DCHC

DURHAM-CHAPEL HILL-CARRBORO METROPOLITAN PLANNING ORGANIZATION

Member Governments
Town of Carrboro
Town of Chapel Hill
County of Chatham
City of Durham
County of Durham
County of Orange
NC Department of Transportation
Town of Hillsborough

DURHAM – CHAPEL HILL-CARRBORO METROPOLITAN PLANNING ORGANIZATION TECHNICAL COORDINATING COMMITTEE (TCC)

AGENDA

May 23, 2012
9:00 am

City Council Committee Room
2nd floor Durham City Hall

1. **Roll Call**

2. **Adjustments to the Agenda**

3. **Public Comments**

ACTION ITEMS

4. **Approval of April 25, 2012 TCC Meeting Minutes**
Attachment 4

A copy of the April 25, 2012 minutes is enclosed as Attachment 4.

TCC Action: Approve minutes of the April 25, 2012 TCC meeting.

5. **Triangle Regional Transit Program**
Attachment 5, 5A
Patrick McDonough, Triangle Transit
Ellen Beckmann, LPA Staff

The Orange County Transit Plan must be adopted by the county, DCHC MPO, Burlington-Graham MPO, and Triangle Transit. The draft Orange County Plan is provided as Attachment 5. A comparison of the regional Durham-Orange transit services in the draft Orange Plan and adopted Durham Plan is provided as Attachment 5A. The TCC should review the draft Orange County Transit Plan and recommend approval by the TAC.

TCC Action: Recommend that the TAC approve the Orange County Transit Plan.

6. **2040 Long Range Transportation Plan and Comprehensive Transportation Plan**
Attachment 6, 6A through 6E
Andy Henry, LPA Staff

The public input period for the Goals and Objectives and Targets is open through May 31, 2012. The LPA staff conducted four public workshops and collected citizen feedback through an online survey. Attachment 6 presents the LPA recommendations. In summary: no changes are

recommended for the Goals and Objectives; and a few alternative and more aggressive Targets are recommended. Additional attachments include:

- Attachment 6A – MPO Survey Results and Summary
- Attachment 6B – DCHC MPO Goals, Objectives and Targets: Comments
- Attachment 6C – Draft Goals and Objectives
- Attachment 6D – Target Development
- Attachment 6E – Targets

TCC Action: Receive Goals and Objectives and Targets, and recommend approval by the TAC.

7. 2040 Long Range Transportation Plan and Comprehensive Transportation Plan – SE Data and Deficiency Analysis
Attachment 7, 7A
Andy Henry, LPA Staff

At their March meeting, the TAC released draft SE Data for public comments. Since that time, several improvements have been made to the land use model (CommunityViz) that generated that SE Data. The improved model does better at allocating households and employment to the suburban and rural areas, and some site specific concerns have been addressed, as well. Attachment 7 is a series of dot-density maps showing the 2010 to 2040 growth for dwelling units and employment growth in Durham, Orange, Chatham and Person counties.

This most recent model version will be used to generate the Deficiency Analysis but unfortunately the data was not available in time to finish the Analysis for review at this TCC meeting. In order to keep the 2040 LRTP process moving forward, the LPA staff will ask the TCC to authorize the LRTP/CTP subcommittee to review the Deficiency Analysis, when it is completed, and forward it to the TAC for review at their June meeting. The TAC reviews and comments on the Deficiency Analysis but does not take any action. Attachment 7A is a copy of the LRTP/CTP schedule.

TCC Action: Review updated SE Data. Authorize the LRTP/CTP subcommittee to review the Deficiency Analysis and forward to TAC for review.

8. Pickett Road
Attachment 8, 8A through 8F
Andy Henry, LPA Staff

At their August 10, 2012 meeting, the TAC received and discussed a recommendation from the TCC to close the unpaved portion of Pickett Road. The TAC asked that staff meet with citizens from the area affected by the road closing because several local residents spoke against the closing at that meeting. After gathering additional data, the LPA staff conducted a drop-in meeting for citizens on May 1, 2012. Over seventy people attended the meeting and a strong majority of the comments opposed the road closing. Attachment 8 is a detailed memorandum discussing this issue. Additional attachments include:

- 8A – Vicinity map and traffic counts
- 8B – Travel Time Map

- 8C – Hollow Rock map (excerpt from Master Plan)
- 8D – Traffic Analysis Report
- 8E – Durham City Council and Durham BOCC approved resolutions
- 8F – DCHC MPO proposed resolution (from August 2011 TAC meeting)

TCC Action: Recommend that the TAC approve a resolution that opposes the closing of Pickett Road.

9. STP-DA Funding Requests
Attachment 9, 9A
Ellen Beckmann, LPA Staff

The Town of Carrboro has requested additional STPDA funding for one project. Attachment 9 is a memo describing this request and other potential STPDA funding requests in the near future. Attachment 9A is a set of tables from the STPDA database showing our unobligated balance and programmed projects.

TCC Action: Recommend that the TAC direct LPA staff to amend the STPDA database to add $25,303 federal STPDA to U-4726DC.

10. FY 2012 UPWP Amendment #5
Attachment 10
Maricia Brown, LPA Staff

The DCHC MPO prepared its FY2011-12 Unified Planning Work Program (UPWP) that details and guides the urban area transportation planning activities, which is based on federal regulations. Funding for the UPWP is provided on an annual basis by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA). During the year, as schedules of funding changes and funding needs shift the MPO prepares amendments to the current UPWP. This amendment serves to request a reallocation of the Section 5307 & Section 5303 funds for Durham Area Transit Authority (DATA). Attachment 10 is a resolution & financial tables that details the requested reallocation.

TCC Action: Recommend approval of the resolution and supporting documents for the FY 2012 UPWP Amendment#5.

11. Carrboro Downtown Traffic Studies
Attachment 11, 11A
Jeff Brubaker, Town of Carrboro

DCHC MPO and the Town of Carrboro jointly funded the West Main Street Road Diet and Pavement Marking Study and Oak-Poplar Neighborhood Traffic Circulation Study. Both studies are packaged into a single report, since the road diet segment is adjacent to the Oak-Poplar neighborhood. The former is a traffic and safety analysis of a classic, "4-to-3" lane reduction on W. Main St. between Hillsborough Rd. and W. Weaver St. The latter recommends traffic calming measures and pedestrian improvements within and around the neighborhood. Attachment 11 is the final report. Attachment 11A is a copy of the presentation.

TCC Action: Receive presentation on the Carrboro Downtown Traffic Studies.

REPORTS FROM STAFF:

12. **Reports from Staff**
    Attachment 12
    Felix Nwoko, LPA Staff

    TCC Action: Receive Report from staff

13. **Report from the Chair**
    No attachment
    Mark Ahrendsen, TCC Chair

    TCC Action: Receive Report from TCC Chair

14. **NCDOT Report**
    Attachment 14
    Wally Bowman, Division 5 – NCDOT
    Mike Mills, Division 7 – NCDOT
    Julie Bollinger, Transportation Planning Branch – NCDOT
    David Bender, Public Transportation Division – NCDOT
    Kelly Becker, Traffic Operations – NCDOT

INFORMATIONAL ITEMS:

15. **TIP Administrative Modification for June 2012**
    Attachment 15, 15A
    This is an Administrative Modification to the STIP expected to be approved by the NC BOT in June 2012. Administrative Modifications do not require TAC approval. A description of the difference between administrative modifications and amendments is also attached.

16. **Letter from NCDOT re Use of NC 147 by Trucks with Twin Trailers**
    Attachment 16

Adjourn

Next meeting: June 27, 2012

TECHNICAL COORDINATING COMMITTEE

April 25, 2012

MINUTES OF MEETING

The Technical Coordinating Committee met on April 25, 2012 at 9:00 a.m. in the Council Committee Room on the second floor of Durham City Hall. The following attended:

**Mark Ahrendsen	City of Durham – Transportation (TCC Chair)
**Julie Bollinger	NCDOT – TPB
**David Bonk	Town of Chapel Hill (TCC Vice-Chair)
**Jeff Brubaker	Town of Carrboro
**Melissa Guilbeau	Chatham County
**Margaret Hauth (Alternate)	Town of Hillsborough
**Andy Henry	City of Durham – Transportation
**John Hodges-Copple	Triangle J COG
**Mike Kneis (Alternate)	NCDOT – Division 5
**Brian Litchfield	Town of Chapel Hill
**Ray Magyar	UNC – Transportation
**Patrick McDonough	Triangle Transit
**Kumar Neppalli	Town of Chapel Hill
**Felix Nwoko	City of Durham – Transportation
**Pierre Osei-Owusu	City of Durham – DATA
**Meg Scully	Durham County
**Ed Venable	City of Durham – Engineering
**Scott Whiteman	City/County Planning
**Patrick Wilson (Alternate)	NCDOT – Division 7
**Laura Woods	City/County Planning
**Darcy Zorio	Orange County
Maricia Brown	City of Durham – Transportation
Aaron Cain	City/County Planning
Leta Huntsinger	City of Durham – Transportation
Dale McKeel	City of Durham – Transportation
Ryan Mickles	Town of Chapel Hill
Tina Moon	Town of Carrboro
Brian Rhodes	City of Durham – Transportation
Mila Vega	Chapel Hill Transit

**Voting Member
^Temporary Non-Voting Member
Quorum Count: 21 of 23 Voting Member

Mark Ahrendsen, TCC Chair, called the meeting to order at 9:05 a. m. The Alternate Voting Members were identified and indicated above.

PRELIMINARIES:

Adjustments to the Agenda

There were no adjustments to the agenda.

Public Comments

There were no comments from the public.

ACTION ITEMS:

Approval of March 28, 2012 TCC Meeting Minutes (Attachment 4)

A motion was made by John Hodges-Copple and seconded by Scott Whiteman to approve the March 28, 2012 TCC Meeting Minutes, along with the attachment. The motion carried unanimously.

FY 2013 UPWP – Public Hearing (Attachment 5)

Maricia Brown provided an introduction and pointed out a change that was made to a Triangle Transit project. David Bonk asked how the additional funding for the Town of Chapel Hill is addressed and Ms. Brown explained it. Mr. Bonk stated there isn't a paragraph on the CMS and Felix Nwoko stated it will be added.

Mark Ahrendsen opened the public hearing for the FY 2013 UPWP at 9:31 a.m. and there were no comments from the public so the public hearing was closed.

Jeff Brubaker asked the timeline for beginning the central area parking inventory. Felix Nwoko stated it was postponed for Triangle Transit to get guidance from the Service Bureau. Patrick McDonough provided an update.

David Bonk stated he wasn't aware of #11 on page 17 – MPO Climate Change Plan/Integration of Climate Change and Greenhouse Gas Emission into MPO Planning. It needs to be clear that this is only for Durham's portion.

David Bonk suggested having a meeting to discuss the status of each project and Felix Nwoko stated that can be done.

A motion was made by Felix Nwoko and seconded by David Bonk to recommend TAC approval of the two resolutions approving the final FY2013 UPWP and the resolution confirming the transportation planning process. The motion carried unanimously.

NC 54/I-40 Corridor Study (Attachments 6, 6A, and 6B)

Leta Huntsinger provided an introduction and reviewed the changes that were made to the Executive Summary and Final Report for the NC 54/I-40 Corridor Study.

After discussion, a motion was made by Andy Henry and seconded by Scott Whiteman to move the study forward allowing TCC members one week to provide any additional comments to Leta Huntsinger. The motion carried unanimously.

FY 2013-2015 Congestion Mitigation Air Quality Projects (Attachments 7, 7A, 7B, and 7C)

Dale McKeel provided an introduction for the FY 2013-2015 Congestion Mitigation Air Quality Projects, along with the attachments.

Margaret Hauth stated there are errors on page two of the application which she pointed out. Ms. Hauth wants to stress the only change they are making is a change to the scope of the project. Staff stated there are clarifications that need to be made to the project, such as an updated map with existing sidewalks.

Dale McKeel stated even though the project didn't rate high, the TAC wanted to support a project in Hillsborough.

A motion was made by Felix Nwoko and seconded by Pierre Osei-Owusu to recommend TAC approval of the requested changes from the Town of Hillsborough and DATA through an MTIP amendment. The motion carried unanimously.

FY 2012-2018 MTIP – Amendment #4 (Attachments 8 and 8A)

A motion was made by Felix Nwoko and seconded by David Bonk to recommend that the TAC adopt the Resolution to Modify the 2012-2018 Transportation Improvement Program for the Durham-Chapel Hill-Carrboro Urban Area Amendment #4. The motion carried unanimously.

Hillsborough Downtown Access Study (Attachment 9)

Margaret Hauth provided a PowerPoint Presentation on the Hillsborough Downtown Access Study, along with the attachment.

Ms. Hauth expressed a concern they are having with bus pullouts. Patrick McDonough suggested touching base with Triangle Transit and Chapel Hill Transit to see if there is something that can be done to resolve this issue.

A motion was made by Felix Nwoko and seconded by Margaret Hauth to receive the presentation on the Hillsborough Downtown Access Study and forward it to the TAC. The motion carried unanimously.

Triangle Regional Transit Program (Attachments 10 and 10A)

Patrick McDonough provided an introduction for the Triangle Regional Transit Program, along with the attachments.

Darcy Zorio stated the Orange County Board of County Commissioners is having a work session on May 3, 2012 to review the public comments collected; May 15, 2012 they will vote on the plan; and on June 5, 2012 they will vote on whether or not to put the referendum on the ballet.

Patrick McDonough stated that Triangle Transit will be updating the Orange County Plan. Andy Henry stated there are differences between the two plans and asked if the LPA staff should send comments to the Orange County BOCC. One of the items that will be discussed at the May 3, 2012 BOCC meeting will be the Durham/Orange County cost-sharing agreement.

Mark Ahrendsen stated the MPO needs a plan as soon as possible. The draft still needs to be provided to the TAC and the Burlington-Graham MPO in May.

The cost-sharing changes need to be discussed at the May TAC meeting. There needs to be draft language indicating cost changes.

Mark Ahrendsen asked who is reaching out to Burlington-Graham MPO and Darcy Zorio stated the boundary issue is getting in the way. Mr. Ahrendsen asked if there has been official documentation sent to the Burlington-Graham MPO requesting to be added to their agenda and Ms. Zorio stated not yet. Patrick McDonough stated this item needs to be escalated to the elected officials.

2040 Long Range Transportation Plan and Comprehensive Transportation Plan (Attachment 11)

Andy Henry provided an update on the 2040 Long Range Transportation Plan and Comprehensive Transportation Plan, along with the attachments.

There will be a Public Hearing and request approval for the Goals and Objectives and Targets at the June 13, 2012 TAC meeting. The SE Data can wait since we don't adopt until the LRTP anyway.

Staff needs to be discussing Southwest Durham Drive as this is a subject that the public is going to want to discuss.

REPORTS FROM STAFF:

Reports from Staff (Attachment 12)

Dale McKeel stated they have a regional TDM program and they have received a request from Triangle Transit where they have proposed use of some of the CMAQ funds for prizes and incentives for commute trips.

Dale McKeel stated the cost projections for the Old Durham/Chapel Hill Road project are much higher than when the project was originally started. Mr. McKeel has set up a meeting with NCDOT next week regarding raising funds.

Dale McKeel also distributed a handout for bike week.

Report from the Chair

Mark Ahrendsen did not have anything to report.

NCDOT Report (Attachment 14)

Mike Kneis, NCDOT Division 5, provided an update on projects. The NC-147 project will take an additional two weeks.

Patrick Wilson, NCDOT Division 7, provided an update on projects.

Julie Bollinger stated the CTP for Orange County has been delayed due to the boundary issue.

INFORMATIONAL ITEMS:

Letter to NCDOT re 2040 Plan – April 11, 2012 (Attachment 15)

The letter to NCDOT re 2040 Plan – April 11, 2012 is attached for review.

Adjournment

There being no further business before the Technical Coordinating Committee, the meeting adjourned at 11:24 a.m.

The DRAFT Bus and Rail Investment Plan in Orange County

5/11/2012

The Bus and Rail Investment Plan in Orange County

I. INTRODUCTION 3

II. TRANSIT STEPS LEADING UP TO THIS PLAN 4

III. PLAN ELEMENTS 5
- A. PUBLIC TRANSIT PROVIDERS
- B. NEW BUS SERVICE
- C. NEW BUS CAPITAL INVESTMENTS
- D. HILLSBOROUGH AMTRAK STATION
- E. NEW LIGHT RAIL SERVICE
- F. MARTIN LUTHER KING JR. BOULEVARD BUS LANES

IV. MAPS 11

V. ORANGE COUNTY REVENUES 20
- A. ONE-HALF CENT TRANSIT SALES TAX
- B. $7 COUNTY VEHICLE REGISTRATION FEE
- C. $3 REGIONAL VEHICLE REGISTRATION FEE
- D. REVENUE FROM REGIONAL RENTAL CAR TAX
- E. STATE GOVERNMENT FUNDING
- F. FEDERAL GOVERNMENT FUNDING

VI. ORANGE FINANCIAL PLAN DATA 23

VII. AGREEMENTS 23

VIII. NEW STARTS PROCESS 24

IX. ALTERNATIVE PLAN 26

X. CLOSING SUMMARY 26

XI. APPENDIX 28

The Bus and Rail Investment Plan in Orange County

I. INTRODUCTION

Orange County has achieved an enviable quality of life at the end of the first decade of the 21st century. Recent accolades include its ranking as the one of the best place to live by *Money Magazine, July 2010,* one of the best places to start a business by *Entrepreneur Magazine, August 2009* and one of the best places in the nation to raise children by *Business Week*, December 2010. Orange County is nationally known for its excellent public education systems. Two districts serve the residents of Orange County: The Chapel Hill-Carrboro City School System and the Orange County School System. The University of North Carolina at Chapel Hill consistently ranks among the great institutions of higher education in the nation, most recently honored by *US News & World Report*.

With these successes comes growth in population and increased pressure on our roads and highways. Since 2004, the Triangle has moved from 46th largest metro area in the nation to 40th in 2009, and our vehicle demand on freeways is up by 28% over those five years. Recently, our region was named the 3rd most sprawling urban area in the country among the 83 areas studied.

In 2009, the Joint Long Range Transportation Plan for 2035, by the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO) noted that the region's population would more than double over the 25-year period. For the last two decades, the demand on our roads has grown significantly faster than our population. Even with Planned highway improvements and likely additional revenues for new roads, it is clear that Orange County and the region will see declining levels of service on major roads in the next 25 years. Orange County population grew by 1.6% a year since 2000 and is projected to grow from the countywide 2010 census of 133,801 to approximately 173,000 by 2030.

The economic costs for increasingly congested roads are significant. In its 2010 Annual Urban Mobility Report, the Texas Transportation Institute estimated that our region has "congestion costs" of almost one-half billion dollars a year. Recently, a May 10, 2011 study cited in Forbes magazine found that the Triangle was the urban region in the nation that is most vulnerable to rising gasoline prices. Enhanced transportation options need to be created to ensure that Orange County's residents of all income levels have access to job centers and commerce.

Orange County residents and their regional neighbors are aware of the growth in clogged roads, as well as the accompanying air quality problems, negative economic impacts and the loss of the quality of life we enjoy if these transportation challenges are not met. Local citizens and elected leaders have responded to these challenges, with some assistance from state government, as described in this investment Plan.

II. TRANSIT PLANNING STEPS LEADING UP TO THIS PLAN

Beginning in 2007, a blue-ribbon group of Triangle leaders (the Special Transit Advisory Commission, or STAC) met for over a year and in 2008 unanimously recommended a regional vision for bus and rail investments. One year later, the region's two Metropolitan Planning Organizations (MPOs) fully incorporated the STAC recommendations into a long-range (25-year) transportation Plan.

In August 2009, Governor Beverly Perdue signed into law the Congestion Relief and Intermodal Transport Fund Act (HB 148), legislation that allows Orange, Durham and Wake counties to generate new revenues for public transportation. These new revenues can include a one-half cent sales tax, if approved by the public through a referendum, as well as an additional $10 in local and regional vehicle registration fees.

Over the last two years, Triangle Transit staff has worked with municipal, Orange County, the MPO and other regional transportation staff to develop a detailed, 25-year Plan for new bus and rail investments designed to provide greater transportation options for residents and employers. These investments would positively impact traffic congestion and air quality, and support local land use policies. This Plan is the culmination of that collaboration and proposes crucial public investments and services to maintain our quality of life and economic vitality for the next 25 years.

Extensive public engagement has occurred over the two years in the development of the bus and rail elements of this Plan. In 2010 and 2011 Triangle Transit and local transportation staff members from municipalities, counties and MPOs conducted a series of 19 public workshops, at various locations throughout the Triangle, on the process and substance of the Plan's development. A total of over 1,100 participants attended the meetings and they provided over 500 comments on the Plan. Since that time, the project Web site, www.ourtransitfuture.com, was viewed by over 73,000 unique individuals with 2.3 million page hits. The Web site houses all of the presentation materials and proposed Plan elements.

Additionally, the DCHC MPO held five public workshops to receive input on the proposed Plan in 2011. In spring 2012, the Orange County Board of Commissioners held two public hearings and two public workshops to provide opportunities for the public to ask questions and provide feedback on the proposed Plan.

There have been dozens of meetings with citizens, local elected officials, staff and members of the region's MPOs, community stakeholders and business leaders, allowing extensive feedback on the proposed bus and rail elements of the Plan. The financial and service elements of this Plan are coordinated with the adopted Durham County Bus and Rail Investment Plan. Additionally, this bus and rail investment Plan builds on existing transit services and therefore does not eliminate or reduce the current financial and service commitments.

III. PLAN ELEMENTS

A. Public Transit Providers

The Triangle has a number of public transit providers that have been involved in the development of this Plan and will have responsibility to implement the recommendations of the Plan upon its approval. Below is a brief description of the transit agencies:

Chapel Hill Transit is a multijurisdictional agency formed by a partnership of the Towns of Chapel Hill, Carrboro and the University of North Carolina at Chapel Hill. Chapel Hill Transit is responsible for regular and express route and demand response service in the Chapel Hill, Carrboro, and University area. Chapel Hill Transit also provides regional express bus service, in cooperation with Triangle Transit to Hillsborough.

Orange County Public Transportation is a county agency that provides community transportation in unincorporated Orange County consisting of demand response service and circulator service within Hillsborough in cooperation with the Town of Hillsborough. Orange County Public Transportation is responsible for providing transportation services to all residents of unincorporated Orange County, the Town of Hillsborough and a portion of the City of Mebane with destinations within and beyond Orange County's borders.

Triangle Transit is a regional transit agency serving Wake, Durham and Orange counties. Triangle Transit is responsible for providing regional commuter express and demand response service connecting Wake, Durham and Orange counties

B. New Bus Service

Representatives from Orange County, Chapel Hill, Carrboro, Hillsborough, The University of North Carolina at Chapel Hill, and Triangle Transit have worked collaboratively to develop a comprehensive bus service improvement Plan that supports the effort to improve public transit in Orange County. The group identified a range of services that would address county-wide transit service needs. Identified services were ranked and prioritized based on a set of goals and strategies.

Goals include:

- Improve overall mobility and transportation options in the region
- Provide geographic equity
- Support improved capital facilities
- Support transit supportive land use
- Provide positive impact on air quality

Strategies to accomplish these goals include:

- Improve connectivity
- Increase frequency in peak hours
- Improve weekend, night services (off peak)

- Enhance existing service
- Maintain existing services
- Maintain level of local funding at no less than the August 1, 2009 spending level

Over the course of the Plan, a new half-cent sales tax would enable delivery of a total of 40,950 additional bus hours in Orange County. By comparison, Chapel Hill Transit currently provides 190,000 annual bus hours and Orange Public Transportation provides 12,846 annual bus hours. The projects will provide benefits to all areas of the county by enhancing urban and rural transit services.

Bus improvement projects were classified by type of service:

- Local bus service - service operating within Orange County boundaries
- Rural or Non-urban service- new or supplemented bus service in northern and western portions of the County.
- Regional service - service operating in more than one county or between separate urban areas

First Five Years following successful sales tax referendum

An investment that equals about 34,650 bus service hours will be provided during the first five years. Improvements will include:

Improve connectivity

- New regional service connecting Carrboro, Chapel Hill, and Durham
- New regional express service connecting Mebane, Hillsborough and Durham

Increase frequency in peak hours

- Enhanced services in the US 15/501 corridor between Durham and Chapel Hill for Chapel Hill Transit, Triangle Transit, and DATA
- Improvements in the NC 54 corridor transit service
- Increased peak hour service on Triangle Transit Route 800 between Research Triangle Park and Chapel Hill
- Increased peak hour service on Triangle Transit Route 420 between Hillsborough and Chapel Hill

Improve weekend, night services (off peak)

- New Saturday service on the in-town Hillsborough circulator
- Expanded local Saturday service in Chapel Hill, Carrboro and UNC
- Expanded regional Saturday service on existing Triangle Transit Route 405 between Durham and Chapel Hill and Triangle Transit Route 800 between Chapel Hill and the Research Triangle Park
- Expanded regional Sunday service on existing Triangle Transit Route 405 between Durham and Chapel Hill and Triangle Transit Route 800 between Chapel Hill and the Research Triangle Park
- New local Sunday service in Chapel Hill, Carrboro and UNC
- Expanded local evening service in Chapel Hill, Carrboro and UNC

Bus Service Enhancements

- Enhanced rural transit service in unincorporated Orange County

Maintain existing services

- A portion of revenues identified in the Plan will be used to support existing bus service
- Continue weekday hourly service on the in-town Hillsborough circulator

❖ Routes provided by Chapel Hill Transit, may or may not, be included in the Plan. Chapel Hill Transit and its partners will determine which of the improvements will be included after further public involvement and analysis.

Year six and beyond following successful sales tax referendum

An additional 6,300 new bus service hours will be provided between year six of the Plan implementation through the end of the program (year 2035) bringing the total to 40,950 total new bus hours.

Improvements include:

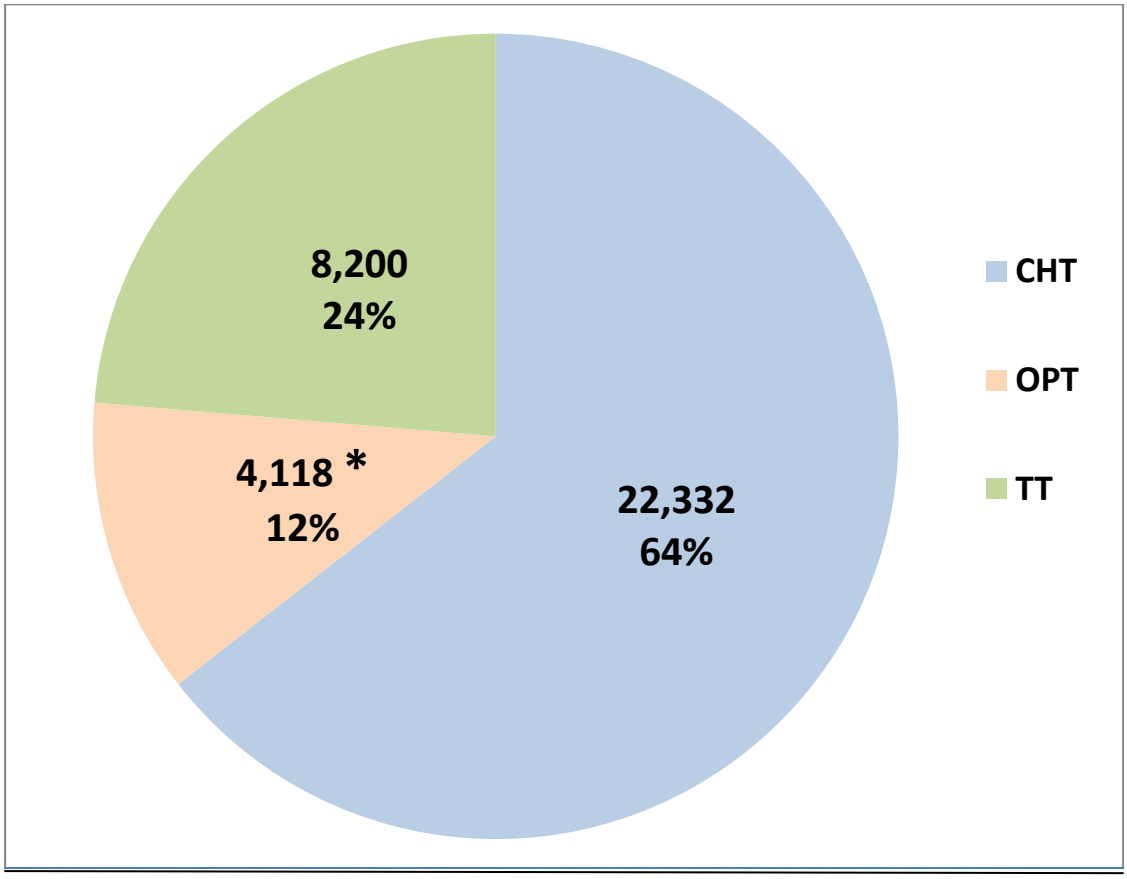
Increase frequency in peak hours

- Increased peak hour service on Pittsboro – Chapel Hill Express
- Increased peak hour service on the existing Triangle Transit Route 800 between Research Triangle Park and Chapel Hill
- Increased peak hour service in Chapel Hill, Carrboro and UNC

Service Enhancements

- Continued enhancements to rural transit service in unincorporated Orange County

The following chart depicts how revenue will be appropriated to the various transit providers – Chapel Hill Transit, Orange Public Transit, and Triangle Transit.



Provider	Hours	% Share of Revenue
CHT	22,332	64%
OPT	4,118 *	12%
TTA	8,200	24%
Total	**34,650**	**100%**

Operating Cost for TT/ CHT is $97/ hr; OPT cost is $58/ hr

***The above chart uses a blended formula for operating costs. Since operating cost for OPT are currently $58/ hr, the 4,118 hours will result in 6,887 hours at that $58/hr rate.**

- See Appendix for more detailed information about specific bus routes and proposals

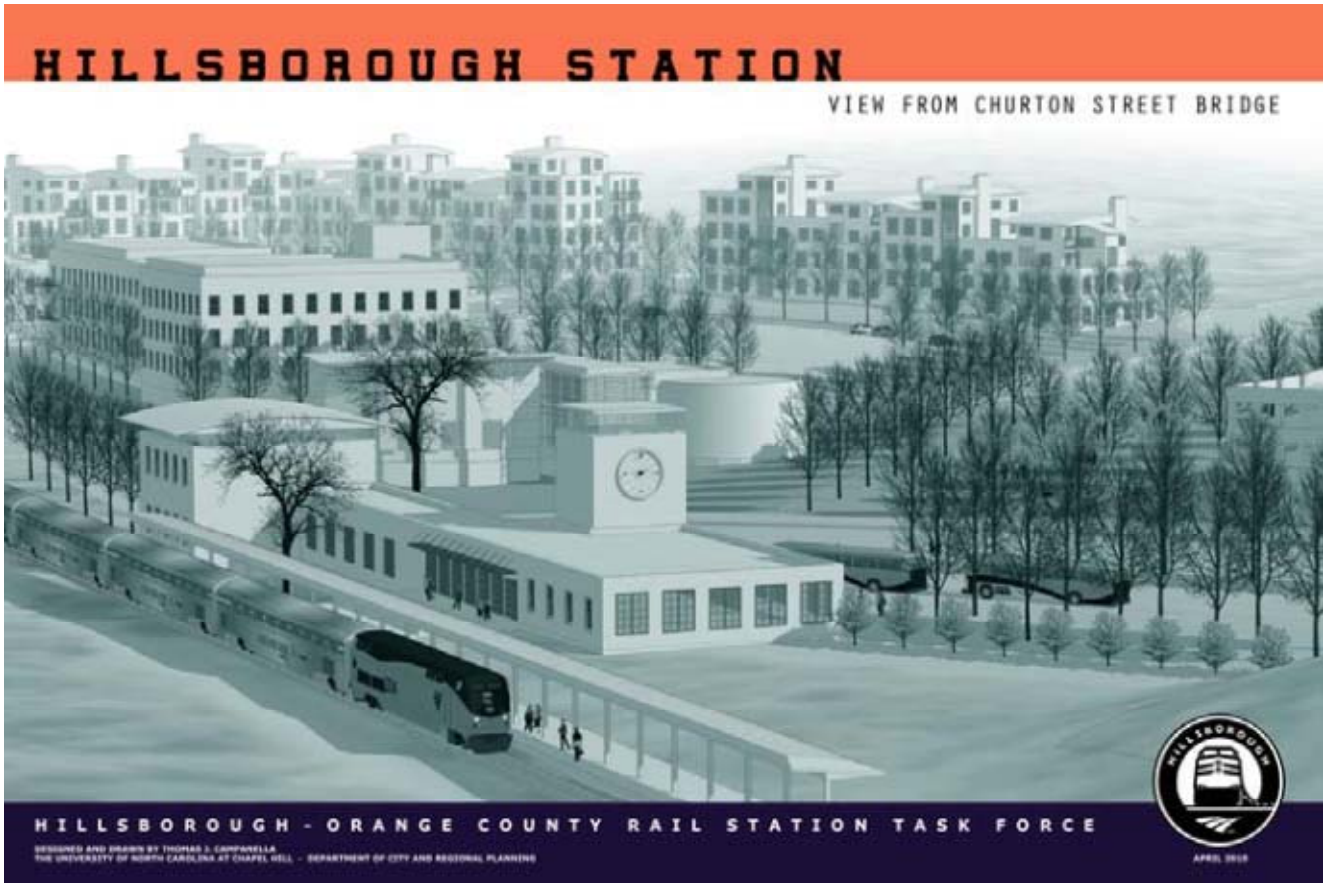
C. New Bus Capital Investments
- Park and Ride lots
- Bus shelters
- Real-time passenger information signs and technology
- Bus stop access improvements such as sidewalks.

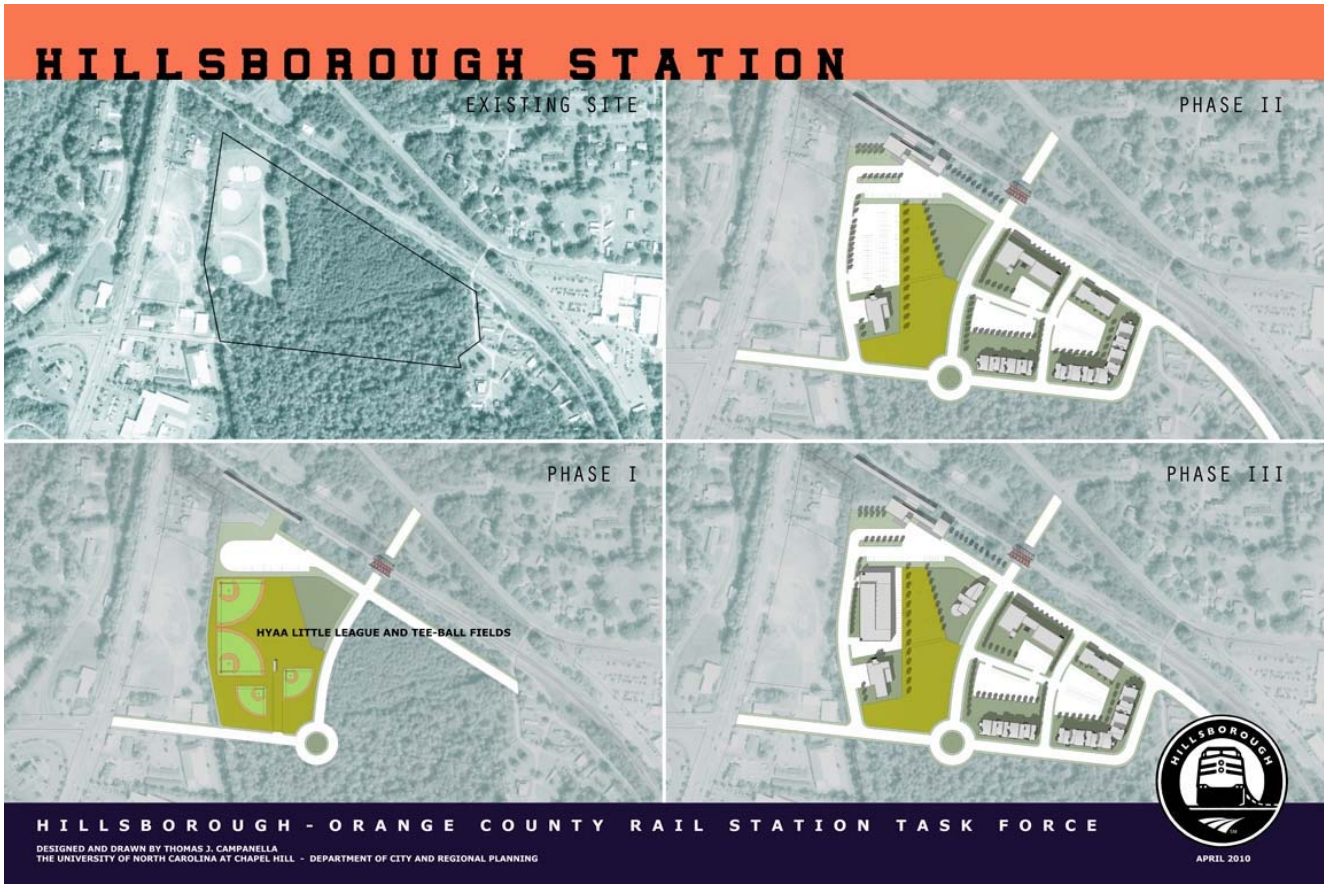
❖ For financial information about these proposed investments please see the Appendix.

D. Hillsborough Amtrak Station

The Plan will provide local funding to support the creation of a passenger rail station in the Town of Hillsborough.

The Rail Station Small Area Plan is a conceptual site and land use Plan for the 20-acre tract of land owned by the Town located off of Orange Grove Street. The proposed land uses include a rail station building with space for municipal meetings and a police station; a fire station, and space for a civic arts center. On the eastern portion of the site, high-density commercial and residential land uses are suggested. Phasing options have been considered as well. In addition to the conceptual site Plan for the Hillsborough tract, a general transportation network and set of land uses is proposed for the adjacent Collins property.





- For financial information about this proposed investment please see the Appendix.

E. New Light Rail Service

The Orange County Bus and Rail Investment Plan provides funding for a fixed guideway transit system that would connect Durham and Orange counties using Light Rail technology (LRT). The 17-mile alignment extends from the University of North Carolina (UNC) Hospitals to Alston Avenue/NCCU in East Durham. A total of 17 stations have been proposed including a station at Mason Farm Road, Hamilton Road, the UNC Friday Center, as well as a potential station at Woodmont/Hillmont or Meadowmont in Chapel Hill. Stations in Durham include Patterson Place along US 15-501, the South Square area, at Duke Medical Center, Ninth Street, and downtown Durham, with convenient access to nearby bus and Amtrak intercity rail connections. Due to the light rail vehicle's capabilities and the requirements of the activity centers and neighborhoods being served along the corridor, light rail stations are routinely spaced between ¼ mile and 2 miles apart.

Light Rail vehicles are electrically powered and travel at speeds up to 55 mph. The total travel time for the 17-mile alignment is about 35 minutes, including stops. The vehicles are approximately 90 feet long and can operate in both directions. Additional cars can be added as the demand increases. Recent 2035 projections indicate that ridership will exceed approximately 14,000 boardings per day. These projections are subject to change

as the demand model is refined and as development, population and employment changes are recognized.

Light rail vehicles can operate in exclusive right of way, as well as along urban streets, and characteristically serve accessible low platforms (14 inches high) at each station. The operations Plan for the 17-mile alignment includes train frequencies (headways/ e.g. time between each train) of 10 minutes during the morning and evening peak and 20 minutes during the off-peak hours and on weekends. Vehicles will operate on an 18-hour schedule each weekday. Several potential light rail vehicle maintenance facility locations are being evaluated. Detailed alignment and station location decisions will be made at the end of Preliminary Engineering.

The total capital cost for the Durham and Orange Light Rail Project is approximately $1.378 billion (2011 dollars). Orange County's share is $316.2 million (2011 dollars). Operations and Maintenance costs are estimated at $14.44 million/year (2011 dollars). Orange County's share of the Operations and Maintenance costs are $3.2 million/year (2011 dollars). For Orange County's share of the capital cost of the Light Rail project the total cost allocation is Orange County 25%, and an assumed State participation of 25% and Federal Participation of 50%.

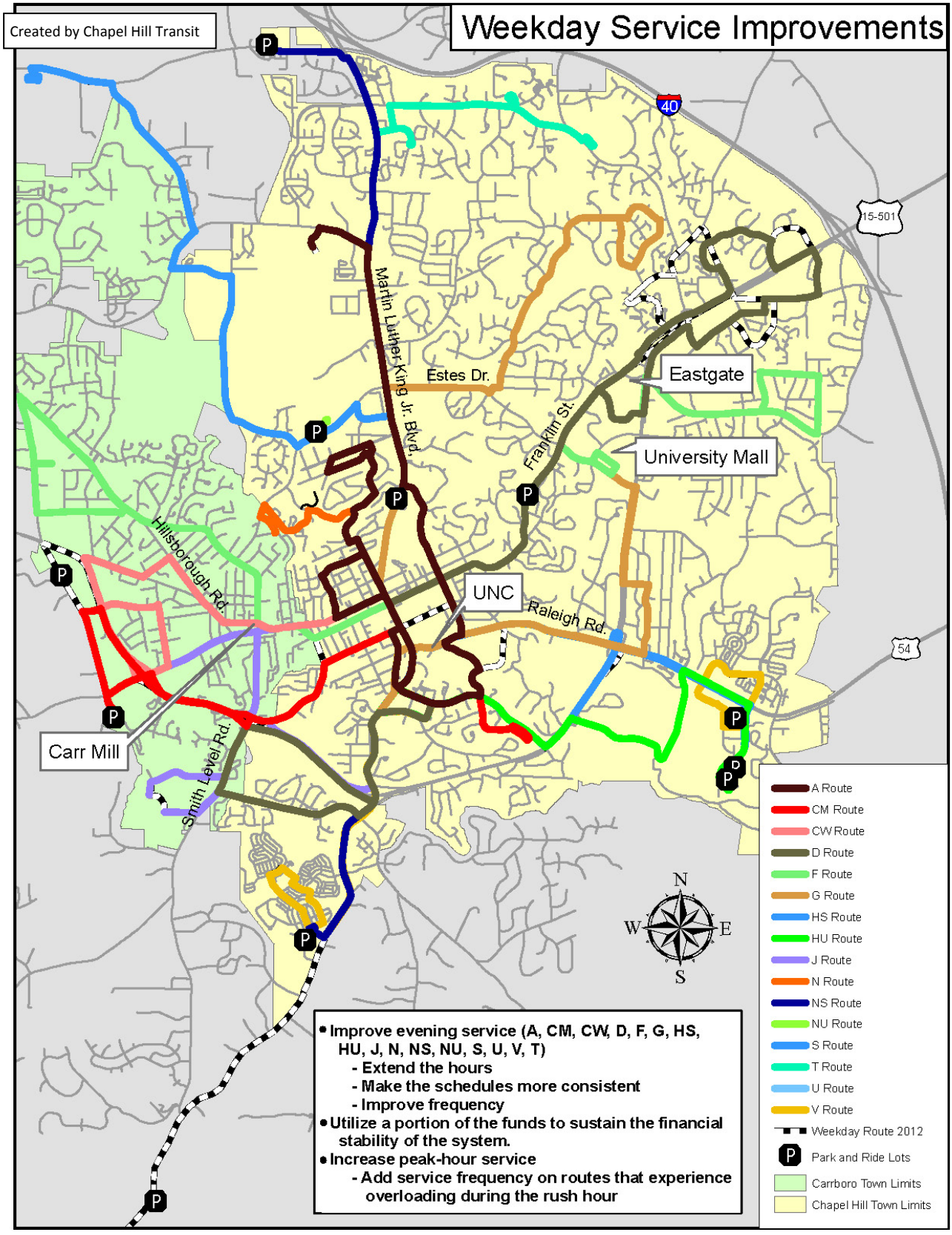
F. Martin Luther King Boulevard Bus Lanes

This investment provides for bus-only lanes on Martin Luther King (MLK) Boulevard from Interstate 40 to Estes Drive. It will make bus travel times more reliable in peak periods. Existing buses in the MLK corridor will be re-routed to take advantage of the enhanced bus lanes.

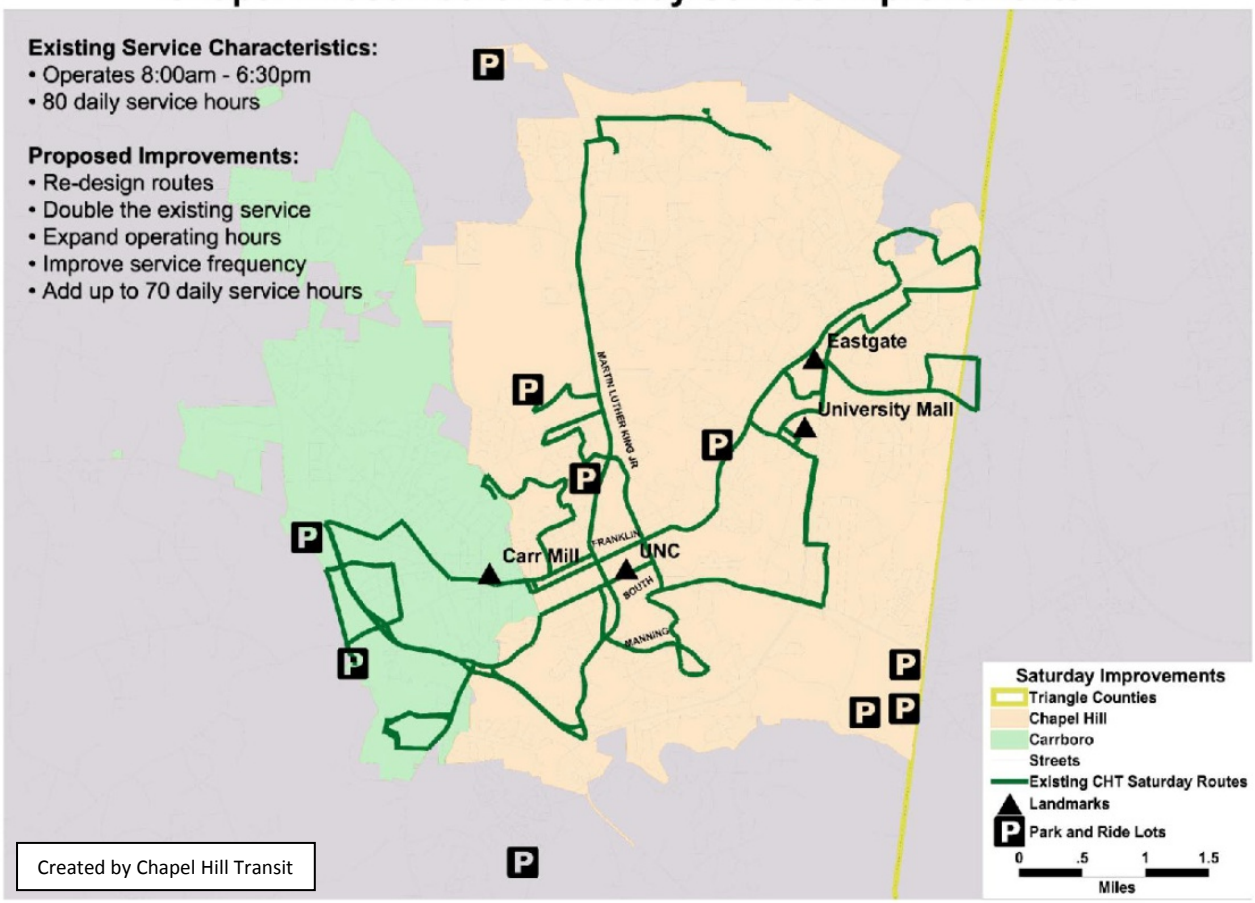
Orange County's cost for the bus lanes is anticipated to be $22 million ($2011 dollars) – according to staff at Chapel Hill Transit. This project assumes 25% of the funding will come from the State and 50% of the funding will come from the Federal Government. Since the bus lanes will be used by existing services, they do not generate any additional operational costs within the Plan.

IV. MAPS: The series of maps listed below articulate proposed investments in both bus and rail throughout Orange County.

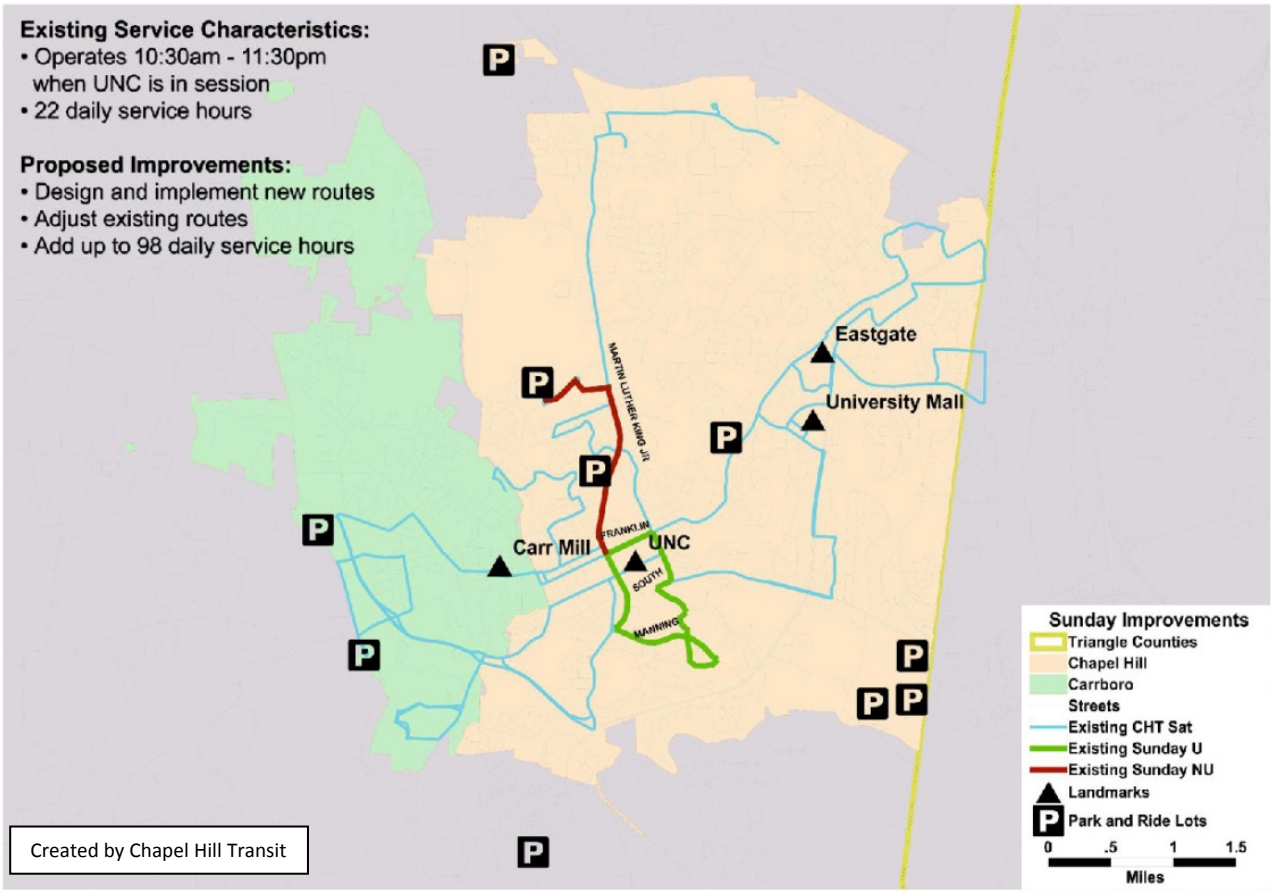
a. Chapel Hill Transit Weekday Service Improvements
b. Chapel Hill/Carrboro: Saturday Service Improvements
c. Chapel Hill/Carrboro: Sunday Service Improvements
d. Improved Bus Service in US 15/ 501 and NC 54 Corridors
e. Orange County Transit Plan: Proposed Regional Bus Service Improvements
f. Proposed Hillsborough and Rural Bus Service Improvements
g. Durham-Orange Light Rail Transit Project
h. Improved Bus service on MLK
i. Regional Integration of Orange, Durham, and Wake Transit Plans


Created by Chapel Hill Transit
Weekday Service Improvements
40
15-501
54
Martin Luther King Jr. Blvd.
Estes Dr.
Franklin St.
Eastgate
University Mall
UNC
Raleigh Rd.
Hillsborough Rd.
Smith Level Rd.
Carr Mill
N
W
E
S
• Improve evening service (A, CM, CW, D, F, G, HS, HU, J, N, NS, NU, S, U, V, T)
- Extend the hours
- Make the schedules more consistent
- Improve frequency
• Utilize a portion of the funds to sustain the financial stability of the system.
• Increase peak-hour service
- Add service frequency on routes that experience overloading during the rush hour
A Route
CM Route
CW Route
D Route
F Route
G Route
HS Route
HU Route
J Route
N Route
NS Route
NU Route
S Route
T Route
U Route
V Route
Weekday Route 2012
Park and Ride Lots
Carrboro Town Limits
Chapel Hill Town Limits

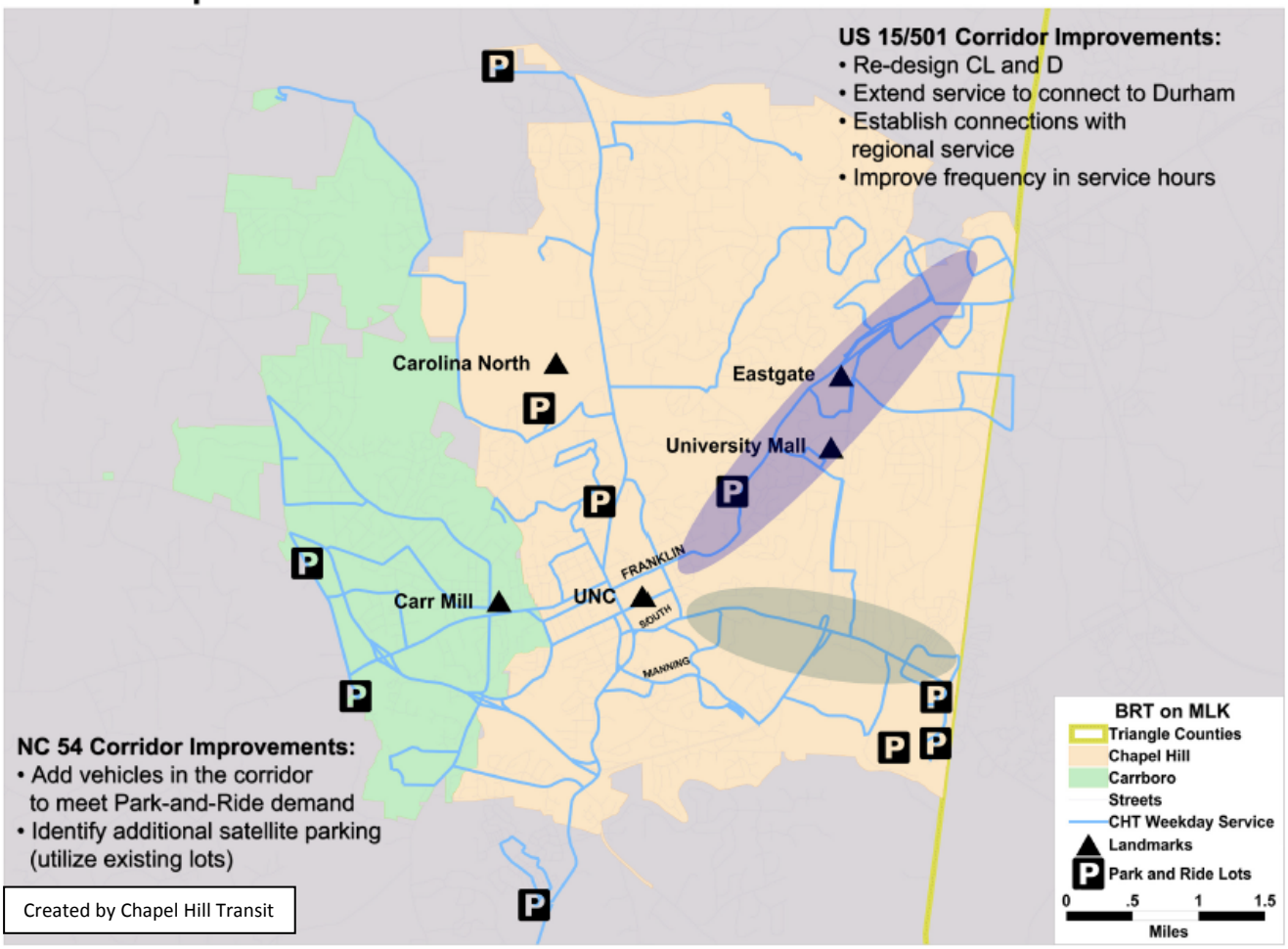
Chapel Hill/Carrboro: Saturday Service Improvements



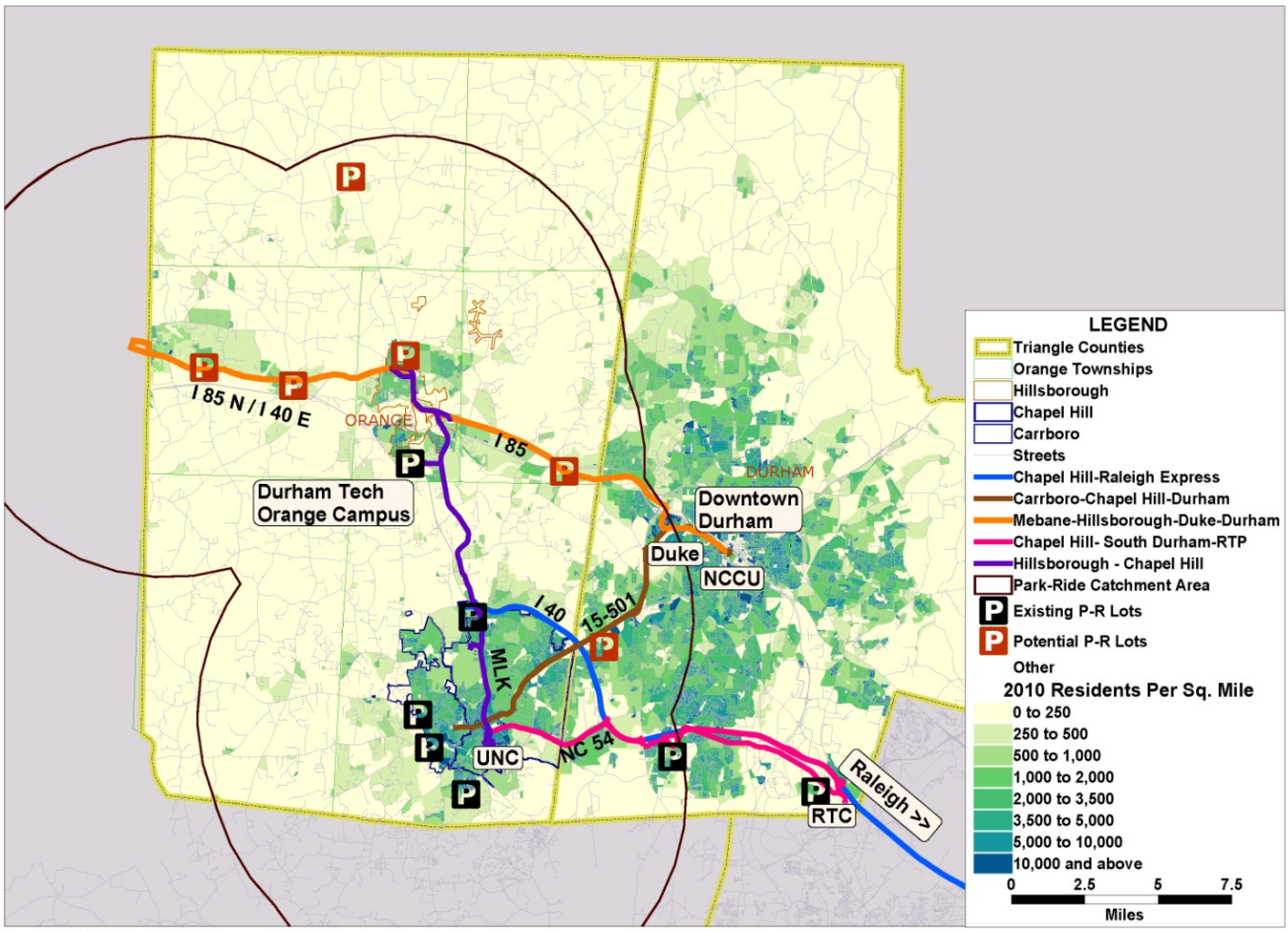
Chapel Hill/Carrboro: Sunday Service Improvements



Improved Bus Service in US 15/501 and NC 54 Corridors

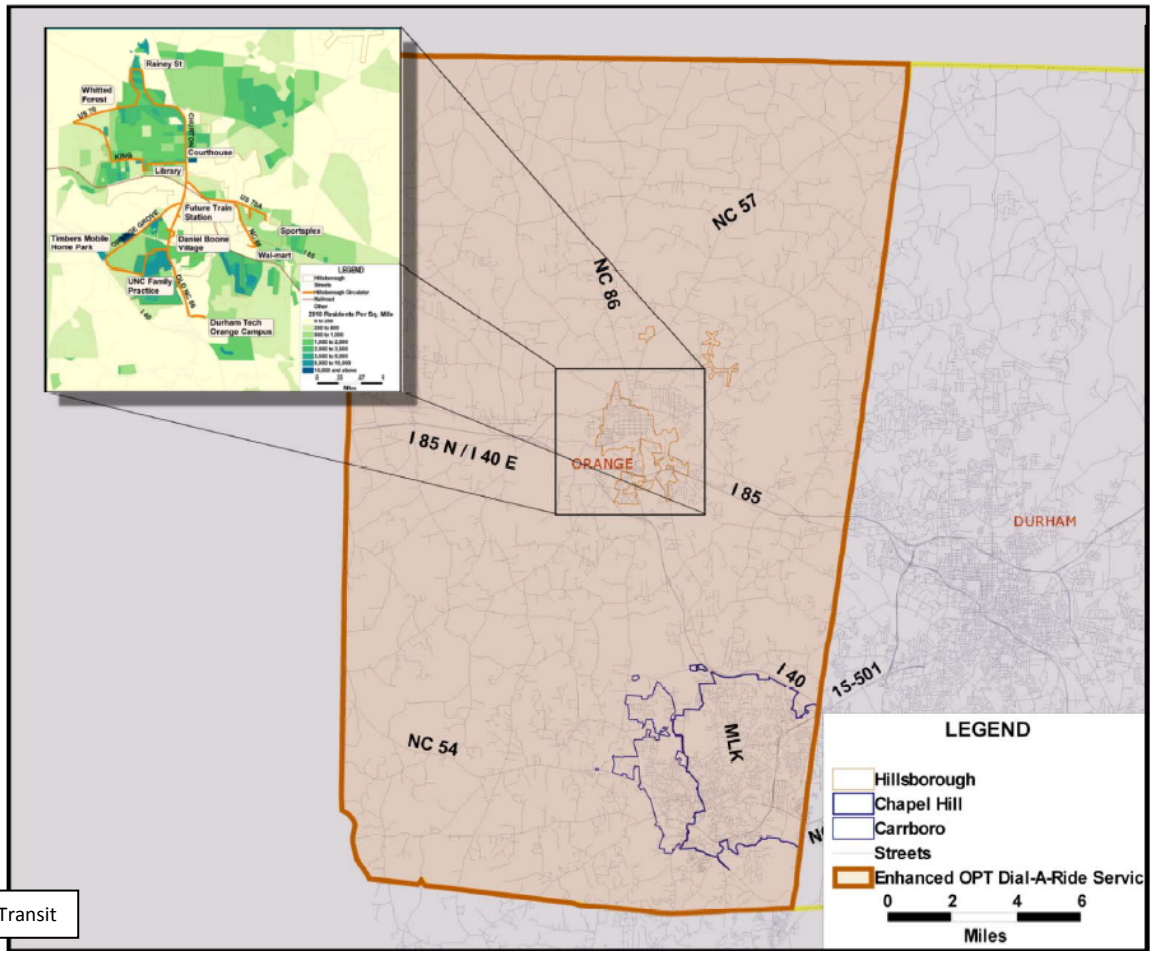


Orange County Transit Plan: Proposed Regional Bus Service Improvements

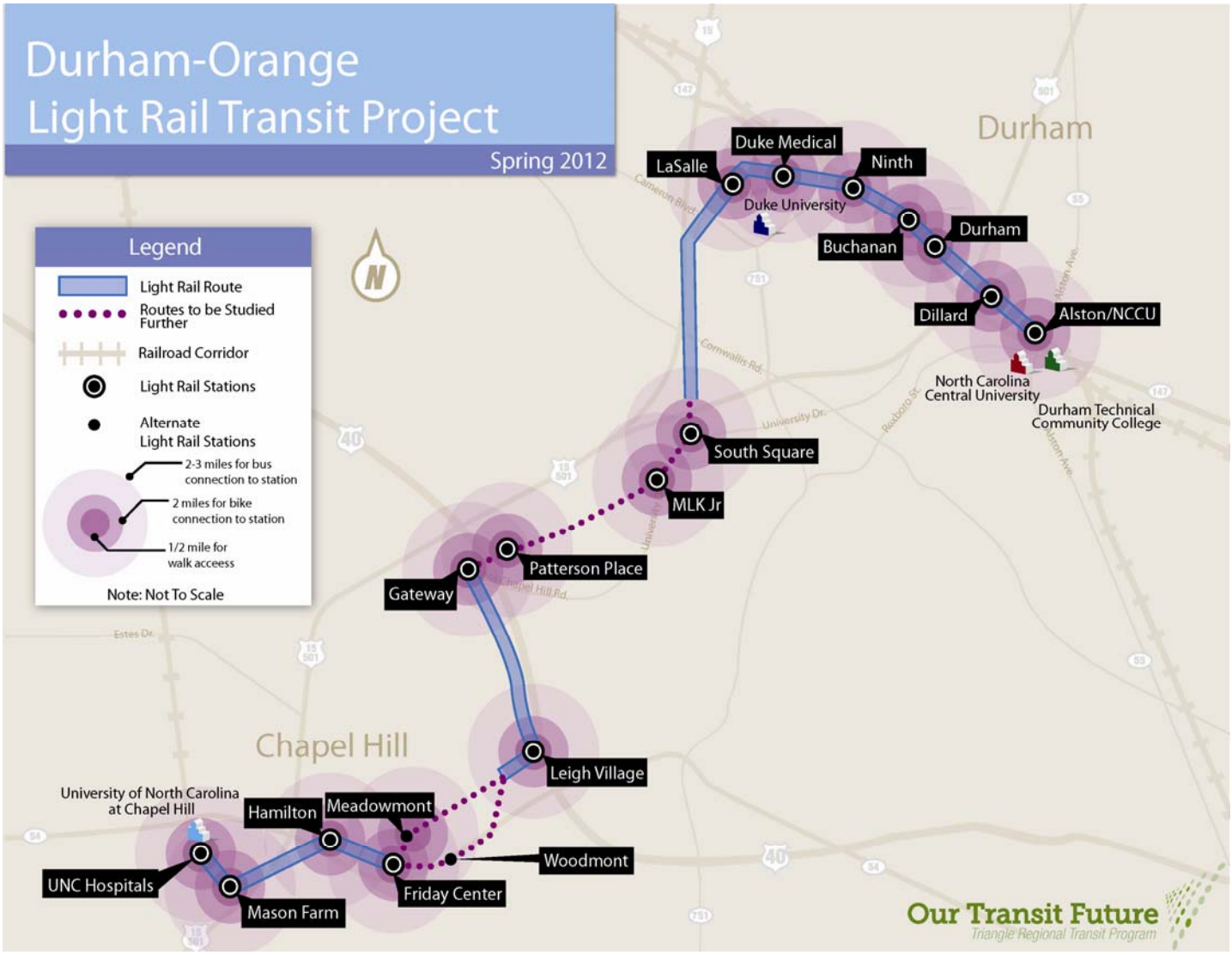


Created by Triangle Transit Staff
April 23, 2012

Orange County Transit Plan: Proposed Hillsborough and Rural Bus Service Improvements



Created by Triangle Transit


Durham-Orange
Light Rail Transit Project
Spring 2012
Legend
Light Rail Route
Routes to be Studied Further
Railroad Corridor
Light Rail Stations
Alternate Light Rail Stations
2-3 miles for bus connection to station
2 miles for bike connection to station
1/2 mile for walk acceess
Note: Not To Scale
Durham
Duke Medical
LaSalle
Ninth
Duke University
Buchanan
Durham
Dillard
Alston/NCCU
North Carolina Central University
Durham Technical Community College
South Square
MLK Jr
Patterson Place
Gateway
Chapel Hill
Leigh Village
University of North Carolina at Chapel Hill
Hamilton
Meadowmont
Woodmont
UNC Hospitals
Mason Farm
Friday Center
Our Transit Future
Triangle Regional Transit Program

V.

