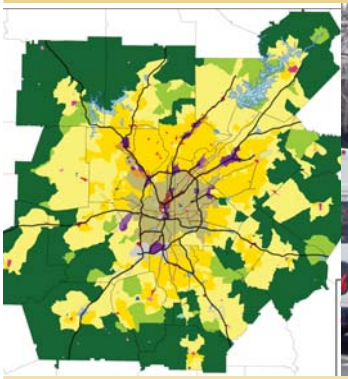
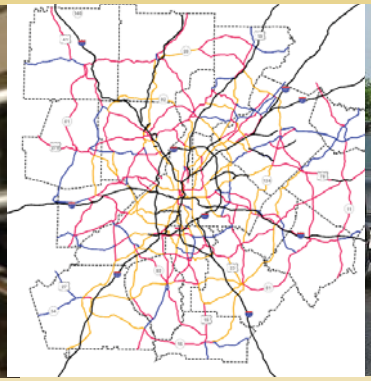
Strategic Regional Thoroughfare Plan

Case Study Report
Aviation Boulevard / Conley Road Corridor





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Section 1: Introduction

This report serves as the deliverable associated with Task 5 of the Scope of Services for the Strategic Regional Thoroughfare Plan (SRTP) completed for the Atlanta Regional Commission (ARC). The purpose of the SRTP is to identify a network of surface roadways, called the Regional Thoroughfare Network (RTN), that are most critical in providing regional mobility and connecting major activity centers throughout the Atlanta region and develop policy guidelines to maximize their overall functionality. As such, the RTN will also serve as the Atlanta region's priority network for its Congestion Management Process policies and procedures.

As part of this effort five case studies were identified to serve as examples of the various improvement scenarios that could be used to address the accessibility and mobility issues within the RTN. These case studies were selected based upon a number of factors:

- Type and character of the facility;
- Type of area and land use within the region;
- Transportation system options; and
- Future transportation and land use issues.

The five case studies selected for detailed analysis as part of this study are:

- Moreland Avenue from Glenwood Avenue to North Avenue (City of Atlanta)
- Memorial Drive from Keningston Road to North Hairston Road (DeKalb County)
- Roswell Road from Northridge Parkway to Marietta Highway (Roswell/Sandy Springs)
- Aviation Boulevard/Conley Road from I-75 to Jonesboro Road (Clayton County)
- McDonough Road (SR 155) from I-75 to Hampton Locust Grove Road (Henry County)

This report documents the investigation, analysis, and evaluations associated with the Moreland Avenue case study.

