SECTION 5
CONGESTION MANAGEMENT

5.1 Introduction

As a newly-designated Transportation Management Area (TMA), the High Point Urban Area Metropolitan Planning Organization (HPMPO) is required to have a Congestion Management System (CMS). The CMS is the planning tool for addressing and managing the region's traffic congestion. The objective of the HPMPO's CMS is to maximize or at least preserve the efficiency of the existing transportation system of the region through a systematic and continuous process.

5.2 Goals

The following goals must be achieved to fully realize the objective of the CMS:

(A) Improve safety on the surface transportation system;
(B) Increase the operational capacity of the transportation system by improving its service delivery capabilities;
(C) Reduce emissions and environmental costs associated with traffic congestion; and
(D) Educate and urge public officials to have better cooperation and coordination.

5.3 Process

The following process should be used in order to achieve the goals and satisfy the objective of HPMPO's CMS:

(A) Definition of congestion for transportation network;
(B) Evaluation and monitoring of the operational performance of the transportation network;
(C) Identification of congested corridors or target areas;
(D) Evaluation and identification of appropriate and cost-effective strategies to alleviate congestion;
(E) Implementation of appropriate congestion management or mobility enhancement strategies;
(F) Evaluation of the effectiveness of implemented strategies; and
(G) The creation of an institutional environment in which the development and deployment of a CMS can flourish.

5.4 Definition of Congestion

The Transportation Research Board (TRB) has identified a definition of congestion, as it relates to travel time and speed. "Congestion is travel time or delay in excess of that normally incurred under light or free-flow travel conditions."

There are two primary causes identified for the cause of congestion. They are (a) recurring congestion that tends to be concentrated into short time periods, such as "rush hours" and is caused from excessive traffic volumes resulting in reduced speed and flow rate within the system, and (b) non-recurring congestion caused from unforeseen incidents (road accidents, spills, and stalls) which affect the driver behavior to a considerable extent.

It is estimated that more than 60 percent of traffic delay is caused from incidents in an urban area. A successful congestion management program should address both types of congestion.

CMS is "a systematic process that provides information on transportation system performance and alternative strategies to alleviate congestion and enhance the mobility of persons and goods to levels that meet state and local needs."

Critical to the concept of congestion management as outlined in ISTEA is the notion that the acceptable system performance may vary by type of transportation modes and systems, geographic location, and/or time of day. The CMS reflects parameters that identify the degree to which travel time and/or delays are within locally acceptable standards of mobility, to meet the needs of individual states or metropolitan areas.

5.5 Evaluation of Network Performance

For this initial Congestion Management Plan, it was decided to review major thoroughfares in the MPO area. The performance measure selected relates congestion to the level of traffic volume versus the total capacity of the facility, otherwise known as volume-to-capacity ratio or v/c ratio. The v/c ratio provides a good indication whether the facility is congested by relating whether there is “excess” capacity available, or saturated conditions exist. A v/c ratio equal to 1.0 or greater indicates that the demand volume is exceeding the available capacity of the roadway and forced flow conditions will inevitably result, this is LOS F operation. The other categories vary slightly depending on the particular methodology from the Highway Capacity Manual that is being employed, but in general the following v/c ratios and their corresponding LOS are as follows:

(1) v/c < 0.65 = LOS A,B,C (Not Congested)
(2) 0.65 < v/c < 0.85 = LOS D (Marginal Congestion)
(3) 0.85 < v/c < 1.00 = LOS E (Moderate Congestion)
(4) v/c > 1.00 = LOS F (Serious Congestion)

5.6 Identification of Existing Congestion

Using information obtained from the North Carolina Department of Transportation (NCDOT), the following corridors were identified as having a v/c >1.00.:

