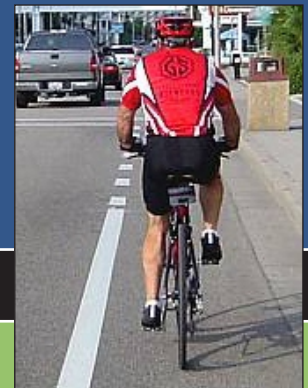
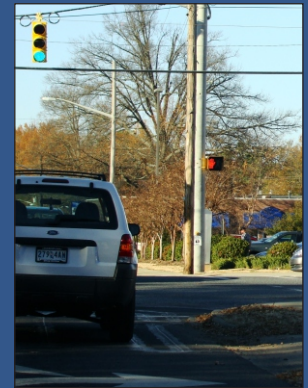


# ROCK HILL-FORT MILL AREA TRANSPORTATION STUDY CONGESTION MANAGEMENT PLAN UPDATE



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Submitted to:



Submitted by:

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# 1. Introduction

## 1.1. Study Purpose

The Rock Hill-Fort Mill Area Transportation Study (RFATS) Congestion Management Process (CMP) Update represents Phase 2 of the Congestion Management System (CMS) Study completed in 2004. The current study has been undertaken in accordance with the requirements of federal legislation, SAFETEA – LU<sup>1</sup>. This legislation replaced previous requirements for a CMS in TEA – 21<sup>2</sup>, with those for a Congestion Management Process (CMP).

The Study was conducted for the RFATS Metropolitan Planning Organization (MPO) with the support and guidance of the RFATS Technical Team, comprised of representatives from the RFATS MPO, York County, Town of Fort Mill, City of Tega Cay, South Carolina Department of Transportation (SCDOT), and the Federal Highway Administration (FHWA).

## 1.2. The Congestion Management Process

The Congestion Management Process is a continuous cycle of planning, implementation, operation and monitoring activities intended to help an MPO to:

- Identify congested locations;
- Determine the causes of congestion;
- Identify strategies that best address the causes and impacts of congestion; and
- Track and evaluate the impact of previously implemented congestion management strategies.

The CMP is intended to be an integral part of the metropolitan planning process, rather than a stand-alone program. It advances the integration of transportation system operations and management (O&M) into the planning process. O&M has emerged as a vitally important approach to addressing both short-range and long-term transportation challenges, including congestion management. It is an integrated approach that seeks to optimize the performance of existing infrastructure through the implementation of multimodal, intermodal, and often cross-jurisdictional systems, services and projects.

## 1.3. Existing Conditions

Information on existing conditions was provided by the RFATS Technical Team, travel time surveys, V/C data from the Metrolina Regional Travel Demand Model, and previous transportation / transit studies. Specific studies reviewed included the RFATS 2035 LRTP (2009), an Advanced Project Planning Report assessing possible impacts from a new Catawba River bridge crossing, Charlotte Region Fast Lanes Study, I-77 Traffic Study, South Pointe High

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<sup>1</sup> Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA – LU), August 10, 2005.

<sup>2</sup> Transportation Efficiency Act for 21<sup>st</sup> Century (TEA – 21), June 9, 1998.

School Area Traffic Study, Rock Hill Urban Transit Study, Rapid Transit (MIS) Study, and the previous CMS Study completed in 2004.

## 2. Performance Monitoring

The Congestion Management Process is one of the primary ways RFATS staff examine roadway operational and management strategies using an objectives-based approach. It is intended to identify candidate congestion mitigation strategies and specific improvements that move forward into the LRTP and TIP planning processes for implementation consideration. Linking the CMP with the LRTP and TIP will ensure congestion mitigation strategies are addressed and integrated into RFATS overall planning process.

### 2.1. Identifying Performance Measures

A key component of the objectives-based approach is the selection of performance measures to identify projects and to assess the impacts on congestion of implemented strategies. The Federal CMP requirements do not mandate specific performance measures that must be used during the process. Identifying appropriate congestion performance measures is up to each MPO.

Although a wide range of performance measures are available, performance measures selected for the RFATS CMP must be understandable, outcome-oriented, and supported by readily available data sources.

Following a review of potential performance measures, the measures recommended were:

