

Project Planning

Using the Piedmont Triad Regional Model

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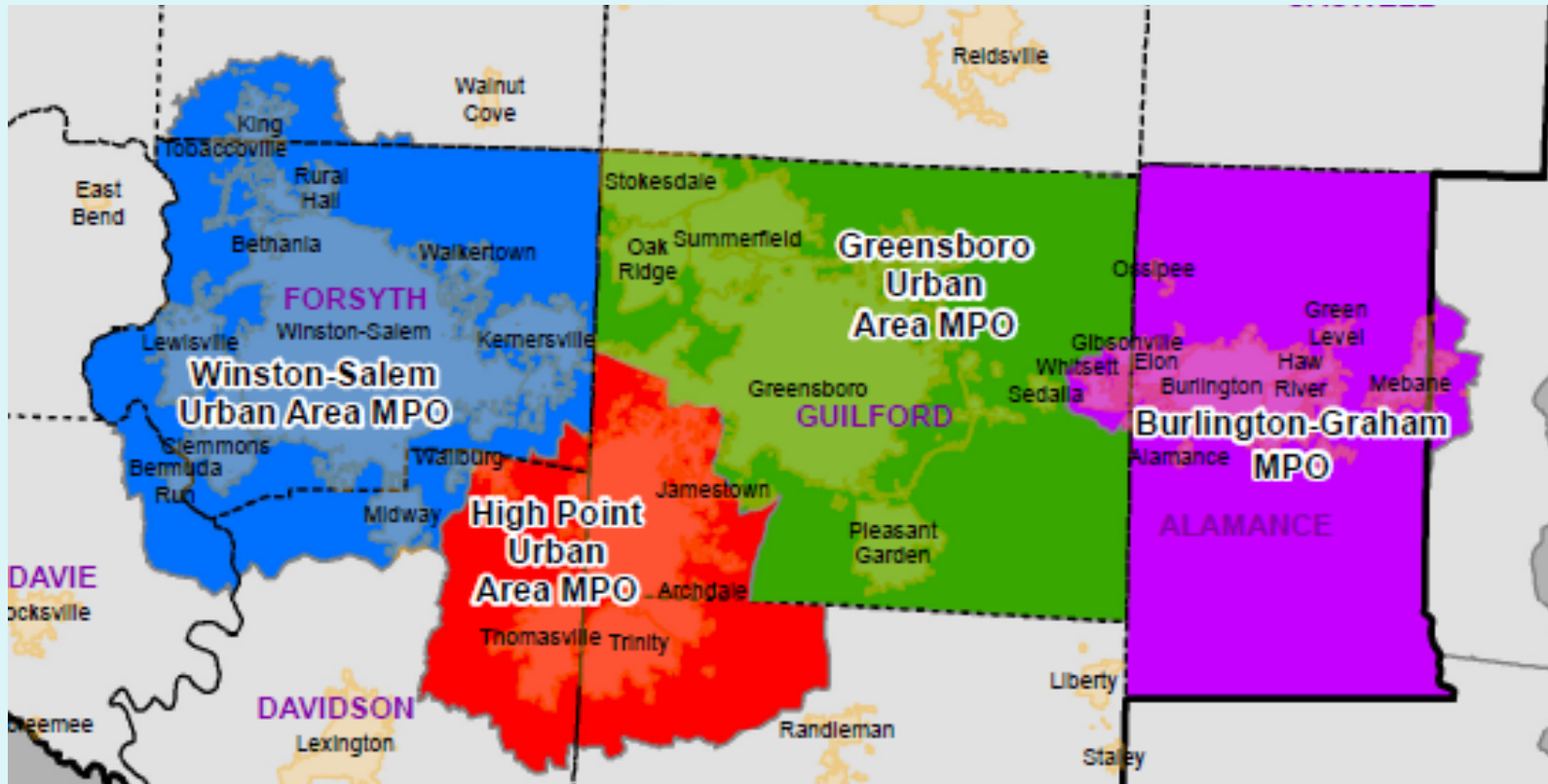


Objectives

- ❖ Meeting Federal Requirements
- ❖ Local Decision Making Process
- ❖ Project Prioritization



Triad MPO Urban Areas



The Process

ENVIRONMENTAL
ANALYSIS
&

PROJECT DESIGN

CONSTRUCTION

PLANNING

PRIORITIZATION
PROCESS

❖ Congestion
Management Process
(CMP)

❖ Long Range
Transportation Plan
(LRTP)

❖ Subarea Studies

❖ Feasibility Studies

❖ Performance
Evaluation

❖ Traffic Forecasts



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CMP

GOAL: MOBILITY

Objective: Reduce the % Centerline Miles experiencing congestion by 25% by 2025.