Improved Bus Service on Martin Luther King Jr. Boulevard

V. ORANGE COUNTY REVENUES

A variety of revenue sources provide the funding for the Orange County Bus and Rail Investment Plan. Those revenues include:

- A new one-half-cent sales tax in Orange County
- A new $7 vehicle registration fee levied by Orange County
- An increase of $3 to the existing $5 vehicle registration fee currently levied by Triangle Transit in Orange County
- Revenue from Triangle Transit's rental car tax
- NC State Government contributions
- Federal Government contributions

In addition, local funding of current transit services will remain in place.

The initial proceeds for each local revenue stream for Orange County in 2012 for transit are assumed to be:

- ½-cent sales tax: $5.1 million
- $7 vehicle registration fee: $770,000
- $3 vehicle registration fee increase: $330,000

- Rental car tax revenue: $560,000

Growth rates assumed for each revenue source:

- ½-cent sales tax:
  - Growth rate from 2011 through 2014: 1.5%
  - Growth rate from 2015 through 2035: 3.6%
- $7 vehicle registration fee: 2.0%
- $3 vehicle registration fee increase: 2.0%
- Rental car tax revenue: 4.0%

A total of $28 million would be borrowed over the life of the Plan. This borrowing would cover for the large capital expenditures which occur for 3 to 4 years of construction of the light rail component of the Plan. Any borrowing would be from capital markets through government bonds, would require approval by the NC Local Government Commission, and would have to meet debt to revenue ratios required by the capital markets for bond issuance.

Further details for each revenue source follow.

A. One-half cent sales tax in Orange County

A one half-cent sales tax in Orange County means that when individuals spend $10.00 on certain goods and services, an additional five cents ($0.05) is added to the transaction to support the development of the Bus and Rail Investment Plan. Purchases of food, gasoline, medicine, health care and housing are excluded from the tax.

A one half-cent sales tax in Orange County is estimated to generate $5.1 million in 2012. Over the life of the Plan to 2035, the sales tax is expected to generate $165 million in Year-Of-Expenditure (YOE) dollars. This tax can only be levied subsequent to a referendum by the Orange Board of County Commissioners and approval by the voters.

Revenue identified in the Bus and Rail Investment Plan for Orange County can be used for financing, constructing, operating and maintain local public transportation systems. The funds can be used to supplement but not supplant or replace existing funds or resources for public transit systems.

B. $7 Vehicle Registration Fee in Orange County

A seven dollar ($7) vehicle registration fee in Orange County means that when an individual registers a new vehicle or renews the registration for an existing vehicle in Orange County, an additional $7 per year is added to the cost above the other required registration fees for that vehicle.

The seven dollar fee in Orange County is expected to bring in $580,000 in 2012. Over the life of the Plan to 2035, the seven dollar fee is expected to generate $22.5 million in Year-Of-Expenditure (YOE) dollars. The implementation agreement will articulate how this revenue can be utilized.

C. $3 Vehicle Registration Fee Increase for Triangle Transit in Orange County

A three dollar ($3) vehicle registration fee increase in Orange County means that when an individual registers a new vehicle or renews the registration for an existing vehicle in Orange County, an additional $3 per year is added to the cost above the other required registration fees for that vehicle. An existing $5 fee for vehicle registration supports activities of Triangle Transit, including bus operations and long-term Planning. This fee would be increased to $8 when the $3 increase is implemented.

The three dollar ($3) fee in Orange County is projected to generate $250,000 in 2012. Over the life of the Plan to 2035, the three dollar ($3) fee is expected to generate $9.7 million in Year-of-Expenditure (YOE) dollars. The implementation agreement will articulate how this revenue can be utilized.

D. Revenue from Triangle Transit's Rental Car Tax

Triangle Transit operations are partially funded by a five percent (5%) tax on car rentals in Wake, Durham, and Orange Counties. Under existing policy adopted by the TTA Board, 50% of the rental car tax revenues are dedicated to advancing long-range bus and rail transit.

Since a significant portion of all cars rented and driven in the three counties are rented at the RDU International Airport, it is difficult to determine which rentals are driven primarily in one county or another. Therefore, the 50% rental revenues dedicated to long-term transit were allocated by county according to the percentage of population in the Triangle Region, which is: Wake (68%); Durham (21.5%); Orange (10.5%).

The Triangle Transit rental car tax proceeds directed to project development in Orange County are estimated to be $560,000 in 2012. Over the life of the Plan to 2035, the rental car tax is expected to generate $21.3 million in Year-of-Expenditure (YOE) dollars for Orange County.

E. NC State Government Funding

The Plan includes a 25% capital cost contribution by the NC Department of Transportation (NCDOT) for both light rail and commuter rail projects in Orange County. This level of participation was established by the State in Charlotte's Lynx Blue Line light rail project in 2003. The Plan assumes that NCDOT also pays for 10% of bus capital costs (replacement buses, new buses, park and ride lots, etc) consistent with its current practices.

F. Federal Government Funding

The Plan assumes that the Federal Government contributes 50% of the capital cost for the light rail project in Orange County. This was the federal level of participation in the Charlotte Lynx Blue Line light rail project and is consistent with federal funding outcomes for most rail projects in the Federal Transit Administration's New Starts program in recent years.

The Plan assumes that the Federal Government also pays for 80% of bus capital costs, consistent with its current practices, and continues to provide operating appropriations consistent with present Federal Transit Administration operating grant formulas. Assumed Federal Government contributions to the Plan total $239 million in YOE dollars from 2012 through 2035.

G. Transit Fares

The Plan assumes fares for all operating agencies remain unchanged from the existing fare structures.

- Light Rail farebox recovery ratio: 20%
- Triangle Transit bus farebox recovery ratio: 15%
- Chapel Hill Transit bus farebox recovery ratio: 0%

H. Additional Revenue Sources

This draft Bus and Rail Investment Plan does not rely on additional municipal contributions, public or private third party contributions or value capture forms of revenue.

VI. ORANGE FINANCIAL PLAN DATA

The following is a list of the total spending for each technology and category identified in the Orange County Bus and Rail Investment Plan to 2035. All figures are in Year of Expenditure dollars (YOE) unless otherwise noted.

- Light Rail Capital: $418 million ($316.2 million in 2011 dollars)
- Light Rail Operations: $58 million
- Bus Capital:
  - MLK Bus Lanes - $24 million
  - Miscellaneous Bus Capital Projects - $7 million
- Bus Operations: $107 million
- Borrowing: $25 million
- Hillsborough Intercity Rail Station: $9 million

VII. AGREEMENTS

IMPLEMENTATION AGREEMENT: ANNUAL REVIEW AND CHANGES TO THE PLAN

The Bus and Rail Investment Plan in Orange County details the specific elements of local and regional bus service, and Light Rail service to be added in Orange County over a 23-year period. Because of the long time frame for implementation of the Plan and its major capital projects, over time there will be changes and revisions made to the Plan. As the statutory implementation agency, Triangle Transit will work with Orange County, the DCHC Metropolitan Planning Organization (MPO), and the towns of Chapel Hill, Carrboro, Hillsborough, the University of North Carolina at Chapel Hill and Chapel Hill Transit, and the public transit provider in Orange County, to develop and execute an Implementation agreement which details the following aspects of implementation of the Plan:

(a) Annual review presentations of the activities and progress made in implementation of the Plan by Triangle Transit to the County and the MPO;
(b) The process for review and vote by the County, the MPO and Triangle Transit's Board of Trustees or the role of the operating agency regarding on any significant or substantial revisions to the Plan required by changes experienced in revenues received, capital costs, operating expenses, or other substantial issues affecting the Plan;
(c) A recognition and preservation of decision making responsibilities of the operating agencies;
(d) Responsibility of Triangle Transit for direct disbursement of funds from the revenues received per Section V (above) to the public agency responsible for implementing the bus services set forth in the Plan; and
(d) Other necessary provisions regarding implementation of this Plan as agreed to by the County, the MPO, and Triangle Transit.

COST SHARING AGREEMENT

The capital and operating costs for the 17-mile LRT line will be shared by Orange and Durham counties. Accordingly, a separate cost sharing agreement between Orange County, Durham County and Triangle Transit has been developed. The cost sharing agreement sets forth the respective shares of the capital and operating costs that will be paid by each county for this project that cross both county and municipal borders.

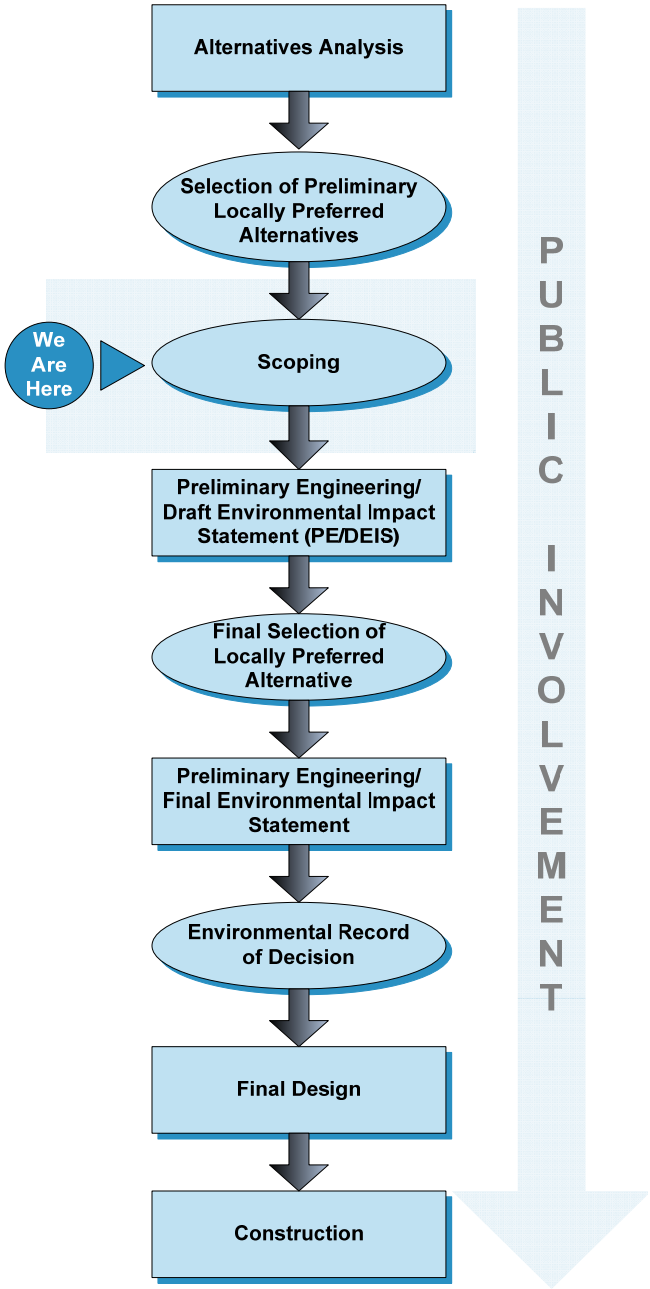
TAX LEVY AGREEMENT

One additional agreement has been developed by Orange County and Triangle Transit relevant to the Plan. In this tax levy agreement Triangle Transit agrees not to levy the half-cent transit sales tax for Orange County in the event of a successful referendum vote on the sales tax until after receiving a Resolution from the Orange County Board of County Commissioners requesting that the tax be levied.

VIII. NEW STARTS PROCESS

Federal New Starts Funding Process
It is anticipated that Federal funds assisting in the Planning and implementation of the Durham-Orange Light Rail Transit Project would be secured through the Federal Transit Administration's (FTA) discretionary New Starts program.

New Starts is the federal government's primary financial resource for funding transit "guideway" capital investments. Projects seeking New Starts funding – like all federally-funded transportation investments in metropolitan areas – must emerge from a locally-driven, *multimodal* corridor Planning process, as depicted graphically in this chart:



Through the jointly adopted 2035 Long Range Transportation Plan by the Durham-Chapel Hill-Carrboro MPO (DCHC MPO) and the Capital Area MPO (CAMPO), transportation corridors in greatest need of more detailed Planning and analysis were identified. The Alternatives Analysis (AA), completed in 2011, focused on a set of needs and alternative actions to address these needs, and generated information needed to select an option for further engineering and implementation. In February 2012, the DCHC MPO selected a 17-mile light rail corridor from East Durham to UNC Hospitals as the locally preferred alternative (LPA). Triangle Transit, as the local project sponsor, will submit to FTA the New Starts project justification and local financial commitment and request FTA's approval to enter into the preliminary engineering (PE) phase of project development.

During the preliminary engineering phase of project development, local project sponsors refine the design of the proposal, taking into consideration all reasonable design alternatives. Preliminary engineering results in estimates of project costs, benefits, and impacts at a level of detail necessary to complete the federal environmental process.

Preliminary engineering for a New Starts project is considered complete when the FTA has issued a *Record of Decision* (ROD) as required by the National Environmental Policy Act (NEPA). Projects which complete preliminary engineering and whose sponsors are determined by the FTA to have the technical capability to advance further in the project development process must request FTA approval to enter final design and submit updated New Starts information for evaluation.

Final design is the last phase of project development, and includes right-of-way acquisition, utility relocation, and the preparation of final construction Plans, detailed specifications, construction cost estimates, and bid documents.

The FTA typically considers a Full Funding Grant Agreement (FFGA) for a New Starts project during the final design phase of the New Starts project development process. A State FFGA will also be requested by the local project sponsor to supplement federal and local funding sources.

With all funding secured, construction on the project will begin.

IX. ALTERNATIVE PLAN

If it is determined that Federal or State funding for the proposed projects are not available, an alternative Plan must be developed. Upon this determination, Triangle Transit will work in collaboration with the citizens, elected officials, and stakeholders from Orange County, Chapel Hill Transit, DCHC MPO and Durham County to identify next steps toward the development of a revised Plan.

X. CLOSING SUMMARY

The Bus and Rail Investment Plan in Orange County is the result of years of collaborative work among Orange County elected officials and civic leaders, regional stakeholders, municipal and county staff and Triangle Transit. The Plan consists of a balance of bus improvements and rail investment to help accommodate the population and employment growth that the region is expected to experience in the next 25 years.

The proposed Plan addresses the ongoing need to provide more options to transit riders with improved and expanded bus and rail connections. Once implemented, the residents of Orange County will be able to have greater access to jobs, shopping, and activity centers such as downtown Chapel Hill and Carrboro, the University, or UNC Hospital.

Additionally, the Plan will provide core infrastructure investment that will help support the goals and objectives of local land use Plans in Orange County and its municipalities. In

particular, as evidenced in communities across the country, investment in light rail has proven to be a great motivator for private companies to build transit-oriented development at station locations along the rail corridor. This kind of more intense development generally consists of a mixed-use, walkable environment that can provide a more sustainable alternative to the suburban growth pattern that exists today, while allowing more open space to be preserved.

All the elements listed in the Draft Bus and Rail Investment Plan of Orange County are fiscally constrained. At every turn, the Plan is conservative in revenue assumptions and incorporates contingencies for capital and operating expenditures.

The draft Plan has been shared with the general public, Carrboro Board of Aldermen, Chapel Hill Town Council, the Hillsborough Town Commissioners, the DCHC MPO, the Burlington-Graham MPO and the Orange County Commission. The draft Plan will be considered for approval by the DCHC MPO, the Burlington–Graham MPO, the Triangle Transit Board of Trustees, and the Orange County Board of Commissioners. The Orange County Board of Commissioners will determine if and when to set a referendum date. Once a referendum passes, work can begin on implementation of the Bus and Rail Investment Plan.

- *As directed by NCGS 105-510.6, Triangle Transit drafted and developed this Plan, working in collaboration with the citizens, elected officials, and stakeholders from Orange County, the DCHC MPO, and Chapel Hill Transit.*

DRAFT Bus and Rail Plan In Orange County

Appendix A: Master Assumption List

Assumptions in Orange County and Durham County Financial Plans for Bus and Rail Transit

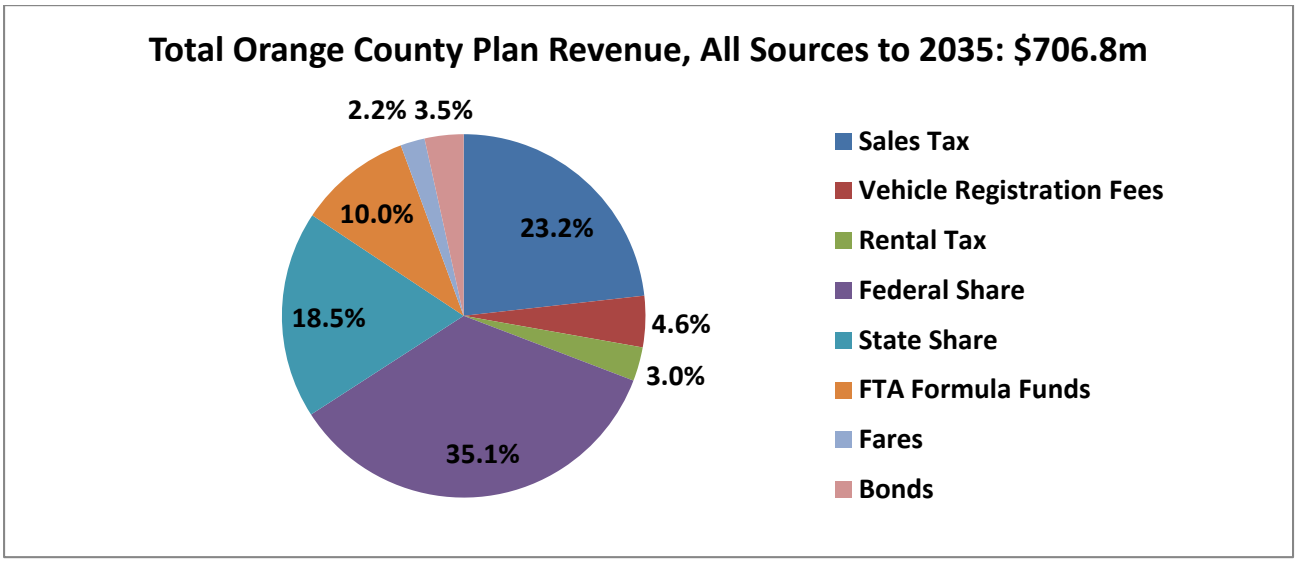
May 10, 2012

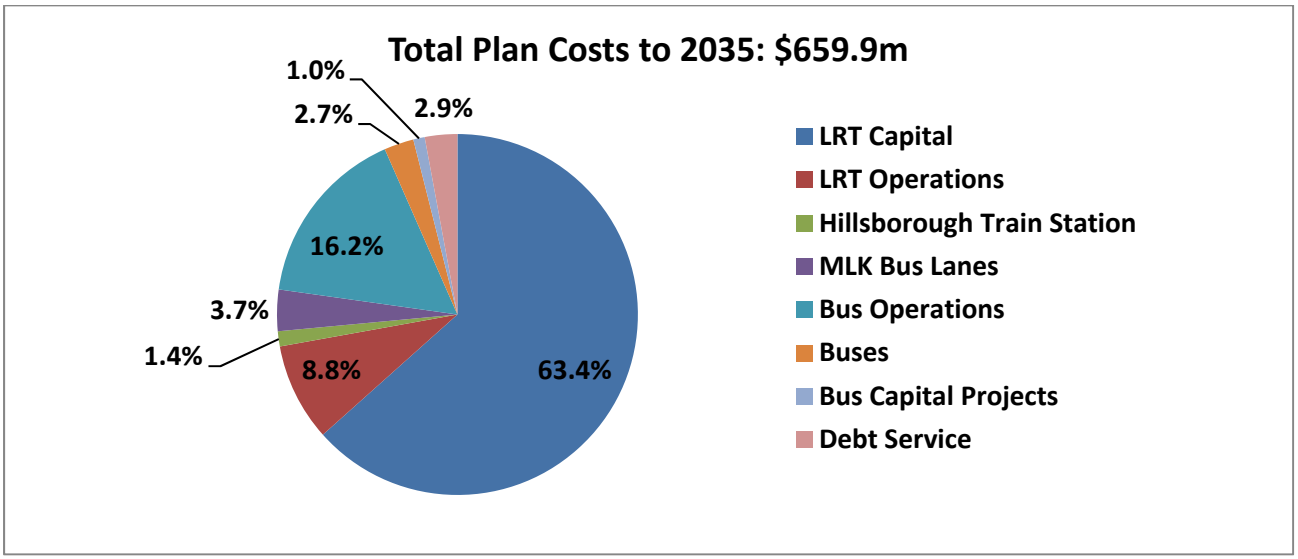
ASSUMPTIONS	ORANGE	DURHAM
Sales Tax Growth Rate to 2015	1.00%	2.00%
Sales Tax Growth Rate 2016 and Beyond	3.60%	3.50%
Light Rail Capital Cost Responsibility (Percentage)	22.95%	77.05%
Light Rail Operating Cost Responsibility (Percentage)	23.95%	76.05%
Light Rail Capital Cost Share Based on Current Cost Estimates ($2011 millions)	$ 316.2	$ 1,061.8
Light Rail Operating Cost Share Based on Current Cost Estimates($2011 millions)	$ 3.2	$ 10.1
MLK Bus Lanes Capital Cost ($2011 millions)	$ 22.1	NA
MLK Bus Lanes Operating Cost* ($2011 millions)	$ -	NA
Hillsborough Intercity Train Station Capital Cost ($2011 thousands)	$400 - $800	NA
Hillsborough Intercity Train Station Operations Cost **	Not part of plan	
Borrowing ($2011 millions)	$25.00	$165.00
Plan Minimum Cash Balance ($2011 millions)	$4.1	$12.9
OUTCOMES		
New Bus Hours in First Five Years of Plan	34,650	45,000
Total Cumulative New Bus Hours by End of Plan (Year 2035)	40,950	87,500
Opening Year for Hillsborough Intercity Train Station	2015	NA
Opening Year for Hillsborough Intercity Train Station	2015	NA
Opening Year for MLK Bus Lanes	2019	NA
Opening Year for Light Rail	2026	2026
"Rail Dividend" Bus Hours that can be re-directed when Light Rail Opens	30,000-45,000	12,000-35,000
Plan Cash Balance in 2035 ($2035 millions)	$47	$91
Plan Cash Balance in 2035 ($2011 millions)	$24	$47

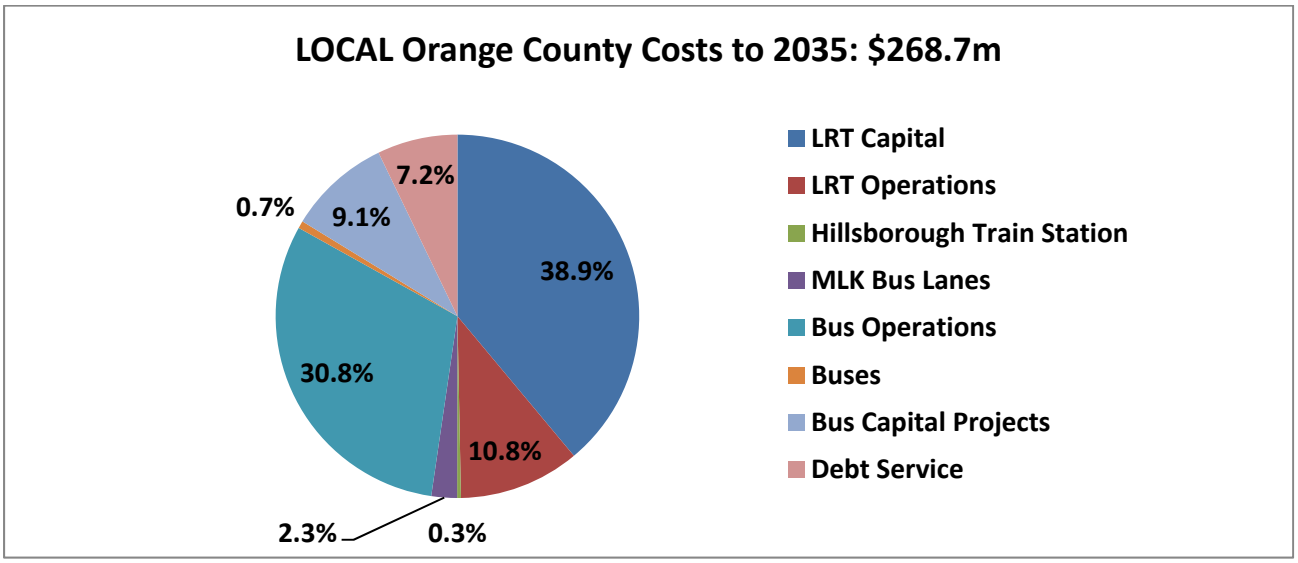
*MLK Bus Lanes have no operating costs because existing, already-paid-for bus services will be-re-organized to use the bus lanes

**Operations cost of Intercity Rail Station assumed to be covered in existing station plans by NCDOT Rail Division and Town of Hillsborough. Capital Cost contribution of the Orange County plan is 10% of total capital cost

TOTAL Plan Revenues and Costs to 2035, and LOCAL Costs to 2035







DRAFT Bus and Rail Plan In Orange County

Appendix B: Proposed Bus Service Enhancements

ORANGE COUNTY DRAFT BUS PLAN - FUNDED AND FUTURE COMPONENTS

REGIONAL SERVICES - FUNDED FIRST FIVE YEARS

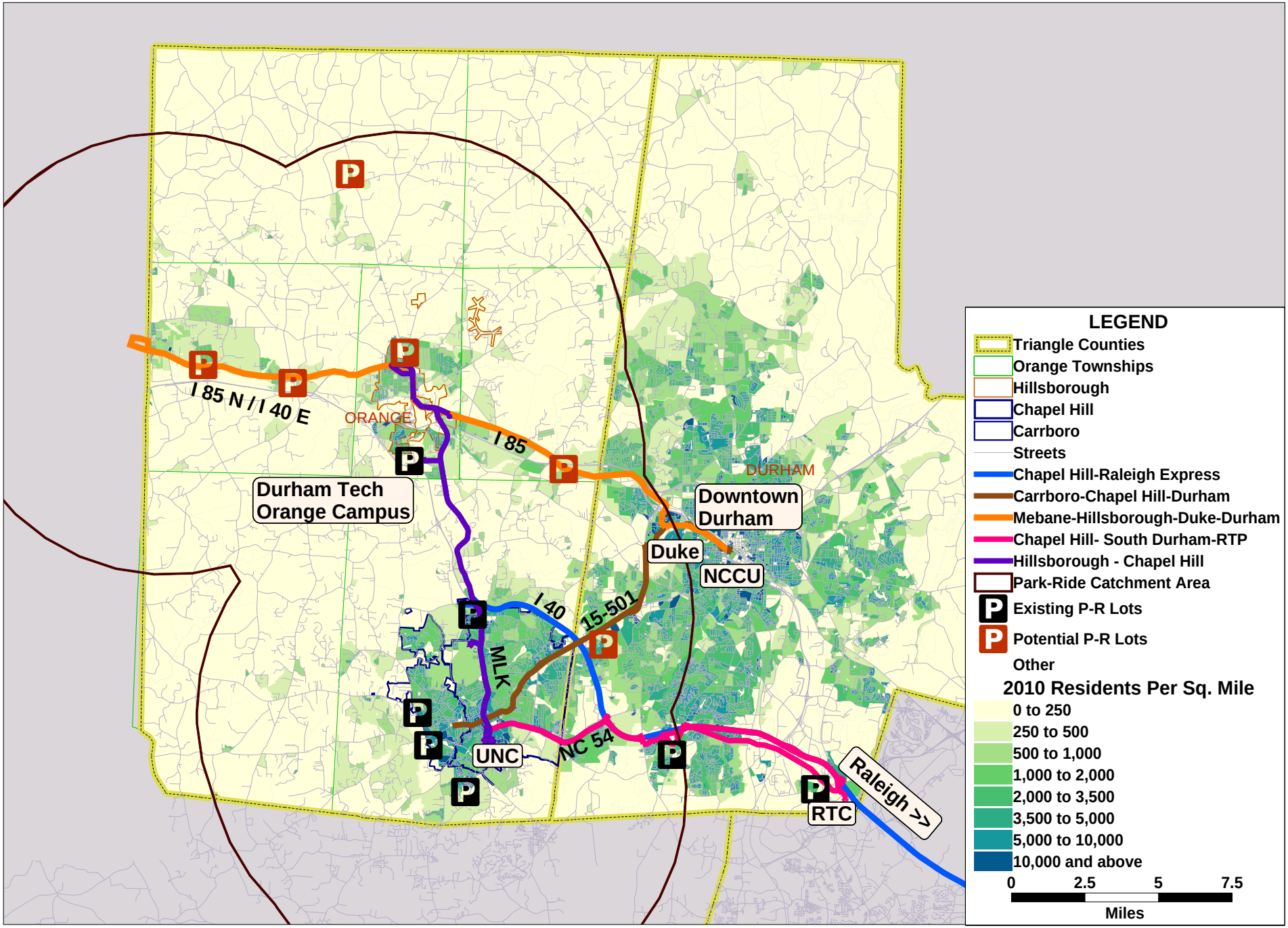
Service Type	PROJECTS	Enhanced or New	Cumulative New Service Hours	Service Description
Regional Exp	Carrboro-Chapel Hill-Durham Express (Route 405)	Enhanced	**1,506**	Increase peak-hour frequency of the express route between Durham and Chapel Hill to 15 minutes during the peak commute, directly serve Downtown Carrboro with rush hour service to Durham.
Regional Exp	Mebane-Hillsborough-Durham Express Introduce Service	New	**2,510**	Introduce a new express route serving Mebane, Hillsborough, and Durham.
Regional Exp	Carrboro-Chapel Hill-Durham Express (Route 405) - mid-day	Enhanced	**4,016**	Increase frequency of the express route between Durham and Chapel Hill or Carrboro to 30 minutes during the mid-day.
Regional Exp	Carrboro-Chapel Hill-Durham Express (Route 405) - Sundays	New	**4,640**	Introduce Sunday service on route between Durham and Chapel Hill or Carrboro.
Regional	Chapel Hill-Regional Transit Center via Southpoint (Route 800) - Sundays	New	**5,264**	Introduce new Sunday service to the existing TTA route 800.
Regional Exp	Carrboro-Chapel Hill-Durham Express (Route 405) - Saturday	Enhanced	**5,484**	Extend service between Durham and Chapel Hill or Carrboro to 11pm on Saturdays.
Regional	Chapel Hill-Regional Transit Center via Southpoint (Route 800) - Saturdays	Enhanced	**5,704**	Extend service between RTP and Chapel Hill (via Southpoint) to 11pm on Saturdays.
Regional	Route 800-SW Durham (Southpoint)-Chapel Hill peak	Enhanced	**7,210**	Phase 1 service improvement - increase peak hour frequency on the existing TTA Route 800. Currently the route operates at 30-minute frequency.
Regional Exp	Chapel Hill-Raleigh Express (Route CRX) - peak	Enhanced	**7,963**	Introduce mid-day service on the express route between Chapel Hill and Raleigh.
Regional	Hillsborough-Chapel Hill (Route 420) - peak: **IMPLEMENTED in 2012**	Enhanced	**7,963**	Increase frequency of the regional route between Hillsborough and Chapel Hill to 30 minutes during the peak commute.
Regional	Additional service Hours TBD	Enhanced	**8,200**	237 additional hours that may augment any of the services above

REGIONAL SERVICES - UNFUNDED, FUTURE PRIORITIES AFTER YEAR 2020

Service Type	PROJECTS	Enhanced or New	Cumulative New Service Hours	Service Description
Regional Exp	Mebane-Hillsborough-Durham Express Expansion	New	**9,204**	Increase the frequency on an express route serving Mebane, Hillsborough, and Durham to 30 minutes at peak.
Regional	Hillsborough-Chapel Hill (Route 420) - mid-day	Enhanced	**13,722**	Increase frequency of the regional route between Hillsborough and Chapel Hill to 30 minutes during the mid-day.
Regional Exp	White Cross to Carrboro to Chapel Hill Express	New	**15,228**	Phase I - Introduce a new express route serving Alamance County and Chapel Hill (via NC-54) at an hourly frequency.
Regional Exp	White Cross to Carrboro to Chapel Hill Express	New	**16,734**	Phase II - Introduce a new express route serving Alamance County and Chapel Hill (via NC-54) at a 30-minute frequency .
Regional Exp	Chapel Hill-Raleigh Express (Route CRX) - mid-day	Enhanced	**18,366**	Introduce mid-day service on the express route between Chapel Hill and Raleigh.
Regional	Chapel Hill-Regional Transit Center via Southpoint (Route 800) - mid-day	Enhanced	**19,997**	Increase frequency of the regional route between RTP and Chapel Hill (via Southpoint) to 30 minutes during the mid-day.
Regional	Route 800- RTC via SW Durham (Southpoint)-Chapel Hill peak	Enhanced	**20,813**	Phase 2 service improvement - increase frequency of the existing Route 800 between RTP and Chapel Hill (via Southpoint) to 15 minutes during the peak commute.
Regional	Chapel Hill-Regional Transit Center via Woodcroft (Route 805) - mid-day	Enhanced	**21,691**	Introduce added mid-day trips to regional route between Woodcroft and Chapel Hill.

Prepared by Triangle Transit
April 23, 2012

Orange County Transit Plan: Proposed Regional Bus Service Improvements



LEGEND

- Triangle Counties
- Orange Townships
- Hillsborough
- Chapel Hill
- Carrboro
- Streets
- Chapel Hill-Raleigh Express
- Carrboro-Chapel Hill-Durham
- Mebane-Hillsborough-Duke-Durham
- Chapel Hill- South Durham-RTP
- Hillsborough - Chapel Hill
- Park-Ride Catchment Area
- Existing P-R Lots
- Potential P-R Lots
- Other

2010 Residents Per Sq. Mile

- 0 to 250
- 250 to 500
- 500 to 1,000
- 1,000 to 2,000
- 2,000 to 3,500
- 3,500 to 5,000
- 5,000 to 10,000
- 10,000 and above

0 2.5 5 7.5

Miles

Created by Triangle Transit Staff
April 23, 2012

ORANGE COUNTY DRAFT BUS PLAN - FUNDED AND FUTURE COMPONENTS

HILLSBOROUGH LOCAL AND RURAL ORANGE COUNTY SERVICES - FUNDED FIRST FIVE YEARS

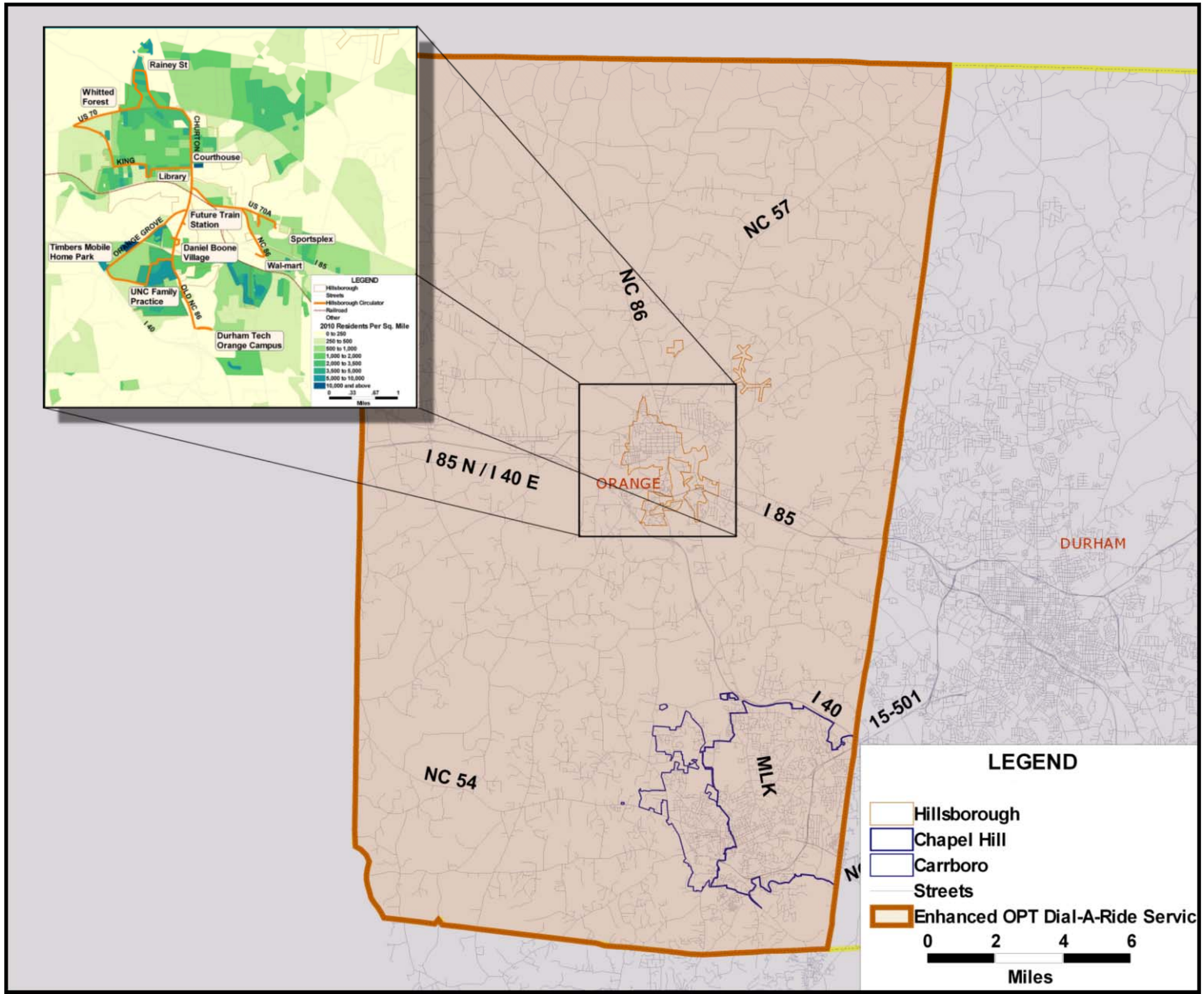
Service Type	PROJECTS	Enhanced or New	Cumulative New Service Hours	Service Description
Local	Hillsborough Circulator	Enhanced	**2,008**	Operate Hillsborough Circulator Mon-Fri, 8 hours per day
Local	Improve Service in Unincorporated Orange County	Enhanced	**4,200**	Improve capacity of demand response service to rural areas
Local	Hillsborough Circulator Phase 2	Enhanced	**4,702**	Add Saturday Service to Hillsborough Circulator
Local	Improve Service in Unincorporated Orange County	Enhanced	**6,887**	Further improve capacty of demand response service to rural areas

HILLSBOROUGH LOCAL AND RURAL ORANGE COUNTY SERVICES - UNFUNDED, FUTURE PRIORITIES AFTER YEAR 2020

NA - All identified needs funded in first five years.

Prepared by Triangle Transit
April 23, 2012

Orange County Transit Plan: Proposed Hillsborough and Rural Bus Service Improvements



ORANGE COUNTY DRAFT PLAN - FUNDED AND FUTURE COMPONENTS

CHAPEL HILL TRANSIT BUS SERVICE OPTIONS

Service Type	Project	Enhanced or New	Cumulative New Service Hours
Local	Service Improvements Chapel Hill, Carrboro, UNC in the 15/501 corridor	Enhanced	7,279
Local	54 Corridor Improvements (Orange and Durham Counties	Enhanced	4,016
Local	Support existing services	Enhanced	6,000
Local	Chapel Hill - Carrboro -UNC Saturday Service	New	5,096
Sub-Total			**22,391**
Local	Chapel Hill - Carrboro -UNC Sunday Service	New	3,640
Local	Extend evening service in Chapel Hill Carrboro UNC	Enhanced	4,080
Regional	Pittsboro- Chapel Hill Express	Enhanced	816
Local	Improve peak hour frequency Chapel Hill Carrboro UNC	Enhanced	2,209
Total			**33,136**

This list of service priorities supplied by Chapel Hill Transit exceeds the 22, 332 bus hour budget currently expected to be available in the plan for Chapel Hill Transit. Roughly a third of the proposed service hours will not be funded in the plan. Chapel Hill Transit and its partners will make a final determination of service priorities based on extensive public involvement and analysis in order to fit within the approximately 22,000 hour limit called for in the financially constrained plan.

Bus Operations

Total Bus Operations and Maintenance Costs by Year

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Bus Hours	9,000	15,750	24,750	34,650	34,650	34,650	34,650	34,650	34,650	34,650	34,650	34,650
Cost ($YOE thousands)	$ 905	$ 1,608	$ 2,565	$ 3,702	$ 3,817	$ 3,935	$ 4,057	$ 4,183	$ 4,313	$ 4,447	$ 4,584	$ 4,727

Year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Bus Hours	34,650	34,650	34,650	34,650	34,650	34,650	34,650	34,650	34,650	34,650	40,950
Cost ($YOE thousands)	$ 4,873	$ 5,024	$ 5,180	$ 5,341	$ 5,506	$ 5,677	$ 5,853	$ 6,034	$ 6,221	$ 6,414	$ 7,815

Total Bus Operations $YOE Cost to Year 2035

$ 106,782,735

DRAFT Bus and Rail Plan In Orange County

Appendix C: Bus Capital Enhancements

Bus Capital and Vehicle (Bus) Purchases/Replacements

Total Bus Purchases (New and Replacement Buses)

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
New Buses Purchased	4	3	4	4	-	-	-	-	-	-	-	-
Replacement Buses Purchased												
Cost ($YOE thousands)	1,606	1,222	1,654	1,876	-	-	-	-	-	-	-	-

Year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
New Buses Purchased	-	-	-	-	-	-	-	-	-	-	3
Replacement Buses Purchased	4	3	4	4	-	-	-	-	-	-	-
Cost ($YOE thousands)	2,245	1,736	2,386	2,706	-	-	-	-	-	-	2,132

Total Bus Purchases $YOE Cost to Year 2035

$ 17,564

Total Bus Capital Project Spending (Amenities, Transit Centers, Park/Ride Lots, Sidewalks, etc)

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Cost ($YOE thousands)	656	2,664	3,379	-	-	-	-	-	-	-	-	-

Year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Cost ($YOE thousands)	-	-	-	-	-	-	-	-	-	-	-

Total Bus Capital Projects $YOE Cost to Year 2035

$ 6,699

Bus Purchases and Bus Capital projects assumed to be split according to current trend:

Federal	80%
State	10%
Local	10%

DRAFT Bus and Rail Plan In Orange County

Appendix D: Hillsborough Train Station Expenditures

Hillsborough Intercity Rail Station

Total Rail Station Construction Costs by Year

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Cost ($YOE thousands)	$ 875	$ 3,552	$ 4,506	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Cost ($YOE thousands)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Total Hillsborough Intercity Rail Station $YOE Cost to Year 2035

$ 8,932,229

Hillsborough Rail Station assumed to be split according to pattern for other NCDOT Rail Division-approved stations

Federal	80%
State	10%
Local	10%

NCDOT Rail Division has studied two possible station designs. This option includes a permanent station. A modular, temporary station can be built for less money, approximately $4 million in $2011 dollars. Examples of the type of station this funding would build can be found in Cary and Kannapolis.

DRAFT Bus and Rail Plan In Orange County

Appendix E:
MLK Bus Lanes
Expenditures

MLK Bus Lane Project

Total MLK Bus Lane Project Costs by Year

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Cost ($YOE thousands)	$ 694	$ 704	$ 4,007	$ 7,456	$ 7,892	$ 3,703	$ -	$ -	$ -	$ -	$ -	$ -

Year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Cost ($YOE thousands)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

Total MLK Bus Lane $YOE Cost to Year 2035

$ 24,456,259

Project Costs are anticipated to follow the percentages below within the FTA Small Starts program

Federal	50%
State	25%
Local	25%

DRAFT Bus and Rail Plan In Orange County

Appendix F: Light Rail Expenditures

Durham-Orange Light Rail Expenditures: Capital & Operating to 2035

Total Light Rail Capital Spending

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Cost ($YOE thousands)	$ 3,258	$ 3,306	$ 5,034	$ 3,460	$ 3,567	$ 5,517	$ 16,757	$ 28,530	$ 31,211	$ 68,984	$ 120,898	$ 96,797

Year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Cost ($YOE thousands)	$ 31,009	-	-	-	-	-	-	-	-	-	-

Total Bus Purchases $YOE Cost to Year 2035

$ 418,327

Total Light Rail Operations Spending

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Cost ($YOE thousands)	-	-	-	-	-	-	-	-	-	-	-	-

Year	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Cost ($YOE thousands)	-	$ 5,024	$ 5,180	$ 5,341	$ 5,506	$ 5,677	$ 5,853	$ 6,035	$ 6,222	$ 6,414	$ 6,613

Total Light Rail Operations $YOE Cost to Year 2035

$ 57,866

The cost of the Durham-Orange Light Rail project is anticipated to be split as follows:

Federal	50%
State	25%
Local	25%

DURHAM-ORANGE REGIONAL SERVICES - Comparison of Plans

The following comparison was made by MPO staff based on the adopted Durham County plan and a draft of the Orange County plan.

Triangle Transit Regional Bus Projects - funded first five years

Service Type	PROJECTS	Enhanced or New	Orange Plan Description	Orange Plan Hours	Durham Plan Description	Durham Plan Hours
Regional Exp	Carrboro-Chapel Hill-Durham Express (Route 405)	Enhanced	Increase peak-hour frequency of the express route between Durham and Chapel Hill to 15 minutes during the peak commute, directly serve Downtown Carrboro with rush hour service to Durham.	1,506	Carrboro-Chapel Hill-Durham Express (Route 405) - 15 minute service during peak hours	1,500
Regional Exp	Mebane-Hillsborough-Durham Express Introduce Service	New	Introduce a new express route serving Mebane, Hillsborough, and Durham.	1,004	Mebane-Hillsborough-Duke/VA Medical Centers E	1,600
Regional Exp	Carrboro-Chapel Hill-Durham Express (Route 405) - mid-day	Enhanced	Increase frequency of the express route between Durham and Chapel Hill or Carrboro to 30 minutes during the mid-day.	1,506	Not included.	-
Regional Exp	Carrboro-Chapel Hill-Durham Express (Route 405) - Sundays	New	Introduce Sunday service on route between Durham and Chapel Hill or Carrboro.	624	Carrboro-Chapel Hill-Durham Express (Route 405) - Sundays	600
Regional	Chapel Hill-Regional Transit Center via Southpoint (Route 800) - Sundays	New	Introduce new Sunday service to the existing TTA route 800.	624	Chapel Hill-Regional Transit Center via Southpoint (Route 800) - Sundays	600
Regional Exp	Carrboro-Chapel Hill-Durham Express (Route 405) - Saturday	Enhanced	Extend service between Durham and Chapel Hill or Carrboro to 11pm on Saturdays.	220	Chapel Hill-Durham Express (Route 405) - extend Saturday hours to 11pm	200
Regional	Chapel Hill-Regional Transit Center via Southpoint (Route 800) - Saturdays	Enhanced	Extend service between RTP and Chapel Hill (via Southpoint) to 11pm on Saturdays.	220	Chapel Hill-Regional Transit Center via Southpoint (Route 800) - extend Saturday hours to 11pm	200
Regional	Route 800-SW Durham (Southpoint)-Chapel Hill peak	Enhanced	Phase 1 service improvement - increase peak hour frequency on the existing TTA Route 800. Currently the route operates at 30-minute frequency.	1,506	Chapel Hill-Regional Transit Center via Southpoint (Route 800) 15 minute service during peak hours	1,500
Regional	Additional Service Hours TBD	Enhanced	237 additional hours that may augment any of the services above in the first five years	237	No additional hours for regional services in the first five years	0
Regional or Local	Additional Service Hours TBD	TBD	By 2035 (both regional and local)	6,300	By 2035 (both regional and local)	27,000

Durham-Orange Corridor Rail Project

The table of Assumptions in Appendix A of the Orange Plan includes some figures that are different from the adopted Durham plan. Since the Durham plan's adoption, cost estimates have changed, the cost sharing agreement has changed, and the opening year for rail had to be pushed back.

Opening Date

Durham Plan - opens 2025 (this date is not actually noted anywhere in the text of the plan, but was assumed in the financial analysis)

Orange Plan - opens 2026 (this date is implied by the expenditures table in Appendix F)

Capital Cost

Durham Plan - $1.4 billion total, $1.05 billion Durham County (2011 $)

Orange Plan - $1.378 billion total, $316.2 million Orange County (2011 $)

Operations and Maintenance Cost

Durham Plan - $15 million/year, $11.3 million/year Durham County (2011 $)

Orange Plan - $14.44 million/year, $3.2 million Orange County (2011 $)

Local Revenue Share

Durham Plan - "Durham County to fund all rail investment (capital, operations, and maintenance costs) within Durham County with the exception of the light rail investment found within those portions of the Chapel Hill town limit which are inside Durham County"

The percentages are not noted in the text of the plan, but these would be 23.9% Orange County, 76.1% Durham County for both capital and operating costs

Orange Plan - "The capital and operating operating costs for the 17-mile LRT line will be shared by Orange and Durham counties. Accordingly, a separate cost sharing agreement between Orange County, Durham County and Triangle Transit has been developed. The cost sharing agreement sets forth the respective shares of the capital and operating costs that will be paid by each county for this project that cross both county and municipal borders."

22.95% Orange County, 77.05% Durham County for capital costs

23.95% Orange County, 76.05% Durham County for operating costs

DCHC MPO -- Goals, Objectives and Targets

Process

The following activities are to take place to review the MPO's Goals, Objectives and Targets for use in developing the 2040 Long Range Transportation Plan (2040 LRTP):

- The TAC released the Goals, Objectives and Targets for public comment at their March meeting. The Goals and Objectives were the same as those used for the 2035 LRTP, but the Targets had been updated from the 2035 LRTP set.
- The MPO conducted four public workshops, including:
  - Chapel Hill/Carrboro, 4/10/12;
  - Hillsborough, 4/12/12;
  - Pittsboro, 4/24/12; and
  - Durham, 4/26/12.
- The MPO created an online survey to assess citizen's values in transportation investments and policies.
- The TAC will conduct a public hearing at their June 13, 2012 meeting.
- The TAC can choose to adopt the Goals, Objectives and Targets at their June 13, 2012 meeting.

Related Documents

The review of the MPO's Goals, Objectives and Targets includes the following documents:

1. Attachment 6A – MPO Survey Results and Summary
2. Attachment 6B – DCHC MPO Goals, Objectives and Targets: Comments
3. Attachment 6C – Draft Goals and Objectives
4. Attachment 6D – Target Development
5. Attachment 6E – Targets

Analysis and Recommendation – Goals and Objectives

MPO staff does not recommend making any changes to the Goals and Objectives. The Goals and Objectives provide strong support for the values and concerns expressed in the public comments received and the transportation survey.

The DCHC MPO has developed a comprehensive, well thought out set of Goals and Objectives and updated them several times over the last decade. The most recent update occurred in August 2007. Respondents in the recent survey supported alternative modes of transportation such as rail transit, bus transit, bicycling and walking, and were concerned about the

transportation impact on neighborhoods and the land use impact on transportation. These items already have strong support in the Goals and Objectives. The citizen comments want walkable communities and alternative transportation modes, which have ample support in the Goals and Objectives. They also asked for more depth and specifics in the environmental Goals and Objectives. Goal #6, "Protection of Natural Environment and Social Systems," and the eight underlying Objectives address environmental concerns, and Goal #1, "Overall Transportation System," also supports the natural resources and the environment.

Staff does not recommend adding specific environmental Objectives. A more specific objective such as "no construction or development will occur in areas designated as Significant Natural Heritage Areas," might take away any latitude the MPO's policy board (the Transportation Advisory Committee – TAC) has in making decisions in which multiple environmental and natural resource concerns are involved.

Many of the comments related to the environment were from citizens who are concerned that the proposed Southwest Durham Drive in the 2035 Long Range Transportation Plan (LRTP) will cause unreasonable environmental damage to the Little Creek area. Staff is aware of this concern and has begun a process to get an early review of proposed 2040 LRTP projects by environmental and natural resource agencies.

Analysis and Recommendation – Goals and Objectives

As suggested when the Targets were released for public input, the MPO staff recommends:

- Replacing Target #2 (Percent of Peak Period VMT at Congestion) with #2A (Percent of population whose average trip time is greater than 15 minutes). The new Target represents data from the regional travel demand model that is more easily comprehended; and,
- Replacing Target #7 (Greenhouse Gas Change) with Target #7A (Greenhouse Gas : annual per capita emissions from transportation sector [in tons]). The new Target accounts for the growing population in the region.
- Changing Target #8 (Cost of Congestion). The growing population will likely increase this value even if the level of service improves. It would be better to use a "per capita" value for this Target.

Staff also recommends making the following Target more aggressive:

- Transit Mode Share – The values released for public comment were 3%, 5% and 7%. The new values in the table are 5%, 7% and 10%.

Goals, Objectives and Targets

05/16/12

Survey Results and Summary

Background

- This survey, conducted by The Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO), will be used to help design the *2040 Long-Range Transportation Plan* (*LRTP).*
- Survey was designed in Survey Monkey and made available online and in printed form.
- The survey will be accessible until May 31st.
- This document presents the results up to 6/15/12.

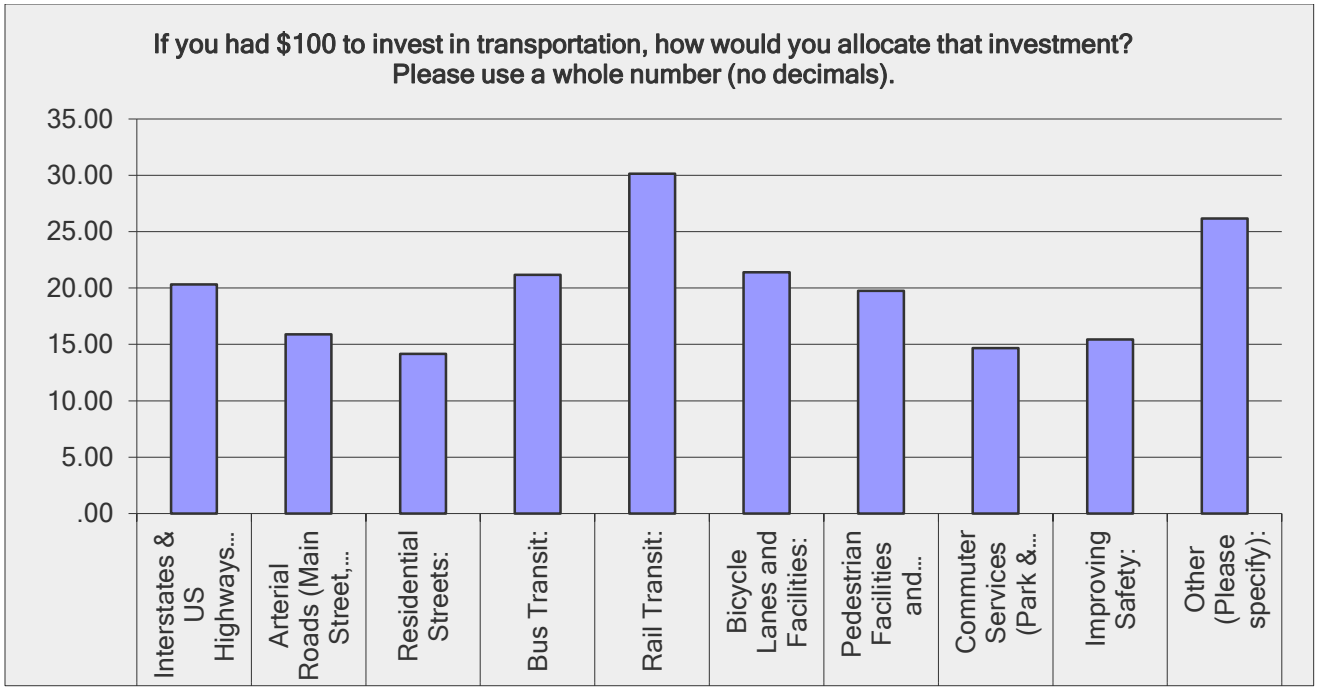
Results

The following sections present the results by each survey question.

Transportation Investment:

In order to gain input on how individuals would allocate transportation funds, we presented a question that "gave" them $100 to invest in transportation as they saw fit. *Rail Transit* received the highest response average of **30,** while *Bus Transit* and *Bicycle Lanes and Facilities* trailed at **21** each, and Interstates and US Highways at **20**.

*Note: As an oversight, there was no room provided for survey takers to specify what they would have rather had as the "Other" option.



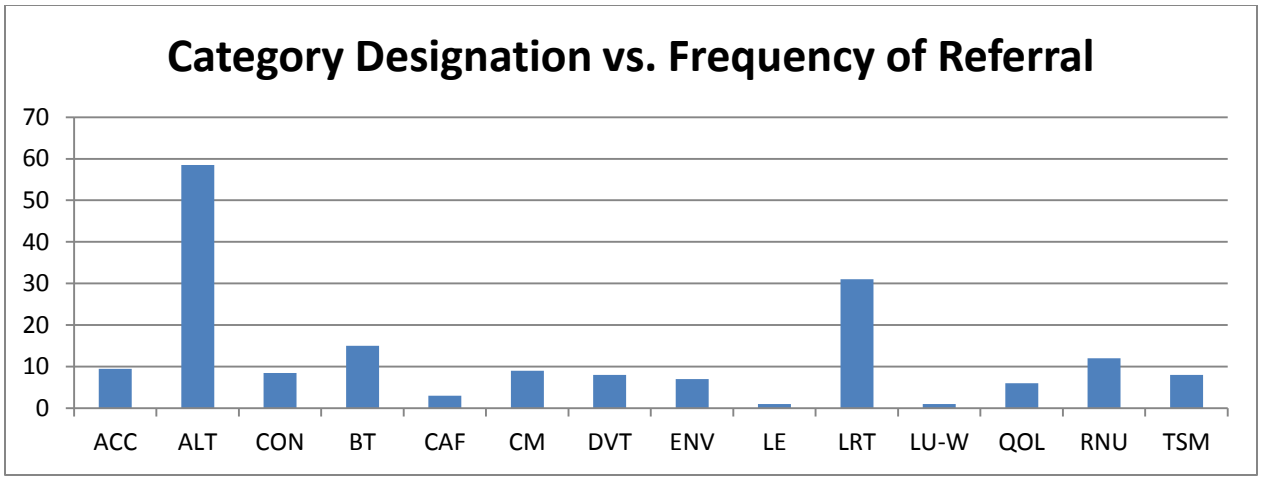
Policy and Investment Decisions:

We had survey takers rank in order of importance (1 being most important, 10 being least important) the following transportation policies in our investment decisions. Since 1 was the HIGHEST designation, the LOWER the Rating Average, the MORE IMPORTANT the category was to the public. Therefore, *Impact on Neighborhoods and Livability, Preservation,* and *Transportation Choices* were the three MOST IMPORTANT policies. *Congestion and Travel Time* and *Economic Development* were the two LEAST IMPORTANT. There was not a large spread in the total score between the policy choices, signifying that all the policies appear to have some support from the respondents.

