Sketching Chapel Hill

Making Transportation Decisions at a local level

February 4, 2013

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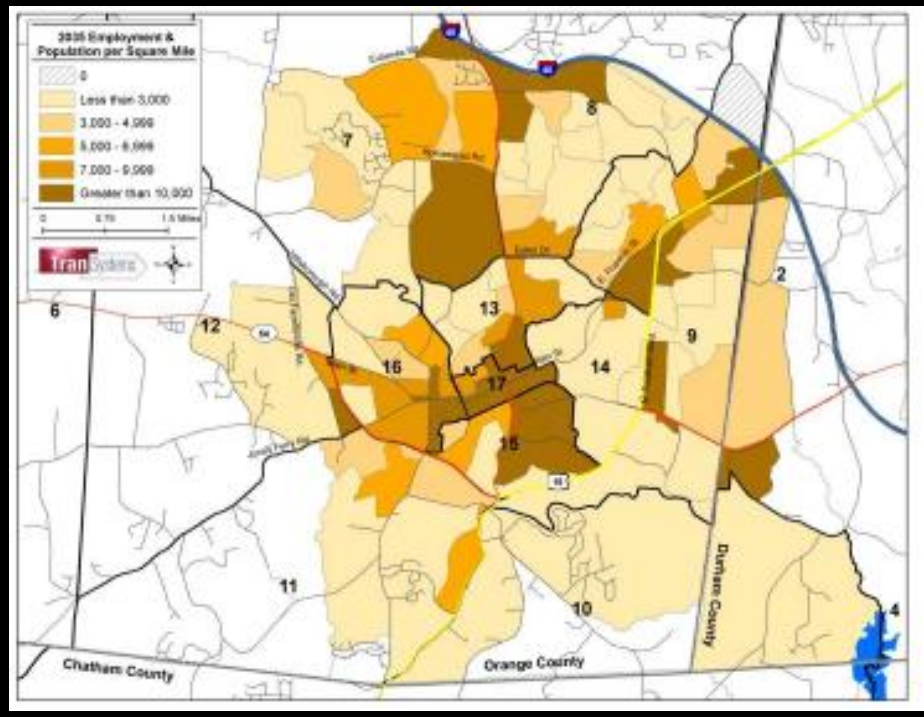
Topics

- Transportation Planning and Decision Making
- Site Development Planning and Impacts
- Status of Transportation in Study Area

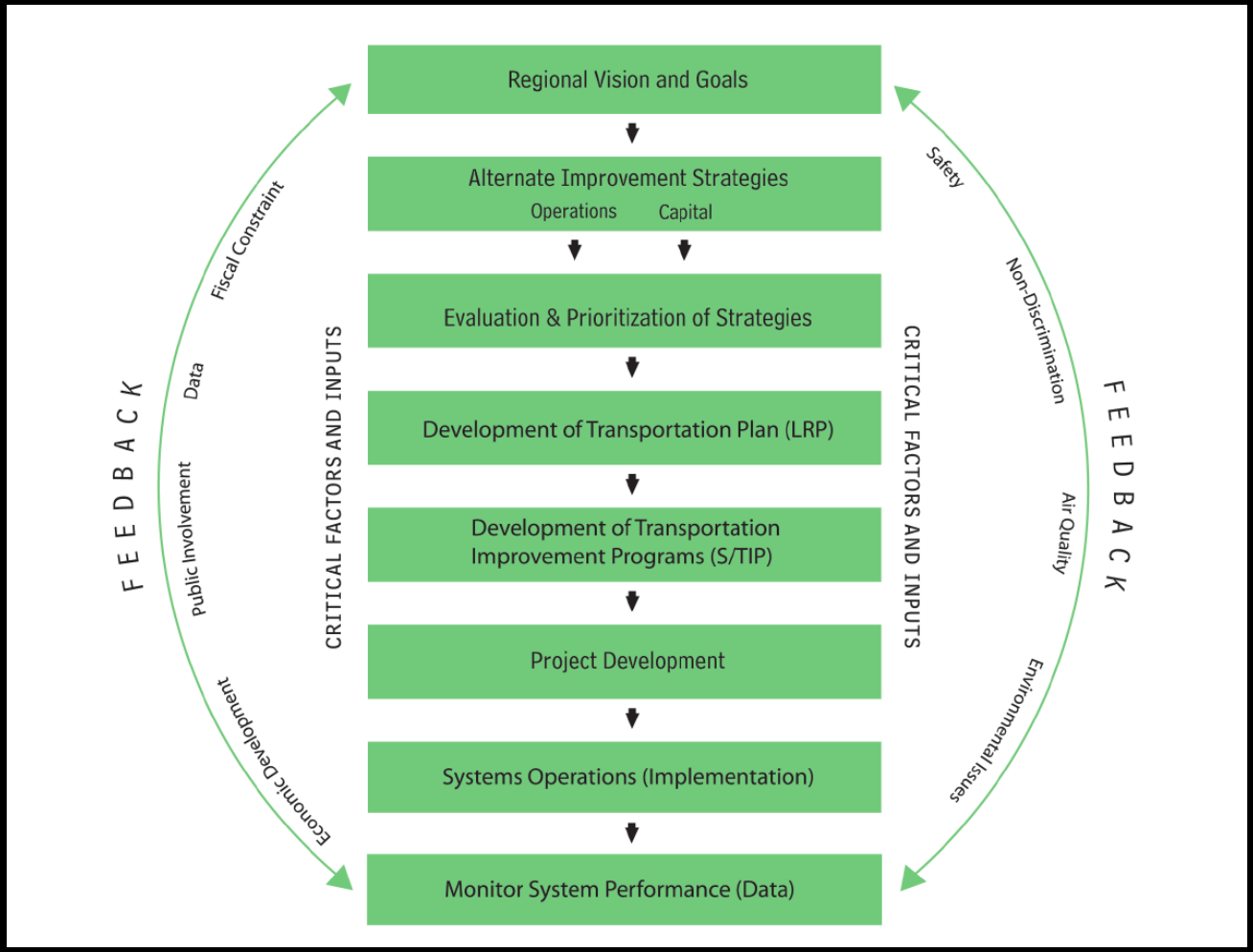
Transportation Planning at the Broader Level

General Notes

- Regional transportation planning develops plan to meet collective regional needs
- 25-30 year planning horizon
- Transportation demands (how much, what mode) based on land use projections
- Zoning and other development attributes for sites are used to projects number of jobs and households
- Aggregated into zones for modeling in the travel forecasting model
- Extensive public involvement in development the transportation plan



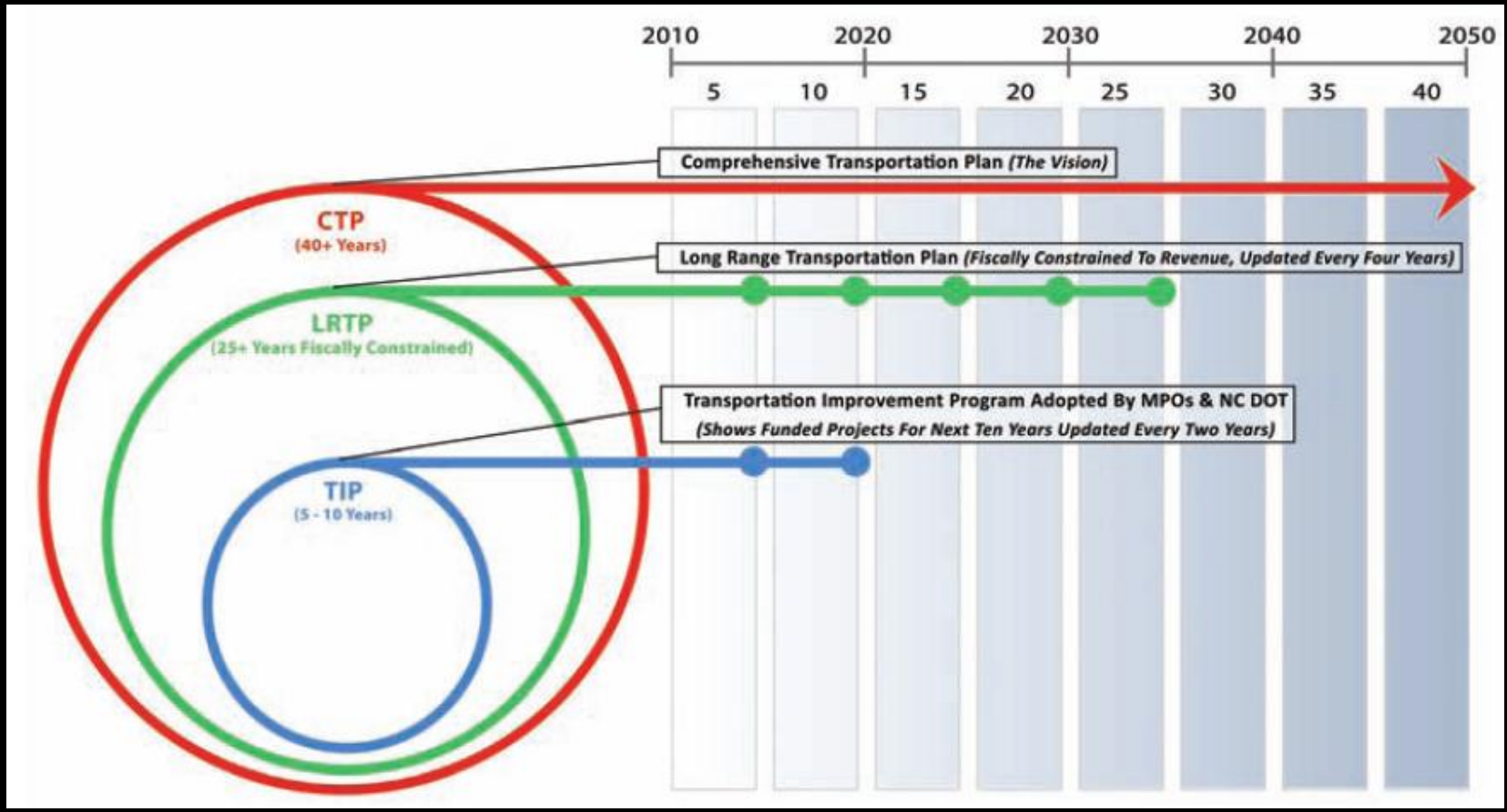
Transportation Planning Process



The Transportation Planning Process Key Issues: A Briefing Book for Transportation Decisionmakers, Officials, and Staff

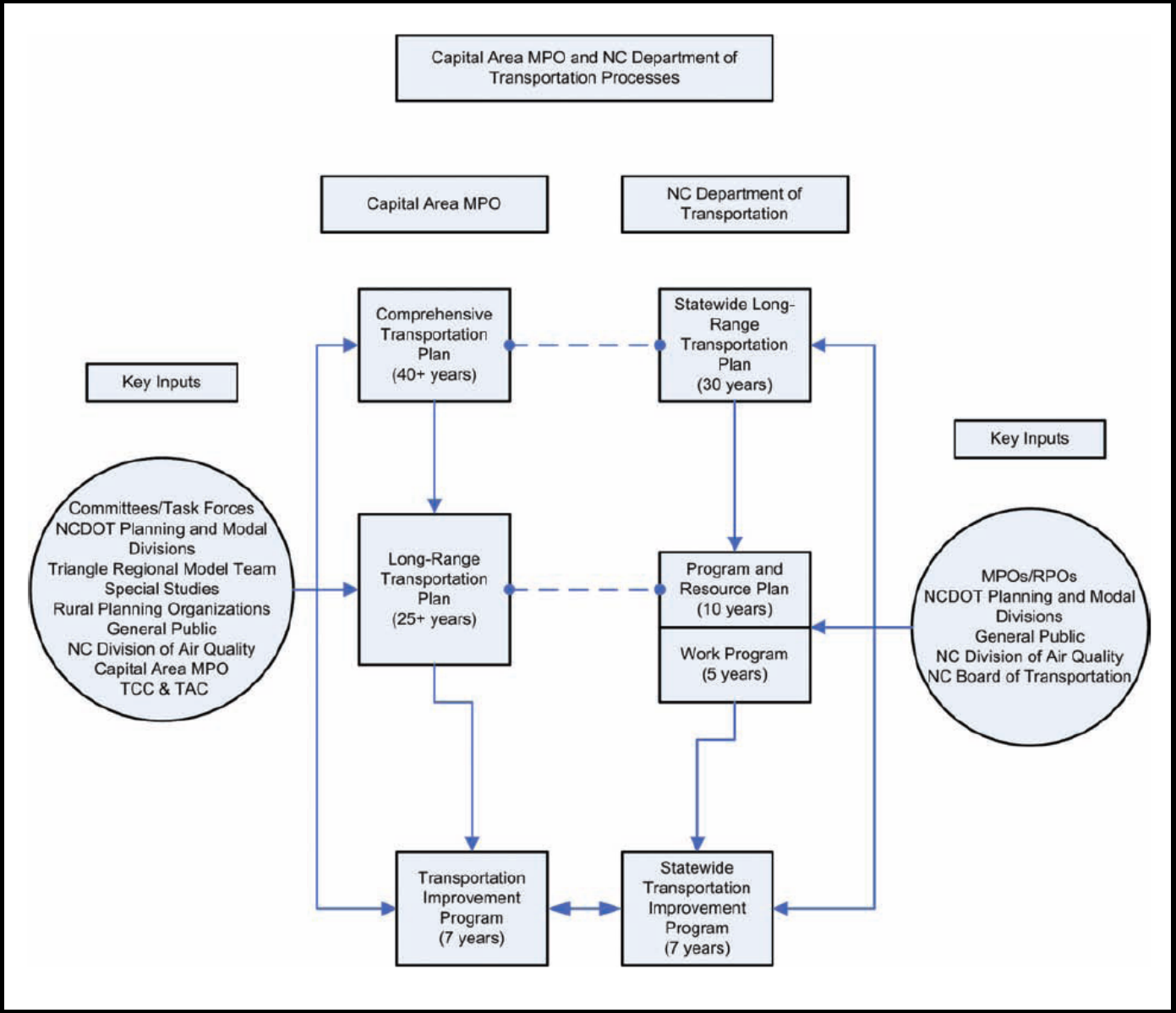
FHWA-HEP-07-039 **http://www.planning.dot.gov/documents/briefingbook/bbook_07.pdf**