Measure 1: Identification of Highest Bottleneck Locations

Measure 2: Base and Future Lanes Miles by V/C ratio

Measure 3: Base and Future Peak Hour VMT by V/C ratio

Measure 4: Existing Centerline Miles by V/C ratio

Measure 5: Existing Centerline Miles Planned for Improvements

Measure 6: Peak Period LOS (Corridors only)

Measure 8: Base and Future Year Network V/C ratio

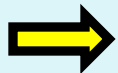
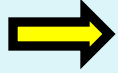
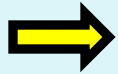
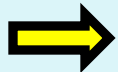
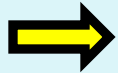


Figure 8: Summary of All Lane Miles by V/C Category

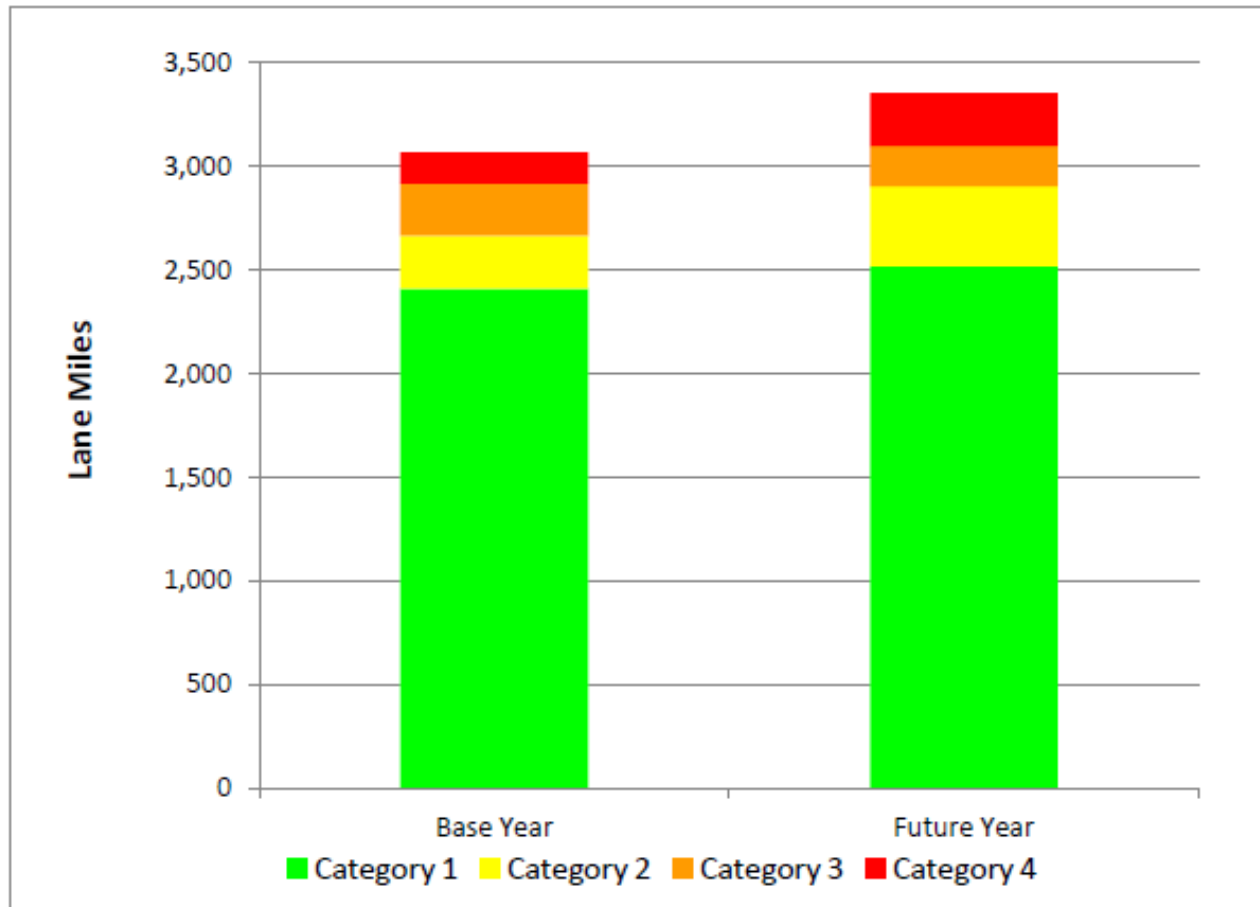


Figure 9: Summary of All VMT by V/C Category

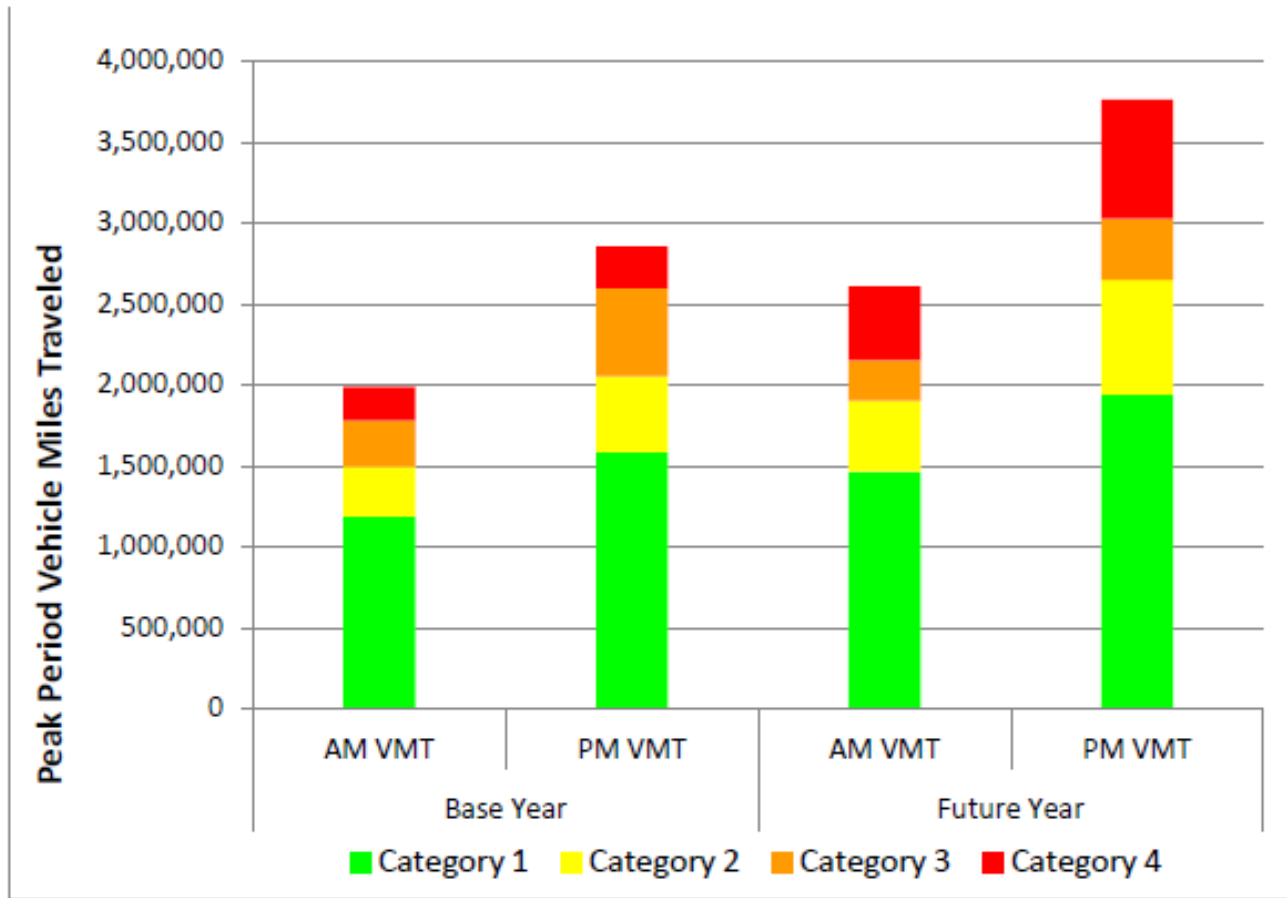


Table 10: Summary of Existing Roads Centerline Miles By V/C Category

Base V/C Category	Not Planned for Improvement	Planned for Improvement	Grand Total
Category 1	883.21	53.46	936.67
Category 2	84.91	12.66	97.57
Category 3	50.56	4.51	55.07
Category 4	63.17	3.98	67.15
Total	1,081.86	74.61	1,156.46