Air Quality	5.08
Economic Development	6.73
Preservation	**4.92**
Connectivity and Convenience to Destinations	5.43
Congestion and Travel Time	6.16
Impact on Neighborhoods and Livability	**4.59**
Efficiency ("Bang for Your Buck")	5.99
Energy Use	5.33
Transportation Choices	**5.19**
Safety	5.48

Important Transportation Option:

Alternate Transportation (ALT) was designated the "Most Important" aspect of the transportation that needs improvement, with **33%** of the survey population agreeing. We categorized answers into the *Alternate Transportation* category if they included more than one transportation mode that was not the dominant highway mode (i.e., bus transit and bicycle/pedestrian). Further, we had categories for those who answered just one mode. The "Most Important" designations were **BT-** *Bus Transit* and **LRT-***Light Rail Transit*.



LEGEND:	
ACC: Accessibility	**ALT**: Alternate Transportation (Bike/ped, bus, rail, etc.)
CON: Connectivity	**CM**: Congestion Management
BT: Bus Transit	**DVT**: Development
CAF: Costs and Funding	**ENV**: Environment
LE: Law Enforcement	**QOL**: Quality-of-Life
LRT: Light Rail Transit	**RNU**: Road Network Update
LU-W: Land Use-	**TSM**: Transportation System Management

How to Accommodate Future Growth:

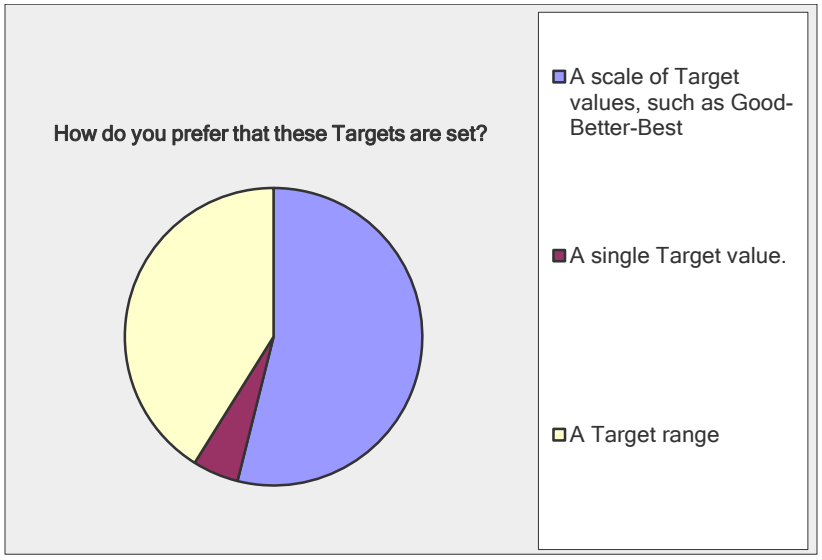
After explaining that the Triangle Area is expected to grow by nearly 1 million new residents over the next 30 years, we had respondents rank in order of importance (1 being most important, 10 being least important) the following policies to address the growing population's needs. Since 1 was the HIGHEST designation, the LOWER the Rating Average, the MORE IMPORTANT the category was to the public. The three MOST IMPORTANT policies are in bold in the following table. Those policies relate to land use, alternative transportation and transit. Policies related to highway improvements and highway funding (i.e., motor fuels tax) were the LEAST IMPORTANT.

Category	Rating Average
Leveraging: Leveraging private and public investment (private investment in roads, toll roads, etc.)	6.4
Raise the motor fuels tax to increase revenue	5.38
Encourage the use of *more fuel efficient vehicles* and *discourage driving.*	4.88
Land use changes that implement *more mixed-use and denser developments* to reduce trip lengths.	4.86
Focus on *increasing road capacity* and *reduce spending on bicycle, pedestrian and transit.*	7.54

Category	Rating Average
Permit land use design elements that support alternative transportation modes such as *sidewalks and grid street patterns with shorter block lengths.*	**4.61**
Support infrastructure that creates incentives to carpool and take transit.	**4.62**
Permit *more concentrated residential and employment development along key travel corridors* to reduce trip lengths and make transit more efficient.	5.29
Increase transit capacity and investment.	**4.81**
Create local ordinances that *require major employers to develop strategies that reduce congestion and increase transportation efficiency.*	5.85

Transportation System Targets:

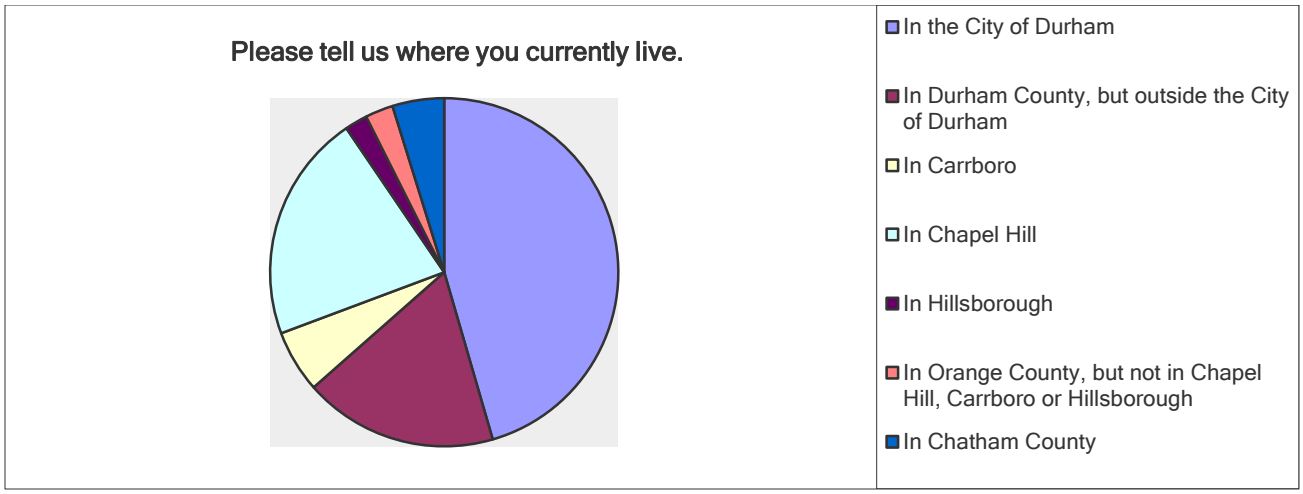
When asked about the preference of a target system for our transportation system, the majority of the survey population **(53.9%)** reported wanting "A scale of Target values, such as Good-Better-Best", while **41.1%** reported wanting "A Target range."



Survey Population:

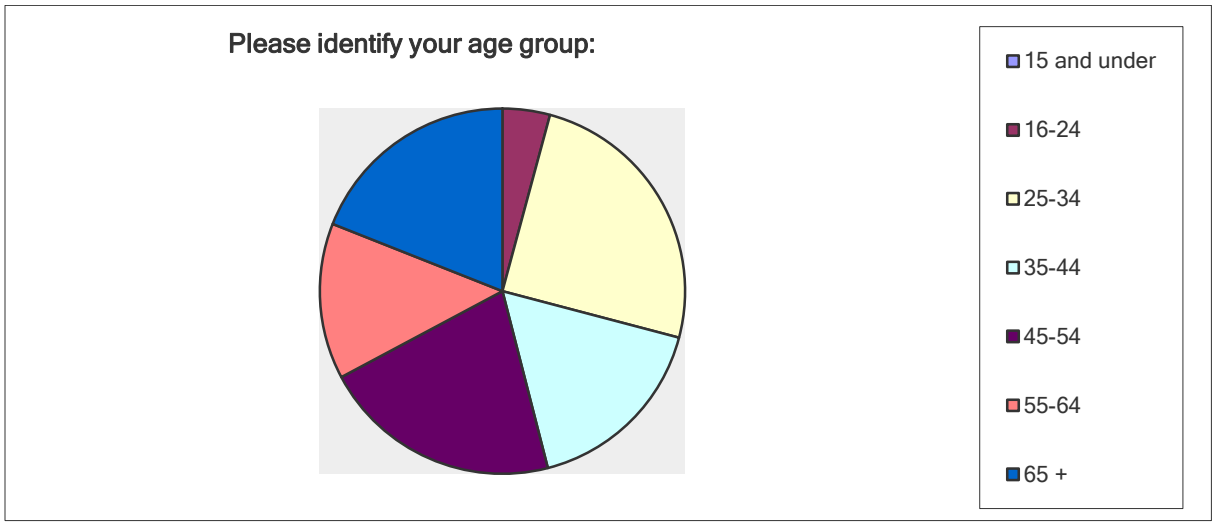
RESIDENCE

The majority of our survey population reported residing in Durham County **(63.5%)**. **45.5%** of our survey population indicated residing in the City of Durham, **21.2%** reported living in Chapel Hill, and **18%** reported living in Durham County, but outside the City of Durham.



AGE

The age of our survey population was evenly distributed among the age categories above 25 years old. To date, we have not had any survey takers report that they were under the age of 15.



DCHC MPO -- Goals, Objectives and Targets

Comments

Background

The TAC released the Goals, Objectives and Targets for public comment at their March meeting. Up to this point, the public input process included four public workshops, an online survey and email comments from citizens. In addition, TAC members and local government staff have provided comments. This document provides a compilation of the comments received to date and a summary of those comments.

Summary and Compilation

This section provides the complete text of all the comments received. A line separates the individual comments. In summary, the comments:

- Ask for more depth in the environmental Goals and Objectives;
- Question how Southwest Durham Drive abides by the environmental, neighborhood and disadvantaged population Objectives;
- Support walkable communities and transportation alternatives; and,
- Request specific transportation facilities.

Comment #1

1. In general I support the stated goals and objectives. However some of them, like "Protect the Environment" have such broad meaning that they lose any applicable value. They should be more specific like: "No construction or development will occur in areas designated as Significant Natural Heritage Areas"

2. Goal 6c: "Identify and protect environmental sensitive areas early in the process." It appears this did not occur in the earlier versions of the LRTP and was also omitted in the Light Rail study. It is imperative that this is done and an (preliminary) environmental impact identification is made. There will be alternatives identified in the draft proposals and an informed choice of the preferred alternative can only be made if the environmental impact is taken into consideration.

3. Goal 6a: Establish performance standards and report impacts on public health, natural environment, cultural resources and social systems." No mention was made when and how these standards will be established.

4. I would like to suggest an additional objective: "Bike lanes on arterial roads will be separated from (adjacent to) the road-deck."

5. Table 2 - Proposed targets for the 2040 LRTP.
    1. "VMT per Capita". 31 in 2010. Proposed 31 in 2040. 30 would be considered good. This does not appear "good" to me.
    4. "Transit Mode share all trips". In 2010 2.8%. Projected in 2040 2.6%. A target of 3% considered good.

If that is all we are going to get for spending 1.4 billion dollars on a Rail connection, we have to do some more thinking. My suggestion would be to replace the word "good" with "conservative" and the word "best" with "aggressive". Leave out the column "better" as it is exactly in the middle and therefore meaningless.

Hank Rodenburg

Comment #2
April 29, 2012
Chapel Hill, N.C.

Dear Andrew Henry:

I just wanted to reiterate and share for the record some of the points made and discussed at the workshop you hosted at the Carrboro Town Hall some weeks back. These community concerns relate specifically to the LRTP Goals and Objectives, namely the following:

- Consistent with community goals and cost effective.
- Conserve natural resources.
- Encourage safe pedestrian, bicycle and vehicular travel.
- Minimize traffic intrusion in residential neighborhoods.
- Establish performance standards and report impacts on public health, natural environment, cultural resources and social systems.
- Identify and protect environmentally sensitive areas early in the planning process.
- Ensure that transportation facilities do not negatively affect disadvantaged populations disproportionately.

For starters, these goals and objectives currently have little if any depth or detail, and for them to be actionable and objective-to gain and receive community support, they require a significant degree of fleshing out and stakeholder engagement.

Since C2 for example is the preferred alternative for the LRT, I'm confused how Southwest Durham Drive (SWDD) going thru the Little Creek, a Significant Natural Heritage Area and currently following the same route as C1, would satisfy and be consistent with a "community goal, "conserve natural resources" or "identify and protect environmentally sensitive areas early in the planning process. " Moving on, I'm

uncertain also how SWDD going down Meadowmont Lane would fulfill the "encourage safe pedestrian…travel" or " minimize traffic intrusion in residential neighborhoods" goals, especially with an elementary school located and a residential area in its proposed path. Another concern is that what was in existence when the plans were proposed or even discussed, is not currently the situation on the ground, and this entire process must be informed by the current scope of reality, namely, the facts as they are today.

How also does SWDD going down Meadowmont Lane, in terms of the Cedar's community, "not negatively affect disadvantaged populations disproportionately"? In fact, it would affect this population disproportionately, and for that reason alone this goal does not appear informed in fact by the reality on the ground as it exists today.

These are just a few examples of how and why the goals and objectives outlined during the workshop- and the process by which they would inform the project require being far more fully informed by community and environmental realties, which, until now, does not appear part of the process.

As with all principles, procedures, goals, targets and objectives for such projects, we the community, hope and trust that the process for which the LRTP follows will be fully informed by and integrally influenced at each step of the process by detailed community and environmentally-based inputs based on today's reality. This is especially the case having gone through the process around the LRT, C1, and the Little Creek and the SNHA, which, to say the least was not fully informed by such worthy goals. What is essential is that the process be informed upstream- and eventually downstream -by well-informed, community and stakeholder-based inputs, like N.C. Department of Natural Resources, the Army Corp of Engineers, just a few examples of those who need to be at the table before such goals and objectives can be said to be more fully-informed and comprehensive.

Many thanks again for your concern and interest in community feedback.

Sincerely,
Geoffrey D. Geist

This section is a compilation of the comments received on the comment forms.

- Need access from East of Hillsborough for bikes and pedestrians- accessible to Orange High School Rd? St. Mary's is too busy, narrow and hilly-i.e., too dangerous. See Holly Reid.
- The way the SE Data is displayed using TAZ's that seem a little awkward/confusing based on the boundaries used. I recommend getting feedback on the known and potential development in Pittsboro from the town's planning staff. They will be able to provide more realistic information on prospects for new residential and commercial employment.
- In my opinion, creating opportunities for residents to live and work within a walkable community ought to be the 1st priority. Secondary to that, providing different options for residents to get to

work should be the second most expensive item in a holistic transportation/transit budget. While this is currently needed for those who live in Durham (Triangle) now, providing these two options to the expected 1.3 million coming will be. I feel that in the mix of people moving to the Triangle very soon, a fairly significant percentage will be families from other economically challenged areas for jobs. It makes sense to me that this majority will not be bringing a lot of resources. They may have suffered from an extended period of unemployment, mortgage failures and/or environmental disasters. These circumstances will be the biggest challenge for the MPO to deal with. People with resources will find a way themselves. For the 1st folks, we need to provide planning for housing, municipal infrastructures and a place to work. Providing these close together has to be high on our list of priorities.

- Target and Sam's Club: There are bushes between bus stop and the stores. Sometimes, the driver has to use alternate stops for a female rider in a wheelchair
- Durham Station: Needs button to open bathroom doors for handicap accessibility
- Southpoint → REI Side: Big hole on sidewalk at bus stop
- Megabus needs to stop at regular bus bays
- Can't get from Durham Station to Amtrak Station in a wheelchair

(Editor's note: this set of transit related comments were immediately forwarded to the appropriate transit staff)

Goals and Objectives.

The Durham-Chapel Hill-Carrboro Metropolitan Planning Organization's goals and objectives are:

1. Overall Transportation System

Goal: A safe, sustainable, efficient, attractive, multi-modal transportation system that: supports local land use; accommodates trip-making choices; maintains mobility; protects the environment and neighborhoods; and improves the quality of life for urban area residents.

Objectives:

a) Establish performance standards that will measure the effectiveness of the urban area's overall transportation system in supporting access to goods, services, activities, and destinations.
b) Select and program transportation projects, which are consistent with community goals and are a cost-effective use of funds.
c) Develop and maintain a multi-modal regional transportation model that reflects travel patterns and incorporates innovative techniques for evaluating the impacts of proposed transportation investments on travel and land use patterns.
d) Promote non-automobile transportation alternatives and create efficient connections between all transportation modes.
e) Conserve natural resources and reduce the rate of energy consumption.
f) Develop cooperative strategies with employers to reduce congestion and increase the efficiency of the transportation system.
g) Use transportation funds based on the priority needs of the urban area, in keeping with community values.
h) Seek additional funding and funding sources to ensure implementation of the long range plan.
i) Monitor the implementation of the Plan and the targets through the biannual TIP process.
j) Ensure that the transportation needs are met for all populations, especially for the youth and elderly, the mobility impaired, and the economically disadvantaged.
k) Work cooperatively with the North Carolina Department of Transportation, neighboring Metropolitan Planning Organizations and Rural Planning Organizations and other transportation-related organizations to address the transportation issues of the broader region.

2. Multi-Modal Street and Highway System

Goal: An attractive multi-modal street and highway system that allows people and goods to be moved safely, conveniently, and efficiently.

Objectives:

a) Establish performance standards and report on the condition and effectiveness of the multi-modal street and highway system.
b) Create multi-modal street patterns that: encourage safe pedestrian, bicycle, and vehicular travel; provide access to public transportation; and ensure connectivity.
c) Develop and implement level of service (LOS) standards for the urban area that are based on a cooperative agreement between state and local agencies.

d) Preserve and enhance the traffic carrying capacity of arterial street systems, while minimizing traffic intrusion in residential neighborhoods.
e) Identify and recommend design standards that: establish safe speeds; increase pedestrian and bicycle usage of streets; and enhance the attractiveness and appeal of the street and highway system.

3. Public Transportation System

Goal: A convenient, accessible, and affordable public transportation system, provided by public and private operators, that enhances mobility and economic development.

Objectives:

a) Establish performance standards and report on the condition and effectiveness of the public transportation system.
b) Increase public transit ridership by enlarging the service area and increasing the frequency of service within the urban area.
c) Coordinate transit service within the urban area by promoting high quality, seamless, integrated, and customer-friendly service.
d) Expand ridesharing, carpool, and vanpool services and opportunities.
e) Develop and implement alternatives to the use of single occupant vehicles, including high occupancy vehicle (HOV) facilities and regional rail services.
f) Develop and implement the Regional Transit Plan.
g) Develop a regional park and ride system for cars and bicycles to support transit services and encourage ridesharing.

4. Pedestrian and Bicycle System

Goal: A pedestrian and bicycle system that: provides a safe alternative means of transportation; allows greater access to public transit; supports recreational opportunities; and includes off-road trails

Objectives:

a) Establish performance standards and report on the condition and effectiveness of the pedestrian and bicycle system.
b) Maintain and implement a Regional Pedestrian Plan and a Regional Bicycle Plan.
c) Identify and recommend ways that local governments may provide adequate staff and resources to meet the goals of their pedestrian and bicycle programs.
d) Develop a regional bicycle and pedestrian policy that establishes linkages between activity centers and provides for access to public transit.
e) Ensure that bicycle and pedestrian facilities are included in the planning, design, and construction of every roadway and development project, including the connection to external transportation facilities, in accordance with bicycle and pedestrian plans and local ordinances.
f) Increase education about the benefits of pedestrian and bicycle alternatives.
g) Support the enforcement of pedestrian and bicycle regulations.
h) Pursue strong funding commitment for building both pedestrian and bicycle facilities.
i) Provide greater safety for pedestrians and bicyclists of all levels of ability, and safer interaction with users of other modes of transportation.

j) Encourage the efforts and activities of citizen advocacy groups for pedestrian and bicycling by providing information and support for their programs.

5. Integration of Land Use and Transportation

Goal: A Transportation Plan that is integrated with local land use plans and development policies.

Objectives:

a) Establish performance standards and report on the integration and consistency of the Transportation Plan with local land use plans and development policies.
b) Create transportation systems that enhance the livability of all communities.
c) Identify the impacts of different land use patterns and site designs on travel behavior.
d) Evaluate the changes in land use brought about by the expansion of existing transportation facilities and the construction of new facilities.
e) Identify and recommend land use patterns, parking requirements and development policies that increase overall mobility and that improve and support transportation efficiency, and compact, mixed-use, transit-friendly, and walkable development

6. Protection of Natural Environment and Social Systems

Goal: A multi-modal transportation system which provides access and mobility to all residents, while protecting the public health, natural environment, cultural resources, and social systems.

Objectives:

a) Establish performance standards and report on transportation impacts on the public health, natural environment, cultural resources, and social systems.
b) Protect and preserve archaeological, historic, and culturally valuable areas.
c) Identify and protect environmentally sensitive areas early in the planning process.
d) Develop and implement modifications to the transportation system that reduce the rate of growth in vehicle miles traveled (VMT).
e) Modify the transportation system to reduce the pollutants in highway runoff and the vehicle emissions, in accordance with federal, state and local Clean Air and Water legislation.
f) Minimize the noise and dust generated by transportation facilities in neighborhoods and the urban area.
g) Ensure that transportation facilities do not negatively affect disadvantaged populations disproportionately.
h) Develop and implement a transportation system that supports the reduction of greenhouse gases and carbon production and is coordinated with local greenhouse gas and carbon reduction plans.

7. Public Involvement

Goal: An ongoing program to inform and involve citizens throughout all stages of the development, update, and implementation of the Transportation Plan.

Objective:

a) Establish performance standards and report on the effectiveness of the public involvement element of the Transportation Plan.

b) Encourage a broad cross section of citizens to take a proactive role in the transportation policy and planning process.
c) Educate the public and elected officials, in order to increase public understanding of both the options and the constraints of transportation alternatives.
d) Determine the public's knowledge of the metropolitan transportation system, and public values, attitudes and concerns regarding transportation.
e) Determine which elements of the Transportation Plan would support or diminish the public's desired lifestyle.

8. Safety and Security

Goal: Continue to improve transportation safety and ensure the security of the transportation system.

Objective:

a) Reduce fatality, injury, and crash/incident rates on all modes.
b) Reduce vulnerability of transportation facilities/users to terrorists, natural disasters and risks by implementing and monitoring an evacuation plan, and working with the regional emergency management team.
c) Reduce economic losses due to transportation crashes and incidents.
d) Improve the ability to identify high accident locations, and evaluate their impacts in TIP project prioritization.
e) Provide a safe environment for transportation users through the "3 Es" (Engineering, Enforcement and Education).
f) Increase transit safety and security for riders and employees.

9. Freight Transportation and Urban Goods Movement

Goal: Improve mobility and accessibility of freight and urban goods movement.

Objective:

a) Relieve congestion on heavily-traveled truck routes.
b) Improve mobility and access to intermodal operations and facilities.
c) Establish and designate truck routes consistent with federal, state and local regulations.

Development of Performance Targets

As part of the same process for creating the Goals and Objectives, the DCHC MPO develops a set of performance targets to provide a set of broadly based quantitative measures that evaluate the transportation plan from several different perspectives. The targets mostly use measurements from the Triangle Regional Model (the region's travel demand model), such as the miles traveled, trips taken, congestion levels, and mode split (between automobiles, transit, bicycling and walking).

The targets that the MPO seeks to achieve with its transportation investments are shown in the tables below. Table 1 shows the measures and targets from the 2035 LRTP report and Table 2 has the proposed targets for the 2040 LRTP. The final measures from the adopted 2040 LRTP will be compared to these targets in the final 2040 LRTP report.

The values in the tables are used as follows:

Comparison Data – this information provides contextual values for comparing the 2040 LRTP and Target values:

- 2005 and 2010 – This is the current condition. It is the 2005 or 2010 population and employment using the 2005 or 2010 transportation network (e.g., highways and transit service).
- 2035 E+C and 2040 E+C – This is the no-build condition, or "Existing plus Committed" (E+C). It is the 2035 and 2040 SE Data using the existing transportation network.
- 2035 LRTP and 2040 – This is the 2035 and 2040 SE Data using the 2035 LRTP network. In the first table, these are the values from the final 2035 LRTP report. In the second table, it is the 2035 SE Data adjusted with a five-year growth cycle to reflect the 2040 horizon year.

Targets – There are three Target values, Good, Better and Best. The use of more than one Target value helps to set a range of values that can be used for comparison.

Table 1 – Targets from 2035 LRTP

No.	Mobility Targets	Comparison Data		2035 LRTP	Targets		
		2005	2035 E+C		Good	Better	Best
1	VMT Per Capita (daily miles)	28.5	31.6	32.0	29.1	27.5	24.5
2	Percent of Peak Period VMT at Congestion (V/C > 1)	3.0%	10.4%	3.7%	12%	8%	4%
3	Average Travel Time: all peak trips (daily minutes)	16.6	20.5	18.3	19	17	15
4	Transit Mode Share: all trips	2.4%	2.3%	3.3%	3.0%	5.0%	8.0%
5	Percent SOV Trip Share: work trips	81.8%	82.3%	81.2%	78.4%	74.3%	66.0%
6	Percent Non-motorized Trip Share: all trips	7.1%	6.8%	6.8%	9%	11%	15%
7	Greenhouse Gas Change (community target)			+49%	-10%	-20%	-30%
8	Cost of Congestion (in million $)	$351	$1,211	$496	1,030	848	666
9	Percent of EJ Population within 1/4 mile of transit	58%	59%	85%	65%	75%	85%

In Table 2 below, several measures will likely change as staff has time to run additional travel demand models and receives feedback from the TAC and public:

- Percent of Peak Period VMT at Congestion – The precipitous climb from 2010 (3%) to 2040E+C (24%) appears too large when compared with changes among the other Targets in the table. Therefore an alternative is suggested that uses a more reliable measure – Percent of population whose average trip time is greater than fifteen minutes (all trips).

- Average Travel Time – The very slight increase from 2010 (14.3) to 2035 (14.1) runs counter to the large increase in congestion, and does not match the increase in the 2035 LRTP table.

- Transit Mode Share – The values released for public comment were 3%, 5% and 7%. The new values in the table below are more aggressive.

- Greenhouse Gas Change – The community target for the Durham Greenhouse Gas Local Action Plan, adopted in 2007, is to reduce emissions by 30% from 2005 by 2030. This was proposed to be achieved through a combination of local, state, and federal actions. For transportation, many of the most effective measures are state and federal actions (vehicle technology and fuel efficiency standards for example). With no action, emissions from transportation were projected to increase by 56% from 2005 to 2030. This is a significant increase and it is important to note that it is based on total emissions (not per capita). In the 2007 Durham plan, three scenarios (good, better, and best) were proposed that showed what could be achieved through local action alone. These scenarios showed a 48% increase (good), a 41% increase (better), and a 34% increase (best). The analysis of the 2035 LRTP showed that we increased emissions by 49% from 2005 to 2035. MPO staff proposes using the targets established in the 2007 Durham plan that can be achieved through local action alone. While these targets are not as inspiring as the -10%, -20%, and -30% targets proposed for the 2035 LRTP, they are more realistic for what can be achieved through the LRTP such as through changes in the transportation network, land use patterns, and pricing/tolling.

  An alternative is proposed to the measure explained in the preceding paragraph; the alternative measure is "annual per capita emissions from transportation sector (in tons)." This measure helps to control for the growing population and employment base and focuses on a sector that can be influenced by MPO policy, i.e., the transportation sector.

- Cost of Congestion – The growing population will likely increase this value even if the level of service improves. It would be better to use a "per capita" value for this Target.

- Percent of Minority and Low-Income Population within ¼ mile of transit – The 2010 U.S. Census did not use a so-called long form, and as a result, income data is only available through the American Community Survey (ACS) process from which staff is not able to create a single Target. Thus this Target has been split into a minority measure and a low-income measure.

Table 2 – Proposed Targets for 2040 LRTP

No.	Mobility Targets	Comparison Data			Targets		
		2010	2040 E+C	2040	Good	Better	Best
1	VMT Per Capita (daily miles)	31	31	31	30	29	28
2	Percent of Peak Period VMT at Congestion (V/C > 1)	3%	24%	10%	9%	7%	5%
2 alt.	Percent of population whose avg trip time is greater than 15 minutes (all trips)	27%	44%	28%	25%	22%	20%
3	Average Travel Time: all peak trips (daily minutes)	15	16	15	14	13	12
4	Transit Mode Share: all trips	2.8%	2.2%	2.6%	5%	7%	10%
5	Percent SOV Trip Share: work trips	81%	80%	79%	78%	75%	72%
6	Percent Non-motorized Trip Share: all trips	10%	11%	12%	13%	14%	16%
7	Greenhouse Gas Change (community target)			49%*	48.0%	41%	34%
7 alt.	Greenhouse Gas : annual per capita emissions from transportation sector (in tons)				11.8	11.3	10.7
8	Cost of Congestion (daily; in million $)	$0.62	$3.2	$1.9	$1.8	$1.5	$1.2
9	Percent of Minority/Low Income Population within 1/4 mile of transit	64%/67%	64%/67%	78%/78%	80%	85%	90%

*49% represents the increase in emissions from 2005 to 2035 from the evaluation of the 2035 LRTP. An analysis of the 2040 modeling results has not been done. However, it is likely similar to the 2035 LRTP results.

Durham-Chapel Hill-Carrboro Metropolitan Planning Organization
Key Targets for the 2040 LRTP

What is the 2040 LRTP?

The Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO) performs the long-range transportation planning for Durham County and parts of Orange County and Chatham County. The DCHC MPO is developing their 2040 Long Range Transportation Plan (2040 LRTP) which will identify the highway, transit, pedestrian and other transportation projects to be implemented, maintained and operated over the next twenty-nine years in the MPO's planning area.

What are the Targets?

The DCHC MPO has identified a list of Targets that will be used to evaluate the extent to which the adopted 2040 LRTP meets the MPO's goals and objectives. These Targets use measurements from the Triangle Regional Model (a travel demand model), such as the miles traveled, trips taken, congestion levels, and mode split (between automobiles, transit, bicycling and walking), to compare the Target value and the value generated by the 2040 LRTP.

What are the Key Targets?

The Key Targets are a subset of a larger table of Targets. These nine Key Targets represent a broad spectrum of the various types of measurements and provide a general overview of the represented measurement. In addition, this Key Targets document identifies the reasons the Target is important and what changes need to be made in land use, transportation and other policies to meet the Target. This presentation is intended for the citizens, public officials and staff who are interested in transportation issues but do not need the details of the complete table.

What is the Guide Data?

The Targets have Guide Data for two scenarios to help set the Target values:

- 2010 – This is the current condition. It is the 2010 population and employment using the 2010 transportation network (e.g., highways and transit service). This is the **2010** column and value in the charts.
- 2040e+c – This is the 2040 population and employment using the existing transportation network plus any projects that are committed to being completed. This is the **2040e+c** column and value in the charts.
- 2035 – This shows how a major transportation investment might affect the Target value. It is the 2040 population and employment using the 2035 transportation network, which is budgeted at over $8 billion and includes light rail and High Occupancy Vehicle (HOV) lanes. This is the **2035** column and value in the charts.

What is the Target Range?

There are three Target values -- Good, Better and Best. The use of more than one Target value helps to set a range of values that can be used for comparison.

Additional Information

Additional information, including a table of the complete list of Targets, is available at the DCHC MPO's Web site – www.dchcmpo.org.

You can also contact:

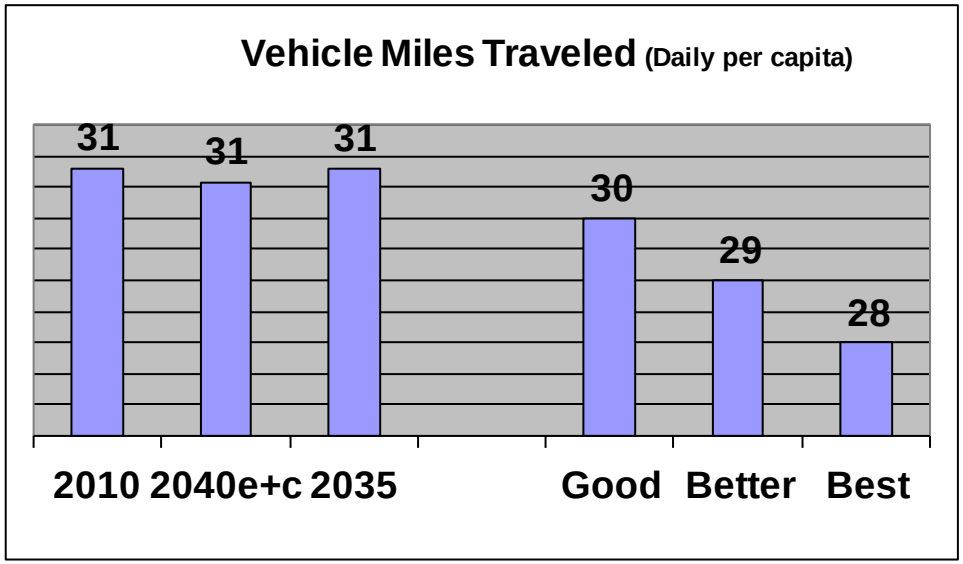
Andy Henry
Transportation Planner
101 City Hall Plaza
Durham, NC 27701

(919) 560-4366, ext. 36419
andrew.henry@durhamnc.gov

Draft

2040 LRTP and CTP Targets

Reduce Vehicle Miles Traveled (VMT)

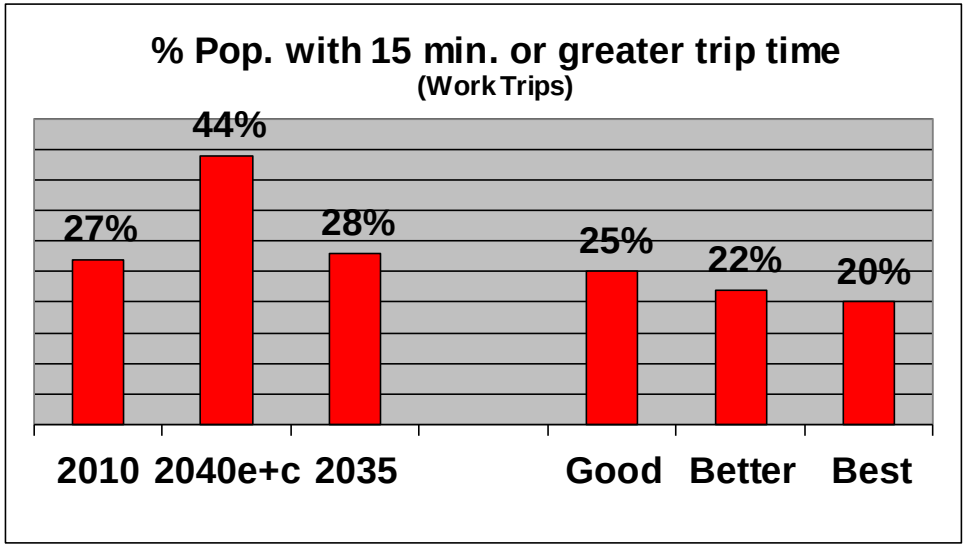
Why Reduce VMT?	How to Reduce VMT?	Trends and Targets
▪ Reduce pollutant emissions – Triangle Region is on federal non-attainment and maintenance plan for ozone and carbon monoxide, respectively. ▪ Minimize congestion – Bi-annual mobility report lists Triangle Region among those areas with the fastest growing traffic congestion. ▪ Relieve transportation demand – NCDOT study concludes that Triangle Region transportation needs will outpace revenues by several billion dollars over next few decades.	▪ Transportation – Encourage transit use, carpooling, walking and bicycling. ▪ Land Use – Permit more concentrated residential and employment development along key travel corridors. ▪ Land Use – Permit more mixed-use development.	

Method: From the Triangle Regional Model (TRM), the total daily vehicle miles are divided by the total population of the TRM area.

Draft

Reduce Congestion (Percent of Peak Period Vehicle Miles Traveled [VMT] at Congestion)

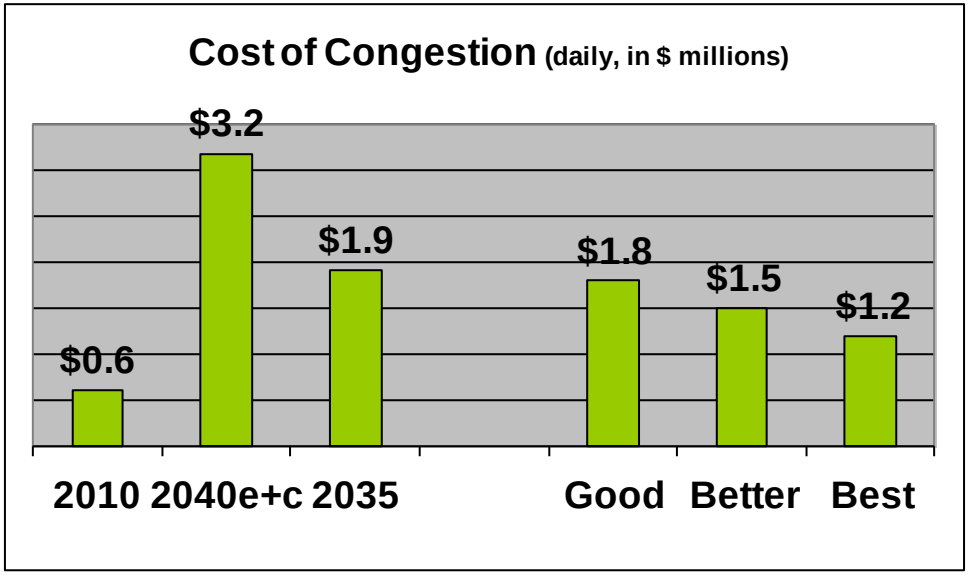
Or (Percent of Population with 15 minute or greater trip time)

Why Reduce Congestion?	How to Reduce Congestion?	Trends and Targets
▪ Reduce Travel Costs – Mobility Report concludes annual congestion cost is $537 per commuter in Triangle. ▪ Reduce Travel Time – Mobility Report estimates 25 hours of annual delay per commuter in Triangle. ▪ Reduce Pollution – Congestion reduces travel speed and increases pollution.	▪ Transportation – Encourage transit use, carpooling, walking and bicycling. ▪ Transportation – Implement Congestion Management Program practices such as traffic signal synchronization and spot improvements at traffic bottlenecks. ▪ Transportation – Increase highway, transit and other transportation mode capacity, especially along critical corridors. ▪ Land Use – Permit more mixed-use development. ▪ Design – Permit design elements that support alternative transportation modes such as sidewalks and grid street patterns with shorter block lengths.	

Method: From the Triangle Regional Model (TRM), the vehicle miles traveled during peak periods that are on roadway links with a volume-to-capacity ratio that exceeds "1" (i.e., traffic exceeds the roadway capacity) is divided by the total vehicle miles traveled in peak periods.

Draft

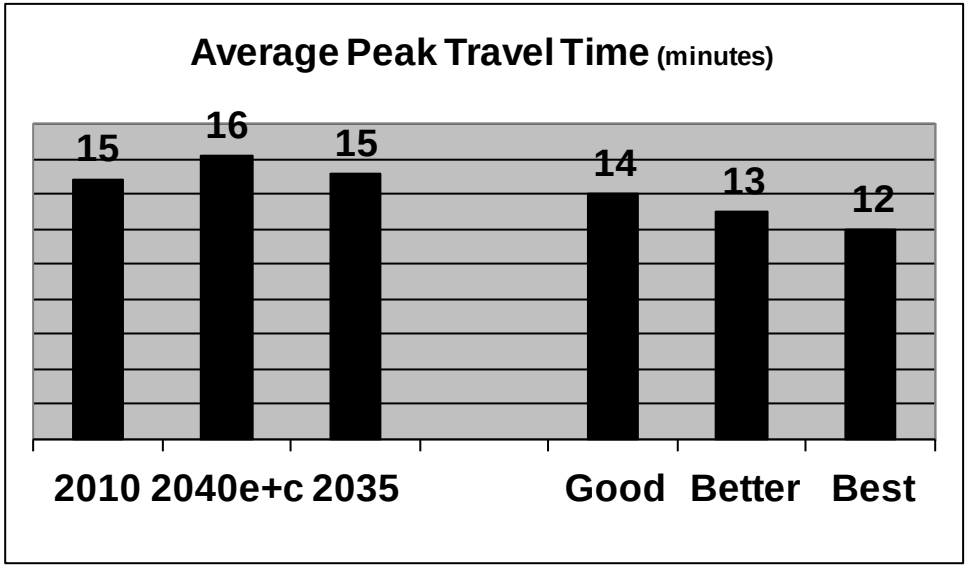
Reduce Cost of Congestion

Why Reduce Congestion Cost?	How to Reduce Congestion Cost?	Trends and Targets
▪ Reduce Travel Costs – Mobility Report concludes annual congestion cost is $537 per peak hour traveler in Triangle. ▪ Reduce Travel Time – Mobility Report estimates 25 hours of annual delay per peak traveler in Triangle ▪ Reduce Pollution -- Congestion reduces travel speed and increases pollution.	▪ Transportation – Encourage transit use, carpooling, walking and bicycling. ▪ Transportation – Implement Congestion Management Program practices such as traffic signal synchronization and spot improvements at traffic bottlenecks. ▪ Transportation – Increase highway, transit and other transportation mode capacity, especially along critical corridors. ▪ Land Use – Permit more mixed-use development. ▪ Design – Permit design elements that support alternative transportation modes such as sidewalks and grid street patterns with shorter block lengths.	

Method: From the Triangle Regional Model (TRM), the total daily hours of vehicle and truck delay is multiplied by the cost of time, which is $16.30 and $88.12, respectively (from Texas Transportation Institute -- TTI). A vehicle occupancy factor accounts for multiple persons per vehicle and a TTI method accounts for wasted gas consumption.

Draft

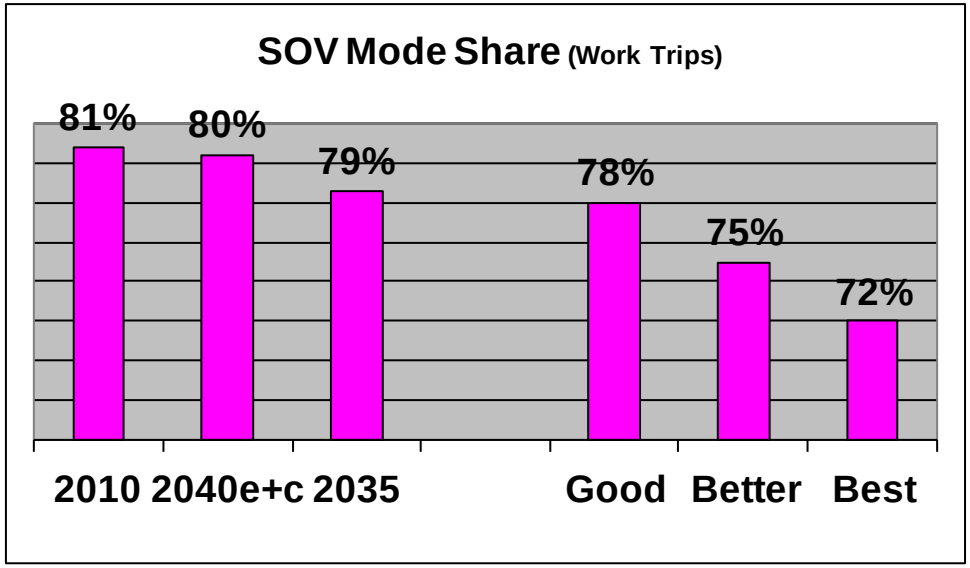
Reduce Travel Time (Average Peak Travel Time)

Why Reduce Travel Time?	How to Reduce Travel Time?	Trends and Targets
▪ Reduce In-Vehicle Time – Travel model estimates that the average peak-hour travel time in the western Triangle will increase 22% from 2005 to 2035. ▪ Reduce Greenhouse Gases – Longer vehicle trips produce greater amounts of greenhouse gases that contribute to global warming.	▪ Transportation – Implement Congestion Management Program practices such as traffic signal synchronization and spot improvements at traffic bottlenecks. ▪ Transportation – Increase highway, transit and other transportation mode capacity. ▪ Land Use – Permit more mixed-use development.	

Method: From the Triangle Regional Model (TRM), the average travel time for trips in the peak period is calculated.

Draft

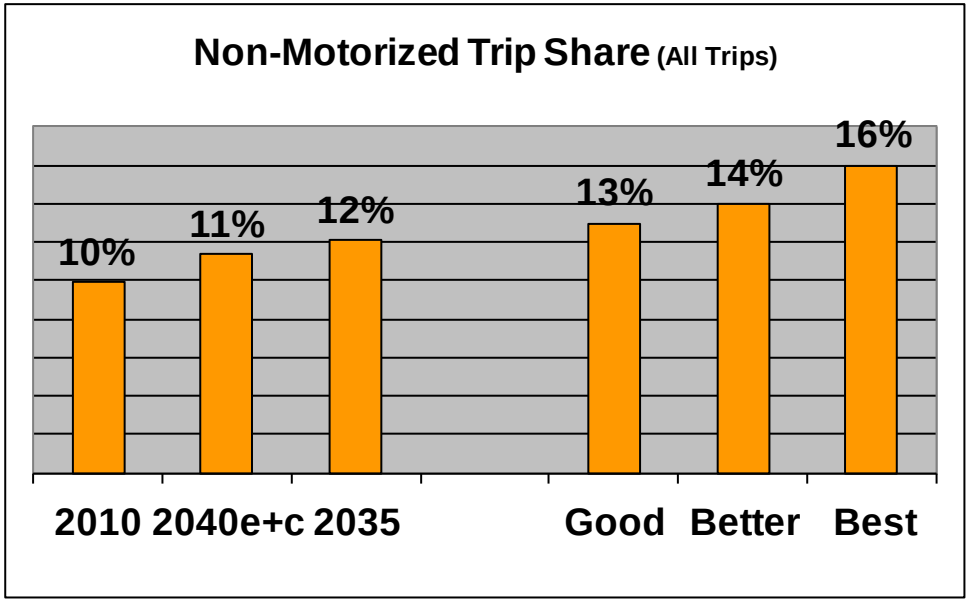
Reduce Single-Occupied Vehicle (SOV) Share (Work Trips)

Why Decrease SOV Share?	How to Decrease SOV Share?	Trends and Targets
▪ Reduce Congestion – SOV contributes to congestion, which wastes time, fuel and money. ▪ Reduce Pollution – SOV contributes to air pollutants. Triangle Region is on federal maintenance plan for carbon monoxide and ozone.	▪ Transportation – Increase support for Transportation Demand Management programs such as carpooling, vanpooling, and company-based rideshare efforts. ▪ Transportation – Support infrastructure that creates incentives to rideshare such as HOT (high occupancy vehicle/toll) and park-and-ride facilities. ▪ Ordinance – Create local ordinances that support ridesharing. ▪ Land Use – Permit more concentrated employment development that enables easier ride matching. ▪ Design – Permit design elements that support ridesharing such as convenient drop off points.	

Method: From the Triangle Regional Model (TRM), work trips in single-occupied vehicles are divided by all work trips.

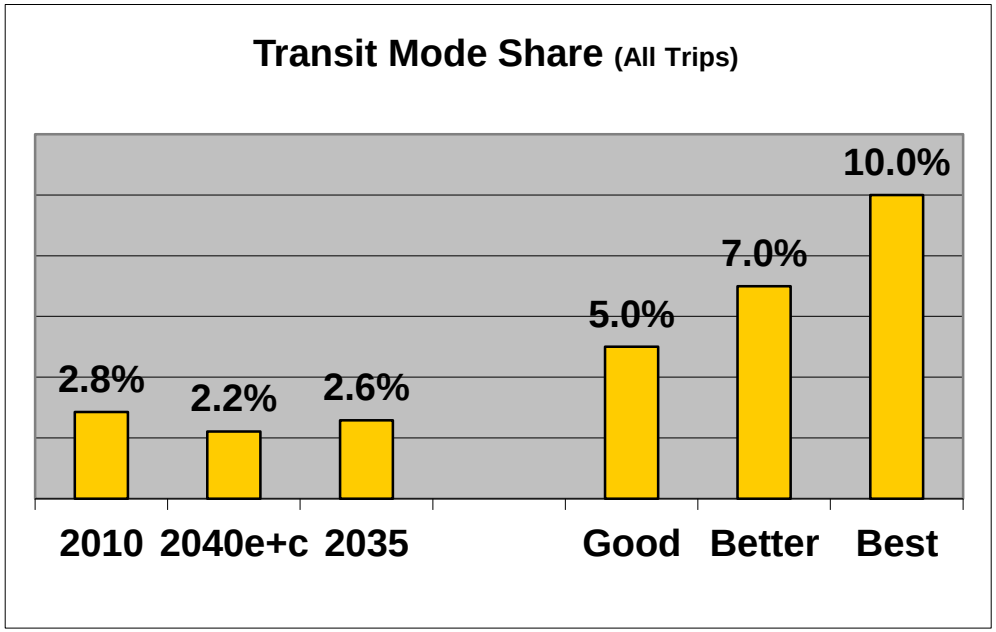
Draft

Increase Percent Non-Motorized Trip Share (All Trips)

Why Increase Non-Motorized Share?	How to Increase Non-Motorized Share?	Trends and Targets
▪ Reduce Pollution – Motorized vehicles are major emitters of carbon monoxide, nitrogen oxides (ozone precursor), carbon dioxide (greenhouse gas), particulate matter and several other toxics that are linked to increased health ailments and global warming. ▪ Reduce Congestion – The percent of congested peak travel miles in the Triangle has risen from 13% to 49%, between 1982 and 2010. Bicycle and walking trips can replace vehicle trips to help abate the growing vehicle congestion problem. ▪ Support Personal Health – Lack of exercise is a leading contributor to the obesity epidemic in the U.S.	▪ Transportation – Increase investment in bicycle and pedestrian facilities and programs. ▪ Transportation – Require bicycle and pedestrian facilities on new and improved roadways, as appropriate. ▪ Ordinance – Require bicycle and pedestrian facilities and supportive design in new and renovated developments. ▪ Land Use – Permit more concentrated residential and employment development along key travel corridors. ▪ Land Use – Permit more mixed-use development. ▪ Land Use – Encourage shorter block lengths and greater roadway connectivity. Method: From Triangle Regional Model (TRM), total bicycle and pedestrian trips divided total trips for all modes.	

Draft

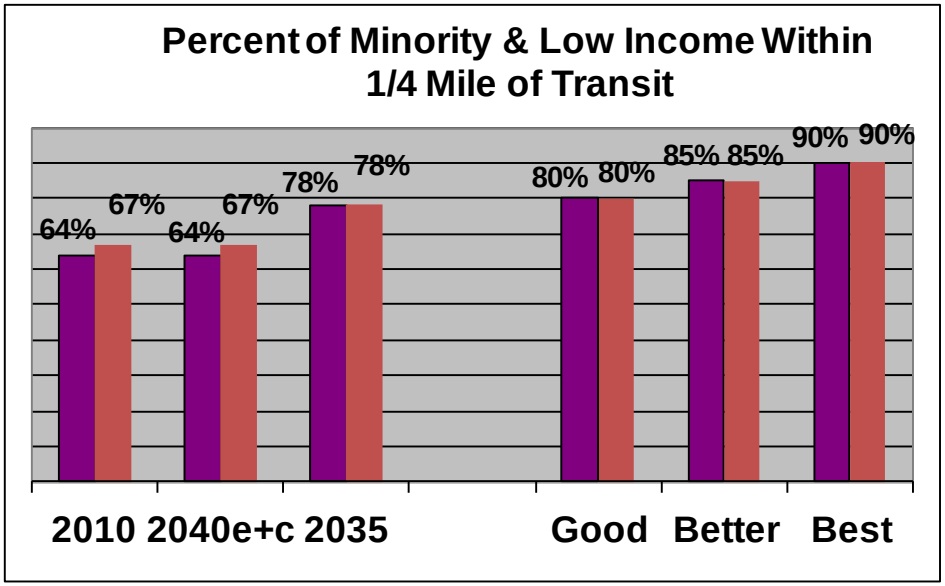
Increase Transit Mode Share (All Trips)

Why Increase Transit Mode Share?	How to Increase Transit Mode Share?	Trends and Targets
▪ Provide Transportation Alternatives – Approximately 6% of households do not own a vehicle, and carless households have increased at twice the rate of other households. ▪ Reduce Congestion – Congestion wastes time, fuel and money. ▪ Reduce Pollution – Triangle Region has difficulty meeting carbon monoxide, ozone, and greenhouse gases standards. Using transit instead of driving a single-occupied-vehicle reduces overall pollution emissions.	▪ Transportation – Increase transit capacity and investment. ▪ Land Use – Permit more concentrated residential and employment development along key travel corridors that have transit and adjacent to proposed transit station areas. ▪ Design – Encourage the type of scale, building orientation, connections, public spaces, parking, amenities and other design elements that support transit.	

Method: From the Triangle Regional Model (TRM), total transit trips are divided by total trips for all modes.

Draft

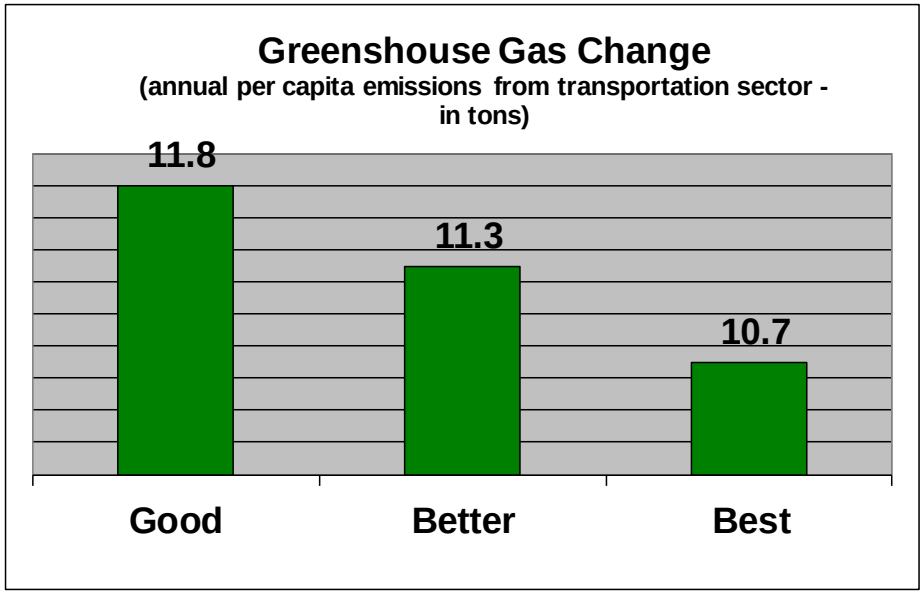
Increase Percent of Minority and Low Income Population within One-Quarter Mile of Transit

Why Increase Transit Access?	How to Increase Transit Access?	Trends and Targets
▪ Provide opportunity – Approximately 6% of households do not own a vehicle, and carless households have increased at twice the rate of other households. ▪ Reduce Congestion – Congestion wastes time, fuel and money, and contributes to air pollutants. Transit use can help reduce roadway congestion. ▪ Support Personal Health – Lack of exercise is a leading contributor to the obesity epidemic in the U.S. Transit use has shown to induce bicycling and walking trips. ▪ Reverse Transit Disinvestment – Triangle transit investment lags behind comparable regions.	▪ Transportation – Increase transit routes and service levels. ▪ Transportation – Increase transit investment. ▪ Land Use – Permit more concentrated residential and employment development along key travel corridors that best support transit. ▪ Design – Encourage transit-supportive scale, building orientation, connections, public spaces, parking, amenities and other design elements along transit corridors and station areas. Method: Using geographic information software, U.S. Census data (block group level) of minority and low-income households is compared to the current and planned (2035 LRTP) transit network.	

Draft

Reduce Greenhouse Gases (based on community plans)

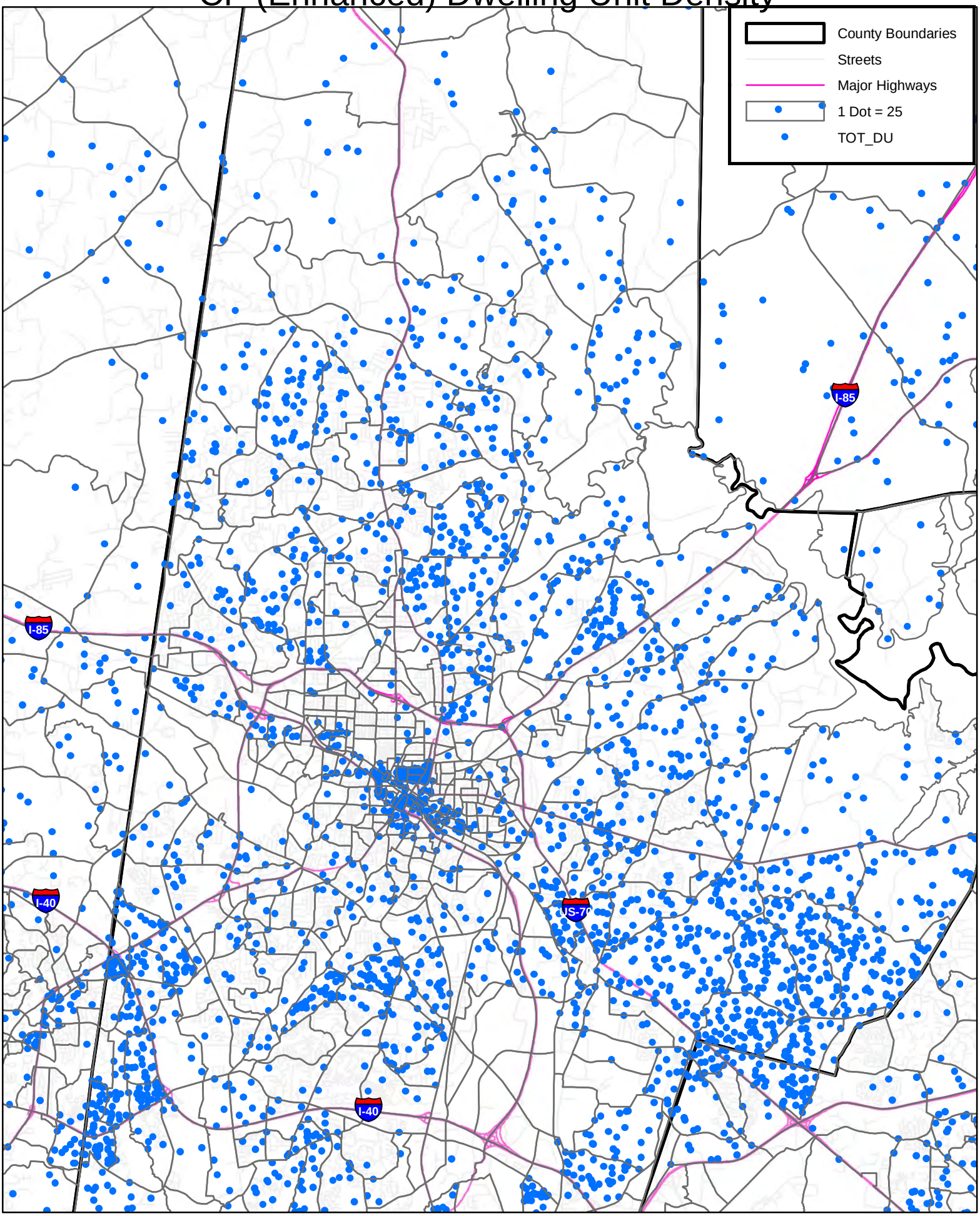
Or (annual per capita emissions from transportation sector – in tons)

Why Reduce Greenhouse Gases?	How to Reduce Greenhouse Gases?	Trends and Targets
▪ Support Environment – Greenhouse gases are causing global warming. An estimated 39% of the greenhouse gases in Durham County are from the vehicle emissions. ▪ Reduce Pollution – Greenhouse gas emissions are accompanied by other pollutants such as carbon monoxide, nitrogen oxides (ozone precursor), and particulate matter that are linked to increased health ailments.	▪ Local Initiative – Support efforts of Durham greenhouse gas local action plan. ▪ Land Use – Permit more concentrated residential and employment development along key travel corridors. Study concludes that 10% density increase results in 4.3% emissions reduction in urban areas. ▪ Land Use – Permit more mixed-use development. ▪ Transportation – Increase investment and ordinance support for bicycle and pedestrian facilities and programs.	

Method: The Durham Greenhouse Gas Local Action Plan designates greenhouse gas increases of 48%, 41% and 34% for their low, medium and high goals. These goals are based on the portion of greenhouse gas emitted from the transportation section and under the control of the locality.