Products



CAMPO Guidebook

MPO and NCDOT



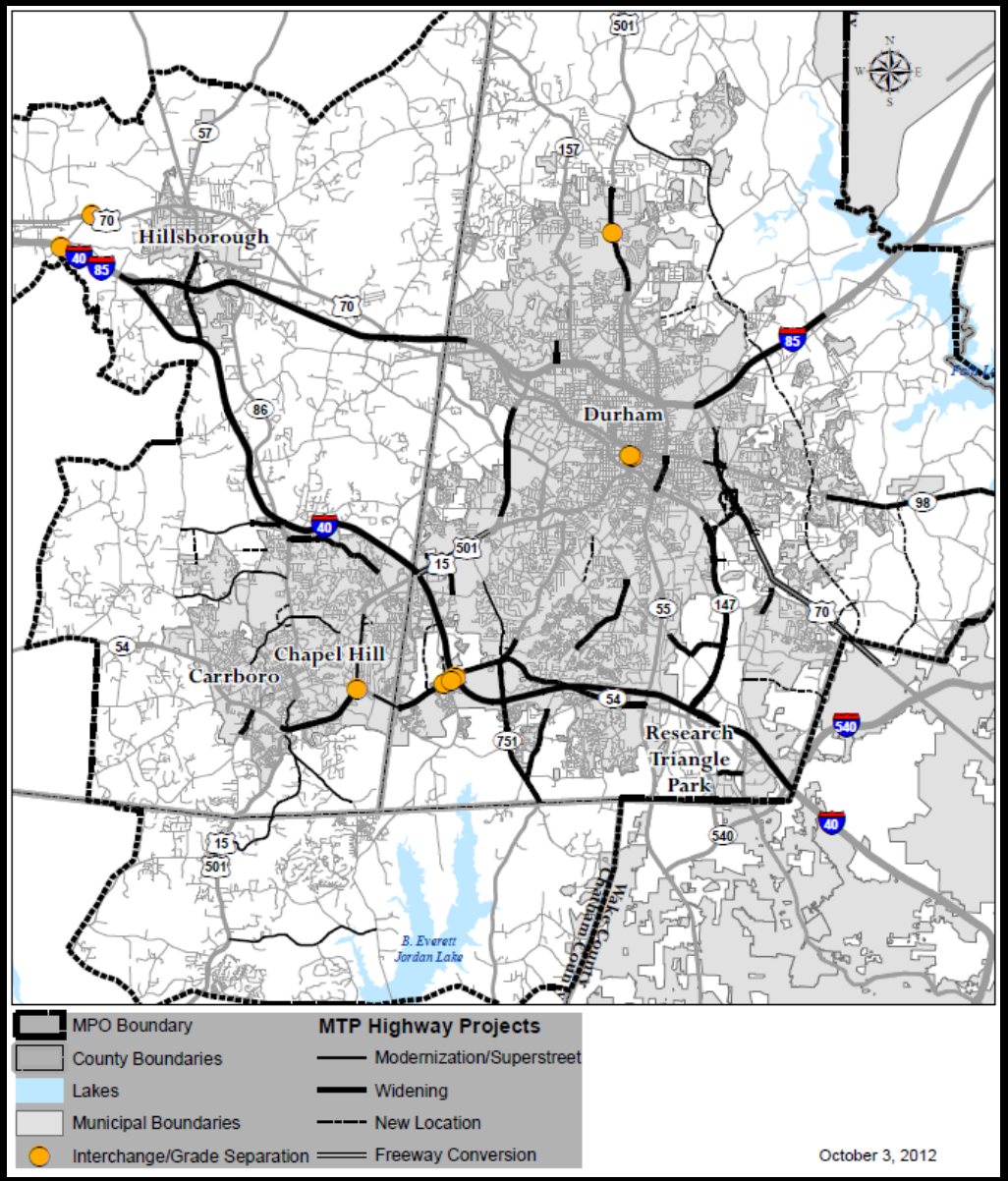
CAMPO Guidebook

Metropolitan Transportation Plans

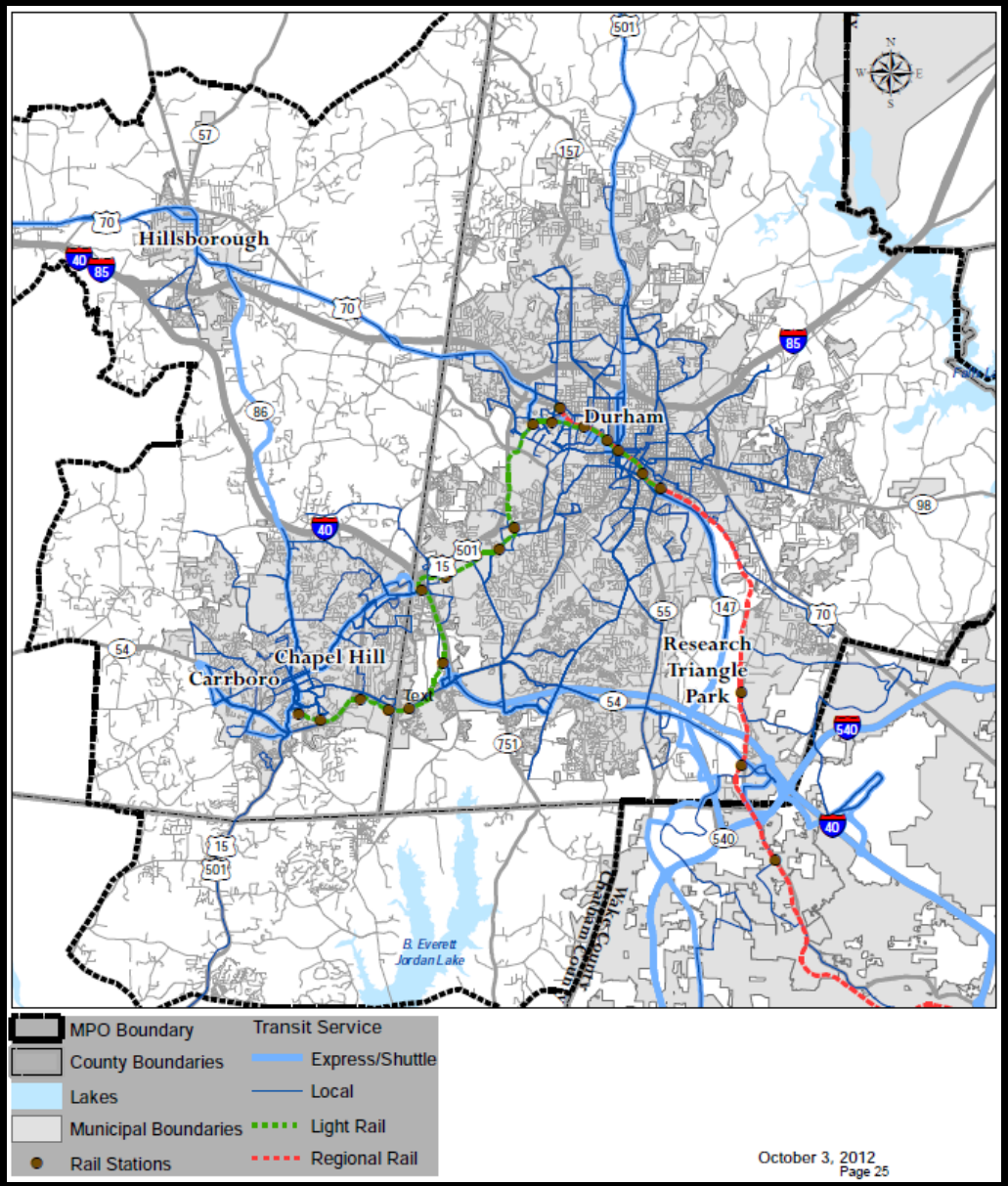
LRTP Overview

- Takes the "wish list" and filters it through a budget of available funds.
- Projects that make the cut are put into a construction time frame over 25 years.
- This plan is a federal requirement and is also used when a region is not meeting federal air quality standards; the plan must show that the projects in plan will help improve air quality.
- One of the most important parts of the LRTP is the Travel Demand Model—the output informs the project "purpose and need" for federal requirements and the design team will use it to scope the scale of the project.

Highway Element



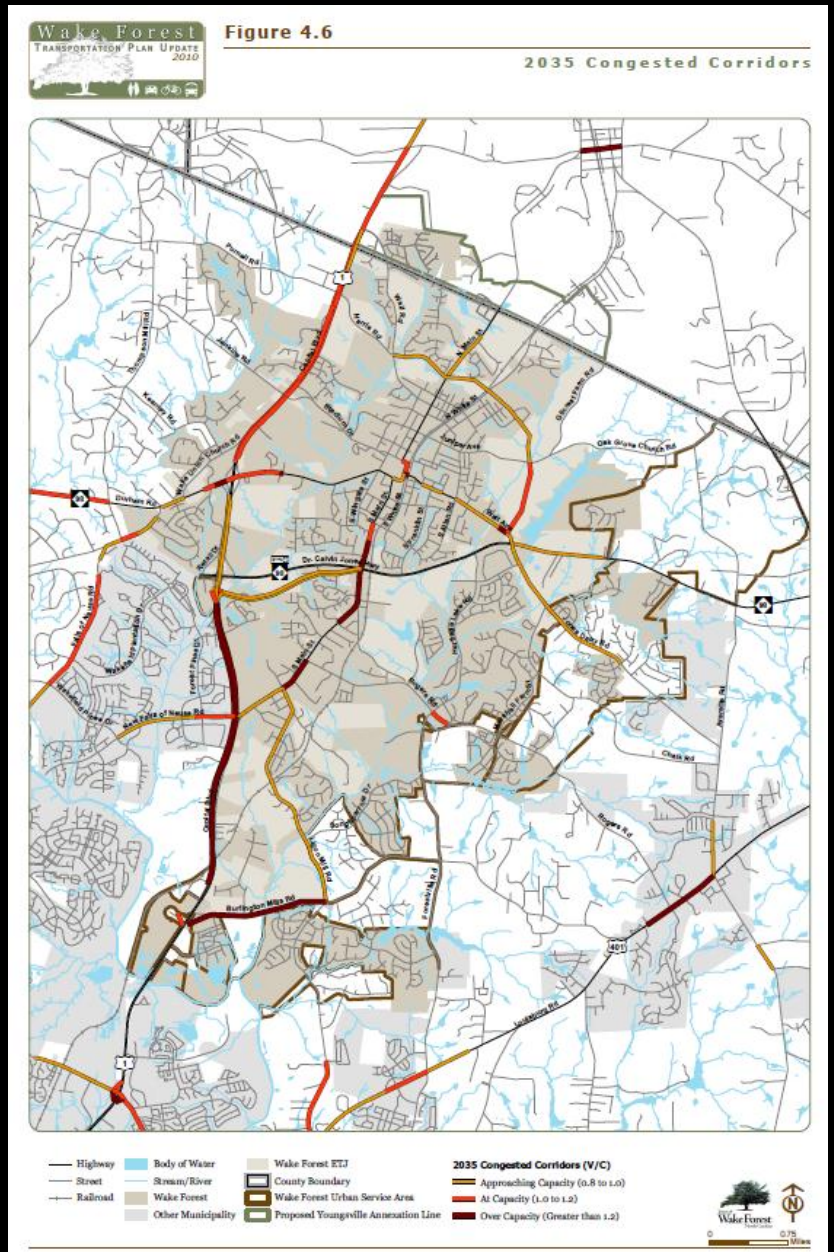
Transit Element

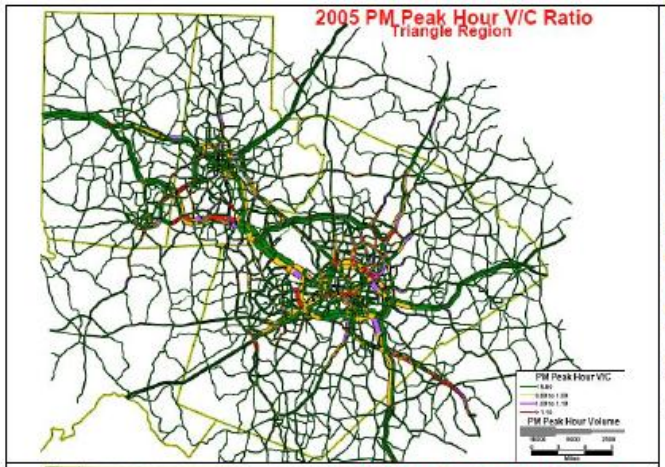


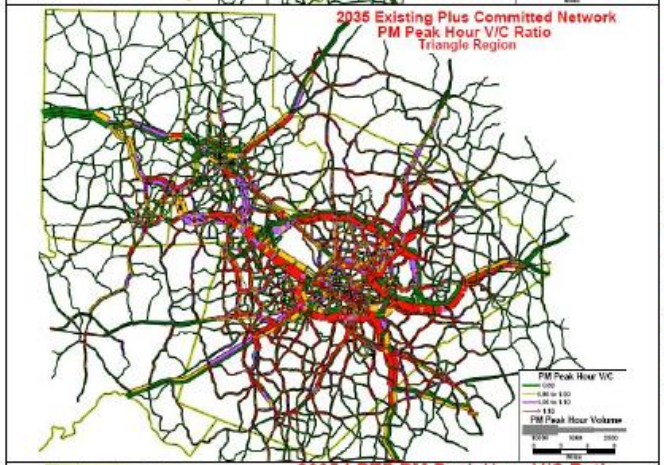
Travel Model Overview

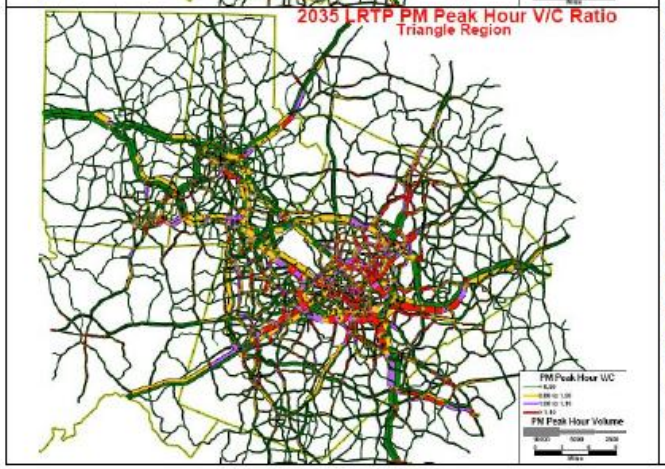
- Model Study Area & Network
- Trip Generation – How many trips are made?
- Trip Distribution – Where do trips go?
- Mode Choice – What mode of travel is used?
- Traffic Assignment – What routes are used?