Figure 11: GUAMPO Base Year P.M. Peak Period V/C

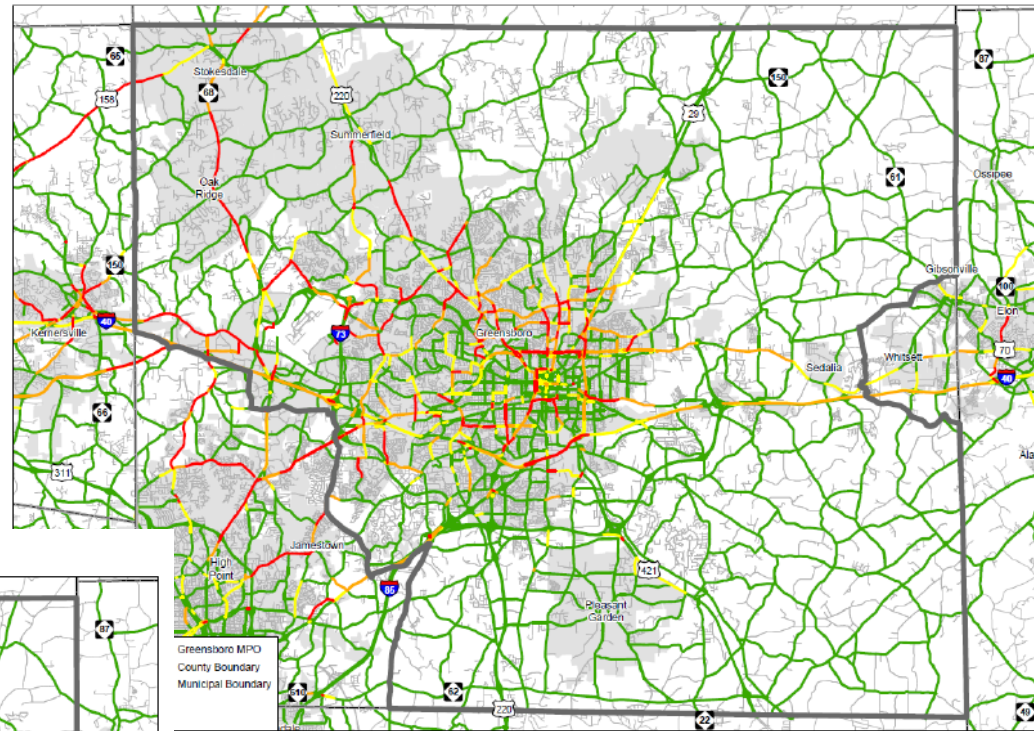
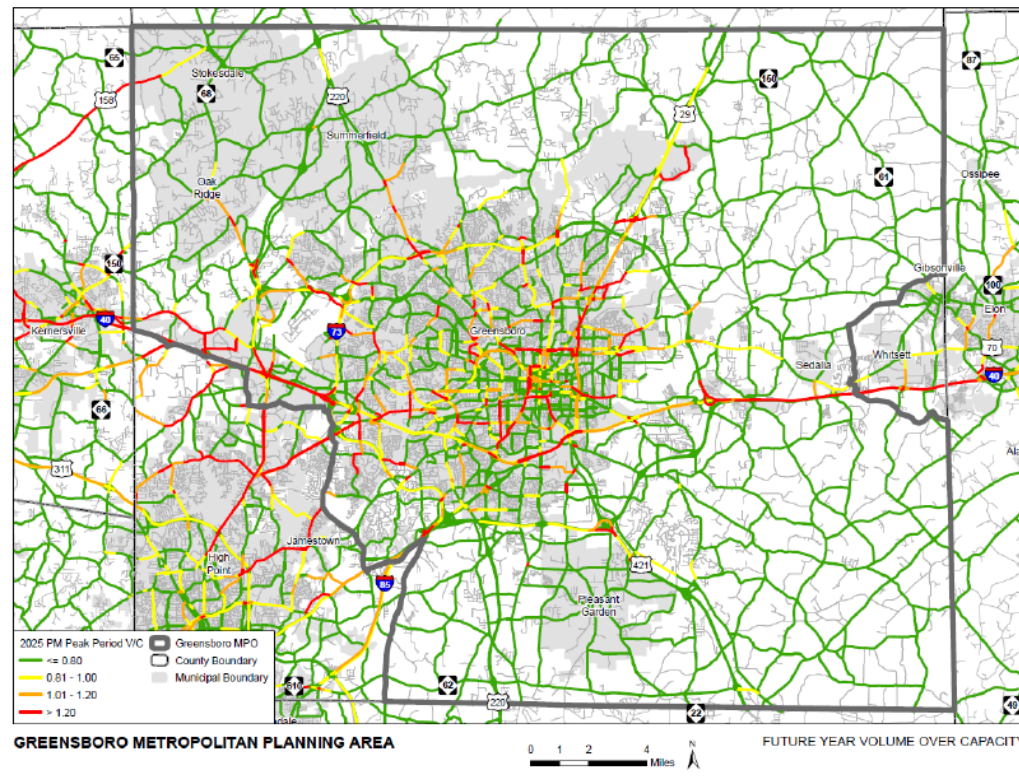