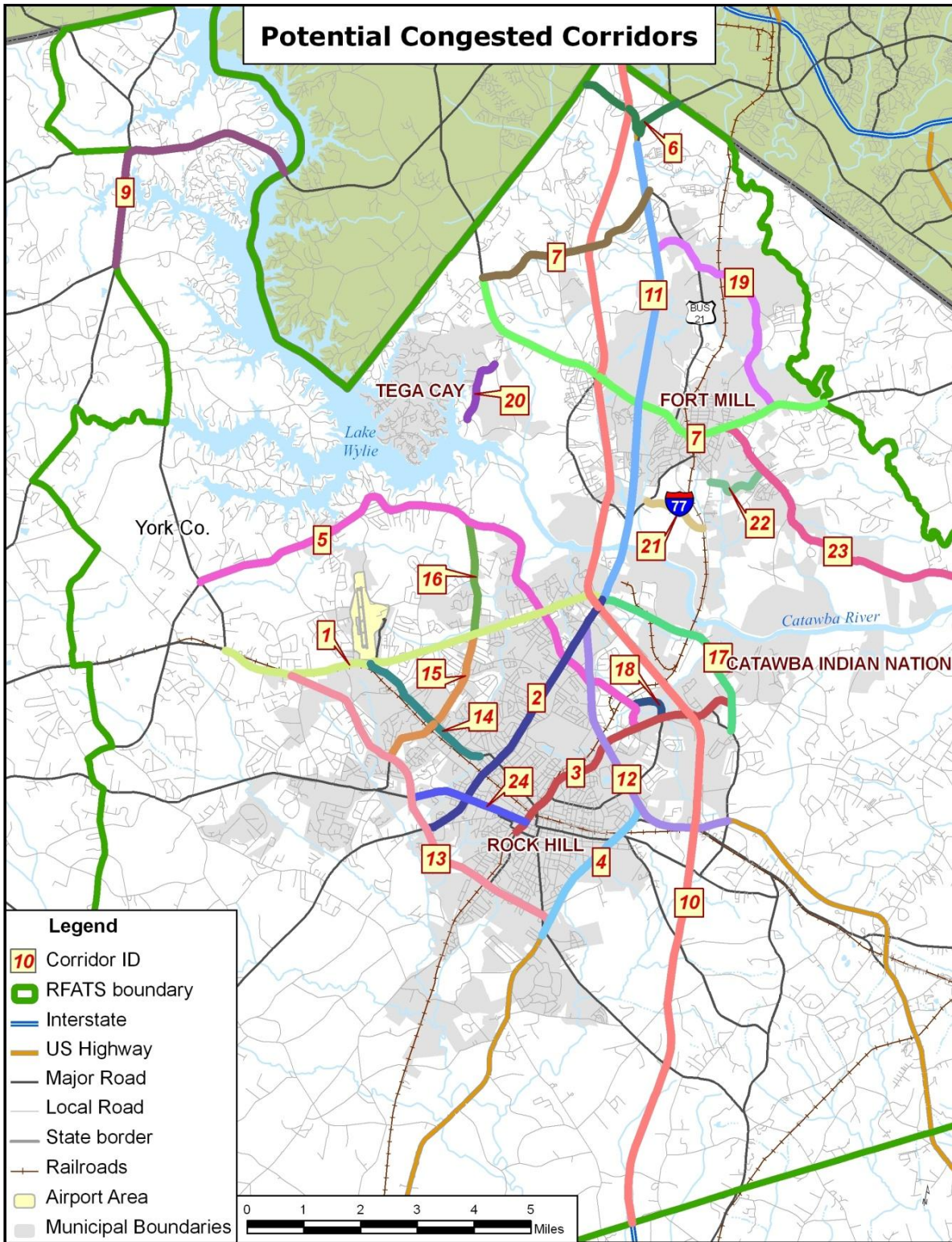
- Volume / capacity ratios and Level of Service – obtained from the Metrolina model;
- Travel times and speeds – obtained through travel time surveys;
- Transit ridership vs. load capacity along congested corridors – obtained through Charlotte Area Transit System; and
- Transit vehicle route reliability (on-time metrics) – obtained through Charlotte Area Transit System.

### 2.2. CMP Corridors

Based on information gathered on existing conditions, a list of 24 CMP corridors was identified as having potential congestion issues at one or more locations along the corridor. The CMP corridors are illustrated in **Figure 1**. Not all identified corridors are currently experiencing severe congestion.



Figure 1: CMP Corridors



### 3. Congestion Management Strategies

The CMP is a tool to ensure that existing and new transportation systems are effectively managed, operated, and maintained. Congestion management strategies differ in terms of effectiveness, cost, complexity, and difficulty of implementation. SAFETEA-LU emphasized maintaining and improving existing transportation infrastructure rather than investing in major infrastructure changes. This emphasis increases the focus on congestion management strategies that enhance mobility, reduce traffic congestion and manage regional travel demand. When suitable strategies are implemented, the improvements may favorably impact auto, transit, pedestrian, and bicycle usage.

Operational and policy strategy matrices were developed that identify potential capital or policy related actions associated with mitigating different causes of congestion. The strategies fell into three categories:

- Operations and Management Strategies, including access management: SAFETEA-LU emphasized that O&M strategies are the preferred method to manage congestion.
- Travel Demand Management Strategies.
- Physical Roadway Capacity Strategies.

For each congestion category, potential strategies were defined and related to the problems or conditions where they may be most applicable.

### 4. Recommended Strategies

All strategies and corridor specific projects identified during the CMP Update were the result of study activities, including input from the RFATS Technical Team, review of previous studies, and/or the analysis of data from the Metrolina Regional Travel Demand Model or travel time surveys.

#### 4.1. Operations and Management Strategies and Projects

Increasing emphasis is being placed on Operations and Management (O&M) in order to preserve and maximize the efficient use of the existing infrastructure. O&M strategies and projects are typically low cost, require minimal right-of-way, and can be constructed or implemented quicker than other congestion management strategies. O&M strategies include geometric and signal operations improvements, as well as access management. Since safety studies or safety audits frequently result in recommendations for geometric or signal improvements, locations where safety audits should be considered were also identified.

