and Reverse Commute (JARC) programs. A 20% local match, paid by Gaston County, is required for Access funding Grants.

Figure 10-8: Summary of Transit Funds, 2009-2035

Equity	2009-2015	2016-2025	2026-2035	Total
Operating	\$13,594,364	\$29,387,847	\$33,456,544	76,438,755.00
Capital	\$4,940,393	\$9,721,587	\$13,511,463	28,173,443.00
Planning	\$565,524	\$1,229,284	\$1,430,163	3,224,971.00

- 1) The federal grant 5307 is expected to grow by only 4 percent per year through the year 2025. This increase is to account for inflation, but does not assume additional federal funding for operating assistance. With such an increase, the federal government share would be slightly more than \$1 million in the year 2025.
- 2) The State Maintenance Assistance Program (SMAP) is also forecasted to increase at a relatively low level. The figures provided by NCDOT Public Transportation Division staff show an increase from approximately \$142,000 per year in FY 2000 to less than \$189,000 in FY 2025. This computes to a 33 percent increase in funding over the 25 year time frame, and does not include increases for inflation.
- 3) For the local share, the City of Gastonia is currently contributing approximately one-third of the cost of operating the fixed route transit system. Due to the anticipation that state and federal assistance will level off, it is felt that local government will need to supply approximately 47 percent of total operating costs by the year 2025.
- 4) Farebox recovery is the amount of money collected in fares, which is contributed to the operating revenue. It is assumed to increase 2.83 percent per year, a figure that is based on average change from 1994 to 1998.



10.2

NEW REVENUE FORECASTS

The Gaston MPO Board will be presented the following “New Revenue” sources for final approval on March 23, 2010.

Figure 10-9: New Revenue Forecasts		
All Tax Revenue + Allocation		
2015	2025	2035
\$264,583,588	\$414,572,646	\$423,572,646
1 Cent Sales Tax		
2015	2025	2035
\$116,579,974	\$194,299,956	\$194,299,956
1 Cent Land Transfer Fee		
2015	2025	2035
\$43,067,274	\$71,778,790	\$71,778,790
Small Starts (Commuter Rail)		
2015	2025	2035
	\$481,411,932	
\$10 Registration Fee		
2015	2025	2035
\$38,696,340	\$64,493,900	\$64,493,900
State Allocation		
2015	2025	2035
\$66,240,000	\$84,000,000	\$93,000,000

Revenue Forecast Scenarios

1. No New Revenue

The first scenario assumed no additional revenues beyond those in existing revenue assumptions through 2035. Both the roadway and transit project lists would be financially-constrained by horizon year based on existing revenue assumptions.

2. Additional 1 Cent Sales Tax for Roads for Gaston County

The second scenario assumed an additional \$505,179,886 per year in Gaston County for highways. This additional revenue would fund an additional \$116,579,974 million (2010-2015), \$194,299,956 million (2016-2025) and \$194,299,956 million (2026-2035) for highway projects.

Figure 10-10: Toll Gap Funds			
Funding Source	2015	2025	2035
TIFIA (33%)	\$385,900,000	\$0	\$0
Toll Revenue Bonds (40%)	\$207,900,000	\$0	\$0
Appropriations Bonds-(GAP)	\$570,800,000	\$0	\$0
Urban Loop Funds	\$0	\$0	\$94,758,677
Interest Earnings	\$35,600,000	\$0	\$0
Total Garden Parkway Funding	\$1,200,200,000	\$0	\$94,758,677
Local Bond Funds (Gastonia)	\$28,000,000	\$50,000,000	\$50,000,000
Developer Contribution (Cox Rd)	\$211,065		
Sales Revenue	\$116,579,974	\$194,299,956	\$194,299,956
NCDOT Allocation	\$66,240,000	\$84,000,000	\$93,000,000
Land Transfer	\$43,067,274	\$71,778,790	\$71,778,790
Registration Revenue	\$38,696,340	\$64,493,900	\$64,493,900
Small Starts		\$481,411,932	
Total Projected Revenue	\$1,493,794,653	\$945,984,578	\$473,572,646
Total Projected Project Costs	\$1,493,794,653	\$903,689,744	\$404,422,396
Total	\$0	\$42,294,834	\$69,150,251



Horizon Year 2015

Figure 10-11: Projects in Horizon Year 2015

Reference Number	Project ID	Facility Name	Description	Distance (Miles)	Existing Facility	Future Facility	Functional Classification (Current)	2015 Cost Estimates	Regionally Significant	Exempt
1	U-3321	Garden Parkway	From I-485 in Mecklenburg County to US 321 in Gaston County will be a 4 Lane Facility From US-321 to I-85 in Gaston County will be a 2 Lane Facility	@20 (Mileage is from Gaston County Line to I-85)	NA	Four Lane Facility to US-321 Two Lane Facility from US-321 to I-85	NA	\$928,300,000	Yes	No
2	I-5000	I-85/US 321 Interchange Improvements	Geometric Safety Improvements to Interchange	NA	Half-Diamond with Ramps and Loops in the Western Quadrants	The Addition of Ramps in the Eastern Quadrants and a Two-Lane Flyover Ramp Connecting US 321 Southbound to I-85 Northbound	Interstate	\$21,047,408	No	Yes
3	C-4934	NC 279 (New Hope Road)	Widen existing four-lane road to a four-lane divided facility: Burtonwood Dr. to Garrison Blvd.	0.53	Four-Lane Road	Four-Lane Divided w/median & median openings for turning	Principal Arterial	\$2,368,501	Yes	Yes
4	4	NC 279 (New Hope Road)	Widen existing four-lane road to a four-lane divided facility: Robinwood Rd. to Armstrong Park Rd.	0.65	Four-Lane Road	Four-Lane Divided w/median & median openings for turning	Principal Arterial	\$6,252,296	Yes	Yes
5	U-5103	Titman/ Cramerton Road	Widen existing two-lane road to three-lane, and construct new three-lane connector from NC 279 (S. New Hope Rd.) to US 29/74 (Wilkinson Blvd.)	2.6	Two Lane Road	Three Lane Road	Collector	\$54,876,916	No	No
6	U-4705	Belmont-Mount Holly Northern Loop	Construct new, four-lane divided facility from NC 27 west of Mount Holly to NC 27 east of Mount Holly	4.0	NA	Four-Lane Divided w/median & median openings for turning	NA	\$72,025,953	Yes	No
7	35	Pedestrian Bridge across Catawba River	Pedestrian bridge across Catawba River	0.4	NA	Pedestrian Bridge	NA	\$5,487,692	No	Yes
8	U-3405	NC 274 (Gastonia Highway / Bessemer City Highway)	Widen existing facility to five-lanes with curb and gutter from Maine Ave to NC 275	1.4	Two Lane Road	Four-Lane Divided w/median & median openings for turning	Minor Arterial	\$5,200,000	No	No



Horizon Year 2015 cont'd

Reference Number	Project ID	Facility Name	Description	Distance (Miles)	Existing Facility	Future Facility	Functional Classification (Current)	2015 Cost Estimates	Regionally Significant	Exempt
9	R-3107	NC 279	Widen two lane road to four lane divided w/ median & median openings for turning movements. The extent of the project within the MPO is from US 321 to Costner School Rd. Phase A (Cherryville to SR. 1626 (Beam Rd) is not in the MPO area, Phase B, SR 1626 to SR 1461 (Lakeside St) is partially in the MPO area. The project imits for this phase within the MPO boundary extends from Costner School Rd to LakesideSt, Phase C is completly in the MPO area and extends from Lakeside St to US 321).	2.66	Two Lane Road	Four-Lane Divided w/median & median openings for turning	Minor Arterial	\$27,540,065	No	No
10	R-2720	NC 16 / 273 Connector	NC 273 to NC 16. Two lane connector with two foot paved shoulders on new location	0.7	NA	Two-Lane Road	NA	\$3,461,467	No	No
11	U-3425	Myrtle School Road	Widen two lane road to three lanes from US 29/74 (Franklin Blvd.) to Hudson Blvd.	1.8	Two-Lane Road	Three Lane Road	Minor Arterial	\$22,091,477	No	No
13	U-2523B	NC 279	Widen two lane road to four lane divided w/ median & median openings for turning movements, from NC 7 to west of NC 275 in Dallas	3.6	Two-Lane Road	Four-Lane Divided w/median & median openings for turning	Principal Arterial	\$15,478,105	Yes	No
14	U-3633	NC 273 (South Main Street)	Widen to multi-lanes south of Catawba Drive to Highland Street at Rankin Avenue	1	Two Lane Road	Four-Lane Divided w/median & median openings for turning	Principal Arterial	\$9,493,707	Yes	No
15		Cox Road	Widen Cox Rd to 6 lanes with continuous right turn lane from I-85 to Franklin Blvd (US 29/US 74) Developer responsible for financing.	0.21	Five-Lane Road	Six-Lane Divided Road	Principal Arterial	\$211,065	Yes	No
16	B-4517	Crowder's Creek Bridge No. 49	Replace Bridge	NA	Two-Lane Bridge	Two-Lane Bridge	Collector	\$1,287,720	No	Yes
18	B-4519	Little Long Creek Bridge No. 155	Replace Bridge	NA	Two-Lane Bridge	Two-Lane Bridge	Local	\$363,825	No	Yes
19	B-4575	Mickley Avenue over Norfolk Southern Railroad. Replace Bridge No. 165	Replace Bridge	NA	Two-Lane Bridge	Two-Lane Bridge	Local	\$4,080,591	No	Yes
20	B-4981	Hoyle's Creek Bridge No. 172	Replace Bridge	NA	Two-Lane Bridge	Two-Lane Bridge	Local	\$1,590,023	No	Yes
21	B-4117	Replace Bridge No. 173	Replace Bridge	NA	Two-Lane Bridge	Two-Lane Bridge	Minor Collector	\$1,792,665	No	Yes



Horizon Year 2015 cont'd

Reference Number	Project ID	Facility Name	Description	Distance (Miles)	Existing Facility	Future Facility	Functional Classification (Current)	2015 Cost Estimates	Regionally Significant	Exempt
22	B-4118	Stanley Creek Bridge No. 200	Replace Bridge	NA	Two-Lane Bridge	Two-Lane Bridge	Major Collector	\$949,253	No	Yes
23	B-4751	Stanley Creek Bridge No. 203	Replace Bridge	NA	Two-Lane Bridge	Two-Lane Bridge	Local	\$1,212,750	No	Yes
24	B-4752	South Fork Catawba River Bridge No. 6	Replace Bridge	NA	Two-Lane Bridge	Two-Lane Bridge	Minor Arterial	\$6,063,750	No	Yes
25	B-4753	Duhart's Creek Bridge No. 15	Replace Bridge	NA	Two-Lane Bridge	Two-Lane Bridge	Minor Arterial	\$1,455,300	No	Yes
26	NA	Multi-modal Center	The Gastonia Multimodal Center is envisioned as a regional transportation hub and a catalyst for economic development. Existing transportation facilities are dispersed and need updating; Gastonia is also seeking activity generators for its downtown area.	NA	NA	Regional Transportation Hub Consolidating Rail, Bus, Taxi, and Pedestrian Modes of Travel	NA	\$24,597,477	No	No
27	TJ-4935	Gaston	Provide operating assistance to counties and community transportation systems to meet work first and employment transportation needs	NA	NA	NA	NA	\$139,650	No	Yes
28	TL-4935	Gaston	Provide operating assistance for additional transportation services to elderly and disabled	NA	NA	NA	NA	\$727,650	No	Yes
29	TR-4935	Gaston	Provide maintenance assistance for community transportation systems to serve the rural general public	NA	NA	NA	NA	\$529,200	No	Yes
30	TA-5106	Gastonia	Five New Ultra Low Sulfur Diesel Buses	NA	NA	NA	NA	\$2,084,000	No	Yes
31	TA-4925	Gastonia	Expansion bus	NA	NA	NA	NA	\$486,203	No	Yes
32	TG-4745	Gastonia	ADA service costs, preventive maintenance and routine capital items	NA	NA	NA	NA	\$2,823,450	No	Yes
33	TO-4712	Gastonia	Federal operating assistance and state maintenance	NA	NA	NA	NA	\$8,057,700	No	Yes
34	TP-4909	Gastonia	MIS-Study to determine if light rail or bus rapid transit is feasible along Wilkinson and Franklin Blvd's from Charlotte to Gastonia	NA	NA	NA	NA	\$1,852,200	No	Yes