Figure 15: GUAMPO Future Year P.M. Peak Period V/C



ROPOLITAN PLANNING AREA

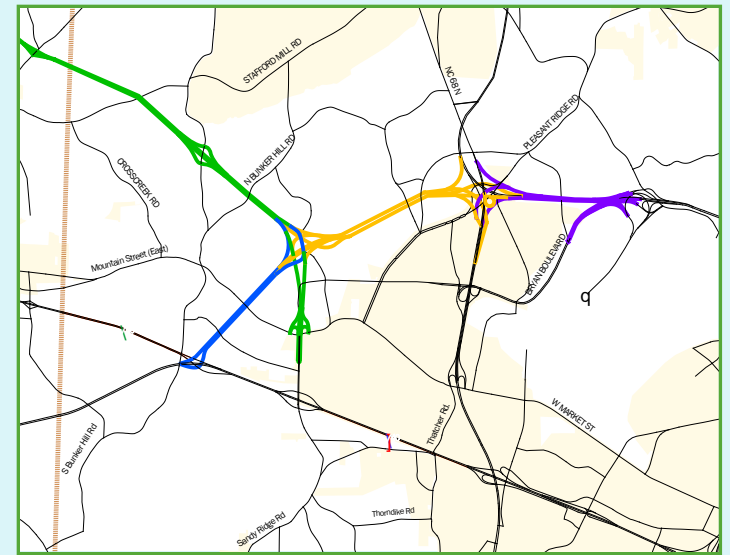
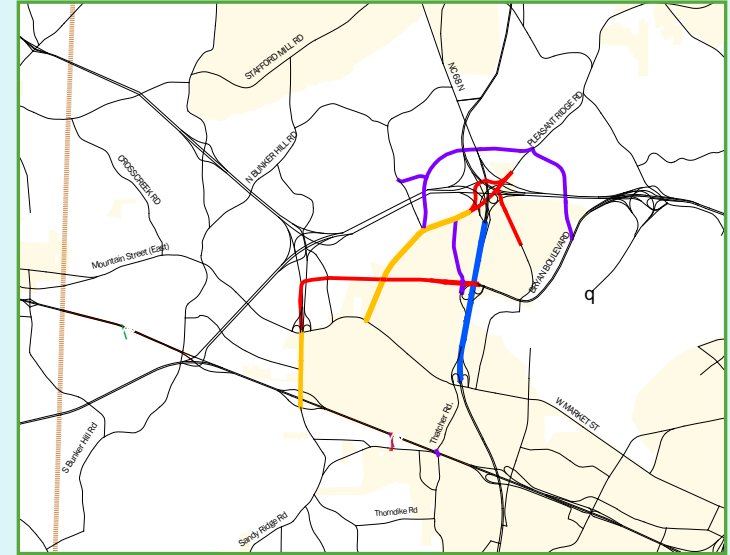