Each of these recommended O&M strategies are briefly described below and then listed with an implementation timeframe of short (1 to 5 years), medium (6 to 10 years), or long-term (more than 10 years) in the Tables that follow. Additionally, the estimated costs for each project is provided as well.

**Intersection Geometric and Signal Operations Improvements** - These projects should be added to existing lists of candidate projects for consideration to be moved forward in the normal

transportation planning process and eventual inclusion in a future TIP update. CMP projects focused on geometric and signal operation improvements at intersections are listed in **Table 1**.

**Conducting Safety Audits** - Road Safety Audits (RSA) include field evaluation of locations with known or suspected safety issues with the intent of identifying potential remedial measures to reduce accident frequency and / or severity in the future. Locations where safety audits should be considered are listed in **Table 2**.

**Access Management Strategies and Projects** - The RFATS 2004 CMS identified a number of access management strategies. Those not already implemented are listed in **Table 3**, together with three additional locations to focus access management efforts in the short term:

- SC 161, Celanese Road;
- Cherry Road; and
- SC 160, Tom Hall Road, in Fort Mill.

**Table 1: CMP Geometric and Signal Operations Improvements**

| Ref # | Project Description <sup>(1)</sup>   | Timeframe            | Cost Est.   |
|-------|--|----------------------|-------------|
| 1.B   | Signal geometric and phasing improvements on Celanese Road as recommended by December 2008 CMAQ Signal Timing Study; additionally, particular attention should be devoted to evaluating needed improvements at the intersection of India Hook / Celanese Road. | Short                | City Budget |
| 2.A   | Signal geometric and phasing improvements on Cherry Road as recommended by December 2008 CMAQ Signal Timing Study: <ul style="list-style-type: none"> <li>• Construct a southbound left-turn lane on Dorchester Road.</li> </ul>                               | Short                | \$270/lf    |
| 2.B   | Prior to the planned widening of Cel-River Road, consideration should be given to converting the westbound outside lane on Cel-River Road at Cherry Road from a right turn only lane to a through/right lane.  | Maintenance Activity | N/A         |
| 3.A   | Add a second northbound Left-turn lane on Galleria Boulevard at Dave Lyle Boulevard  | Short                | \$270/lf    |
| 3.B   | At I-77 Southbound Ramp on Dave Lyle Boulevard - Add a second southbound Right-turn lane and develop side street capacity/operation improvements at Chamberside – This is understood to be an upcoming CMAQ funded project                                     | Short                | \$270/lf    |
| 3.E   | Traffic signal priority for express bus services on Dave Lyle Boulevard  | Medium               | \$5k/signal |
| 4.A   | Review and update signal operations and timings at signals on SC 72 not addressed in the 2008 CMAQ Signal Timing Study; it is recommended that an evaluation of a traffic adaptive system such as InSync be considered for use on Albright Road (SC 72)        | Short                | \$2k/signal |
| 4.D   | On SC 72/SC 5 realign Paddock Parkway to the east to develop a 4-way intersection with Lesslie Highway   | Medium               | \$50,000    |
| 4.E   | On SC 72/SC 5/US 21 reconstruct NB and SB separated legs of SC 121 into a single T intersection  | Medium               | \$600,000   |
| 4.G   | On SC 72 construct a new connector from Saluda Trail entrance to Harper Gault/Oakdale Road, as identified in South Pointe traffic study  | Medium               | \$787,000   |
| 4.H   | On SC 72 realign Oakdale road to Forest Road, as identified in South Pointe traffic study  | Medium               | \$60,000    |



| Ref # | Project Description <sup>(1)</sup>  | Timeframe | Cost Est. |
|-------|---|-----------|-----------|
| 4.I   | On SC 72 extend Robertson Road to SC 72 and Cul-de-Sac Rambo Road (as identified in South Pointe traffic study)   | Medium    | \$25,000  |
| 4.J   | On SC 72 widen SC 72 to five lanes from Rawlsville to SC 901, Heckle Boulevard (included in York County 2011 referendum project list)   | Medium    | \$2.61 m  |
| 5.F   | Preserve 90 feet of right of way along Mt. Gallant Road from SC 161 to west of Museum Road to accommodate the potential for a four-lane divided road with sidewalks.  | Short     | TBD       |
| 6.A   | The westbound left turning movement is heavy from Carowinds Boulevard to Pleasant Road. Dual left is not possible because there is only one receiving lane on Pleasant Road. Consider lengthening the left turn lane while retaining a physical median for access management purposes.  | Short     | \$270/lf  |
| 6.F   | Three eastbound through lanes begin at the intersection of Carowinds Blvd and Pleasant Rd. Currently only two through lanes exist on the westbound approach to this intersection. Consider adding a through westbound lane on Carowinds Blvd from Choate Circle to Pleasant Road, while retaining access management control and the potential for future sidewalks.   | Medium    | \$117,500 |
| 7.C   | A new interchange at Gold Hill Road and I-77 may be needed to accommodate the higher volumes that are developing with the growth of Tega Cay. Consideration should be given to conducting an Interchange Justification Study. (Same as Project 10.A)  | Long      | \$150,000 |
| 8.D   | The westbound movement at SC 160 at Springfield Pkwy intersection is the only east-west access to Fort Mill from the east. The intersection is also on a heavily used truck route. Although the single westbound through lane is a limiting factor in the intersection's operations, several small changes should be considered to improve operations with the existing geometry: <ul style="list-style-type: none"> <li>• Improve radius in northeast corner</li> <li>• Consider signaling the southbound right turn overlap with the eastbound left turn</li> <li>• Consider remarking the westbound approach to include a left turn lane – this may be difficult because the turning path for trucks turning southbound to eastbound means the stop bar for the westbound left turn lane would be set back. The lane would be helpful, however, by removing the occasional left turn from the westbound through movement.</li> <li>• Examine signal timing for changes in timing to accommodate different peak volumes.</li> </ul> | Short     | \$15,000  |
| 8.I   | Consider realignment of I-77 SB exit ramp onto SC Highway 160 to line up with Market Street (previously Sutton Road)  | Short     | TBD       |
| 8.J   | Both ends of Fairway Drive need to have turn lanes installed to accommodate conflicting turn movements and reduce backups. Also, site distance should be improved in both directions along with turn lanes on the intersecting streets as well.   | Short     | TBD       |
| 8.K   | Consider installation of right bound turn lane from Clebourne St onto N. White Street as well as re-configuration of N. White, Clebourne, and Tom Hall Streets to help accommodate traffic flows in and around downtown Fort Mill. These improvements would need to coordinate to allow for a more free –flow traffic movement, especially during railroad operations that block Main Street  | Short     | TBD       |