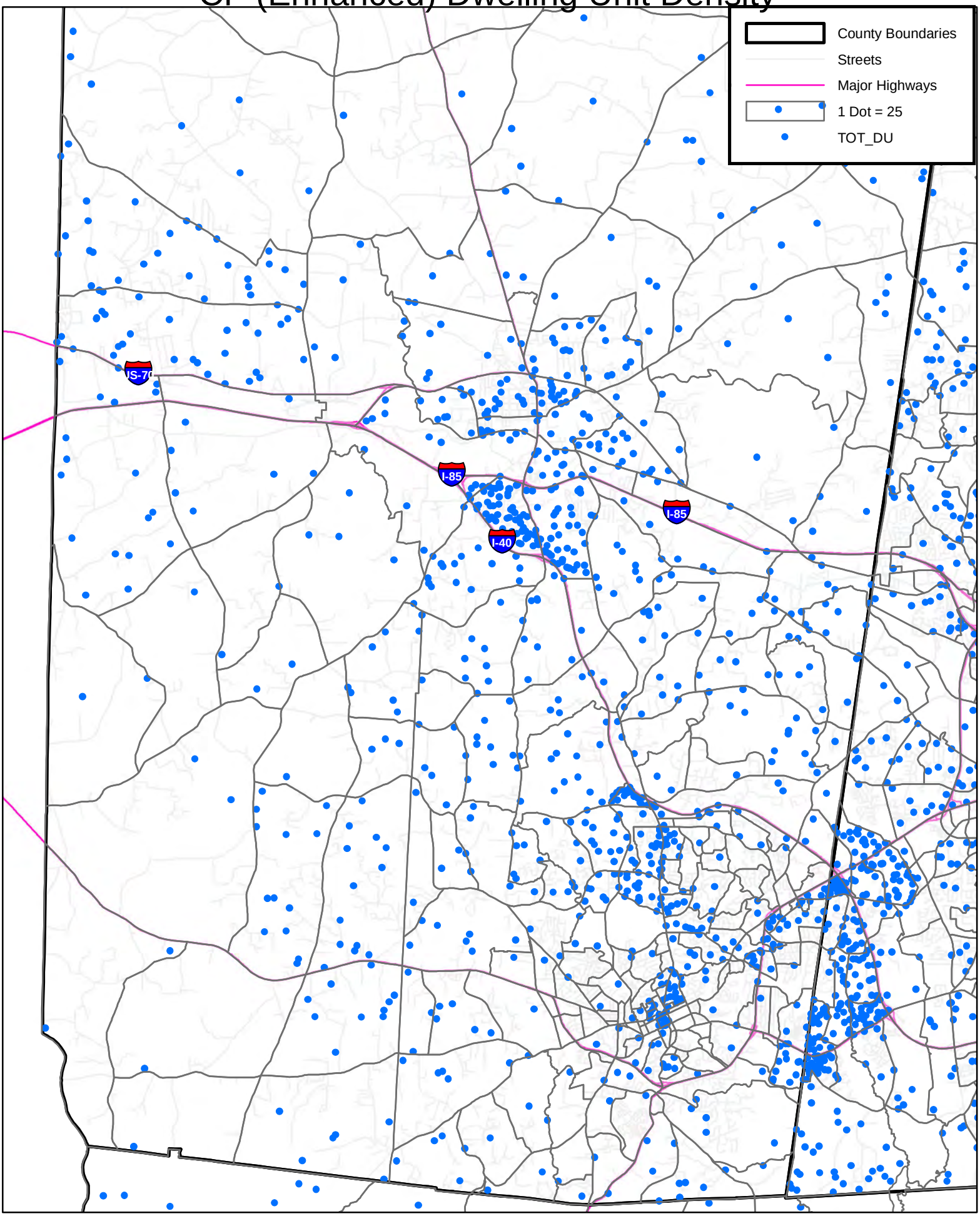
Durham County
CP (Enhanced) Dwelling Unit Density

TAC 5/23/2012 Attachment 7



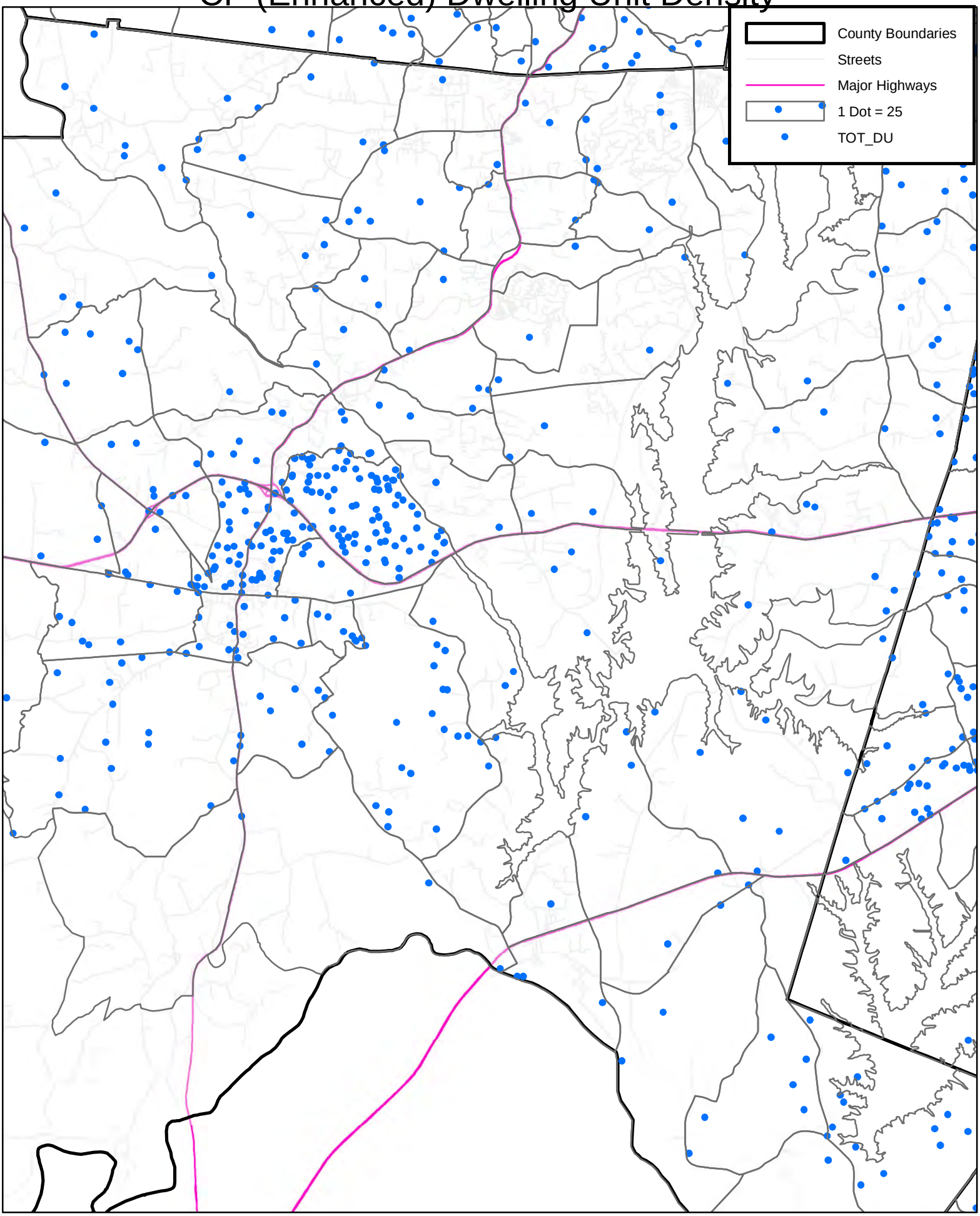
Orange County
CP (Enhanced) Dwelling Unit Density

TAC 5/23/2012 Attachment 7



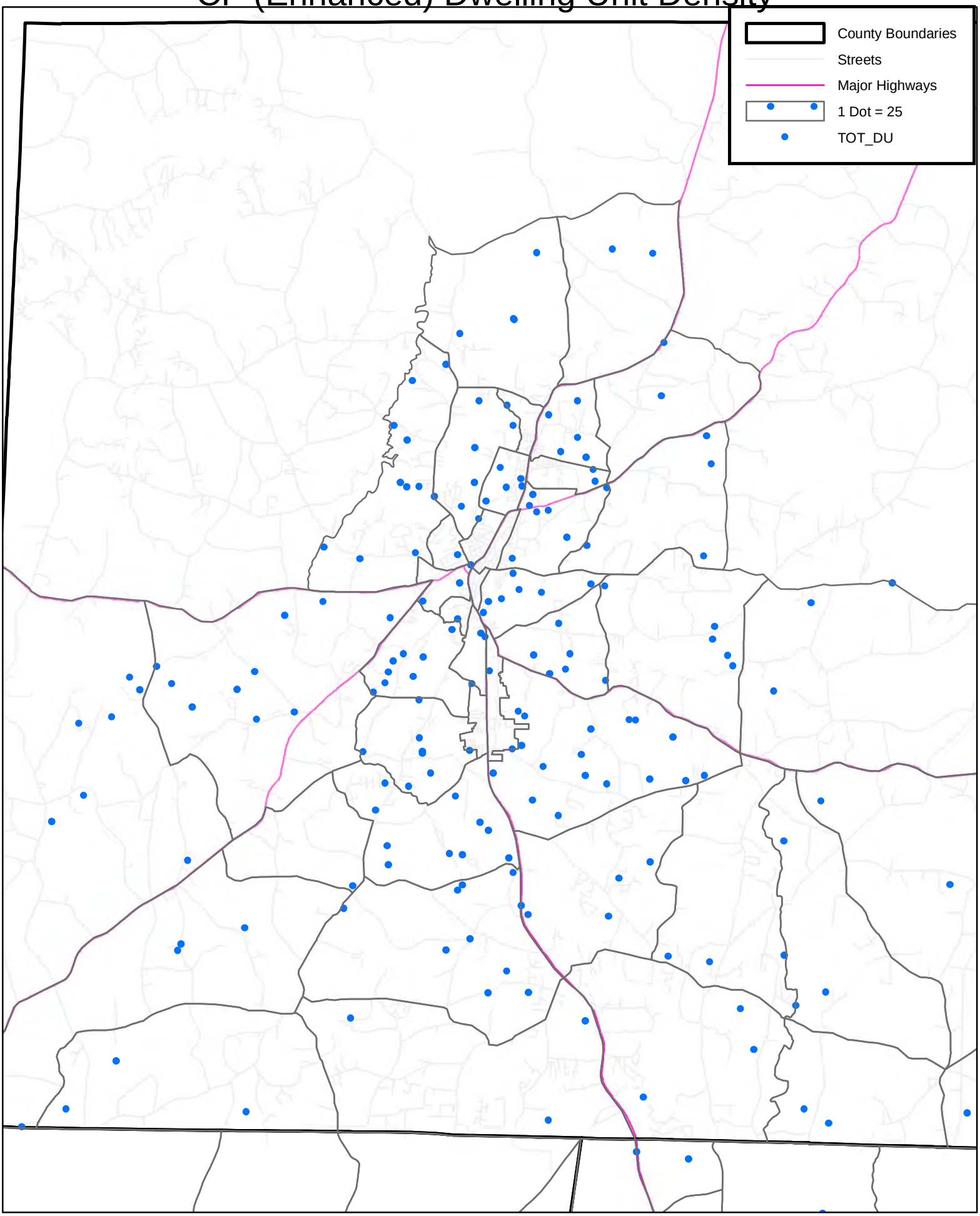
Chatham County
CP (Enhanced) Dwelling Unit Density

TAC 5/23/2012 Attachment 7



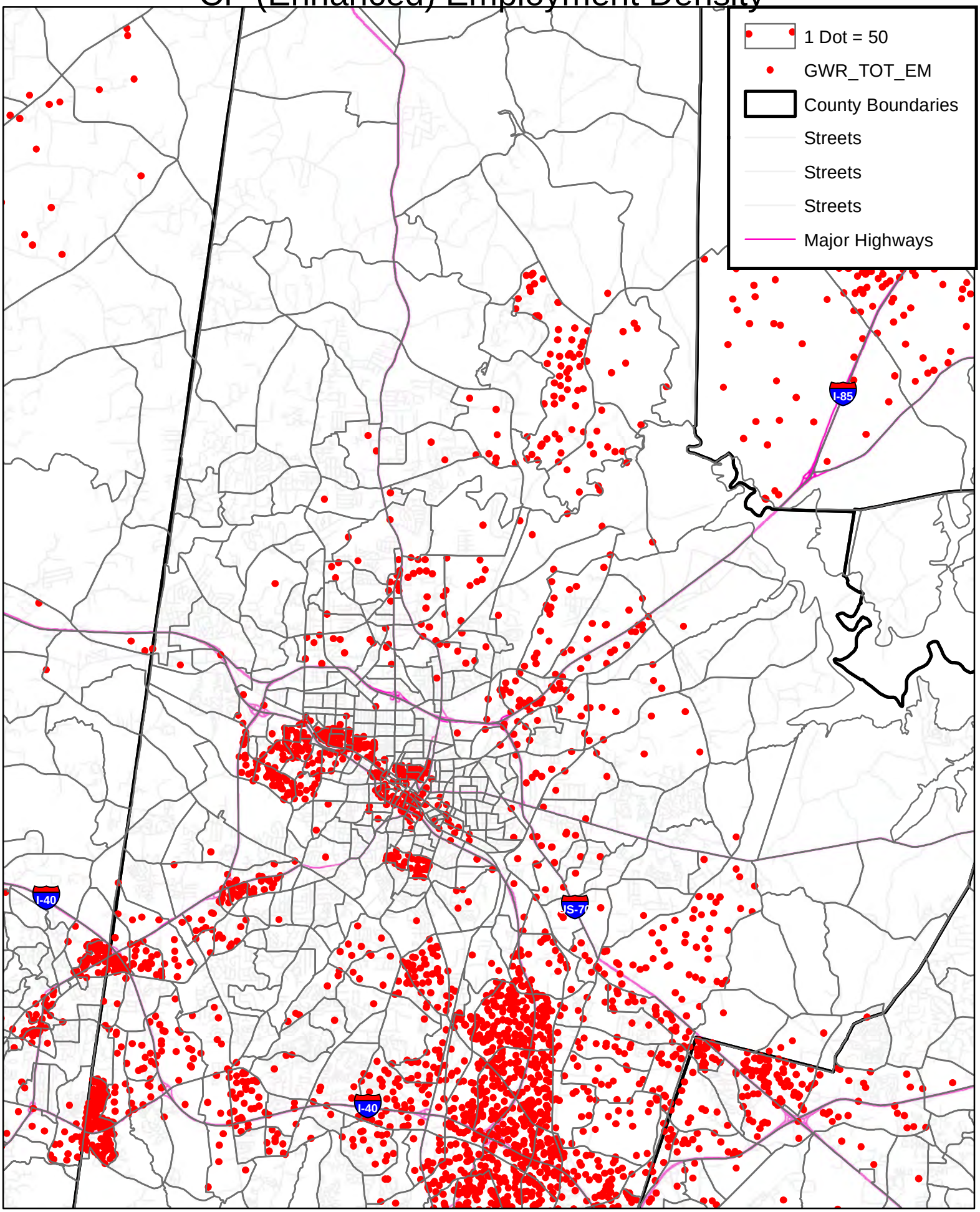
Person County
CP (Enhanced) Dwelling Unit Density

TAC 5/23/2012 Attachment 7



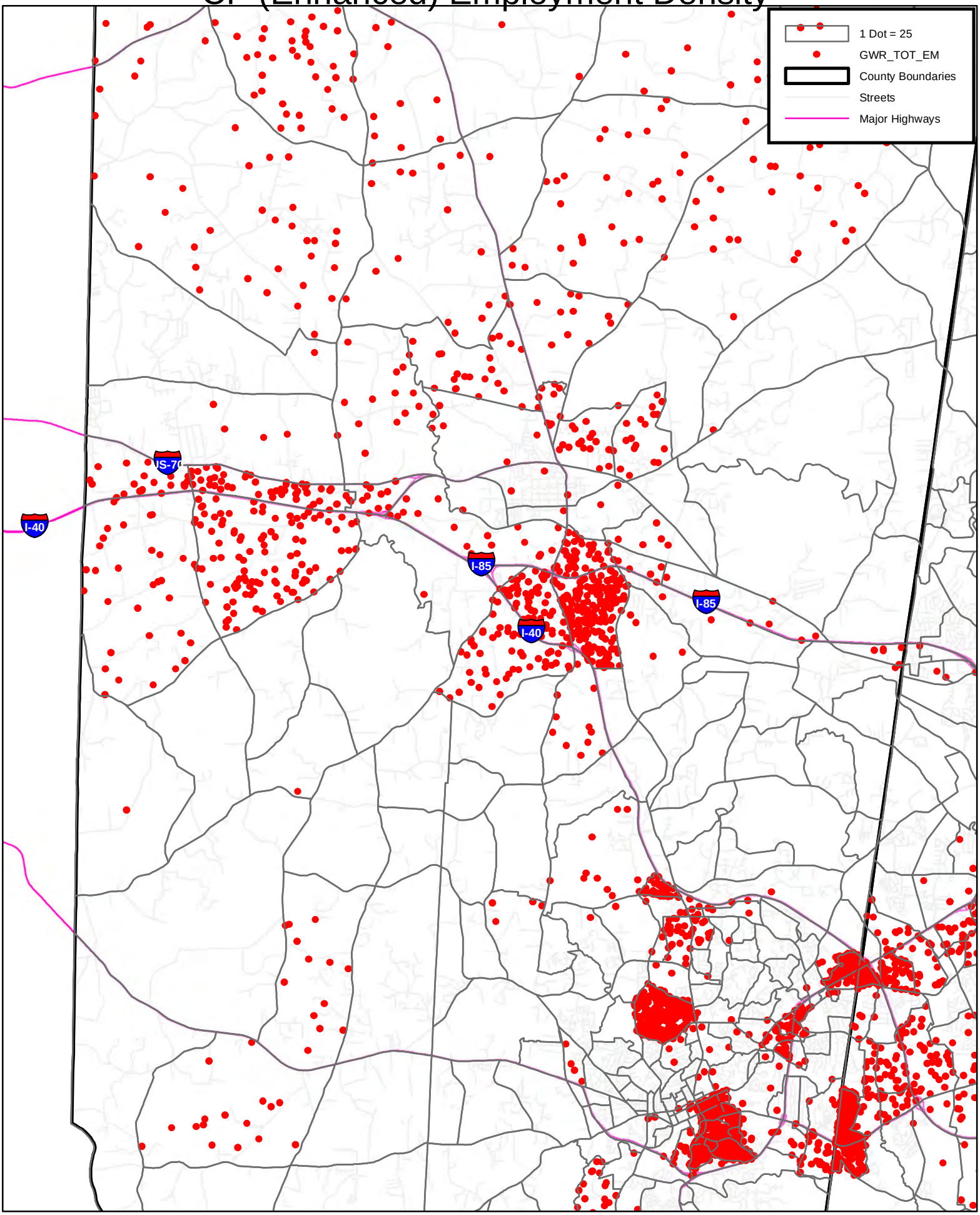
Durham County
CP (Enhanced) Employment Density

TAC 5/23/2012 Attachment 7



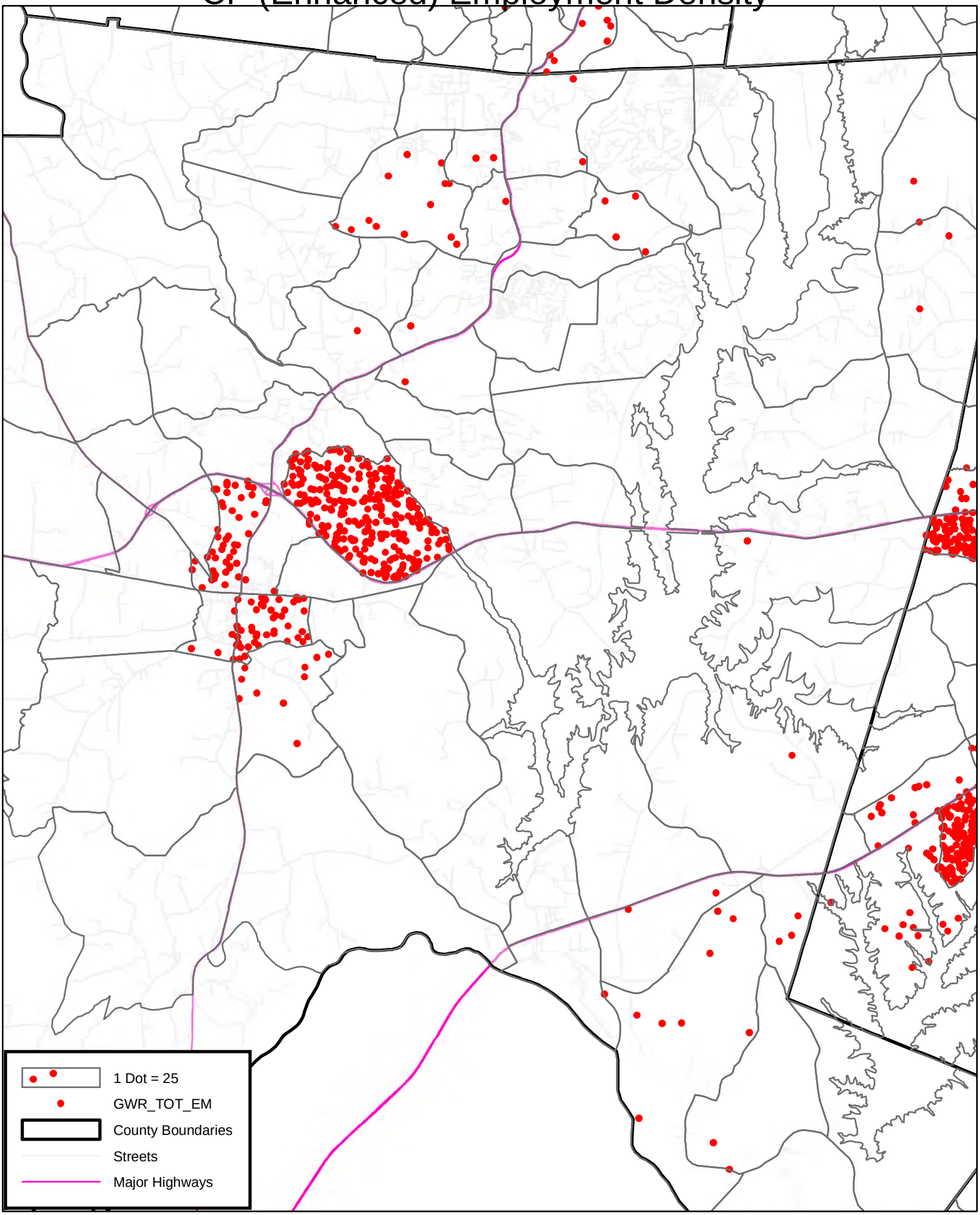
Orange County
CP (Enhanced) Employment Density

TAC 5/23/2012 Attachment 7



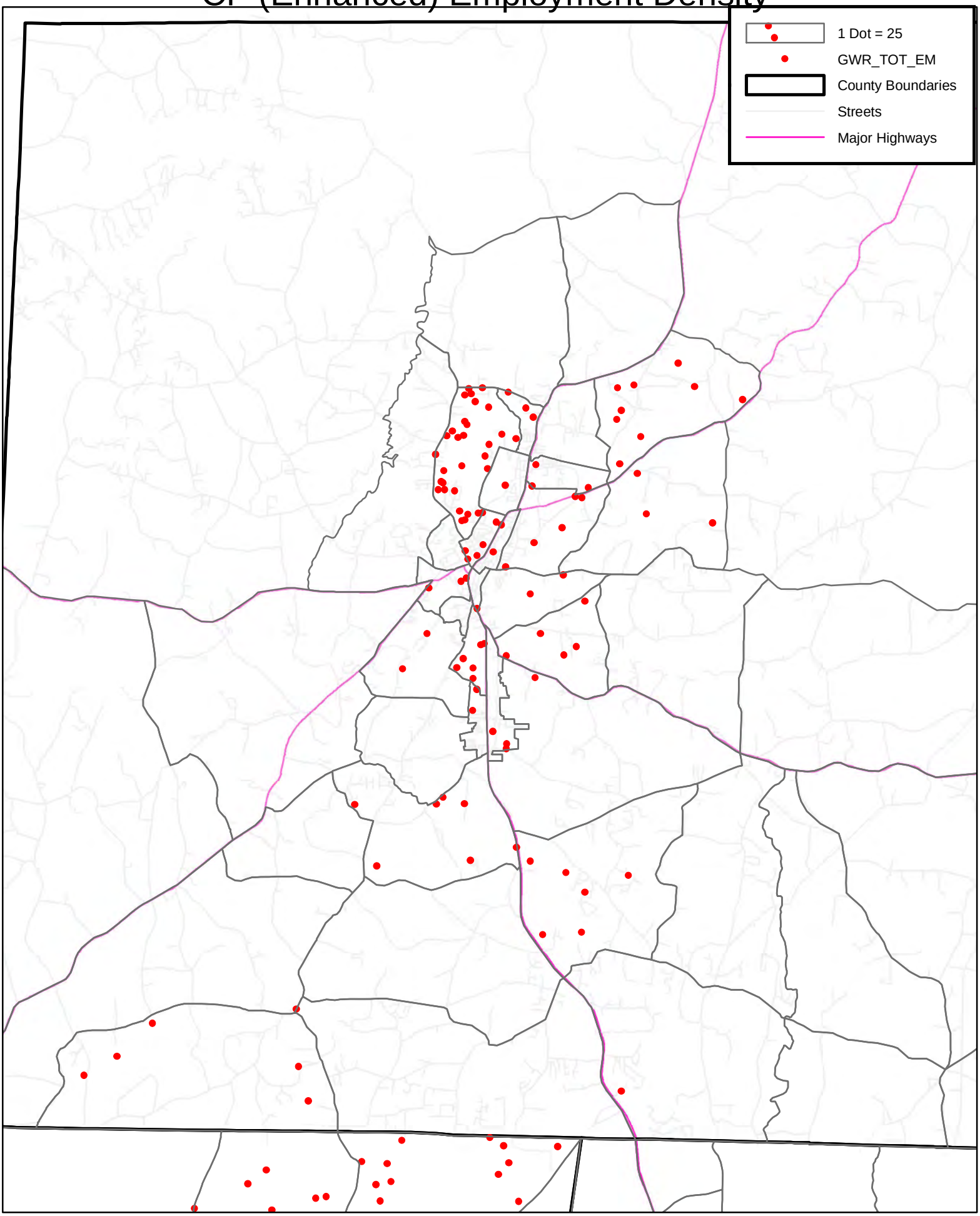
Chatham County
CP (Enhanced) Employment Density

TAC 5/23/2012 Attachment 7



Person County
CP (Enhanced) Employment Density

TAC 5/23/2012 Attachment 7



2040 Long Range Transportation Plan (LRTP)
Comprehensive Transportation Plan (CTP)
Summarized Development Schedule

Public Involvement Activities	
W = Public **W**orkshops/meetings	H = Public **H**earings
N = LRTP **N**ewsletter	O = **O**ther Public Involvement Activities
M = Mailing List - flyers, information, materials	

(bold/blue block) = TAC task/action
(light/blue crosshatch) = First TAC review or action
(light grey block) = task/action
(yellow/horizontal stripe) = adopted or completed

Task ID#	Plan Tasks	Pub. Involve.	2011 Aug	Sep	Oct	Nov	Dec	2012 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2013 Jan	Feb	Mar	Apr	May	Jun
1	**2040 LRTP Work Plan and Schedule** -- **develop, review and endorse**																								
2	**2040 LRTP Public Involvement Plan** -- **update, release for comment, conduct hearing and approve**	N, W, M, H, O										public h													
3	**Goals & Objectives and Targets** -- **develop, release for comment, conduct hearing, and adopt**	N, W, M, H, O										public he													
4	**Socio-economic Data (SE Data)** -- **develop, release for comment, conduct hearing and approve for use in 2040 LRTP**	N, W, M, H, O										public heari													
5	**Triangle Regional Model (TRM)** -- **update model, complete Base Year validation, verify network, and TAC approve**																								
6	**Deficiency Analysis and Needs Assessment** -- **generate deficiency analysis, develop needs assessment, and TAC review and comment**																								
7	**Financial Plan** -- **Preliminary forecasts for Alts. Analysis; final forecasts for Preferred Option**																								
8	**Alternatives Analysis** -- **establish evaluation criteria, generate and evaluate alternatives, conduct workshops and public hearing, other agency and local review, TAC select Preferred Option**	N, W, M, H, O														public hearing									
9	**CTP Projects** -- **Same tasks as #8 (Alternatives Analysis) except most of CTP report will be drafted, and NC Bd. of Transportation needs to approve after TAC approval.**	N, W, M, H, O														public hearing									
10	**Incorporated Studies** -- **Freight; Purpose & Need; Environmental Justice; Resource agency review (4F); Planning Factors; and, Indirect & Cumulative**																								
11	**Adoption of 2040 LRTP** -- **release fiscally-constrained 2040 LRTP full report for public comment, conduct hearing, receive local review, and approve Plan**	M, H, O																public hearing							
12	**CTP Report** -- **Write full CTP report (includes purpose & need, etc.), release for public comment, conduct workshop, TAC adopt final CTP Report, NC BOT approves final CTP Maps.**	M, H, O																public hearing							
13	**AQ Conformity Determination** -- **prepare networks, conduct emissions analysis and prepare draft report**	M, H, O																							
14	**Final LRTP/AQ Conformity Adoption** -- **release fulle report for comment, conduct public hearing, TAC approve full report, and federal agency approval**	M, H																				public hearing			
▶	Conformity Lapse Date -- June 15, 2013																								

To: Transportation Coordinating Committee May 23, 2012

From: Lead Planning Agency (LPA)

Subject: Closing of Pickett Road in Orange County for the Hollow Rock Access Area

---

Summary

The Hollow Rock Access Area Master Plan recommends closing Pickett Road through the park to reduce conflicts between park uses and through vehicle traffic. The Orange County Board of County Commissioners will need to initiate the road closing procedure with the North Carolina Department of Transportation (NCDOT). The Durham City/County Planning staff conducted a meeting for residents in the vicinity of Pickett Road given the road closing impacts on Durham citizens. Approximately 55 people attended, and comments regarding the closing of Pickett Road received at the meeting were mixed. The primary concern of the attendees both in favor and opposed was the need for a traffic signal at the intersection of Randolph and Erwin Roads. City of Durham Transportation subsequently performed a traffic analysis in the area which determined that signal warrants were met at the intersection of Randolph Road and Erwin Road, and Kerley Road and Erwin Road.

The Durham City Council and Board of County Commissioners reviewed this issue and adopted a resolution of support for the road closing at their May 2, 2011 and May 16, 2011, respectively. At their March 9, 2011 meeting, TAC members asked that this issue be brought to the TAC for discussion and a vote at their April 13th meeting. The TCC reviewed this item and recommended that the TAC adopt a resolution in support of closing Pickett Road in Orange County, subject to several stipulations that included a traffic signal being installed at the intersection of Erwin Road and Randolph Road.

The TAC addressed this item at their August 8, 2011 meeting and asked that staff meet with citizens from the area affected by the road closing because several local residents spoke against the closing at that TAC meeting. On May 1, 2012, MPO staff conducted a drop-in meeting for citizens. Over seventy people attended the meeting and a strong majority of the comments opposed the road closing.

Recommendation

Earlier in this process, the Durham City Council and Durham Board of County Commissioners supported the closing of Pickett Road, and the TCC recommended that the TAC support that closing, as well. Since that time, the opinion of active citizens in the Pickett Road area has definitely shifted to oppose the road closing. In addition, there is no guarantee that devices can be installed to mitigate the expected shift of traffic from the unpaved portion of Pickett Road to Randolph Road. There is no funding for a traffic signal at the intersection of Erwin Road and Pickett Road, and traffic calming facilities cannot be installed on Randolph Road because it is a state maintained road. The LPA staff recommends that the TCC not support the road closing and that park design solutions be explored to mitigate any safety or movement hazards posed by existing traffic on Pickett Road.

If the TAC decides to support the Pickett Road closing, the LPA recommends that the TAC include the same contingencies from the TAC resolution of August 2011, but with one addition. The LPA recommends that the Orange Board of County Commissioners not begin the road closing process until a traffic signal is installed at the intersection of Erwin Road and Randolph Road.

Attachments

- 8 -- Memorandum
- 8A – Vicinity map and traffic counts
- 8B – Travel Time Map
- 8C – Hollow Rock map (excerpt from Master Plan)
- 8D – Traffic Analysis Report
- 8E – Durham City Council and Durham BOCC approved resolutions
- 8F – DCHC MPO proposed resolution (from August 2011 TAC meeting)

Background

The Master Plan for the Hollow Rock Access Area was developed as a partnership between the City of Durham, Durham County, Orange County and the Town of Chapel Hill. The future parkland is bisected by Pickett Road, which the master plan recommended closing in Phase II of the park development to provide better pedestrian connectivity and allow for parking. It is understood that the road will be closed by placing a gate across the road on the Orange County section. Attachment 8C is a one-age map of the Master plan, and the following link is a copy of the Hollow Rock Park Master Plan Final Report:

http://www.rtpnet.org/newhope/preserve/Hollow%20Rock%20Park%20Master%20Plan%20report%20%28Final%209-23-09%29-2.pdf

The section of Pickett Road to be closed is designated as a minor thoroughfare on the Durham-Chapel Hill-Carrboro Urban Area Thoroughfare Plan. The DCHC MPO will complete a Comprehensive Transportation Plan (CTP) within the next year that will supersede the 1991 Thoroughfare Plan, and staff anticipates that Pickett Road will be designated as a local road, not a thoroughfare in the CTP. The road is currently unpaved west of the Trinity School, and no improvements are proposed or funded.

The unpaved portion of Pickett Road, and Erwin Road and Randolph Road are outside the limits of the City of Durham and therefore are state maintained. The NCDOT policy prohibits the installation of traffic calming facilities such as speed humps. The NCDOT does not own the right-of-way for the unpaved section of Picket Road, and so apparently maintains the road through an implied usage.

The portion of Pickett Road proposed for closure is entirely within Orange County. In order to close the road, the State Board of Transportation must vote to remove it from the State system, and a street closing petition must be approved by the Orange County Board of Commissioners. While the street closing is not within Durham's jurisdiction, Orange County has requested that the Durham City Council and Durham County Board of Commissioners adopt resolutions of support to be forwarded to Orange County.

In June of 2010, Durham Planning staff organized and conducted a community meeting to receive public input about the potential closure of Pickett Road. The purpose of the meeting was to receive input from Durham County residents, who would be most impacted by the decision even though the road segment proposed to be closed is within Orange County. Approximately 55 people attended. Comments voiced by the attendees at the meeting itself were generally mixed. The most frequent comment from both supporters and opponents was that a traffic light was needed at the intersection of Erwin Road and Randolph Road. The Durham Bicycle and Pedestrian Advisory Commission (BPAC) wrote a letter requesting that the road alignment continue to be open to bicycle and pedestrian access in the event of a closing to vehicle traffic.

In the fall of 2010, the City Transportation Department agreed to perform a traffic analysis at three intersections in the vicinity of Pickett Road: Erwin Road at Randolph Road, Erwin Road at Kerley Road,

and Pickett Road at Randolph Road. The study concluded the first two intersections already meet signal warrants based on travel delays, regardless of whether or not Pickett Road is closed. The intersection of Pickett Road and Randolph Road does not meet signal warrants in either case. Due to insufficient space, traffic signals cannot be placed at both the Erwin/Randolph and the Erwin/Kerley intersections. Transportation's study recommends that a roundabout be placed at the Erwin/Kerley intersection instead. Attachment 8D is a copy of the Traffic Report.

The results of this study and the traffic signal warrant information has been forwarded to the North Carolina Department of Transportation (NCDOT). Installation of a traffic signal or roundabout at these intersections would be at the discretion of the NCDOT.

A crash analysis of the Erwin Road and Pickett Road intersection shows only one crash in the last ten years (2/28/2002 through 2/28/2012), and there were no fatalities or injuries in that crash. It should be noted that even if Pickett Road is closed, a driveway to Hollow Rock Park is proposed in the same location. Thus, any safety issues at this intersection would continue, but there would likely be reduced exposure because the driveway would attract fewer trips.

The TCC reviewed the proposed Picket Road closing at their March 23rd meeting and had the following issues:

1. Clarity on who receives ownership of ceded right-of-way, and if it is the adjacent property owners, how will bicycle and pedestrian access be maintained on private property.
2. How will automobiles and maintenance vehicles turn around on the closed end of the Durham side?
3. NCDOT has experienced lots of dumping (refrigerators, trash, etc.) at dead end roads. Who will be responsible for clean up?
4. NCDOT might prefer that part of the Durham County portion be closed and that the gate be located further east in the Durham side to reduce the incidence of dumping, i.e., the closely located houses and school will discourage dumping.
5. The park master plan shows vehicular access to the park from both Erwin and Pickett Road. Will the proposed closing of the road provide / allow for what is shown on the master plan?
6. What portion of the unpaved portion of Pickett is actually being proposed to be closed?
7. There are limited connectivity between Erwin Road and Pickett Road in this area. Can the closing be accomplished in such a way that the unpaved section of Pickett would remain available as an emergency connection (for instance, if a tree fell across Randolph in a hurricane)?

The TCC recommended closing Pickett Road subject to several contingencies including the installation of a traffic signal at the Erwin Road and Randolph Road intersection. The TAC addressed this item at their August 8, 2011 meeting and asked that staff meet with citizens from the area affected by the road closing because several local residents spoke against the closing at that TAC meeting. After gathering additional data, the MPO staff conducted a drop-in meeting for citizens on May 1, 2012. Over seventy people attended the meeting and a strong majority of the comments were against the road closing.

In the interim, some additional data has been gathered to inform the discussion, including:

- In January 2012, the traffic counts for the roads in the Picket Road area were taken again and the results similar to those counts from October 2009. Attachment 8A includes the new traffic counts.

- A travel time study was conducted showing that the travel time from Chapel Hill to Trinity School would increase 1 ½ minutes if motorists used Randolph Road instead of the unpaved section of Pickett Road. Attachment 8B presents the findings of the travel time study.
- The Durham Fire Department (DFD) does not believe the road closing will affect their response time, but will affect the mutual aid response received from the New Hope Volunteer Fire Department (VFD).
- The New Hope VFD states that the closure will not pose any real problems but a slight delay in response time.
- The Durham County Sherriff's Department did not see any issue with their emergency response time.
- The NCDOT Division 5 office is aware that the Erwin Road and Kerley Road intersection and the Erwin Road and Randolph Road intersection meet signal warrants but does not currently have a funding source for a traffic signal. The DCHC MPO has eligible funding for traffic signals but the project would have to compete against other MPO priorities and needs.
- The NCDOT recently completed landscaping work at the intersection of Erwin Road and Pickett Road that improved the sight distance for Pickett Road motorists. However, it is fair to say that the sight distance conditions at that intersection are still not ideal. The NCDOT does not have any precedent or procedure to delay an approved road closing until some other action is completed such as a traffic signal installation.
- There have been delays in getting Phase I funding commitments for the Hollow Rock Access Area. The master plan recommends that Pickett Road be closed for Phase II.

Issues and Analysis

The closing of Pickett Road could have an impact on Durham residents, particularly those who live on Randolph Road. However, leaving the road open could undermine the public and private investment in the Hollow Rock Access Area.

The City of Durham Comprehensive Plan, chapter 8, calls for a "continuous and comprehensible street network" and the unified development ordinance rates new developments on a connectivity ratio. The proposed street closing runs counter to the connectivity objectives of the Plan.

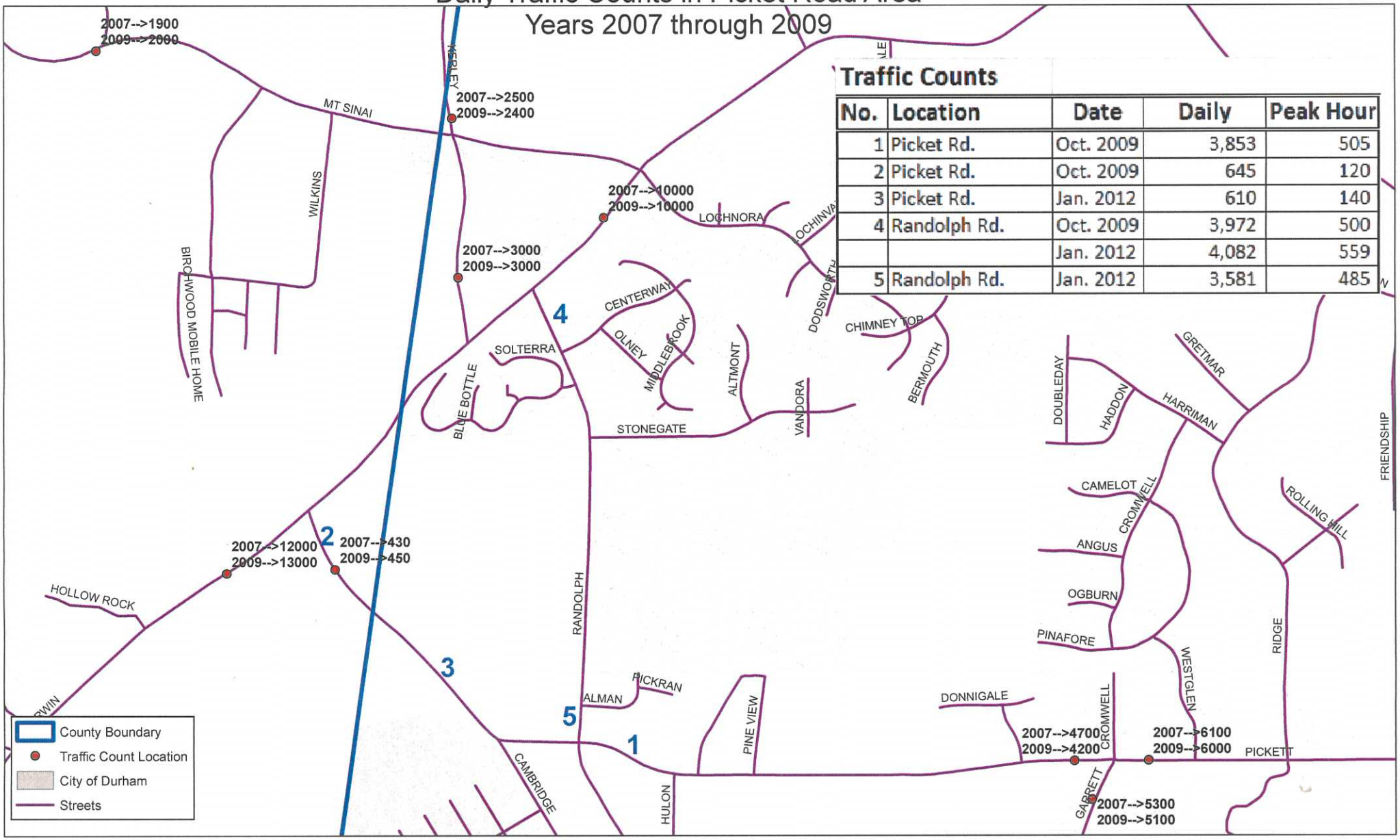
The subject section of Pickett Road had only 610 daily trips in 2012, compared to 4,082 on Randolph Road. It is reasonable to assume that many of the Pickett Road trips would be diverted to Randolph Road, as the closest alternative route, and Randolph Road has enough excess capacity to handle these trips. However, many local residents state that the long queues at the Erwin Road and Pickett Road intersections pose a safety hazard and the intersection study shows that the Erwin Road intersection meets warrants for a traffic signal based on traffic delays. The diverted traffic would exacerbate the existing intersection delays.

The provision of a traffic signal at the intersection of Randolph Road and Erwin Road would address present circulation problems at that location, and could help alleviate the impacts of the additional traffic. While a roundabout is warranted by current conditions at the intersection of Kerley Road and Erwin Road, that location would be less impacted by the closure of Pickett Road and could be cost prohibitive. The NCDOT does not currently have funding to install the traffic signal and there doesn't appear to be a mechanism to guarantee the installation of a signal if Pickett Road is closed.

In June 2010, the Durham City/County Planning Department conducted a community meeting and opinions were mixed on the proposed road closing. At the MPO community meeting in May 2012, opinion had decidedly shifted and a strong majority of participants opposed the proposed closing.

If Pickett Road is closed, the MPO should recommend that the Orange Board of County Commissioners not begin the road closing process until a traffic signal is installed at the Erwin Road and Randolph Road intersection. The MPO and NCDOT will want to ensure that private vehicles have an adequate facility for turning around at the end of the state maintained section of the roadway, and that official vehicles can pass through in case of an emergency. In addition, the MPO will want to ensure that bicyclists and pedestrians are able to go around the gate and continue using the road alignment for through access.

Daily Traffic Counts in Picket Road Area
Years 2007 through 2009

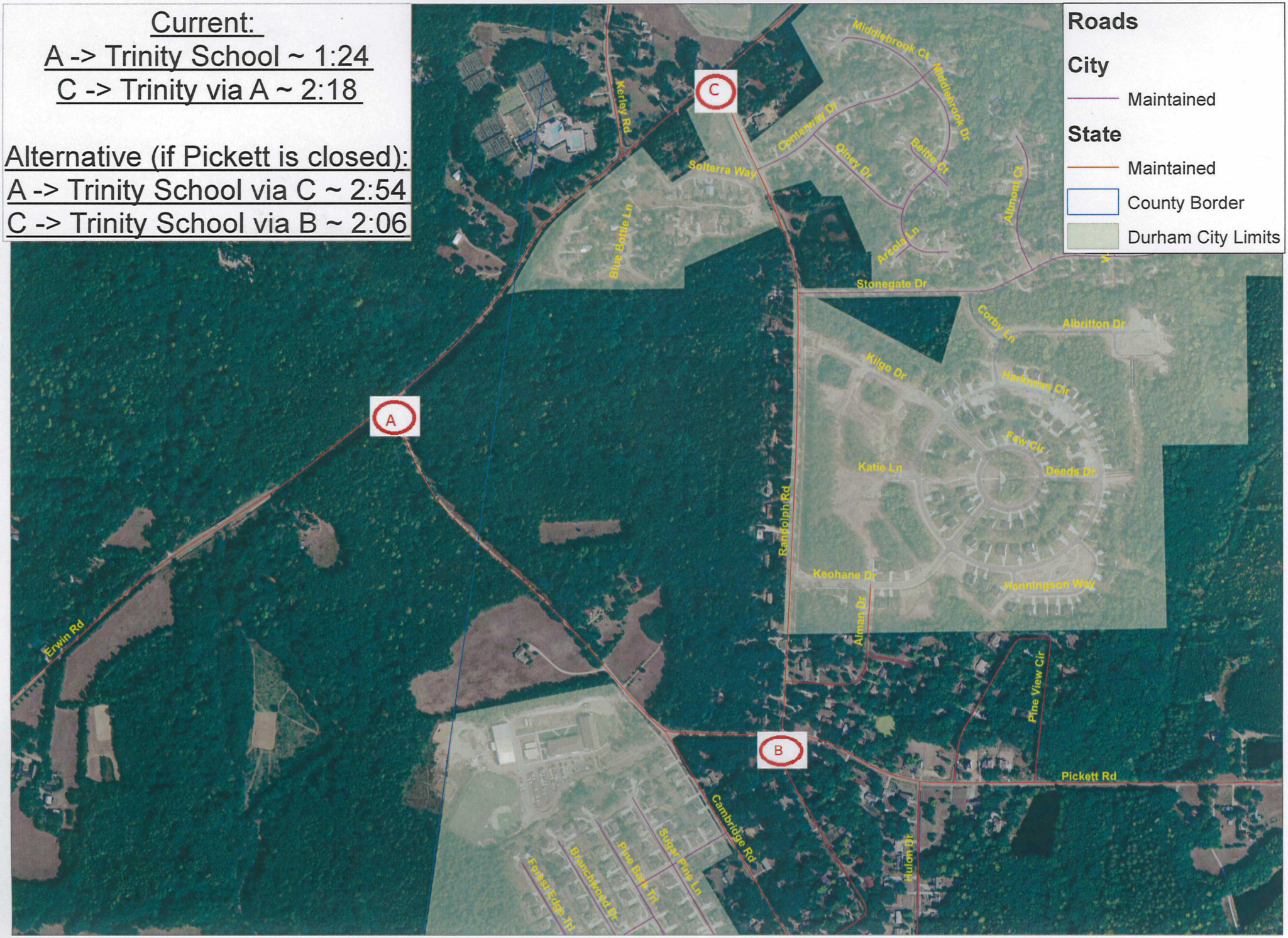


Traffic Counts

No.	Location	Date	Daily	Peak Hour
1	Picket Rd.	Oct. 2009	3,853	505
2	Picket Rd.	Oct. 2009	645	120
3	Picket Rd.	Jan. 2012	610	140
4	Randolph Rd.	Oct. 2009	3,972	500
		Jan. 2012	4,082	559
5	Randolph Rd.	Jan. 2012	3,581	485

Pickett Road Area

TCC 5/23/2012 Attachment 8B



Proposed Master Plan

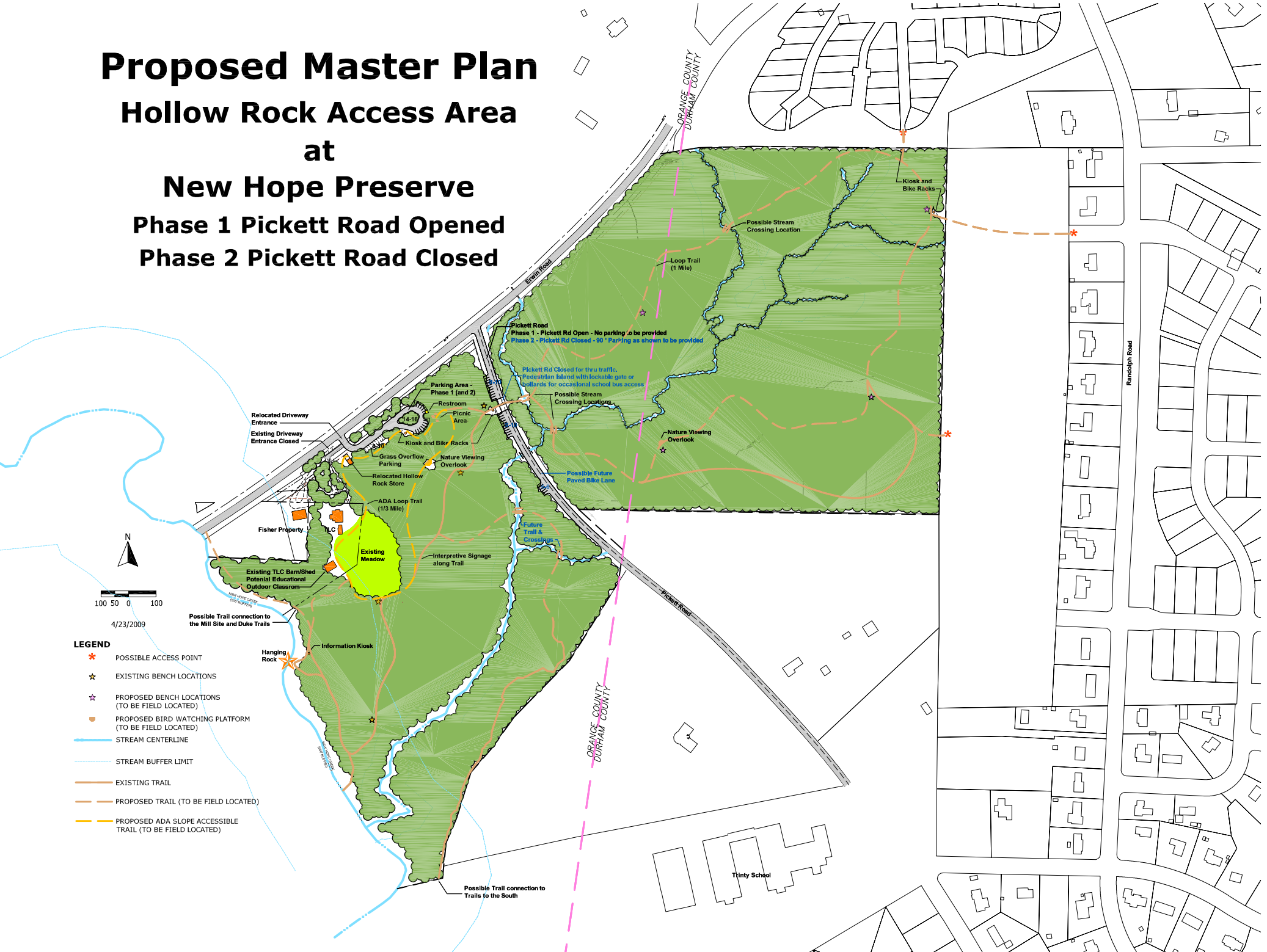
Hollow Rock Access Area

at

New Hope Preserve

Phase 1 Pickett Road Opened

Phase 2 Pickett Road Closed



Traffic Analysis Report

INTRODUCTION:

This report summarizes the findings of existing road conditions and the anticipated impact of the proposed closure of Pickett Road associated with the Hollow Rock Access Area Master Plan (http://www.co.orange.nc.us/ercd/parks/HollowRockAccessArea.asp).

The scope of this study is to assess if proper traffic control measures are currently in place on the surrounding roadway network and to determine the impact of the traffic redistribution by the proposed closing of Pickett Road at Erwin Road. It was determined that the following traffic conditions would need to be studied in order to accomplish this objective.

- Existing (2010) traffic conditions
- After (with closure of Pickett Road) traffic conditions

STUDY AREA:

The site (New Hope Preserve) is located on the southeast side of Erwin Road (SR 1306) just south of the intersections of Kerley Road (SR 1304) and Randolph Road (SR 1302). This report focuses on the following intersections:

1) Pickett Road (SR 1303) and Randolph Road (SR 1302)
2) Erwin Road (SR 1306) and Randolph Road (SR 1302)
3) Erwin Road (SR 1306) and Kerley Road (SR 1304)

ANALYSIS PROCEDURE:

Study intersections were analyzed using the Traffic Control Signal Warrants as outlined in the 2003 Manual on Uniform Traffic Control Devices (MUTCD) published by the U.S. Department of Transportation. As outlined in this manual a comprehensive investigation of the physical characteristics of the above referenced intersections, as well as the surrounding road grid network was completed. In addition, we collected the daily traffic volume for one week, collected speed data, and examined the individual accident history reports for the respective intersections.

For evaluation of existing conditions, the highest daily volume for each approach was selected for analysis purposes. For the proposed closing of Pickett Road, traffic counts that were previously collected (2009) at the proposed closure point were factored into the existing conditions.

Existing and proposed conditions were evaluated utilizing the 2006 PC-Warrants for Windows software, published by JAMAR Technologies, Incorporated.

ANALYSIS:

Pickett Road and Randolph Road

The intersection was analyzed for signalization under existing and proposed conditions (closure of Pickett Road) with the following roadway characteristics. Copies of the signal warrant analysis and accident history report are attached.

Existing Conditions:

- Four-way intersection with a single lane approach for all directions
- Unsignalized with stop sign control on Randolph Road
- Stop ahead sign approaching intersection on Randolph Road (NB)
- Intersection ahead warning sign on Pickett Road approaching Randolph (WB)
- Adjacent land use is residential
- School Zone west of intersection
- Axle Weight Limit of 6.5 tons east of Randolph Road on Pickett Road
- No overhead lighting at the intersection proper
- No sight distance obstructions observed
- Posted speed limit:
    - South of Pickett Road on Randolph Road 25 mph
    - North of Pickett Road on Randolph Road 35 mph
    - Pickett Road 35 mph east and west of Randolph Road

Findings: (Existing Conditions)

No signal warrants were met and no deficiencies were identified from a pavement marking or signing standpoint. The accident history report, for the last five years, revealed three correctable type accidents. There were no correctable accidents reported over the last year. In summary, the intersection does not meet the threshold for crash experience as outlined in the signal warrants.

Findings: (Proposed Conditions)

No signal warrants were met with the proposed closure of Pickett Road.

Erwin Road and Randolph Road

The intersection was analyzed for signalization under existing and proposed conditions (closure of Pickett Road) with the following roadway characteristics. Copies of the signal warrant analysis and accident history report are attached.

Existing Conditions:

- Tee intersection with single lane approach eastbound on Erwin Road
- Two lane approach (1 TH, 1 LT) westbound Erwin Road
- Two lane approach (1 LT, 1 RT) northbound Randolph Road
- Unsignalized with stop sign control on Randolph Road
- Stop ahead sign approaching intersection on Randolph Road (NB)
- Intersection ahead warning sign on Erwin Road (EB) & (WB)
- Adjacent land use is primarily vacant with some residential
- School Zone east of intersection
- No overhead lighting at the intersection proper
- No sight distance obstructions observed
- Posted speed limit:
    - Randolph Road 35 mph
    - Erwin Road 45 mph

Findings: (Existing Conditions)

Signal warrants #1, #2, #3, and #8 were met. No deficiencies were identified from a pavement marking or signing standpoint. The accident history reports, for the last five years, revealed one rear-end type accident. No accident patterns or concerns from a safety standpoint were identified.

Findings: (Proposed Conditions)

Signal warrants #1, #2, #3, and #8 were met. No additional warrants were met with the proposed closure of Pickett Road factored in; however, an additional condition was met under warrant #1. In addition, the number of hours exceeding the thresholds increased under multiple conditions within the individual warrant summaries. The proposed closure of Pickett Road further signifies the need for additional traffic control at this intersection.

Erwin Road and Kerley Road

The intersection was analyzed for signalization under existing and proposed conditions (closure of Pickett Road) with the following roadway characteristics. Copies of the signal warrant analysis and accident history report are attached.

Existing Conditions:

- Tee intersection with single lane approach for all directions
- Unsignalized with stop sign control on Kerley Road
- Stop ahead sign approaching intersection on Kerley Road (SB)
- Intersection ahead warning sign on Erwin Road (WB)
- Adjacent land use is residential and commercial
- School Zone north of intersection
- Overhead street lighting on one corner of the intersection
- No sight distance obstructions observed
- Posted speed limit:
    - Kerley Road 45 mph
    - Erwin Road 45 mph

Findings: (Existing Conditions)

Signal warrants #1, #2, #3, and #8 were met. No deficiencies were identified from a pavement marking or signing standpoint. The accident history reports revealed that there were a total of 6 accidents over the last 5-year period resulting in 2 injuries with total property damage of $37,600. Of the 6 reported accidents, 2 were of the correctable nature. The severity index was 11.83. There were no correctable accidents reported over the last year. In summary, the intersection does not meet the threshold for crash experience as outlined in the signal warrants.

Findings: (Proposed Conditions)

Signal warrants #1, #2, #3, and #8 were met. No additional warrants were met with the proposed closure of Pickett Road factored in; however, an additional condition was met under warrant #1. In addition, the number of hours exceeding the thresholds increased under multiple conditions within the individual warrant summaries. The proposed closure of Pickett Road further signifies the need for additional traffic control at this intersection.

CONCLUSIONS:

This study revealed the need for additional traffic control at two of the focus intersections. The proposed closure of Pickett Road further solidifies this need.

As noted in this report, currently Warrants #1, #2, #3, and #8 are solidly met at the intersections of Randolph Road/Erwin Road and Kerley Road/Erwin Road. The accident history report did not reveal any existing patterns of concern at either intersection; however, past experience suggests that the crash experience will likely increase when undue delay occurs.

Warrant #3 is the best indicator for undue delay on the minor-street and there are now 5 periods (hours) that are plotting above the minimum threshold for both intersections. This coupled with a posted speed limit of 45 mph on Erwin Road, suggests that there is an increased risk for more severe crashes. We believe appropriate applied traffic control measures can mitigate the potential for such an occurrence. In summary, with 4 significant warrants being met and a potential for severe crashes going forward, we believe there is sufficient justification for immediate action.

The City of Durham recommends signalization at one of the intersections and a roundabout at the other. Signalization is warranted at both intersections, but due to other factors and the unique characteristics of each intersection, signalizing both is not desirable. The main issue, for not signalizing both locations, is the close proximity of the intersections. These two intersections are within 750' of one another. Other determining factors are related to the physical layout of the respective intersections.

The leading factor for selecting Randolph Road and Erwin Road for signalization is for efficiency and operational reasons. Operational reliability will likely translate into a desirable safety performance. Operationally, a signal here will enhance the movement of vehicles due to the spacing with the adjacent existing signal at Lochnora Parkway/Mt. Sinai Road/Erwin Road. The approximate spacing is 1500' and is a desirable distance to maintain vehicular progression for motorists traveling this segment of roadway. Other important factors were carefully evaluated. This intersection is more conducive to adding signalization because of the physical layout. The geometric alignment is advantageous consisting of the classic 90 degree aligned tee intersection with excellent sight lines. Proper channelization, including paved turn lanes are in place and there are no utility conflicts with poles, cabinet, wires, and signal head installations.

The intersection of Kerley Road and Erwin Road is better suited for a roundabout installation. As noted in the MUTCD, signal installation is not the panacea for all traffic problems at intersections. There are other alternatives and in some cases better treatments for addressing the problems associated with signal warrant indicators. One treatment gaining popularity in the United States is the roundabout installation. Unfortunately, the rapid expansion of the use of roundabouts is currently not controlled by any real warrants. However, it has been proven that roundabouts are effective in moving vehicles with decreased delay and greater efficiency than traffic signals in some instances.

Although this intersection does not meet the crash experience warrant for a signal, the severity index is somewhat elevated. Our recommendation for a roundabout is an excellent treatment to

address the high severity indicator. Roundabouts are not only popular for their operational benefits, but are proven to be useful enhancements for traffic calming and safety. A roundabout effectively decreases driving speeds to 30 mph or less and significantly reduces the number of vehicular conflict points. Both characteristics will likely improve the high severity index at this intersection. Another factor supporting a roundabout installation is the close proximity to the intersection of Randolph Road and Erwin Road. While 750' is less than attractive for two adjacent signal installations, this spacing is workable for a roundabout. Lastly, the skewed alignment of Kerley Road with Erwin Road points to a roundabout as a fitting treatment.

RECOMMENDATIONS:

The following are roadway improvements recommended under current conditions:

Pickett Road and Randolph Road

- No improvements are recommended at this intersection

Erwin Road and Randolph Road

- Signal installation is recommended

Erwin Road and Kerley Road

- Roundabout installation is recommended

RESOLUTION #9762

CITY OF DURHAM
RESOLUTION IN SUPPORT OF THE CLOSURE OF A PORTION OF PICKETT ROAD IN ORANGE COUNTY

WHEREAS, the citizens of Durham and Orange Counties have made significant investments in Hollow Rock Park; and

WHEREAS, The Master Plan for the Hollow Rock Access Area of the New Hope Preserve was adopted by the City Council on November 16, 2009; and

WHEREAS, through traffic on Picket Road may be detrimental to the success of the Park; and

WHEREAS, the current average daily traffic volume on the subject portion of Pickett Road is modest (645 vehicles per day); and

WHEREAS, a traffic analysis performed by the City Transportation Department determined signal warrants are met at the intersections of Erwin Road and Randolph Road and Erwin Road and Kerley Road.

NOW, THEREFORE BE IT RESOLVED, the City Council of the City of Durham supports the permanent closure of Pickett Road in Orange County, from the Durham County line to Erwin Road, provided:

1. A traffic signal is installed at the intersection of Erwin Road and Randolph Road prior to the closure of Pickett Road; and
2. An easement shall be retained providing for public pedestrian and bicycle ingress, egress, and regress.

This being the 2nd day of May.

APPROVED BY
CITY COUNCIL

MAY 2 2011

CITY CLERK

D. Ann Gray

DURHAM COUNTY
RESOLUTION IN SUPPORT OF THE CLOSURE OF A PORTION OF PICKETT ROAD IN ORANGE COUNTY

WHEREAS, the citizens of Durham and Orange Counties have made significant investments in Hollow Rock Park; and

WHEREAS, The Master Plan for the Hollow Rock Access Area of the New Hope Preserve was adopted by the Durham County Board of Commissioners on December 14, 2009; and

WHEREAS, through traffic on Picket Road may be detrimental to the success of the Park; and

WHEREAS, the current average daily traffic volume on the subject portion of Pickett Road is modest (645 vehicles per day); and

WHEREAS, a traffic analysis performed by the City Transportation Department determined signal warrants are met at the intersections of Erwin Road and Randolph Road and Erwin Road and Kerley Road.

NOW, THEREFORE BE IT RESOLVED, the Durham County Board of Commissioners does support the permanent closure of Pickett Road in Orange County, from the Durham County line to Erwin Road, provided:

1. A traffic signal is installed at the intersection of Erwin Road and Randolph Road prior to the closure of Pickett Road; and
2. An easement shall be retained providing for public pedestrian and bicycle ingress, egress, and regress.

This being the 9th day of May.

Approved By The
Board of County Commissioners
May 9, 2011

Clerk to the Board

DURHAM-CHAPEL HILL-CARRBORO
METROPOLITAN PLANNING ORGANIZATION (DCHC MPO)
RESOLUTION IN SUPPORT OF THE CLOSURE OF A PORTION OF PICKETT ROAD IN ORANGE COUNTY

August 10, 2011

A motion was made by TAC Member _____ and seconded by TAC Member _____ for the adoption of the following resolution, and upon being put to a vote, was duly adopted.