Triangle Regional Model









The top map shows levels of congestion during the 2005 "base year." The afternoon rush hour (the "PM Peak Hour") is used since it is the heaviest travel period of the day. Congestion is calculated using a "volume to capacity ratio," or v/c ratio, which indicates the volume of traffic using each roadway segment divided by the capacity of vehicles that can use each segment before it breaks down. These v/c ratios are color coded as follows:

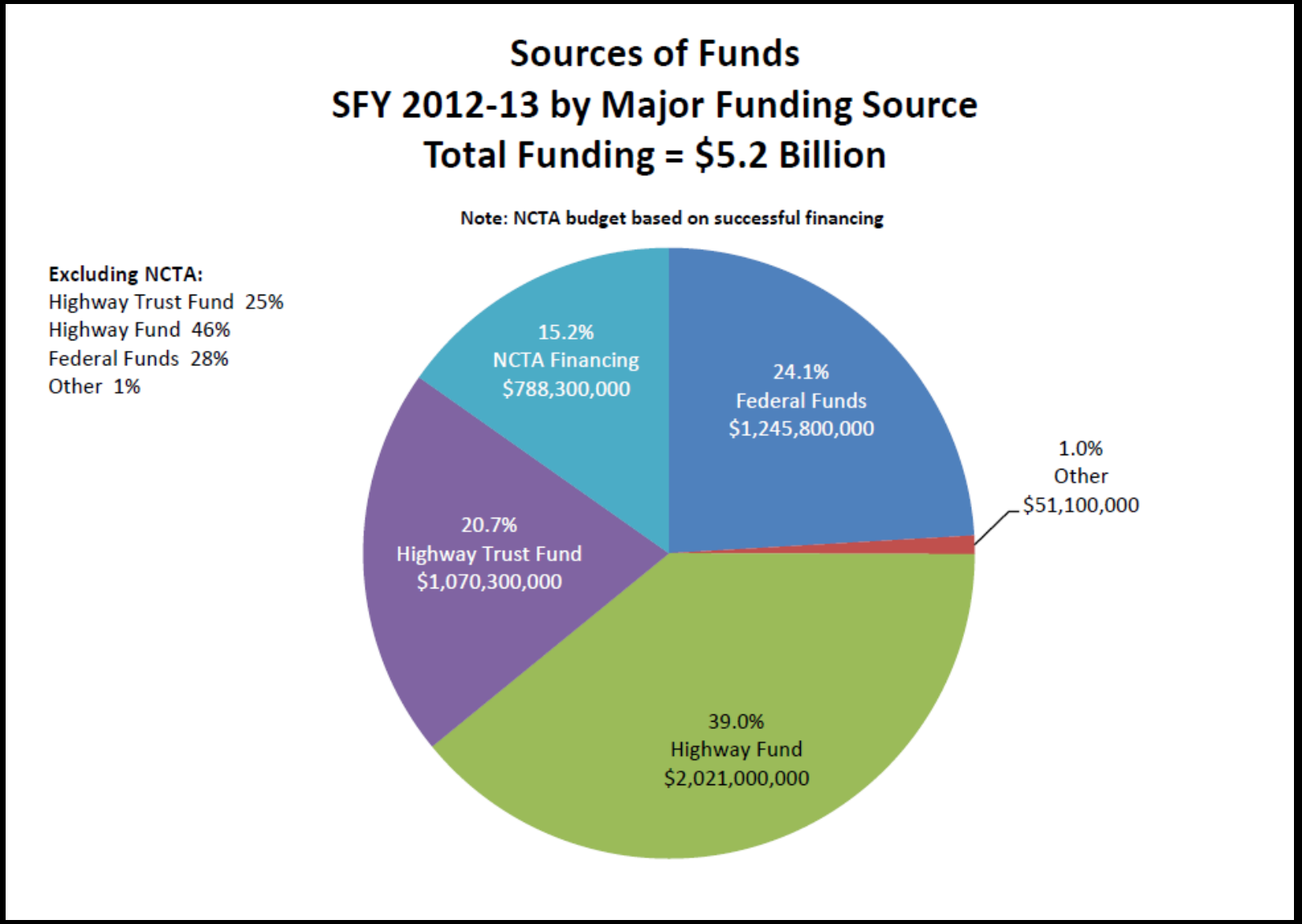
- < 0.80
- 0.80 to 1.00
- 1.00 to 1.10
- > 1.10

The middle map shows the same type of information, but it is for the population and job levels we forecast in the Year 2035 but only those new road and transit facilities that are already well-underway, which is called the "existing plus committed" transportation network.

The bottom map is based on the same growth assumptions as the previous map: Year 2035 population and jobs, but this time with all the new road and transit facilities included in this 2035 Long Range Transportation Plan.

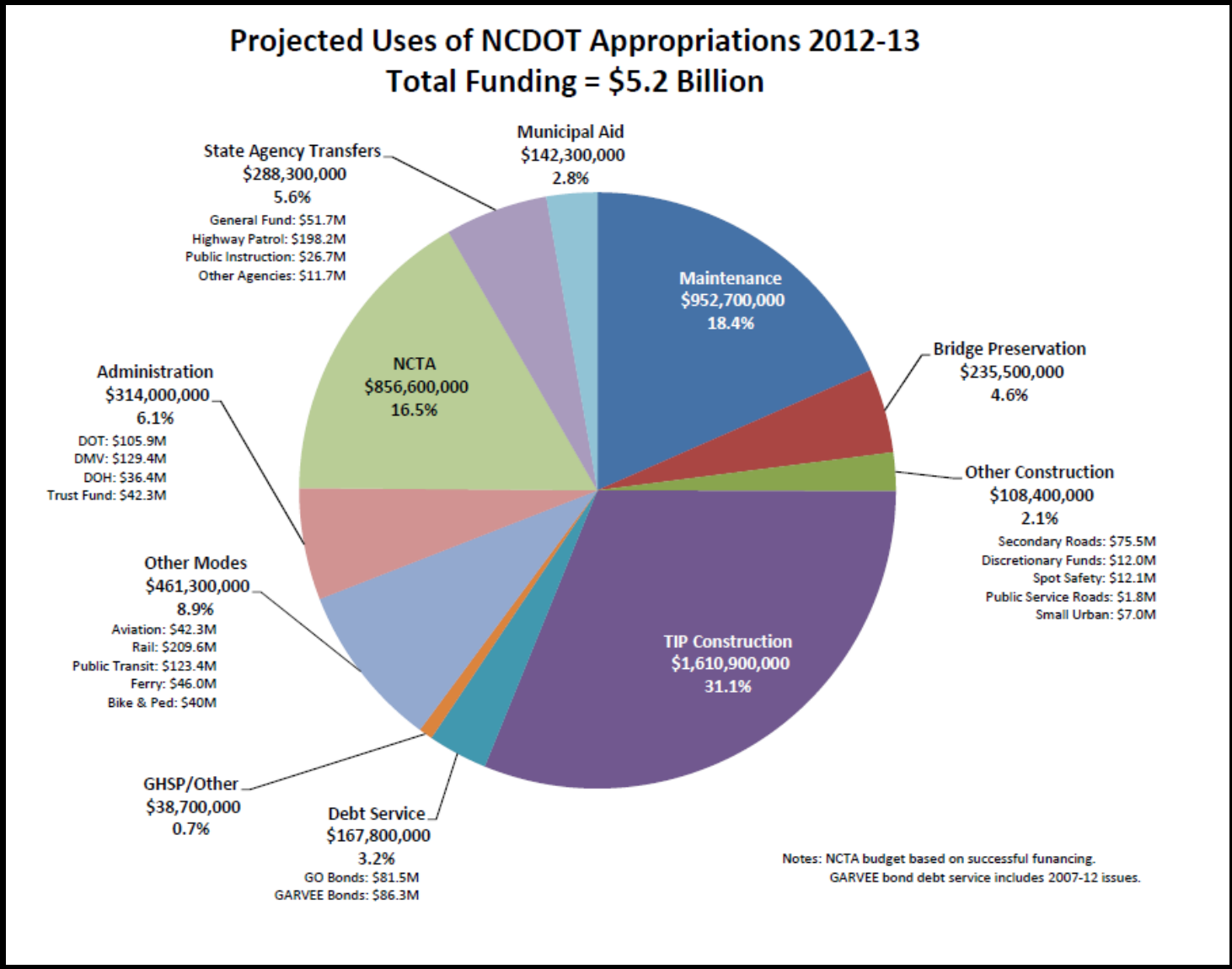
Conditions will be better than if we only build what is already in the pipeline, but congestion is forecast to exceed the levels in our 2005 base year. Larger versions of all three maps are available from the DCHC MPO and CAMPO staffs.

NCDOT Revenue Sources



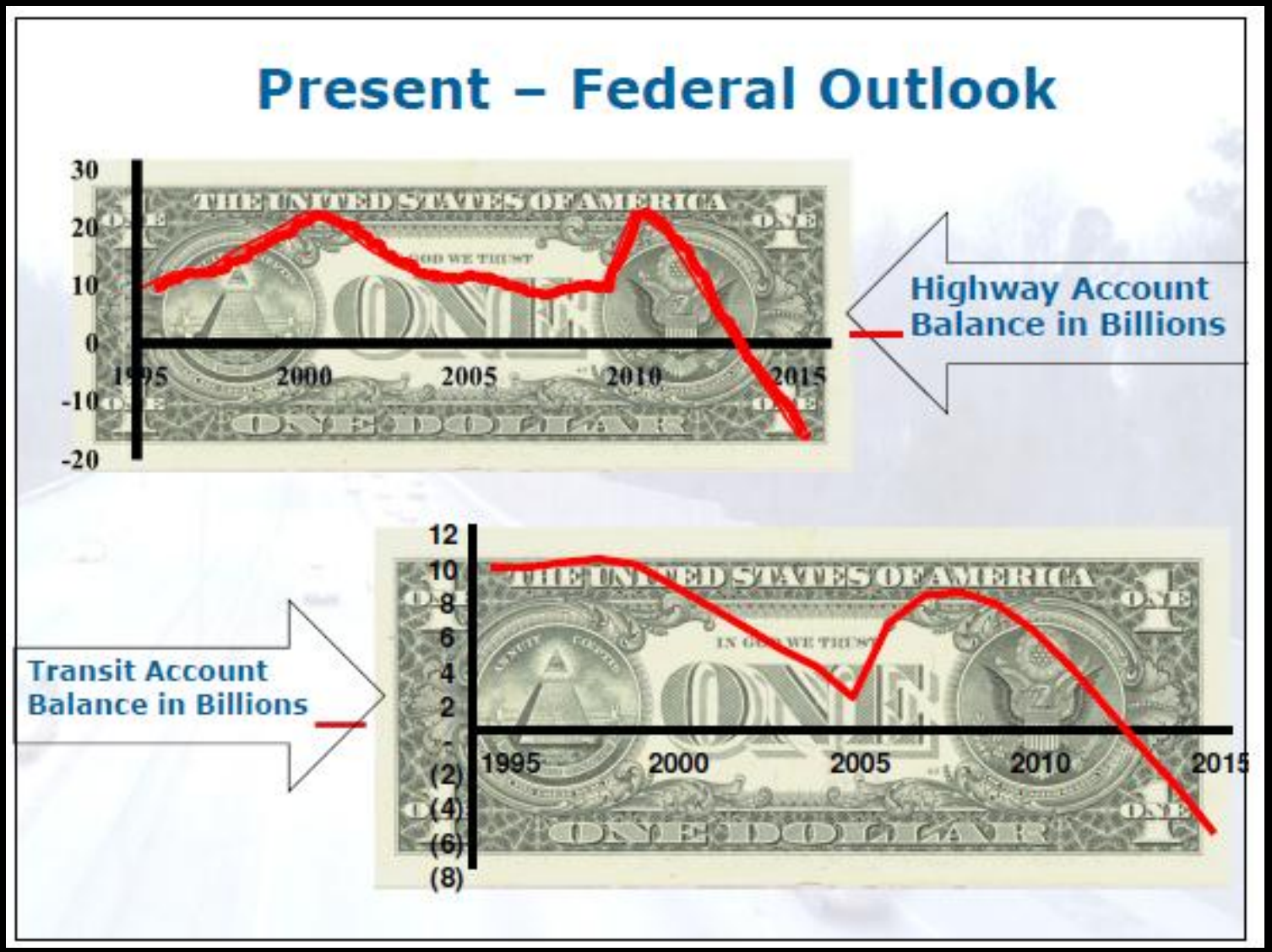
http://www.ncdot.gov/about/finance/

Projected NCDOT Spending



http://www.ncdot.gov/about/finance/

Funding Projections
(and not just Federal level)



Transportation Factors to Consider in Site Development

Transportation Factors at Site Level

Land Use:

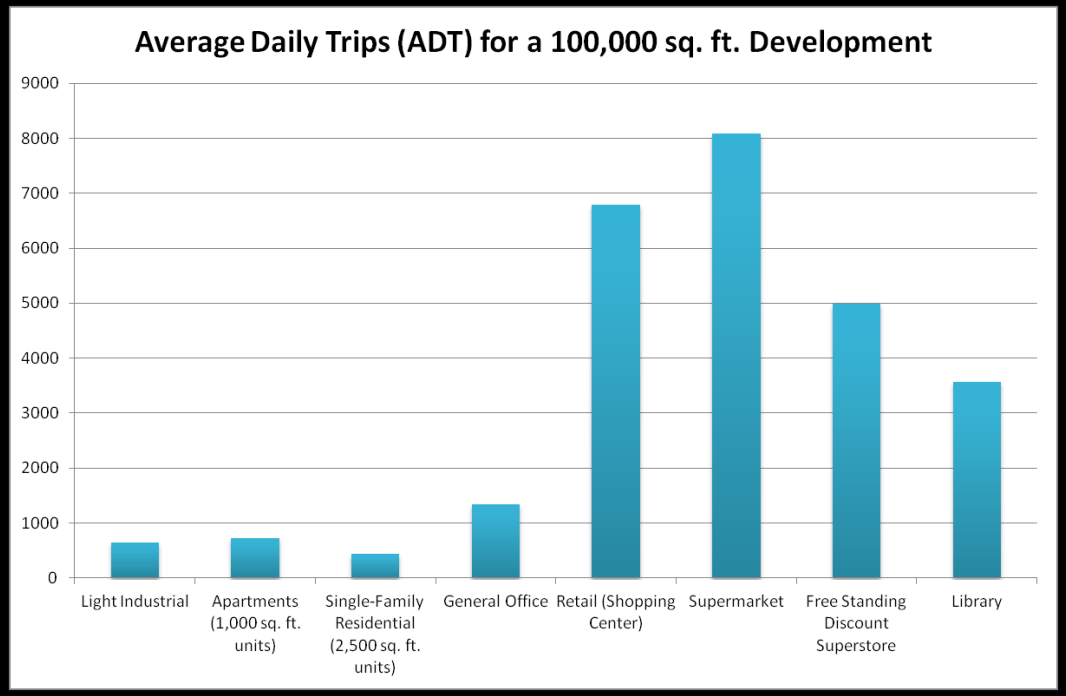
- Trips generated
  - Peak
  - Daily
- Distribution of Trips to/from site

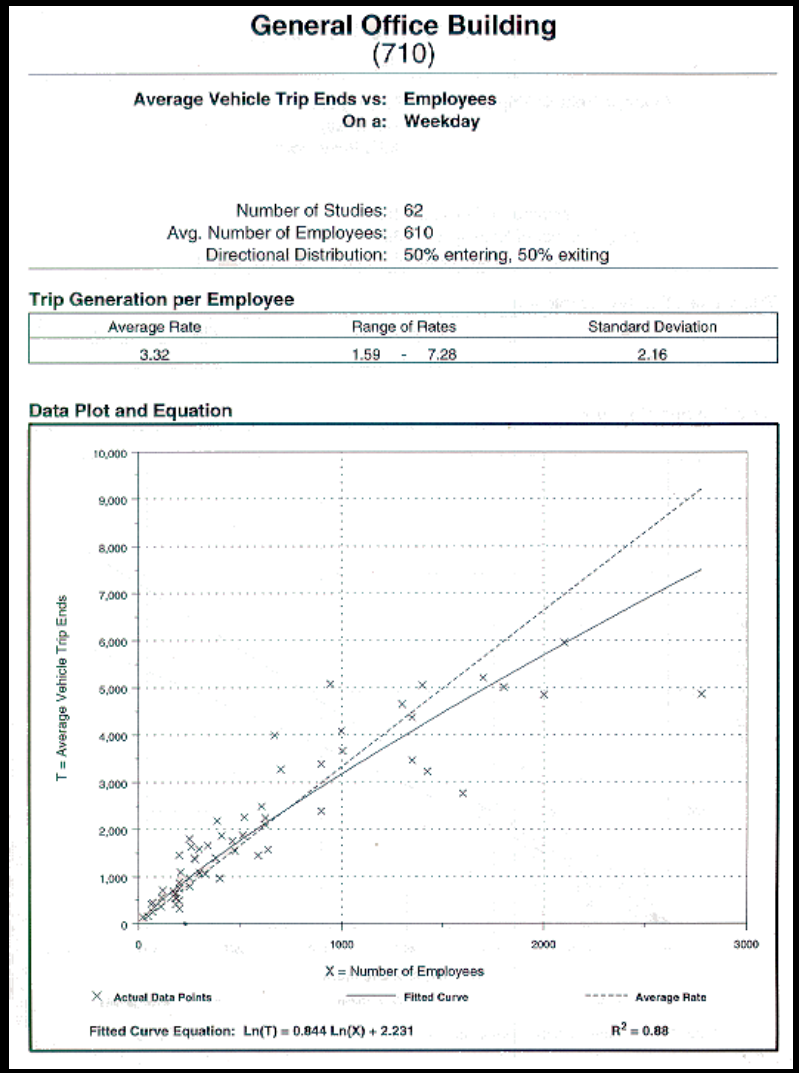
Transportation System:

- Alternative Modes
- Routing
  - Site access points
  - Roadway capacity– INTERSECTION CAPACITY IS TYPICALLY BIGGEST CONSTRAINT TO DEVELOPMENT
  - Committed improvements
  - Financial capacity of development to make improvements (all modes)

Steps for Projected Site Trips

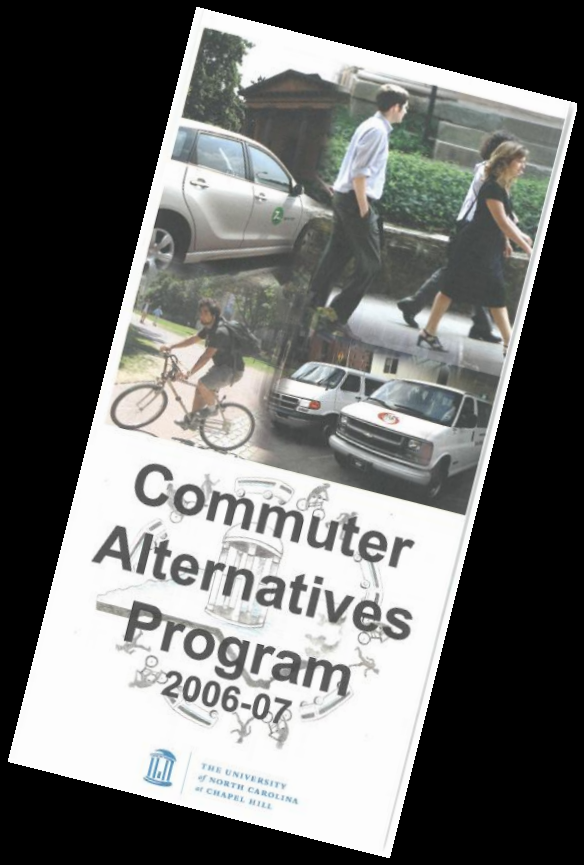
- Four steps to determine volume of site trips:
  - Trip Generation
  - Mode Split
  - Trip Distribution
  - Trip Assignment





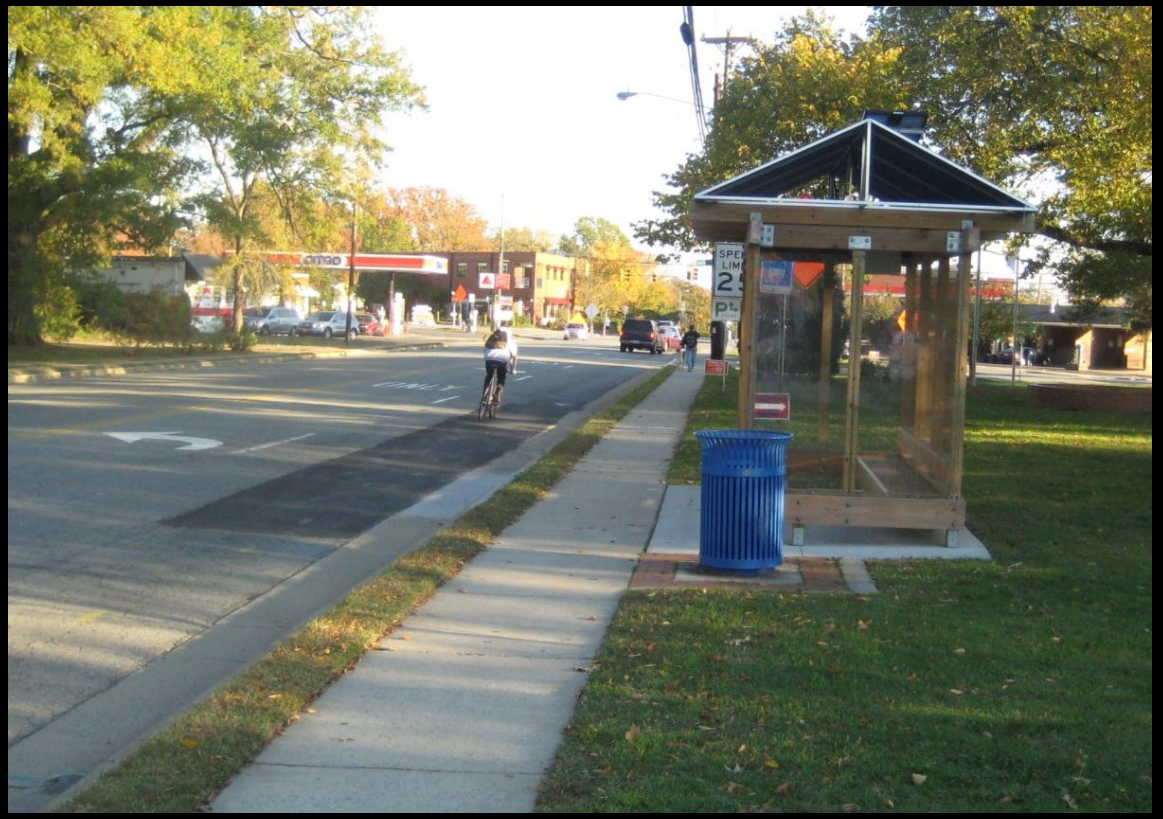
Vehicular Trip Reductions

- Mixed use
- Transit Oriented Development (TOD)
- Transit service
- Sidewalks/connectivity
- Bike facilities
- Incentives

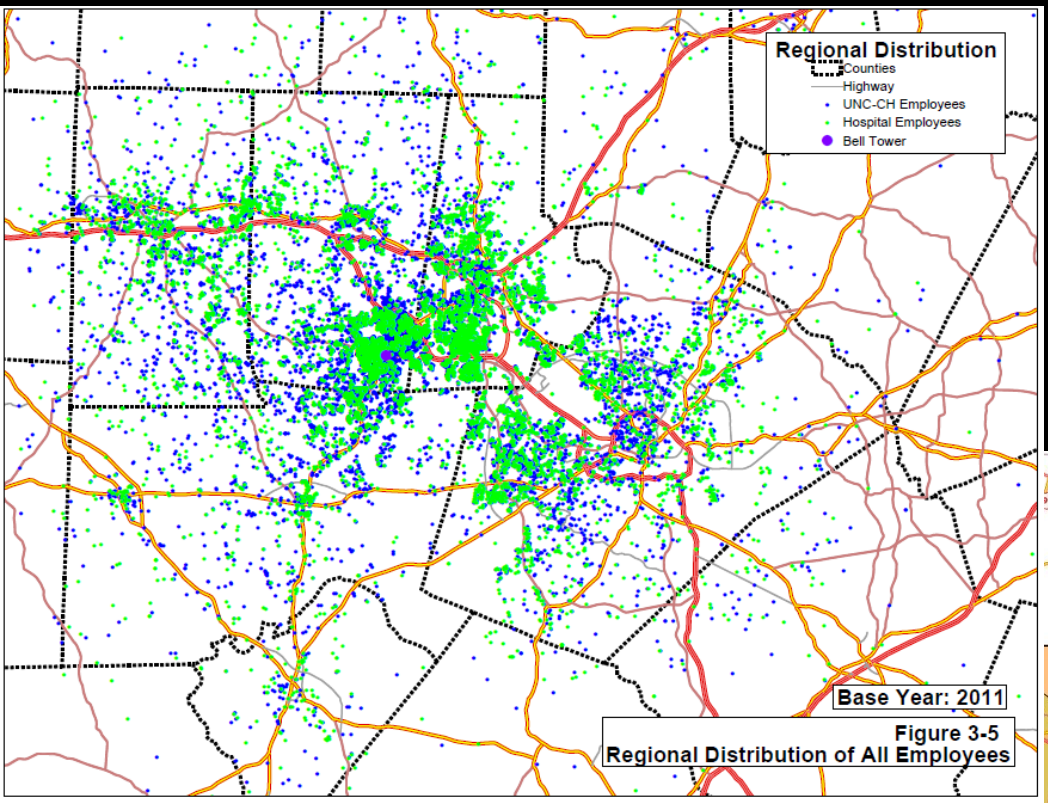


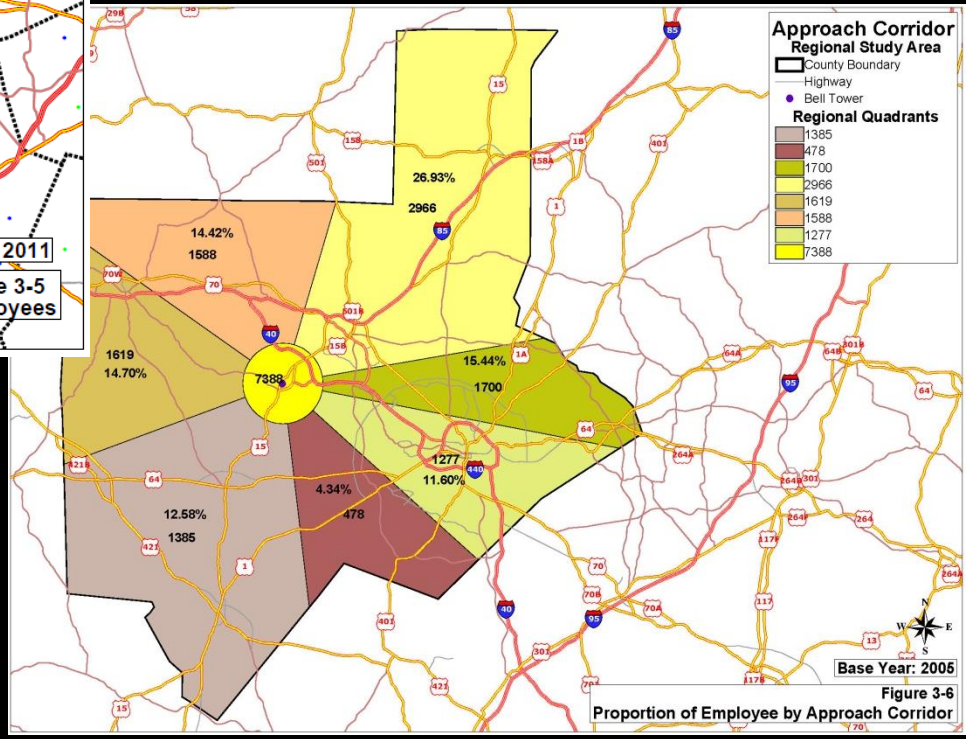
Mode Split

- How people travel:
  - Options (including road capacity)
  - Relative travel times
  - Cost
  - General availability
  - Practical rules of thumb
  - other