| Ref # | Project Description <sup>(1)</sup>  | Timeframe | Cost Est. |
|-------|---|-----------|-----------|
| 9.A   | Review signal timings and operations at the intersections of SC 49 at SC 274 and at Robinwood Road – very long delays experienced in the PM Peak during the Travel Time Surveys | Short     | \$2,000   |
| 9.B   | Preserve 90 feet of right of way along SC 49 from south of Big Allison Creek to Lake Wylie and along SC 274 from south of Campbell Road to US 49                                | Short     | TBD       |
| 9.C   | Improve intersection capacity at SC 274/SC 49 and SC 49/SC 557  | Medium    | TBD       |
| 10.B  | Consider conducting an Interchange Justification Study for a new I-77 interchange just north of Coltharp Road for proposed roadway running west to SC 160.                      | Long      | \$150,000 |
| 11.F  | Improve triangular intersections of US 21 with Gold Hill Road and Old Nation Road.  | Medium    | TBD       |
| 12.A  | On SC 72/SC 5 realign Paddock Parkway to the east to develop a 4-way intersection with Lesslie Highway. (Same as Project 4.D)   | See 4.D   | See 4.D   |
| 19.B  | Old Nations Road / Springfield Parkway – consider dual left turn lanes into the school complex; also, a dedicated right turn is also advisable                                  | Short     | TBD       |
| 21.A  | Preserve 90 feet of right of way along Fort Mill Parkway from Spratt Street to Brickyard Road.  | Short     | TBD       |
| 23.A  | Preserve 90 feet of right of way along Doby’s Bridge Road from north of Williams Road to south of the potential extension of Holbrook Road.                                     | Short     | TBD       |

Notes:

(1) A review and update of signal operations and timing should be conducted at regular intervals for all corridors with signalized intersections.

**Table 2: Locations Where Safety Audits Should be Considered**

| Ref # | Project Description   | Timeframe | Cost Est. |
|-------|---|-----------|-----------|
| 2.C   | Conduct Safety Audit along the Cherry Road corridor from Oakland Avenue to Camden Avenue  | Short     | \$24,000  |
| 5.B   | Conduct Safety Audit along the Mt. Gallant Road corridor between Redwood Drive to India Hook Road   | Short     | \$24,000  |
| 8.E   | The intersection of SC 160 at Hensley Road is also on the truck route and has been recently signalized. One eastbound truck held up traffic because of the grades eastbound past the intersection. There is no westbound left turn lane, and the side street has one wide approach lane. Intersection should be reexamined for turn lane needs and signal timing refinements. Long term, the narrow lanes, nonexistent shoulders and grades on this section should be examined for their ability to accommodate truck traffic safely. Problems at this intersection are being addressed by SCDOT in a safety project, which is currently under design | Short     | TBD       |
| 8.F   | Conduct Safety Audit on SC 160 at Springfield Parkway   | Short     | \$12,000  |
| 11.C  | Conduct Safety Audit at the intersection of US 21 BYP and Harris Street   | Short     | \$12,000  |
| 13.A  | Conduct Safety Audit at the intersection of Heckle Boulevard and Old York Road, as well as along Heckle Boulevard north and south of Herlong Avenue   | Short     | \$24,000  |
| 15.A  | Conduct Safety Audit along Herlong Avenue between Heckle Boulevard and Ebenezer Road  | Short     | \$36,000  |