Horizon Year 2025

Figure 10-12: Projects in Horizon Year 2025

Reference Number	Project ID	Facility Name	Description	Distance (Miles)	Existing Facility	Future Facility	Functional Classification (Current)	2025	Regionally Significant	Exempt
35	NA	Commuter Rail	Commuter rail from Charlotte to the multi-modal center in downtown Gastonia	22	NA	New Commuter Rail Service between Gastonia and Charlotte	NA	\$481,411,932	No	No
36	U-2713	Linwood Road	Widen existing facility to multi-lanes with some relocation from Crowder's Creek Rd. to US 29/74 (Franklin Blvd.)	2.2	Two-Lane Road	Three Lane Road	Minor Arterial	\$27,923,908	No	No
37	I-5000	I-85/US 321 Interchange Improvements	Geometric Safety Improvements to Interchange	NA	Half-Diamond with Ramps and Loops in the Western Quadrants	Addition of Ramps in the Eastern Quadrants and a Two-Lane Flyover Ramp Connecting US 321 Southbound to I-85 Northbound	Interstate	\$20,200,000	No	Yes
38	U-3608	NC7, I-85 to US 29/74	Widen to four lanes (0.4) mile)	0.4	Four-Lane Road	Four-Lane Divided w/ median & median openings for turning	Principal Arterial	\$8,251,266	No	No
39	6	US 321 (York Road)	Widen four-lane facility to four-lane divided w/ median and median openings for turning movements from Hudson Blvd. to Beam Ave.	0.54	Four-Lane Road	Four-Lane Divided w/ median & median openings for turning	Principal Arterial	\$7,004,323	No	Yes
40	7	NC 279 (S. New Hope Road)	Widen existing two-lane road to four-lane divided from Titman Road to Union-New Hope Road	3.8	Two-Lane Road	Four-Lane Divided w/ median & median openings for turning	Principal Arterial	\$85,537,043	Yes	No
41	8	NC 274 (Union Road)	Widen the existing two-lane facility to five lanes and construct a new four-lane divided realignment from Robinson Rd. to Beaty Rd.	2.5	Two-Lane Road	Four-Lane Divided w/ median & median openings for turning	Principal Arterial	\$53,748,550	Yes	No
42	14	US 29/74 South Fork Catawba River Bridge No. 82	Widen existing four-lane bridge on Wilkinson Blvd to six-lanes, and widen existing four-lane cross section to six-lanes from Market St to Alberta St	1.2	Four-Lane Bridge	Six-Lane Bridge	Principal Arterial	\$68,324,608	Yes	No
43	17	US 29/74 Catawba River Bridge No. 159	Widen existing four-lane bridge to six-lanes, and widen existing four-lane cross section to six-lanes from NC 7 (Catawba St.) to the east bank of the Catawba River	0.13	Four-Lane Bridge	Six-Lane Bridge	Principal Arterial	\$77,510,613	Yes	No
44	18	Ratchford Road/US 321 Interchange	Construct Interchange between US 321 and Ratchford Road.	NA	NA	NA	NA	\$30,760,457	Yes	No
46	37	Belmont Mt. Holly Loop Link	Construct segment between Belmont / Mt Holly northern and central loop (only if Gastonia Mt. Holly Connector is not built.	0.9	NA	Four-Lane Divided w/ median & median openings for turning	Principal Arterial	\$28,760,726	Yes	Yes



Horizon Year 2025 cont'd

Reference Number	Project ID	Facility Name	Description	Distance (Miles)	Existing Facility	Future Facility	Functional Classification (Current)	2025 Cost Estimates	Regionally Significant	Exempt
47	TJ-4935	Gaston	Provide operating assistance to counties and community transportation systems to meet work first and employment transportation needs	NA	NA	NA	NA	\$154,745	No	Yes
48	TL-4935	Gaston	Provide operating assistance for additional transportation services to elderly and disabled	NA	NA	NA	NA	\$806,303	No	Yes
49	TR-4935	Gaston	Provide maintenance assistance for community transportation systems to serve the rural general public	NA	NA	NA	NA	\$586,402	No	Yes
50	TA-4925	Gastonia	Expansion bus	NA	NA	NA	NA	\$651,558	No	Yes
51	TG-4745	Gastonia	ADA service costs, preventive maintenance and routine capital items	NA	NA	NA	NA	\$3,128,641	No	Yes
52	TO-4712	Gastonia	Federal operating assistance and state maintenance	NA	NA	NA	NA	\$8,928,670	No	Yes



Horizon Year 2035

Figure 10-13: Projects in Horizon Year 2035

Reference Number	Project ID	Facility Name	Description	Distance (Miles)	Existing Facility	Functional Classification	2035	Regionally Significant	Exempt
53	U-3321	Garden Parkway	185 West of Gastonia to US 321 south of Gastonia	6	Four Lane Facility	NA	\$94,758,677	Yes	No
54	11b	Belmont-Mount Holly Central Loop	Construct new, four-lane divided facility from Wilkinson Blvd. to the proposed Gastonia-Mt. Holly Connector or to the Belmont Mt. Holly Loop Link if the Gastonia-MT. Holly Connector is not built.	4.34	Four-Lane Divided w/median & median openings for turning	NA	\$259,584,992	Yes	No
55	16a	Lowell-Bethesda/Groves St. Connection	Provide direct connection between Lowell-Bethesda Rd. and the intersection with US 29/74 (Wilkinson Blvd.) and Groves St. The project will also include a grade-separated crossing of the Norfolk Southern Railroad.	0.08	Four-Lane Divided with bridge over railroad and new intersection at Wilkinson Blvd	NA	\$43,739,485	No	No
56	16b	Lowell-Bethesda Road/Beaty Road	Widen two-lane to four-lane divided from Westover St. to NC 279 (S. New Hope Rd.)	2.3	Four-Lane Divided w/median & median openings for turning	Minor Arterial	\$76,133,598	No	No
57	24	Market Street	Add right turn lane on northbound Market St. to eastbound US 29/74 (Wilkinson Blvd.)	0.25	Addition of Turn Lane	Minor Arterial	\$1,742,280	No	Yes
58	TJ-4935	Gaston	Provide operating assistance to counties and community transportation systems to meet work first and employment transportation needs	NA	NA	NA	\$252,063	No	Yes
59	TL-4935	Gaston	Provide operating assistance for additional transportation services to elderly and disabled	NA	NA	NA	\$1,313,382	No	Yes
60	TR-4935	Gaston	Provide maintenance assistance for community transportation systems to serve the rural general public	NA	NA	NA	\$955,187	No	Yes
61	TA-4925	Gastonia	Expansion bus	NA	NA	NA	\$1,061,319	No	Yes
62	TG-4745	Gastonia	ADA service costs, preventive maintenance and routine capital items	NA	NA	NA	\$5,096,227	No	Yes
63	TO-4712	Gastonia	Federal operating assistance and state maintenance	NA	NA	NA	\$14,543,862	No	Yes



Unfunded

Figure 10-14: Projects Unfunded

Reference Number	Project ID	Facility Name	Description	Distance (Miles)	Existing Facility	Future Facility	Functional Classification (Current)	Regionally Significant	Exempt
64	10a	North Dallas Bypass East	From Ratchford Road/US 321 Interchange to NC 279 (Lower Dallas Rd.)	6	Two Lane Road	Three Lane Road	Principal Arterial	No	No
65	R-2608	US 321 Bypass	Construct a new four-lane divided, controlled access facility from I-85 to US 321 (north of Dallas)	7.5	NA	Four-Lane Divided w/ median & median openings for turning	NA	Yes	No
66	10b	North Dallas Bypass Central	From Ratchford Road/US 321 Interchange to Gaston MPO boundary	0.67	Two Lane Road	Three Lane Road	Principal Arterial	No	No
67	11c	Belmont-Mount Holly Southern Loop	Construct new, four-lane divided facility from South Point Road to US 29/74 (Wilkinson Blvd)	4.75	NA	Four-Lane Divided w/ median & median openings for turning	NA	Yes	No
68	12	Gastonia-Mt.Holly Connector	Construct new, four-lane divided facility from Cox Road to NC 27 (Catawba Avenue)	6.5	NA	Four-Lane Divided w/ median & median openings for turning	NA	No	No
69	13	Lineberger Road	Construct four-lane divided facility including bridge over I-85 from US 29/74 (Franklin Blvd.) to the proposed Gastonia-Mt. Holly Connector.	0.95	NA	Four-Lane Divided w/ median & median openings for turning	NA	No	No
70	15	Hudson Blvd. Extension	Hudson Boulevard Extension from Davis Park Road to Chapel Grove Road	1.16	NA	Four-Lane Divided w/ median & median openings for turning	NA	No	No
71	16c	Lowell-Bethesda Road/Beaty Road	Widen two-lane to four-lane divided from NC 279 (S. New Hope Rd.) to NC 274 (Union Rd.)	3.7	Two Lane Road	Four-Lane Divided w/ median & median openings for turning	Minor Arterial	No	No
72	19	Puetts Chapel Road Widening	Widen existing two-lane road to a three-lane facility from Maine Avenue to the proposed NC 274 Bypass.	0.9	Two Lane Road	Three Lane Road	Minor Arterial	No	No
45	20	US 29/74 (Franklin Blvd.) Westbound	Add an additional westbound through lane from Church Street to Cox Road	1.2	Four-Lane Road	Four-Lane Divided w/ median & median openings for turning	Principal Arterial	No	No
73	21	Oakland Street	Widen substandard two-lane road from Trade St. to Carr Rd. to provide standard lane width of 12 feet.	1.6	Two Lane Road	Two Lane Road	Minor Arterial	No	No
74	22	13th Street Railroad Underpass	Replace the 13th Street Norfolk Southern Railroad underpass to allow for safer and more efficient traffic flow.	0.1	NA	NA	NA	No	No

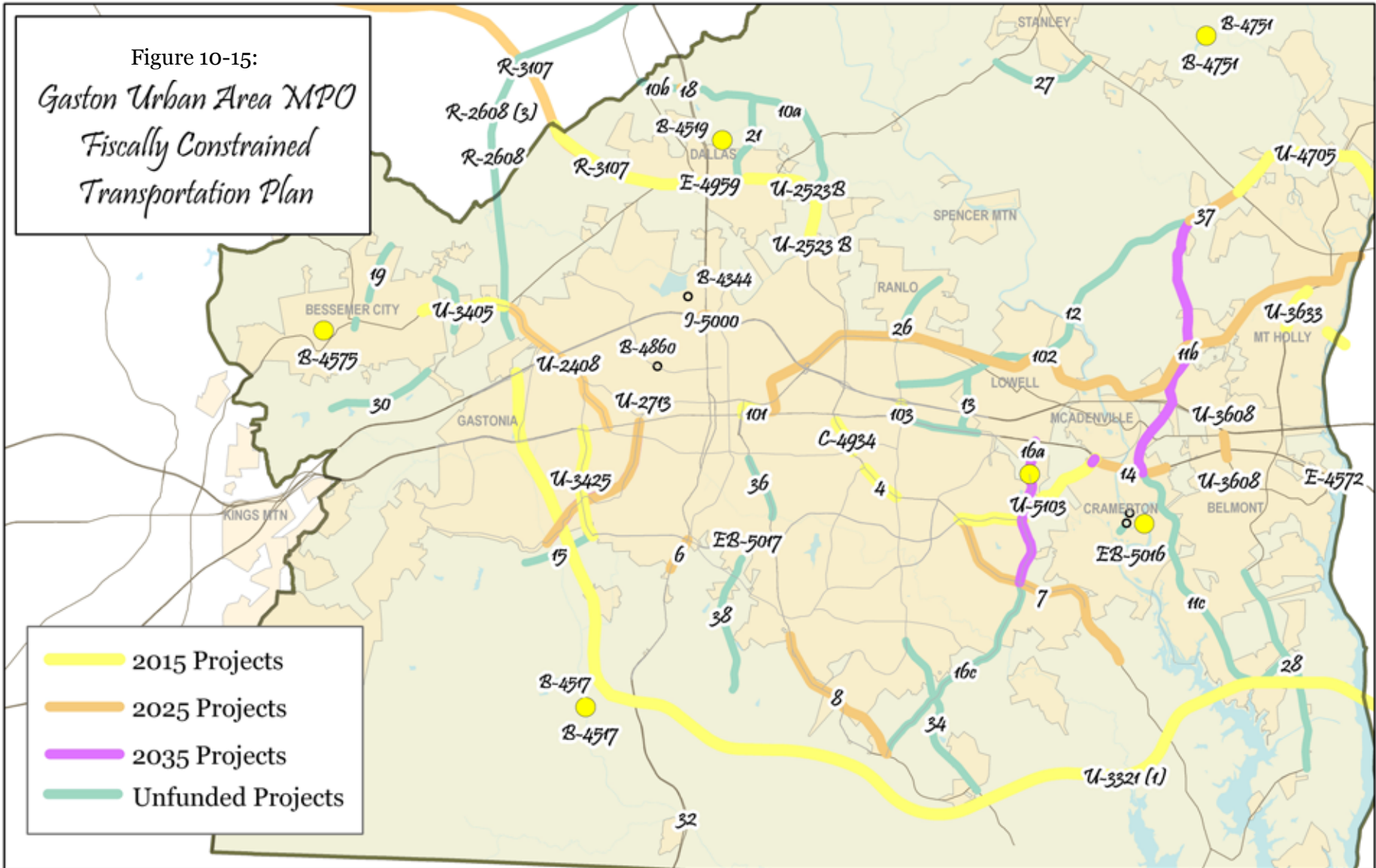


Unfunded cont'd

Reference Number	Project ID	Facility Name	Description	Distance (Miles)	Existing Facility	Future Facility	Functional Classification (Current)	Regionally Significant	Exempt
75	23	Eight Avenue Railroad Underpass	Widen existing one-lane underpass bridge to a two-lane underpass bridge from Main Street to 500' past the railroad tracks.	0.1	NA	NA	NA	No	No
76	25	Southridge Parkway North Extension	Extend Southridge Parkway (three-lane facility) north to NC 274 (at Crème Haven Dr.)	0.35	Three Lane Road	Three Lane Road	Local	No	No
77	26	Spencer Mountain Road	Widen two-lane road to a three-lane cross section from NC 7 (Ozark Avenue) to Central Ave.	1.2	Two Lane Road	Three Lane Road	Minor Arterial	No	No
78	27	Stanley Southern Connector	Construct new, four-lane divided facility from NC 275 (Dallas-Stanley Highway) to NC 27 (Charles R. Jonas Highway)	1.8	NA	Four-Lane Divided w/ median & median openings for turning	NA	No	No
79	28	NC 273 (South Point Road)	Widen existing two-lane road to a four-lane divided facility from Nixon Road to NC 273 (Lower Armstrong Rd.)	3.4	Two Lane Road	Four-Lane Divided w/ median & median openings for turning	Principal Arterial	Yes	No
80	29	NC 274 Bypass	Construct new, three-lane minor thoroughfare facility from NC 274 (Bessemer City Highway) to Costner School Road.	0.7	NA	Three Lane Road	NA	No	No
81	30	Southridge Parkway West Extension	Construct a new, three-lane facility from Crowders Mtn. Rd. to Edgewood Rd.	1.68	NA	Three Lane Road	NA	No	No
82	32	Robinson Rd/321 Railroad Underpass	Railroad trestle underpass at the intersection of Robinson Road and US 321 (North Carolina - South Carolina Border)	0.1	Railroad Trestle	Railroad Trestle	NA	No	No
83	34	Gaston Day School Road Extension	Construct new four lane divided highway from Kinmere Dr to NC 274 (Union Rd.)	2.8	NA	Four-Lane Divided w/ median & median openings for turning	NA	Yes	No
84	38	Forbes Road Extension	New four lane divided highway connecting Forbes Rd to the North to Forbes Rd to the South	2.2	NA	Four-Lane Divided w/ median & median openings for turning	NA	No	No
85	36	Union Rd	Niblick to Osceola - widen to add median	1	Four Lane Road	Four-Lane Divided w/ median & median openings for turning	Principal Arterial	No	No