WHEREAS, the citizens of Durham and Orange Counties have made significant investments in Hollow Rock Park; and

WHEREAS, The Master Plan for the Hollow Rock Access Area of the New Hope Preserve was adopted by the Durham City Council on November 16, 2009; and

WHEREAS, through traffic on Picket Road may be detrimental to the success of the Park; and

WHEREAS, the current average daily traffic volume on the subject portion of Pickett Road is only 645 vehicles per day; and

WHEREAS, a traffic analysis performed by the City Transportation Department determined signal warrants are met at the intersections of Erwin Road and Randolph Road and Erwin Road and Kerley Road.

NOW, THEREFORE BE IT RESOLVED, the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization does support the permanent closure of Pickett Road in Orange County, in area between the Durham County line and Erwin Road, provided:

1. A traffic signal is installed at the intersection of Erwin Road and Randolph Road, and,
2. Retain public access for bicyclist and pedestrians to use the approximate former roadway alignment of Picket Road thereby allowing interconnection from the remaining Pickett Road segment and Erwin Road, and,
3. Adequate vehicle turn around facilities be provided at the end of the state maintenance section of Picket Road; and,
4. There be a process to permit vehicles to travel on Picket Road between Randolph Road and Erwin Road in the case of an emergency.

_____
Lydia E. Lavelle, TAC Chair

Durham County, North Carolina

I certify that Lydia E. Lavelle personally appeared before me this day acknowledging to me that she signed the forgoing document.

Date: August 10, 2011

Frederick Brian Rhodes, Notary Public
My commission expires: May 10, 2015

MEMORANDUM

To: Technical Coordinating Committee
DCHC MPO

From: DCHC MPO Lead Planning Agency

Date: May 23, 2012

Subject: **STP-DA Funding Requests**

LPA staff have received requests for additional STPDA funding for several projects recently. The last STPDA Call for Projects was done in 2009, and allocated estimated funding through 2015. However, some funding was held in reserve for future programming. In late 2011, some of these reserved funds were allocated to the American Tobacco Trail cost over-run. While LPA staff prefer to hold a general Call for Projects for STPDA funding in 2014 or 2015 for projects to be obligated in FY 2016 and 2017 and include revisions to our STPDA allocation formula at that time, LPA staff also want to provide a response to the current requests for funding and allow these projects to move forward. The TCC should make a recommendation to the TAC to respond to the additional funding being requested by member jurisdictions that is needed before FY 2016.

Carrboro Request

The Town of Carrboro has requested an additional 15 percent, or $25,303, for U-4726DC, Multi-use Path from Wilson Park to Estes Drive. This project is funded for $16,868 federal STPDA for planning in FY 2010 and $151,816 federal STPDA in FY 2012 ($168,684 total). All of this funding has been obligated. The Town of Carrboro offers the following explanation for the additional funding request.

> "The initial cost estimate for the project was completed in 2007 for the 2009-2015 STP-DA Call for Projects, using a simple cost-per-linear foot estimate and based on a shorter facility that climbed a steeper hill. Since that time, a concept plan was completed that recommended a longer facility traversing a more gentle grade and a path intersection at Estes Dr. Additionally, the initial estimate did not seem to factor in Construction Engineering and Inspection services. It also underestimated the cost of PE. Furthermore, inflation since that time has also served to increase construction costs. Updated Davis-Bacon wage determinations also may play a role.
>
> For your info, here is the current financial picture for the project. The table shows more federal STP-DA used for PE, due to cost, and less allocated to construction (total is still $168,684). The Town also has a federal RTP [Recreational Trails Program] grant contributing to the project, with a separate required local match."

Project	Flow	Category	Cost	Federal	Local	Total
Wilson Path	Cost	PE	$(49,066)			$ (49,066)
Wilson Path	Cost	Construction (OPCC 4-25-12)	$(249,218)			$(249,218)
Wilson Path	Cost	10% Construction Contingency	$(24,922)			$(24,922)
Wilson Path	Cost	CE	$(37,383)			$(37,383)
Wilson Path	Rev	Federal STP-DA - PE		$39,253		$39,253
Wilson Path	Rev	Local Bond - PE - 20% local STP-DA match			$9,813	$9,813
Wilson Path	Rev	Federal STP-DA - Construction		$129,431		$129,431
Wilson Path	Rev	Local Bond - 20% local STP-DA match - Construction			$32,358	$32,358
Wilson Path	Rev	Federal RTP grant		$75,000		$75,000
Wilson Path	Rev	Local Bond - 25% local RTP grant match			$18,751	$18,751
Wilson Path	**Rev**	**Federal STP-DA - Construction - 15% additional**		**$25,303**		**$25,303**
Wilson Path	**Rev**	**Local Bond - 20% local STP-DA match add'l - Constr.**			**$6,326**	**$6,326**
Wilson Path	Rev	Local Bond - Contingency			$24,354	$24,354
Wilson Path Total			**$(360,589)**	**$268,987**	**$91,602**	**$0**

The MPO's current policy for STPDA funding would require that Carrboro find the funding to cover the cost over-run from their other future programmed projects or through a request from the MPO's annual reserve. Carrboro's other future programmed projects include Rogers Road Sidewalk, the Bolin Creek Greenway (Homestead to Meadow Run), Bicycle Loop Detectors (partially obligated), the Bolin Creek Greenway (Jones Creek), the S. Greensboro St. sidewalk, the Morgan Creek Greenway, and the Bel Arbor-Plantation Acres Multi-use Path. The MPO has not been allocating funding from the annual reserve since 2009. Initially, this was cancelled due to the rescission. Since the rescission has been restored, we have not allocated funding from the annual reserve because local governments no longer expressed a desire for small projects due to the burdensome local programs management process. A portion of the reserved funds have been allocated to the American Tobacco Trail cost over-run.

In our preliminary discussions about changes for the next STPDA Call for Projects, LPA staff have suggested, as a rule, allowing and additional allocation of up to 15 percent for any project with a cost over-run. The reasoning for this was that it would be a replacement for the 15 percent annual reserve set-aside, that it would allow projects ready to be obligated to proceed without requiring time for TCC

and TAC review and approval, that it would over-program our funding helping to protect us against carrying a high unobligated balance if some projects fall behind schedule, and that it would not require an MTIP amendment (NCDOT considers minor cost increases that do not exceed $2 million and 25% of the original project cost to be TIP administrative modifications, not amendments). While this is not an official MPO policy yet, Carrboro's request would fall under this criterion and LPA staff believe this is a reasonable request that can be accommodated by the MPO's current unobligated balance.

LPA staff recommend approving Carrboro's request for an additional $25,303 federal CMAQ funding through an amendment of the STPDA database and a TIP administrative modification.

Durham Requests

The City of Durham has three upcoming NCDOT-managed TIP projects that will need a local contribution for sidewalk and other project upgrades that NCDOT will not fund through traditional funding sources. NCDOT's current policies require that the municipality partially pay for sidewalks based on their population and pay for the cost to upgrade materials used in fencing, noisewalls, etc. The City of Durham's population requires a 50 percent local share/50 percent state share for sidewalks. The City may want to consider requesting STPDA funding for these sidewalks and is waiting for information from NCDOT on which agency would be responsible for providing the local match.

U-4716B, Hopson Road Grade Separation and railroad improvements, will likely go out to bid later this year. Part of this project is the extension of Church Street (Keystone Park Drive) to Hopson Road. The Keystone developer was originally expected to be responsible for participating in the cost of constructing this road extension. However, NCDOT and the NCTA have bought the entire property from the developer. As such, NCDOT's current sidewalk policy now applies. Sidewalks on Church Street are estimated at $35,000. A more precise estimate will be completed before the project goes out to bid. NCDOT has requested a signed municipal agreement by the end of August 2012. Since the TAC may not act before August, the City may enter the agreement with a clause describing an alternative funding agreement if STPDA funding were approved by the MPO.

U-3308, Alston Avenue widening, is scheduled for construction in FY 2015-2016. The City anticipates that funding will be needed for some of the elements of the project such as wider sidewalks, retaining wall treatments, etc. The specific amount of STPDA that will be requested by the City is not known at this time.

U-0071, the East End Connector, is scheduled for construction in FY 2014-2017. The City anticipates that funding will be needed for some of the elements of the project such as sidewalks on local streets, upgrades in noisewall and fencing materials, etc. The specific amount of STPDA that will be requested by the City is not known at this time. However, due to the large size of this project it is likely to be a significant amount.

The MPO's current policy for the programming of STPDA funding would require that Durham find the funding to cover these sidewalks and upgrades from their other future programmed projects or through a request from the MPO's annual reserve. Durham's other future programmed projects include Fayetteville Road bicycle lanes and sidewalks, Barbee Road sidewalk, DATA sidewalk, Avondale sidewalk, Cheek Road bicycle and pedestrian facilities, Morreene Road bicycle and pedestrian facilities, Cornwallis Road bicycle and pedestrian facilities, Hillandale Road bicycle and pedestrian facilities, Carpenter Fletcher Road bicycle and pedestrian facilities, and Holloway Street sidewalks. The MPO has not been allocating funding from the annual reserve since 2009. Initially, this was cancelled due to the rescission. Since the rescission has been restored, we have not allocated funding from the annual reserve because local governments no longer expressed a desire for small projects due to the burdensome local programs management process. A portion of the reserved funds have been allocated to the American Tobacco Trail cost over-run.

LPA staff consider enhancements for NCDOT-managed projects to be a high priority for the use of STPDA funds. Using STPDA considerably helps the local government afford the cost of sidewalks and project upgrades. It is certainly appropriate to use federal STPDA funding on these larger scale projects that are already being primarily funded with federal and state money. In addition, these are NCDOT-managed projects so NCDOT will be responsible for getting federal authorization.

Old Durham-Chapel Hill Road

EB-4707, Old Durham-Chapel Hill Road, will require additional funding due to cost increases. Currently, the estimated additional funding request is around $5.5 million federal STPDA. The Town of Chapel Hill is currently considering how it wishes to proceed with this project. LPA staff plan to bring this back to the TCC with more details and a recommended action at a future meeting. However, we wanted to make sure that the TCC was aware that this project will also likely require additional STPDA funding when they consider these other requests.

Effect on STPDA Unobligated Balance and Future STPDA Call for Projects

The MPO currently has an unobligated STPDA balance of $7,415,648 and we expect to receive approximately $4.47 million annually in STPDA. While the MPO has already programmed much of our STPDA funding through FY 2015, there are some funds that are unprogrammed due to the restoration of the 2009 rescission. Some of these funds were allocated to the American Tobacco Trail in late 2011. LPA staff estimate that approximately $3 million of the restored funding is currently unprogrammed. This is an approximate amount since the programming of funds is done based on estimated costs and estimated STPDA allocations. The unobligated balance is a more accurate accounting of how much STPDA funding is currently available and is based on actual obligations and allocations.

The MPO can obligate the Carrboro request without affecting the schedule of other projects. The other impending STPDA requests for Hopson Road, Alston Avenue, the East End Connector, and Old Durham-Chapel Hill Road, if approved, would require that the MPO over-program and over-obligate funding.

NCDOT staff says that we are allowed to over-program and over-obligate STPDA funding since they can "cash flow" the funding over several years.

While we can allocate these funds, it is important to understand that obligating the additional funds for any of these projects will affect the amount of funds available for a future STPDA Call for Projects. Typically, the MPO programs STPDA for a set number of future years (last time it was for FY 2009-2015) based on our unobligated balance and estimated future allocations. If the MPO obligates more funding now, the unobligated balance will decrease and thus there will be fewer funds to allocate to future projects. Our unobligated balance may in fact end up being negative at the time we hold our Call for Projects if projects stay on schedule meaning we are borrowing against our future anticipated STPDA allocations. Based on our adopted STPDA distribution formula, the impact will be distributed proportionately across all funding categories and jurisdictions.

While LPA Staff have previously discussed holding our call for projects for FY 2016 through 2020 in the spring of 2012, we are now recommending that we delay this until potentially 2014. The MPO has 26 projects programmed for obligation in FY 2012 through 2015. Nine of these projects have been delayed one year, and six of these projects have been delayed more than one year. With so many projects currently behind schedule, the MPO would like our member jurisdictions to focus on obligating projects over the next couple of years before we start to program future funding. By 2014, the MPO will have a better idea of which projects have been able to move forward and which projects may need to be cancelled due to inactivity. In addition, with the changes in the local programs management process, member jurisdictions are learning which projects are best to pursue with federal funding and which are better done with local funds. Delaying the call for projects will allow local jurisdictions more time to consider which of their priorities are better suited for federal funding and which are better done with local funding.

Furthermore, an issue with the current STPDA program and allocation process is that local jurisdictions have difficulty anticipating their needs far out into the future. This has resulted in many projects being delayed, cancelled, or funding reassigned. It increases the amount of TIP amendments necessary and LPA Staff oversight to track funding. For the next call for projects, the MPO may want to limit the allocation to a shorter, more immediate time period (maybe two years only) so jurisdictions only program projects that are able to meet their anticipated schedules. Similarly, some STPDA funding is allocated to routine and special planning projects. The LPA is also better able to anticipate our planning needs on a shorter term basis.

TCC Recommendation: That the TAC direct LPA staff to amend the STPDA database to add $25,303 federal STPDA to U-4726DC.

FFY 2012
DCHC MPO Surface Transportation-Direct Attributable
Federal Funding Levels Report

TCC 5/23/2012 Attachment 9A

Funding Availability (Adjusted to Obligational Limitation)

	COLUMN A	COLUMN B	(COLUMN A + COLUMN B) COLUMN C	(COLUMN C x 87%) COLUMN D	COLUMN E	(COLUMN D - COLUMN E) COLUMN F
DCHC MPO- STPDA	2011 CFFY Carry Forward	CY 2012 Appropriations	Total Appropriations	Net Available Funding	YTD Obligation	Net Available Balance
TOTALS	$6,526,600	$2,374,511	$8,901,111	$7,743,967	$328,319	$7,415,648

Project Specific Obligation List

Date	WBS TIP Sub Num	Project Desc	WBS element		Phase ID	Authorization date	System Status	WBS Closed Date	County Code	Fund		Obligated Amount	Expenditure Amount	Program Specific Obligated Amount	Program Specific Expenditure Amount
12/15/2011	U-4726DC	CARRBORO - WILSON PARK MULTI-USE PATH	36268.3.4	U-4726DC - CON - CARRBORO	Construction	11/21/11	REL	#	ORANGE	1500/2731L23ED	STP >200K POP-DURHAM-SAFETEA-LU EXT	$ 151,816	$ -	$ 151,816	0.00
1/3/2012	EL-4995	CHAPEL HILL - DRY CREEK GREENWAY FROM PERRY CREEK ROAD TO PR	40764.1.1	CLOSED EL-4995 - PE - DRY CREEK GREENWA	Prel Engr	11/27/07	CLSD ACPT	1/3/12	ORANGE	1500/2731H230D	STP >200K POPULATION-DURHAM	$ 35,879	$ 35,879	$ (28,121)	35,879.00
1/26/2012	SR-5001AR	CHAPEL HILL - SAFE ROUTES TO SCHOOL CONSTRUCT SIDEWALKS ALON	40924.3.43	SR-5001AR - CON - CHAPEL HILL	Construction	12/14/2011	REL	#	ORANGE	1500/2731L23ED	STP >200K POP-DURHAM-SAFETEA-LU EXT	$ 86,400	$ -	$ 86,400	$ -
1/26/2012	U-4726DF	CARRBORO - BICYCLE DETECTION AT SIGNALIZED INTERSECTIONS	36268.1.27	U-4726DF - PE - CARRBORO	Prel Engr	01/24/2012	REL	#	ORANGE	1500/2731L23ED	STP >200K POP-DURHAM-SAFETEA-LU EXT	$ 6,000	$ -	$ 6,000	$ -
2/9/2012: adjusted 2/23/2012	EB-4707	DURHAM - SR 1838/SR 2220 (OLD DURHAM/CHAPEL HILL ROAD)FROM S	38664.1.1	EB-4707 - PE - BICYCLE IMPROVEMENTS	Prel Engr	06/13/2008	REL ACPT	#	DURHAM	1500/2731L23ED	STP >200K POP-DURHAM-SAFETEA-LU EXT	112,224	52,629	112,224	52,629

Total Obligated YTD: $ 328,319

DURHAM-CHAPEL HILL-CARRBORO (DCHC) MPO
STPDA Programming Database

Original Fund Type	STP-DA
Extended Program Year	2015

Sum of Programmed Funds					
TIP No	Jurisdiction	TIP No2	Project Phase/Type	Project Description	Total
U-4727	DCHC MPO	(blank)	UPWP	FY 2015 UPWP	$ 741,836
		(blank) Total			$ 741,836
U-4727 Total					$ 741,836
Grand Total					$ 741,836

DURHAM-CHAPEL HILL-CARRBORO (DCHC) MPO
STPDA Programming Database

Original Fund Type	STP-DA
Extended Program Year	2014

Sum of Programmed Funds					
TIP No	Jurisdiction	TIP No2	Project Phase/Type	Project Description	Total
C-4928	Durham	(blank)	Construction	Morreene Road-Bike/Ped Facilities (Neal to Erwin)	$ 1,148,000
		(blank) Total			$ 1,148,000
C-4928 Total					$ 1,148,000
U-4724	Durham	(blank)	Construction	Cornwallis Road - Bike/Ped Facilities (S. Roxboro to University or C. H.)	$ 1,661,000
			Planning/Design	Cornwallis Road - Bike/Ped Facilities (S. Roxboro to University or C. H.)	$ 255,000
				Cornwallis Road - Bike/Ped Facilities (S. Roxboro to University or C. H.)-move to UPWP- U4727 FY12	$ (190,800)
		(blank) Total			$ 1,725,200
U-4724 Total					$ 1,725,200
U-4726	Durham	HK	Construction	Hillandale-Bike/Ped Facilities (I-85 to Fulton)	$ 894,529
			Planning/Design	Hillandale-Bike/Ped Facilities (I-85 to Fulton)	$ 157,858
				Hillandale-Bike/Ped Facilities (I-85 to Fulton)-move to UPWP - U4727 FY12	$ (96,000)
		HK Total			$ 956,387
		HO	Construction	Carpenter Fletcher-Bike/Ped Facilities (Woodcroft to Alston)	$ 684,773
			Planning/Design	Carpenter Fletcher-Bike/Ped Facilities (Woodcroft to Alston)	$ 255,000
				Carpenter Fletcher-Bike/Ped Facilities (Woodcroft to Alston)-move to UPWP FY12	$ (76,000)
		HO Total			$ 863,773
		Hx	Construction	Holloway Street Sidewalks	$ 125,685
		Hx Total			$ 125,685
U-4726 Total					$ 1,945,845
U-4727	DCHC MPO	(blank)	UPWP	FY 2014 UPWP	$ 720,370
		(blank) Total			$ 720,370
U-4727 Total					$ 720,370
Grand Total					$ 5,539,415

DURHAM-CHAPEL HILL-CARRBORO (DCHC) MPO
STPDA Programming Database

Original Fund Type	STP-DA
Extended Program Year	2013

Sum of Programmed Funds					
TIP No	Jurisdiction	TIP No2	Project Phase/Type	Project Description	Total
EB-4707	NCDOT	(blank)	Construction	Old Durham-Chapel Hill Road-Chapel, Durham	$ 3,200,000
			Preliminary Engineering	Old Durham-Chapel Hill Road-Chapel, Durham-partial obligation	$ -
		(blank) Total			$ 3,200,000
EB-4707 Total					$ 3,200,000
U-4726	Carrboro	Dx	Construction	Bel Arbor-Plantation Acres Multi-use Path	$ 67,000
		Dx Total			$ 67,000
	Chapel Hill	IF	Construction	Bolin Creek Stairs - Chapel Hill	$ 100,000
				Bolin Creek Stairs - Chapel Hill-move Morgan Creek Greenway	$ (100,000)
		IF Total			$ -
		IG	Construction	Morgan Creek Greenway - Chapel Hill	$ 560,000
				Morgan Creek Greenway Phase 2 - Chapel Hill -moved from Bolin Creek Greenway	$ 850,000
		IG Total			$ 1,410,000
		Ix	Construction	NC86/other locations of Pedestrian Safety Improvements	$ 150,000
		Ix Total			$ 150,000
U-4726 Total					$ 1,627,000
U-4727	DCHC MPO	(blank)	UPWP	FY 2013 UPWP	$ 1,577,051
				FY 2013 UPWP-add planning/design for Durham construction projects	$ 412,800
		(blank) Total			$ 1,989,851
U-4727 Total					$ 1,989,851
Grand Total					$ 6,816,851

DURHAM-CHAPEL HILL-CARRBORO (DCHC) MPO
STPDA Programming Database

Original Fund Type	STP-DA
Extended Program Year	2012

Sum of Programmed Funds					
TIP No	Jurisdiction	TIP No2	Project Phase/Type	Project Description	Total
E-2921e	Durham	(blank)	Construction	American Tobacco Trail Phase E - Durham, Durham County	$ 4,135,377
		(blank) Total			$ 4,135,377
E-2921e Total					$ 4,135,377
EB-4707	NCDOT	(blank)	ROW	Old Durham-Chapel Hill Road-Chapel, Durham	$ 511,200
		(blank) Total			$ 511,200
EB-4707 Total					$ 511,200
EL-4828	Carrboro	(blank)	Construction	Morgan Creek Greenway - Carrboro	$ 374,120
		(blank) Total			$ 374,120
EL-4828 Total					$ 374,120
SR-5001	Chapel Hill	AR	Construction	CH-Culbreth Rd: Cobble Ridge to Rossburn sidewalk	$ 108,000
		AR Total			$ 108,000
	Durham	C	Construction	Fayetteville Road (Cornwallis to Nelson) bicycle lanes and sidewalks	$ 200,800
		C Total			$ 200,800
SR-5001 Total					$ 308,800
U-4726	Carrboro	DC	Construction	Multi-use path from Wilson Park to Estes Drive	$ 151,816
		DC Total			$ 151,816
		DD	Construction	Rogers Road - Sidewalk (Homestead to Meadow Run)	$ 363,960
		DD Total			$ 363,960
		DE	Construction	Bolin Creek Greenway - Carrboro (Homestead to Chapel Hill HS Greenway	$ 531,000
		DE Total			$ 531,000
		DF	Construction	Bicycle Loop Detectors	$ 30,000
		DF Total			$ 30,000
		Dx	Construction	Bolin Creek Greenway (Jones Creek)	$ 214,700
				S. Greensboro St. - Sidewalk	$ 46,640
		Dx Total			$ 261,340
	Chapel Hill	Ix	Construction	Bolin Creek Greenway - Chapel Hill	$ 750,000
				Bolin Creek Greenway -funds moved for Morgan Creek Greenway	$ (750,000)
				CH-Chapel Hill Sidewalks	$ 320,000
				NC86/other locations of Pedestrian Safety Improvements	$ 150,000
		Ix Total			$ 470,000
	Durham	HL	Construction	Barbee Rd. (Orindo to Pearstown Elementary) Sidewalk	$ 15,680
				DATA Sidewalk	$ 15,840
		HL Total			$ 31,520
		Hx	Construction	Avondale - Sidewalk (I-85 to Geer)	$ 412,000
				Cheek - Bike/Ped Facilities (Geer to Hardee)	$ 556,000

DURHAM-CHAPEL HILL-CARRBORO (DCHC) MPO
STPDA Programming Database

U-4726	Durham	Hx Total			$ 968,000
U-4726 Total					$ 2,807,636
U-4727	Chapel Hill	(blank)	UPWP Amend.	FY 2012 UPWP Amend. #3	$ 30,000
		(blank) Total			$ 30,000
	DCHC MPO	(blank)	UPWP	FY 2012 UPWP	$ 1,533,665
			UPWP Amend.	FY 2012 UPWP Amend. #1-Add planning/design for Durham construction projects	$ 412,800
				FY 2012 UPWP Amend. #4	$ (499,317)
				FY 2012 UPWP Amend. #4 move to FY13	$ (412,800)
		(blank) Total			$ 1,034,348
	Triangle J COG	(blank)	UPWP	FY 2012 UPWP	$ 55,200
				FY 2012 UPWP-Amendment #2 -deobligation	$ (20,000)
		(blank) Total			$ 35,200
U-4727 Total					$ 1,099,548
U-5119	Chapel Hill Trans	(blank)	Construction	NC-86/US 15-501 BRT improvements	$ 452,000
		(blank) Total			$ 452,000
U-5119 Total					$ 452,000
Grand Total					$ 9,688,681

RESOLUTION

TO APPROVE AMENDMENT #5 TO THE FY 2011-2012 UNIFIED PLANNING WORK PROGRAM OF THE DURHAM-CHAPEL HILL-CARRBORO METROPOLITAN PLANNING ORGANIZATION (DCHC MPO)

June 9, 2012

A motion was made by TAC Member _____and seconded by TAC Member _____for the adoption of the following resolution, and upon being put to a vote was duly adopted.

WHEREAS, A comprehensive and continuing transportation planning program must be carried out cooperatively in order to ensure that funds for transportation planning projects are effectively allocated to the DCHC MPO; and

WHEREAS, The Durham-Chapel Hill-Carrboro MPO requests an amendment to the 2011-2012 UPWP as outlined on the attached tables; and

WHEREAS, Members of the Transportation Advisory Committee agree that the Unified Planning Work Program amendment effectively advances transportation planning for 2011-2012.

Now, therefore, be it resolved that the Transportation Advisory Committee hereby endorses Amendment #5 of the Durham-Chapel Hill-Carrboro Urban Area Unified Planning Work Program for the FY 2011-2012 as described in the attached sheets.

I, Lydia E. Lavelle, TAC Chair, do hereby certify that the above is a true and correct copy of an excerpt from the minutes of a meeting of the Durham-Chapel Hill- Carrboro Urban Area Transportation Advisory Committee, duly held on the _____ day of _____, 2012.

_____
Lydia E. Lavelle, TAC Chair

Durham County, North Carolina

I certify that Lydia E. Lavelle personally appeared before me on this day acknowledging to me she signed the foregoing document.

Date: June 9th, 2012

_____
Frederick Brian Rhodes, Notary Public
My commission expires: May 10, 2015

Durham-Chapel Hill-Carrboro Urban Area
FY 2011-2012 Unified Planning Work Program
Proposed Funding Source Tables

Durham Area Transit Authority (DATA)

FIGURES Approved May 11, 2011

	TASK DESCRIPTION	STP-DA 100%	PL 100%	TRANSIT FUNDS Section 5303 100%	Section 5307 100%	Section 5309 100%	Total
II-A	**Surveillance of Change**						
1	Traffic Volume Counts	$ -	$ -	$ -	$ -	$ -	$ -
2	Vehicle Miles of Travel	$ -	$ -	$ -	$ -	$ -	$ -
3	Street System Changes	$ -	$ -	$ -	$ -	$ -	$ -
4	Traffic Accidents	$ -	$ -	$ -	$ -	$ -	$ -
5	**Transit System Data**	$ -	$ -	$ 88,186	$ 14,862	$ -	$ 103,048
6	Dwelling Unit, Pop. & Emp. Change	$ -	$ -	$ -	$ -	$ -	$ -
7	Air Travel	$ -	$ -	$ -	$ -	$ -	$ -
8	Vehicle Occupancy Rates	$ -	$ -	$ -	$ -	$ -	$ -
9	Travel Time Studies	$ -	$ -	$ -	$ -	$ -	$ -
10	Mapping	$ -	$ -	$ -	$ -	$ -	$ -
11	Central Area Parking Inventory	$ -	$ -	$ -	$ -	$ -	$ -
12	Bike & Ped. Facilities Inventory	$ -	$ -	$ -	$ -	$ -	$ -
13	Bike & Ped. Counts	$ -	$ -	$ -	$ -	$ -	$ -
II-B	**Long Range Transp. Plan**						
1	Collection of Base Year Data	$ -	$ -	$ -	$ -	$ -	$ -
2	Collection of Network Data	$ -	$ -	$ -	$ -	$ -	$ -
3	Travel Model Updates	$ -	$ -	$ -	$ -	$ -	$ -
4	Travel Surveys	$ -	$ -	$ -	$ -	$ -	$ -
5	Forecast of Data to Horizon year	$ -	$ -	$ -	$ -	$ -	$ -
6	Community Goals & Objectives	$ -	$ -	$ -	$ -	$ -	$ -
7	Forecast of Futurel Travel Patterns	$ -	$ -	$ -	$ -	$ -	$ -
8	Capacity Deficiency Analysis	$ -	$ -	$ -	$ -	$ -	$ -
9	Highway Element of th LRTP	$ -	$ -	$ -	$ -	$ -	$ -
10	Transit Element of the LRTP	$ -	$ -	$ -	$ 10,762	$ -	$ 10,762
11	Bicycle & Ped. Element of the LRTP	$ -	$ -	$ -	$ -	$ -	$ -
12	Airport/Air Travel Element of LRTP	$ -	$ -	$ -	$ -	$ -	$ -
13	Collector Street Element of LRTP	$ -	$ -	$ -	$ -	$ -	$ -
14	Rail, Water or other mode of LRTP	$ -	$ -	$ -	$ -	$ -	$ -
15	Freight Movement/Mobility Planning	$ -	$ -	$ -	$ -	$ -	$ -
16	Financial Planning	$ -	$ -	$ -	$ 63,342	$ -	$ 63,342
17	Congestion Management Strategies	$ -	$ -	$ -	$ 21,450	$ -	$ 21,450
18	Air Qual. Planning/Conformity Anal.	$ -	$ -	$ -	$ -	$ -	$ -
II-C	**Short Range Transit Planning**						
1	Short Range Transit Planning	$ -	$ -	$ -	$ 96,250	$ -	$ 96,250
III-A	**Planning Work Program**						
1	Planning Work Program	$ -	$ -	$ 32,383	$ -	$ -	$ 32,383
III-B	**Transp. Improvement Plan**						
1	TIP	$ -	$ -	$ 2,594	$ -	$ -	$ 2,594
III-C	**Civil Right Compliance /Other Regulation Requirements**						
1	Title VI	$ -	$ -	$ -	$ -	$ -	$ -
2	Environmental Justice	$ -	$ -	$ -	$ 6,637	$ -	$ 6,637
3	Minority Business Enterprise	$ -	$ -	$ -	$ -	$ -	$ -
4	Planning for the Elderly & Disabled	$ -	$ -	$ -	$ -	$ -	$ -
5	Safety/Drug Control Planning	$ -	$ -	$ -	$ -	$ -	$ -
6	Public Involvement	$ -	$ -	$ 16,822	$ 81,475	$ -	$ 98,297
7	Private Sector Participation	$ -	$ -			$ -	$ -
III-D	**Incidental Planning/Project Development**						
1	Transportation Enhancement Plng.	$ -	$ -	$ -	$ -	$ -	$ -
2	Enviro. Analysis & Pre-TIP Plng.	$ -	$ -	$ -	$ -	$ -	$ -
3	Special Studies	$ -	$ -	$ -	$ -	$ -	$ -
4	Regional or Statewide Planning	$ -	$ -	$ -	$ -	$ -	$ -
III-E	**Management & Operations**						
1	Management & Operations	$ -	$ -	$ -	$ 342,377	$ -	$ 342,377
	TOTALS	$ -	$ -	$ 139,985	$ 637,155	$ -	$ 777,140

Durham-Chapel Hill-Carrboro Urban Area
FY 2011-2012 Unified Planning Work Program

Durham Area Transit Authority (DATA)

Proposed Funding Source Tables

Proposed Changes - UPWP Amendment#5

	TASK DESCRIPTION	STP-DA	PL	TRANSIT FUNDS Section 5303	Section 5307	Section 5309	Total
		100%	100%	100%	100%	100%	
II-A	**Surveillance of Change**						
1	Traffic Volume Counts	-	-	-	-	-	-
2	Vehicle Miles of Travel	-	-	-	-	-	-
3	Street System Changes	-	-	-	-	-	-
4	Traffic Accidents	-	-	-	-	-	-
5	Transit System Data	-	-	(22,177.00)	13,428.00	-	**(8,749.00)**
6	Dwelling Unit, Pop. & Emp. Change	-	-	-	-	-	-
7	Air Travel	-	-	-	-	-	-
8	Vehicle Occupancy Rates	-	-	-	-	-	-
9	Travel Time Studies	-	-	-	-	-	-
10	Mapping	-	-	-	-	-	-
11	Central Area Parking Inventory	-	-	-	-	-	-
12	Bike & Ped. Facilities Inventory	-	-	-	-	-	-
13	Bike & Ped. Counts	-	-	-	-	-	-
II-B	**Long Range Transp. Plan**						
1	Collection of Base Year Data	-	-	-	-	-	-
2	Collection of Network Data	-	-	-	-	-	-
3	Travel Model Updates	-	-	-	-	-	-
4	Travel Surveys	-	-	-	-	-	-
5	Forecast of Data to Horizon year	-	-	-	-	-	-
6	Community Goals & Objectives	-	-	-	-	-	-
7	Forecast of Futurel Travel Patterns	-	-	-	-	-	-
8	Capacity Deficiency Analysis	-	-	-	-	-	-
9	Highway Element of th LRTP	-	-	-	-	-	-
10	Transit Element of the LRTP	-	-	-	(10,762.00)	-	**(10,762.00)**
11	Bicycle & Ped. Element of the LRTP	-	-	-	-	-	-
12	Airport/Air Travel Element of LRTP	-	-	-	-	-	-
13	Collector Street Element of LRTP	-	-	-	-	-	-
14	Rail, Water or other mode of LRTP	-	-	-	-	-	-
15	Freight Movement/Mobility Planning	-	-	-	-	-	-
16	Financial Planning	-	-	-	-	-	-
17	Congestion Management Strategies	-	-	-	(21,450.00)	-	**(21,450.00)**
18	Air Qual. Planning/Conformity Anal.	-	-	-	-	-	-
II-C	**Short Range Transit Planning**						
1	Short Range Transit Planning	-	-	-	(96,250.00)	-	**(96,250.00)**
III-A	**Planning Work Program**						
1	Planning Work Program	-	-	(32,383.00)	-	-	**(32,383.00)**
III-B	**Transp. Improvement Plan**						
1	TIP	-	-	(2,594.00)	-	-	**(2,594.00)**
III-C	**Civil Right Compliance /Other Regulation Requirements**						
1	Title VI	-	-	-	-	-	-
2	Environmental Justice	-	-	-	(6,637.00)	-	**(6,637.00)**
3	Minority Business Enterprise	-	-	-	-	-	-
4	Planning for the Elderly & Disabled	-	-	-	-	-	-
5	Safety/Drug Control Planning	-	-	-	-	-	-
6	Public Involvement	-	-	(16,822.00)	(81,475.00)	-	**(98,297.00)**
7	Private Sector Participation	-	-		-	-	-
III-D	**Incidental Planning/Project Development**						
1	Transportation Enhancement Plng.	-	-	-	-	-	-
2	Enviro. Analysis & Pre-TIP Plng.	-	-	-	-	-	-
3	Special Studies	-	-	-	-	-	-
4	Regional or Statewide Planning	-	-	-	-	-	-
III-E	**Management & Operations**						
1	Management & Operations	$0.00	$0.00	73,976.00	195,870.00	-	**269,846.00**
	TOTALS	**$0.00**	**$0.00**	**$0.00**	**(7,276.00)**	**$0.00**	**(7,276.00)**

Durham-Chapel Hill-Carrboro Urban Area
FY 2011-2012 Unified Planning Work Program
Proposed Funding Source Tables

Durham Area Transit Authority (DATA)

FINAL FIGURES AFTER UPWP AMENDMENT #5

	TASK DESCRIPTION	STP-DA	PL	TRANSIT FUNDS Section 5303	Section 5307	Section 5309	Total
		100%	100%	100%	100%	100%	
II-A	**Surveillance of Change**						
1	Traffic Volume Counts	$ -	$ -	$ -	$ -	$ -	$ -
2	Vehicle Miles of Travel	$ -	$ -	$ -	$ -	$ -	$ -
3	Street System Changes	$ -	$ -	$ -	$ -	$ -	$ -
4	Traffic Accidents	$ -	$ -	$ -	$ -	$ -	$ -
5	Transit System Data	$ -	$ -	$ 66,009	$ 28,290	$ -	$ 94,299
6	Dwelling Unit, Pop. & Emp. Change	$ -	$ -	$ -	$ -	$ -	$ -
7	Air Travel	$ -	$ -	$ -	$ -	$ -	$ -
8	Vehicle Occupancy Rates	$ -	$ -	$ -	$ -	$ -	$ -
9	Travel Time Studies	$ -	$ -	$ -	$ -	$ -	$ -
10	Mapping	$ -	$ -	$ -	$ -	$ -	$ -
11	Central Area Parking Inventory	$ -	$ -	$ -	$ -	$ -	$ -
12	Bike & Ped. Facilities Inventory	$ -	$ -	$ -	$ -	$ -	$ -
13	Bike & Ped. Counts	$ -	$ -	$ -	$ -	$ -	$ -
II-B	**Long Range Transp. Plan**						
1	Collection of Base Year Data	$ -	$ -	$ -	$ -	$ -	$ -
2	Collection of Network Data	$ -	$ -	$ -	$ -	$ -	$ -
3	Travel Model Updates	$ -	$ -	$ -	$ -	$ -	$ -
4	Travel Surveys	$ -	$ -	$ -	$ -	$ -	$ -
5	Forecast of Data to Horizon year	$ -	$ -	$ -	$ -	$ -	$ -
6	Community Goals & Objectives	$ -	$ -	$ -	$ -	$ -	$ -
7	Forecast of Futurel Travel Patterns	$ -	$ -	$ -	$ -	$ -	$ -
8	Capacity Deficiency Analysis	$ -	$ -	$ -	$ -	$ -	$ -
9	Highway Element of th LRTP	$ -	$ -	$ -	$ -	$ -	$ -
10	Transit Element of the LRTP	$ -	$ -	$ -	$ -	$ -	$ -
11	Bicycle & Ped. Element of the LRTP	$ -	$ -	$ -	$ -	$ -	$ -
12	Airport/Air Travel Element of LRTP	$ -	$ -	$ -	$ -	$ -	$ -
13	Collector Street Element of LRTP	$ -	$ -	$ -	$ -	$ -	$ -
14	Rail, Water or other mode of LRTP	$ -	$ -	$ -	$ -	$ -	$ -
15	Freight Movement/Mobility Planning	$ -	$ -	$ -	$ -	$ -	$ -
16	Financial Planning	$ -	$ -	$ -	$ 63,342	$ -	$ 63,342
17	Congestion Management Strategies	$ -	$ -	$ -	$ -	$ -	$ -
18	Air Qual. Planning/Conformity Anal.	$ -	$ -	$ -	$ -	$ -	$ -
II-C	**Short Range Transit Planning**						
1	Short Range Transit Planning	$ -	$ -	$ -	$ -	$ -	$ -
III-A	**Planning Work Program**						
1	Planning Work Program	$ -	$ -	$ -	$ -	$ -	$ -
III-B	**Transp. Improvement Plan**						
1	TIP	$ -	$ -	$ -	$ -	$ -	$ -
III-C	**Civil Right Compliance /Other Regulation Requirements**						
1	Title VI	$ -	$ -	$ -	$ -	$ -	$ -
2	Environmental Justice	$ -	$ -	$ -	$ -	$ -	$ -
3	Minority Business Enterprise	$ -	$ -	$ -	$ -	$ -	$ -
4	Planning for the Elderly & Disabled	$ -	$ -	$ -	$ -	$ -	$ -
5	Safety/Drug Control Planning	$ -	$ -	$ -	$ -	$ -	$ -
6	Public Involvement	$ -	$ -	$ -	$ -	$ -	$ -
7	Private Sector Participation	$ -	$ -			$ -	$ -
III-D	**Incidental Planning/Project Development**						
1	Transportation Enhancement Plng.	$ -	$ -	$ -	$ -	$ -	$ -
2	Enviro. Analysis & Pre-TIP Plng.	$ -	$ -	$ -	$ -	$ -	$ -
3	Special Studies	$ -	$ -	$ -	$ -	$ -	$ -
4	Regional or Statewide Planning	$ -	$ -	$ -	$ -	$ -	$ -
III-E	**Management & Operations**						
1	Management & Operations	$ -	$ -	$ 73,976	$ 538,247	$ -	$ 612,223
	TOTALS	$ -	$ -	$ 139,985	$ 629,879	$ -	$ 769,864

WEST MAIN STREET ROAD DIET AND PAVEMENT MARKING STUDY
and
OAK-POPLAR NEIGHBORHOOD TRAFFIC CIRCULATION STUDY

Prepared For:

Town of Carrboro

Durham-Chapel Hill-Carrboro Metropolitan Planning Organization

February 2012




DRAFT

Prepared By:

MARTIN ALEXIOU BRYSON

Table of Contents

1 Introduction And Background 1
1.1 Purpose of the Study 1
1.2 Project Background and Context 1
1.3 Community Involvement 3
1.4 Background Resources 5
2 West Main Street Road Diet And Pavement Marking Study 5
2.1 Introduction 5
2.2 Road Diet Feasibility and Concept Plan 7
2.3 Traffic Data Collection 9
2.4 Level of Service Analyses 10
3 Oak-Poplar Neighborhood Traffic And Circulation Study 11
3.1 Introduction 11
3.2 Pedestrian Issues 12
3.3 School Circulation Concerns 15
3.4 General Circulation Issues 18
3.5 Potential Solutions 20
Appendix 1: Draft Pavement Marking Plan 23
Appendix 2: Comments from The Public 25
Appendix 3: Synchro and sidra Reports for Study Intersections 27

List of Figures

Figure 1: Study Area 1
Figure 2: Typical West Main Street Cross-Section - Existing 2
Figure 3: Neighborhood Walk Route 3
Figure 4: Neighborhood Walk 4
Figure 5: Public Meeting Map Exercise 4
Figure 6: Roadway Data Gathering 5
Figure 7: Typical Road Diet Before and After Cross-Sections 6
Figure 8: West Main Street - Existing 7
Figure 9: Proposed West Main Street Typical Section 7
Figure 10: Bike Box Example 8
Figure 11: Average Daily Traffic Volume 9
Figure 12: Level of Service Analysis 10
Figure 13: Multimodalism on Oak Avenue 12
Figure 14: Oak-Poplar Pedestrian Issues 13
Figure 15: Missing Sidewalks on Shelton Street 14
Figure 16: Pedestrian Crossing West Main Street 14
Figure 17: Oak Ave. and N. Greensboro St. Intersection 15
Figure 18: School Circulation Concerns 16

Figure 19: Carrboro Elementary Drop-Off Circle 16
Figure 20: Pavement Markings on Shelton Street 17
Figure 21: Intersection of West Main Street, Hillsborough Road, and Shelton Street 18
Figure 22: Traffic on Poplar Avenue 18
Figure 23: General Circulation Issues 19
Figure 24: Chicane Example 20
Figure 25: Road Diet Typical Section 23
Figure 26: Bike Box Concept 23
Figure 27: Road Diet Pavement Marking Plan 24

List of Tables

Table 1: Peak Period Intersection Level of Service Results 11
Table 2: Potential Solutions Matrix 21

1 INTRODUCTION AND BACKGROUND

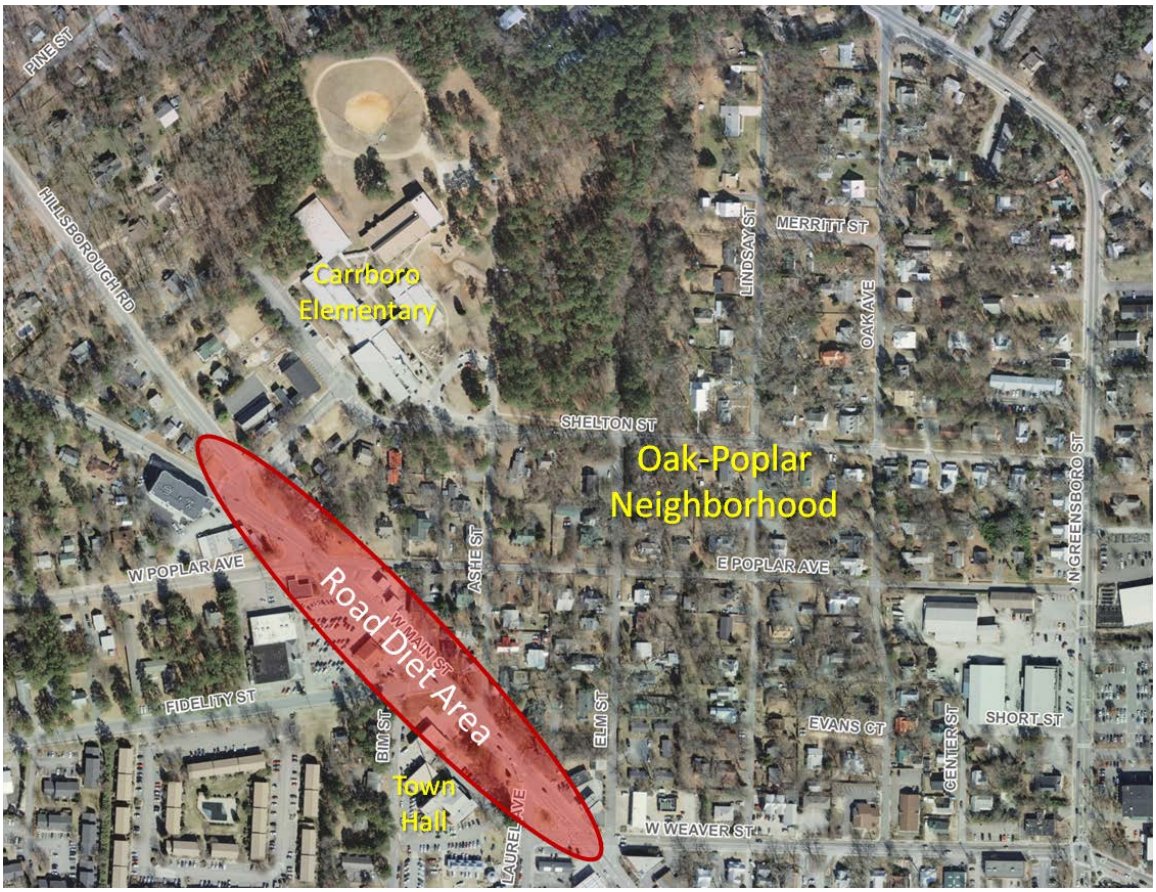
1.1 Purpose of the Study

This study was developed to provide recommendations to address existing and projected multimodal deficiencies for West Main Street between Weaver Street and Hillsborough Road in Carrboro, NC and address traffic concerns in the Oak-Poplar neighborhood. This study has two main parts. The first part is a set of road design recommendations, including a pavement marking and signage plan, for West Main Street. The second part of the study identifies existing and projected traffic and circulation concerns in the adjacent Oak-Poplar neighborhood and provides recommendations for the Town of Carrboro to explore to mitigate traffic issues.

1.2 Project Background and Context

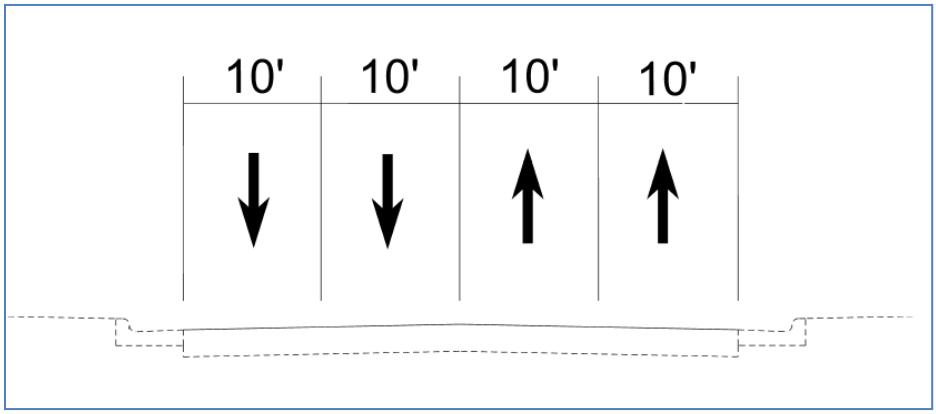
West Main Street is an important street for Carrboro residents, connecting neighborhoods on the west side of town with downtown and providing access to Town Hall and the popular Farmer's Market. West Main Street is listed as State Route 1010. The Study Area for the first part of the project covers the section of West Main Street between Hillsborough Road to the north and Weaver Street to the south. The Study Area for the second portion of this project is the adjacent Oak-Poplar neighborhood which is roughly bounded by West Main Street to the west, Carrboro Elementary and North Greensboro Street to the north, North Greensboro Street to the east, and Weaver Street to the south (see Figure 1).

Figure 1: Study Area



The typical cross-section for the portion of West Main Street in the Study Area is two travel lanes in each direction (see Figure 2). Immediately to the north and south of the Study Area, West Main Street has only one travel lane in each direction. This section of West Main Street does not contain any facilities dedicated to bicyclists. Immediately to the north of the study area, there are bicycle lanes on both sides of West Main Street and Hillsborough Road. There are also bicycle lanes on both sides of Weaver Street east of the Study Area, Poplar Avenue to the west, and a section of West Main Street further south outside of the study area (after the intersection with Jones Ferry Road). Thus, the section of West Main Street in the Study Area represents a gap in the existing bicycle lane network.

Figure 2: Typical West Main Street Cross-Section - Existing



The pavement marking portion of the study analyzed possible "road diet" alignments for West Main Street that would reduce the travel lanes to one in each direction plus provide a continuous, two-way turn lane. This alignment allows room for bike lanes in each direction. The road diet cross-section would also be consistent with immediately adjacent sections of West Main Street. It is anticipatd that changes to the pavement markings associated with a road diet will be implemented after a scheduled resurfacing of West Main Street; therefore no additional costs are associated with the removal of the existing pavement markings in the study area.

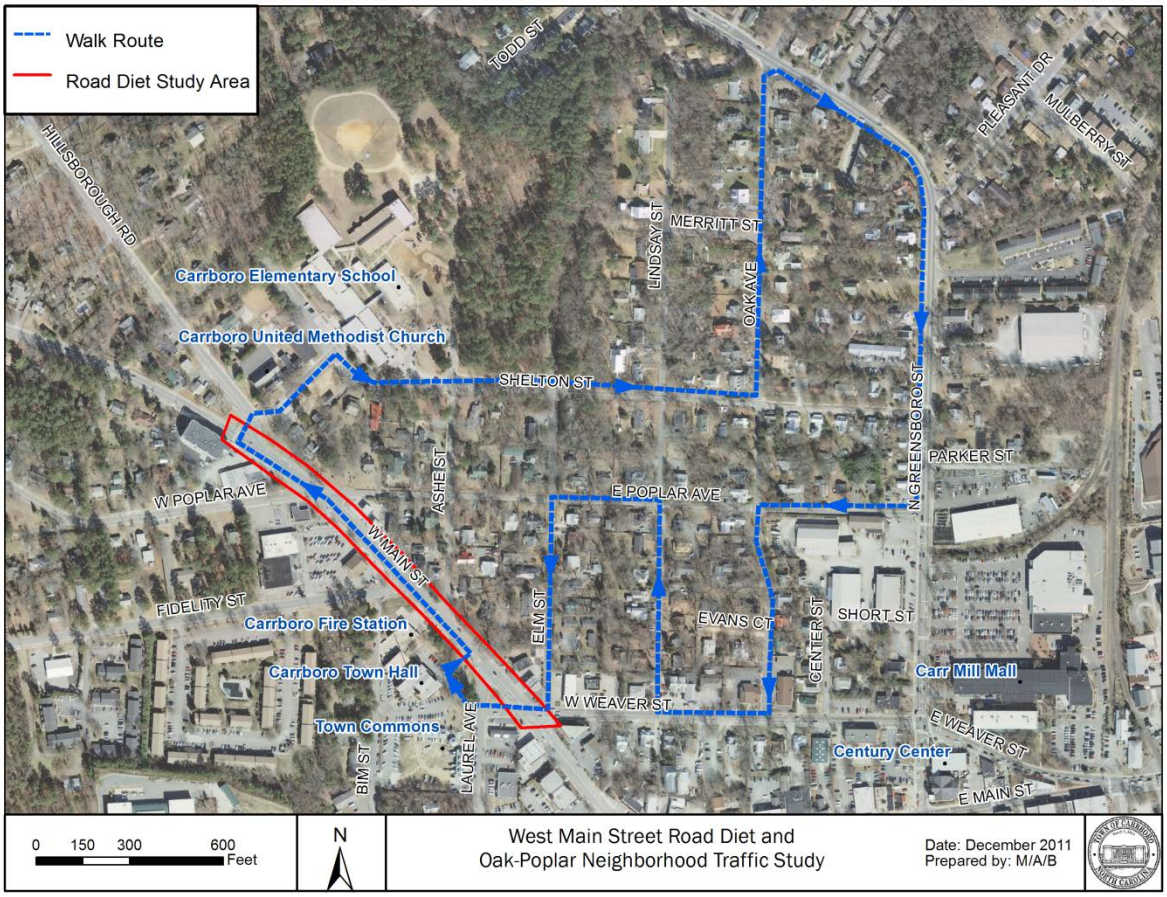
The second portion of the study concerns the 15-block Oak-Poplar neighborhood immediately adjacent to the section of West Main Street in the first part of the study. This neighborhood is residential in character and contains Carrboro Elementary School. The main roads within the neighborhood include Shelton Street (which has a one block, one-way section, westbound between Ashe Street and Hillsborough Road), Poplar Avenue (one-way eastbound), Ashe Street (which has a one block, one-way section, northbound between Poplar Avenue and Shelton Street), Elm Street, Lindsay Street, and Oak Avenue.

The Oak-Poplar Neighborhood Traffic and Circulation Study identified concerns and issues relating to transportation within the neighborhood and any possible impacts that might result from a road diet on West Main Street. This portion of the study includes preliminary recommendations for low-cost, high-yield changes to transportation infrastructure in the neighborhood to improve traffic and circulation issues. Like the road diet portion of the study, this neighborhood traffic study will be focused on multimodal solutions.

1.3 Community Involvement

A critical component of this study is involvement from the community to ensure the issues and concerns that are most important to the neighborhood residents are addressed and that potential solutions will comport with the expectations and desires of the community. In order to foster strong public participation, the project team held a neighborhood walk on November 3, 2011, and a public meeting on December 5, 2011. The neighborhood walk took place at 5:30 pm on a Thursday evening and had ten participants from the neighborhood (see Figure 4). The walk started and ended at Town Hall and took the route shown in Figure 3 through the Oak-Poplar neighborhood. The walk took about an hour and provided detailed feedback from community members on trouble spots, traffic concerns, and neighborhood transportation issues. Project team members also had a chance to ask questions of community members to gauge the importance of different circulation issues in the community.

Figure 3: Neighborhood Walk Route



The public meeting was held on a Monday night at 5:30 pm, at Carrboro Elementary School. Eleven members of the public were present. The meeting lasted about two and a half hours, including time at the beginning and end of the meeting where project team members were available for more informal, one-on-one discussions with community members. The presentation from the project team, which included ample opportunities for comments and feedback from members of the public, took about an hour and a half. The presentation contained a draft pavement marking plan for a road diet on West Main Street and a summary of

feedback and neighborhood traffic concerns heard to date. Figure 5 shows a neighborhood map with participant comments that was part of the public meeting process.

Figure 4: Neighborhood Walk

The neighborhood walk and public meeting generated a number of comments from members of the public about various neighborhood transportation concerns. In addition to input at the walk and the public meeting, a number of comments were received, via email, by project staff. A summary of the comments received regarding the road diet plan and traffic concerns in the Oak-Poplar neighborhood is contained in Appendix 2.

Figure 5: Public Meeting Map Exercise

1.4 Background Resources

In addition to feedback from the public, the project team utilized a number of other resources in this study. Town of Carrboro staff members provided input and their professional judgment of various options. M/A/B staff collected traffic count data, including for pedestrians and bicyclists, along the West Main Street Study Area section. M/A/B staff also made neighborhood traffic observations independent of the neighborhood walk in order to better understand transportation issues in the Oak-Poplar neighborhood (see Figure 6).

Figure 6: Roadway Data Gathering

In addition to community engagement, independent observation, and Town input, M/A/B staff examined existing Town of Carrboro plans and policies to ensure that recommendations are in accordance with other plans and goals. Plans and policies that have been reviewed include:

- Draft Safe Routes to School Strategic Action Plan (December, 2010)
- Town of Carrboro Comprehensive Bicycle Transportation Plan (March, 2009)
- Town of Carrboro Sidewalk Bond Referendum Project List

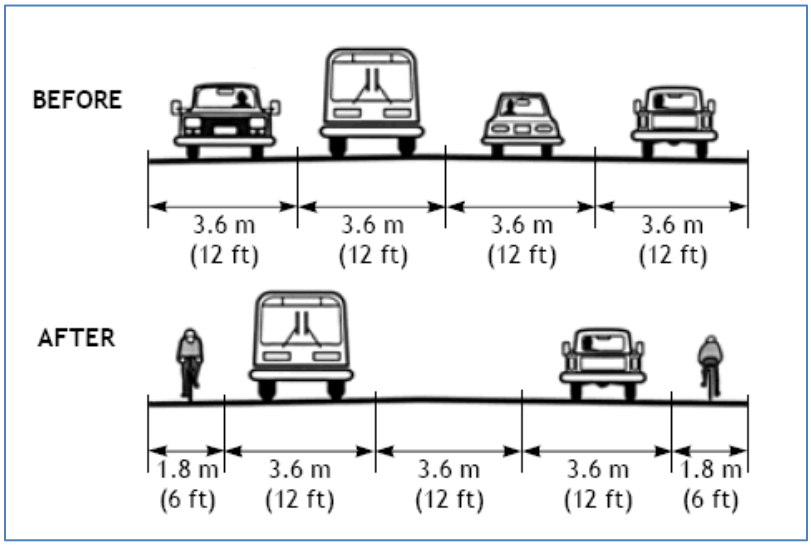
2 WEST MAIN STREET ROAD DIET AND PAVEMENT MARKING STUDY

2.1 Introduction

A road diet is a form of road engineering wherein travel lanes (and sometimes lane width) are reduced in order to improve traffic flow, road safety, and to better accommodate pedestrians and bicyclists. A common road diet is to replace a four lane cross-section (two travel lanes in each direction) with a cross-section featuring two travel lanes (one in each direction), a two-way, center turn lane, and the either bike lanes or on-street parking. The concept can have safety benefits for drivers, pedestrians, and bicyclists. By reducing lanes, drivers no longer can switch lanes and weave around traffic. Average travel speed is often reduced as traffic flows at the speed of the slowest driver. Pedestrians benefit from fewer lanes to cross when crossing the street. If bike lanes are added as part of the road diet, then bicyclists benefit from the additional

infrastructure, reduced vehicle speeds, and the elimination of lane changing. Road diets are also a cost-effective traffic control measure because they do not involve moving curbs and gutters, merely restriping a road section. Typically, the restriping is scheduled to be done after the road is resurfaced, which makes the marginal cost of the road diet essentially zero because the pavement markings would have to be repainted anyway and the only change is the pavement marking design. This is what is proposed on West Main Street. Average daily traffic typically should be less than 20,000 cars per day for a road diet to work. Figure 7 shows typical before and after cross-sections. Figure 8 shows the existing conditions on West Main Street.

Figure 7: Typical Road Diet Before and After Cross-Sections



Source: FHWA

Analyses were performed to assess the feasibility and traffic impacts of a road diet on West Main Street between Weaver Street and Hillsborough Road. Traffic analyses were performed to assess the existing traffic conditions on West Main Street and the conditions anticipated to result should the proposed road diet be implemented. Peak period intersection level of service analyses were performed using traffic data collected in the fall of 2011. To illustrate the potential layout of West Main Street, a concept pavement marking plan was prepared. The findings of the analyses indicate that the pavement markings on West Main Street could be modified to provide a travel lane each direction, a center two-way left-turn lane, and bike lanes on each side of the street and still provide acceptable levels of service at the intersections in the study area. The Town is considering possibly extending the road diet beyond the study area extent south of Weaver Street between Weaver Street and Jones Ferry Road. Based on our assessment, this would likely be feasible.

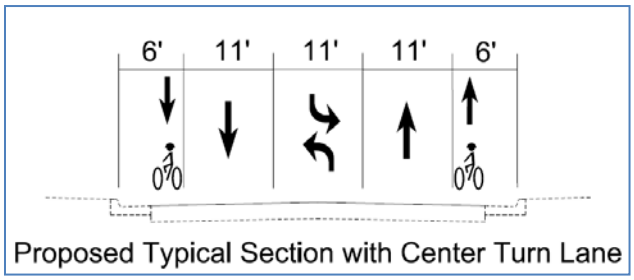
Chapel Hill Transit currently provides transit service on West Main Street on the CW Route. The headways are approximately 30 minutes during peak hours, 60 minutes during off-peak hours, and 90 minutes on Saturdays. It is not anticipated that a road diet on West Main Street would have any impact on transit service or operations nor are any modification to the transit service proposed as part of the road diet.

Figure 8: West Main Street - Existing

2.2 Road Diet Feasibility and Concept Plan

The goal of the road diet for West Main Street is to provide two travel lanes in each direction, a center two-way left-turn lane, and a bike lane in each direction between Weaver Street and Hillsborough Road without widening the existing road. The existing typical section of West Main Street includes two travel lanes in each direction between Weaver Street and Hillsborough Road. North of Hillsborough Road the typical section includes one travel lane in each direction with marked bike lanes in each direction. Field measurements indicate that the desired typical section can be accommodated within the existing curb to curb width of West Main Street. A concept plan for the road diet pavement markings is included in Appendix 1. The typical section that could potentially result from the road diet is illustrated below in Figure 9. It is anticipated that any new pavement markings associated with a road diet will be implemented after a scheduled resurfacing of West Main Street and would therefore not require any additional cost to remove the existing marking or to install the new markings. It is also anticipated that the speed limit on West Main Street will not be reduced as part of the road diet.

Figure 9: Proposed West Main Street Typical Section



It is anticipated that the adjustments in the lane markings on West Main Street due to a road diet may require that the existing traffic signal heads be adjusted to properly align with the approaching vehicles on southbound West Main Street at the intersection with West Weaver Street. The existing traffic signal at the intersection is pre-timed (does not include any vehicle detector loops); therefore no adjustments for vehicle detection will be required.

The draft pavement markings plan also shows a bike box on West Main Street at the intersection with Weaver Street. A bike box can be installed at intersections to allow bicyclists to move to the front of the queue, which improves the visibility of bicyclists to motorists and improves the safety of left and right bicycle turning movements (see Figure 10). Bicyclists can position themselves to more easily make left turns without having to merge into traffic, and the bike box would be painted a solid color to increase visibility. The safety of right turning movements is also improved as motorists are prohibited from turning right on red and are less likely to conflict with bicycle through traffic when turning right on green. Bicycle boxes are relatively new and not yet included within the MUTCD or AASHTO guidelines. Cities such as Portland, Minneapolis, and New York City have successfully implemented bike boxes. Because of the geometry of the intersection at West Main Street and Weaver Street and the relatively low volume of traffic, a bike box is not recommended at this location, although it was examined as an option. If a bike box were to be provided, then it would be painted a solid color to contrast with the asphalt, and consideration could also be given to painting the entire bike lane a solid color to improve visibility (as shown in the bike box example in Figure 10); this would entail higher maintenance costs and require approval from NCDOT.