Tool for Work Trip Distribution



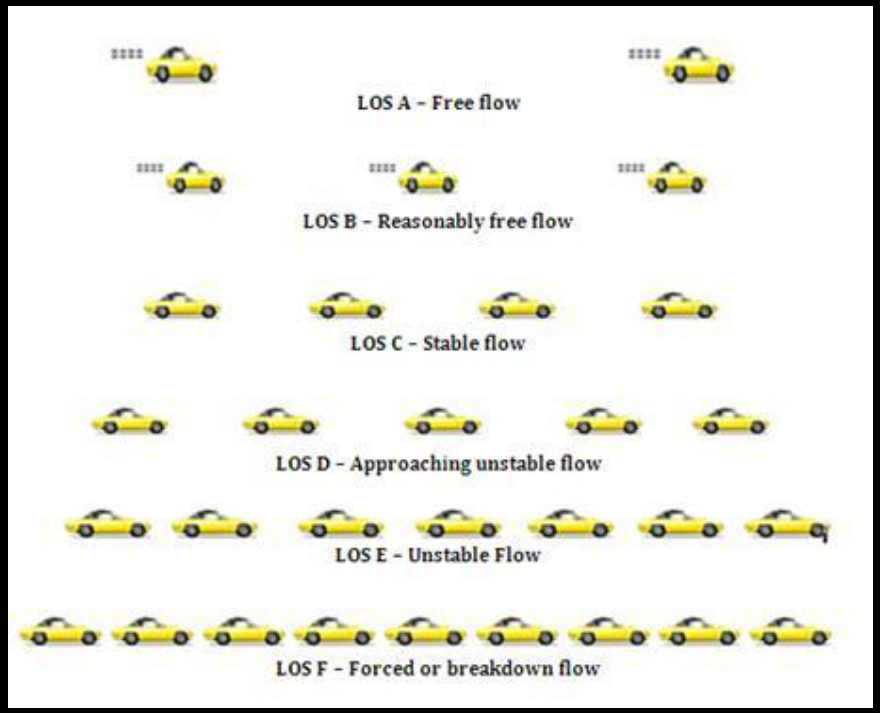


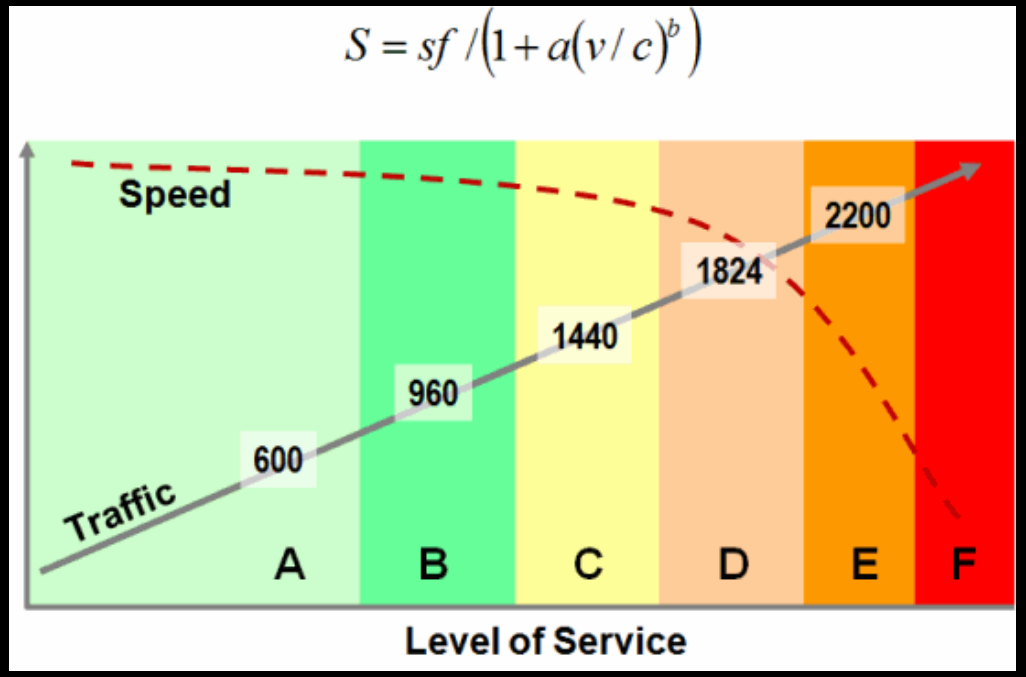
Traffic Level of Service (LOS)

Assessment of road system performance:

- Today
- Year that project opens but without project
- Year that project opens with project
- LOS measures traffic delay for an approach or intersection as a whole
- Applies to both signalized and unsignalized intersections
- Grades A through F
- Signalized Intersections
  - Overall LOS D generally considered as acceptable level of service for urban areas
  - Careful to provide ample time for side streets
- Unsignalized Intersections
  - Not based on overall intersection LOS, only measures the stopped approach
  - Not uncommon for side streets to operate at LOS E or F
  - Does not necessarily indicate over-congestion or the need for signalization

Traffic Level of Service (LOS)





Traffic Impact Analysis (TIA)

1) Insure that the transportation system is adequate, safe and efficient

2) To determine the difference between perception and accepted practices

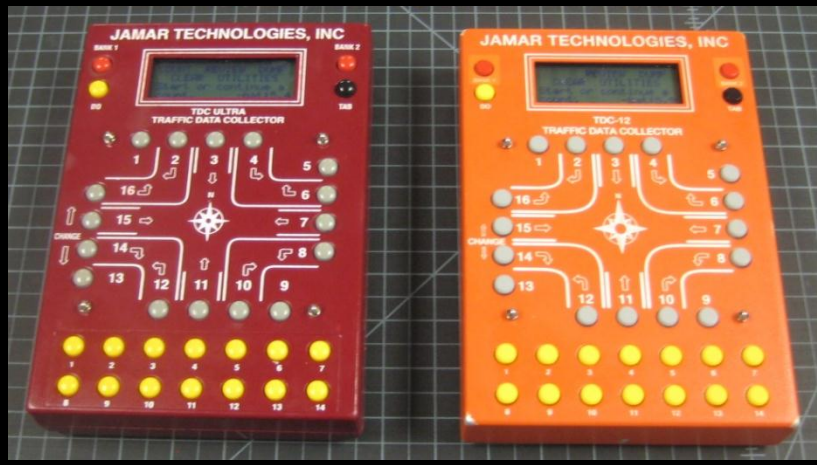
3) Promote more coordination between state and local officials

4) Help provide elected officials with enough information to make a decision

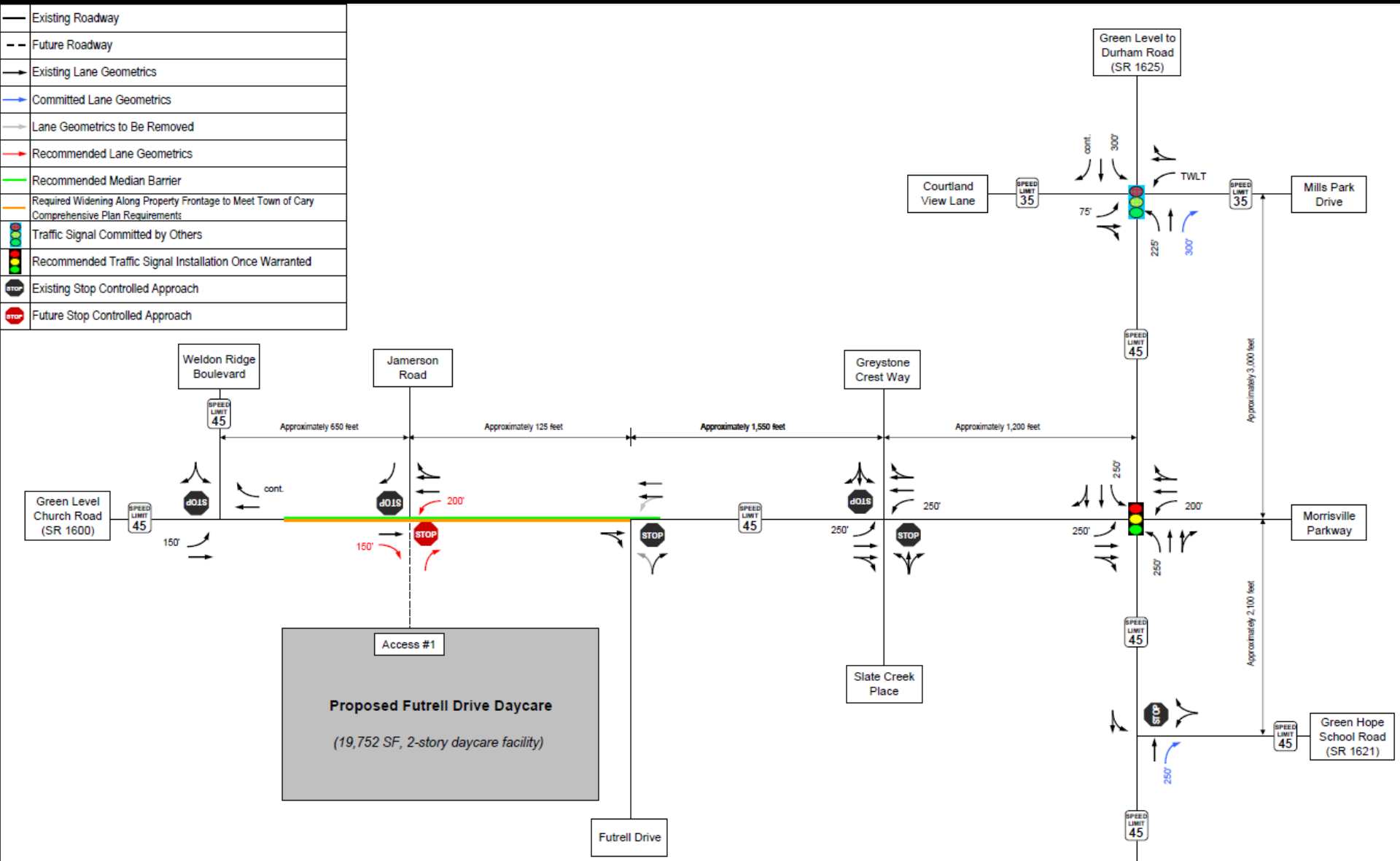
Benefits of Traffic Study

Traffic Impact Analysis Elements

- Scoping
- Data Collection
- Traffic Data Analysis
  - Existing Data
  - Background Growth Trips
  - Site Trips
    - Trip Generation, Distribution, & Assignment
- Traffic Analyses
  - Existing, No-Build, & Build
- Report
  - Conclusions & Recommendations