Figure 10-15:
Gaston Urban Area MPO
Fiscally Constrained
Transportation Plan



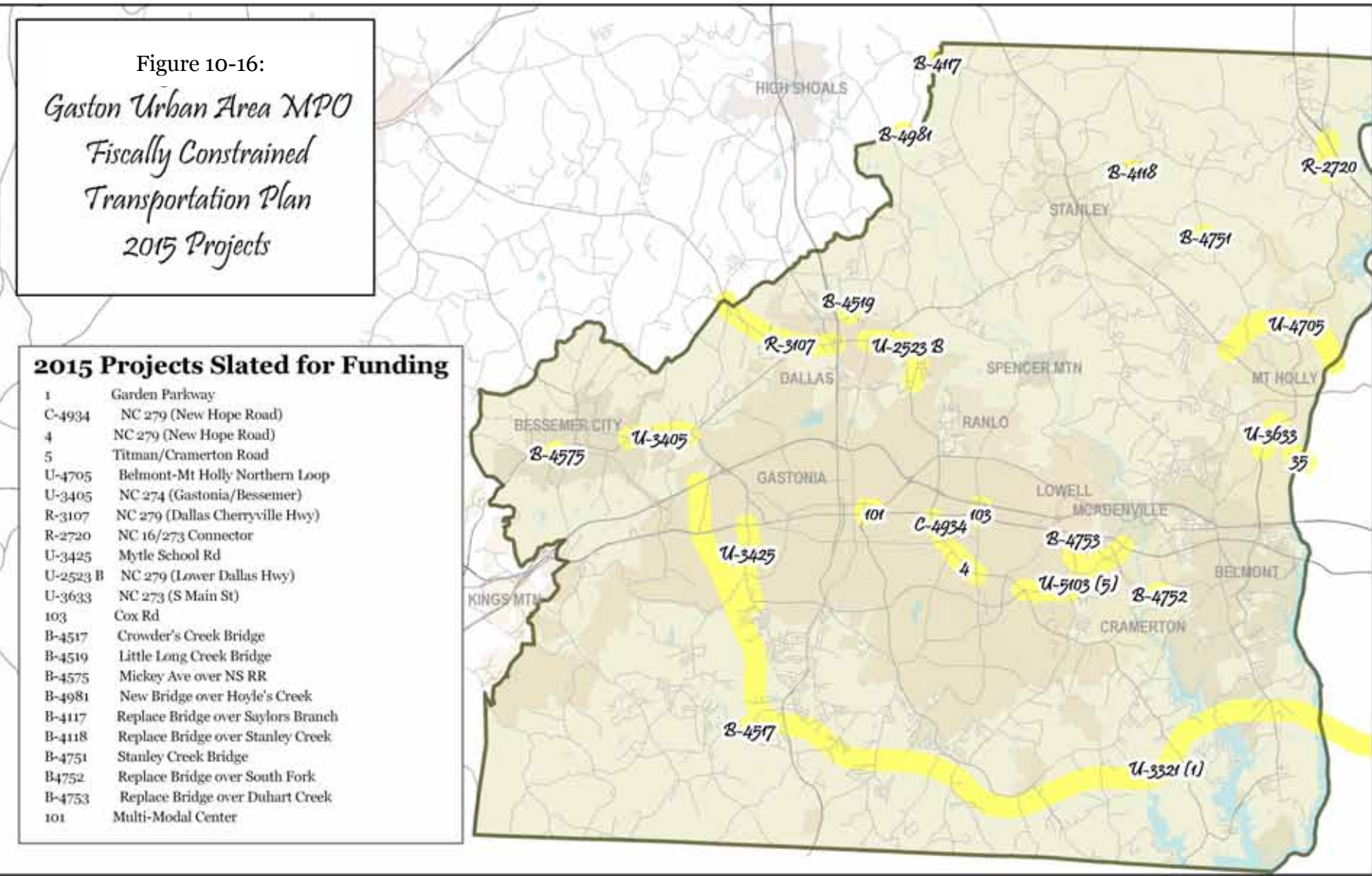


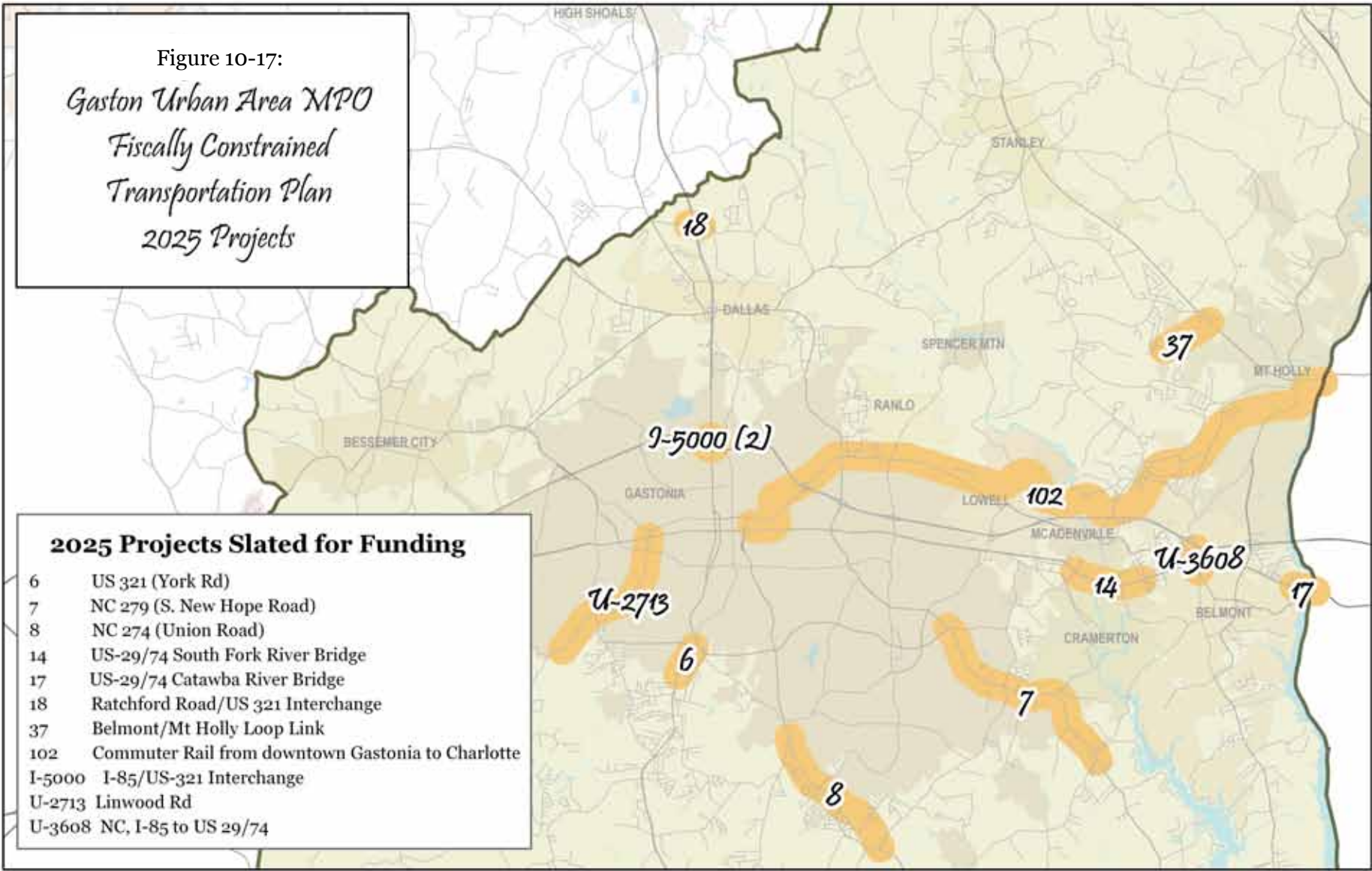
Figure 10-16:
*Gaston Urban Area MPO
 Fiscally Constrained
 Transportation Plan
 2015 Projects*

2015 Projects Slated for Funding

1	Garden Parkway
C-4934	NC 279 (New Hope Road)
4	NC 279 (New Hope Road)
5	Titman/Cramerton Road
U-4705	Belmont-Mt Holly Northern Loop
U-3405	NC 274 (Gastonia/Bessemer)
R-3107	NC 279 (Dallas Cherryville Hwy)
R-2720	NC 16/273 Connector
U-3425	Mytle School Rd
U-2523 B	NC 279 (Lower Dallas Hwy)
U-3633	NC 273 (S Main St)
103	Cox Rd
B-4517	Crowder's Creek Bridge
B-4519	Little Long Creek Bridge
B-4575	Mickey Ave over NS RR
B-4981	New Bridge over Hoyle's Creek
B-4117	Replace Bridge over Saylor's Branch
B-4118	Replace Bridge over Stanley Creek
B-4751	Stanley Creek Bridge
B4752	Replace Bridge over South Fork
B-4753	Replace Bridge over Duhart Creek
101	Multi-Modal Center



Figure 10-17:
*Gaston Urban Area MPO
 Fiscally Constrained
 Transportation Plan
 2025 Projects*



2025 Projects Slated for Funding

- 6 US 321 (York Rd)
- 7 NC 279 (S. New Hope Road)
- 8 NC 274 (Union Road)
- 14 US-29/74 South Fork River Bridge
- 17 US-29/74 Catawba River Bridge
- 18 Ratchford Road/US 321 Interchange
- 37 Belmont/Mt Holly Loop Link
- 102 Commuter Rail from downtown Gastonia to Charlotte
- I-5000 I-85/US-321 Interchange
- U-2713 Linwood Rd
- U-3608 NC, I-85 to US 29/74