**Table 3: Access Management Projects**

| Ref # | Project Description  | Timeframe |
|-------|--|-----------|
| 1.E   | Conduct an Access Management review along the SC 161 corridor to identify opportunities to improve access management.  | Short     |
| 2.E   | Seek opportunities to incorporate access management strategies into the planning, design and approval processes for redevelopment that may occur in the northern section of Cherry Road from Cherry Park to the Catawba River and in implementing recommendations from the ongoing College Town Plan in the vicinity of Winthrop University.   | Short     |
| 3.C   | RFATS 2004 CMS identified access management improvements for Dave Lyle Boulevard related to access to and from Tinsley Way, such as: <ul style="list-style-type: none"> <li>• Redesign of Tinsley Way to eliminate stop sign entering from Dave Lyle;</li> <li>• Study and implement how to deal with right turns onto Tinsley from Dave Lyle;</li> <li>• Modify shopping center driveway (Tinsley Way) to create adequate and uninterrupted storage approaching Dave Lyle signal. Eliminate interfering left turn traffic from Petro Express direction that causes large gaps in traffic movement exiting the shopping center and interferes with signal operation.</li> </ul>  | Short     |
| 3.D   | Conduct Access Management Evaluation Study on Dave Lyle Boulevard at John Ross Parkway   | Short     |
| 6.E   | Access management measures on Carowinds Boulevard between Pleasant Road and SC 51 identified in the RFATS 2004 CMS: <ul style="list-style-type: none"> <li>• Raised concrete medians to help create strategic, shared access points to lesson conflicting turn movements and help general traffic flow.</li> <li>• Shared access between parcels limiting the number of curb cuts throughout.</li> <li>• Implementation of frontage roads that will provide additional access to the business once the medians are constructed.</li> <li>• Easy to read directional signage.</li> <li>• Implementation of new traffic patterns within the Plaza Fiesta, Comfort Inn and Carowinds area.</li> <li>• Removal of one-way streets and split entrances to the business location to provide a more traditional traffic pattern.</li> </ul> | Short     |
| 8.H   | Conduct an Access Management review along SC 160, Tom Hall Road, in Fort Mill to identify opportunities to improve access management.  | Short     |

## 4.2. Travel Demand Management Strategies

The Travel Demand Management (TDM) Strategies Matrix identifies a range of measures aimed at affecting travel demand by reducing the need for travel, increasing vehicle occupancy, encouraging alternative modes, or shifting the timing of trips to periods outside of peak travel times. It is recommended that initial efforts at implementing TDM strategies / programs be focused in the following areas:

- Expanding Rideshare Programs;
- Encouraging large employers to institute alternative work arrangements for its employees;
- Identifying areas to include Transit Oriented Development and Mixed-Use Development; and
- Transit improvements.

These strategies are all characterized as being low cost to implement and exhibiting a high level of effectiveness to address commuter peak period congestion, as well as other types of recurring congestion problems. The recommended TDM projects and policies for the CMP Update are listed in **Table 4**.

**Table 4: Travel Demand Management CMP Projects and Policies**

| Ref #    | Project Description  | Timeframe | Cost Est. |
|----------|--|-----------|-----------|
| 2.D      | Continue planning for the BRT line on Cherry Road from downtown Rock Hill to the I-485 light rail station.   | Short     | N/A       |
| 11.E     | Continue planning for the BRT line on US 21 BYP from downtown Rock Hill to the I-485 light rail station  | Short     | N/A       |
| Policy 1 | If they have not done so already local government agencies should adopt consistent Access Management standards that, at a minimum, meet the requirements of the latest SCDOT Access and Roadside Management Standards (ARMS), and subsequent updates.  | Short     | N/A       |
| Policy 2 | It is recommended that RFATS planning staff continue to work with their existing partners on existing transit programs and ridesharing initiatives including Charlotte Area Transit System and SCDOT to improve the effectiveness of the existing program and park-and-ride facilities and to seek opportunities to expand the existing program. | Short     | N/A       |
| Policy 3 | Alternative Work Arrangements: If not already in place, the formation of a Task Force should be considered to guide efforts to implement alternative work time strategies, consisting of representatives of local government, the Chamber of Commerce, major public and private employers in the area, and other business organizations.         | Short     | N/A       |
| Policy 4 | During the next Comprehensive Land Use Plan update, areas that would support Transit Oriented Development and Mixed Use Development should be identified and included in the adopted plan.   | Short     | N/A       |

### 4.3. Physical Roadway Capacity Strategies

A number of projects designed to increase roadway capacity along sections of CMP corridors have been identified previously, and are already programmed in the current RFATS Transportation Improvement Program. CMP projects already in the TIP are listed in **Table 5**.