Recommendations



Town Requirements

Guidelines for
Traffic Impact Analysis

Town of Chapel Hill, North Carolina

Effective Date: October 1, 2001
Adopted by the Town Council on June 11 2001

Table of Contents

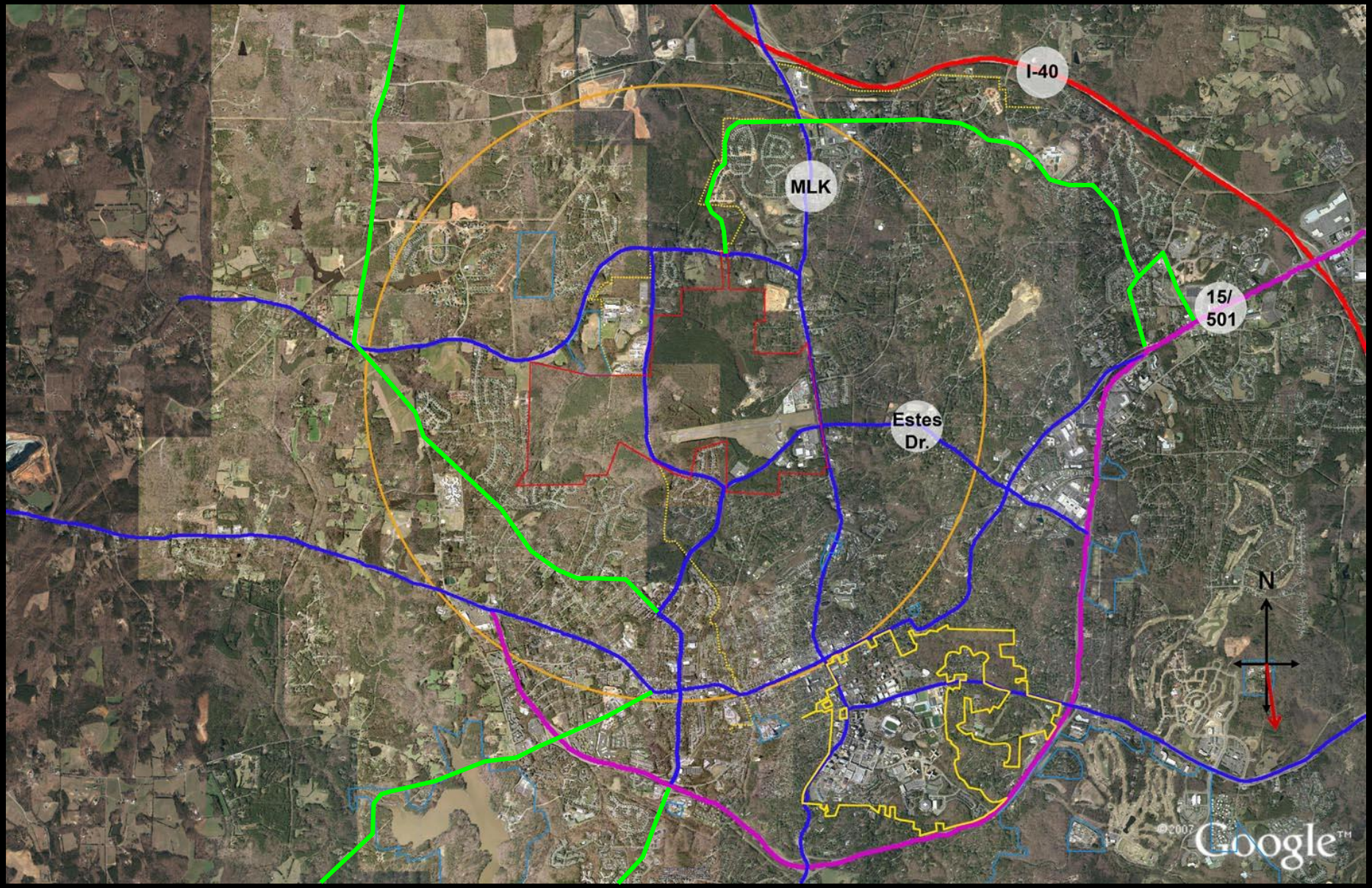
Transportation In Study Area

Transportation in Area

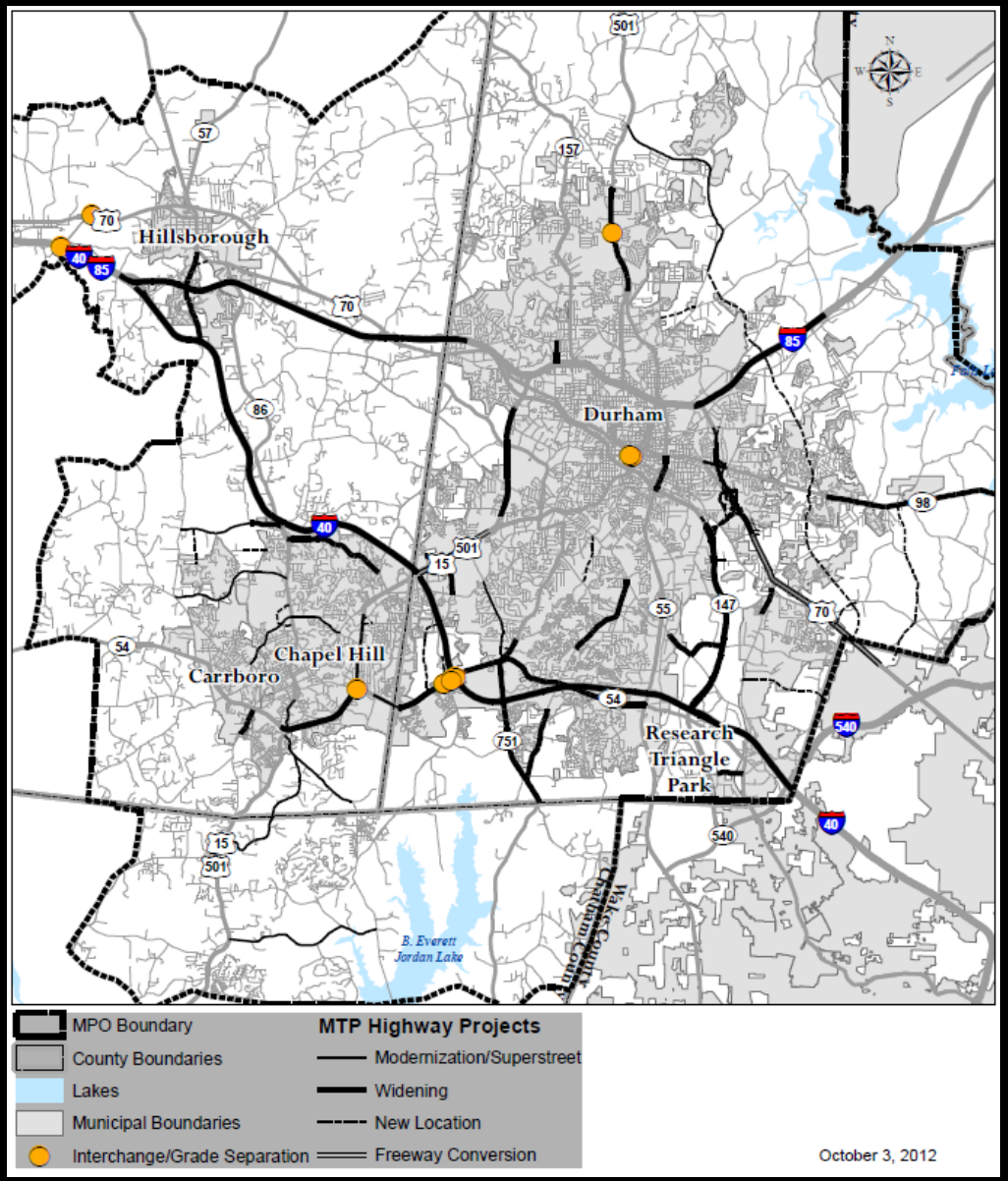
- Roads
- Transit
- Bike facilities/greenways
- Pedestrian paths/sidewalks