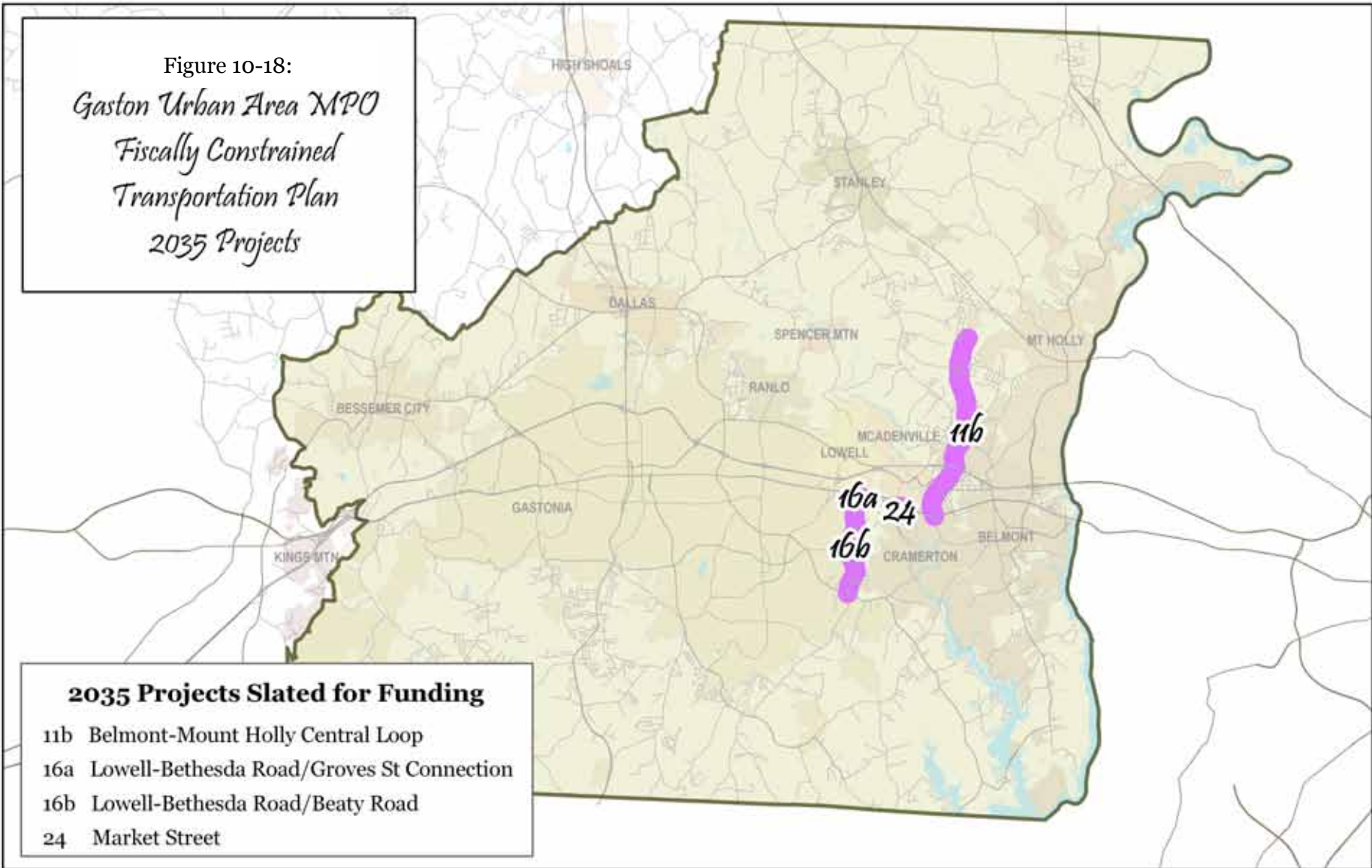


Figure 10-19: Projected Costs and Revenue Projections

Funding Source	2015	2025	2035
Garden Parkway Funding			
TIFIA (33%)	\$385,900,000	\$0	\$0
Toll Revenue Bonds (40%)	\$207,900,000	\$0	\$0
Appropriations Bonds-(GAP)	\$570,800,000	\$0	\$0
Urban Loop Funds	\$0	\$0	\$94,958,677
Interest Earnings	\$35,600,000	\$0	\$0
Total Funding	\$1,200,200,000	\$0	\$94,958,677
Total Project Costs	\$928,300,000	\$0	\$94,958,677
Total Funds Remaining	\$271,900,000	\$0	\$0
Highway Funding			
Local Bond Funds (Gastonia)	\$28,000,000	\$50,000,000	\$50,000,000
Developer Contribution (Cox Rd)	\$211,065	\$0	\$0
Sales Revenue	\$116,579,974	\$194,299,956	\$194,299,956
NCDOT Allocation	\$66,240,000	\$84,000,000	\$93,000,000
Land Transfer	\$43,067,274	\$71,778,790	\$71,778,790
Registration Revenue	\$38,696,340	\$64,493,900	\$64,493,900
Total Funding	\$292,794,653	\$464,572,646	\$473,572,646
Total Project Cost	\$273,397,123	\$408,021,494	\$473,572,646
Total Funds Remaining	\$19,397,530	\$56,551,152	\$0
Transit Funding			
Operating	\$13,594,364	\$29,387,847	\$33,456,544
Capital	\$26,840,393	\$9,721,587	\$13,511,463
Planning	\$565,524	\$1,229,284	\$1,430,163
Total Funding	\$41,000,281	\$40,338,718	\$48,398,170
Total Costs	\$16,700,053	\$14,256,318	\$23,222,041
Total Funds Remaining	\$24,300,229	\$26,082,400	\$25,176,129
Commuter Rail Funding			
Small Starts		\$481,411,932	
Sub-Total	\$0	\$481,411,932	\$0
Total Funds Remaining	\$0	\$0	\$0
Total All Projects			
Total Projected Revenue	\$1,533,994,934	\$986,323,296	\$616,729,493
Total Projected Project Costs	\$1,218,397,176	\$903,689,744	\$591,553,364
Total Funds Remaining	\$315,597,758	\$82,633,552	\$25,176,129



Figure 10-20:

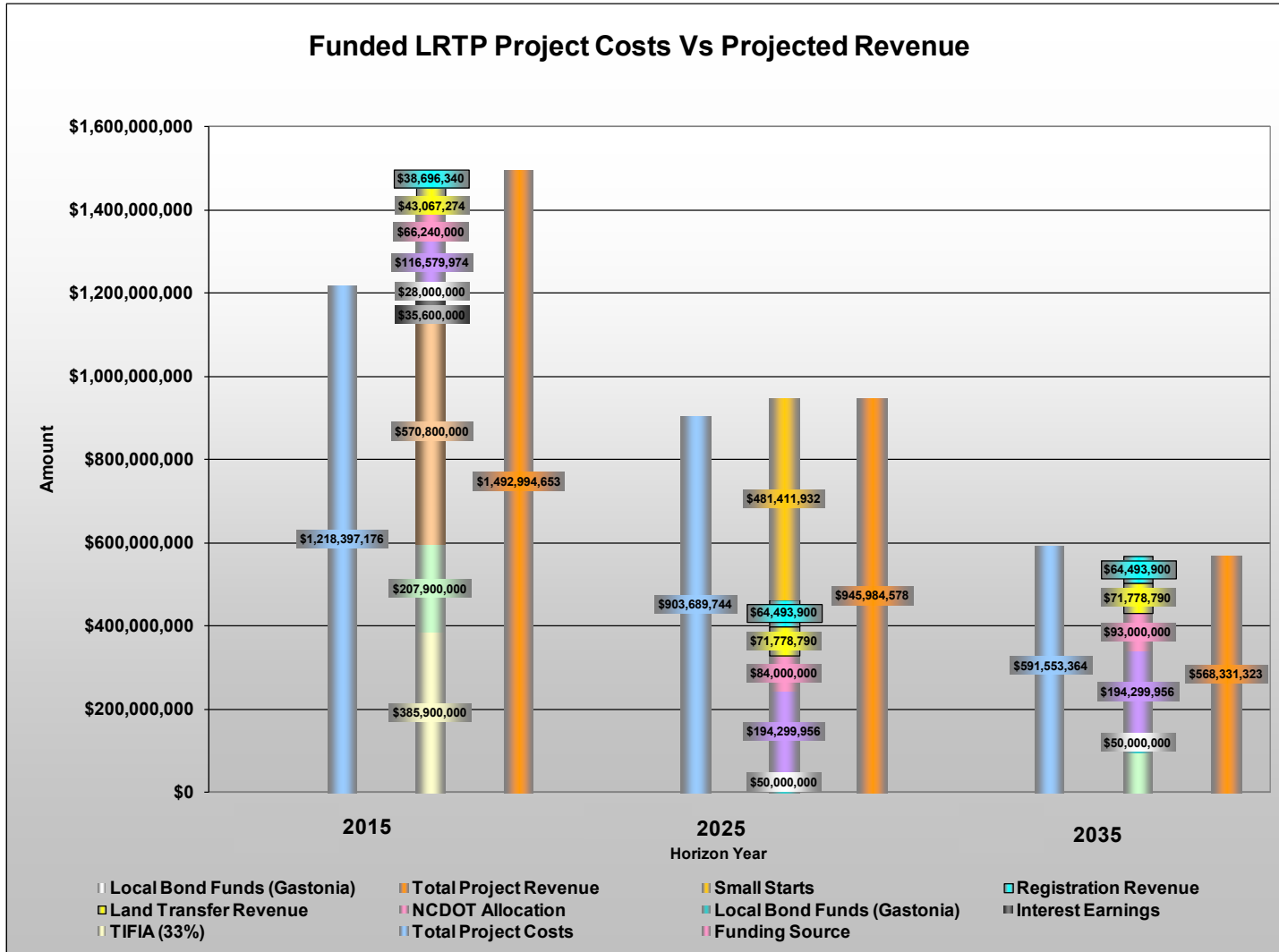


Figure 10-21: Projected Transit Expenditures					
YEAR	CAPITAL EXPENDITURES			OPERATING EXPENDITURES	TOTAL
	Expansion	Replacement	Routine Maintenance		
2009	\$313,146		\$106,640	\$1,333,001	\$1,752,787
2010		\$313,146	\$111,137	\$1,389,210	\$1,813,493
2011			\$115,823	\$1,447,789	\$1,563,613
2012	\$400,000		\$120,707	\$1,508,839	\$3,195,276
2013		\$1,565,730	\$125,797	\$1,572,463	\$2,011,406
2014		\$313,146	\$131,102	\$1,638,770	\$2,132,893
2015	\$363,022		\$136,630	\$1,707,873	\$1,844,503
2016			\$142,391	\$1,779,889	\$1,922,281
2017			\$148,395	\$1,854,943	\$2,003,338
2018			\$154,653	\$1,933,161	\$2,087,814
2019	\$420,841	\$420,841	\$161,174	\$2,014,678	\$3,017,534
2020		\$420,841	\$167,971	\$2,099,632	\$2,688,443
2021			\$175,053	\$2,188,168	\$2,363,221
2022			\$182,435	\$2,280,437	\$4,831,177
2023		\$2,368,305	\$190,128	\$2,376,598	\$3,514,047
2024	\$473,661	\$473,661	\$198,145	\$2,476,813	\$3,148,619
2025		\$473,661	\$206,500	\$2,581,254	\$2,787,754
2026			\$215,210	\$2,690,100	\$2,905,310
2027			\$224,288	\$2,803,536	\$3,027,824
2028			\$233,288	\$2,921,756	\$3,155,504
2029			\$243,608	\$3,044,961	\$3,288,568
2030			\$253,883	\$3,173,361	\$3,427,244
2031	\$500,000	\$500,000	\$261,449	\$3,268,562	\$3,530,061
2032		\$500,000	\$269,344	\$3,366,619	\$3,635,963
2033		\$1,700,000	\$277,424	\$3,467,617	\$3,745,042
2034	\$500,000		\$285,748	\$3,571,645	\$3,857,393
2035			\$294,320	\$3,678,795	\$3,973,115
TOTAL	\$3,072,924	\$10,359,331	\$5,768,666	\$72,107,518	\$87,368,490

2026-2030 figures were factored out by forecasting 3% increase per year

Figure 10-22: Summary of Transit Funds 2009-2035				
Equity	2009-2015	2016-2025	2026-2035	Total
Operating	\$13,594,364	\$29,387,847	\$33,456,544	76,438,755.00
Capital	\$4,940,393	\$9,721,587	\$13,511,463	28,173,443.00
Planning	\$565,524	\$1,229,284	\$1,430,163	3,224,971.00

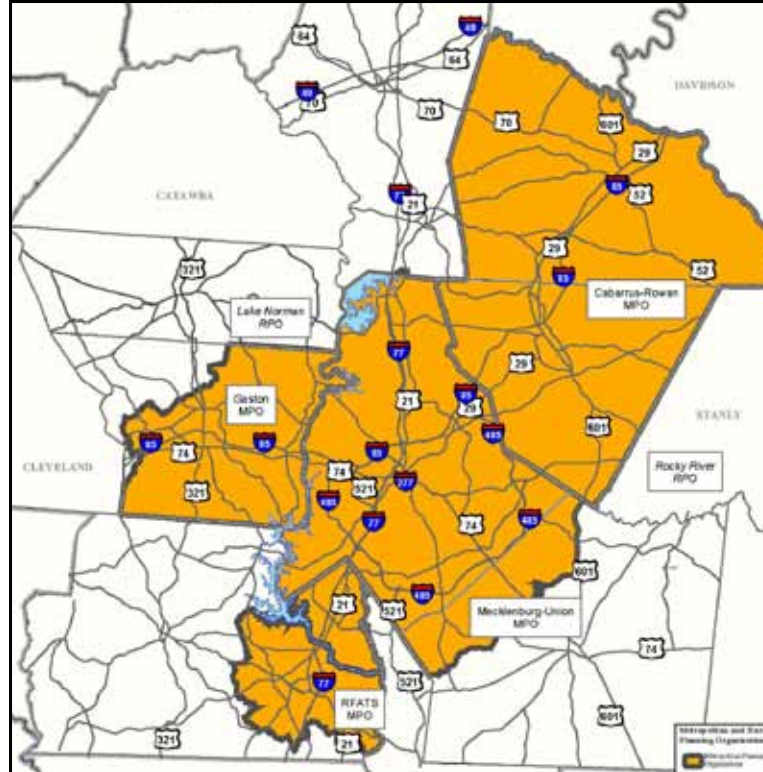


Chapter 11: Planning Factors

11.0

EIGHT PLANNING FACTORS

In 1991, Congress enacted the Intermodal Surface Transportation Efficiency Act, or ISTEA. This legislation dramatically changed the manner in which appropriations for transportation improvements were handled in that it clearly recognized the importance of modes of travel other than the automobile. This milestone legislation was reinforced in 1998 with the passage of the Transportation Equity Act for the 21st Century (TEA-21). This successor to ISTEA made it clear that transportation planning must take into account other modes. In 2005, Congress passed the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). SAFETEA-LU was a funding and authorization bill that governs United States federal surface transportation spending. The \$286.4 billion measure contains a host of provisions and earmarks intended to improve and maintain the surface transportation infrastructure in the United States, including the interstate highway system, transit systems around the country, bicycling and pedestrian facilities, and freight rail operations. SAFETEA-LU has expired as of September 30, 2009. Congress is expected to begin working on a replacement bill for the next six-year period during



The Gaston MPO works with the regional transportation alliance CRAFT that involves the other Regional MPOs in the Charlotte region

its 2009 session.

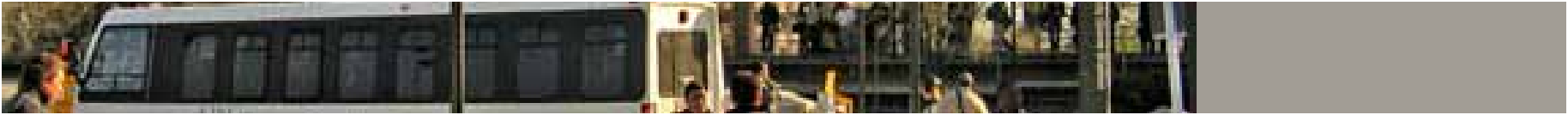
11.1 Economic Vitality

The Gaston Urban Area MPO has worked extensively over the years with NCDOT and other state and federal agencies on transportation projects that enhance the economic prosperity of the County.

A significant development is the formation of a regional transportation alliance involving the four MPOs in the Charlotte Region. The regional organization, CRAFT (Charlotte Regional Alliance for Transportation), is committed to ensuring that the economic growth and vitality of the entire area will be complemented by a transportation system developed in a regional manner. The alliance marks a coordinated effort to guide the Charlotte region in broader planning to serve the rapidly merging urban areas. The four MPOs in the Charlotte region: Cabarrus-Rowan, Gaston, Rock Hill-Fort Mill and Mecklenburg-Union have signed a Memorandum of Agreement for working cooperatively on regional transportation issues and have begun meeting on an adopted schedule.