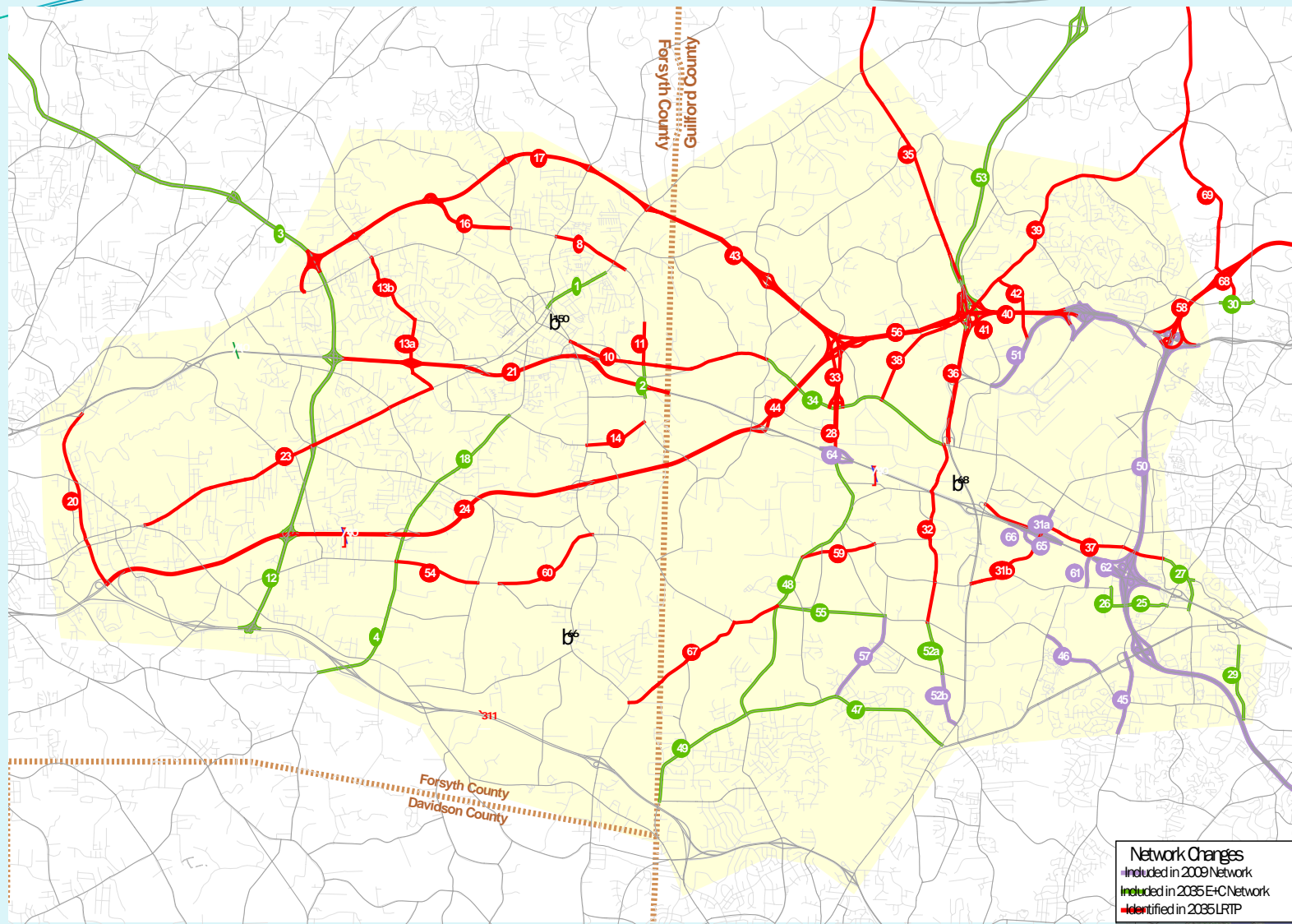
BASE YEAR VOLUME OVER CAPACITY



Projects Evaluated

- Sandy Ridge Road widening
- Pegg Road/Thatcher Road connector
- Sandy Ridge Road extension
- NC 68 widening
- Pleasant Ridge Road widening
- I-73 connector
- Pleasant Ridge Road relocation
- I-73/I-74 connector
- I-40 connector
- Airport connector
- Bryan Boulevard loop at I-73
- I-40 widening