- Current and planned

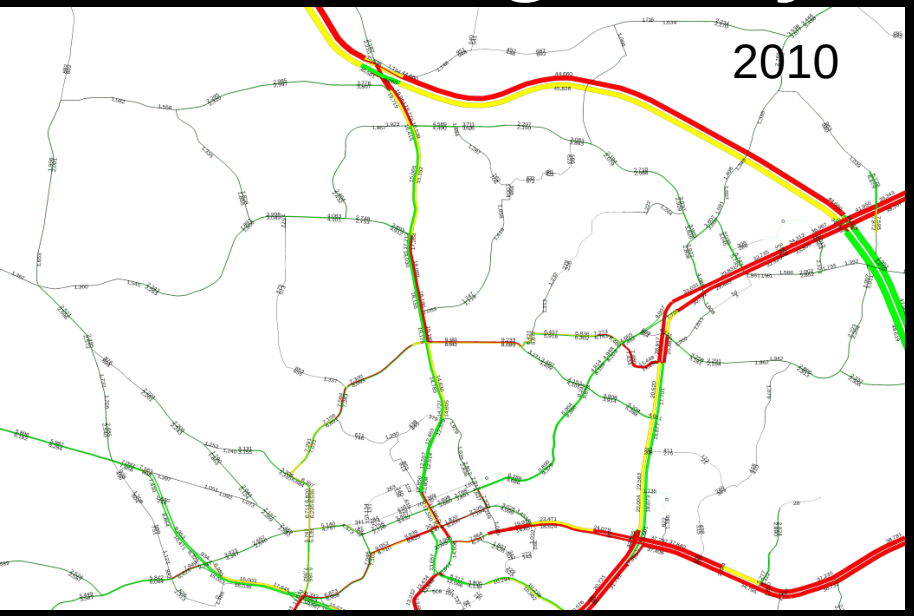
Existing Roads

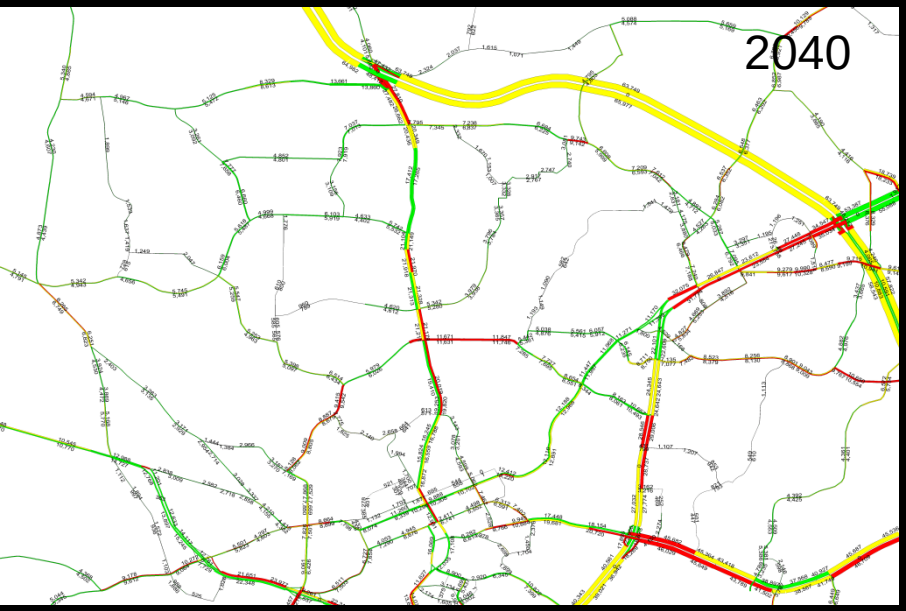


Highway Element

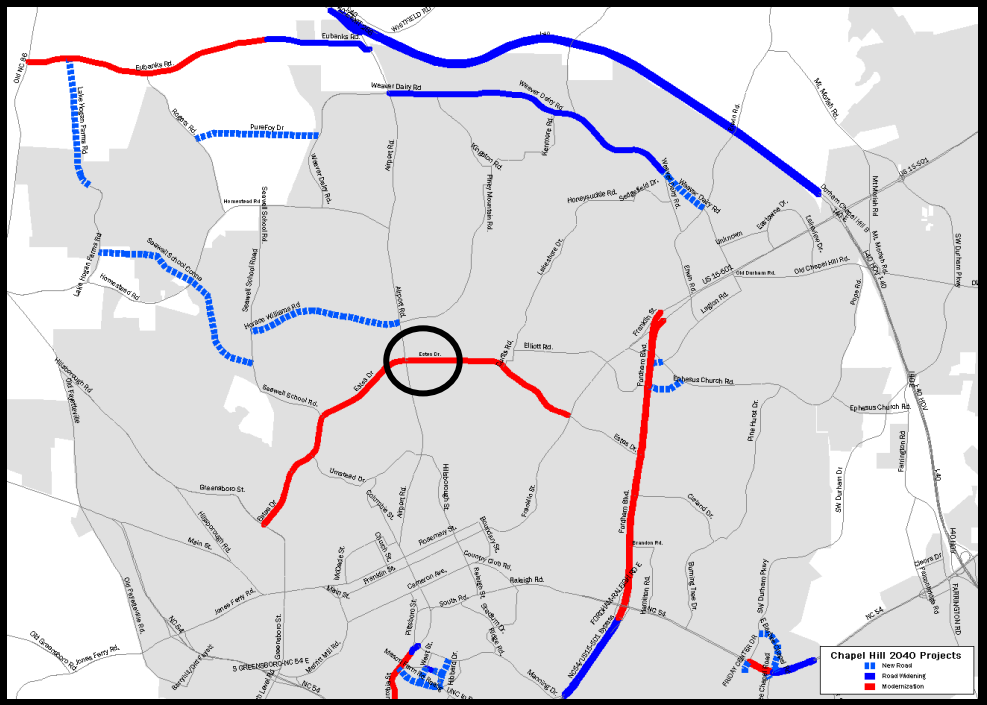


Highway Performance

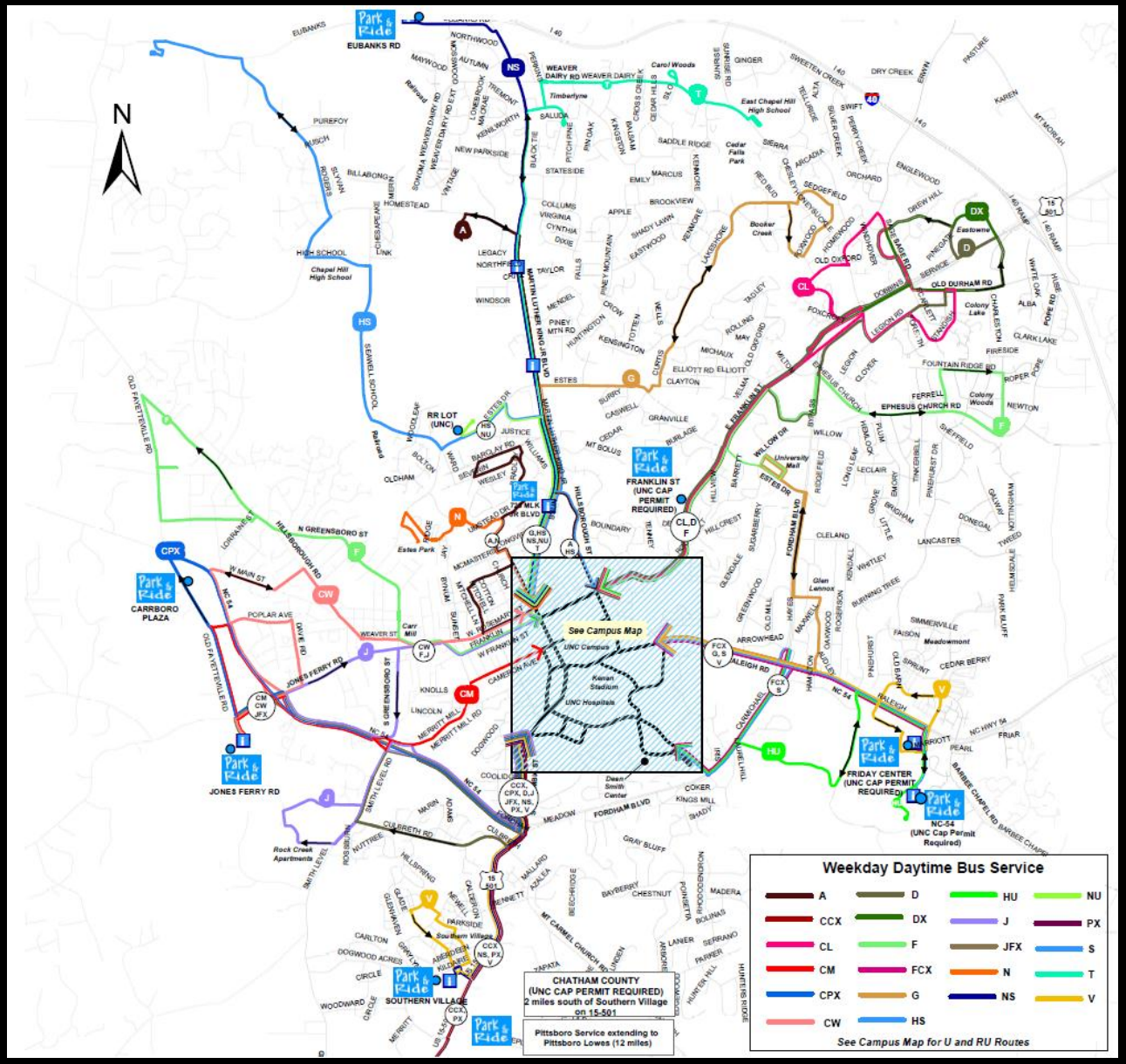




2040 Planned Projects



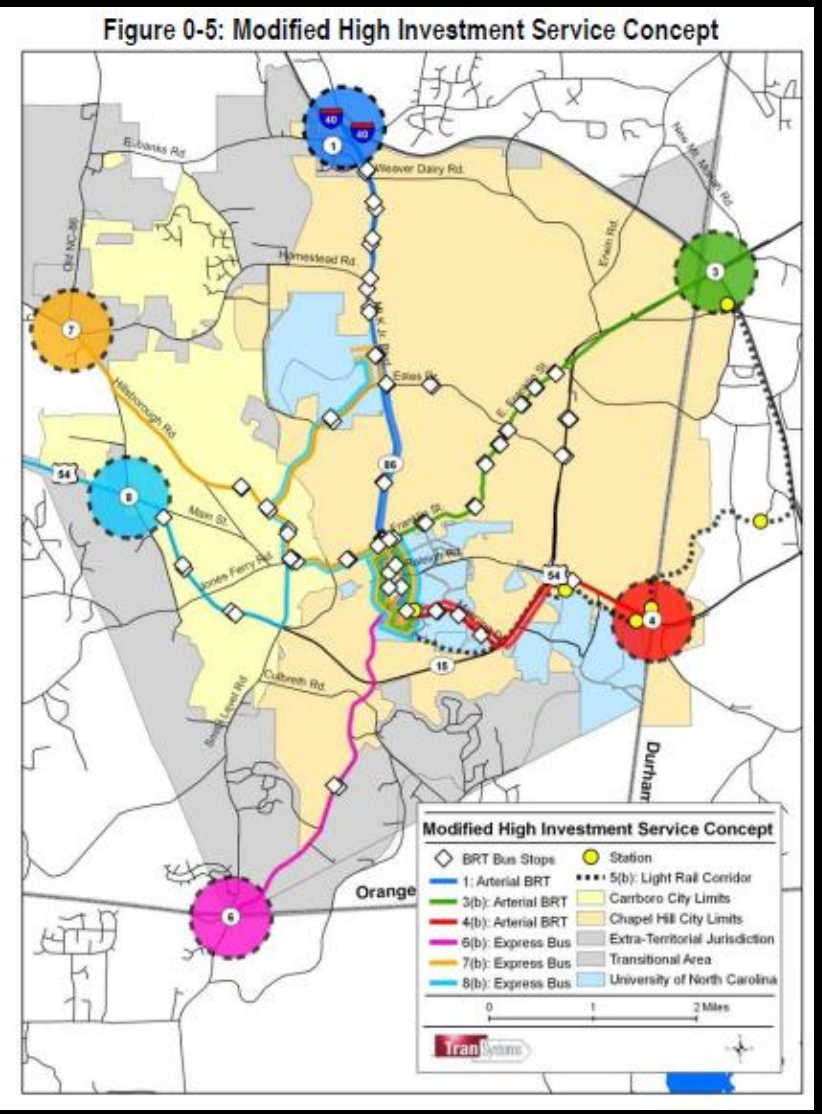
Current CHT Services

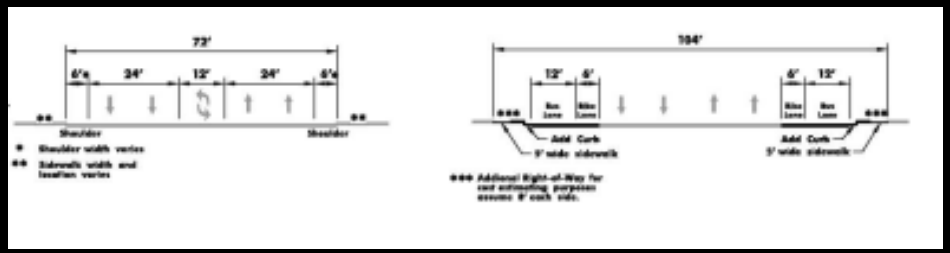


Peak period service frequency:
NS – 10 min
A – 30 min
T – 35 min
G – 50 min

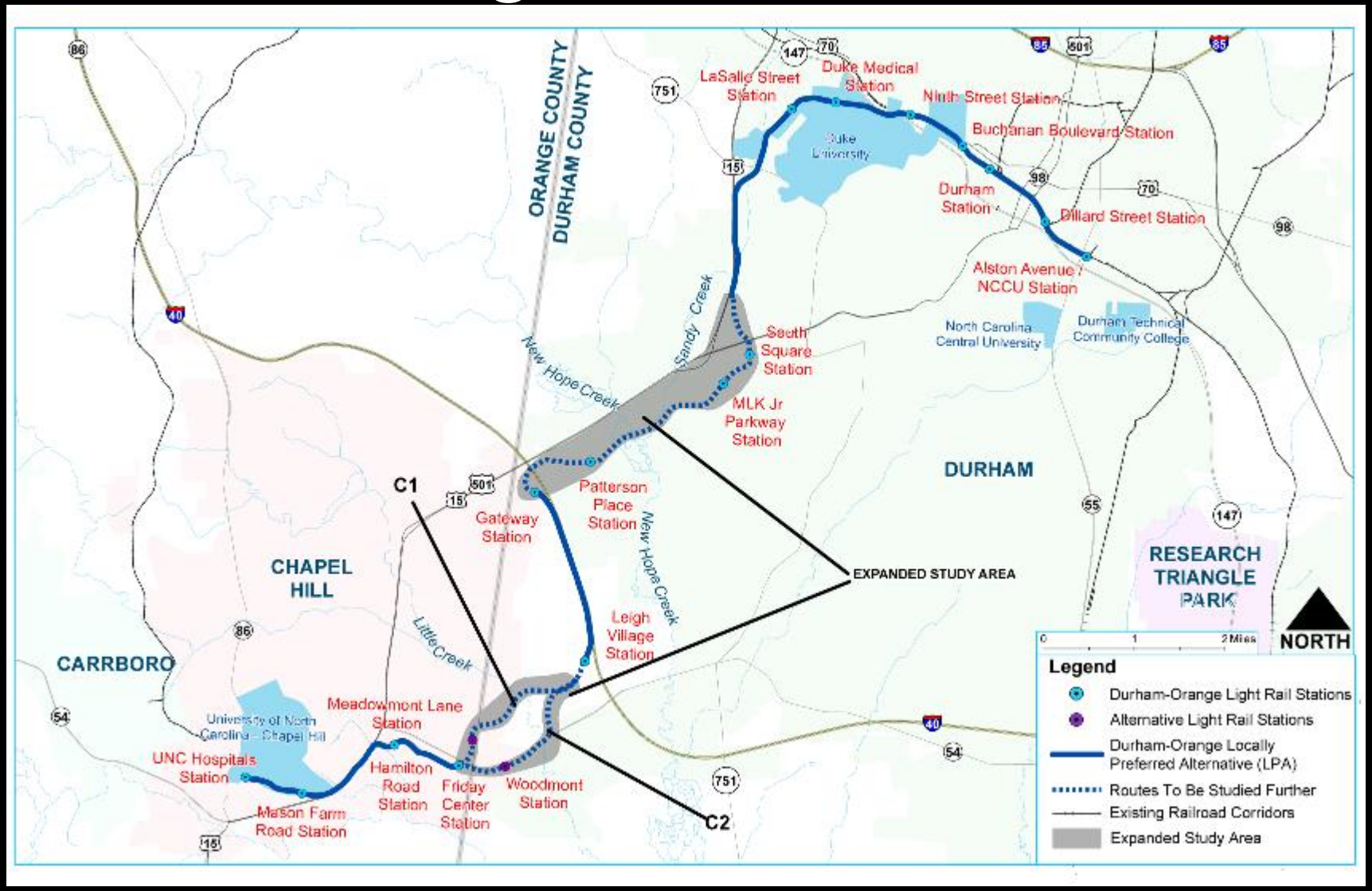
2009 Transit Study

(more detailed study for MLK corridor planned for 2013)

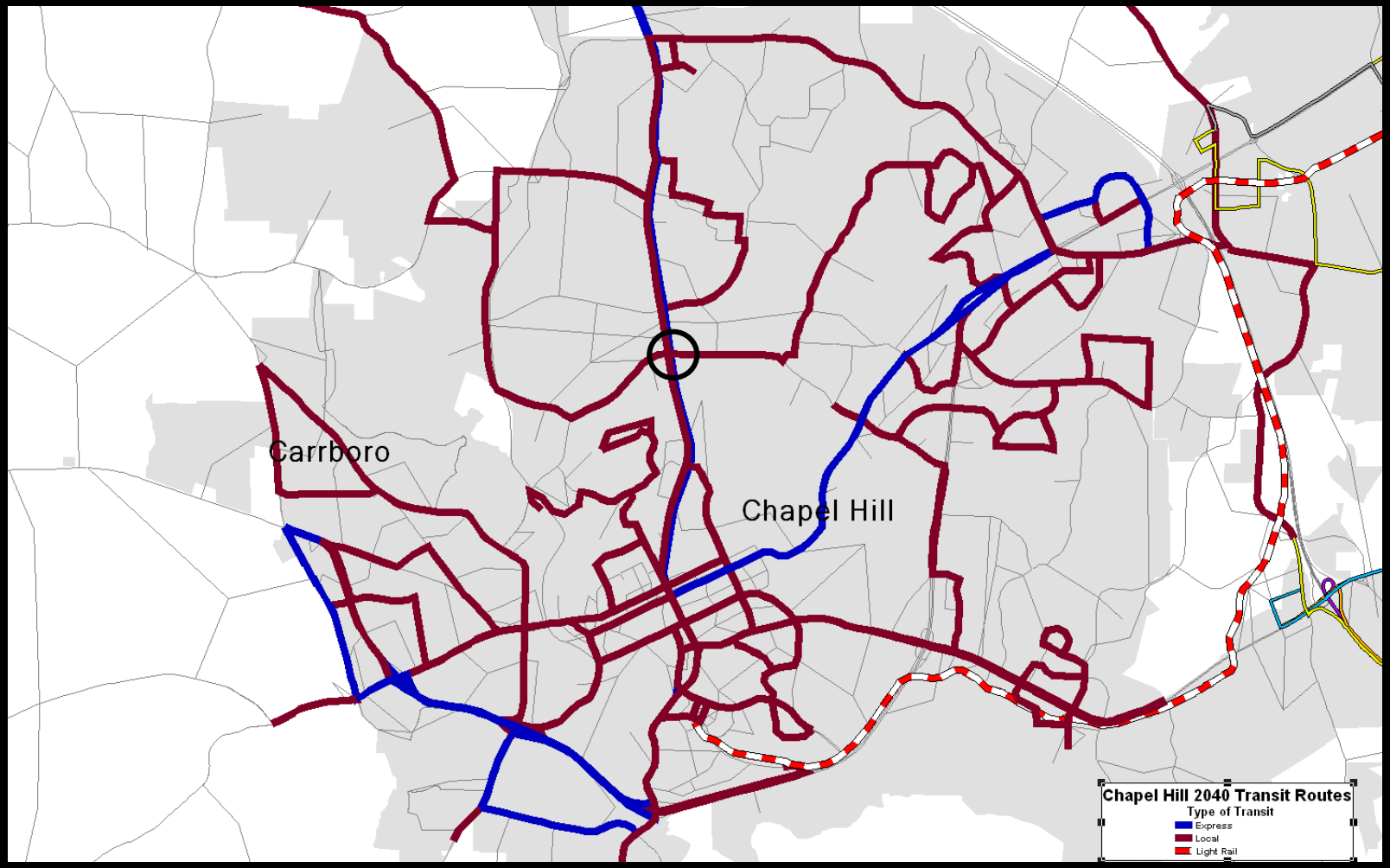




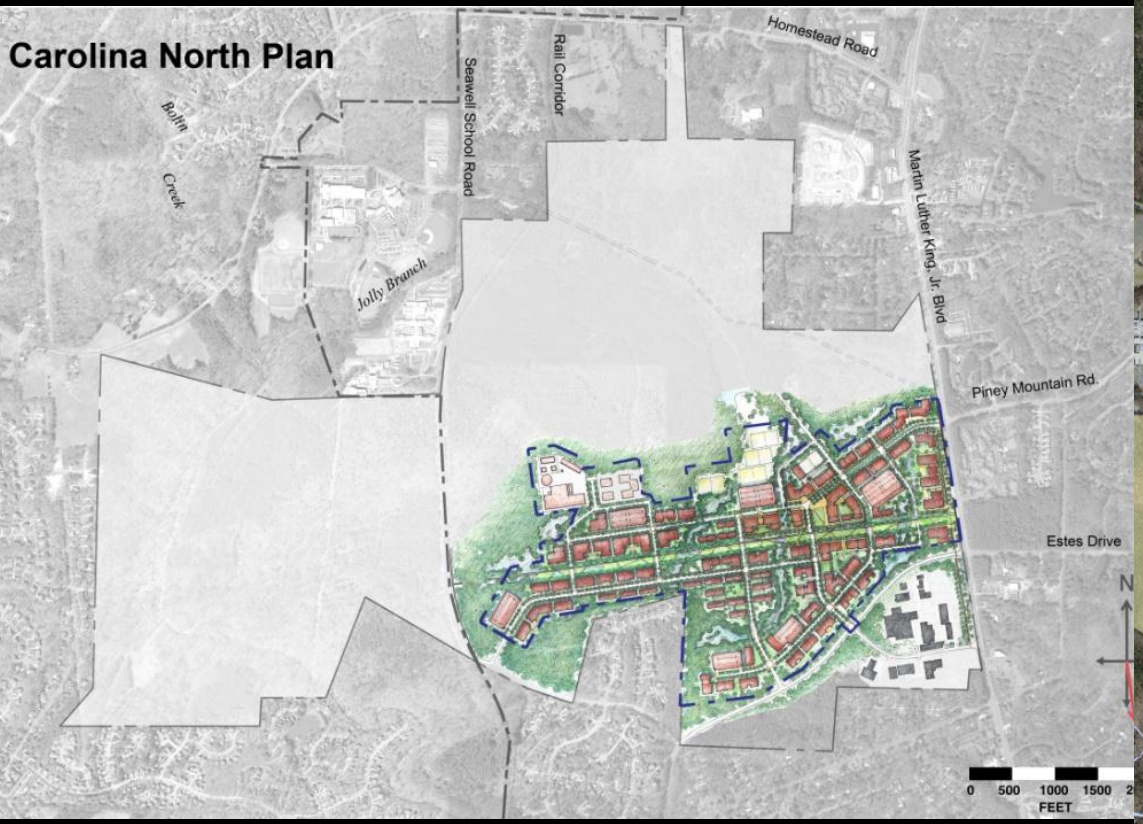
Adopted Durham- Chapel Hill Light Rail line