Also important is the completion of I-485,





Pedestrian and Bicycle Crashes in downtown Gastonia from 2005-2008

and the improvements and maintenance of I-77 and I-85. These freeways will continue to provide important interstate access to other parts of the country and benefit the Charlotte region's economy with improved transportation for goods and tourism. The implementation of an efficient transportation system including mass transit options will preserve the area's reputation as a desirable place to locate businesses.

11.2 Safety

GUAMPO takes a number of measures to improve the safety of the transportation system for all users. NCDOT produces an annual inventory of high accident locations to identify where there may be a need for safety improvements. Projects are then developed to improve the conditions. NCDOT also has a safety program to address these needs.

The Gaston Urban Area MPO will begin to look at other projects including expansion of camera enforcement programs aimed at reducing heavy traffic congestion during peak hour. As of June 2009, the City of Gastonia has a Camera Signal System, which currently has 13 cameras strategically placed throughout the network to reduce congestion during peak hours and for emergency evacuations.

Further efforts supported by the Gaston MPO to ensure safety include: the construction of median guardrails on freeways, the replacement of deficient bridges and other roadway structures, the construction of sidewalks on all non-freeway road projects, the addition of bike lanes on roadways, and programs to improve safety at school crossings.

11.3 Security

Security of the transportation system for all users is very important to GUAMPO. As stated above The Gaston MPO will begin to look at other projects including expansion of camera enforcement programs aimed at helping reduce congestion and provide for safe evacuation during emergency situations.

With the increasing attention put on emergency response, MPO staff and NCDOT personnel are becoming more comfortable and proactive in their roles as incident response partners. We will continue to work with our emergency agencies at the local, regional and state level to develop a strong working relationship together.

The Gastonia Transit safety and security plan works in conjunction with the City of Gastonia emergency operation plan in order to provide coverage to the users and it's citizens. There is constant review of the plans to provide the best practices to use in case of a natural or man-made disaster.

11.4 Accessibility and Mobility Options

Increasing the accessibility and mobility options available to people and for freight is one of the most important objectives of GUAMPO. This is achieved by: integrating land use and transportation planning, providing the necessary resources to enhance the existing transportation system, expanding the existing



transit system and implementing fixed route mass transit options.

Land use and transportation policies are being instituted that support transit ridership, walking and bicycling, and reducing the dependency on the automobile. More compact development patterns at activity centers and along transit corridors will make the transit system more economically self-sustaining. In neighborhoods, transit-oriented development that emphasizes a mix of uses and easy pedestrian access to shopping and services could reduce the need to drive.



11.5 Environmental Protection, Energy Conservation Promotion, and Quality of Life Improvements

The Gaston MPO is committed to protecting and

enhancing the environment, promoting energy conservation, and improving the quality of life for citizens living, working or visiting the area. The member governments within the urban area look to protect its important resources by enacting environmentally sensitive land use policies, transportation choices, and promoting air quality education programs (such as gas cap checks and air quality awareness signs and flags). Land use decisions are being made to direct growth to reduce travel demand, which in turn leads to energy conservation and reduced pollutants. As a result many local municipalities are participating in the previously mentioned Carolina Thread Trail program. Gastonia Transit will also be replacing part of their fleet with Clean Diesel/Hybrid buses.

11.6 System Integration and Connectivity

GUAMPO has begun to develop and support programs and projects that enhance the development, integration, and connectivity of a multi-modal transportation system. The current proposed Gaston East-West Connector (toll facility) and the expansion of the Charlotte Douglas International Airport provides a critical link for movement of goods between rail, highway, and air. Ambitious transit plans in Charlotte-Mecklenburg will provide many opportunities for the regions population to enjoy a more mobile system to access the entire region. Park-and-Ride lots will provide auto commuters an opportunity to access the current bus system and will be available for the planned rapid transit system. GUAMPO and the City of Gastonia have been working together on plans to build a

Multimodal facility to house all modes of transportation in one location, along with other retail and citizen uses. Bike racks on buses allow people the flexibility to access bus stops by bike, improving the efficiency of the system. Gaston MPO policy is to add sidewalks to non-freeway roadways which will enable citizens to leave their vehicle at home for short trips.

In 2009, the Gaston MPO along with the City of Gastonia completed a Conceptual Design and Feasibility Study for a Multimodal Center in Downtown Gastonia. This work accompanied by the re-activation of the old P&N railroad will allow GUAMPO to pursue opportunities to fund commuter rail in between Gastonia and Charlotte, while providing a one-stop destination for other travel needs.

11.7 Efficient System Management and Operations

Congestion Management System

In 2005-2006 the Gaston MPO Technical Coordination Committee began analysis of a Congestion Management System in Cooperation with the North Carolina Department of Transportation. The system identifies improvements to reduce traffic congestion at intersections throughout the urban area.

A. Traffic Monitoring System

North Carolina Department of Transportation



completes bi-annual traffic counts for the entire Gaston Urban Area. The City of Gastonia currently has thirteen (13) CCTV cameras for its computerized traffic signal system. The traffic system in Gastonia is also linked to the Metrolina Regional Traffic Management Center (MRTMC) in Charlotte. The cameras are used to provide depiction of the traffic patterns/flows during peak times, as well as, during incidents that require the detour of I-85 traffic to Franklin Boulevard (US29/74). This information allows for the revision/tweaking of traffic signal timing to accommodate the existing conditions; thereby, reducing delays, increasing capacity, decreasing idle time, and improving air quality. The City of Gastonia is actively searching for grant money to expand and improve the current system.

B. Safety Management System

The MPO works with NCDOT's Traffic Engineering Branch in implementing safety improvements on the State highway system. One new resource for the MPO is linking with Strategic Highway safety plan, which is a statewide, comprehensive, data driven plan that provides a collaborative framework for safety on public roads by reducing serious injuries and fatalities on public roads.

11.8 Preservation of the Existing System

GUAMPO has worked with NCDOT for many years in establishing and maintaining a transportation

planning program that incorporates a standard set of planning principles. These planning principles require the development of a safe and efficient transportation system by: maximizing utilization of the existing facilities, increasing operational efficiency and altering travel demands when appropriate, and minimizing adverse impacts to the natural, social and economic environments. The MPO is also committed to providing the necessary resources for maintaining and preserving the existing and future transportation system.



Appendices

2015 PROJECTIONS																
TAZ	HH	POP	POP_HHS	POP_GRP	MIWTCU	RTL	HWY	LOSVC	HISVC	OFFGOV	BANK	EDUC	STU_K8	STU_HS	STU_CU	DORM
1	384	978	841	137	2	19	11	61	94	3	0	9	110	0	0	0
2	137	350	8	342	0	30	0	7	25	912	0	0	0	0	0	0
3	83	213	202	11	317	48	12	68	190	17	0	0	0	0	0	0
4	85	215	93	122	263	182	14	263	422	599	108	0	0	0	0	0
5	584	1490	1490	0	132	0	0	9	65	334	0	90	376	0	0	0
6	186	475	464	11	248	50	0	48	20	3	0	0	0	0	0	0
7	104	265	265	0	73	17	3	10	15	22	0	0	0	0	0	0
8	9	23	23	0	71	32	32	2	25	1	13	0	0	0	0	0
9	8	20	20	0	98	39	35	9	15	3	2	0	0	0	0	0
10	510	1300	1293	7	94	388	150	174	81	140	95	113	1055	0	0	0
11	281	717	714	3	12	27	70	32	42	65	0	0	0	0	0	0
12	635	1618	1512	106	149	101	80	268	331	171	31	49	314	0	0	0
13	755	1925	1957	0	11	22	24	71	84	14	0	109	794	0	0	0
14	390	994	994	0	11	3	0	14	4	9	0	0	0	0	0	0
15	341	870	870	0	9	1	0	24	37	19	0	0	0	0	0	0
16	1131	2884	2884	0	4	53	75	68	37	7	0	162	277	1220	0	0
17	89	226	226	0	103	38	7	58	36	8	0	0	0	0	0	0
18	553	1411	1411	0	99	11	36	14	31	0	0	0	0	0	0	0
19	265	675	675	0	3	0	0	7	4	158	0	0	0	0	0	0
20	712	1815	1815	0	62	21	31	14	25	10	0	37	0	585	0	0
21	102	261	261	0	2	0	0	7	0	0	0	78	470	0	0	0
22	273	696	696	0	173	0	0	10	0	0	0	0	0	0	0	0
23	286	730	730	0	58	37	0	20	11	3	0	127	466	52	0	0
24	772	1968	1968	8	176	134	89	77	66	14	0	0	0	0	0	0
25	639	1629	1629	0	123	246	27	57	101	40	30	0	0	0	0	0
26	383	976	976	0	27	39	50	23	99	0	8	129	746	128	0	0
27	995	2537	2537	0	7	91	9	9	19	5	0	0	0	0	0	0
28	841	2145	2013	132	7	37	86	9	115	181	6	149	1594	0	0	0
29	344	878	878	0	206	36	102	40	9	2	4	90	700	58	0	0
30	288	735	735	0	49	9	0	42	2	0	0	0	0	0	0	0
31	987	2518	2393	125	84	32	40	34	70	47	13	0	0	0	0	0
32	310	790	790	0	117	14	0	50	37	22	0	0	0	0	0	0
33	925	2358	2225	133	11	143	73	61	18	20	6	0	0	0	0	0
34	948	2416	2282	134	3	10	0	4	36	16	5	0	0	0	0	0
35	678	1728	1728	0	0	75	19	22	33	12	7	0	0	0	0	0
36	552	1407	1407	0	37	224	50	79	128	22	36	194	682	1683	0	0
37	169	431	431	0	4	278	37	25	187	13	30	0	0	0	0	0
38	859	2190	2183	7	226	76	145	31	66	22	0	0	0	0	0	0
39	132	336	336	0	243	0	143	16	10	0	0	0	0	0	0	0
40	226	576	123	454	242	391	159	50	3251	591	0	0	0	0	0	0
41	27	68	68	0	35	744	208	69	94	69	0	0	0	0	0	0
42	0	0	0	0	510	237	159	46	72	1	15	0	0	0	0	0



2015 PROJECTIONS																
TAZ	HH	POP	POP_HHS	POP_GRP	MIWTCU	RTL	HWY	LOSVC	HISVC	OFFGOV	BANK	EDUC	STU_K8	STU_HS	STU_CU	DORM
43	221	564	564	0	0	50	9	34	169	44	5	0	0	0	0	0
44	114	290	290	0	101	1390	512	50	138	0	0	0	0	0	0	0
45	803	2047	2047	0	48	147	5	26	21	0	0	0	0	0	0	0
46	1292	3293	3293	0	9	149	27	53	67	69	8	0	0	0	0	0
47	971	2476	2476	0	12	1	0	28	19	0	0	0	0	0	0	0
48	624	1591	1530	62	44	156	0	16	65	17	0	59	0	0	0	0
49	118	301	301	0	14	10	0	17	13	0	0	140	817	0	0	0
50	319	813	813	0	338	7	0	38	17	0	10	0	0	0	0	0
51	588	1500	1489	11	367	17	3	32	24	0	0	0	0	0	0	0
52	567	1446	1446	0	124	15	0	32	34	155	0	34	52	29	0	0
53	300	764	764	0	61	27	49	42	41	22	0	0	0	0	0	0
54	739	1885	1752	133	382	15	4	26	83	8	0	0	0	0	0	0
55	357	911	911	0	0	0	0	0	33	3	0	0	0	0	0	0
56	790	2015	2015	0	0	2	0	5	0	0	0	87	627	0	0	0
57	220	561	561	0	0	18	0	0	0	0	0	0	0	0	0	0
58	20	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0
59	15	39	39	0	0	0	0	0	0	0	0	0	0	0	0	0
60	221	563	563	0	4	0	0	7	0	0	0	0	0	0	0	0
61	238	608	608	0	91	0	0	0	0	0	0	0	0	0	0	0
62	327	833	833	0	1	2	0	2	3	0	0	0	0	0	0	0
63	214	547	547	0	265	10	8	32	29	0	0	66	497	0	0	0
64	425	1084	1084	0	18	38	83	35	37	76	10	0	0	0	0	0
65	149	380	380	0	70	79	0	5	14	0	8	0	0	0	0	0
66	311	794	794	0	3204	11	9	31	31	4	0	40	204	0	0	0
67	862	2199	2199	0	176	113	57	41	15	66	0	50	365	86	0	0
68	378	964	964	0	0	5	0	2	0	2	0	115	930	0	0	0
69	779	1986	1986	0	72	139	7	38	63	15	6	148	1335	0	0	0
70	605	1544	1544	0	45	26	19	53	27	0	0	0	0	0	0	0
71	984	2510	2510	0	23	0	0	14	0	7	0	0	0	0	0	0
72	865	2205	2205	0	13	10	25	5	108	5	13	70	601	0	0	0
73	1174	2994	2994	0	32	59	34	21	14	0	0	78	362	96	0	0
74	9	23	23	0	0	0	0	20	0	0	0	0	0	0	0	0
75	952	2428	2428	0	25	168	94	19	57	0	0	0	0	0	0	0
76	212	540	540	0	23	0	0	7	0	0	0	0	0	0	0	0
77	562	1432	1432	0	137	13	0	9	18	0	0	0	0	0	0	0
78	549	1401	1401	0	102	8	0	24	20	0	0	0	0	0	0	0
79	266	679	679	0	3	7	0	4	0	0	0	0	0	0	0	0
80	113	288	288	0	19	0	2	2	1	35	0	0	0	0	0	0
81	645	1644	1158	0	27	0	20	40	0	0	0	0	0	0	0	0
82	201	513	516	0	33	11	0	5	8	0	0	0	0	0	0	0
83	610	1554	1554	0	12	8	0	23	1	0	0	0	0	0	0	0
84	766	1952	1952	0	13	6	0	21	0	0	0	82	627	0	0	0