Projects Evaluation Overview

Local roads

Regional freeways

Widening of existing roads

Construction of new facilities

Multiple alignments for some projects

Up to \$1,148,604,000 to construct all projects

12,288 possible project combinations

Evaluation Criteria

- Projects – number in each scenario
- Cost (Million) – total cost of the projects
- VHD Reduction – difference in vehicle hours of delay vs. 2035 E+C network
- VHD Reduction/Project
- VHD Reduction/Cost (Million)

Implementation Strategies

- Minimize cost
 - Back load expensive projects
- Maximize VHD reduction
 - Front load beneficial (traffic) projects
- Maximize VHD reduction/cost
 - Balance benefits and cost



Recommendation: Maximize VHD Reduction/Cost

PTI Area Implementation Plan - Maximize VHD Reduction/Cost

Sequence	Project	VHD Reduction	Cost (Million)	VHD Reduction/Cost (Million)	VHD Reduction/Project
1	Sandy Ridge Road Widening	192	\$ 5.6	34.6	192.0
2	Pegg/Thatcher Street Connection	553	\$ 23.4	23.6	276.5
3	Pleasant Ridge Road Widening	673	\$ 36.7	18.3	224.3
4	Bryan Boulevard Loop	899	\$ 74.4	12.1	224.8
5	I-73 Connector	1,250	\$ 151.2	8.3	250.0
6	Pleasant Ridge Road Relocation	1,328	\$ 166.1	8.0	221.3
7	Airport Connector	1,328	\$ 189.2	7.0	189.7
8	I-40 Connector	2,209	\$ 235.6	9.4	276.1
9	Sandy Ridge Road Extension (North)	2,299	\$ 258.4	8.9	255.4
10	I-73/I-74 Connector (Arterial)	4,440	\$ 573.2	7.7	444.0
11	NC 68 Widening	4,517	\$ 631.3	7.2	410.6
12	I-40 Widening	5,575	\$ 1,075.4	5.2	464.6



Performance Evaluation

Needs Criteria

Reduce Congestion

1. Objective: To assess the relationship between the amount of physical and operational capacity provided by the roadway project in comparison to the vehicular travel demand.

➤ **Reduction in Vehicle Hours Delay (VHD)**

The % hours delay reduced between no-build and build scenarios. The 2035 E+C scenario without the improvement will serve as the no-build scenario and the 2035 E+C with the improvement will serve as the build scenario. The number of vehicles multiplied by pm peak hours will be calculated for the no-build and build scenarios.

A synchro analysis will be performed for intersection improvements and proposed grade separations. The percentage of VHD reduced between the existing and future scenarios will be calculated.

Up to 3 points will be awarded.

➤ **Benefit / Cost Ratio to reduce Congestion**

The ratio of the Vehicle Hours of Delay reduced between the no-build and build divided by the cost of the project. The cost of the project includes right-of-way and construction. The project is considered cost efficient for a higher ratio and less efficient for a lower ratio.

Up to 3 points will be awarded.

Ranking Order	TIP or Bond ID	Facility	Description / Extents
1	PO4554	Battleground Avenue	Intersection Improvements at Benjamin Parkway and Cone Boulevard
2	PO4553	Battleground Avenue	Intersection Improvements at Westridge Road
3	PO4263, P04555	Battleground Avenue	Intersection Improvements at Brassfield Drive and New Garden
4	Bond Candidate	East Cone Boulevard Extension (Phase II)	Nealtown Road Extension to Hines Chapel Road (includes widening of existing and new location)
5	R-2910	US 70	Rock Creek Dairy Road to MPO Boundary (remaining portion in Burlington-Graham MPO)
6	PO4420, 4382, 4450, 4383A	West Wendover	Intersection and Sidewalk Improvements at Norwalk and Clifton. West of Edwardia to Clifton.
7	P04416	West Market Street	Intersection and Sidewalk Improvements at College Road
8	Bond Candidate	Hilltop Road	Railroad grade separation between Stanley Road and Fairfax Drive.
9	R-2612 B	US 421	Neelley Rd. and Williams Dairy Rd. realignment and Interchange
10		Franklin Boulevard	Railroad grade separation south of Burlington Road



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