**Table 5: CMP Projects in the RFATS 2009-2015 TIP**

| Ref # | Project Description  | Timeframe | Cost Est.   | Funding <sup>(1)</sup>    |
|-------|--|-----------|-------------|---------------------------|
| 1.A   | At Celanese Road and Mt Gallant Road: Add second SB LT lane and add WB RT lane – this is understood to be an existing CMAQ project (TIP). This project is identical to 5.A   | Short     | \$565,000   | CMAQ                      |
| 1.D   | Develop improvements at Riverview Road and Riverchase Boulevard to improve flow (CMAQ, TIP). The RFATS 2004 CMS identified a new access road from Riverview to Paces River to help alleviate side street congestion on Riverchase Boulevard. Conduct study to evaluate needed turn lanes for the I-77 southbound off-ramp at Celanese Road consistent with proposed improvements at Riverview Road and Riverchase Boulevard. | Short     | \$870,000   | CMAQ                      |
| 4.B   | Widen SC 72, Albright Road to 5 lanes between Black Street to Heckle Boulevard (TIP)   | Short     | \$8,700,000 | 1997 PP and Federal match |

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| Ref # | Project Description  | Timeframe | Cost Est.    | Funding <sup>(1)</sup>   |
|-------|--|-----------|--------------|--------------------------|
| 4.C   | Widen SC 72 from Heckle Boulevard (SC 901) to Rambo Road, south of Rawlsville Road, from 2 to 3 lanes (TIP). See Project 4.K also.   | Short     | \$6,771,000  | 2003 PP                  |
| 4.F   | On Albright Road: Add capacity on NB and SB lanes of White Street (CMAQ, TIP)  | Medium    | \$771,750    | CMAQ                     |
| 5.A   | At Celanese Road and Mt Gallant Road: Add second SB LT lane and add WB RT lane – this is understood to be an existing CMAQ project (TIP). This project is identical to 1.A   | Short     | See 1.A      | See 1.A                  |
| 5.D   | Widen Mt. Gallant Road for 2.5 miles from Twin Lakes Road to SC 161, Celanese from 2 to 3 lanes (TIP).   | Short     | \$4,971,000  | 2003 PP                  |
| 5.E   | RFATS 2004 CMS noted that the signal at Mt. Gallant and Eden Terrace was not actuated and did not include protected left-turn phases. Note a TIP project widens Eden Terrace through this intersection from 2 to 3 lanes from Bradley to Anderson Road and will include additional left-turn storage on both Mt. Gallant approaches (TIP, funded by the 2003 Pennies for Progress) | Short     | N/A          | 2003 PP                  |
| 6.B   | Springhill Farm Road – construct dedicated right turn lane on Springhill Farm Road from Stateview Road to Carowinds Boulevard (CMAQ, TIP)  | Short     | \$2,250,500  | CMAQ                     |
| 6.C   | Widen Springhill Farm Road from 2 to 5 lanes from US 21 to SC 51 (TIP)   | Short     | \$4,600,000  | 2003 PP                  |
| 6.D   | Widen SC 51 from 2 to 5 lanes from US 21 to NC State Line (TIP)  | Short     | \$5,900,000  | 2003 PP                  |
| 7.A   | Goldhill Road / Steele Creek Road intersection improvement: This project is a traffic flow improvement effort involving the addition of turn lanes and the upgrading of the traffic signal controller. (TIP) – Same as Project 8.A   | Short     | \$1,375,000  | CMAQ                     |
| 8.A   | Goldhill Road / Steele Creek Road intersection improvement: This project is a traffic flow improvement effort involving the addition of turn lanes and the upgrading of the traffic signal controller. (TIP) – same as Project 7.A   | Short     | See 7.A      | See 7.A                  |
| 8.B   | Steele Creek Road Expansion: Widen to 3 lanes between Gold Hill Road and Zoar Road.(TIP)   | Short     | \$1,600,000  | 2003 PP                  |
| 8.C   | SC 160 / SC 21 intersection improvement: This project is a traffic flow improvement effort that will widen the Westbound Lane of SC 160 to include a turn lane with a straight right function. (CMAQ, TIP)   | Short     | \$400,000    | CMAQ                     |
| 11.A  | US 21 BYP Widening: Widen from two to five lane facility between Cel-River Road and Sutton Road. (TIP)   | Short     | \$22,000,000 | 2003 PP                  |
| 11.B  | US 21 Bridge replacement over the Catawba River (TIP)  | Short     | \$24,736,210 | STP, ARRA <sup>(2)</sup> |
| 14.A  | Ebenezer Road Widening: Widen roadway from two lanes to three lanes between SC 161, Celanese Road, and Frank Gaston Boulevard (TIP)  | Short     | \$2,016,000  | 2003 PP                  |
| 17.A  | Cel-River Road Widening: Widen roadway from two lanes to five lane facility between Cherry Road / US 21 and north of S-645 (TIP)   | Short     | \$4,575,000  | DFP                      |

**Notes:**

(1) PP – Pennies for Progress; CMAQ – Congestion Mitigation and Air Quality Improvement Program; ARRA – American Recovery and Reinvestment Act; DFP – Developer Funded Project

(2) Funded by STP (\$12,900,000) and ARRA (\$11,000,000 (Economic Stimulus Project) plus \$836,210 (Pedestrian Enhancements))



## **4.4. Monitoring CMP Impacts**

As the congestion management process is intended to be an integral part of the metropolitan planning process, active and ongoing monitoring of implemented strategies is an essential component to continuously improving transportation system management and operations. With this in mind, the 2010 CMP update has involved the identification of appropriate performance measures for the RFATS Area as well as collected baseline data that will be used in subsequent years to evaluate progress achieved, and to outline expected future conditions on the most heavily traveled corridors in the RFATS region.