Figure 10: Bike Box Example

Source: stelsewhere.blogspot.com

2.3 Traffic Data Collection

In order to assess the traffic impacts of a road diet, peak period intersection turning volumes were collected at the following intersections:

- West Main Street at Weaver Street
- West Main Street at Ashe Street
- West Main Street at Fidelity Street
- West Main Street at Poplar Avenue
- West Main Street at Hillsborough Road

West Weaver Street was closed to traffic at the time the traffic data was collected; therefore the data was adjusted based on historical traffic data to reflect conditions that would have been typical with Weaver Street open to traffic.

Daily traffic volume data were also provided by the Town of Carrboro. The daily traffic volumes range from approximately 6,300 vehicles per day between Weaver Street and Ashe Street to approximately 6,000 vehicles per day between Poplar Avenue and Hillsborough Road. Daily traffic volumes are illustrated below in Figure 11.

Figure 11: Average Daily Traffic Volume

*Note that traffic volume data was collected when East Weaver Street was closed. Traffic volumes on West Main Street north of Weaver Street may exceed the volumes indicated in the figure above after Weaver Street is opened to traffic.

2.4 Level of Service Analyses

Peak period intersection level of service analyses were performed for existing conditions on West Main Street and for the conditions anticipated to result should a road diet be implemented. Analyses were also performed to assess the impact of converting the signalized intersection of West Main Street at West Weaver Street to roundabout in addition to implementing a road diet. The results of the level of service (LOS) analyses are illustrated below in Figure 12 and detailed in Table 1.

The analyses indicated that all of the intersections in the study area are currently operating at acceptable (LOS A and B) levels of service during the A.M. peak hour and during the P.M. peak hour of traffic and would be expected to continue to operate at acceptable LOS should the road diet be implemented. The analyses also indicate that the approaches of West Main Street, West Weaver Street, and Elm Street would operate at acceptable LOS if the existing intersections of those streets were to be converted to a roundabout. While the analyses indicated that traffic operations should be acceptable with a roundabout, impacts on adjacent properties and driveways should be more fully assessed before making a recommendation to construct a roundabout at this location. The peak period intersection turning volumes and detailed traffic analysis reports from *Synchro* (intersection analyses) and *Sidra* (roundabout analyses) are provided in Appendix 3.

Implementation of the road diet concept will require that detailed pavement marking plans and traffic signal modification plans (if necessary) be submitted to NCDOT for approval. The necessary design documents will be prepared following the selection of the preferred road diet options by the Town.

Figure 12: Level of Service Analysis

Table 1: Peak Period Intersection Level of Service Results

West Main Street Intersection	Traffic Control	Existing (2011)		Road Diet (2011)	
		AM	PM	AM	PM
Hillsborough Road	Unsignalized	(WB-B)	(WB-B)	(WB-B)	(WB-B)
Poplar Avenue	Unsignalized	(EB-B)	(EB-B)	(EB-B)	(EB-B)
Fidelity Street	Unsignalized	(EB-B)	(EB-B)	(EB-B)	(EB-B)
Ashe Street	Unsignalized	(SB-A)	(WB-A)	(WB-A)	(WB-B)
Weaver Street	Signalized	B (SB-B)	B (NB-B)	B (SB-B)	B (NB-B)
Elm Street	Unsignalized	(SB-A)	(SB-B)	(SB-A)	(SB-B)
Weaver Street/Elm Street Roundabout	Roundabout	-	-	A (SB-A)	A (SB-A)

Legend: X (X-X) = overall intersection LOS for signalized intersection (worst approach – worst approach LOS)
X = Worst LOS for uncontrolled approach at unsignalized intersection

3 OAK-POPLAR NEIGHBORHOOD TRAFFIC AND CIRCULATION STUDY

3.1 Introduction

The Oak-Poplar neighborhood is roughly bounded by West Main Street to the west, Carrboro Elementary and North Greensboro Street to the north, North Greensboro Street to the east, and Weaver Street to the south. It is a mostly residential neighborhood that also includes Carrboro Elementary School, located on Shelton Street. The main roads within the neighborhood include Shelton Street (which has a one block, one-way section, westbound between Ashe Street and Hillsborough Road), Poplar Avenue (one-way eastbound), Ashe Street (which has a one block, one-way section, northbound between Poplar Avenue and Shelton Street), Elm Street, Lindsay Street, and Oak Avenue. The neighborhood streets are primarily arranged in a grid pattern with some variation, particularly at edges to the neighborhood.

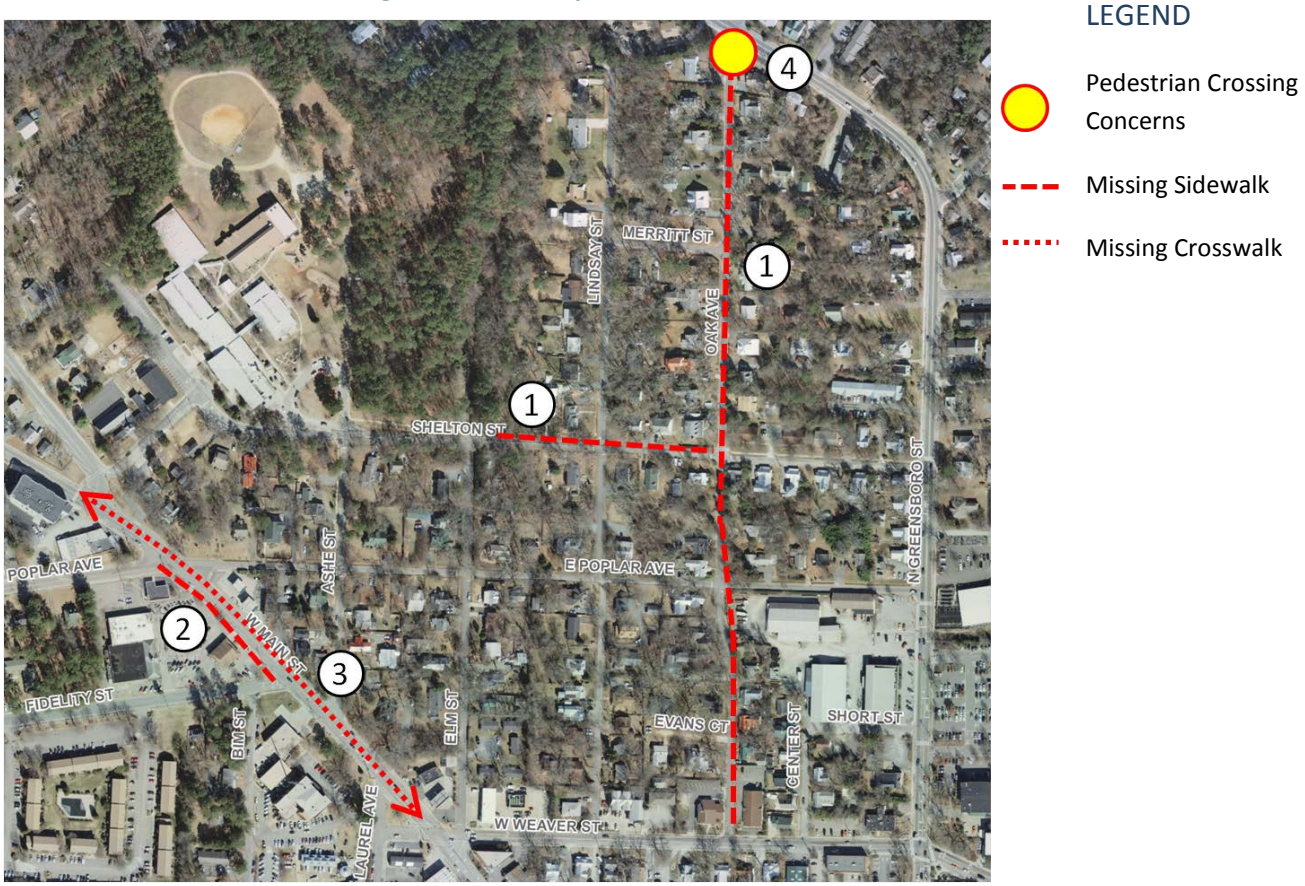
Because the Oak-Poplar neighborhood is older, many of its roads were designed and constructed prior to current engineering standards. Therefore, many of the roads in the neighborhood are narrower than typical roads, and most road segments do not have sidewalks. Additionally, the right-of-way is sometimes narrow on neighborhood streets with houses, trees, and utility poles occasionally close to the roadway. All of this complicates possible multimodal transportation facility improvements, and currently bicyclists, pedestrians, and vehicles often share the same space (see Figure 13). Residents of the neighborhood have voiced a number of concerns about traffic and transportation issues in the neighborhood, which are discussed below grouped by type of concern.

Figure 13: Multimodalism on Oak Avenue

3.2 Pedestrian Issues

Figure 14 shows pedestrian issues identified in the Oak-Poplar neighborhood. Most of the roads within the Oak-Poplar community do not have sidewalks. Ashe Street has a sidewalk on the block between Poplar Avenue and Shelton Street. Shelton Street has sidewalks, except for the portion between the greenway and Oak Avenue. Major roads in the area (North Greensboro Street, Weaver Street, and West Main Street) all have sidewalks on both sides, except for missing segments on the west side of West Main Street between Fidelity Street and Poplar Avenue. Many of the neighborhood streets in this segment are narrow and most lack curbs, meaning pedestrians and vehicles are not separated and travel close to each other.

Figure 14: Oak-Poplar Pedestrian Issues



Based on comments from the public and observations, the lack of sidewalks on key neighborhood roads, Shelton Street and Oak Avenue, was the biggest complaint (Number 1 in Figure 14 and Figure 15). According to members of the neighborhood, these two roads are frequently used by pedestrians both in the neighborhood and by residents outside the neighborhood to cross through the Oak-Poplar neighborhood. Additionally, Carrboro Elementary School is located at the western end of Shelton Street.

On West Main Street, there is a gap in the sidewalk on the western side between Fidelity Street and Poplar Avenue (Number 2 in Figure 14). There is some space to walk in the fitness center parking lot and the chiropractor's office driveway to avoid walking in the street; even so, this section is not very accommodating to pedestrians, particularly those with disabilities or pedestrians with strollers. Additionally, there are no crosswalks on West Main Street between Hillsborough Road and Weaver Street (Number 3 in Figure 14 and Figure 16). This was the top issue cited in public comments concerning West Main Street. Several commenters requested well-marked crosswalks like those on North Greensboro Street at Shelton Street. A road diet would reduce the number of vehicle travel lanes to cross at a mid-block crossing, but would also mean crossing bike lanes and in this case does not reduce the overall width of the crossing. A refuge island in the center or a raised median could potentially be added which could make it more feasible to provide a mid-block crosswalk.

Figure 15: Missing Sidewalks on Shelton Street

Figure 16: Pedestrian Crossing West Main Street

In addition to the pedestrian crossing issues along West Main Street, there were concerns raised about the intersection of Oak Avenue and North Greensboro Street. There is no marked pedestrian crossing here, either for pedestrians trying to cross Oak Avenue while traveling along North Greensboro Street or for pedestrians seeking to cross North Greensboro Street; the closest crossings of North Greensboro Street are Estes Drive to

the west and Shelton Street to the south. There is a striped yellow triangle which attempts to demarcate a traffic island, but this is faded (see Number 4 in Figure 14 and Figure 17). Cars can turn from North Greensboro Street into Oak Avenue at a high speed and pedestrians walking along North Greensboro Street do not have a raised pedestrian refuge while crossing Oak Avenue.

Figure 17: Oak Ave. and N. Greensboro St. Intersection

3.3 School Circulation Concerns

There are a number of circulation issues that are specific to the blocks adjacent to Carrboro Elementary School, and the concerns are largely as a result of trips generated going to and from the school (see Figure 18). Perhaps the primary issue cited here is the lack of traffic control for cars leaving the drop-off circle at Ashe Street and Shelton Street (Number 5 in Figure 18 and Figure 19). The other two streets at the intersection, northbound Ashe Street (one-way) and westbound Shelton Street (one-way west of the intersection), have stops signs. When school is starting or letting out, there is a traffic guard here who helps direct traffic. However, at other times of day, there is no clear indication of how a car leaving the traffic circle should proceed. The lack of appropriate controls may leave drivers unclear whether to stop, yield, or do neither.

Figure 18: School Circulation Concerns

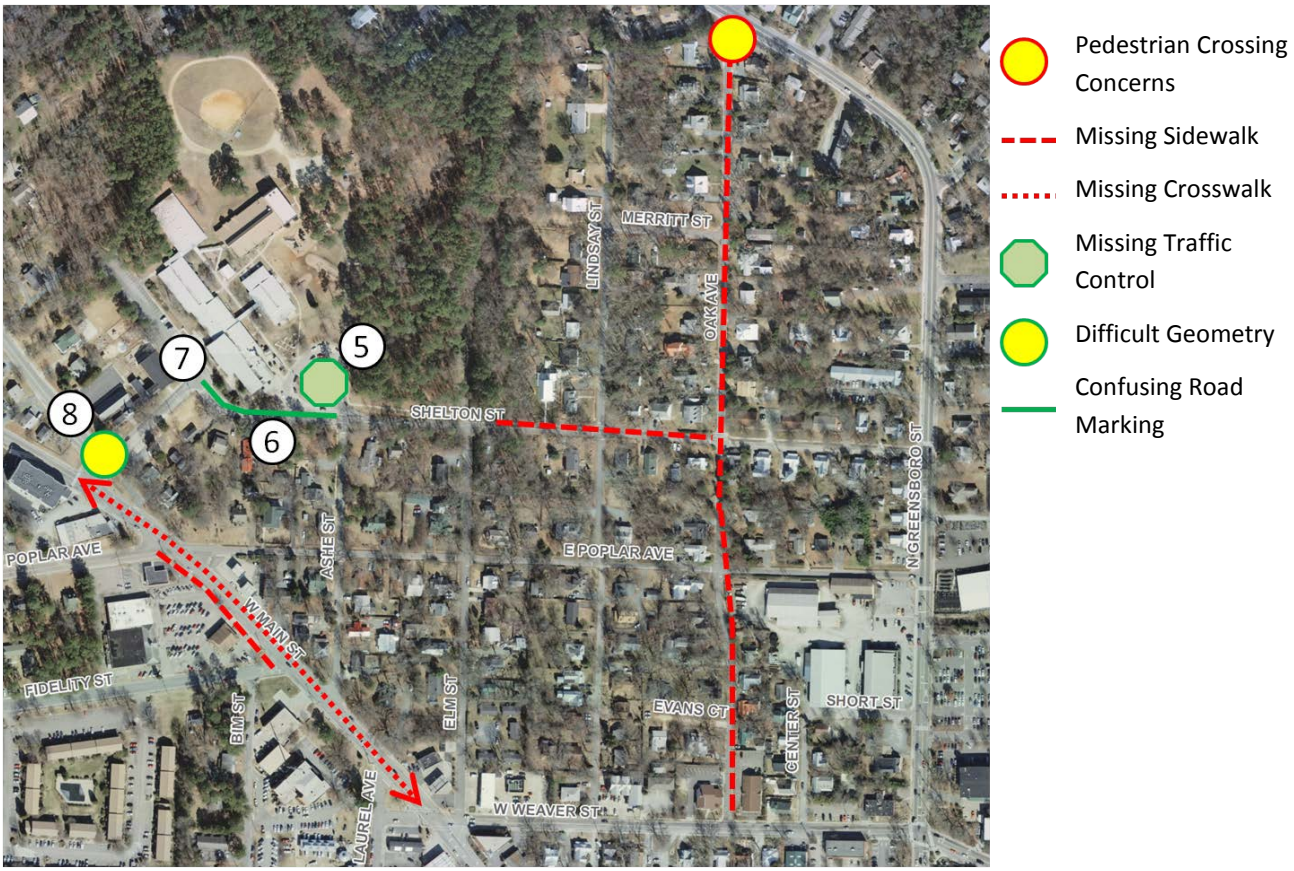


Figure 19: Carrboro Elementary Drop-Off Circle

Shelton Street in front of the school also can be confusing for drivers (Number 6 in Figure 18 and Figure 20). Approaching the school (i.e., east of Ashe Street), Shelton Street is two-way. However, it is one-way in front of

the school with a solid white line separating two lanes. First, it is unclear, initially, that there are two available travel lanes. Second, it is implied from the solid line that it is improper to change lanes. Third, when the two lanes reach a stop sign at the turn in the road on Shelton Street, both lanes are allowed to turn left, yet only one lane exists into which to turn left (Number 7 in Figure 18). This set-up is most likely to aid in pick-up and drop-off during school times when traffic flow is assisted by guards, but it leads to a confusing couple blocks at other times.

Figure 20: Pavement Markings on Shelton Street

The third primary issue around Carrboro Elementary is the road geometry at the intersection of Shelton Street, Hillsborough Road, and West Main Street (Number 8 in Figure 18 and Figure 21). Shelton Street intersects with Hillsborough Road only a few feet from where Hillsborough Road intersects with West Main Street. This leads to a situation where traffic during school drop-off and pick-up times is not permitted to take a left-turn from Shelton Street onto Hillsborough Road because there is not enough queuing space. Some of these cars that are forced to take a right-turn cut through a private driveway on Hillsborough Road to reach West Main Street, despite posted signs directing drivers that the driveway is private and should not be entered. The traffic flow is better here at non-school peak times because there is space for cars to queue up on Shelton Street if needed. Additionally, residents noted some accidents at this intersection because they believe drivers traveling south on Hillsborough Road failed to notice the curve in the road just before the stop sign at Main Street.

Figure 21: Intersection of West Main Street, Hillsborough Road, and Shelton Street

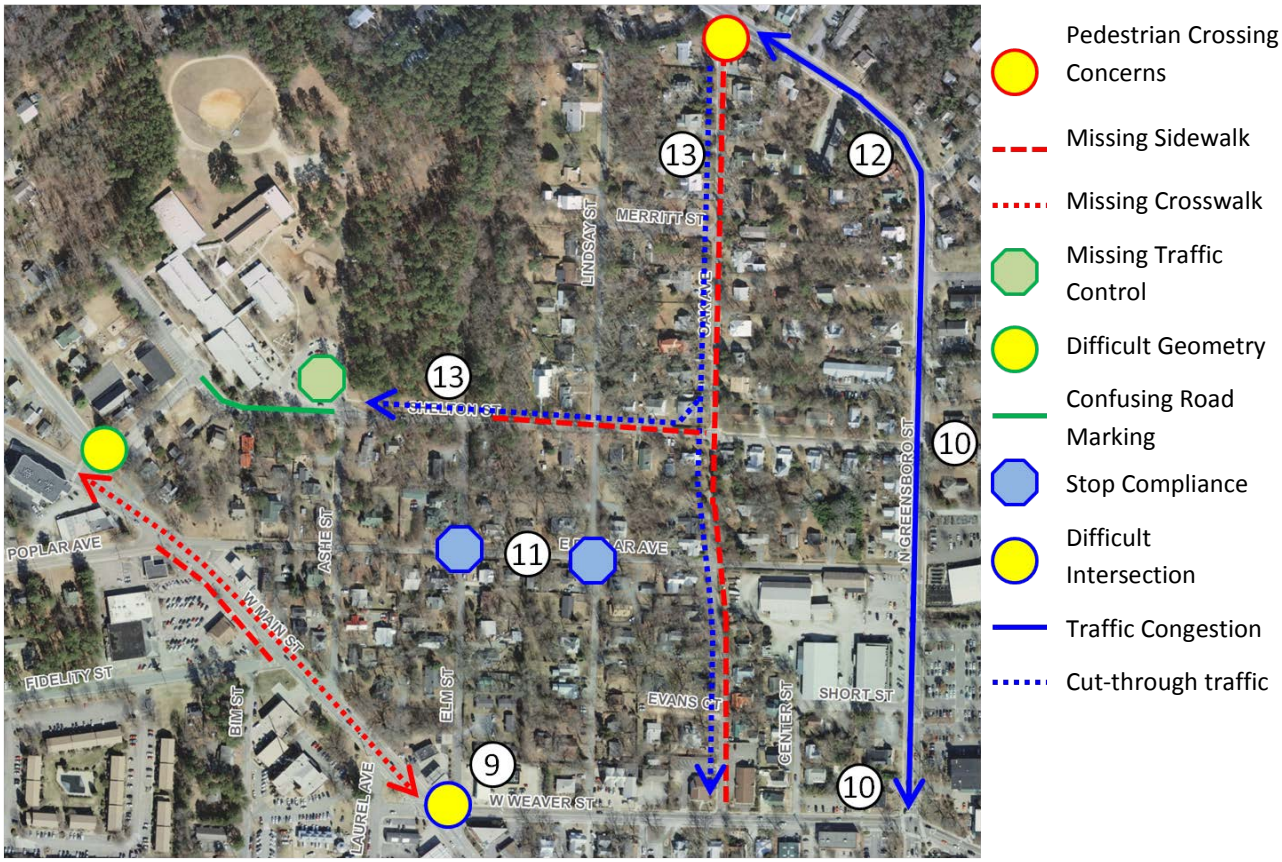
3.4 General Circulation Issues

There are some additional neighborhood traffic and circulation issues which have been highlighted by the public and the project team for additional attention (see Figure 23). A number of public comments cited cut-through traffic as an issue affecting the Oak-Poplar neighborhood. The primary roads that were mentioned as having cut-through traffic were Shelton Street and Oak Avenue, which makes sense based on the road characteristics. These two roads allow drivers to avoid downtown Carrboro when traveling from the north to the west or vice versa (Number 13 in Figure 23 and Figure 22).

Figure 22: Traffic on Poplar Avenue

A number of comments concerned failure to comply with stop signs throughout the Oak-Poplar neighborhood (Number 11 in Figure 23). There are no traffic signals within the neighborhood and all intersections are controlled with stop signs. Many of the public comments received noted that a number of drivers in the neighborhood fail to stop at stop signs and many fail to slow down much at all.

Figure 23: General Circulation Issues



The intersection at Elm Street, West Main Street, and Weaver Street is another intersection with odd geometry (Number 9 in Figure 23). Elm Street intersects with Weaver Street within a few feet of the signalized Weaver Street and West Main Street intersection. There is confusing signage on Weaver Street regarding whether right turns onto West Main Street are permitted during red light cycles. The sign, placed before Elm Street, states, "Stop Here on Red," in order to prevent queued vehicles from blocking Elm Street. However, it is not clear whether drivers can proceed forward to the Main Street intersection to take a right turn if that action would not block Elm Street. All turning movements into and out of Elm Street at this location were noted by some members of the public as difficult.

Traffic on North Greensboro Street can be heavy at peak travel times and queues from the traffic signal at Weaver Street and North Greensboro Street can stretch back to Poplar Avenue (Number 12 in Figure 23). The congestion on this section of North Greensboro Street may be encouraging cut-through traffic into the Oak-Poplar neighborhood to avoid the North Greensboro Street and Weaver Street intersection. Exiting the Oak-Poplar neighborhood at peak travel times can be difficult using any of the eastern egress points – Poplar Avenue, Shelton Street, or Oak Avenue. In particular, left turns to travel northbound on North Greensboro Street were noted by members of the public as particularly hard.

Connected with concerns about traffic on North Greensboro Street, there were many comments received about possible new developments on North Greensboro Street and the potential traffic impacts for the neighborhood resulting from these new developments (Number 10 in Figure 23). The two development proposals currently being considered are for a mixed-use development featuring over 100 apartment units (proposed for North Greensboro Street across from Shelton Street) and a CVS drug store at the corner of Weaver Street and North Greensboro Street. As part of the development review process, the impacts to the surrounding transportation network will be identified and addressed.

3.5 Potential Solutions

There are a variety of possible traffic measures for the Oak-Poplar neighborhood to address the traffic and circulation concerns identified by this study. These possible measures are shown below in a matrix in Table 2, but many need more extensive investigation to determine their feasibility and the possible traffic effects. Note that measures which change traffic patterns on one street may increase traffic on adjacent neighborhood streets.

The matrix shows problems addressed by each potential treatment, expected outcomes, next steps needed to implement the treatment, and a qualitative assessment of affordability, feasibility, and effectiveness. It is important to stress that these qualitative assessments are a high-level expectation based on neighborhood observations and similar projects in other locations; the actual assessment of the project may change after more detailed study of the unique planning and engineering elements of each treatment.

Each qualitative assessment category contains one to three plus signs denoting whether the treatment scores lowly (one plus mark), highly (three plus marks), or somewhere in the middle (two plus marks) for that category. Affordability scores are classified as: + means greater than $50,000 expected cost, ++ means between $10,000 and $50,000 expected cost, and +++ means less than $10,000 expected cost (note: detailed cost estimates were not completed for this study). Feasibility is a low (+), medium (++), or high (+++) ranking of the engineering, technical, and approval challenges posed by the project. Effectiveness is a low (+), medium (++), or high (+++) assessment of the degree to which the potential treatment solves the particular problems it seeks to address.

For example, a chicane on Shelton Street (introducing a horizontal “jog” or shift into an otherwise straight section of roadway) scores “+” for affordability, “+” for feasibility, and “++” for effectiveness. This means that this type of treatment is expected to cost more than $50,000, have a high degree of engineering and/or regulatory approval concerns, and be moderately effective at accomplishing the stated goals, in this case reducing traffic speeds. For an example of a chicane, see Figure 24.

Figure 24: Chicane Example

Source: walkinginfo.org

Table 2: Potential Solutions Matrix

Potential Solution	Problem(s) Addressed	Expected Outcomes and Impacts	Affordability [1]	Feasibility [1]	Effectiveness [1]	Next Steps
Oak Avenue One-Way	▪ Cut through traffic ▪ Limited space for autos and pedestrians on Oak Avenue	▪ Less cut through traffic ▪ Increased travel distance for residents ▪ Possible level of service impacts at intersections	++	+	++	Detailed Traffic Impact Analysis report
Traffic calming: traffic humps or speed tables on Oak Avenue	▪ Speeding ▪ Cut through traffic	▪ Slower traffic	++	++	++	Detailed engineering study on possible locations
Traffic calming: chicanes or traffic circles on Shelton Street	▪ Speeding ▪ Cut through traffic	▪ Slower traffic	+	+	++	Detailed treatment location / traffic impact study
Raised Pedestrian Islands at the North Greensboro Street and Oak Avenue intersection and the West Main Street and Weaver Street intersection	▪ Pedestrian discomfort at crossings	▪ Slower traffic ▪ Safer pedestrian crossings	++	+++	++	Town and NCDOT approval
Close Elm Street and Weaver Street intersection to vehicle traffic	▪ Difficult turning movements into and out of Elm Street	▪ Better traffic operations at Weaver Street and West Main Street ▪ Increased travel distance for residents of Elm Street ▪ Possible increase in traffic on neighboring streets	++	+	++	Traffic Impact Analysis report

Potential Solution	Problem(s) Addressed	Expected Outcomes and Impacts	Affordability [1]	Feasibility [1]	Effectiveness [1]	Next Steps
Reconstruct Shelton Street / Hillsborough Road / West Main Street intersection	▪ Lack of queue space on Hillsborough Road between West Main Street and Shelton Street ▪ Difficult turning movements ▪ Right only from Shelton Street during school drop-off and pick-up	▪ Better traffic movements, particularly from Shelton Street ▪ Possible increase in traffic on neighboring streets	+	+	+++	Planning and engineering study of traffic impacts, capital costs, new road alignments, and new traffic patterns.
Construct sidewalks on Oak Avenue, Shelton Street, and/or Elm Street (Note: Construction of a sidewalk on Elm Street is anticipated to begin in April/May 2012 and be completed in September 2012.)	▪ Pedestrians and vehicles having to share the same space on neighborhood streets	▪ Increased pedestrian safety and comfort ▪ May require new right-of-way acquisition and/or relocating utilities	+	++	+++	Detailed sidewalk layout study to determine sidewalk alignments and impacts on properties, right-of-way, trees, and utilities.
Mid-block, marked , pedestrian crossings on West Main Street (possibly with raised, pedestrian refuge islands)	▪ Haphazard pedestrian crossings ▪ Lack of marked crossings on West Main Street	▪ Increased pedestrian safety and comfort	+++ (++ if raised refuge islands are used)	+++	+++	Location study and NCDOT approval

[1] Scoring:

Score	Affordability	Feasibility	Effectiveness
+	Cost > $50,000	Low	Low
++	Cost $10,000 - $50,000	Moderate	Moderate
+++	Cost < $10,000	High	High

APPENDIX 1: DRAFT PAVEMENT MARKING PLAN

Figure 27 shows a possible pavement marking plan for a road diet on Main St., and Figure 25 shows a close-up view of the typical section for the road diet pavement marking plan. The plan shows one travel lane in each direction with a shared center turn lane and bike lanes in each direction. There is some possibility for alternative plans as well. For example, parking could possibly be added in front of Town Hall, although that would possibly require eliminating one or more of the bike lanes in this portion. Also, Figure 26 shows a bike box concept which could be included in a restriping project, but is not recommended in this particular case because of the geometry of the intersection at West Main Street and Weaver Street. Bike lanes could be painted a solid color to increase visibility, but this involves higher maintenance costs and NCDOT approval. It is anticipated that any revisions to the existing pavement markings associated with the road diet will be implemented following the scheduled repaving of West Main Street which would reduce the costs.

Figure 25: Road Diet Typical Section

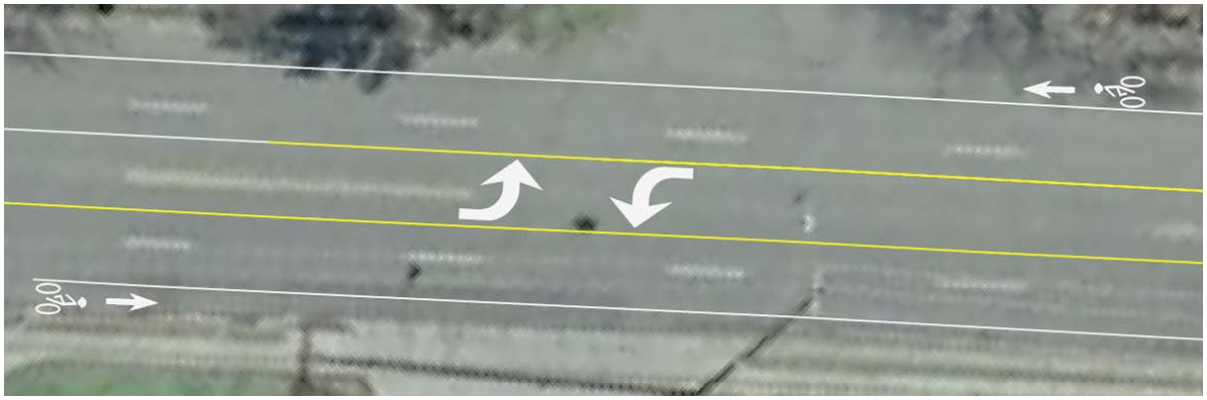


Figure 26: Bike Box Concept

Figure 27: Road Diet Pavement Marking Plan

APPENDIX 2: COMMENTS FROM THE PUBLIC

The following comments were received from the public during this process.

On the Neighborhood Walk:

- Crossing West Main Street as a pedestrian is difficult without any marked crossings, but many people make this crossing.
- The drop-off circle at Carrboro Elementary School is dangerous and several members of the walk commented on nearly having accidents with cars exiting the circle.
- The solid white line on Shelton Street in front of Carrboro Elementary School was noted as being confusing.
- Cut-through traffic is a problem, particularly on Oak Avenue and Shelton Street.
- Drivers sometimes fail to properly observe stop signs in the neighborhood by coming to a complete stop; some drivers barely slow down.
- A couple participants on the walk expressed a desire for Oak Avenue to be one-way.
- Several participants expressed a desire for speed humps on Oak Avenue, and speed humps larger than the one currently on Oak Avenue between Poplar Avenue and Weaver Street.
- The Oak Avenue and North Greensboro Street intersection was described by a couple of participants as difficult both for drivers and pedestrians.
- Many participants in the walk expressed concern over the possible traffic effects of proposed new development at North Greensboro Street across from Shelton Street.
- Turning movements from Elm Street onto Weaver Street or into Elm Street were described as difficult.
- A number of participants expressed a desire for sidewalks along Oak Avenue, or at least space demarcated for pedestrians to provide some separation from vehicles traveling in the road.
- Several comments expressed concern over the speed of traffic traveling through the neighborhood.

At the Public Meeting:

- Several members of the public expressed a desire to have some sort of “gateway” treatment at the north end of North Greensboro Street to signal to drivers that they are entering the downtown area and should proceed slowly and with caution.
- Several attendees expressed a desire to have crosswalks installed on West Main Street in the Road Diet Study Area section.
- Concerns were raised about the possible traffic and transportation impacts of new developments on North Greensboro Street across from Shelton Street and the proposed new CVS at North Greensboro Street and Weaver Street.
- Stop sign compliance was noted as a problem for neighborhood streets.
- Cut-through traffic was cited by a couple participants as a problem, particularly on Oak Avenue and Shelton Street.
- Town staff noted that bus headways are 30-minute peak and 60-minute off-peak for service along West Main Street in the Study Area.
- A couple participants noted that the intersection of Shelton Street, Hillsborough Road, and West Main Street is dangerous and they have observed accidents here when drivers were unaware of the turn in Hillsborough road before West Main Street.

- Several participants commented that drivers sometimes speed through the neighborhood and the existing stop signs do not appear to be effective devices for reducing vehicle speeds.

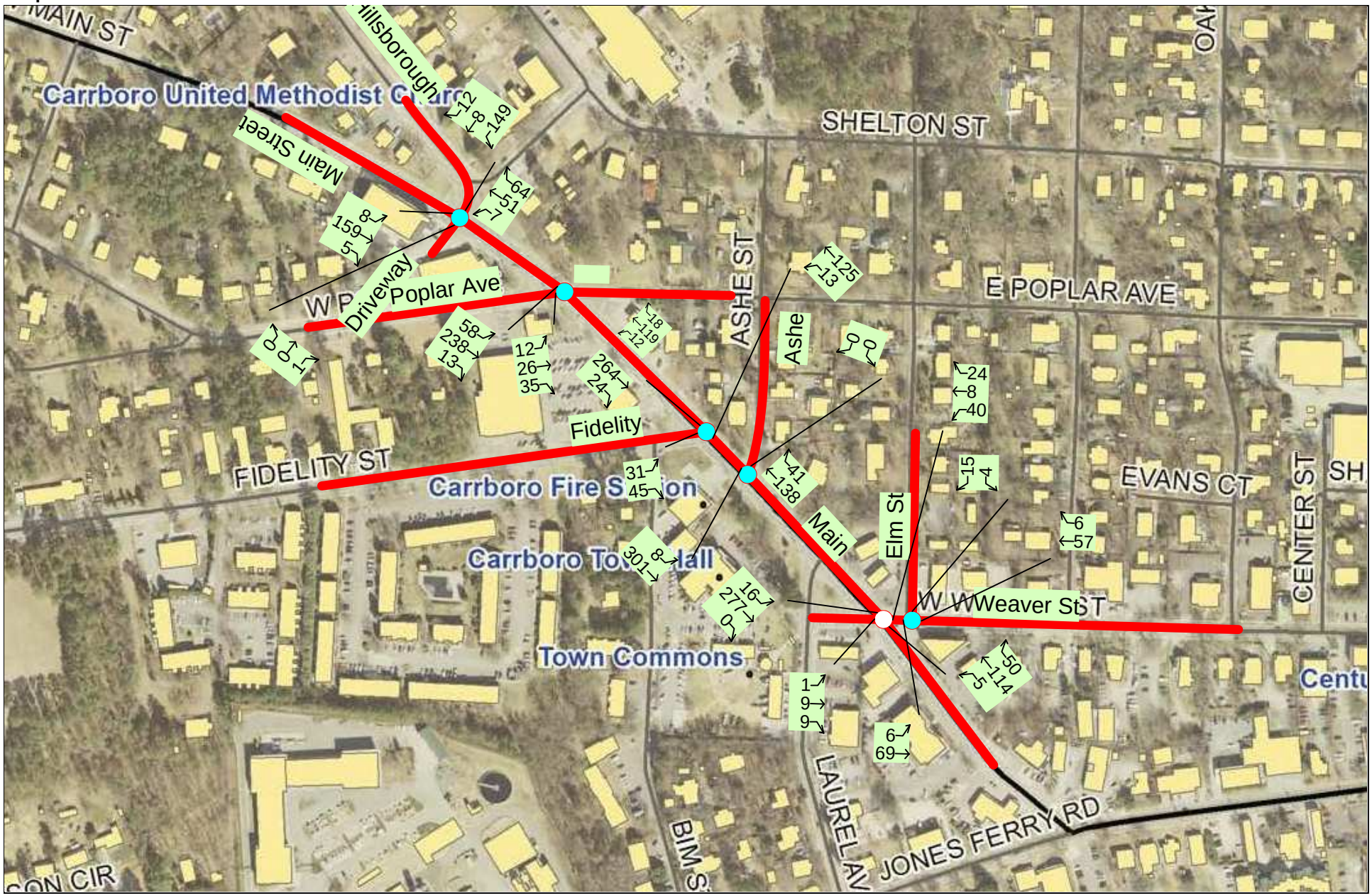
APPENDIX 3: SYNCHRO AND SIDRA REPORTS FOR STUDY INTERSECTIONS

The following pages contain the Synchro traffic analysis for the peak period turning movements in the study Area.

West Main Street Road Diet

Existing AM without Weaver Open

Map - West Main Street Road Diet



MAB

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	1	149	8	12	7	51	64	8	159	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	1	166	9	13	8	57	71	9	177	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								1289				
pX, platoon unblocked												
vC, conflicting volume	287	341	179	271	272	57	182			128		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	287	341	179	271	272	57	182			128		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	75	99	99	99			99		
cM capacity (veh/h)	643	574	863	675	627	1010	1393			1458		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	1	188	64	71	191
Volume Left	0	166	8	0	9
Volume Right	1	13	0	71	6
cSH	863	689	1393	1700	1458
Volume to Capacity	0.00	0.27	0.01	0.04	0.01
Queue Length 95th (ft)	0	28	0	0	0
Control Delay (s)	9.2	12.2	1.0	0.0	0.4
Lane LOS	A	B	A		A
Approach Delay (s)	9.2	12.2	0.5		0.4
Approach LOS	A	B			

Intersection Summary				
Average Delay	4.7			
Intersection Capacity Utilization	37.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Carrboro Road Diet
Existing AM without Weaver Open
3: Poplar Ave & Main Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	12	26	35	0	0	0	12	119	18	58	238	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	13	29	39	0	0	0	13	132	20	64	264	14
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								1006				
pX, platoon unblocked												
vC, conflicting volume	493	579	139	483	577	76	279			152		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	493	579	139	483	577	76	279			152		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	93	96	100	100	100	99			95		
cM capacity (veh/h)	439	401	883	404	403	970	1281			1426		

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	81	79	86	197	147
Volume Left	13	13	0	64	0
Volume Right	39	0	20	0	14
cSH	554	1281	1700	1426	1700
Volume to Capacity	0.15	0.01	0.05	0.05	0.09
Queue Length 95th (ft)	13	1	0	4	0
Control Delay (s)	12.6	1.4	0.0	2.8	0.0
Lane LOS	B	A		A	
Approach Delay (s)	12.6	0.7		1.6	
Approach LOS	B				

Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	27.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	31	45	13	125	264	24
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	34	50	14	139	293	27
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				568		
pX, platoon unblocked						
vC, conflicting volume	405	160	320			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	405	160	320			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	94	99			
cM capacity (veh/h)	567	857	1237			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	34	50	61	93	196	124
Volume Left	34	0	14	0	0	0
Volume Right	0	50	0	0	0	27
cSH	567	857	1237	1700	1700	1700
Volume to Capacity	0.06	0.06	0.01	0.05	0.12	0.07
Queue Length 95th (ft)	5	5	1	0	0	0
Control Delay (s)	11.8	9.5	2.0	0.0	0.0	0.0
Lane LOS	B	A	A			
Approach Delay (s)	10.4		0.8		0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	23.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	138	41	8	301
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	153	46	9	334
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			437			
pX, platoon unblocked						
vC, conflicting volume	361	99			199	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	361	99			199	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			99	
cM capacity (veh/h)	607	937			1371	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	0	102	97	120	223
Volume Left	0	0	0	9	0
Volume Right	0	0	46	0	0
cSH	1700	1700	1700	1371	1700
Volume to Capacity	0.00	0.06	0.06	0.01	0.13
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.6	0.0
Lane LOS	A			A	
Approach Delay (s)	0.0	0.0		0.2	
Approach LOS	A				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	17.4%	ICU Level of Service	A
Analysis Period (min)	15		

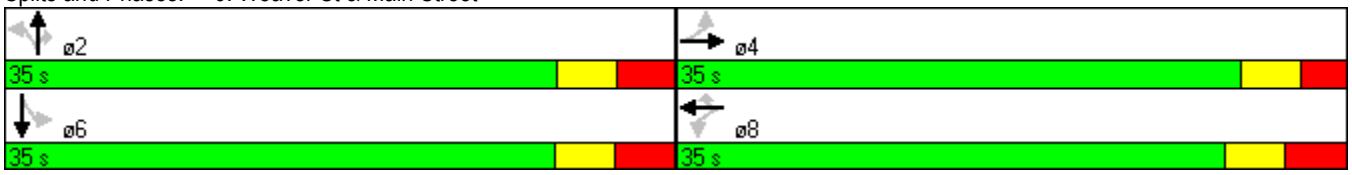
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	9	9	40	8	24	5	114	50	16	277	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	10	10	11	12	12	10	9	12
Storage Length (ft)	0		0	0		0	50		100	0		0
Storage Lanes	0		0	0		0	1		1	0		0
Taper Length (ft)	0		0	0		0	100		100	0		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.936				0.850			0.850			
Flt Protected		0.998			0.960		0.950			0.950		
Satd. Flow (prot)	0	1856	0	0	1669	1478	1711	1863	1583	1652	1676	0
Flt Permitted		0.986			0.748		0.573			0.676		
Satd. Flow (perm)	0	1834	0	0	1300	1478	1032	1863	1583	1175	1676	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		157			63			401			437	
Travel Time (s)		4.3			1.7			10.9			11.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1	10	10	44	9	27	6	127	56	18	308	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	21	0	0	53	27	6	127	56	18	308	0
Turn Type	Perm			Perm		Perm	Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2		2	6		
Detector Phase	4	4		8	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	32.6	32.6		33.5	33.5	33.5	29.2	29.2	29.2	29.4	29.4	
Total Split (s)	35.0	35.0	0.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	0.0
Total Split (%)	50.0%	50.0%	0.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	0.0%
Maximum Green (s)	29.4	29.4		28.5	28.5	28.5	28.8	28.8	28.8	28.6	28.6	
Yellow Time (s)	3.1	3.1		3.2	3.2	3.2	3.1	3.1	3.1	3.2	3.2	
All-Red Time (s)	2.5	2.5		3.3	3.3	3.3	3.1	3.1	3.1	3.2	3.2	
Lost Time Adjust (s)	-2.0	-0.6	-2.0	-2.0	-1.5	-1.5	-1.2	-1.2	-1.2	-1.4	-1.4	-2.0
Total Lost Time (s)	3.6	5.0	2.0	4.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	2.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	Min	Min	Min	Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0	20.0	16.0	16.0	16.0	16.0	16.0	
Pedestrian Calls (#/hr)	4	4		4	4	4	7	7	7	5	5	
Act Effct Green (s)		13.6			14.5	14.5	25.7	25.7	25.7	25.7	25.7	
Actuated g/C Ratio		0.34			0.36	0.36	0.64	0.64	0.64	0.64	0.64	
v/c Ratio		0.03			0.11	0.05	0.01	0.11	0.05	0.02	0.29	
Control Delay		9.6			10.0	9.5	9.6	8.8	9.0	9.6	9.7	
Queue Delay		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		9.6			10.0	9.5	9.6	8.8	9.0	9.6	9.7	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		A			A	A	A	A	A	A	A	
Approach Delay		9.6			9.8			8.9			9.7	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)		3			8	4	1	15	6	2	41	
Queue Length 95th (ft)		14			29	17	8	62	33	15	149	
Internal Link Dist (ft)		77			1			321			357	
Turn Bay Length (ft)							50		100			
Base Capacity (vph)		1475			1045	1188	830	1498	1273	945	1347	
Starvation Cap Reductn		0			0	0	0	0	0	0	0	
Spillback Cap Reductn		0			0	0	0	0	0	0	0	
Storage Cap Reductn		0			0	0	0	0	0	0	0	
Reduced v/c Ratio		0.01			0.05	0.02	0.01	0.08	0.04	0.02	0.23	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 39.9
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.29
Intersection Signal Delay: 9.5 Intersection LOS: A
Intersection Capacity Utilization 37.5% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 6: Weaver St & Main Street



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	6	69	57	6	4	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	7	77	63	7	4	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		63				
pX, platoon unblocked						
vC, conflicting volume	70				153	63
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	70				153	63
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	98
cM capacity (veh/h)	1531				835	1001

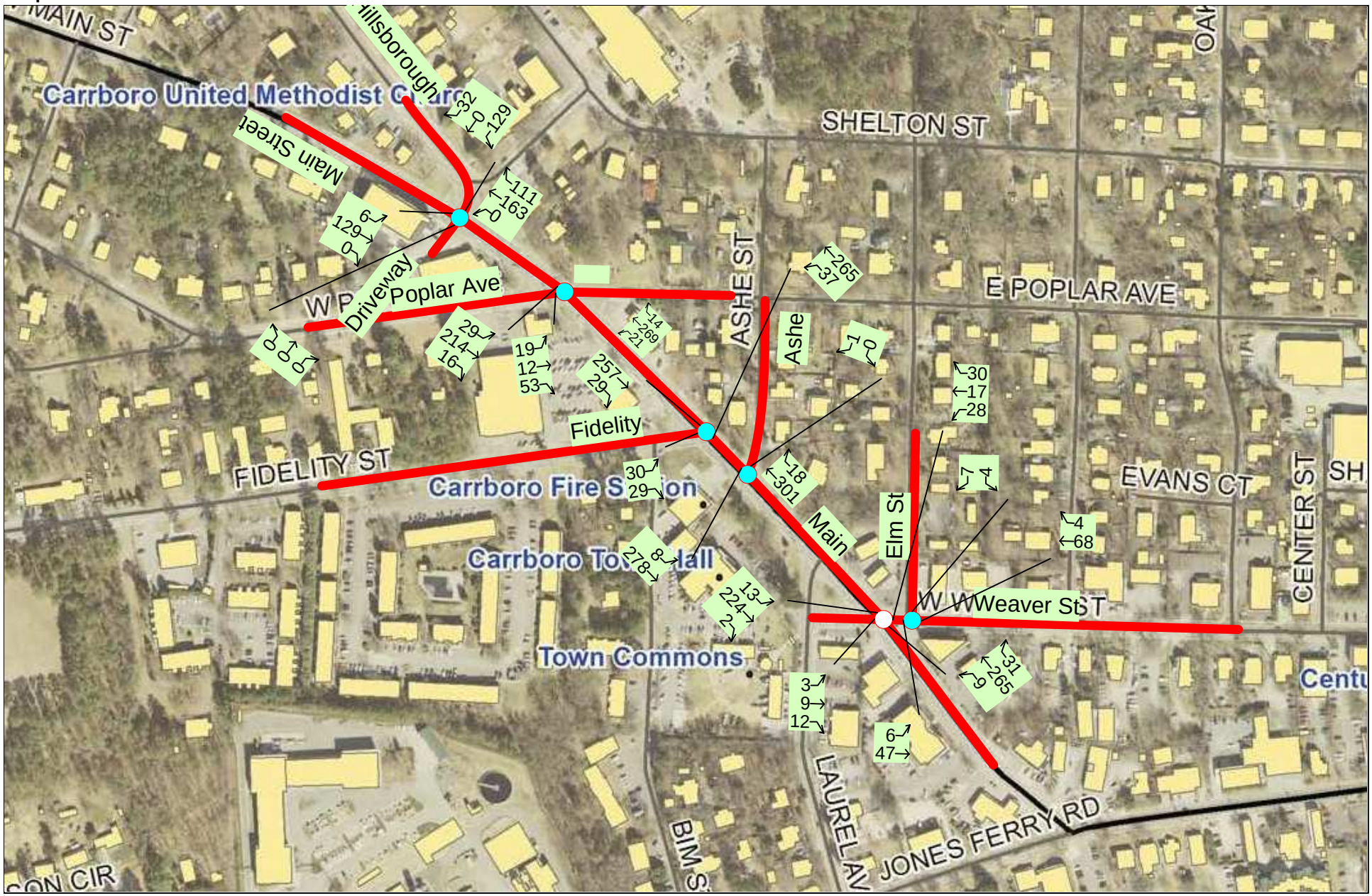
Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	83	63	7	21
Volume Left	7	0	0	4
Volume Right	0	0	7	17
cSH	1531	1700	1700	961
Volume to Capacity	0.00	0.04	0.00	0.02
Queue Length 95th (ft)	0	0	0	2
Control Delay (s)	0.6	0.0	0.0	8.8
Lane LOS	A			A
Approach Delay (s)	0.6	0.0		8.8
Approach LOS				A

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	18.6%	ICU Level of Service	A
Analysis Period (min)	15		

West Main Street Road Diet

Existing PM without Weaver Open

Map - West Main Street Road Diet



MAB

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	129	0	32	0	163	111	6	129	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	0	143	0	36	0	181	123	7	143	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								1289				
pX, platoon unblocked												
vC, conflicting volume	373	461	143	338	338	181	143			304		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	373	461	143	338	338	181	143			304		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	77	100	96	100			99		
cM capacity (veh/h)	557	495	904	614	580	862	1439			1256		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	0	179	181	123	150
Volume Left	0	143	0	0	7
Volume Right	0	36	0	123	0
cSH	1700	651	1439	1700	1256
Volume to Capacity	0.00	0.27	0.00	0.07	0.01
Queue Length 95th (ft)	0	28	0	0	0
Control Delay (s)	0.0	12.6	0.0	0.0	0.4
Lane LOS	A	B			A
Approach Delay (s)	0.0	12.6	0.0		0.4
Approach LOS	A	B			

Intersection Summary				
Average Delay	3.7			
Intersection Capacity Utilization	27.4%	ICU Level of Service		A
Analysis Period (min)	15			

Carrboro Road Diet
3: Poplar Ave & Main Street

Existing PM without Weaver Open
2/28/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	19	12	53	0	0	0	21	269	14	29	214	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	21	13	59	0	0	0	23	299	16	32	238	18
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								1006				
pX, platoon unblocked												
vC, conflicting volume	507	672	128	602	673	157	256			314		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	507	672	128	602	673	157	256			314		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	96	93	100	100	100	98			97		
cM capacity (veh/h)	434	359	899	337	359	860	1306			1243		

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	93	173	165	151	137
Volume Left	21	23	0	32	0
Volume Right	59	0	16	0	18
cSH	617	1306	1700	1243	1700
Volume to Capacity	0.15	0.02	0.10	0.03	0.08
Queue Length 95th (ft)	13	1	0	2	0
Control Delay (s)	11.9	1.2	0.0	1.9	0.0
Lane LOS	B	A		A	
Approach Delay (s)	11.9	0.6		1.0	
Approach LOS	B				

Intersection Summary				
Average Delay	2.2			
Intersection Capacity Utilization	30.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	30	29	37	265	257	29
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	33	32	41	294	286	32
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				568		
pX, platoon unblocked						
vC, conflicting volume	531	159	318			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	531	159	318			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	96	97			
cM capacity (veh/h)	462	858	1239			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	33	32	139	196	190	127
Volume Left	33	0	41	0	0	0
Volume Right	0	32	0	0	0	32
cSH	462	858	1239	1700	1700	1700
Volume to Capacity	0.07	0.04	0.03	0.12	0.11	0.07
Queue Length 95th (ft)	6	3	3	0	0	0
Control Delay (s)	13.4	9.4	2.6	0.0	0.0	0.0
Lane LOS	B	A	A			
Approach Delay (s)	11.4		1.1		0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	29.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	1	301	18	8	278
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1	334	20	9	309
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			437			
pX, platoon unblocked						
vC, conflicting volume	517	177			354	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	517	177			354	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			99	
cM capacity (veh/h)	484	835			1201	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	1	223	131	112	206
Volume Left	0	0	0	9	0
Volume Right	1	0	20	0	0
cSH	835	1700	1700	1201	1700
Volume to Capacity	0.00	0.13	0.08	0.01	0.12
Queue Length 95th (ft)	0	0	0	1	0
Control Delay (s)	9.3	0.0	0.0	0.7	0.0
Lane LOS	A			A	
Approach Delay (s)	9.3	0.0		0.2	
Approach LOS	A				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	23.5%	ICU Level of Service	A
Analysis Period (min)	15		

Carrboro Road Diet
6: Weaver St & Main Street

Existing PM without Weaver Open
2/28/2012

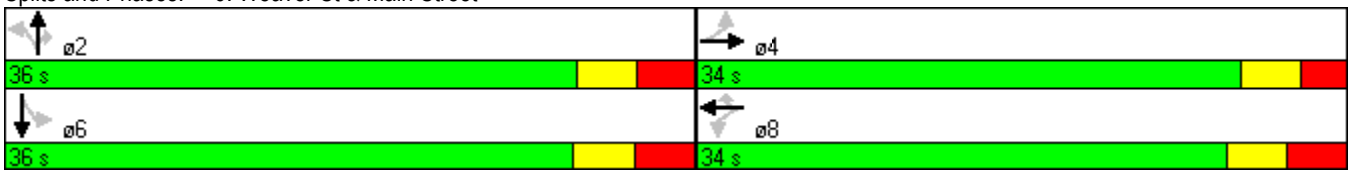
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	9	12	28	17	30	9	265	31	13	224	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	10	10	11	12	12	10	9	12
Storage Length (ft)	0		0	0		0	50		100	0		0
Storage Lanes	0		0	0		0	1		1	0		0
Taper Length (ft)	0		0	0		0	100		100	0		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.932				0.850			0.850		0.999	
Flt Protected		0.994			0.970		0.950			0.950		
Satd. Flow (prot)	0	1841	0	0	1686	1478	1711	1863	1583	1652	1675	0
Flt Permitted		0.965			0.796		0.603			0.580		
Satd. Flow (perm)	0	1787	0	0	1384	1478	1086	1863	1583	1008	1675	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		157			63			401			437	
Travel Time (s)		4.3			1.7			10.9			11.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	3	10	13	31	19	33	10	294	34	14	249	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	26	0	0	50	33	10	294	34	14	251	0
Turn Type	Perm			Perm		Perm	Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2		2	6		
Detector Phase	4	4		8	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	32.6	32.6		33.4	33.4	33.4	29.2	29.2	29.2	29.4	29.4	
Total Split (s)	34.0	34.0	0.0	34.0	34.0	34.0	36.0	36.0	36.0	36.0	36.0	0.0
Total Split (%)	48.6%	48.6%	0.0%	48.6%	48.6%	48.6%	51.4%	51.4%	51.4%	51.4%	51.4%	0.0%
Maximum Green (s)	28.4	28.4		27.6	27.6	27.6	29.8	29.8	29.8	29.6	29.6	
Yellow Time (s)	3.1	3.1		3.2	3.2	3.2	3.1	3.1	3.1	3.2	3.2	
All-Red Time (s)	2.5	2.5		3.2	3.2	3.2	3.1	3.1	3.1	3.2	3.2	
Lost Time Adjust (s)	-2.0	-0.6	-2.0	-2.0	-1.4	-1.4	-1.2	-1.2	-1.2	-1.4	-1.4	-2.0
Total Lost Time (s)	3.6	5.0	2.0	4.4	5.0	5.0	5.0	5.0	5.0	5.0	5.0	2.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	Min	Min	Min	Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0	20.0	16.0	16.0	16.0	16.0	16.0	
Pedestrian Calls (#/hr)	13	13		10	10	10	8	8	8	8	8	
Act Effct Green (s)		13.9			14.3	14.3	25.4	25.4	25.4	25.4	25.4	
Actuated g/C Ratio		0.35			0.36	0.36	0.64	0.64	0.64	0.64	0.64	
v/c Ratio		0.04			0.10	0.06	0.01	0.25	0.03	0.02	0.23	
Control Delay		9.3			9.7	9.4	9.6	9.2	9.3	9.6	9.4	
Queue Delay		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		9.3			9.7	9.4	9.6	9.2	9.3	9.6	9.4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		A			A	A	A	A	A	A	A	
Approach Delay		9.3			9.6			9.2			9.4	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)		4			7	5	1	37	4	2	32	
Queue Length 95th (ft)		17			27	20	10	136	23	13	119	
Internal Link Dist (ft)		77			1			321			357	
Turn Bay Length (ft)							50		100			
Base Capacity (vph)		1399			1084	1157	909	1559	1325	844	1402	
Starvation Cap Reductn		0			0	0	0	0	0	0	0	
Spillback Cap Reductn		0			0	0	0	0	0	0	0	
Storage Cap Reductn		0			0	0	0	0	0	0	0	
Reduced v/c Ratio		0.02			0.05	0.03	0.01	0.19	0.03	0.02	0.18	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 39.6
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.25
Intersection Signal Delay: 9.3 Intersection LOS: A
Intersection Capacity Utilization 43.1% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 6: Weaver St & Main Street



Carrboro Road Diet
15: Weaver St & Elm St

Existing PM without Weaver Open
2/28/2012

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	6	47	68	4	4	7
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	7	52	76	4	4	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		63				
pX, platoon unblocked						
vC, conflicting volume	80				141	76
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	80				141	76
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	99
cM capacity (veh/h)	1518				848	986

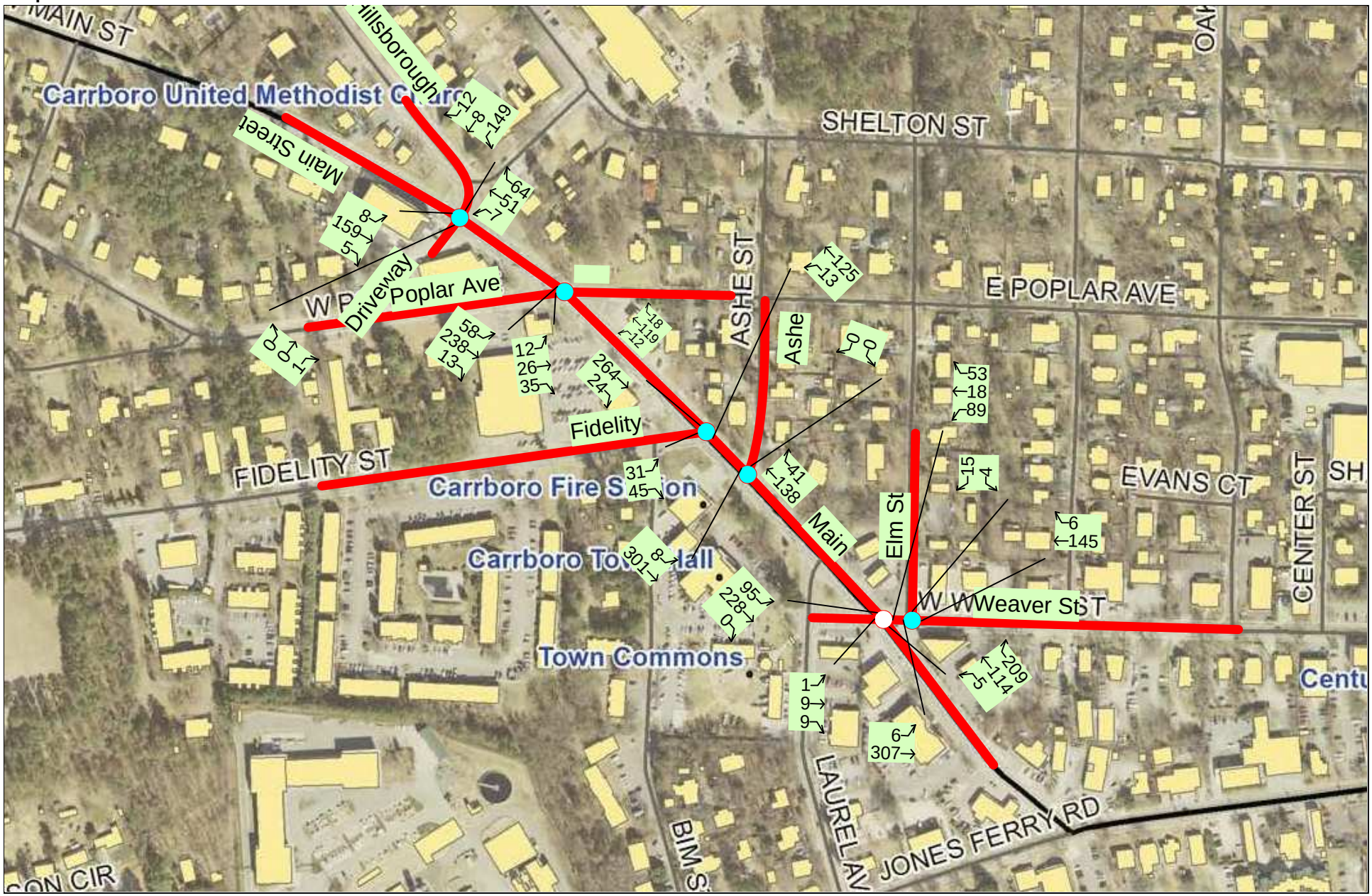
Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	59	76	4	12
Volume Left	7	0	0	4
Volume Right	0	0	4	8
cSH	1518	1700	1700	931
Volume to Capacity	0.00	0.04	0.00	0.01
Queue Length 95th (ft)	0	0	0	1
Control Delay (s)	0.9	0.0	0.0	8.9
Lane LOS	A			A
Approach Delay (s)	0.9	0.0		8.9
Approach LOS				A

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	17.5%	ICU Level of Service	A
Analysis Period (min)	15		

West Main Street Road Diet

Existing AM with Weaver Open

Map - West Main Street Road Diet



MAB

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	1	149	8	12	7	51	64	8	159	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	1	166	9	13	8	57	71	9	177	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								1289				
pX, platoon unblocked												
vC, conflicting volume	287	341	179	271	272	57	182			128		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	287	341	179	271	272	57	182			128		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	75	99	99	99			99		
cM capacity (veh/h)	643	574	863	675	627	1010	1393			1458		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	1	188	64	71	191
Volume Left	0	166	8	0	9
Volume Right	1	13	0	71	6
cSH	863	689	1393	1700	1458
Volume to Capacity	0.00	0.27	0.01	0.04	0.01
Queue Length 95th (ft)	0	28	0	0	0
Control Delay (s)	9.2	12.2	1.0	0.0	0.4
Lane LOS	A	B	A		A
Approach Delay (s)	9.2	12.2	0.5		0.4
Approach LOS	A	B			

Intersection Summary				
Average Delay	4.7			
Intersection Capacity Utilization	37.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	12	26	35	0	0	0	12	119	18	58	238	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	13	29	39	0	0	0	13	132	20	64	264	14
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								1006				
pX, platoon unblocked												
vC, conflicting volume	493	579	139	483	577	76	279			152		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	493	579	139	483	577	76	279			152		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	93	96	100	100	100	99			95		
cM capacity (veh/h)	439	401	883	404	403	970	1281			1426		

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	81	79	86	197	147
Volume Left	13	13	0	64	0
Volume Right	39	0	20	0	14
cSH	554	1281	1700	1426	1700
Volume to Capacity	0.15	0.01	0.05	0.05	0.09
Queue Length 95th (ft)	13	1	0	4	0
Control Delay (s)	12.6	1.4	0.0	2.8	0.0
Lane LOS	B	A		A	
Approach Delay (s)	12.6	0.7		1.6	
Approach LOS	B				

Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	27.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	31	45	13	125	264	24
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	34	50	14	139	293	27
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				568		
pX, platoon unblocked						
vC, conflicting volume	405	160	320			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	405	160	320			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	94	99			
cM capacity (veh/h)	567	857	1237			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	34	50	61	93	196	124
Volume Left	34	0	14	0	0	0
Volume Right	0	50	0	0	0	27
cSH	567	857	1237	1700	1700	1700
Volume to Capacity	0.06	0.06	0.01	0.05	0.12	0.07
Queue Length 95th (ft)	5	5	1	0	0	0
Control Delay (s)	11.8	9.5	2.0	0.0	0.0	0.0
Lane LOS	B	A	A			
Approach Delay (s)	10.4		0.8		0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	23.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	138	41	8	301
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	153	46	9	334
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			437			
pX, platoon unblocked						
vC, conflicting volume	361	99			199	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	361	99			199	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			99	
cM capacity (veh/h)	607	937			1371	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	0	102	97	120	223
Volume Left	0	0	0	9	0
Volume Right	0	0	46	0	0
cSH	1700	1700	1700	1371	1700
Volume to Capacity	0.00	0.06	0.06	0.01	0.13
Queue Length 95th (ft)	0	0	0	0	0
Control Delay (s)	0.0	0.0	0.0	0.6	0.0
Lane LOS	A			A	
Approach Delay (s)	0.0	0.0		0.2	
Approach LOS	A				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	17.4%	ICU Level of Service	A
Analysis Period (min)	15		

West Main Street Road Diet
6: Weaver St & Main Street

Existing AM with Weaver Open

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	9	9	89	18	53	5	114	209	95	228	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	10	10	11	12	12	10	9	12
Storage Length (ft)	0		0	0		0	50		100	0		0
Storage Lanes	0		0	0		0	1		1	0		0
Taper Length (ft)	0		0	0		0	100		100	0		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.936				0.850			0.850			
Flt Protected		0.998			0.960		0.950			0.950		
Satd. Flow (prot)	0	1856	0	0	1669	1478	1711	1863	1583	1652	1676	0
Flt Permitted		0.986			0.747		0.602			0.676		
Satd. Flow (perm)	0	1834	0	0	1299	1478	1084	1863	1583	1175	1676	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		157			63			401			437	
Travel Time (s)		4.3			1.7			10.9			11.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1	10	10	99	20	59	6	127	232	106	253	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	21	0	0	119	59	6	127	232	106	253	0
Turn Type	Perm			Perm		Perm	Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2		2	6		
Detector Phase	4	4		8	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	32.6	32.6		33.5	33.5	33.5	29.2	29.2	29.2	29.4	29.4	
Total Split (s)	35.0	35.0	0.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	0.0
Total Split (%)	50.0%	50.0%	0.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	0.0%
Maximum Green (s)	29.4	29.4		28.5	28.5	28.5	28.8	28.8	28.8	28.6	28.6	
Yellow Time (s)	3.1	3.1		3.2	3.2	3.2	3.1	3.1	3.1	3.2	3.2	
All-Red Time (s)	2.5	2.5		3.3	3.3	3.3	3.1	3.1	3.1	3.2	3.2	
Lost Time Adjust (s)	-2.0	-0.6	-2.0	-2.0	-1.5	-1.5	-1.2	-1.2	-1.2	-1.4	-1.4	-2.0
Total Lost Time (s)	3.6	5.0	2.0	4.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	2.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	Min	Min	Min	Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0	20.0	16.0	16.0	16.0	16.0	16.0	
Pedestrian Calls (#/hr)	4	4		4	4	4	7	7	7	5	5	
Act Effct Green (s)		13.6			14.4	14.4	20.2	20.2	20.2	20.2	20.2	
Actuated g/C Ratio		0.34			0.36	0.36	0.51	0.51	0.51	0.51	0.51	
v/c Ratio		0.03			0.25	0.11	0.01	0.13	0.29	0.18	0.30	
Control Delay		9.2			11.0	9.5	9.8	9.9	11.0	10.8	11.0	
Queue Delay		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		9.2			11.0	9.5	9.8	9.9	11.0	10.8	11.0	

West Main Street Road Diet
6: Weaver St & Main Street

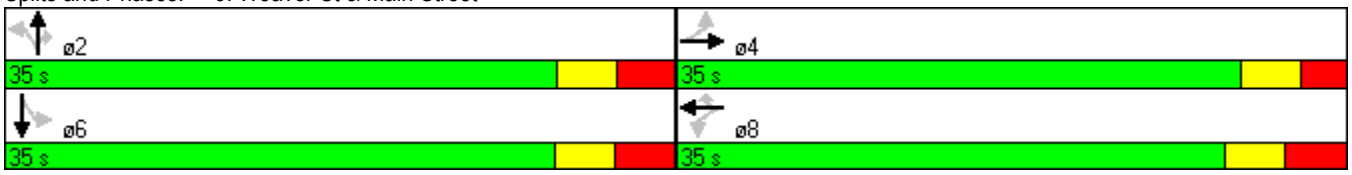
Existing AM with Weaver Open

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		A			B	A	A	A	B	B	B	
Approach Delay		9.2			10.5			10.6			10.9	
Approach LOS		A			B			B			B	
Queue Length 50th (ft)		2			14	7	1	15	29	13	32	
Queue Length 95th (ft)		14			55	31	7	62	113	58	121	
Internal Link Dist (ft)		77			1			321			357	
Turn Bay Length (ft)							50		100			
Base Capacity (vph)		1475			1045	1188	872	1498	1273	945	1347	
Starvation Cap Reductn		0			0	0	0	0	0	0	0	
Spillback Cap Reductn		0			0	0	0	0	0	0	0	
Storage Cap Reductn		0			0	0	0	0	0	0	0	
Reduced v/c Ratio		0.01			0.11	0.05	0.01	0.08	0.18	0.11	0.19	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 39.8
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.30
Intersection Signal Delay: 10.7 Intersection LOS: B
Intersection Capacity Utilization 42.1% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 6: Weaver St & Main Street



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	6	307	145	6	4	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	7	341	161	7	4	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		63				
pX, platoon unblocked					0.97	
vC, conflicting volume	168				516	161
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	168				490	161
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	98
cM capacity (veh/h)	1410				521	884

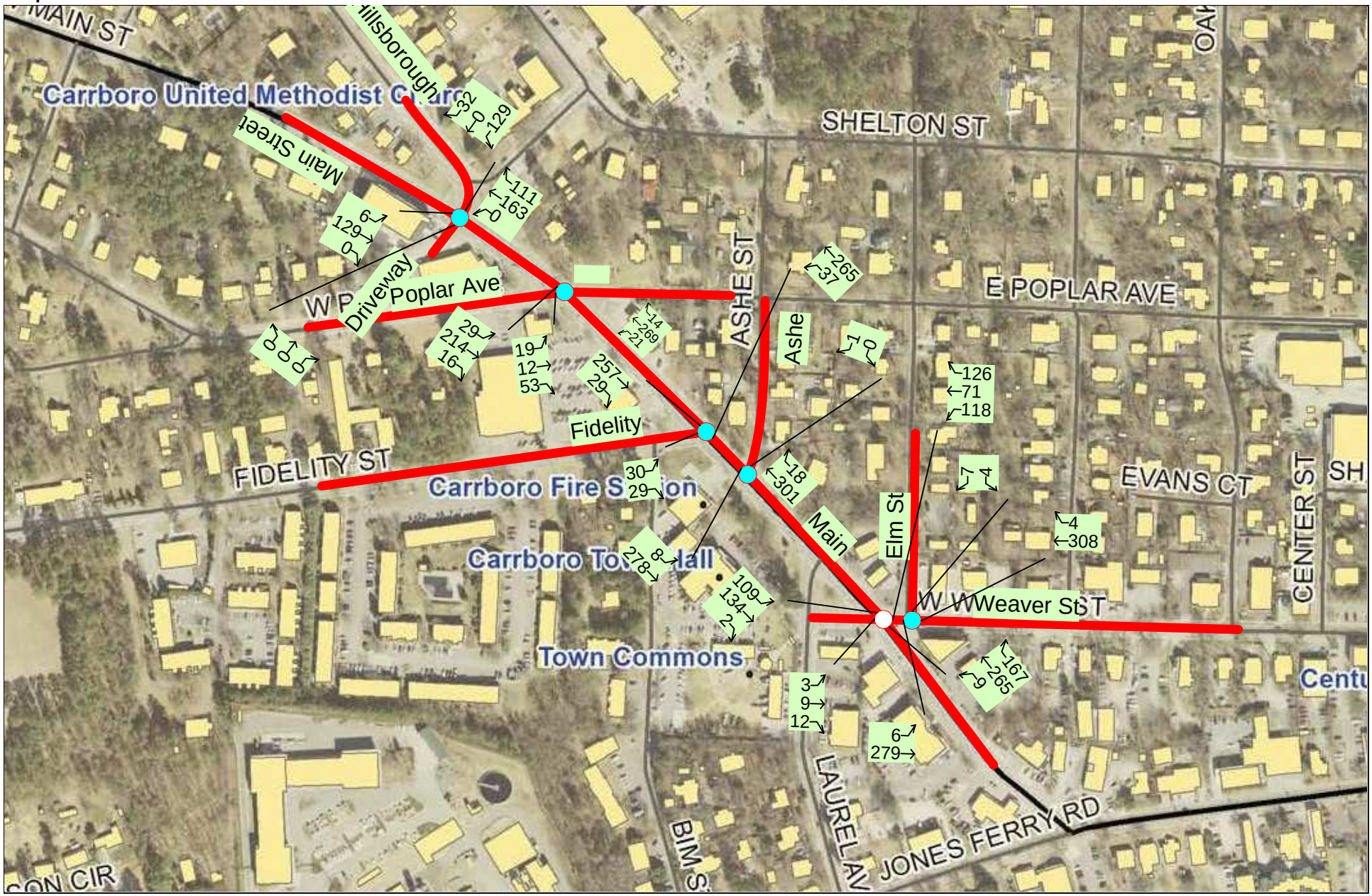
Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	348	161	7	21
Volume Left	7	0	0	4
Volume Right	0	0	7	17
cSH	1410	1700	1700	771
Volume to Capacity	0.00	0.09	0.00	0.03
Queue Length 95th (ft)	0	0	0	2
Control Delay (s)	0.2	0.0	0.0	9.8
Lane LOS	A			A
Approach Delay (s)	0.2	0.0		9.8
Approach LOS				A

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	31.0%	ICU Level of Service	A
Analysis Period (min)	15		

West Main Street Road Diet

Existing PM with Weaver Open

Map - West Main Street Road Diet



MAB

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	129	0	32	0	163	111	6	129	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	0	143	0	36	0	181	123	7	143	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								1289				
pX, platoon unblocked												
vC, conflicting volume	373	461	143	338	338	181	143			304		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	373	461	143	338	338	181	143			304		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	77	100	96	100			99		
cM capacity (veh/h)	557	495	904	614	580	862	1439			1256		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	0	179	181	123	150
Volume Left	0	143	0	0	7
Volume Right	0	36	0	123	0
cSH	1700	651	1439	1700	1256
Volume to Capacity	0.00	0.27	0.00	0.07	0.01
Queue Length 95th (ft)	0	28	0	0	0
Control Delay (s)	0.0	12.6	0.0	0.0	0.4
Lane LOS	A	B			A
Approach Delay (s)	0.0	12.6	0.0		0.4
Approach LOS	A	B			

Intersection Summary				
Average Delay	3.7			
Intersection Capacity Utilization	27.4%	ICU Level of Service		A
Analysis Period (min)	15			

West Main Street Road Diet
3: Poplar Ave & Main Street

Existing PM with Weaver Open
2/28/2012

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	19	12	53	0	0	0	21	269	14	29	214	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	21	13	59	0	0	0	23	299	16	32	238	18
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								1006				
pX, platoon unblocked												
vC, conflicting volume	507	672	128	602	673	157	256			314		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	507	672	128	602	673	157	256			314		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	96	93	100	100	100	98			97		
cM capacity (veh/h)	434	359	899	337	359	860	1306			1243		

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	93	173	165	151	137
Volume Left	21	23	0	32	0
Volume Right	59	0	16	0	18
cSH	617	1306	1700	1243	1700
Volume to Capacity	0.15	0.02	0.10	0.03	0.08
Queue Length 95th (ft)	13	1	0	2	0
Control Delay (s)	11.9	1.2	0.0	1.9	0.0
Lane LOS	B	A		A	
Approach Delay (s)	11.9	0.6		1.0	
Approach LOS	B				

Intersection Summary				
Average Delay	2.2			
Intersection Capacity Utilization	30.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	30	29	37	265	257	29
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	33	32	41	294	286	32
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				568		
pX, platoon unblocked						
vC, conflicting volume	531	159	318			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	531	159	318			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	96	97			
cM capacity (veh/h)	462	858	1239			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	33	32	139	196	190	127
Volume Left	33	0	41	0	0	0
Volume Right	0	32	0	0	0	32
cSH	462	858	1239	1700	1700	1700
Volume to Capacity	0.07	0.04	0.03	0.12	0.11	0.07
Queue Length 95th (ft)	6	3	3	0	0	0
Control Delay (s)	13.4	9.4	2.6	0.0	0.0	0.0
Lane LOS	B	A	A			
Approach Delay (s)	11.4		1.1		0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	29.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	1	301	18	8	278
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1	334	20	9	309
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			437			
pX, platoon unblocked						
vC, conflicting volume	517	177			354	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	517	177			354	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			99	
cM capacity (veh/h)	484	835			1201	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	1	223	131	112	206
Volume Left	0	0	0	9	0
Volume Right	1	0	20	0	0
cSH	835	1700	1700	1201	1700
Volume to Capacity	0.00	0.13	0.08	0.01	0.12
Queue Length 95th (ft)	0	0	0	1	0
Control Delay (s)	9.3	0.0	0.0	0.7	0.0
Lane LOS	A			A	
Approach Delay (s)	9.3	0.0		0.2	
Approach LOS	A				

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	23.5%	ICU Level of Service	A
Analysis Period (min)	15		

West Main Street Road Diet
6: Weaver St & Main Street

Existing PM with Weaver Open
2/28/2012

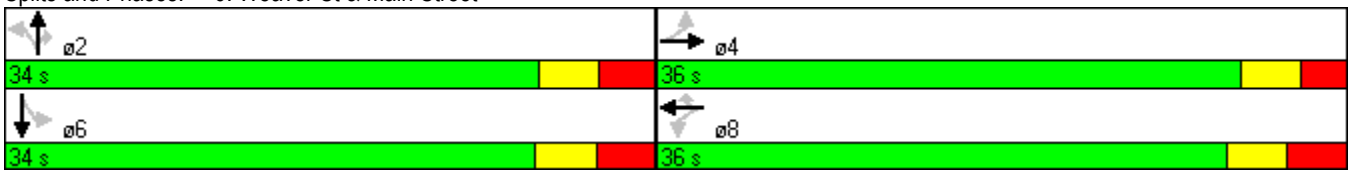
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	9	12	118	71	126	9	265	167	109	134	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	10	10	11	12	12	10	9	12
Storage Length (ft)	0		0	0		0	50		100	0		0
Storage Lanes	0		0	0		0	1		1	0		0
Taper Length (ft)	0		0	0		0	100		100	0		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.932				0.850			0.850		0.998	
Flt Protected		0.994			0.970		0.950			0.950		
Satd. Flow (prot)	0	1841	0	0	1686	1478	1711	1863	1583	1652	1673	0
Flt Permitted		0.965			0.795		0.661			0.580		
Satd. Flow (perm)	0	1787	0	0	1382	1478	1190	1863	1583	1008	1673	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		157			63			401			437	
Travel Time (s)		4.3			1.7			10.9			11.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	3	10	13	131	79	140	10	294	186	121	149	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	26	0	0	210	140	10	294	186	121	151	0
Turn Type	Perm			Perm		Perm	Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2		2	6		
Detector Phase	4	4		8	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	32.6	32.6		33.4	33.4	33.4	29.2	29.2	29.2	29.4	29.4	
Total Split (s)	36.0	36.0	0.0	36.0	36.0	36.0	34.0	34.0	34.0	34.0	34.0	0.0
Total Split (%)	51.4%	51.4%	0.0%	51.4%	51.4%	51.4%	48.6%	48.6%	48.6%	48.6%	48.6%	0.0%
Maximum Green (s)	30.4	30.4		29.6	29.6	29.6	27.8	27.8	27.8	27.6	27.6	
Yellow Time (s)	3.1	3.1		3.2	3.2	3.2	3.1	3.1	3.1	3.2	3.2	
All-Red Time (s)	2.5	2.5		3.2	3.2	3.2	3.1	3.1	3.1	3.2	3.2	
Lost Time Adjust (s)	-2.0	-0.6	-2.0	-2.0	-1.4	-1.4	-1.2	-1.2	-1.2	-1.4	-1.4	-2.0
Total Lost Time (s)	3.6	5.0	2.0	4.4	5.0	5.0	5.0	5.0	5.0	5.0	5.0	2.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	Min	Min	Min	Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0	20.0	16.0	16.0	16.0	16.0	16.0	
Pedestrian Calls (#/hr)	13	13		10	10	10	8	8	8	8	8	
Act Effct Green (s)		15.3			15.3	15.3	16.1	16.1	16.1	16.1	16.1	
Actuated g/C Ratio		0.37			0.37	0.37	0.38	0.38	0.38	0.38	0.38	
v/c Ratio		0.04			0.42	0.26	0.02	0.41	0.31	0.31	0.24	
Control Delay		9.1			12.9	10.8	10.2	12.6	11.9	13.2	11.2	
Queue Delay		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		9.1			12.9	10.8	10.2	12.6	11.9	13.2	11.2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		A			B	B	B	B	B	B	B	
Approach Delay		9.1			12.1			12.3			12.1	
Approach LOS		A			B			B			B	
Queue Length 50th (ft)		3			29	18	1	39	24	15	19	
Queue Length 95th (ft)		17			93	62	10	136	90	68	74	
Internal Link Dist (ft)		77			1			321			357	
Turn Bay Length (ft)							50		100			
Base Capacity (vph)		1393			1077	1152	868	1358	1154	735	1220	
Starvation Cap Reductn		0			0	0	0	0	0	0	0	
Spillback Cap Reductn		0			0	0	0	0	0	0	0	
Storage Cap Reductn		0			0	0	0	0	0	0	0	
Reduced v/c Ratio		0.02			0.19	0.12	0.01	0.22	0.16	0.16	0.12	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 41.9
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.42
Intersection Signal Delay: 12.1 Intersection LOS: B
Intersection Capacity Utilization 51.7% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 6: Weaver St & Main Street



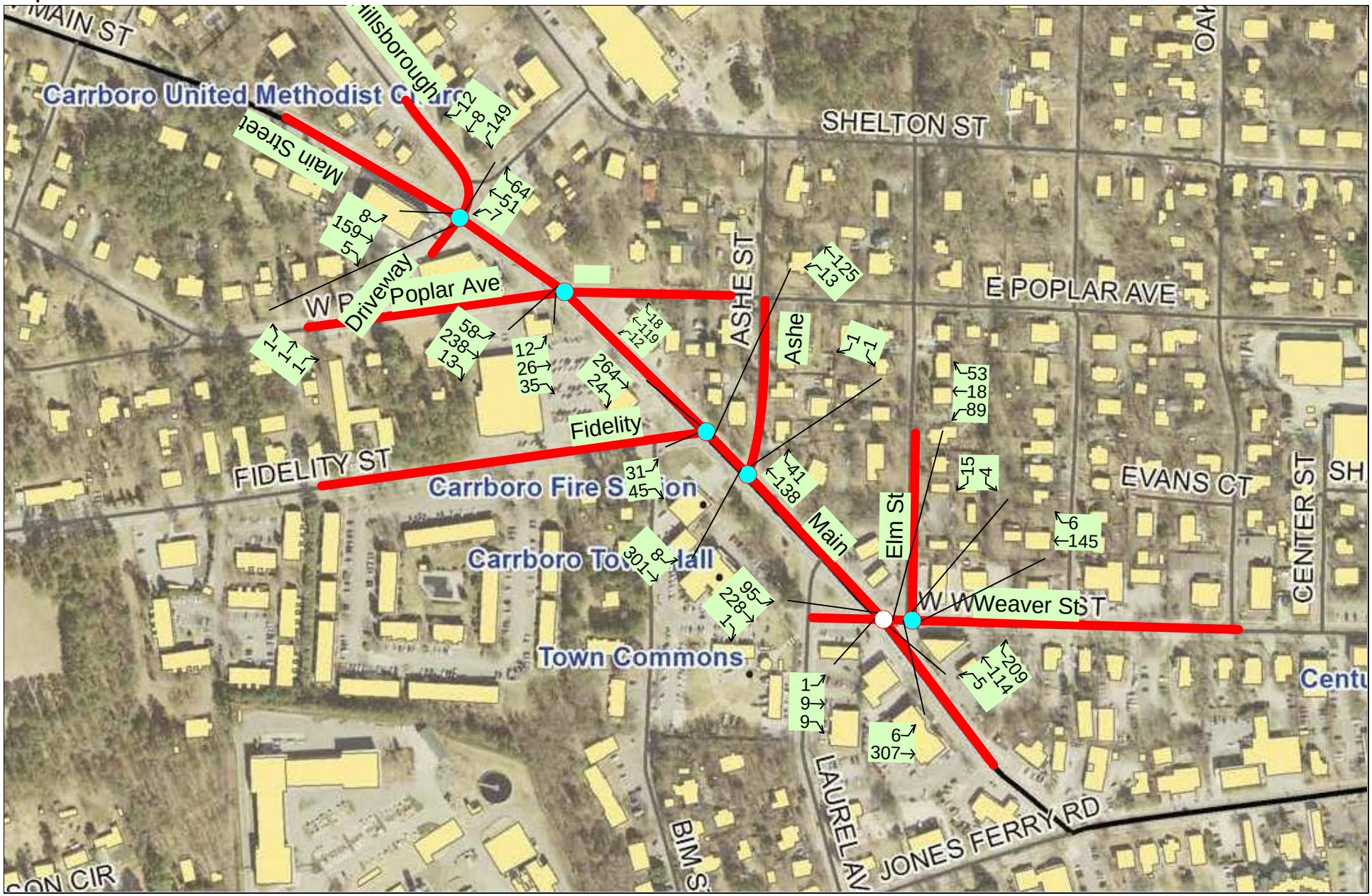
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	6	279	308	4	4	7
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	7	310	342	4	4	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		63				
pX, platoon unblocked					0.96	
vC, conflicting volume	347				666	342
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	347				632	342
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	99
cM capacity (veh/h)	1212				425	700

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	317	342	4	12
Volume Left	7	0	0	4
Volume Right	0	0	4	8
cSH	1212	1700	1700	567
Volume to Capacity	0.01	0.20	0.00	0.02
Queue Length 95th (ft)	0	0	0	2
Control Delay (s)	0.2	0.0	0.0	11.5
Lane LOS	A			B
Approach Delay (s)	0.2	0.0		11.5
Approach LOS				B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	29.5%	ICU Level of Service	A
Analysis Period (min)	15		

West Main Street Road Diet **Build AM**

Map - West Main Street Road Diet



MAB

West Main Street Road Diet
2: Hillsborough & Main Street

Build AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	1	1	149	8	12	7	51	64	8	159	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	1	1	166	9	13	8	57	71	9	177	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (ft)								1289				
pX, platoon unblocked												
vC, conflicting volume	287	341	179	307	308	92	182			128		
vC1, stage 1 conf vol	197	197		108	108							
vC2, stage 2 conf vol	90	143		199	200							
vCu, unblocked vol	287	341	179	307	308	92	182			128		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	78	99	99	99			99		
cM capacity (veh/h)	749	673	863	743	683	965	1393			1458		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	3	188	8	128	191
Volume Left	1	166	8	0	9
Volume Right	1	13	0	71	6
cSH	754	752	1393	1700	1458
Volume to Capacity	0.00	0.25	0.01	0.08	0.01
Queue Length 95th (ft)	0	25	0	0	0
Control Delay (s)	9.8	11.4	7.6	0.0	0.4
Lane LOS	A	B	A		A
Approach Delay (s)	9.8	11.4	0.4		0.4
Approach LOS	A	B			

Intersection Summary				
Average Delay	4.4			
Intersection Capacity Utilization	37.9%	ICU Level of Service	A	
Analysis Period (min)	15			

West Main Street Road Diet
3: Poplar Ave & Main Street

Build AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	12	26	35	0	0	0	12	119	18	58	238	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	13	29	39	0	0	0	13	132	20	64	264	14
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)								1006				
pX, platoon unblocked												
vC, conflicting volume	559	579	272	616	577	142	279			152		
vC1, stage 1 conf vol	401	401		169	169							
vC2, stage 2 conf vol	159	179		447	408							
vCu, unblocked vol	559	579	272	616	577	142	279			152		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	95	95	100	100	100	99			95		
cM capacity (veh/h)	558	528	767	474	526	905	1284			1429		

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	81	13	152	64	279
Volume Left	13	13	0	64	0
Volume Right	39	0	20	0	14
cSH	627	1284	1700	1429	1700
Volume to Capacity	0.13	0.01	0.09	0.05	0.16
Queue Length 95th (ft)	11	1	0	4	0
Control Delay (s)	11.6	7.8	0.0	7.6	0.0
Lane LOS	B	A		A	
Approach Delay (s)	11.6	0.6		1.4	
Approach LOS	B				

Intersection Summary				
Average Delay	2.6			
Intersection Capacity Utilization	30.8%	ICU Level of Service	A	
Analysis Period (min)	15			

West Main Street Road Diet
4: Fidelity & Main Street

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	31	45	13	125	264	24
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	34	50	14	139	293	27
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)				568		
pX, platoon unblocked						
vC, conflicting volume	474	307	320			
vC1, stage 1 conf vol	307					
vC2, stage 2 conf vol	168					
vCu, unblocked vol	474	307	320			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	93	99			
cM capacity (veh/h)	687	733	1240			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	34	50	14	139	320
Volume Left	34	0	14	0	0
Volume Right	0	50	0	0	27
cSH	687	733	1240	1700	1700
Volume to Capacity	0.05	0.07	0.01	0.08	0.19
Queue Length 95th (ft)	4	5	1	0	0
Control Delay (s)	10.5	10.3	7.9	0.0	0.0
Lane LOS	B	B	A		
Approach Delay (s)	10.4		0.7		0.0
Approach LOS	B				

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	25.3%	ICU Level of Service	A
Analysis Period (min)	15		

West Main Street Road Diet
Build AM

5: Ashe & Main Street

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	1	138	41	8	301
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	1	153	46	9	334
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)			437			
pX, platoon unblocked						
vC, conflicting volume	528	176			199	
vC1, stage 1 conf vol	176					
vC2, stage 2 conf vol	352					
vCu, unblocked vol	528	176			199	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			99	
cM capacity (veh/h)	656	867			1373	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	2	199	9	334
Volume Left	1	0	9	0
Volume Right	1	46	0	0
cSH	747	1700	1373	1700
Volume to Capacity	0.00	0.12	0.01	0.20
Queue Length 95th (ft)	0	0	0	0
Control Delay (s)	9.8	0.0	7.6	0.0
Lane LOS	A		A	
Approach Delay (s)	9.8	0.0	0.2	
Approach LOS	A			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	25.8%	ICU Level of Service	A
Analysis Period (min)	15		

West Main Street Road Diet
6: Weaver St & Main Street

Build AM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	9	9	89	18	53	5	114	209	95	228	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	10	10	11	12	12	10	9	12
Storage Length (ft)	0		0	0		0	50		100	100		0
Storage Lanes	0		0	0		0	1		1	1		0
Taper Length (ft)	0		0	0		0	100		100	0		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.936				0.850			0.850		0.999	
Flt Protected		0.998			0.960		0.950			0.950		
Satd. Flow (prot)	0	1856	0	0	1669	1478	1711	1863	1583	1652	1675	0
Flt Permitted		0.986			0.747		0.602			0.676		
Satd. Flow (perm)	0	1834	0	0	1299	1478	1084	1863	1583	1175	1675	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		157			63			401			437	
Travel Time (s)		4.3			1.7			10.9			11.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1	10	10	99	20	59	6	127	232	106	253	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	21	0	0	119	59	6	127	232	106	254	0
Turn Type	Perm			Perm		Perm	Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2		2	6		
Detector Phase	4	4		8	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	32.6	32.6		33.5	33.5	33.5	29.2	29.2	29.2	29.4	29.4	
Total Split (s)	35.0	35.0	0.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	0.0
Total Split (%)	50.0%	50.0%	0.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	0.0%
Maximum Green (s)	29.4	29.4		28.5	28.5	28.5	28.8	28.8	28.8	28.6	28.6	
Yellow Time (s)	3.1	3.1		3.2	3.2	3.2	3.1	3.1	3.1	3.2	3.2	
All-Red Time (s)	2.5	2.5		3.3	3.3	3.3	3.1	3.1	3.1	3.2	3.2	
Lost Time Adjust (s)	-2.0	-0.6	-2.0	-2.0	-1.5	-1.5	-1.2	-1.2	-1.2	-1.4	-1.4	-2.0
Total Lost Time (s)	3.6	5.0	2.0	4.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	2.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	Min	Min	Min	Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0	20.0	16.0	16.0	16.0	16.0	16.0	
Pedestrian Calls (#/hr)	4	4		4	4	4	7	7	7	5	5	
Act Effct Green (s)		13.6			14.4	14.4	20.2	20.2	20.2	20.2	20.2	
Actuated g/C Ratio		0.34			0.36	0.36	0.51	0.51	0.51	0.51	0.51	
v/c Ratio		0.03			0.25	0.11	0.01	0.13	0.29	0.18	0.30	
Control Delay		9.2			11.0	9.5	9.8	9.9	11.0	10.8	11.0	
Queue Delay		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		9.2			11.0	9.5	9.8	9.9	11.0	10.8	11.0	

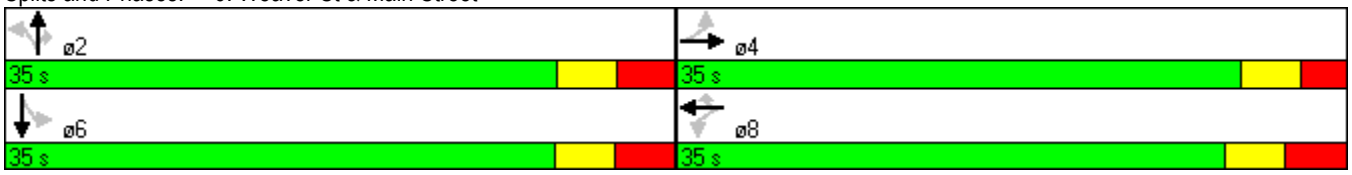
West Main Street Road Diet
Build AM
6: Weaver St & Main Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		A			B	A	A	A	B	B	B	
Approach Delay		9.2			10.5			10.6			10.9	
Approach LOS		A			B			B			B	
Queue Length 50th (ft)		2			14	7	1	15	29	13	32	
Queue Length 95th (ft)		14			55	31	7	62	113	58	121	
Internal Link Dist (ft)		77			1			321			357	
Turn Bay Length (ft)							50		100	100		
Base Capacity (vph)		1475			1045	1188	872	1498	1273	945	1347	
Starvation Cap Reductn		0			0	0	0	0	0	0	0	
Spillback Cap Reductn		0			0	0	0	0	0	0	0	
Storage Cap Reductn		0			0	0	0	0	0	0	0	
Reduced v/c Ratio		0.01			0.11	0.05	0.01	0.08	0.18	0.11	0.19	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 39.8
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.30
Intersection Signal Delay: 10.7 Intersection LOS: B
Intersection Capacity Utilization 42.1% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 6: Weaver St & Main Street



West Main Street Road Diet
Build AM

15: Weaver St & Elm St

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	6	307	145	6	4	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	7	341	161	7	4	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		63				
pX, platoon unblocked					0.97	
vC, conflicting volume	168				516	161
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	168				490	161
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	98
cM capacity (veh/h)	1410				521	884

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	348	161	7	21
Volume Left	7	0	0	4
Volume Right	0	0	7	17
cSH	1410	1700	1700	771
Volume to Capacity	0.00	0.09	0.00	0.03
Queue Length 95th (ft)	0	0	0	2
Control Delay (s)	0.2	0.0	0.0	9.8
Lane LOS	A			A
Approach Delay (s)	0.2	0.0		9.8
Approach LOS				A

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	31.0%	ICU Level of Service	A
Analysis Period (min)	15		

LANE SUMMARY

Site: Build AM Peak Hour

Carroboro Road Diet and Neighborhood Study
W. Main Street @ W. Weaver Street/Elm Street
Build AM Peak Hour
Roundabout

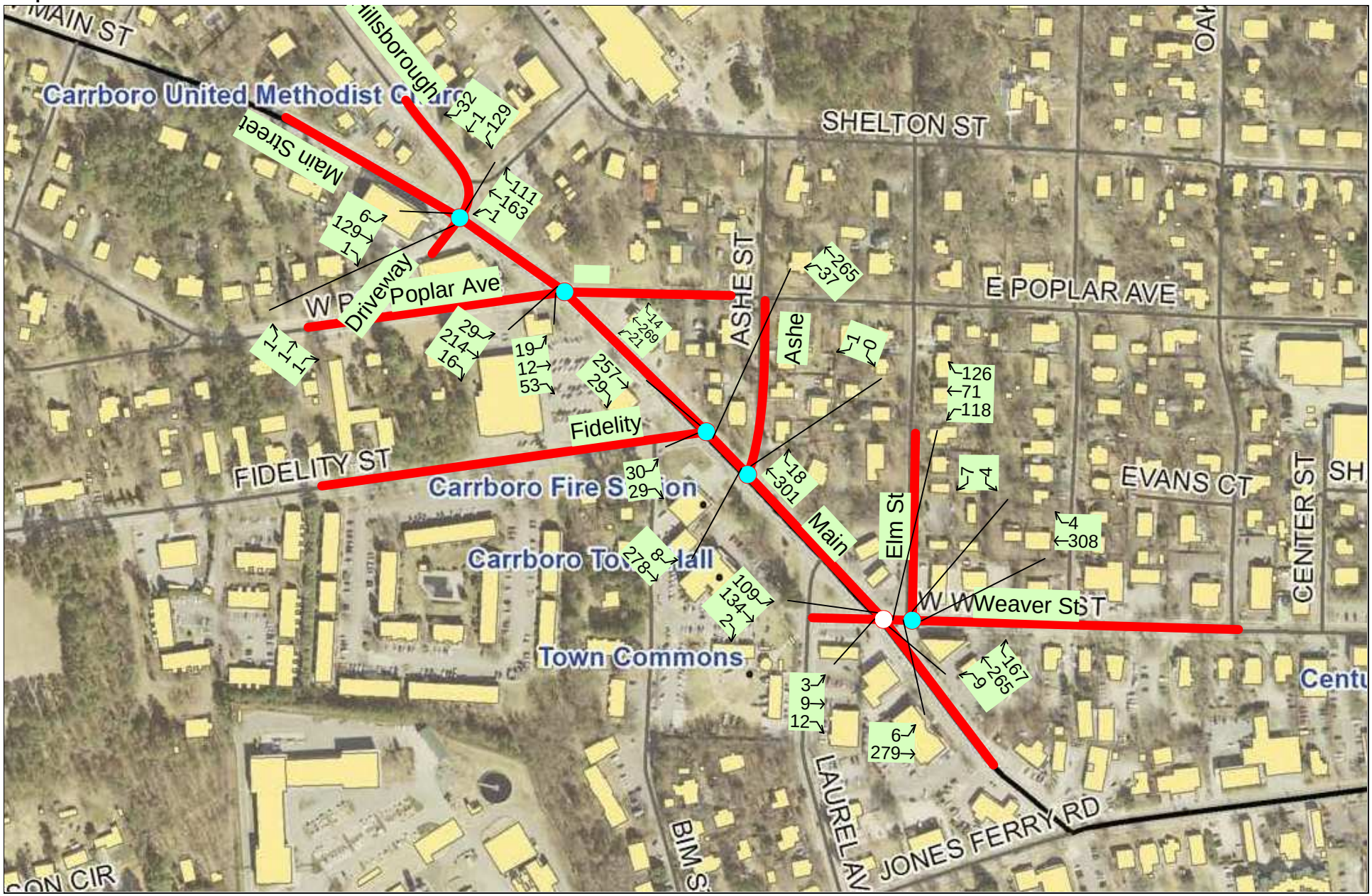
Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Lane Length ft	SL Type	Cap. Adj. %	Prob. Block. %
South: West Main Street																
Lane 1	6	130	238	373	2.0	1045	0.357	100	2.6	LOS A	2.9	73.9	1600	–	0.0	0.0
Approach	6	130	238	373	2.0		0.357		2.6	LOS A	2.9	73.9				
East: West Weaver Street																
Lane 1	111	25	74	210	2.0	982	0.214	100	5.2	LOS A	1.5	38.5	1600	–	0.0	0.0
Approach	111	25	74	210	2.0		0.214		5.2	LOS A	1.5	38.5				
North East: Elm Street																
Lane 1	22	0	12	34	2.0	805	0.042	100	6.9	LOS A	0.3	6.5	1600	–	0.0	0.0
Approach	22	0	12	34	2.0		0.042		6.9	LOS A	0.3	6.5				
North: West Main Street																
Lane 1	114	271	1	387	2.0	1004	0.385	100	3.7	LOS A	3.1	80.0	1600	–	0.0	0.0
Approach	114	271	1	387	2.0		0.385		3.7	LOS A	3.1	80.0				
West: West Weaver Street																
Lane 1	3	12	13	28	2.0	670	0.042	100	5.3	LOS A	0.3	6.7	1600	–	0.0	0.0
Approach	3	12	13	28	2.0		0.042		5.3	LOS A	0.3	6.7				
Intersection				1031	2.0		0.385		3.7	LOS A	3.1	80.0				

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all lanes. LOS Method: Delay (HCM).
Level of Service (Worst Lane): LOS A. LOS Method for individual lanes: Delay (HCM).
Approach LOS values are based on the worst delay for any lane.
Roundabout LOS Method: Same as Sign Control.
Roundabout Capacity Model: SIDRA Standard.

West Main Street Road Diet **Build PM**

Map - West Main Street Road Diet



MAB

West Main Street Road Diet
2: Hillsborough & Main Street

Build PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	1	1	129	1	32	1	163	111	6	129	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	1	1	143	1	36	1	181	123	7	143	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			None	
Median storage veh)								2				
Upstream signal (ft)								1289				
pX, platoon unblocked												
vC, conflicting volume	377	464	144	404	403	243	144			304		
vC1, stage 1 conf vol	157	157		245	245							
vC2, stage 2 conf vol	219	307		159	158							
vCu, unblocked vol	377	464	144	404	403	243	144			304		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	79	100	96	100			99		
cM capacity (veh/h)	684	610	904	693	646	796	1438			1256		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	3	180	1	304	151
Volume Left	1	143	1	0	7
Volume Right	1	36	0	123	1
cSH	713	711	1438	1700	1256
Volume to Capacity	0.00	0.25	0.00	0.18	0.01
Queue Length 95th (ft)	0	25	0	0	0
Control Delay (s)	10.1	11.8	7.5	0.0	0.4
Lane LOS	B	B	A		A
Approach Delay (s)	10.1	11.8	0.0		0.4
Approach LOS	B	B			

Intersection Summary				
Average Delay	3.5			
Intersection Capacity Utilization	37.8%	ICU Level of Service	A	
Analysis Period (min)	15			

West Main Street Road Diet
3: Poplar Ave & Main Street

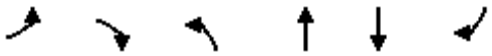
Build PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	19	12	53	0	0	0	21	269	14	29	214	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	21	13	59	0	0	0	23	299	16	32	238	18
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (ft)								1006				
pX, platoon unblocked												
vC, conflicting volume	657	672	247	721	673	307	256			314		
vC1, stage 1 conf vol	311	311		353	353							
vC2, stage 2 conf vol	346	361		368	320							
vCu, unblocked vol	657	672	247	721	673	307	256			314		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)	6.1	5.5		6.1	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	97	93	100	100	100	98			97		
cM capacity (veh/h)	542	513	792	483	518	733	1309			1246		

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	93	23	314	32	256
Volume Left	21	23	0	32	0
Volume Right	59	0	16	0	18
cSH	670	1309	1700	1246	1700
Volume to Capacity	0.14	0.02	0.18	0.03	0.15
Queue Length 95th (ft)	12	1	0	2	0
Control Delay (s)	11.2	7.8	0.0	8.0	0.0
Lane LOS	B	A		A	
Approach Delay (s)	11.2	0.5		0.9	
Approach LOS	B				

Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	33.3%	ICU Level of Service	A	
Analysis Period (min)	15			

West Main Street Road Diet
4: Fidelity & Main Street

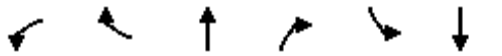


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	30	29	37	265	257	29
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	33	32	41	294	286	32
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (ft)				568		
pX, platoon unblocked						
vC, conflicting volume	678	302	318			
vC1, stage 1 conf vol	302					
vC2, stage 2 conf vol	377					
vCu, unblocked vol	678	302	318			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	96	97			
cM capacity (veh/h)	589	738	1242			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1
Volume Total	33	32	41	294	318
Volume Left	33	0	41	0	0
Volume Right	0	32	0	0	32
cSH	589	738	1242	1700	1700
Volume to Capacity	0.06	0.04	0.03	0.17	0.19
Queue Length 95th (ft)	4	3	3	0	0
Control Delay (s)	11.5	10.1	8.0	0.0	0.0
Lane LOS	B	B	A		
Approach Delay (s)	10.8		1.0		0.0
Approach LOS	B				

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	32.0%	ICU Level of Service	A
Analysis Period (min)	15		

West Main Street Road Diet
5: Ashe & Main Street



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	1	301	18	8	278
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1	334	20	9	309
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLTL			TWLTL
Median storage veh)			2			2
Upstream signal (ft)			437			
pX, platoon unblocked	0.98	0.98			0.98	
vC, conflicting volume	671	344			354	
vC1, stage 1 conf vol	344					
vC2, stage 2 conf vol	327					
vCu, unblocked vol	653	320			330	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			99	
cM capacity (veh/h)	607	706			1204	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	1	354	9	309
Volume Left	0	0	9	0
Volume Right	1	20	0	0
cSH	706	1700	1204	1700
Volume to Capacity	0.00	0.21	0.01	0.18
Queue Length 95th (ft)	0	0	1	0
Control Delay (s)	10.1	0.0	8.0	0.0
Lane LOS	B		A	
Approach Delay (s)	10.1	0.0	0.2	
Approach LOS	B			

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	26.9%	ICU Level of Service	A
Analysis Period (min)	15		

West Main Street Road Diet
6: Weaver St & Main Street

Build PM

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	9	12	118	71	126	9	265	167	109	134	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	14	12	12	10	10	11	12	12	10	9	12
Storage Length (ft)	0		0	0		0	50		100	100		0
Storage Lanes	0		0	0		0	1		1	1		0
Taper Length (ft)	0		0	0		0	100		100	0		0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.932				0.850			0.850		0.998	
Flt Protected		0.994			0.970		0.950			0.950		
Satd. Flow (prot)	0	1841	0	0	1686	1478	1711	1863	1583	1652	1673	0
Flt Permitted		0.965			0.795		0.661			0.580		
Satd. Flow (perm)	0	1787	0	0	1382	1478	1190	1863	1583	1008	1673	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		157			63			401			437	
Travel Time (s)		4.3			1.7			10.9			11.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	3	10	13	131	79	140	10	294	186	121	149	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	26	0	0	210	140	10	294	186	121	151	0
Turn Type	Perm			Perm		Perm	Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2		2	6		
Detector Phase	4	4		8	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	32.6	32.6		33.5	33.5	33.5	29.2	29.2	29.2	29.4	29.4	
Total Split (s)	36.0	36.0	0.0	36.0	36.0	36.0	34.0	34.0	34.0	34.0	34.0	0.0
Total Split (%)	51.4%	51.4%	0.0%	51.4%	51.4%	51.4%	48.6%	48.6%	48.6%	48.6%	48.6%	0.0%
Maximum Green (s)	30.4	30.4		29.5	29.5	29.5	27.8	27.8	27.8	27.6	27.6	
Yellow Time (s)	3.1	3.1		3.2	3.2	3.2	3.1	3.1	3.1	3.2	3.2	
All-Red Time (s)	2.5	2.5		3.3	3.3	3.3	3.1	3.1	3.1	3.2	3.2	
Lost Time Adjust (s)	-2.0	-0.6	-2.0	-2.0	-1.5	-1.5	-1.2	-1.2	-1.2	-1.4	-1.4	-2.0
Total Lost Time (s)	3.6	5.0	2.0	4.5	5.0	5.0	5.0	5.0	5.0	5.0	5.0	2.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	Min	Min	Min	Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	20.0	20.0		20.0	20.0	20.0	16.0	16.0	16.0	16.0	16.0	
Pedestrian Calls (#/hr)	4	4		4	4	4	7	7	7	5	5	
Act Effct Green (s)		13.6			15.5	15.5	16.1	16.1	16.1	16.1	16.1	
Actuated g/C Ratio		0.32			0.37	0.37	0.38	0.38	0.38	0.38	0.38	
v/c Ratio		0.05			0.41	0.26	0.02	0.41	0.31	0.31	0.24	
Control Delay		10.5			12.9	10.8	10.2	12.7	12.0	13.3	11.3	
Queue Delay		0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay		10.5			12.9	10.8	10.2	12.7	12.0	13.3	11.3	

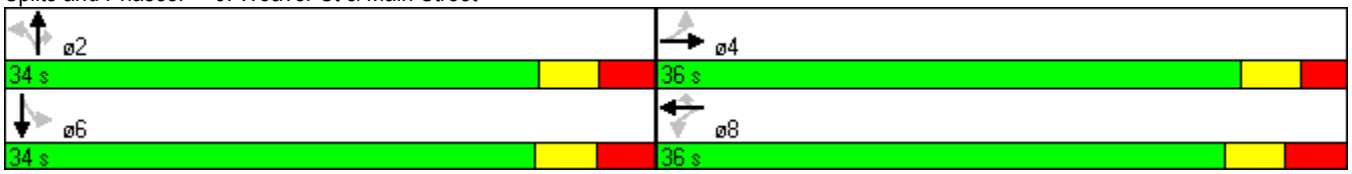
West Main Street Road Diet
Build PM
6: Weaver St & Main Street

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		B			B	B	B	B	B	B	B	
Approach Delay		10.5			12.0			12.4			12.2	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)		3			29	18	1	40	24	16	19	
Queue Length 95th (ft)		17			93	62	10	136	91	68	74	
Internal Link Dist (ft)		77			1			321			357	
Turn Bay Length (ft)							50		100	100		
Base Capacity (vph)		1388			1073	1148	865	1353	1150	732	1215	
Starvation Cap Reductn		0			0	0	0	0	0	0	0	
Spillback Cap Reductn		0			0	0	0	0	0	0	0	
Storage Cap Reductn		0			0	0	0	0	0	0	0	
Reduced v/c Ratio		0.02			0.20	0.12	0.01	0.22	0.16	0.17	0.12	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 42.1
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.41
Intersection Signal Delay: 12.2 Intersection LOS: B
Intersection Capacity Utilization 51.7% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 6: Weaver St & Main Street



West Main Street Road Diet
Build PM

15: Weaver St & Elm St

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	6	279	308	4	4	7
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	7	310	342	4	4	8
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		63				
pX, platoon unblocked					0.96	
vC, conflicting volume	347				666	342
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	347				632	342
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	99
cM capacity (veh/h)	1212				425	700

Direction, Lane #	EB 1	WB 1	WB 2	SB 1
Volume Total	317	342	4	12
Volume Left	7	0	0	4
Volume Right	0	0	4	8
cSH	1212	1700	1700	567
Volume to Capacity	0.01	0.20	0.00	0.02
Queue Length 95th (ft)	0	0	0	2
Control Delay (s)	0.2	0.0	0.0	11.5
Lane LOS	A			B
Approach Delay (s)	0.2	0.0		11.5
Approach LOS				B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	29.5%	ICU Level of Service	A
Analysis Period (min)	15		

LANE SUMMARY

Site: Build PM Peak Hour

Carroboro Road Diet and Neighborhood Study
W. Main Street @ W. Weaver Street/Elm Street
Build PM Peak Hour
Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Lane Length ft	SL Type	Cap. Adj. %	Prob. Block. %
South: West Main Street																
Lane 1	10	285	180	474	2.0	1060	0.447	100	2.4	LOS A	4.0	102.9	1600	–	0.0	0.0
Approach	10	285	180	474	2.0		0.447		2.4	LOS A	4.0	102.9				
East: West Weaver Street																
Lane 1	122	75	134	331	2.0	815	0.406	100	6.1	LOS A	3.2	82.4	1600	–	0.0	0.0
Approach	122	75	134	331	2.0		0.406		6.1	LOS A	3.2	82.4				
North East: Elm Street																
Lane 1	7	0	9	16	2.0	603	0.027	100	8.3	LOS A	0.2	4.4	1600	–	0.0	0.0
Approach	7	0	9	16	2.0		0.027		8.3	LOS A	0.2	4.4				
North: West Main Street																
Lane 1	117	144	2	263	2.0	892	0.295	100	4.9	LOS A	2.3	57.2	1600	–	0.0	0.0
Approach	117	144	2	263	2.0		0.295		4.9	LOS A	2.3	57.2				
West: West Weaver Street																
Lane 1	5	12	16	33	2.0	758	0.044	100	4.7	LOS A	0.3	6.9	1600	–	0.0	0.0
Approach	5	12	16	33	2.0		0.044		4.7	LOS A	0.3	6.9				
Intersection				1118	2.0		0.447		4.2	LOS A	4.0	102.9				

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all lanes. LOS Method: Delay (HCM).
Level of Service (Worst Lane): LOS A. LOS Method for individual lanes: Delay (HCM).
Approach LOS values are based on the worst delay for any lane.
Roundabout LOS Method: Same as Sign Control.
Roundabout Capacity Model: SIDRA Standard.

Oak-Poplar Traffic Study

Public Hearing

March 27, 2012

MARTIN ALEXIOU BRYSON

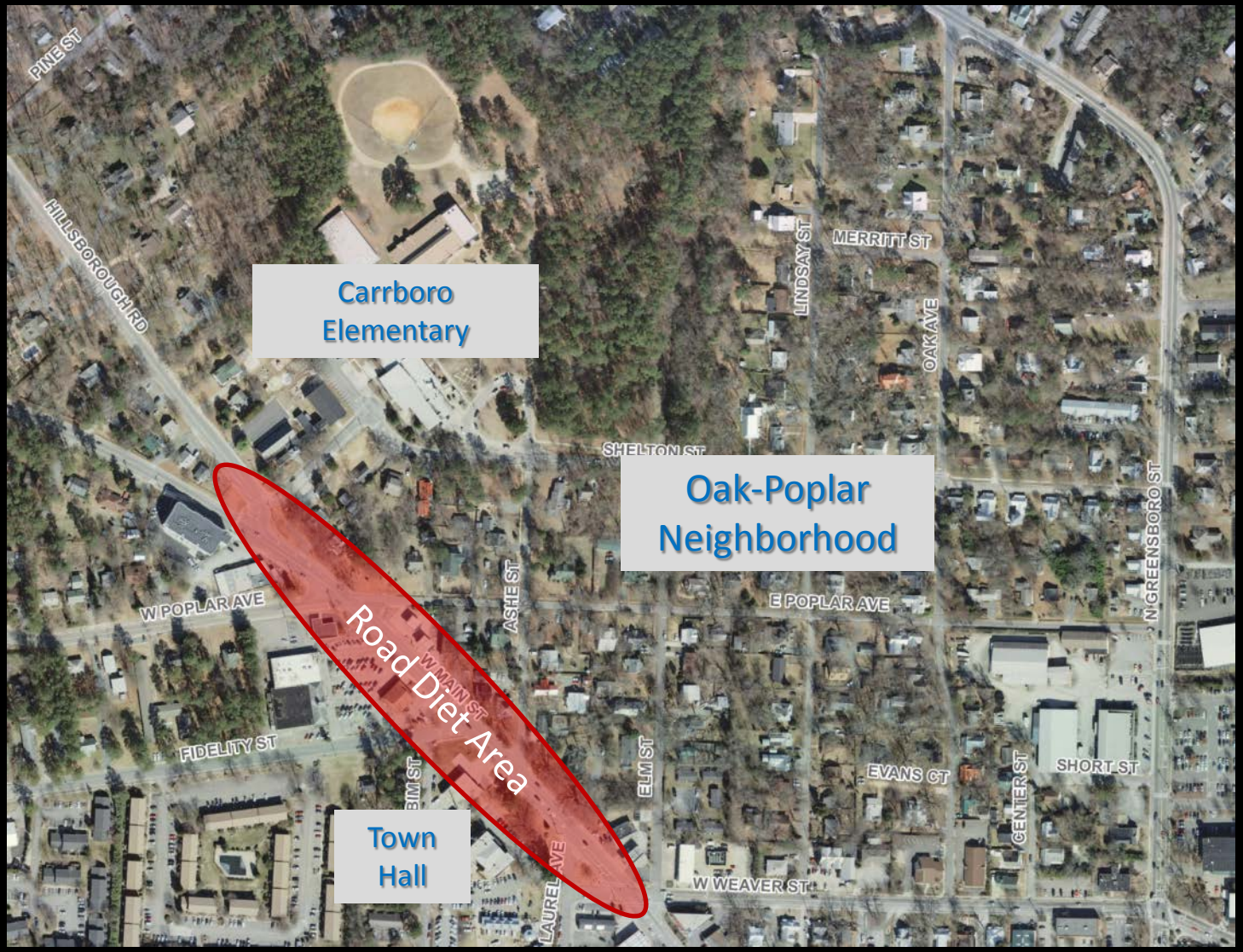
Study Objectives

- Develop pavement marking plan for West Main Street “Road Diet”
- Identify circulation and safety issues in Oak-Poplar neighborhood

Input and Data Collection

- Neighborhood Walk (Nov 3)
- Field observations
- Traffic counts
- Community Meeting (Dec 5)
- Town and MPO staff

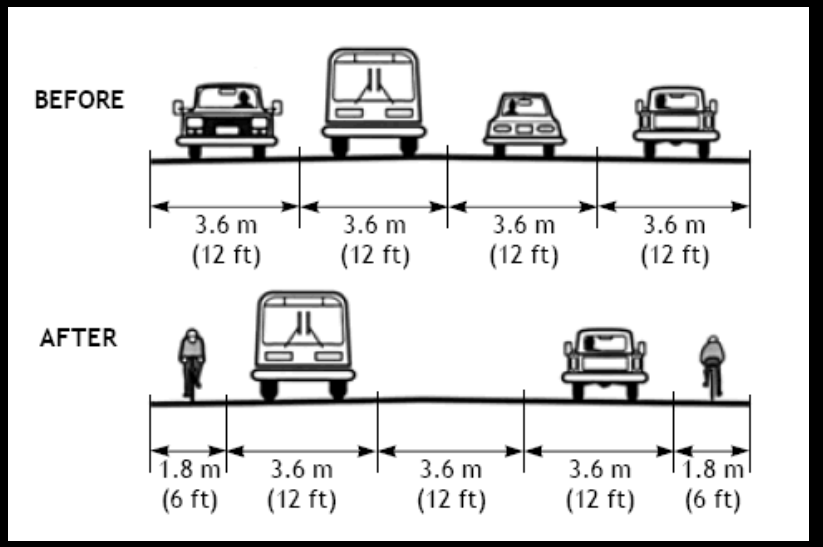
Study Area


PINE ST
HILLSBOROUGH RD
Carrboro Elementary
MERRITT ST
LINDSAY ST
OAK AVE
SHELTON ST
Oak-Poplar Neighborhood
N GREENSBORO ST
W POPLAR AVE
ASHE ST
Road Diet Area
E POPLAR AVE
WILSON ST
FIDELITY ST
ELM ST
EVANS CT
SHORT ST
CENTER ST
BIM ST
Town Hall
LAUREL AVE
W WEAVER ST

West Main St Road Diet

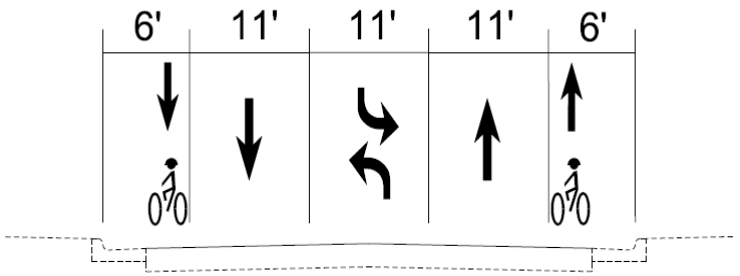
What is a "Road Diet"?