2015 PROJECTIONS

TAZ	HH	POP	POP_HHS	POP_GRP	MWTCU	RTL	HWY	LOSVC	HISVC	OFFGOV	BANK	EDUC	STU_K8	STU_HS	STU_CU	DORM
85	273	697	697	0	1419	1	17	16	47	0	9	0	0	0	0	0
86	989	2521	2521	0	1	0	0	5	0	0	0	50	0	0	0	0
87	894	2280	2280	0	13	23	0	26	34	29	0	0	0	0	0	0
88	1035	2639	2639	0	0	10	16	32	30	14	9	224	616	1389	0	0
89	678	1729	1677	53	48	22	20	15	38	0	0	67	382	0	0	0
90	518	1321	1321	0	7	3	81	30	30	8	0	74	0	1256	0	0
91	260	663	663	0	2	18	14	47	35	0	8	56	0	0	0	0
92	268	684	684	0	92	0	0	0	0	3	0	0	0	0	0	0
93	784	2000	716	7	46	30	8	31	45	0	0	0	0	0	0	0
94	574	1464	1464	0	2	50	25	36	47	0	0	0	0	0	0	0
95	470	1197	1197	0	107	5	5	26	52	88	0	125	962	0	0	0
96	250	638	1593	7	66	0	0	44	40	0	0	65	680	0	0	0
97	428	1091	1091	0	41	119	31	7	56	28	7	0	0	0	0	0
98	555	1416	1416	0	699	92	4	26	147	40	0	0	0	0	0	0
99	233	595	436	160	362	132	54	136	401	64	43	42	191	228	0	0
100	1176	3000	3000	0	596	89	86	31	11	12	0	0	0	0	0	0
101	334	851	851	0	24	534	396	65	151	10	40	0	0	0	0	0
102	602	1536	1536	0	52	74	71	60	148	118	11	0	0	0	0	0
103	847	2160	1442	718	356	171	147	240	287	247	22	435	314	0	1360	1
104	318	810	810	0	731	36	0	12	6	85	0	127	694	0	0	0
105	880	2245	2245	0	6	22	1	5	3	0	0	0	0	0	0	0
106	370	944	884	61	210	20	36	44	93	14	0	0	0	0	0	0
107	681	1737	1737	0	27	23	4	9	6	0	0	0	0	0	0	0
108	660	1684	1684	0	280	27	17	25	24	10	0	0	0	0	0	0
109	651	1659	1659	0	28	20	13	22	33	1	0	0	0	0	0	0
110	252	643	643	0	58	77	13	35	42	25	15	0	0	0	0	0
111	388	990	990	0	22	7	32	14	25	0	0	0	0	0	0	0
112	1323	3373	3373	0	61	5	0	9	0	0	0	75	790	0	0	0
113	320	817	817	0	350	0	0	9	13	0	0	135	0	1519	0	0
114	334	851	851	0	23	0	0	10	0	13	0	0	0	0	0	0
115	570	1454	1454	0	269	0	36	20	31	8	0	0	0	0	0	0
116	1640	4183	4183	0	2234	41	0	54	84	22	0	56	429	0	0	0
117	505	1287	1184	103	210	98	7	37	60	4	0	0	0	0	0	0
118	347	884	884	0	280	53	10	88	61	101	32	0	0	0	0	0
119	231	589	589	0	62	58	15	51	50	18	14	85	638	0	0	0
120	0	0	0	0	190	21	29	14	0	0	0	0	0	0	0	0
121	81	207	207	0	73	32	19	109	1	0	0	0	0	0	0	0
122	262	667	667	0	7	0	0	0	0	0	0	0	0	0	0	0
123	294	750	750	0	93	2	0	23	36	10	0	0	0	0	0	0
124	627	1599	1599	0	123	67	19	76	37	43	10	70	574	0	0	0
125	413	1052	748	302	93	136	65	47	51	63	27	0	0	0	0	0
126	179	456	456	0	79	0	0	2	0	0	0	0	0	0	0	0



2015 PROJECTIONS

TAZ	HH	POP	POP_HHS	POP_GRP	MIWTCU	RTL	HWY	LOSVC	HISVC	OFFGOV	BANK	EDUC	STU_K8	STU_HS	STU_CU	DORM
127	467	1190	1190	0	0	17	2	10	20	0	0	0	0	0	0	0
128	392	999	999	0	16	5	0	7	0	36	0	0	0	0	0	0
129	590	1505	1505	0	28	5	0	2	9	0	0	0	0	0	0	0
130	297	757	757	0	76	48	10	144	18	0	0	170	766	1212	0	0
131	460	1174	1137	37	227	84	105	70	83	0	15	34	154	60	0	0
132	147	375	352	23	95	28	42	42	278	136	0	363	0	0	6401	0
133	107	273	273	0	1198	13	102	23	22	10	0	0	0	0	0	0
134	95	242	242	0	1949	38	15	31	37	0	0	0	0	0	0	0
135	160	408	408	0	642	63	0	0	0	0	0	0	0	0	0	0
136	402	1026	1026	0	272	29	34	7	81	0	0	0	0	0	0	0
137	110	282	282	0	6	63	26	31	31	0	8	0	0	0	0	0
138	84	214	214	0	544	10	58	9	0	0	0	0	0	0	0	0
139	276	705	705	0	309	4	0	67	17	8	0	0	0	0	0	0
140	523	1335	1335	0	219	101	25	24	25	0	5	0	0	0	0	0
141	427	1088	1088	0	456	19	11	23	33	4	0	69	533	0	0	0
142	1225	3123	3123	0	432	109	26	93	78	186	25	223	836	798	0	0
143	374	953	953	0	26	1	1	20	0	3	0	0	0	0	0	0
144	147	375	375	0	0	0	0	0	0	0	0	0	0	0	0	0
145	375	955	955	0	25	0	10	0	0	0	0	42	710	0	0	0
146	669	1706	1706	0	219	20	31	204	118	13	0	95	0	0	0	0
147	208	529	529	0	40	53	10	27	51	0	8	68	0	0	0	0
148	327	833	833	0	0	2	155	0	17	2	0	0	0	0	0	0
149	1098	2801	2740	62	29	41	2	109	354	106	0	85	934	0	0	0
150	283	721	721	0	63	3	0	0	0	0	0	0	0	0	0	0
151	88	224	224	0	4	0	0	0	0	0	0	0	0	0	0	0
152	163	416	416	0	84	0	13	13	0	0	0	0	0	0	0	0
153	139	354	354	0	1	0	0	0	0	0	0	0	0	0	0	0
154	358	914	914	0	0	0	0	5	9	0	0	0	0	0	0	0
155	363	927	927	0	1	0	9	4	0	0	0	0	0	0	0	0
156	17	43	43	0	112	2	0	0	0	0	0	0	0	0	0	0
157	145	371	297	73	0	0	0	0	0	0	0	0	0	0	0	0
158	462	1178	1178	0	141	9	31	20	13	0	0	0	0	0	0	0
159	217	553	553	0	8	0	0	9	0	0	0	0	0	0	0	0
160	546	1393	1393	0	21	10	0	10	5	0	0	0	0	0	0	0
161	457	1165	1165	0	0	0	0	19	22	0	0	0	0	0	0	0
162	304	776	776	0	192	7	0	0	1	0	0	0	0	0	0	0
163	422	1076	1076	0	20	0	0	14	0	0	0	0	0	0	0	0
164	556	1417	1414	3	25	0	0	16	16	0	0	0	0	0	0	0
165	677	1727	1727	0	54	35	24	96	46	6	0	59	625	7	0	0
166	285	727	727	0	0	0	0	0	0	0	0	0	0	0	0	0
167	235	599	599	0	3	0	0	2	0	0	0	0	0	0	0	0
168	339	865	865	0	0	0	0	7	0	0	0	0	0	0	0	0





2015 PROJECTIONS																
TAZ	HH	POP	POP_HHS	POP_GRP	MIWTCU	RTL	HWY	LOSVC	HISVC	OFFGOV	BANK	EDUC	STU_K8	STU_HS	STU_CU	DORM
169	1204	3071	3071	0	42	73	45	67	50	78	14	134	1118	0	0	0
170	1019	2599	2599	0	25	3	0	20	6	0	0	0	0	0	0	0
171	621	1584	1386	199	714	90	96	62	171	0	7	0	0	0	0	0
172	656	1672	1672	0	2	0	0	0	0	0	0	0	0	0	0	0
173	495	1263	1263	0	2	0	0	7	0	0	0	0	0	0	0	0
174	125	318	318	0	41	0	0	20	13	5	0	0	0	0	0	0
175	400	1021	1021	0	126	35	14	50	58	30	0	60	0	0	0	0
176	446	1138	1390	4	5	38	14	54	51	5	8	87	0	0	0	0
177	500	1276	1276	0	31	23	10	37	28	0	0	0	0	0	0	0
178	500	1275	1275	0	18	36	18	36	59	22	8	0	0	0	0	0
179	382	975	975	0	5	0	19	0	0	0	0	0	0	0	0	0
180	438	1117	1110	7	17	39	13	34	29	1	10	0	0	0	0	0
181	565	1441	1440	1	63	42	10	33	30	0	0	0	0	0	0	0
182	222	566	566	0	7	0	0	10	0	0	0	0	0	0	0	0
183	79	201	201	0	25	0	0	0	0	0	0	0	0	0	0	0
184	126	322	322	0	22	27	57	52	51	14	50	0	0	0	0	0
185	433	1105	1105	0	0	33	9	35	38	10	8	80	0	0	0	0
186	136	346	346	0	0	0	0	0	0	0	0	0	0	0	0	0
187	136	348	348	0	0	0	0	0	0	0	0	0	0	0	0	0
188	264	673	673	0	0	0	0	4	0	0	0	0	0	0	0	0
189	150	383	383	0	2	1	3	5	2	0	0	0	0	0	0	0
190	90	230	230	0	3	0	0	0	0	0	0	0	0	0	0	0
TOTAL	84952	216628	212370	3752	28136	10024	5281	6136	11401	5853	876	5560	25935	10401	7761	1



2025 PROJECTIONS																
TAZ	HH	POP	POP_HHS	POP_GRP	MIWTCU	RTL	HWY	LOSVC	HISVC	OFFGOV	BANK	EDUC	STU_K8	STU_HS	STU_CU	DORM
1	385	982	836	146	2	19	11	61	94	3	0	13	136			0
2	145	371	5	366	0	71	0	22	25	940	9	0				0
3	83	211	200	12	317	71	12	101	219	42	0	0				0
4	87	222	92	131	263	206	14	295	446	638	114	0				0
5	584	1490	1490	0	132	0	0	9	65	334	0	96	470			0
6	198	506	494	12	248	50	0	48	20	3	0	0				0
7	103	262	262	0	73	17	3	10	15	22	0	0				0
8	9	22	22	0	71	39	32	9	31	11	13	0				0
9	8	20	20	0	98	39	35	16	21	13	2	0				0
10	508	1295	1320	8	94	388	150	174	81	140	99	119	1319			0
11	280	713	710	3	12	27	70	32	42	65	0	0				0
12	633	1614	1501	113	149	118	80	295	351	171	31	54	392			0
13	750	1914	1914	0	11	22	24	71	84	14	0	115	992			0
14	525	1338	1338	0	11	3	0	14	4	9	0	0				0
15	340	867	867	0	9	1	0	24	37	19	0	0				0
16	1167	2975	2975	0	4	53	75	68	37	7	0	170	346	1585		0
17	88	224	224	0	103	48	7	71	46	8	0	0				0
18	552	1407	1407	0	99	11	36	14	31	0	0	0				0
19	263	671	671	0	3	0	0	7	4	158	0	0				0
20	717	1830	1830	0	62	21	31	14	25	10	0	40		760		0
21	112	286	286	0	2	0	0	7	0	0	0	81	587			0
22	286	728	728	0	173	0	0	10	0	0	0	0				0
23	287	732	732	0	58	37	0	20	11	3	0	129	582	67		0
24	795	2028	2020	9	176	147	98	90	80	14	0	0				0
25	648	1653	1653	0	122	285	39	92	139	40	34	0				0
26	510	1302	1302	0	27	67	66	54	139	10	12	137	933	166		0
27	1090	2779	2779	0	7	91	9	9	19	5	0	0				0
28	912	2327	2186	141	7	37	86	9	115	181	6	158	1993			0
29	345	879	879	0	206	36	102	40	9	2	4	96	875	74		0
30	331	844	844	0	49	9	0	42	2	0	0	0				0
31	1053	2685	2552	134	84	32	40	34	70	53	13	0				0
32	310	790	790	0	117	14	0	50	37	22	0	0				0
33	993	2533	2391	142	11	143	73	61	18	20	6	0				0
34	1014	2585	2442	143	3	10	0	4	36	16	5	0				0
35	1030	2627	2627	0	0	75	19	22	33	12	7	0				0
36	549	1399	1399	0	37	224	50	79	128	22	36	205	852	2186		0
37	171	435	435	0	4	291	37	43	187	32	30	0				0
38	853	2175	2222	8	226	76	145	31	66	22	0	0				0
39	132	337	337	0	243	0	143	16	10	0	0	0				0
40	237	604	120	485	242	391	159	50	3326	637	0	0				0