It is important to note that this information will also serve as a critical data source for completing the periodic updating to the RFATS' Long Range Transportation Plan (LRTP). As the LRTP (within the broader metropolitan planning process), is the central planning document that lists transportation system needs and priorities for a particular area, the importance of continuously monitoring current congestion levels as well as emerging patterns of congestion is fundamental to sound, long term transportation decision-making.

As discussed in Section 2.1 of this report, the principal performance measures recommended for the RFATS CMP are V/C ratios from the Metrolina Travel Demand Model (TDM) and Travel Time Surveys. Additionally, Transit Travel Condition measures are also recommended for on-going monitoring, though it must be noted that given the focused nature of the existing transit program (i.e., two express bus routes providing weekday service from the Rock Hill Urbanized Area to Charlotte), that the importance of these measures will tend to increase as additional transit options / routes are introduced over time.

The Metrolina model is typically updated and recalibrated in connection with the periodic update to the RFATS LRTP. Since RFATS lies within an air quality non-attainment area, the LRTP must be updated every four years. However, since the CMP is a continuous planning effort, it is recommended that the latest output from the model be incorporated into on-going CMP monitoring activities – so that this information can be used for project identification, selection, and prioritization that occurs between LRTP updates.

### **4.4.1. RFATS CMP Priorities**

The identification of CMP priorities represents the output of the selected performance measures listed in Section 3 (i.e., travel time surveys, volume-to-capacity ratios, travel transit conditions), as well as related studies and technical team input. All of these data sources provide operational and safety information that directly correlate with the reliability and efficiency of the existing transportation network as well as highlight emerging areas of congestion.

For example, by examining roadway congestion along the major corridors within the RFATS region and documenting the nature and extent of area congestion, provided useful information for identifying and prioritizing needed congestion mitigation projects and strategies. With this in mind, those roadway segments with the highest recurring congestion levels were identified as the most immediate needs; and therefore, are being recommended with a short-term (1 to 5 year) implementation schedule. It should be noted that areas and/or corridors with the potential for high growth (development activity), transit potential, and/or safety related concerns have also

been identified as high priorities warranting a short term implementation schedule. Lastly, please note that projects previously identified during the 2004 Congestion Management Study that have yet to be implemented or receive funding are included as continuing project priorities as well. All of these projects are reflected in **Table 6**.

**Table 6: Proposed Priority CMP Projects for Next Five Years**

| Ref # | Corridor                          | Project Description   | Type                  |
|-------|-----------------------------------|---|-----------------------|
| 1.B   | SC 161,<br>Celanese Rd            | Other signal geometric and phasing improvements on Celanese Road as recommended by December 2008 CMAQ Signal Timing Study; additionally, particular attention should be devoted to evaluating needed improvements at the intersection of India Hook / Celanese Road.  | Geometric /<br>Signal |
| 1.E   | SC 161                            | Conduct an Access Management review along the SC 161 corridor to identify opportunities to improve access management.   | Access Man.           |
| 2.A   | US 21,<br>Cherry Rd               | Signal geometric and phasing improvements on Cherry Road as recommended by December 2008 CMAQ Signal Timing Study:<br>Construct a southbound left-turn lane on Dorchester Road.   | Geometric /<br>Signal |
| 2.D   | US 21                             | Continue planning for the BRT line on Cherry Road from downtown Rock Hill to the I-485 light rail station.  | Transit               |
| 2.E   | US 21                             | Seek opportunities to incorporate access management strategies into the planning, design and approval processes for redevelopment that may occur in the northern section of Cherry Road from Cherry Park to the Catawba River and in implementing recommendations from the ongoing College Town Plan in the vicinity of Winthrop University.  | Access Man.           |
| 3.B   | SC 122,<br>Dave Lyle<br>Boulevard | At I-77 Southbound Ramp on Dave Lyle Boulevard, add a second southbound Right-turn lane and develop side street capacity/operation improvements at Chamberside – This is understood to be an upcoming CMAQ funded project   | Geometric /<br>Signal |
| 5.B   | Mt. Gallant<br>Rd                 | Conduct Safety Audit along the Mt. Gallant Road corridor at Redwood Drive to India Hook Road  | Safety                |
| 6.A   | Carowinds<br>Boulevard            | The westbound left turning movement is heavy from Carowinds Boulevard to Pleasant Road. Dual left is not possible because there is only one receiving lane on Pleasant Road. Consider lengthening the left turn lane while retaining a physical median for access management purposes.  | Geometric /<br>Signal |
| 6.E   | Carowinds<br>Boulevard            | Access management measures on Carowinds Boulevard between Pleasant Road and SC 51 identified in the RFATS 2004 CMS: <ul style="list-style-type: none"> <li>• Raised concrete medians to help create strategic, shared access points to lessen conflicting turn movements and help general traffic flow.</li> <li>• Shared access between parcels limiting the number of curb cuts throughout.</li> <li>• Implementation of frontage roads that will provide additional access to the business once the medians are constructed.</li> <li>• Easy to read directional signage.</li> <li>• Implementation of new traffic patterns within the Plaza Fiesta, Comfort Inn and Carowinds area.</li> </ul> Removal of one-way streets and split entrances to the business location to provide a more traditional traffic pattern. | Access Man.           |