- Archdale Road (Main Street to Trinity Road)
- Eastchester Drive/NC 68 (Deep River Road to Skeet Club Road)
- Fairfield Road (Main Street to Baker Road)
- Greensboro-High Point Road (US 311 Bypass to Penny Road)
- Guilford Road (East Fork Road to Main Street)
- Guilford College Road (Wendover Avenue to Mackay Road)
- Kivett Drive (US 311 Bypass to Scientific Street)
- E. Lexington Avenue (College Drive to Montlieu Avenue)
- W. Lexington Avenue (Main Street to Wallburg-High Point Road)
- Liberty Drive (Main Street to Cloniger Drive)
- Main Street/US 311 (Hartley Drive to Kivett Drive)
- Main Street/US 311 (Market Center Drive to Archdale Road)
- Main Street (Liberty Drive to Lexington Avenue)
- NC 109 (Interstate 85 to NC 47)
- Randolph Street/NC 109 (Main Street to Royal Oaks Street)
- Skeet Club Road (NC 68 to Beacon Ridge Drive)
- Surrett Drive (Market Center Drive to Business 85)
- Surrett Drive (Fairfield Road to Sealy Road)
- Wendover Avenue (Piedmont Parkway to Guilford College Road)
- Westchester Drive/NC 68 (Main Street to Lexington Avenue)

5.7 Strategies

The HPMPO has identified the following strategies as having potential for improving the operational performance of the transportation network. As the initial study is only evaluating major thoroughfares, only a few strategies are relevant at this time. As the CMS becomes part of an institutionalized process, these potential strategies will be amended. These potential strategies are:

Transportation Demand Management Measures: Car and vanpooling; flexible work hours; compressed workweeks; and telecommuting.
Roadway System Operational Improvements: Improved traffic signal coordination, pavement markings and intersection improvements.

Public Transit System Capital Improvements: Transit centers; park-and-ride lots; line expansions and other facilities that promote transit usage.
Public Transit System Operational Improvements: New bus and rail routes or services that facilitate transit usage.
Access Management: Developing access roads to businesses, planning well-spaced driveways and bus stops.
Intelligent Transportation Systems: A sophisticated network of communications tools that can monitor roadway conditions, advise motorists of upcoming traffic construction or incidents, and alert emergency operators in case of accidents.
Addition of Physical Capacity: Adding lanes, ramps, interchanges or other physical improvements to the existing network.
Special Event Congestion: Developing strategies to address congestion caused by special events in the area (i.e., semi-annual International Home Furnishings Market).

5.8 Implementation

CMS Strategies Already In Place

- PART vanpool leases and carpool matching
- PART planning underway for system of park-and-ride lots
- PART Express bus service
- PART planning underway for commuter rail and bus rapid transit
- 24 traffic surveillance cameras
- Traffic Operations Center connected to traffic signal system by fiber-optic network
- City of High Point Driveway Ordinance – much more stringent than NCDOT
- Planning for Variable Message Signs on new I-74
- Addition of new turn lanes at selected intersections to improve traffic flow
- Two satellite parking area with free shuttle downtown during Furniture Market
- Free transportation from Piedmont Triad International Airport to downtown during Market
- Free transportation from over 100 hotels to downtown during Furniture Market
- Free shuttles to outlying showrooms during Furniture Market

Implementation Schedule
The implementation schedule will vary depending on the individual strategy. For the purpose of this outline, the strategies have been classified into three timeframes.

- *Short-term (0-5 years):*
  Development of PART park-and-ride lots
  Optimization of traffic signal system
  Improved usage of PART vanpool and carpool programs

- *Mid-term (5-10 years):*
  Network of PART transit centers

Expansion of Hi tran service to reach underserved areas
Implementation of ITS Program being developed by NCDOT

- *Long-term (10-25 years):*
  Bus Rapid Transit service from downtown High Point to Airport area with transfer to east-west regional train service

Recommended Strategies for Selected Corridors

Corridor Segment	Potential Strategies	Recommended Strategy	Implementation Schedule
Archdale Road (Main Street to Trinity Road)	Improved traffic signal coordination; intersection improvements; access management; additional physical capacity	Additional physical capacity	Unfunded project in TIP
Eastchester Drive/NC 68 (Deep River Road to Skeet Club Road)	Improved traffic signal coordination; intersection improvements; public transit system improvements; access management	Improved traffic signal coordination; access management	Coordination to be studied and improved during next two years
Fairfield Road (Main Street to Baker Road)	Intersection improvements; access management; additional physical capacity	Additional physical capacity	Addition of dedicated right-turn lane as part of NC Moving Ahead (completed)
Greensboro-High Point Road (US 311 Bypass to Penny Road)	Intersection improvements; access management; additional physical capacity	Additional physical capacity; access management	Segment scheduled for widening (U-2412) in FY 07
Guilford Road (East Fork Road to Main Street)	Improved traffic signal coordination; intersection improvements; access management; additional physical capacity	None at this time.	Segment expected to carry reduced volume due to construction of U-2913
Guilford College Road (Wendover Avenue to Mackay Road)	Intersection improvements; access management; additional physical capacity	Additional physical capacity	Segment scheduled for widening (U-2913) in FY 05