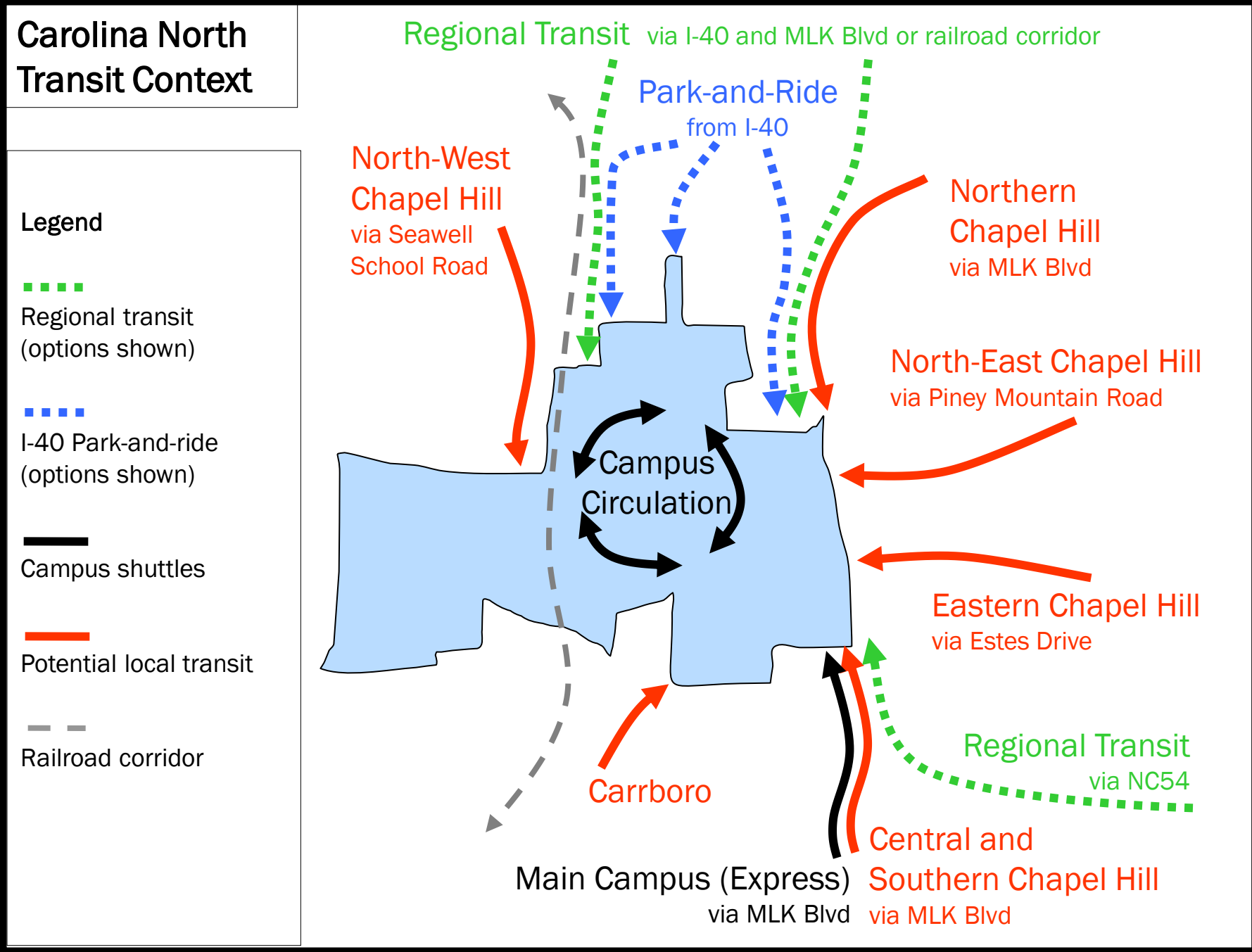
2040 Transit Plan



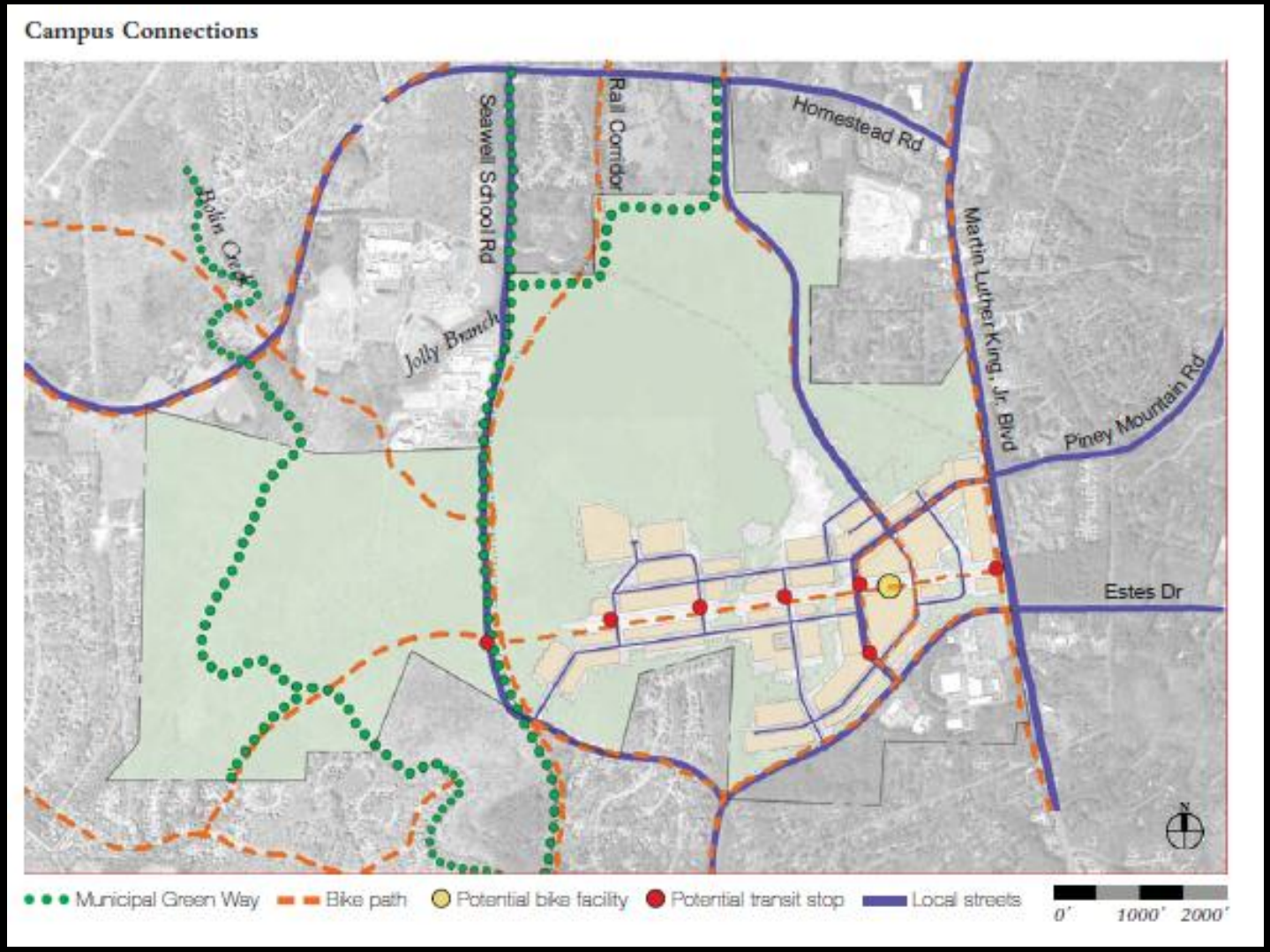
Carolina North Master Plan and Phase 1 Plan



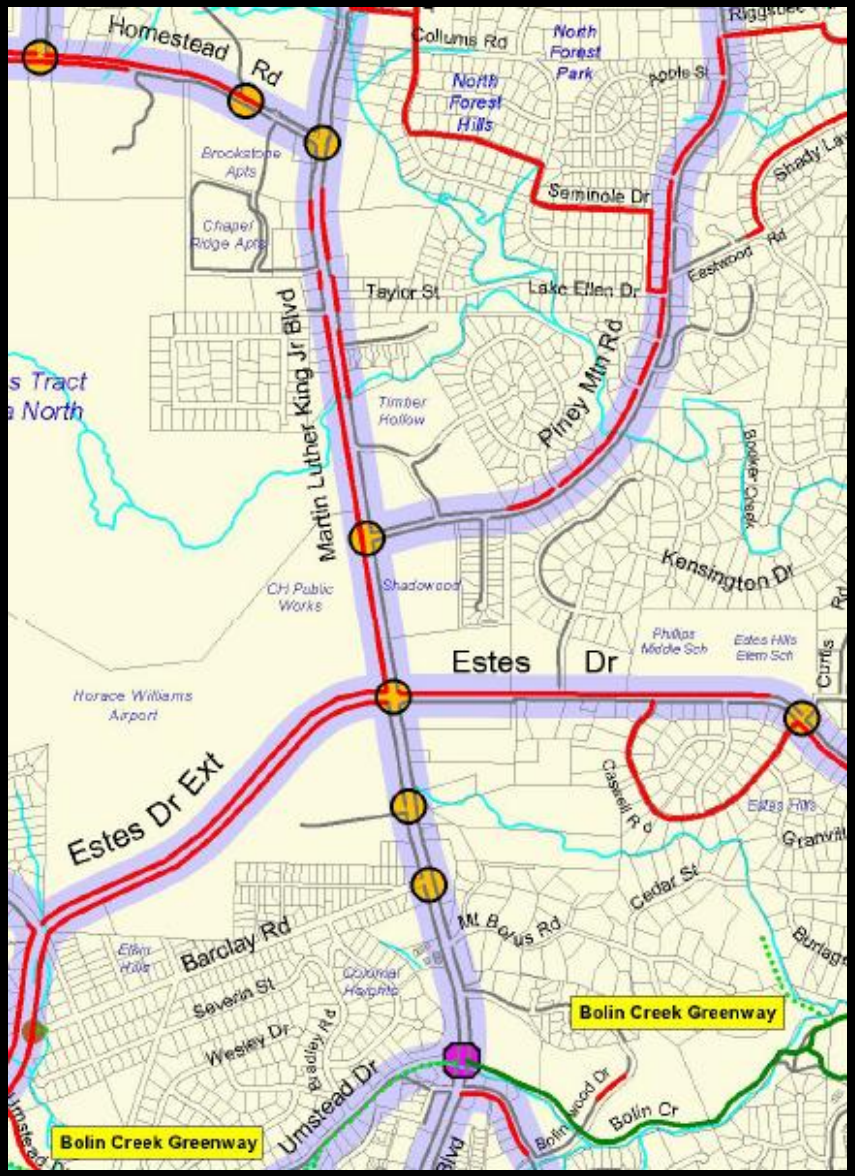
Carolina North Transit Context



Bicycle Improvements



2005 Pedestrian Plan



Sidewalks
- Existing Sidewalk
- Proposed Sidewalk

Off Road Path (Bicycle/Pedestrian)
- Existing
- Proposed

Greenways Master Plan
- Paved Greenway
- Unpaved Greenway
- Future Greenway
- Corridor Improvement

Other Improvement Needs
- Crossing Improvements
- Pedestrian Underpass
- Bicycle/Pedestrian Bridge
- Intersection Improvement Study

Boundaries
- Urban Services Boundary
- Chapel Hill City Limits
- Carrboro City Limits
- Durham City Limits

Carrboro Sidewalks (Carrboro Data)
- Existing Sidewalk
- Planned Future Sidewalk

- Streams

Key Conclusions

CONSTRAINTS

- Limited highway capacity
- Constraints to adding additional capacity
- Planned long-term improvements cannot be considered at time of development application

OPPORTUNITIES

- Good transit access with plans for significant enhancements
- Park-and-rides coupled with quality transit provide a real alternative to driving
- Over time bike and pedestrian access will improve
- Mixed use/transit-oriented development will enable a higher level of development