| Ref #    | Corridor                          | Project Description  | Type               |
|----------|-----------------------------------|--|--------------------|
| 8.H      | SC 160                            | Conduct an Access Management review along SC 160, Tom Hall Road, in Fort Mill to identify opportunities to improve access management.  | Access Man.        |
| 8.I      | SC 160                            | Consider re-alignment of I-77 SB exit ramp onto SC Highway 160 to line up with Market Street (previously Sutton Road)  | Geometric / Signal |
| 8.J      | SC 160                            | Both ends of Fairway Drive need to have turn lanes installed to accommodate conflicting turn movements and reduce backups. Also, site distance should be improved in both directions along with turn lanes on the intersecting streets as well.  | Geometric / Signal |
| 8.K      | SC 160                            | Consider installation of right bound turn lane from Clebourne St onto N. White Street as well as re-configuration of N. White, Clebourne, and Tom Hall Streets to help accommodate traffic flows in and around downtown Fort Mill. These improvements would need to coordinate to allow for a more free –flow traffic movement, especially during railroad operations that block Main Street | Geometric / Signal |
| 11.E     | US 21 BYP                         | Continue planning for the BRT line on US 21 BYP from downtown Rock Hill to the I-485 light rail station  | Transit            |
| 13.A     | SC 901, Heckle Boulevard          | Conduct Safety Audit at the intersection of Heckle Boulevard and Old York Road, as well as along Heckle Boulevard north and south of Herlong Avenue  | Safety             |
| 19.B     | Springfield Pkwy                  | Consider dual left turn lanes into the school complex at Old Nations Road & Springfield Pkwy; also, a dedicated right turn lane is also advisable.   | Geometric / Signal |
| 2004 CMS | I-77 / Celanese Road              | The southbound ramp at Exit 82c is heavy during pm peak period. Redesign of off-ramp intersection to allow 2 or 3 right turn lanes in addition to a channelized free flow lane is recommended  | Geometric / Signal |
| 2004 CMS | Eden Terrace / Mount Gallant Road | Due to congestion during peak periods at the signalized intersection of two arterial roadways; additional left turn storage improvements are recommended for the Eden Terrace portion of this intersection   | Geometric / Signal |
| Policy 1 |                                   | If they have not done so already municipalities and other governmental agencies should adopt consistent Access Management standards that, at a minimum, meet the requirements of the latest SCDOT Access and Roadside Management Standards (ARMS), and subsequent updates.   | Policy 1           |
| Policy 2 |                                   | It is recommended that RFATS planning staff continue work with their existing partners in the Rideshare Program, including Charlotte Area Transit System and SCDOT to improve the effectiveness of the existing program and park-and-ride facilities and to seek opportunities to expand the existing program.   | Policy 2           |
| Policy 3 |                                   | Alternative Work Arrangements: If not already in place, the formation of a Task Force should be considered to guide efforts to implement alternative work time strategies, consisting of representatives of local government, the Chamber of Commerce, major public and private employers in the area, and other business organizations.   | Policy 3           |
| Policy 4 |                                   | During the next Comprehensive Land Use Plan update, areas that would support Transit Oriented Development and Mixed Use Development should be identified and included in the adopted plan.   | Policy 4           |

## 5. Subarea Traffic Analysis

Transportation planning studies were conducted for the five subareas shown in **Figure 2**. York County’s Comprehensive Plan notes the area’s development growth history has been largely unmanaged and has resulted in sprawl. Low density residential development has occurred

sporadically in rural locations. Unmanaged development without regulation for interconnectivity has resulted in linear “strip development” patterns.

## **5.1. Managing Development**

In recent years SCDOT and local governments have improved development regulations and implemented more stringent requirements for interconnection of streets and access. Traffic impact studies are required for new development proposals, which assist reviewers in making sound decisions for location and spacing of access points. SCDOT has also issued an updated “Access and Roadside Management Standards” (ARMS) manual with increased restrictions for driveway spacing and intersection design elements.

Planning efforts by all of the municipalities in RFATS have included a concentration on improving and preserving the transportation system through better planning for development growth. Controlling development, planning for pedestrian and bicycle facilities, transportation demand management efforts and transit planning have all been emphasized in recent planning activities.

## **5.2. Key Common Issues**

Common to all of the subareas studies were the following key issues:

- Preserving Arterial Rights of Way;
- Preserving Intersection Rights of Way;
- Access Management; and
- Preserving operations and arterial progression.

Recommendations were made regarding these key issues, as well as recommendations specific to each individual subarea.

## **5.3. Summary of Subarea Issues**

Development pressures continue to be evident in all five of the subareas studied. Attention is needed in these areas to preserve the capacity, operation and rights of ways along the existing roadways to ensure they continue to function as traffic volumes increase with new development.

Development proposals will need to be considered based on their impact on transportation. Opportunities for new facilities that can be coordinated and constructed with new developments will be essential in order to prevent overloading of the existing transportation system.

RFATS local governments may need to consider adoption of ordinances to enforce efforts to preserve rights of way and intersection access points. Planning efforts for current and future development proposals should continue to be coordinated with transportation needs in efforts to manage the transportation system and control system congestion.



Figure 2: Subarea Boundaries