Kivett Drive (US 311 Bypass to Scientific Street)	Improved traffic signal coordination; intersection improvements; access management; additional physical capacity	Additional physical capacity; access management	Segment scheduled for widening (U-2717) in FY 05
E. Lexington Avenue (College Drive to Montlieu Avenue)	Improved traffic signal coordination; intersection improvements; access management; additional physical capacity	Intersection improvements; additional physical capacity	Future Need identified in Thoroughfare Plan
W. Lexington Avenue (Main Street to Wallburg-High Point Road)	Improved traffic signal coordination; intersection improvements; access management; additional physical capacity	Access management; intersection improvements; additional physical capacity	Future Need identified in LRTP
Liberty Drive (Main Street to Cloniger Drive)	Improved traffic signal coordination; intersection improvements; access management; additional physical capacity	Intersection improvements; additional physical capacity	Unfunded project in TIP
Main Street/US 311 (Hartley Drive to Kivett Drive)	Improved traffic signal coordination; intersection improvements; access management	Improved traffic signal coordination; access management; intersection improvements	Coordination to be studied and improved during next two years
Main Street/US 311 (Market Center Drive to Archdale Road)	Improved traffic signal coordination; intersection improvements; access management	Improved traffic signal coordination; access management; intersection improvements	Coordination to be studied and improved during next two years
Main Street (Liberty Drive to Lexington Avenue)	Improved traffic signal coordination; intersection improvements; access management	Improved traffic signal coordination	Coordination to be studied and improved during next two years
NC 109 (Interstate 85 to NC 47)	Improved traffic signal coordination; intersection	Additional physical capacity	Feasibility Study completed by NCDOT

	improvements; access management; additional physical capacity		
Randolph Street/NC 109 (Main Street to Royal Oaks Street)	Improved traffic signal coordination; intersection improvements; access management; additional physical capacity	Improved traffic signal coordination	Coordination to be studied and improved during next two years
Skeet Club Road (NC 68 to Beacon Ridge Drive)	Improved traffic signal coordination; intersection improvements; access management; additional physical capacity	Additional physical capacity	Segment scheduled for widening (U-3615) in FY 08
Surrett Drive (Market Center Drive to Business 85)	Improved traffic signal coordination; intersection improvements; access management; additional physical capacity	Improved traffic signal coordination; additional physical capacity	Coordination to be studied and improved during next two years
Surrett Drive (Fairfield Road to Sealy Road)	Improved traffic signal coordination; intersection improvements; access management; additional physical capacity	Improved traffic signal coordination	Coordination to be studied and improved during next two years
Wendover Avenue (Piedmont Parkway to Guilford College Road)	Improved traffic signal coordination; intersection improvements; access management	Improved traffic signal coordination	Coordination to be studied and improved during next two years
Westchester Drive/NC 68 (Main Street to Lexington Avenue	Improved traffic signal coordination; intersection improvements; access management	Improved traffic signal coordination	Coordination to be studied and improved during next two years

Monitoring Plan

As part of its continuing efforts regarding Congestion Management, the HPMPO is developing a program to continually monitor congestion and provide input into the project needs selection process.

MPO staff will revisit the congestion criteria by analyzing which criteria can convey the present congestion levels while also being easily collected. Examples being examined are intersection delay and segment travel times.

The network to be examined will also be revisited. A list of primary intersections and segments will be developed to be studied on an ongoing basis to determine the effectiveness of the selected strategies.

A Congestion Base Conditions Report will be developed to provide staff a baseline on average, non-Market congestion conditions. This information will be compared to data collected at the same locations during Market time as well as on an ongoing annual basis.

Every other year, on the years between TIP updates, a Congestion Status Report will be developed which will highlight the existing conditions compared to the data collected in the Base Conditions Report. This data will be used as one of the criteria for project selection in the MPO Needs Report.

Because congestion during the semi-annual International Home Furnishings Market is a recurring pattern, it has been determined that it is of key interest to determine ways to reduce the impacts of congestion on the system during Market. The primary method would be the establishment of Market-specific traffic signal plans. These have already begun to be developed but the data collected as part of the CMS will be used to confirm the accuracy of these revised plans.