2025 PROJECTIONS

TAZ	HH	POP	POP_HHS	POP_GRP	MIWTCU	RTL	HWY	LOSVC	HISVC	OFFGOV	BANK	EDUC	STU_K8	STU_HS	STU_CU	DORM
41	26	67	67	0	35	760	225	89	122	69	0	0				0
42	0	0	0	0	510	256	182	66	103	1	15	0				0
43	228	580	580	0	0	62	9	56	200	90	5	0				0
44	118	300	300	0	101	1390	511	50	138	0	0	0				0
45	799	2037	2037	0	48	147	5	26	21	0	0	0				0
46	1385	3531	3531	0	9	176	40	94	109	148	17	0				0
47	976	2489	2489	0	12	1	0	28	19	0	0	0				0
48	638	1626	1560	66	44	156	0	16	65	17	0	63				0
49	140	358	358	0	14	19	0	36	30	0	0	149	1021			0
50	351	894	894	0	338	7	0	61	35	0	19	0				0
51	800	2040	542	12	367	28	3	50	37	0	0	0				0
52	619	1578	1578	0	124	31	0	67	65	167	0	36	64	38		0
53	305	777	777	0	61	27	49	42	41	22	0	0				0
54	755	1925	1783	142	382	15	4	26	83	8	0	0				0
55	406	1036	1036	0	0	0	0	0	33	3	0	0				0
56	820	2091	2091	0	0	2	0	5	0	0	0	93	784			0
57	350	893	893	0	0	18	0	0	0	0	0	0				0
58	20	51	51	0	0	0	0	0	0	0	0	0				0
59	18	46	46	0	0	0	0	0	0	0	0	0				0
60	261	665	665	0	4	0	0	7	0	0	0	0				0
61	365	930	930	0	91	0	0	0	0	0	0	0				0
62	428	1090	1090	0	1	2	0	14	13	0	9	0				0
63	298	760	760	0	411	19	14	59	53	0	0	73	622			0
64	436	1113	1113	0	18	59	92	57	64	114	19	0				0
65	163	416	416	0	70	79	0	5	14	0	8	0				0
66	333	848	848	0	3204	11	25	55	31	4	0	45	254			0
67	882	2250	2250	0	195	126	64	46	46	73	0	55	456	111		0
68	378	964	964	0	0	5	0	2	0	2	0	123	1162			0
69	982	2503	2503	0	72	187	21	68	96	15	14	155	1669			0
70	628	1602	1602	0	45	50	32	77	48	0	0	0				0
71	1049	2675	2675	0	23	0	0	14	0	7	0	0				0
72	956	2438	2438	0	13	10	25	5	108	5	13	76	751			0
73	1315	3352	3352	0	32	59	34	21	14	0	0	83	453	124		0
74	10	25	25	0	0	0	0	20	0	0	0	0				0
75	1886	4809	4809	0	25	189	113	46	87	0	0	0				0
76	235	598	598	0	23	0	0	7	0	0	0	0				0
77	648	1651	1651	0	137	13	0	9	18	0	0	0				0
78	650	1657	1657	0	102	8	0	24	20	0	0	0				0
79	311	793	793	0	3	7	0	4	0	0	0	0				0
80	147	374	374	0	19	0	2	2	1	35	0	0				0



2025 PROJECTIONS																
TAZ	HH	POP	POP_HHS	POP_GRP	MIWTCU	RTL	HWY	LOSV	HISVC	OFFGOV	BANK	EDUC	STU_K8	STU_HS	STU_CU	DORM
81	698	1779	1779	0	27	0	20	40	0	0	0	0				0
82	267	681	681	0	33	11	0	5	8	0	0	0				0
83	673	1716	1716	0	12	8	0	23	1	0	0	0				0
84	784	1999	1999	0	13	6	0	21	0	0	0	89	784			0
85	315	804	804	0	1497	16	36	43	83	0	17	0				0
86	1108	2826	2826	0	1	0	0	5	0	0	0	144				0
87	951	2425	2425	0	13	23	0	26	34	29	0	0				0
88	2087	5321	5321	0	0	27	32	59	53	29	21	238	770	1805		0
89	873	2225	2169	56	48	22	20	15	38	0	0	72	478			0
90	784	2000	2000	0	7	3	97	59	54	8	0	74		1631		0
91	1660	4233	4233	0	2	42	14	86	67	0	14	70				0
92	268	684	684	0	92	0	0	0	0	3	0	0				0
93	784	2000	1993	8	49	85	28	71	87	0	0	0				0
94	967	2465	2465	0	2	76	39	65	78	0	9	0				0
95	494	1259	1259	0	107	20	5	38	80	104	0	136	1203			0
96	380	969	962	8	66	0	0	44	40	0	0	70	850			0
97	461	1175	1175	0	41	119	31	7	56	28	7	0				0
98	560	1427	1427	0	699	92	4	26	147	40	0	0				0
99	238	606	436	171	362	148	54	169	425	101	52	50	239	296		0
100	1176	3000	3000	0	584	124	84	63	11	34	0	0				0
101	334	852	852	0	24	596	428	104	202	14	49	0				0
102	896	2286	2286	0	41	98	87	88	164	205	17	0				0
103	876	2233	1467	767	356	171	147	240	287	247	22	465	392		1895	1
104	317	809	809	0	844	36	0	12	6	85	0	146	867			0
105	951	2425	2425	0	6	22	1	5	3	0	0	0				0
106	371	946	882	65	210	20	36	44	93	14	0	0				0
107	718	1831	1831	0	27	23	4	9	6	0	0	0				0
108	700	1784	1784	0	280	51	35	71	56	29	9	0				0
109	674	1719	1719	0	28	20	29	47	52	1	0	0				0
110	254	647	647	0	58	94	29	65	73	25	15	0				0
111	391	996	996	0	22	7	32	14	25	0	0	0				0
112	1813	4623	4623	0	124	5	0	9	0	0	0	84	988			0
113	363	926	926	0	350	0	0	9	13	0	0	144		1973		0
114	398	1015	1015	0	23	0	0	10	0	13	0	0				0
115	637	1625	1625	0	269	0	36	37	51	8	0	0				0
116	1738	4433	4433	0	2258	41	0	54	84	22	0	60	536			0
117	513	1307	1197	110	210	118	7	69	90	4	0	0				0
118	353	900	900	0	267	70	26	114	90	1213	39	0				0
119	238	607	607	0	62	58	30	78	73	18	14	91	797			0
120	0	0	0	0	190	21	47	27	11	0	9	0				0



2025 PROJECTIONS

TAZ	HH	POP	POP_HHS	POP_GRP	MIWTCU	RTL	HWY	LOSVC	HISVC	OFFGOV	BANK	EDUC	STU_K8	STU_HS	STU_CU	DORM
121	214	545	545	0	91	32	19	109	1	0	0	0				0
122	364	928	928	0	7	0	0	0	0	0	0	0				0
123	363	925	925	0	93	2	0	23	36	10	0	0				0
124	707	1803	1803	0	122	88	19	103	37	61	10	76	718			0
125	431	1100	778	323	93	157	65	74	51	82	31	0				0
126	211	539	539	0	79	0	0	2	0	0	0	0				0
127	587	1498	1498	0	0	17	2	10	20	0	0	0				0
128	456	1162	1162	0	16	5	0	7	0	36	0	0				0
129	1215	3097	3097	0	28	5	0	2	9	0	0	0				0
130	375	957	957	0	76	60	29	180	47	0	0	179	958	1575		0
131	574	1463	1424	39	227	94	126	97	109	0	15	39	192	77		0
132	113	288	264	25	95	47	61	72	299	155	9	419			8916	0
133	123	314	322	0	1284	13	116	23	32	10	0	0				0
134	123	313	313	0	2054	38	35	36	72	0	0	0				0
135	173	442	442	0	681	63	0	0	0	0	0	0				0
136	416	1062	1062	0	311	29	34	7	81	0	0	0				0
137	140	356	356	0	6	89	47	69	58	0	14	0				0
138	86	219	219	0	629	10	58	9	0	0	0	0				0
139	305	778	778	0	308	4	0	67	17	8	0	0				0
140	678	1730	1730	0	219	129	45	56	60	0	14	0				0
141	601	1532	1532	0	516	39	31	56	67	4	9	75	667			0
142	1372	3498	3498	0	432	125	26	122	112	212	30	236	1045	1036		0
143	447	1141	1141	0	26	1	1	20	0	3	0	0				0
144	218	555	555	0	0	0	0	0	0	0	0	0				0
145	435	1110	1110	0	77	0	29	16	15	0	0	45	888			0
146	880	2245	2245	0	330	15	59	241	136	12	0	93				0
147	237	605	605	0	40	112	30	62	84	0	14	74				0
148	326	832	832	0	0	2	155	0	17	2	0	0				0
149	1125	2870	2804	66	29	41	2	109	354	106	0	91	1168			0
150	319	813	813	0	63	3	0	0	0	0	0	0				0
151	159	406	406	0	4	0	0	0	0	0	0	0				0
152	260	663	663	0	140	0	34	38	0	0	0	0				0
153	207	529	529	0	1	0	0	0	0	0	0	0				0
154	418	1067	1067	0	0	0	0	5	9	0	0	0				0
155	415	1057	1057	0	1	0	9	4	0	0	0	0				0
156	27	68	68	0	112	2	0	0	0	0	0	0				0
157	1888	4814	4737	78	0	0	0	0	0	0	0	0				0
158	634	1616	1616	0	141	16	50	45	33	0	0	0				0
159	242	618	618	0	8	0	0	9	0	0	0	0				0
160	610	1556	1556	0	21	10	0	10	5	0	0	0				0



2025 PROJECTIONS																
TAZ	HH	POP	POP_HHS	POP_GRP	MIWTCU	RTL	HWY	LOSVC	HISVC	OFFGOV	BANK	EDUC	STU_K8	STU_HS	STU_CU	DORM
161	521	1328	1328	0	0	0	0	19	22	0	0	0				0
162	346	884	884	0	222	7	0	0	1	0	0	0				0
163	509	1298	1298	0	20	0	0	14	0	0	0	0				0
164	573	1462	1459	3	47	0	0	29	30	0	0	0				0
165	814	2076	2076	0	54	35	24	96	46	6	0	61	781			0
166	421	1073	1073	0	0	0	0	0	0	0	0	0				0
167	289	738	738	0	3	0	0	2	0	0	0	0				0
168	398	1015	1015	0	0	0	0	7	0	0	0	0				0
169	1354	3452	3452	0	42	73	45	96	76	97	14	141	1398			0
170	1307	3332	3332	0	25	3	0	20	6	0	0	0				0
171	918	2341	2129	212	800	119	113	97	199	0	15	0				0
172	802	2045	2045	0	2	20	9	21	15	0	0	0				0
173	682	1738	1738	0	2	0	0	7	0	0	0	0				0
174	202	514	514	0	106	0	0	51	34	5	0	0				0
175	1137	2900	2900	0	126	79	37	112	111	30	0	117				0
176	919	2344	2340	5	5	95	37	110	108	25	22	101				0
177	737	1878	1878	0	31	63	29	94	80	0	0	0				0
178	2000	5100	5100	0	51	94	45	87	117	37	22	0				0
179	519	1324	1324	0	5	0	19	0	0	0	0	0				0
180	653	1665	1665	8	17	98	35	94	87	16	27	40				0
181	744	1898	1897	2	63	100	30	89	85	0	0	0				0
182	304	775	775	0	7	0	0	10	0	0	0	0				0
183	133	340	340	0	25	0	0	0	0	0	0	0				0
184	125	319	319	0	22	65	66	101	83	22	50	0				0
185	694	1771	1771	0	0	91	16	91	84	19	23	89				0
186	208	530	530	0	0	0	0	0	0	0	0	0				0
187	188	480	480	0	0	0	0	0	0	0	0	0				0
188	362	923	923	0	0	0	0	4	0	0	0	0				0
189	176	450	450	0	2	1	3	5	2	0	0	0				0
190	108	277	277	0	3	0	0	0	0	0	0	0				0
TOTAL	104879	267443	262048	4008	29427	11547	6120	8286	13409	7708	1150	6174	32433	13504	10811	1