- Reduce number (and sometimes width) of vehicular travel lanes
  - Enhance safety for bicycles and pedestrians
  - Add bicycle and pedestrian facilities/amenities
- Create a multimodal street

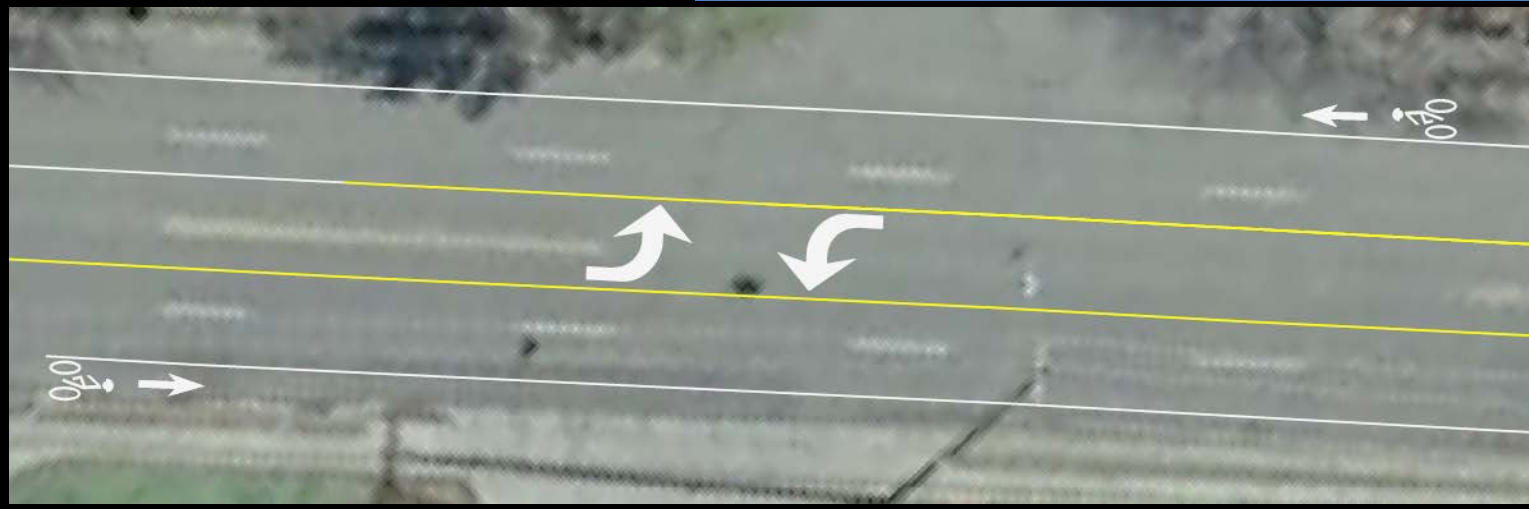


Source: FHWA

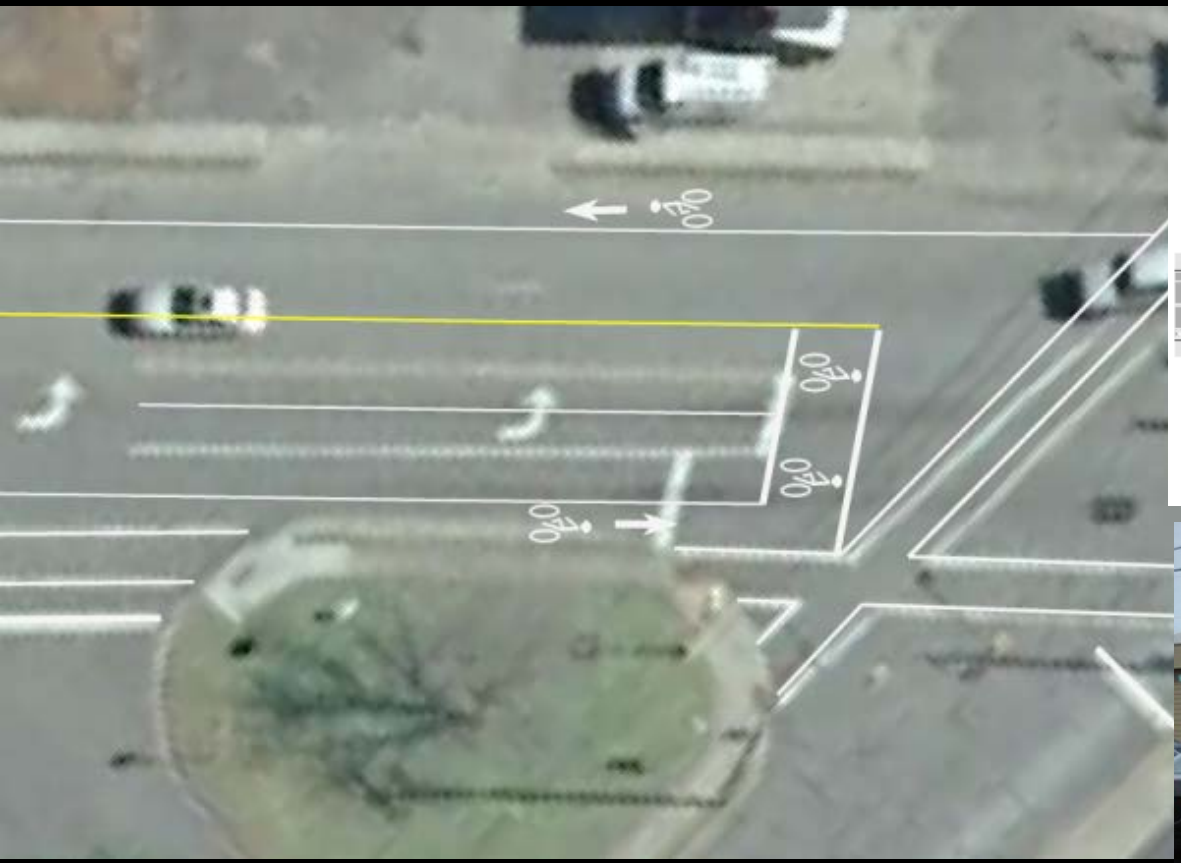
Road Diet

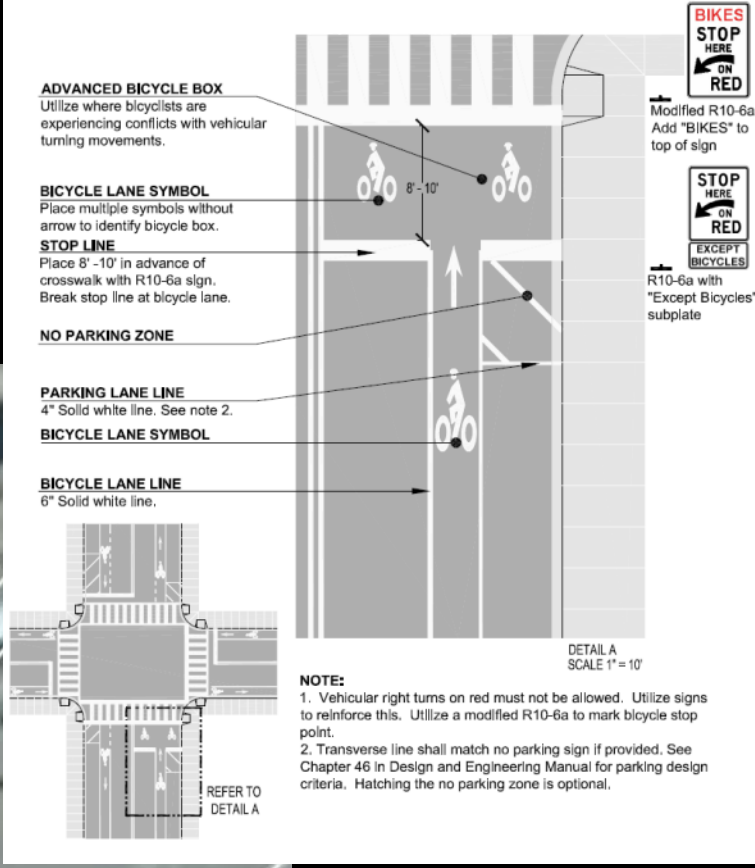


Proposed Typical Section with Center Turn Lane



Bike Box Concept





Traffic Data

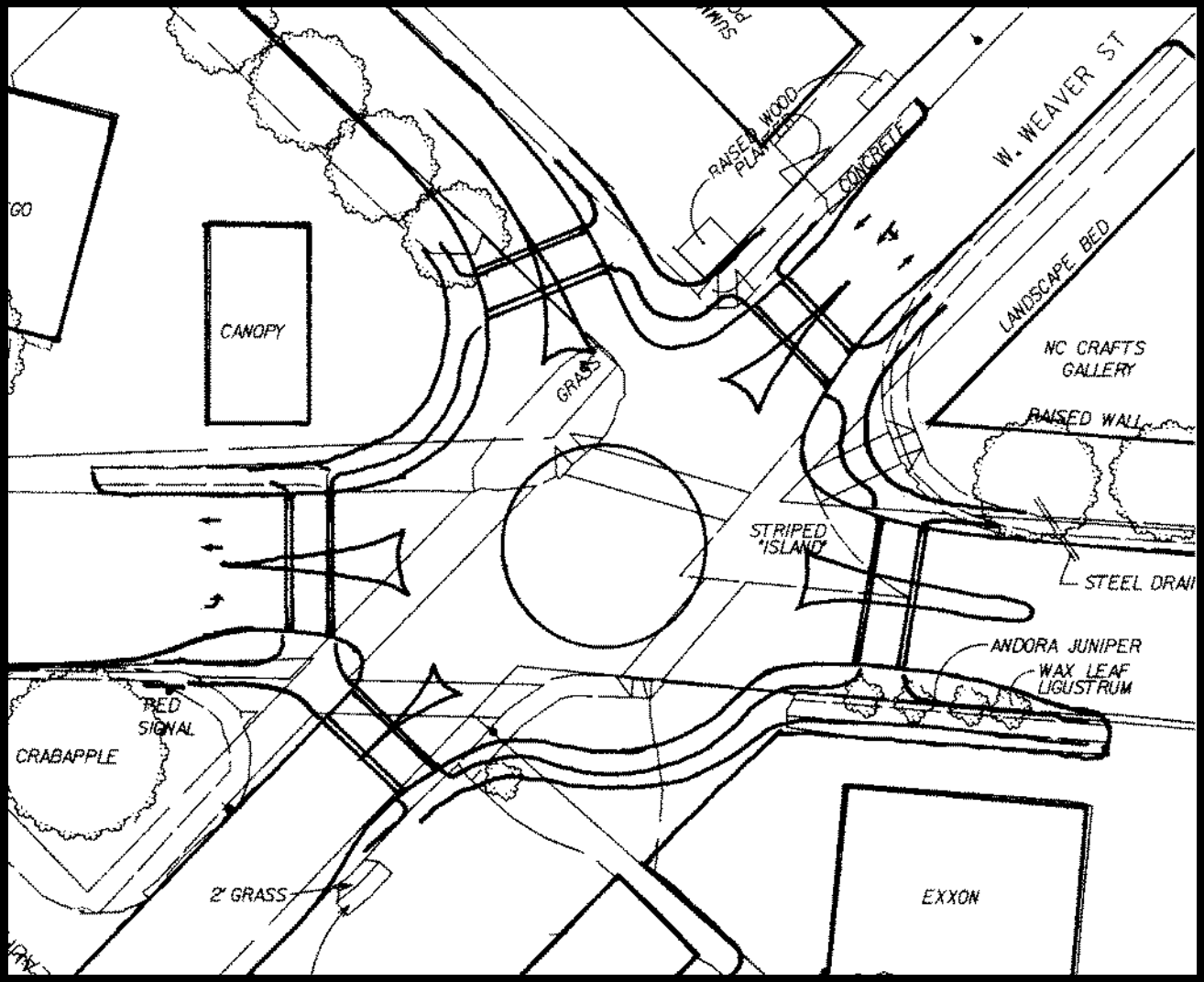
Level of Service Analysis

Level of Service

West Main Street Intersection	Traffic Control	Existing (2011)		Road Diet (2011)	
		AM	PM	AM	PM
Hillsborough Road	Unsignalized	(WB-B)	(WB-B)	(WB-B)	(WB-B)
Poplar Avenue	Unsignalized	(EB-B)	(EB-B)	(EB-B)	(EB-B)
Fidelity Street	Unsignalized	(EB-B)	(EB-B)	(EB-B)	(EB-B)
Ashe Street	Unsignalized	(SB-A)	(WB-A)	(WB-A)	(WB-B)
Weaver Street	Signalized	B (SB-B)	B (NB-B)	B (SB-B)	B (NB-B)
Elm Street	Unsignalized	(SB-A)	(SB-B)	(SB-A)	(SB-B)
Weaver Street/Elm Street Roundabout	Roundabout	-	-	A (SB-A)	A (SB-A)

Legend: X (X-X) = overall intersection LOS for signalized intersection (worst approach – worst approach LOS)
X = Worst LOS for uncontrolled approach at unsignalized intersection

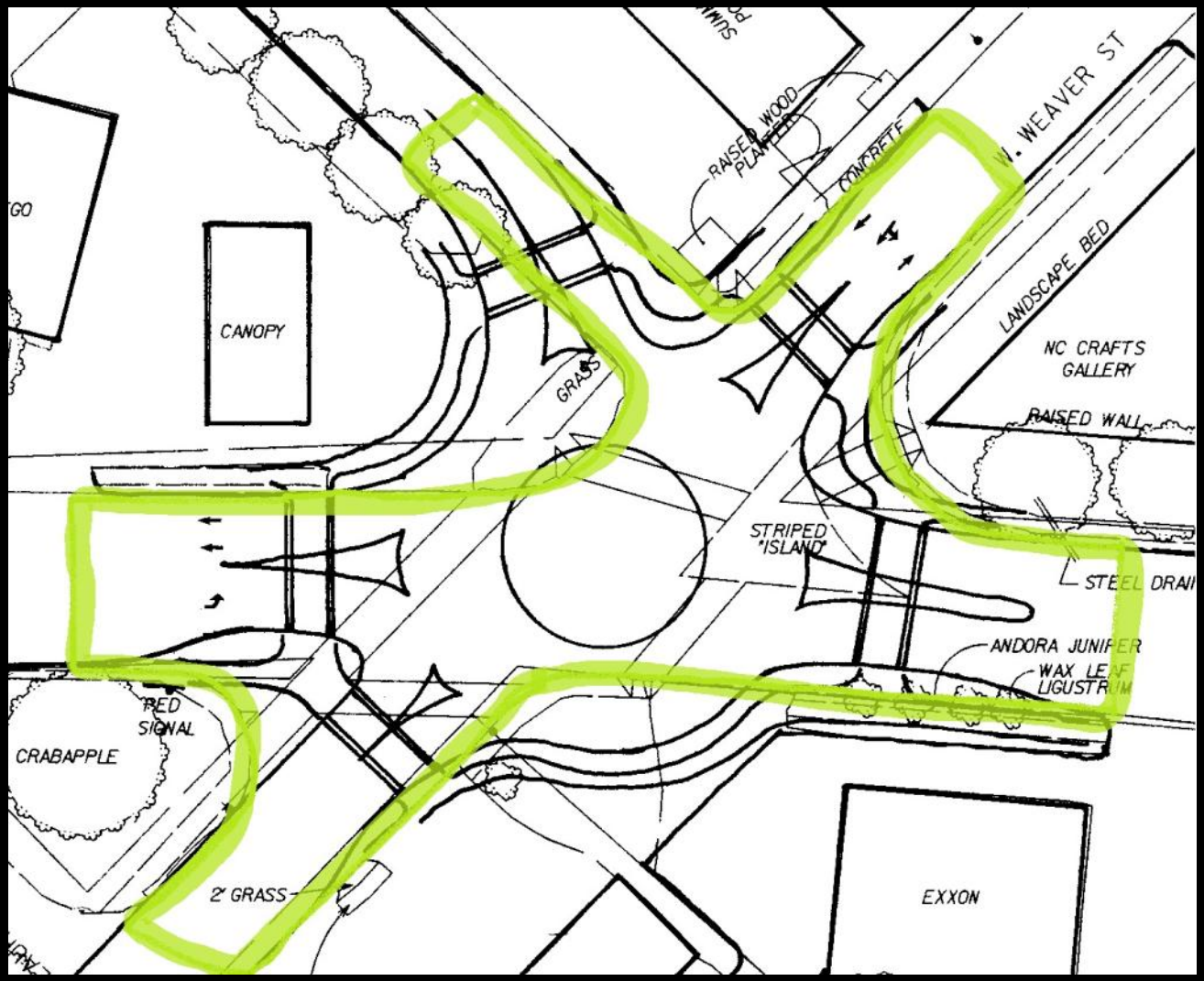
Roundabout



- Impacts private property
- Impacts access to adjacent properties
- NCDOT typically requires 25-year service life analysis

Source: Town of Carrboro

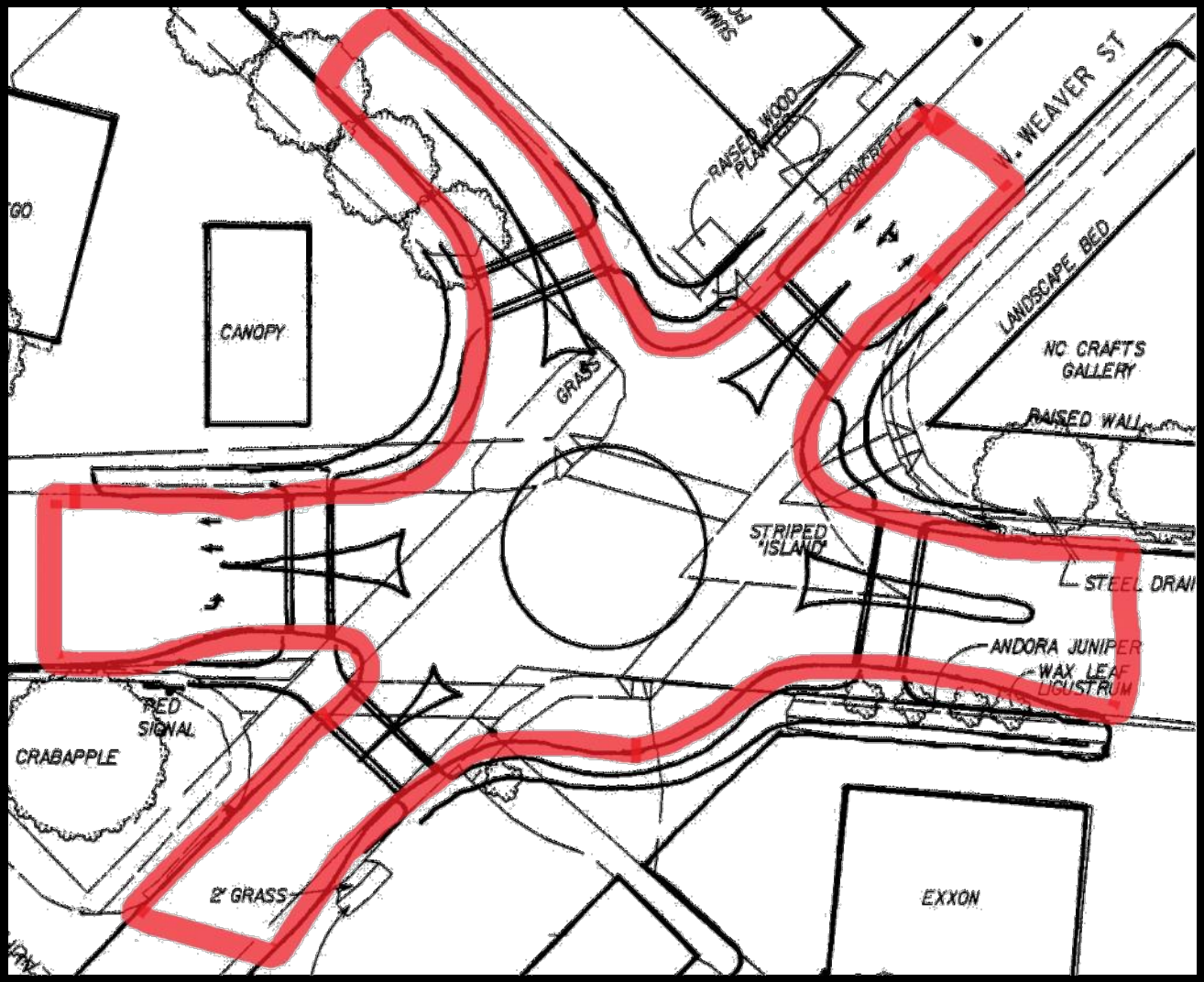
Roundabout



- Impacts private property
- Impacts access to adjacent properties
- NCDOT typically requires 25-year service life analysis

Source: Town of Carrboro

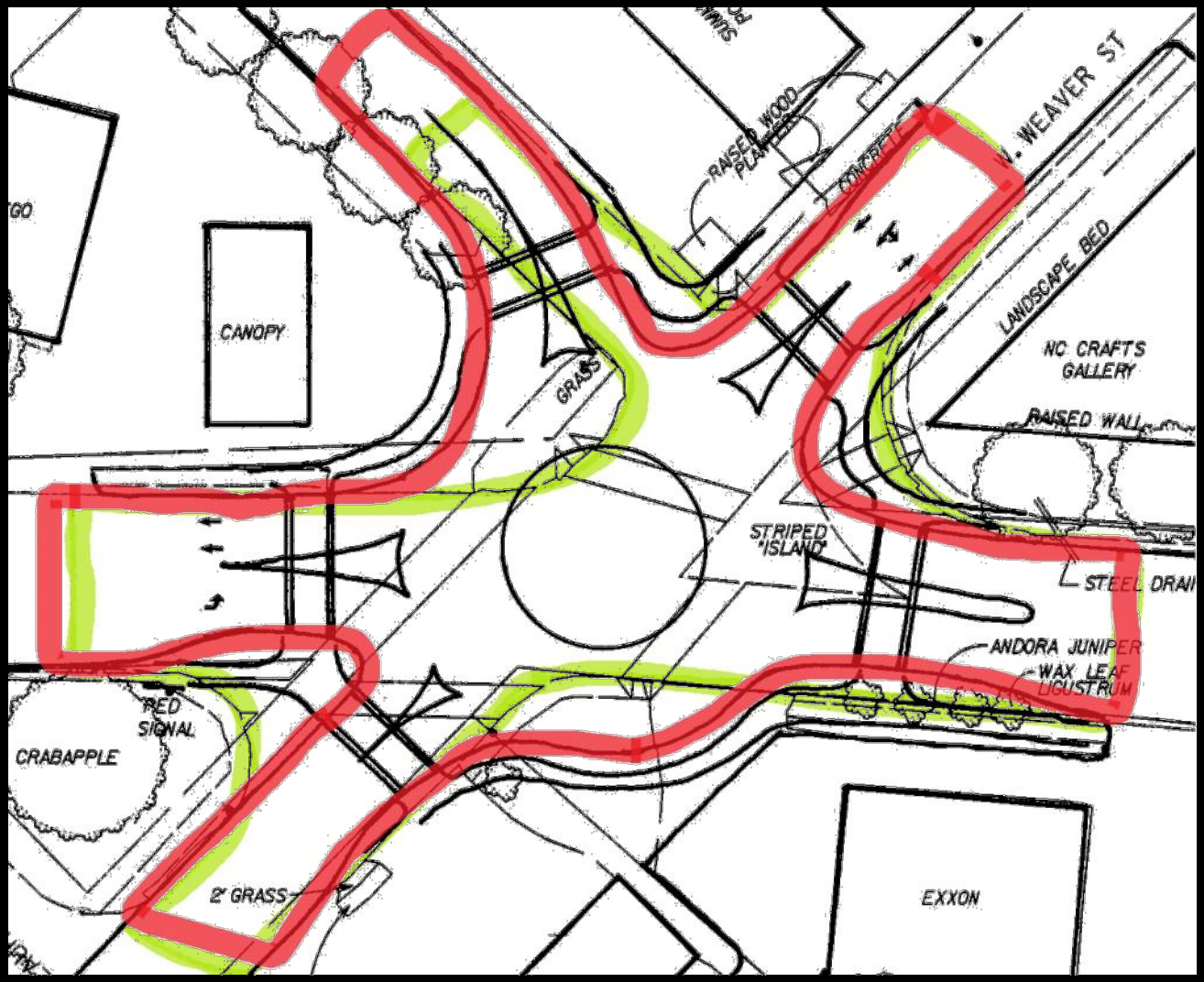
Roundabout



- Impacts private property
- Impacts access to adjacent properties
- NCDOT typically requires 25-year service life analysis

Source: Town of Carrboro

Roundabout



- Impacts private property
- Impacts access to adjacent properties
- NCDOT typically requires 25-year service life analysis

Source: Town of Carrboro

Preliminary Traffic Findings

- Road Diet not expected to have significant negative impact on congestion in the area

- Roundabout may be feasible but further analyses are necessary

Oak-Poplar Neighborhood

Circulation and Safety Issues

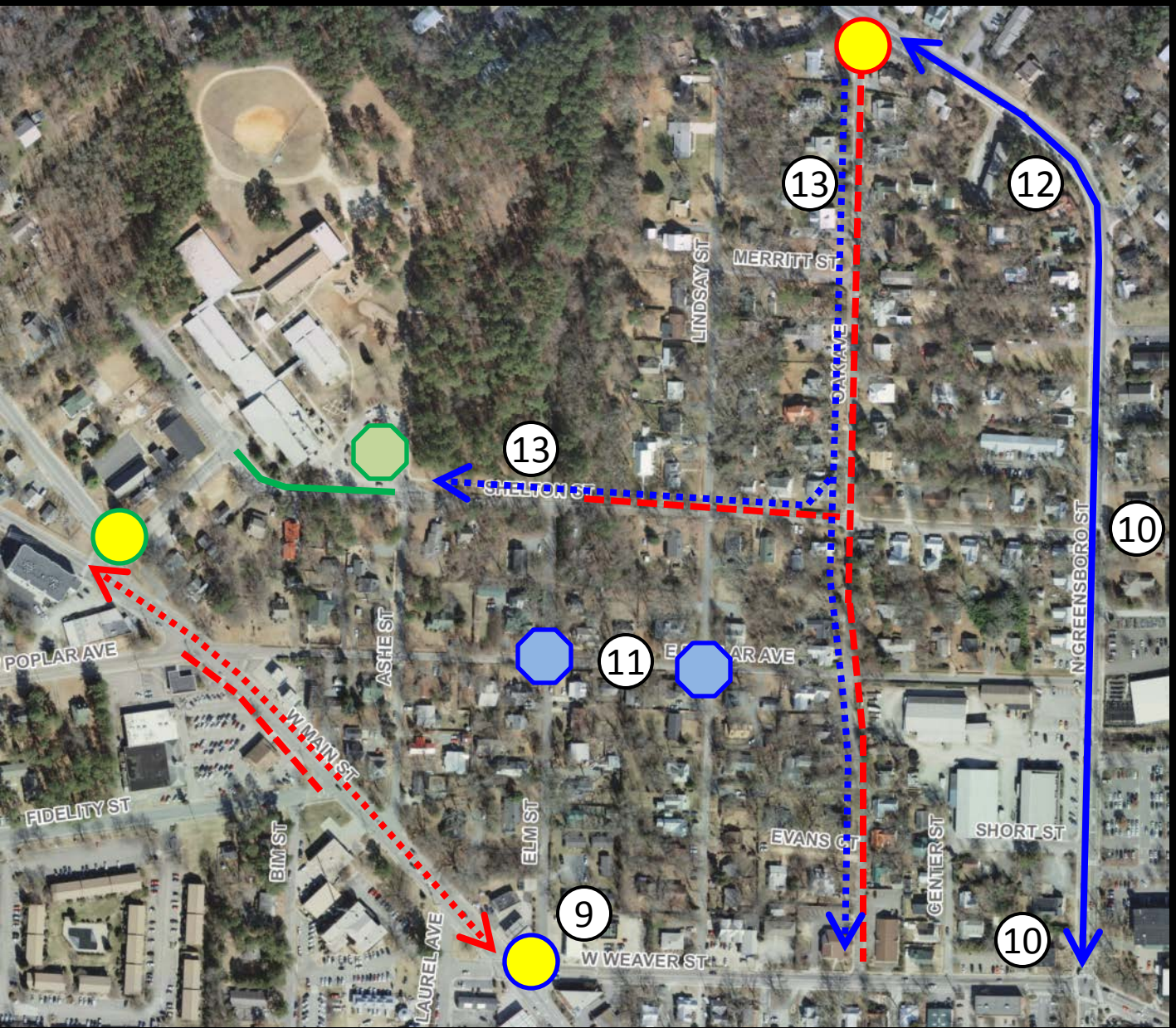
Pedestrian Issues

1. No sidewalk/ narrow street on Oak and Shelton
2. Gap in sidewalk on west side of W Main St
3. Lack of crosswalks on W Main St
4. Oak/Greensboro intersection crossing concerns

School Circulation Issues

5. No stop sign or traffic control at drop-off circle
6. Solid white line on Shelton confusing
7. Two left turn lanes become one lane on Shelton
8. Main/ Hillsborough/ Shelton intersection difficult

Neighborhood Circulation Issues



9 Elm / Weaver / Main intersection

10 Impacts of potential new development

11 Stop sign compliance

12 Greensboro traffic

13 Cut-through traffic

Potential Solutions

Potential Solution	Affordability	Feasibility	Effectiveness	Next Steps
Oak Avenue one-way	++	+	++	Detailed Traffic Impact Analysis report
Traffic calming: traffic humps or speed tables on Oak Avenue	++	++	++	Detailed engineering study on possible locations
Traffic calming: chicanes or traffic circles on Shelton Street	+	+	++	Detailed treatment location / traffic impact study
Raised pedestrian islands at the North Greensboro Street and Oak Avenue intersection and the West Main Street and Weaver Street intersection	++	+++	++	Town and NCDOT approval
Close Elm Street and Weaver Street intersection to vehicle traffic	++	+	++	Traffic Impact Analysis report
Reconstruct Shelton Street / Hillsborough Road / West Main Street intersection	+	+	+++	Planning and engineering study of traffic impacts, capital costs, new road alignments, and new traffic patterns.
Construct sidewalks on Oak Avenue, Shelton Street, and/or Elm Street	+	++	+++	Detailed sidewalk layout study to determine sidewalk alignments and impacts on properties, right-of-way, trees, and utilities.
Marked pedestrian crossings on West Main Street (likely with raised, pedestrian refuge islands)	+++ (++ if raised refuge islands are used)	+++	+++	Location study and NCDOT approval

Questions and Comments?

MEMORANDUM

To: Transportation Advisory Committee (TAC)
DCHC MPO

From: DCHC MPO Lead Planning Agency

Date: May 9, 2012

Subject: **Lead Planning Agency (LPA) Staff Report**

This memorandum provides a summary status of tasks for projects in the FY 2011-2012 Unified Planning Work Program.

- Indicates that task is ongoing and not complete.
- ✓ Indicates that task is complete.

FY 2011- 2012 Unified Planning Work Program (UPWP) – Projects

Town of Carrboro Transportation Study/Main Street Road Diet

- ✓ Consultant selected
- ✓ Scope development/contract negotiation complete
- ✓ Data Collection to commence in September 2011 – Analysis Underway

Town of Hillsborough Downtown Transportation Study

- ✓ Consultant selected
- ✓ Scope development/contract negotiation complete
- ✓ Data Collection to commence in September 2011 – Analysis Underway

2040 Long Range Transportation Plan LRTP

- ✓ LRTP Schedule/Timeline TAC Approval – August 2011
- ✓ Socio-economic and demographic data analysis completed
- ✓ LRTP Public Involvement plan – March/April/May 2012
- ✓ LRTP Goals and Objectives – March/April/May 2012
- Approval of LRTP Targets - March/April/May 2012
- Deficiency Analysis – March/April/May 2012
- Socio-economic Forecasts – March 2012
- Land use Scenario – March 2012
- Alternative Analysis – May –July 2012
- Draft LRTP Recommendation - September 2012
- Air Quality analysis and Conformity Adopted - October 2012 - February 2013
- Approval of LRTP and Conformity determination - April/May 2013
- Technical report and implementation

Comprehensive Transportation Plan (CTP)

- Draft CTP –Depends on NCDOT Schedule
- Public Input

- Recommended CTP
- Adopted CTP - September 2012
- Technical report and implementation

NC 54/I-40 Corridor/Sub-Area Study

- ✓ Staff study initiation meeting
- ✓ Draft scope of services
- ✓ Agency review of scope and time
- ✓ Request for Proposal notice – October 2008
- ✓ Proposal due January 2009
- ✓ Consultant selected
- ✓ Contract negotiation underway
- ✓ Council contract approval – May 18, 2009
- ✓ Notice to Proceed – June 2009
- ✓ Kickoff Meeting – July 2009
- ✓ Public Outreach Plan – August 2009
- ✓ Prepare Corridor / Subarea Community Profile – Dec 2009
    - ✓ Public Workshop #1 – Fall 2009
- ✓ Development and Evaluation of Scenarios – Apr 2010
    - ✓ Public Workshop #2 – Feb 25, 2010
- ✓ Transportation/Land Use Master Plan – June 2010
    - ✓ Public Workshop #3 – May 11, 2010
- ✓ Documentation and Final Presentation – June 2010
- ✓ Local agency review – ongoing
- ✓ Additional study to address issues raised during public comment
- ✓ Phase 2 – Draft plan completed
- Study completion – June 2012

GIS/Data Integration and Automation

- ✓ Phase I completed. Internal review and implementation in progress
- ✓ Phase I deployment
- Database development – ongoing.
- Phase 2 – underway

Land-use Model Development

- ✓ Multi-year project in progress
- ✓ Phase 1 completed
- ✓ Sensitivity analysis and testing in progress
- ✓ Data development in on-going
- Phase 2- Parcel level model for DCHC
    - Initial database – TBD
    - Initial model estimation – TBD
    - Initial calibration – TBD

MPO Parking Survey and Study (postponed)

- Parking model specification
- Regional Coordination and planning
- Draft scope of services
- Request for Proposal notice
- Consultant selection

- Council contract approval
- Project commences

MPO Community Viz. Scenarios Planning and Visualization

- ✓ Project kick- off in November 2010 – completed
- ✓ Data collection – completed
- ✓ Build Scenario Planning Tool
- ✓ Develop and approve Place Typology – Place Type Palette – completed
- ✓ Focus Group Meetings – completed
- ✓ Trend Forecasts
- ✓ Partnering Strategy
- ✓ Build Development Strategy
- ✓ Rationalize Scenarios
- Land use and Transportation MOEs
- Documentation/Protocol Report

MPO Congestion Management Process CMP

- ✓ CMP Procedure Plan approval – completed
- ✓ FHWA Approval of CMP procedure plan – August 2011
- ✓ CMP data requirement collection plan –Fall of 2011
- ✓ CMP Data collection and monitoring – ongoing
- ✓ CMP implementation – ongoing
- State- of Systems Report – December 2012
- Evaluation of effective of CMP projects and funded projects - ongoing

MPO Safety and Security Plan

- ✓ Action Plan and schedule to be completed in September 2011

Update of the MPO Public Involvement consistent with Federal Certification Review

- ✓ Action Plan and schedule completed in September 2011

MPO Title VI/Environmental Justice (EJ)/Limited English Proficiency (LEP) Plan

- ✓ Action Plan and schedule completed in September 2011

MPO Climate Change (Sustainability Adaptation) Plan/ Update of Greenhouse Emissions Plan

- ✓ Action Plan and schedule completed in September 2011

MPO Freight Plan and Integration

- ✓ Action Plan and schedule completed in September 2011

TCC 5/23/2012 Attachment 14

Contract Number:	C201994	**Route:**	NC-147
Physical Division:	5	**County:**	Durham
Administrative Division:	15	**TIP Number:**	U-4763B
Length:	4.2 miles	**Federal Aid Number:**	TIFIA-540(2)
Resident Engineer:	D. Brian Harrington, PE	**RE Phone Number:**	(919)836-4873
Location Description:	TRIANGLE PARKWAY FROM NC-540 IN WAKE CO TO I-40 IN DURHAM CO		
Type of Work:	GRADING, DRAINAGE, PAVING, SIGNALS, TOLL FACILITIES & STRS.		
Contractor Name:	S. T. WOOTEN CORPORATION		
Contract Amount:	$137,446,000.00	**Cost Overrun/Underrun:**	
Availability Date:	9/19/2008	**Letting Date:**	8/5/2008
Completion Date:	7/1/2011	**Work Began:**	8/3/2009
Revised Completion Date:		**Estimated Completion:**	
Last Estimate Thru:		**Scheduled Progress:**	
Last Estimate Paid:		**Actual Progress:**	

Contract Number:	C202064	**Route:**	SR-2028
Physical Division:	5	**County:**	Durham
Administrative Division:	5	**TIP Number:**	U-3309A
Length:	1.165 miles	**Federal Aid Number:**	STP-2028(4)
Resident Engineer:	Cadmus Capehart, PE	**RE Phone Number:**	(919)840-0914
Location Description:	SR-2028 (TW ALEXANDER DR) FROM CORNWALLIS RD TO EAST OF NC-147 IN DURHAM.		
Type of Work:	WIDENING, GRADING, DRAINAGE, PAVING & SIGNALS.		
Contractor Name:	GELDER AND ASSOCIATES, INC.		
Contract Amount:	$6,502,648.68	**Cost Overrun/Underrun:**	1.61%
Availability Date:	2/1/2010	**Letting Date:**	12/15/2009
Completion Date:	8/15/2011	**Work Began:**	2/8/2010
Revised Completion Date:		**Estimated Completion:**	4/30/2012
Last Estimate Thru:	3/31/2012	**Scheduled Progress:**	100%
Last Estimate Paid:	4/5/2012	**Actual Progress:**	97.84%

Contract Number:	C202164	**Route:**	SR-1959
Physical Division:	5	**County:**	Durham
Administrative Division:	5	**TIP Number:**	U-4011
Length:	0.767 miles	**Federal Aid Number:**	STP-1959(3)
Resident Engineer:	Mark W. Luther, PE	**RE Phone Number:**	(919)220-4680
Location Description:	SR-1959 (S MIAMI BLVD) FROM SOUTH OF SR-2112 (METHODIST ST) TO NORTH OF SR-1960 (BETHESDA AVE).		
Type of Work:	GRADING, DRAINAGE, PAVING & SIGNALS.		
Contractor Name:	TRIANGLE GRADING & PAVING, INC		
Contract Amount:	$4,666,751.41	**Cost Overrun/Underrun:**	0.75%
Availability Date:	6/27/2011	**Letting Date:**	5/17/2011
Completion Date:	7/13/2012	**Work Began:**	7/13/2011
Revised Completion Date:		**Estimated Completion:**	7/13/2012
Last Estimate Thru:	4/15/2012	**Scheduled Progress:**	56.66%
Last Estimate Paid:	4/19/2012	**Actual Progress:**	62.75%

Contract Number:	C202340	**Route:**	SR-1321
Physical Division:	5	**County:**	Durham
Administrative Division:	5	**TIP Number:**	U-3804
Length:	1.07 miles	**Federal Aid Number:**	STM-0505(50)
Resident Engineer:	Mark W. Luther, PE	**RE Phone Number:**	(919)220-4680
Location Description:	SR-1321 (HILLANDALE RD) FROM I-85 TO NORTH OF SR-1407 (CARVER AVE).		
Type of Work:	GRADING, DRAINAGE, PAVING, AND SIGNAL.		
Contractor Name:	REA CONTRACTING A DIVISION OF THE LANE CONSTRUCTION CORPORAT		
Contract Amount:	$4,222,625.78	**Cost Overrun/Underrun:**	15.35%
Availability Date:	8/30/2010	**Letting Date:**	7/20/2010
Completion Date:	6/15/2012	**Work Began:**	9/30/2010
Revised Completion Date:	7/1/2012	**Estimated Completion:**	10/1/2012
Last Estimate Thru:	4/7/2012	**Scheduled Progress:**	81.82%
Last Estimate Paid:	4/26/2012	**Actual Progress:**	63.84%

Contract Number:	C202507	**Route:**	I-540
Physical Division:	5	**County:**	Durham
Administrative Division:	15	**TIP Number:**	R-2635, U-4763B
Length:	18.8 miles	**Federal Aid Number:**	TIFIA-540(2)
Resident Engineer:	Jason R. Peterson, PE	**RE Phone Number:**	(919)571-3000
Location Description:	NC-540 FROM NC-55 NEAR APEX TO NC-54 NEAR RTP AND NC-147 FROM I-40 TO		

NC-540.
Type of Work: DESIGN-BUILD LANDSCAPING.
Contractor Name: SOUTHERN GARDEN, INC.
Contract Amount: $4,800,000.00 **Cost Overrun/Underrun:**
Availability Date: 8/15/2011 **Letting Date:** 4/21/2011
Completion Date: 7/1/2015 **Work Began:**
Revised Completion Date: **Estimated Completion:**
Last Estimate Thru: **Scheduled Progress:**
Last Estimate Paid: **Actual Progress:**

Contract Number: C202538 **Route:** NC-55, NC-751, SR-1118 SR-1357, SR-1404, SR-1615 SR-1641, SR-1646, SR-1656 SR-1670, SR-1671, SR-1901 SR-1954, SR-1955, SR-1981 US-70
Physical Division: 5 **County:** Durham
Administrative Division: 5 **TIP Number:**
Length: 22.96 miles **Federal Aid Number:**
Resident Engineer: Cadmus Capehart, PE **RE Phone Number:** (919)840-0914
Location Description: 1 SECTION OF US-70, 1 SECTION OF NC-55, 1 SECTION OF NC-751 & 13 SECTIONS OF SECONDARY ROADS.
Type of Work: MILLING, RESURFACING & SHOULDER RECONSTRUCTION.
Contractor Name: TRIANGLE GRADING & PAVING, INC
Contract Amount: $4,474,348.51 **Cost Overrun/Underrun:** 1.58%
Availability Date: 3/15/2010 **Letting Date:** 1/19/2010
Completion Date: 12/16/2010 **Work Began:** 4/5/2010
Revised Completion Date: **Estimated Completion:** 3/30/2012
Last Estimate Thru: 6/22/2011 **Scheduled Progress:** 100%
Last Estimate Paid: 7/7/2011 **Actual Progress:** 98.01%

Contract Number: C202610 **Route:** NC-147
Physical Division: 5 **County:** Durham
Administrative Division: 5 **TIP Number:** R-5164D
Length: 6.8 miles **Federal Aid Number:** STM-0147(3)
Resident Engineer: Cadmus Capehart, PE **RE Phone Number:** (919)840-0914
Location Description: NC-147 FROM NORTH OF SR-1322 (BROAD ST) TO NORTH OF SR-2028 (TW ALEXANDER BLVD).
Type of Work: DIAMOND GRINDING, CONC PVT SLAB REMOVAL & SHOULDER RECONST.
Contractor Name: FSC II LLC DBA FRED SMITH COMPANY
Contract Amount: $4,274,880.20 **Cost Overrun/Underrun:** 26.59%
Availability Date: 3/15/2011 **Letting Date:** 9/21/2010
Completion Date: 11/1/2011 **Work Began:** 3/15/2011
Revised Completion Date: **Estimated Completion:** 5/15/2012
Last Estimate Thru: 4/7/2012 **Scheduled Progress:** 100%
Last Estimate Paid: 4/12/2012 **Actual Progress:** 88.42%

Contract Number: C202620 **Route:** I-85
Physical Division: 5 **County:** Durham
Administrative Division: 5 **TIP Number:** I-5145
Length: 12.6 miles **Federal Aid Number:** IMS-085-4(118)178
Resident Engineer: Cadmus Capehart, PE **RE Phone Number:** (919)840-0914
Location Description: I-85 FROM NORTH OF US-70 IN DURHAM COUNTY TO NORTH OF NC-56 IN GRANVILLE COUNTY.
Type of Work: PAVEMENT REHABILITATION AND BRIDGE REPAIR OVERLAYS.
Contractor Name: FSC II LLC DBA FRED SMITH COMPANY
Contract Amount: $8,098,211.15 **Cost Overrun/Underrun:** 4.72%
Availability Date: 6/1/2011 **Letting Date:** 4/19/2011
Completion Date: 7/15/2012 **Work Began:** 6/10/2011
Revised Completion Date: **Estimated Completion:** 7/15/2012
Last Estimate Thru: 4/15/2012 **Scheduled Progress:** 70%
Last Estimate Paid: 4/25/2012 **Actual Progress:** 79.06%

Contract Number: C202875 **Route:** I-540
Physical Division: 5 **County:** Durham
Administrative Division: 5 **TIP Number:** I-5307, I-5310
Length: 17.133 miles **Federal Aid Number:** IM-0540(23)
Resident Engineer: Cadmus Capehart, PE **RE Phone Number:** (919)840-0914
Location Description: I-540 FROM I-40 OVERPASS TO TRIANGLE TOWN BLVD, AND TRIANGLE TOWN

BLVD FROM I-540 TO NEW ASPHALT PAVEMENT JOINT.
Type of Work: MILLING, RESURFACING, SHOULDER RECONST, AND STR REHAB.
Contractor Name: FSC II LLC DBA FRED SMITH COMPANY
Contract Amount: $8,384,157.45 **Cost Overrun/Underrun:** 0.35%
Availability Date: 2/27/2012 **Letting Date:** 1/17/2012
Completion Date: 11/15/2012 **Work Began:** 2/27/2012
Revised Completion Date: **Estimated Completion:** 11/15/2012
Last Estimate Thru: 4/22/2012 **Scheduled Progress:** 10%
Last Estimate Paid: 4/26/2012 **Actual Progress:** 14.74%

Contract Number: C202918 **Route:** SR-1002, SR-1400, SR-1628 SR-1669, SR-1675
Physical Division: 5 **County:** Durham
Administrative Division: 5 **TIP Number:**
Length: 6.09 miles **Federal Aid Number:**
Resident Engineer: Mark W. Luther, PE **RE Phone Number:** (919)220-4680
Location Description: 5 SECTIONS OF SECONDARY ROADS.
Type of Work: MILLING, RESURFACING & SHOULDER RECONSTRUCTION.
Contractor Name: CAROLINA SUNROCK LLC
Contract Amount: $1,398,321.31 **Cost Overrun/Underrun:**
Availability Date: 4/2/2012 **Letting Date:** 1/17/2012
Completion Date: 6/29/2012 **Work Began:** 5/2/2012
Revised Completion Date: **Estimated Completion:**
Last Estimate Thru: **Scheduled Progress:**
Last Estimate Paid: **Actual Progress:**

Contract Number: C202928 **Route:** -
Physical Division: 5 **County:** Durham
Administrative Division: 5 **TIP Number:**
Length: 13.57 miles **Federal Aid Number:**
Resident Engineer: Cadmus Capehart, PE **RE Phone Number:** (919)840-0914
Location Description: NC-54 FROM NC-55 TO WEST OF DAVIS DR AND 10 SECTIONS OF SECONDARY ROADS.
Type of Work: WIDENING, MILLING, RESURFACING, AND SHOULDER RECONSTRUCTION.
Contractor Name: CAROLINA SUNROCK LLC
Contract Amount: $3,634,988.89 **Cost Overrun/Underrun:**
Availability Date: 3/12/2012 **Letting Date:** 1/17/2012
Completion Date: 11/9/2012 **Work Began:**
Revised Completion Date: **Estimated Completion:**
Last Estimate Thru: **Scheduled Progress:**
Last Estimate Paid: **Actual Progress:**

Contract Number: DE00011 **Route:** SR-1308
Physical Division: 5 **County:** Durham
Administrative Division: 5 **TIP Number:**
Length: 4 miles **Federal Aid Number:**
Resident Engineer: Mark W. Luther, PE **RE Phone Number:** (919)220-4680
Location Description: SR-1308 (CORNWALLIS RD) IN DURHAM COUNTY AND SR-1717 (WOOD- LAND RD) IN GRANVILLE COUNTY.
Type of Work: STRENGTHENING, RESURFACING, AND PAVEMEN MARKINGS.
Contractor Name: FSC II LLC DBA FRED SMITH COMPANY
Contract Amount: $1,102,907.60 **Cost Overrun/Underrun:** 7.02%
Availability Date: 9/6/2011 **Letting Date:** 7/26/2011
Completion Date: 11/30/2011 **Work Began:** 9/6/2011
Revised Completion Date: **Estimated Completion:** 4/15/2012
Last Estimate Thru: 3/31/2012 **Scheduled Progress:** 100%
Last Estimate Paid: 4/9/2012 **Actual Progress:** 93.38%

Contract Number: DE00019 **Route:** NC-55
Physical Division: 5 **County:** Durham
Administrative Division: 5 **TIP Number:** W-5110
Length: 0.225 miles **Federal Aid Number:** STP-0055(40)
Resident Engineer: Mark W. Luther, PE **RE Phone Number:** (919)220-4680
Location Description: NC 55 (ALSTON AVE) AT EAST LAWSON STREET
Type of Work: GRADING, PAVING, CURB AND GUTTER, SIDEWALK, SIGNALS, SIGNING
Contractor Name: TRIANGLE GRADING & PAVING, INC
Contract Amount: $615,467.55 **Cost Overrun/Underrun:**
Availability Date: 5/1/2012 **Letting Date:** 3/28/2012

Completion Date:	8/1/2012	**Work Began:**	5/1/2012
Revised Completion Date:		**Estimated Completion:**	
Last Estimate Thru:		**Scheduled Progress:**	
Last Estimate Paid:		**Actual Progress:**	

Contract Number:	DO00069	**Route:**	NC-147
Physical Division:	5	**County:**	Durham
Administrative Division:	5	**TIP Number:**	BK-5102G
Length:	0 miles	**Federal Aid Number:**	BRNHS-0147(4)
Resident Engineer:	Cadmus Capehart, PE	**RE Phone Number:**	(919)840-0914
Location Description:	BRIDGES #12, 71, 137, 154, 156, AND 169 ON NC-147.		
Type of Work:	BRIDGE PAINTING.		
Contractor Name:	S & D INDUSTRIAL PAINTING, INC.		
Contract Amount:	$922,562.15	**Cost Overrun/Underrun:**	
Availability Date:	7/11/2011	**Letting Date:**	8/19/2010
Completion Date:	11/7/2011	**Work Began:**	7/11/2011
Revised Completion Date:	8/28/2012	**Estimated Completion:**	
Last Estimate Thru:		**Scheduled Progress:**	
Last Estimate Paid:		**Actual Progress:**	

ACTIVE NCDOT PROJECTS LOCATED IN DCHC MPO- ARRA

County	TIP/WBS #	Description	Let Date	Completion Date	Status	Cost	Comments
Orange	ER-5100 GE	Landscape planting on US 15-501@ SR 1734 (Erwin Rd./Europa Dr.)	11/24/2009	4/30/2012	**pending final inspection**	$65,000	ARRA
Orange	U-3306 34913.3.ST1 STM-1733 (16)	Grading, drainage, paving, signals, curb and gutter,and retaining wall on SR 1733 (Weaver Dairy Rd.) from NC 86 to Old Sterling Road	7/20/2010	6/15/2013	on schedule	$13.4 million	ARRA
Orange	U-4704	Computerized Traffic Signal System for Chapel Hill-Carrboro	9/15/2009	**Revised completion 9/30/12**	behind schedule	$5.175 million	ARRA
NCDOT PROJECTS CURRENTLY IN 12 MONTH LETTNG LIST							
County	TIP #	Description	Let Date	Completion Date	Status	Cost	Comments

ACTIVE NCDOT PROJECTS LOCATED IN DCHC MPO-NON ARRA

County	TIP/WBS #	Description	Let Date	Completion Date	Status	Cost	Comments
Orange	36945	Upgrade traffic signal with mast arm and install pedestrian signal heads on SR 1010 (Franklin St.) @ Mallette St.	11/4/2010	TBD	**Work delayed; numerous utilities interfere with boring under road; contractor has requested meeting to resolve**	$140,000.00	Small Construction
Orange	C-4932 A	Construct a Transit Shelter at the Park and Ride Lot for DTCC in Hillsborough and install bike racks on Orange Public Transportation buses	5/17/2011		Bike racks installed and reimbursed ; **bus shelter installed; installation & change order pending review**	$20,275	CMAQ
Orange	ER-2971 G 3607.3.09	Widen roadway, install curb and gutter and construct sidewalk along SR 1750 (Estes Drive) between Burlage Circle and SR 1010 (Franklin Street)		10/3/2012	MA with Town executed	$200,000.00	Small Construction/ STP-Division Enhancement
Orange	ER-2973 G 3707.3.16	Rehabilitation of landscape plantings on I-40/I-85 at SR 1114 (Buckhorn Rd.) and installation of landscape plantings at the Hillsborough Maintenance Yard on SR 1009 (Old NC 86)	10/13/2011	3/15/2012	**installation complete**	$137,500.00	STP-Division Enhancement
Orange	SR-5000 S 40922.1.18 PE	Education, encouragement, evaluation, and neighborhood outreach for Carrboro Elementary School	N/A	N/A	Municipal Agreement with Town; program underway	$12,865	Safe Routes to Schools
Orange	SR-5001 AE	Construct 870 linear feet of 5' sidewalk on Elm Street from existing sidewalk near Weaver Street to Shelton Street in Carrboro	2/21/2012	**120 days after Notice to Proceed**	**Pre-const. meeting held 4/26/12**	$300,000.00	SRTS
Orange	SR-5001 AR	Construct 320' of 5' sidewalk on Culbreth Road between Cobbleridge Rd. in Chapel Hill and Rossburn Rd. in Carrboro	4/12/2012	8/10/2012	**Town is evaluating bids**	$50,000/$108,000	SRTS/STP-DA
Orange	SS-4907 U 42205.2 42205.1 42171	Improve sight distance on SR 1710 by lowering the crest vertical curve on the westbound approach to the intersection of SR 1710 (Old NC 10) @ SR 1713 (Mt. Herman Church Road)	N/A	Revised to 6/1/2012	Utility relocation underway; FA construction in Spring 2012	$320,000	Spot Safety-State

Orange	SS -4907 V 42423.3 42423.1	Realign intersection of SR 1005 (Old Greensboro Rd.) @ SR 1951 (White Cross Rd.)	R/W/U 7/20/12	Let 12/20/12	Consultant design underway	$198,000	Spot Safety-State
Orange	SS-4907 AI 43404.1.1	Revise signals on US 70 at SR 1561/1709 (Lawrence Rd.) and at SR 1002 (St. Mary's Rd.) near Hillsborough			**All work complete; final inspection 4/26/12**	$7000 PE	Spot Safety-State
Orange	SS-4907 AM 43504.1.1	Install near-side supplemental signal heads on NC 54 @ SR 1010 (W. Main St.)			Design underway	$1500 PE	Spot Safety-State
Orange	U-4726 DC	Wilson Park Multi-Use Path	3/13/2012	6/30/2012	Municipal Agreement with Town of Carrboro; CEI RFQ underway; **Town reviewing bids**	$39,262.65 PE $129,431.35 C	STPDA
Orange	U-4726 DD	Construct sidewalk on Rogers Road from Homestead Road to Meadowrun Ct.	6/20/2012		Municipal Agreement with Town of Carrboro; Design underway	$67,025 PE $469,175 C	STPDA
Orange	U-4726 DE	Construct Bolin Creek Multi-use Path from Homestead Road to Chapel Hill High School	6/20/2012		Municipal Agreement with Town of Carrboro for construction (replaces EL-4994) Design underway	$59,000 PE	STPDA
Orange	U-4726 DF	Bicycle detection at Signalized Intersections	10/18/2012	FFY 2013	Municipal Agreement with Town of Carrboro	$36,000	STP-DA
Orange	U-4726 IF	Design and install stairs from the sidewalk on the north side of Franklin St. to the Bolin Creek Trail	N/A	N/A	plans pending NCDOT review; Supplemental to remove construction pending; **Town to pay for construction**	$20,000 PE	STPDA

ACTIVE NCDOT PROJECTS LOCATED IN DCHC MPO-NON ARRA

Orange	U-4726 IG	Construct 10' wide greenway from existing Fan Branch Trail near Culbreth Rd. and US 15/501 to Phase I	6/20/2012-to be revised		Municipal Agreement with Town of Chapel Hill; structure designs in review; **Supplemental to add $100,000 pending**	$1,310,000	STPDA
Orange	W-5207 E 45337.1.5 PE	Installation of a roundabout on SR 1734 (Erwin Rd.) and SR 1791 (Mt. Moriah Rd.) near Chapel Hill	Revised to 8/2012	12/31/2012- to be revised	Consultant design- **R/W funding requested**	$450,000	High Hazard Safety
NCDOT PROJECTS CURRENTLY IN 12 MONTH LETTNG LIST							
County	**TIP #**	**Location Description**	**Est. Let Date**	**Completion Date**	**Status**	**Cost**	**Comments**
Durham/ Orange	EB-4707	Bicycle improvements(Bikeway and signals) on Durham/ Chapel Hill (SR 1838/SR 2220)from SR 1116 (Garrett Road) in Durham County to US 15-501 in Orange County				$4.0 million	Delayed R/W to 3/12 and Construction to 5/13 to allow City to secure increased funding
Orange	U-0624	Corridor upgrade on NC 86 (S. Columbia St.)including Bicycle lanes from SR 1906 (Purefoy Rd.) to SR 1902 (Manning Dr.)	10/16/2012			$4.2 million	STP
Orange	U-2803	Widening of SR 1919 (Smith Level Road) from Rock Haven Road to Bridge# 88 over Morgan Creek	12/18/2012			$3,7 million	
Orange	W-5318	GRADE, DRAIN, AND PAVE NC 86 FROM NC 57 TO CASWELL COUNTY LINE GEOMETRIC IMPROVEMENT, PAVED SHOULDERS AND RUMBLE STRIPS; **Resurfacing**	1/15/2013			$4.75 million	
ALAMANCE, ORANGE	17BP.7.P.2	BRIDGE PRESERVATION - BRIDGES 38, 41, 51, 52, 121, AND 293 IN ALAMANCE COUNTY; BRIDGES 6, 59, 81, AND 82 IN ORANGE COUNTY	5/15/2012			$2.3 million	

REVISIONS TO THE 2012-2020 STIP

HIGHWAY PROGRAM

STIP MODIFICATIONS

DIVISION 5

U-3308	NC 55 (ALSTON AVENUE), NC 147 (I. L. "BUCK" DEAN	RIGHT-OF-WAY	FY 2013 -	$800,000	(STP)
DURHAM	FREEWAY) TO US 70 BUSINESS-NC 98 (HOLLOWAY	MITIGATION	FY 2014 -	$28,000	(STP)
	STREET) IN DURHAM. WIDEN TO FOUR LANE DIVIDED	CONSTRUCTION	FY 2015 -	$13,800,000	(STP)
	FACILITY AND REPLACE NORFOLK-SOUTHERN		FY 2016 -	$13,800,000	(STP)
	RAILROAD BRIDGES.			$28,428,000	
	DELAY RIGHT OF WAY FROM FY 12 TO FY 13 TO ALLOW ADDITIONAL TIME FOR DESIGN MODIFICATIONS REQUESTED BY CITY OF DURHAM.				

STATEWIDE

K-4704	VARIOUS, REST AREA SYSTEM PRESERVATION.	CONSTRUCTION	FY 2012 -	$100,000	(IMPM)
STATEWIDE	PAVEMENT, PAVEMENT MARKING, CURB AND GUTTER,		FY 2012 -	$300,000	(STP)
	SIDEWALKS AND OTHER REHABILITATION ITEMS.		FY 2013 -	$300,000	(IMPM)
	MODIFY DESCRIPTION TO ALLOW FOR IMPROVEMENTS TO REST AREAS LOCATED OFF OF THE INTERSTATE AND INCLUDE APPROPRIATE FUNDING FOR THIS LOCATIONS.		FY 2013 -	$100,000	(STP)
			FY 2014 -	$300,000	(IMPM)
			FY 2014 -	$100,000	(STP)
			FY 2015 -	$300,000	(IMPM)
			FY 2015 -	$100,000	(STP)
			FY 2016 -	$300,000	(IMPM)
			FY 2016 -	$100,000	(STP)
			FY 2017 -	$300,000	(IMPM)
			FY 2017 -	$100,000	(STP)
			FY 2018 -	$300,000	(IMPM)
			FY 2018 -	$100,000	(STP)
			FY 2019 -	$300,000	(IMPM)
			FY 2019 -	$100,000	(STP)
			FY 2020 -	$300,000	(IMPM)
			FY 2020 -	$100,000	(STP)
				$3,600,000	

* Y-5500	VARIOUS, TRAFFIC SEPARATION STUDY	RIGHT-OF-WAY	FY 2012 -	$150,000	(RR)
STATEWIDE	IMPLEMENTATION AND CLOSURES.		FY 2013 -	$500,000	(RR)
	ADD RIGHT OF WAY AND CONSTRUCTION IN FY 13 NOT PREVIOUSLY PROGRAMMED.	CONSTRUCTION	FY 2012 -	$250,000	(RR)
			FY 2013 -	$2,500,000	(RR)
				$3,400,000	

* Z-5400	VARIOUS, HIGHWAY-RAIL GRADE CROSSING SAFETY	RIGHT OF WAY	FY 2013 -	$500,000	(RR)
STATEWIDE	IMPROVEMENTS.	CONSTRUCTION	FY 2012 -	$12,309,000	(RR)
	ADD RIGHT OF WAY AND CONSTRUCTION IN FY 13 NOT PREVIOUSLY PROGRAMMED.		FY 2013 -	$3,000,000	(RR)
				$15,809,000	

*** INDICATES FEDERAL AMENDMENT**

STIP AMENDMENT AND MODIFICATION GUIDELINES

Changes may be made to the State Transportation Improvement Program (STIP) by either formal amendment or administrative modification.

Formal **Amendments** are required when changes cause: addition or deletion of a project, changes in project cost beyond a predetermined threshold, project phase initiation dates to move into or out of the 4 year STIP time window, changes in funding sources involving non-traditional funding sources (including GARVEE bonds), or major changes in design concept or scope; an example of a "major" scope change might be - changing the project termini or number of through travel lanes or significantly altering the proposed transit coverage area.

Examples of Amendments:

- Change in project cost beyond a predetermined threshold; increases in highway projects that exceed both $ 2 million and 25% of the original cost and may affect fiscal constraint and changes (increases or decreases) in transit projects that exceed either $1 million or 25% of the original project cost;
- Any addition or deletion of a federally funded project to the first 4 years of the Program;
- Addition or deletion of any state funded regionally significant project into the first 4 years of the Program;
- Change in project design or scope[1] that significantly changes; the termini or project type, purpose, or number of through lanes on a non-exempt (for transportation conformity purposes) project;
- Any addition, deletion or significant modification of non-traditional funding source to a project (traditional sources of revenue include federal, state, or local government tax revenues. Non-traditional sources include state bonding and/or private participation);
- Project schedule shifts that move ROW, major capital acquisitions, or construction authorization dates either into or out of the 4 year STIP time window;
- Project schedule shifts in years 1 through 4 that move project completion dates across Horizon Years as determined by the local Long Range Transportation plan;
- Project schedule shifts to incorporate the project from an out-year into the current (four-year) STIP.

Note: Amendments do require documentation of public review and comment opportunity, and may require re-demonstration of fiscal constraint and local transportation conformity determination. Fiscal constraint may be shown by either the project cost impact being less than 5% of the expected annual budget or by showing other cost reductions and/or revenue increases within the affected fiscal year(s).

Note: on Program Date field in the FTA Transportation Electronic Award and Management (TEAM) system applications – the transit grant applications asks for the STIP amendment approval dates; however the correct entry in the TEAM application is the date FTA endorses the BOT approved STIP amendment, e.g. the effective STIP approval date is the date FTA concurs with the amendment to the STIP.

[1] Note: alteration to earmarks described in the Congressional Report may jeopardize project eligibility for federal (FTA) funding under the discretionary capital program (Section 5309).

Administrative Modifications can be made to previously included projects when; change in project costs are below the predetermined thresholds, movement of project phase initiation dates are within the 4 year STIP time window, change to project scope or description do not significantly diminish the ability to achieve the original project intent, and change in traditional funding sources occur.

Administrative modification is a streamlining process recommended in the FHWA/FTA/NCDOT Joint STIP Review of December 2011. Administrative Modifications do not require documentation of public review or comment, redemonstration of fiscal constraint, or a local transportation conformity determination.

Examples of Administrative Modifications:

- Any change to projects in years 5 or later;
- Minor change to project descriptions, scopes, sponsor funding;
- Minor cost increases in highway projects that do not exceed both $ 2 million and 25% of the original project cost;
- Minor cost change (increase or decrease) in transit projects that do not exceed either $1 million or 25% of the original project cost;
- Schedule changes that move project authorization dates within the first 4 year STIP time window and do not affect local air quality conformity findings;
- Funding source changes between traditional funding sources (i.e. substituting available Congestion Mitigation Air Quality (CMAQ) funds for FTA section 5307 formula transit funds);
- Projects approved for Emergency Relief funds do not generally have to be included in the STIP, so any changes made for emergency projects may be considered minor modifications.

State funded projects are amended when the fiscal year changes or when there is a significant change in the project description. Unless the project is determined to be regionally significant for transportation conformity purposes, these amendments are approved solely by the State Board of Transportation. Local approval of these changes is desired but not legally required. MPO's may treat these as Administrative modifications if they wish. If there is a change to a state funded project that is regionally significant, this requires a new transportation conformity determination, this determination must be made before the amendment can be processed. The state public notification process will be the same for state funded projects as it is for federal-aid projects.

PUBLIC INVOLVEMENT PROCEDURES:

The NCDOT will make all proposed STIP amendments available to the public for comment on its website at least 25 days prior to adoption action by the Board of Transportation. Exception may be made for response to declared disasters.

The NCDOT will make all proposed STIP amendments available to staff of MPOs and RPOs for comment at least 25 days prior to adoption action by the Board of Transportation. Exception may be made for response to declared disasters.

All amendments to the transit portion of the STIP will be submitted to FTA Region IV for formal endorsement. The request letter for FTA endorsement of STIP amendments will include assurances that public involvement processes were followed, in accordance with the federally approved state or local Participation Plans. Administrative modifications to the transit portion of the STIP will be posted on the Public Transportation Division website for informational purposes within 5 days of the changes being processed at NCDOT.

Established public involvement procedures at the local level shall be followed. Any significant negative reaction will result in either the Board being notified of the reaction prior to voting, or withdrawal of the proposal for further review.

Attachment 1

Federal Definitions according to 23 CFR 450.104

Administrative modification means a minor revision to a long-range statewide or metropolitan transportation plan, Transportation Improvement Program (TIP), or Statewide Transportation Improvement Program (STIP) that includes minor changes to project/project phase costs, minor changes to funding sources of previously-included projects, and minor changes to project/project phase initiation dates. An administrative modification is a revision that does not require public review and comment, redemonstration of fiscal constraint, or a conformity determination (in nonattainment and maintenance areas).

Amendment means a revision to a long-range statewide or metropolitan transportation plan, TIP, or STIP that involves a major change to a project included in a metropolitan transportation plan, TIP, or STIP, including the addition or deletion of a project or a major change in project cost, project/project phase initiation dates, or a major change in design concept or design scope (e.g., changing project termini or the number of through traffic lanes). Change to projects that are included only for illustrative purposes do not require an amendment. An amendment is a revision that requires public review and comment, redemonstration of fiscal constraint, or a conformity determination (for metropolitan transportation plans and TIPs involving "non-exempt" projects in nonattainment and maintenance areas). In the context of a long-range statewide transportation plan, an amendment is a revision approved by the State in accordance with its public involvement process.

STIP AMENDMENT AND MODIFICATION GUIDELINES APPROVAL:

4/5/12
Date

Judge Robert A. Collier Jr.
Chairman, NC Board of Transportation

4/18/12
Date

for John F. Sullivan, III, P.E.
Division Administrator, Federal Highway Administration

5-9-12
Date

Dr. Yvette G. Taylor
Regional Administrator, Federal Transit Administration

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

May 8, 2012

In Reply Refer To
Application D-12-1

Mr. Felix Nwoko, PhD
Transportation Planning Manager – MPO Administrator
DCHC MPO
101 City Hall Plaza, 4th Floor
Durham, NC 27701

Dear Mr. Nwoko:

The North Carolina Department of Transportation is in the process of designating NC 147 between SR 2028 (T.W. Alexander Drive) in Durham County and NC 540 in Wake County for use by trucks with twin trailers. If the Department designates this route for use by these vehicles, public hearings, or the opportunity for such, will be provided in each of the affected counties. The North Carolina Board of Transportation will render a final decision on designation at a later date.

Please provide any comments you may have by August 6, 2012. If you have any questions or need additional information, you may contact me at (919) 773-2893 or lavery@ncdot.gov .

Sincerely,

Lisa N. Avery
Traffic Safety Project Engineer

LNA:lna

cc: Chuck Watts, Board of Transportation Member
Eugene A. Conti, Jr., Secretary of Transportation
T. R. Gibson, P.E., State Highway Administrator
J. Nance, P.E., Chief Engineer - Operations
J. K. Lacy, P.E., State Traffic Engineer
J. W. Bowman, P.E., Division Five Engineer
A. B. Whitley, IV, P.E., Division Five Operations Engineer
T. M. Hopkins, P.E., State Traffic Safety Engineer
A. D. Wyatt, P.E., PTOE, Central Regional Field Operations Engineer
K. L. Becker, P.E., Capital Regional Traffic Engineer
A. Grandy, Division Five Traffic Engineer
B. Mayhew, P.E., Traffic Safety Systems Engineer
S. Lowry, P.E., Highway Safety Improvement Program Engineer

MAILING ADDRESS:
TRANSPORTATION MOBILITY AND SAFETY DIVISION
1561 MAIL SERVICE CENTER
RALEIGH NC 27699-1561

TELEPHONE: 919-773-2800
FAX: 919-771-2745

WEBSITE: WWW.NCDOT.ORG

LOCATION:
750 NORTH GREENFIELD PARKWAY
GARNER NC 27529