2035 PROJECTIONS

TAZ	HH	POP	POP_HHS	POP_GRP	MIWTCU	RTL	HWY	LOSVC	HISVC	OFFGOV	BANK	EDUC	STU_K8	STU_HS	STU_CU	DORM
1	434	1107	950	157	2	21	13	68	104	3	0	15	154			0
2	164	418	32	386	0	79	0	25	28	1049	10	0				0
3	93	238	222	16	354	79	14	112	245	47	0	0				0
4	98	250	108	142	293	230	16	329	497	712	127	0				0
5	589	1502	1502	0	147	0	0	10	72	373	0	107	531			0
6	223	570	554	16	277	55	0	53	22	3	0	0				0
7	116	296	296	0	81	19	3	11	17	24	0	0				0
8	10	25	25	0	79	44	35	10	35	12	15	0				0
9	9	22	22	0	110	44	39	18	23	14	2	0				0
10	572	1459	1448	11	104	433	167	194	91	157	111	133	1491			0
11	315	803	798	5	14	30	78	35	47	73	0	0				0
12	713	1819	1696	123	166	132	90	330	392	191	34	60	443			0
13	846	2157	2157	0	13	25	27	79	94	16	0	128	1120			0
14	525	1338	1338	0	13	3	0	16	4	10	0	0				0
15	383	977	977	0	10	1	0	27	42	21	0	0				0
16	1315	3353	3353	0	4	59	83	76	42	8	0	190	391	1793		0
17	99	253	253	0	115	54	8	80	51	9	0	0				0
18	622	1586	1586	0	111	13	40	16	34	0	0	0				0
19	297	756	756	0	3	0	0	8	4	176	0	0				0
20	809	2062	2062	0	69	23	34	16	28	11	0	45		860		0
21	127	323	323	0	2	0	0	8	0	0	0	91	664			0
22	322	821	821	0	193	0	0	11	0	0	0	0				0
23	323	825	825	0	65	42	0	22	13	3	0	144	658	75		0
24	896	2286	2276	10	196	164	110	100	90	16	0	0				0
25	731	1863	1863	0	137	318	43	102	156	45	38	0				0
26	575	1467	1467	0	30	75	74	61	156	11	14	153	1054	188		0
27	1228	3132	3132	0	8	101	10	10	21	5	0	0				0
28	1028	2622	2467	155	8	42	96	10	128	202	6	177	2252			0
29	389	991	991	0	230	40	114	45	10	2	4	107	987	84		0
30	373	952	952	0	54	10	0	47	2	0	0	0				0
31	1187	3026	2877	149	94	35	45	38	78	59	15	0				0
32	310	790	790	0	130	16	0	55	42	24	0	0				0
33	1119	2854	2689	165	13	160	81	68	20	22	6	0				0
34	1143	2914	2751	163	3	11	0	4	41	18	5	0				0
35	1187	3027	3027	0	0	83	21	25	37	14	7	0				0
36	618	1577	1577	0	42	250	55	89	143	24	41	229	962	2473		0
37	192	491	491	0	4	325	42	48	209	35	33	0				0
38	961	2451	2221	10	253	85	162	34	74	24	0	0				0
39	149	379	379	0	271	0	160	18	11	0	0	0				0
40	267	681	156	525	270	436	177	55	3712	711	0	0				0
41	30	76	76	0	39	848	251	99	136	77	0	0				0
42	0	0	0	0	569	286	203	74	115	1	17	0				0
43	257	654	654	0	0	69	10	62	223	101	5	0				0



2035 PROJECTIONS																
TAZ	HH	POP	POP_HHS	POP_GRP	MIWTCU	RTL	HWY	LOSVC	HISVC	OFFGOV	BANK	EDUC	STU_K8	STU_HS	STU_CU	DORM
44	133	338	338	0	113	1551	571	55	154	0	0	0				0
45	900	2296	2296	0	53	164	5	29	23	0	0	0				0
46	1561	3980	3980	0	10	196	45	105	121	165	19	0				0
47	1100	2805	2805	0	14	1	0	31	21	0	0	0				0
48	719	1833	1758	75	49	174	0	18	73	19	0	71				0
49	158	403	403	0	16	21	0	40	33	0	0	166	1153			0
50	395	1008	1008	0	377	8	0	68	39	0	21	0				0
51	902	2299	2285	14	409	31	3	55	42	0	0	0				0
52	698	1779	1779	0	139	34	0	75	72	187	0	40	72	42		0
53	344	876	876	0	68	30	54	47	46	24	0	0				0
54	851	2170	2015	155	426	17	4	29	93	9	0	0				0
55	458	1168	1168	0	0	0	0	0	37	3	0	0				0
56	924	2357	2357	0	0	2	0	5	0	0	0	104	886			0
57	395	1007	1007	0	0	20	0	0	0	0	0	0				0
58	22	57	57	0	0	0	0	0	0	0	0	0				0
59	21	52	52	0	0	0	0	0	0	0	0	0				0
60	294	749	749	0	4	0	0	8	0	0	0	0				0
61	411	1048	1048	0	101	0	0	0	0	0	0	0				0
62	482	1229	1229	0	1	2	0	16	15	0	10	0				0
63	336	857	857	0	459	21	16	65	59	0	0	81	702			0
64	492	1254	1254	0	20	65	103	63	72	127	21	0				0
65	184	469	469	0	78	88	0	5	16	0	9	0				0
66	375	956	956	0	3575	13	28	61	34	4	0	50	287			0
67	882	2250	2250	0	184	119	61	43	43	69	0	61	515	125		0
68	378	964	964	0	0	6	0	2	0	2	0	135	1313			0
69	1087	2772	2772	0	80	208	24	76	108	17	15	173	1885			0
70	645	1644	1644	0	50	55	36	86	54	0	0	0				0
71	1182	3015	3015	0	26	0	0	16	0	7	0	0				0
72	1078	2748	2748	0	15	11	28	5	120	5	15	85	849			0
73	1481	3778	3778	0	35	66	38	23	16	0	0	93	512	140		0
74	11	29	29	0	0	0	0	22	0	0	0	0				0
75	2125	5420	5420	0	28	210	126	52	97	0	0	0				0
76	264	674	674	0	26	0	0	7	0	0	0	0				0
77	730	1861	1861	0	152	15	0	10	20	0	0	0				0
78	733	1868	1868	0	114	9	0	27	22	0	0	0				0
79	350	894	894	0	3	7	0	4	0	0	0	0				0
80	165	422	422	0	21	0	2	2	1	39	0	0				0
81	769	1961	1961	0	30	0	22	45	0	0	0	0				0
82	301	768	768	0	37	13	0	5	9	0	0	0				0
83	758	1934	1934	0	14	9	0	26	1	0	0	0				0
84	884	2253	2253	0	15	6	0	23	0	0	0	99	886			0
85	355	906	906	0	1671	18	40	48	92	0	19	0				0
86	1249	3184	3184	0	1	0	0	5	0	0	0	160				0



2035 PROJECTIONS

TAZ	HH	POP	POP_HHS	POP_GRP	MIWTCU	RTL	HWY	LOSVC	HISVC	OFFGOV	BANK	EDUC	STU_K8	STU_HS	STU_CU	DORM
87	1072	2733	2733	0	15	26	0	29	38	32	0	0				0
88	2286	5829	5829	0	0	30	35	65	59	32	24	266	870	2042		0
89	983	2508	2445	63	53	24	22	17	43	0	0	81	540			0
90	1373	3500	3500	0	8	3	108	65	60	9	0	82		1845		0
91	1969	5021	5021	0	2	47	16	96	75	0	16	78				0
92	268	684	684	0	102	0	0	0	0	3	0	0				0
93	784	2000	1990	10	49	85	28	71	87	0	0	0				0
94	967	2465	2465	0	2	85	44	73	87	0	10	0				0
95	556	1419	1419	0	119	22	5	43	89	117	0	152	1359			0
96	380	969	969	8	74	0	0	49	45	0	0	78	960			0
97	519	1324	1324	0	46	133	34	8	63	31	7	0				0
98	631	1608	1608	0	781	102	4	29	164	45	0	0				0
99	268	683	493	190	404	165	61	189	474	113	58	56	269	334		0
100	1176	3000	3000	0	584	124	84	63	11	34	0	0				0
101	377	961	961	0	27	665	477	116	226	16	55	0				0
102	980	2500	2500	0	46	111	99	100	186	232	19	0				0
103	987	2517	1690	827	356	196	147	240	287	247	22	465	443		2140.766847	1
104	358	912	912	0	941	40	0	14	6	95	0	162	979			0
105	1072	2733	2733	0	6	24	1	5	3	0	0	0				0
106	418	1066	992	74	235	22	41	49	103	16	0	0				0
107	809	2063	2063	0	30	26	4	10	6	0	0	0				0
108	856	2184	2184	0	312	57	39	79	63	32	10	0				0
109	760	1937	1937	0	31	22	32	52	58	1	0	0				0
110	286	729	729	0	65	105	32	72	81	28	17	0				0
111	291	742	742	0	32	17	32	14	25	0	0	0				0
112	2043	5210	5210	0	138	5	0	10	0	0	0	94	1116			0
113	409	1044	1044	0	390	0	0	10	15	0	0	161		2233		0
114	448	1143	1143	0	26	0	0	11	0	15	0	0				0
115	718	1832	1832	0	301	0	40	41	56	9	0	0				0
116	1836	4683	4683	0	2520	46	0	61	94	25	0	67	605			0
117	578	1474	1354	120	235	132	8	78	100	4	0	0				0
118	398	1014	1014	0	119	31	12	51	40	543	17	0				0
119	268	684	684	0	69	65	33	87	81	20	16	101	900			0
120	0	0	0	0	212	23	53	30	12	0	10	0				0
121	241	614	614	0	101	35	21	122	1	0	0	0				0
122	410	1045	1045	0	7	0	0	0	0	0	0	0				0
123	409	1042	1042	0	103	2	0	26	41	11	0	0				0
124	797	2032	2032	0	137	98	21	115	42	69	11	85	810			0
125	431	1100	737	363	103	175	73	83	57	92	34	0				0
126	238	607	607	0	89	0	0	2	0	0	0	0				0
127	662	1688	1688	0	0	19	2	11	22	0	0	0				0
128	513	1309	1309	0	18	5	0	8	0	40	0	0				0
129	1369	3490	3490	0	31	5	0	2	10	0	0	0				0



2035 PROJECTIONS																
TAZ	HH	POP	POP_HHS	POP_GRP	MIWTCU	RTL	HWY	LOSVC	HISVC	OFFGOV	BANK	EDUC	STU_K8	STU_HS	STU_CU	DORM
130	423	1079	1079	0	85	67	32	201	53	0	0	200	1082	1781		0
131	646	1648	1591	57	254	105	141	109	122	0	17	43	216	88		0
132	127	325	295	30	106	53	68	81	334	173	10	468			10071.23315	0
133	139	354	354	0	1433	15	129	26	36	11	0	0				0
134	138	353	353	0	2292	43	39	40	81	0	0	0				0
135	195	498	498	0	760	70	0	0	0	0	0	0				0
136	469	1197	1197	0	347	32	38	7	91	0	0	0				0
137	157	402	402	0	6	99	53	78	65	0	16	0				0
138	97	247	247	0	702	11	65	10	0	0	0	0				0
139	344	877	877	0	929	12	0	202	51	5	0	0				0
140	777	1982	1982	0	244	144	50	62	67	0	15	0				0
141	677	1727	1727	0	576	44	35	63	75	4	10	84	753			0
142	1546	3943	3943	0	482	139	29	136	125	237	33	263	1180	1173		0
143	504	1285	1285	0	29	1	1	22	0	3	0	0				0
144	245	625	625	0	0	0	0	0	0	0	0	0				0
145	491	1251	1251	0	86	0	33	18	17	0	0	50	1003			0
146	880	2245	2245	0	1104	50	197	806	455	40	0	311				0
147	267	682	682	0	45	125	34	70	94	0	16	83				0
148	368	938	938	0	0	2	173	0	19	2	0	0				0
149	1157	2950	2872	78	32	46	2	122	395	118	0	101	1320			0
150	359	916	916	0	70	3	0	0	0	0	0	0				0
151	179	457	457	0	4	0	0	0	0	0	0	0				0
152	293	747	747	0	157	0	38	43	0	0	0	0				0
153	234	596	596	0	1	0	0	0	0	0	0	0				0
154	471	1202	1202	0	0	0	0	5	10	0	0	0				0
155	467	1191	1191	0	1	0	10	4	0	0	0	0				0
156	30	76	76	0	125	2	0	0	0	0	0	0				0
157	2128	5425	5338	87	0	0	0	0	0	0	0	0				0
158	714	1822	1822	0	158	18	56	50	37	0	0	0				0
159	273	697	697	0	9	0	0	10	0	0	0	0				0
160	688	1754	1754	0	23	11	0	11	5	0	0	0				0
161	587	1497	1497	0	0	0	0	21	24	0	0	0				0
162	390	996	996	0	247	7	0	0	1	0	0	0				0
163	574	1463	1463	0	22	0	0	16	0	0	0	0				0
164	646	1648	1645	3	52	0	0	32	33	0	0	0				0
165	918	2340	2340	0	61	39	27	107	51	6	0	68	881	10		0
166	474	1210	1210	0	0	0	0	0	0	0	0	0				0
167	326	832	832	0	3	0	0	2	0	0	0	0				0
168	449	1144	1144	0	0	0	0	8	0	0	0	0				0
169	1526	3891	3891	0	47	81	50	107	85	108	16	157	1579			0
170	1473	3756	3756	0	28	3	0	22	6	0	0	0				0
171	956	2438	2208	230	893	133	126	108	222	0	16	0				0
172	1030	2626	2626	0	2	22	10	23	17	0	0	0				0





2035 PROJECTIONS																
TAZ	HH	POP	POP_HHS	POP_GRP	MIWTCU	RTL	HWY	LOSVC	HISVC	OFFGOV	BANK	EDUC	STU_K8	STU_HS	STU_CU	DORM
173	768	1959	1959	0	2	0	0	7	0	0	0	0				0
174	227	580	580	0	118	0	0	57	38	5	0	0				0
175	1282	3268	3268	0	141	89	41	125	124	33	0	131				0
176	919	2344	2339	5	5	106	41	123	121	28	25	113				0
177	830	2117	2117	0	34	70	32	105	89	0	0	0				0
178	2300	5865	5865	0	57	105	50	97	130	42	24	0				0
179	585	1492	1492	0	5	0	21	0	0	0	0	0				0
180	736	1877	1867	10	19	110	39	105	97	18	30	45				0
181	839	2139	2136	3	70	112	33	99		0	0	0				0
182	342	873	873	0	8	0	0	11	0	0	0	0				0
183	150	383	383	0	28	0	0	0	0	0	0	0				0
184	141	360	360	0	25	73	74	113	93	25	55	0				0
185	783	1996	1996	0	0	102	18	102	94	21	25	99				0
186	234	597	597	0	0	0	0	0	0	0	0	0				0
187	212	541	541	0	0	0	0	0	0	0	0	0				0
188	408	1040	1040	0	0	0	0	4	0	0	0	0				0
189	199	507	507	0	2	1	3	5	2	0	0	0				0
190	122	312	312	0	3	0	0	0	0	0	0	0				0
TOTAL	117334	299202	294555	4435	33840	12850	6902	9783	15091	7772	1254	7041	36637	15286	12212	1