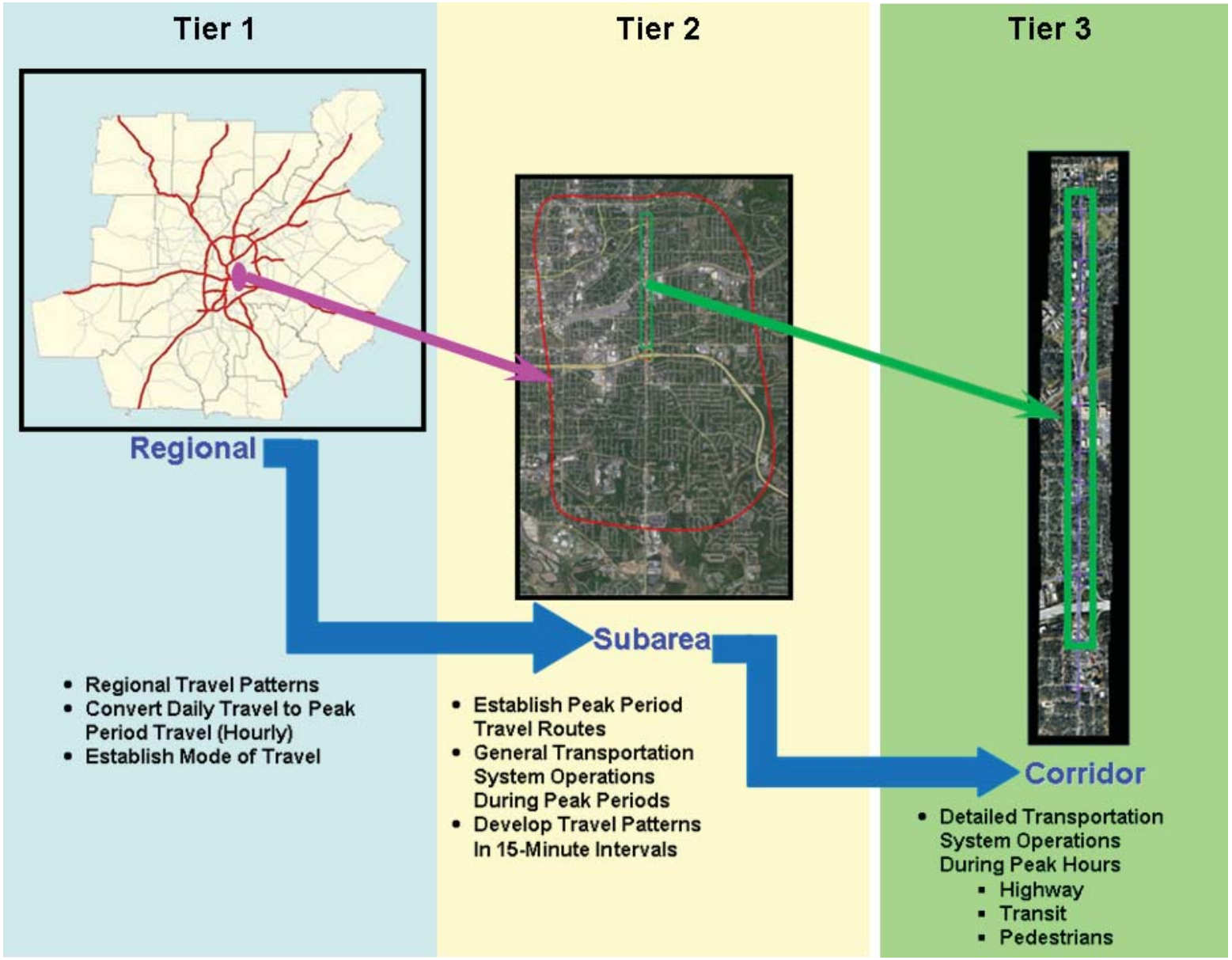
1.1 Case Study Analysis Process

All five case studies followed the same general analysis procedures since one of the primary objectives of the case studies was to evaluate the effectiveness and applicability of the analysis procedures in diverse environments. This process consisted of a three tier procedure depicted in **Figure 1**.

The overall analysis approach is to build upon the foundation provided by the ARC regional travel demand model. This foundation was used to structure a study process that combines analysis of the regional travel demand, the more detailed analysis of travel within a subarea encompassing the study corridor, and operation analysis detail associated with a microsimulation model. The key to successfully performing these three levels of analysis while maintaining overall consistency in the analysis process is the establishment of the required linkages between all three analysis levels.

The regional level of analyses, or macroscopic model, provides an overall level of analysis and can be used to provide a global assessment of the existing and future conditions in the corridor. It can be used to ascertain the impacts of alternative general improvement scenarios and concepts throughout the study area. An important aspect of this level of analysis is an examination of the various travel modes and the impacts of the improvement scenarios on travel mode. These improvement scenarios consider both transportation system modifications and land use changes. General evaluation measures developed at this level of analysis include: vehicle-miles of travel, vehicle-hours of travel, vehicle-hours of delay, percent single occupancy vehicle trips, percent shared ride 2 person vehicle trips, percent shared ride 3 or more person vehicle trips, and percent transit trips.

Figure 1: Traffic Analysis Process



However, this project utilized an additional, more detailed, level of analysis in order to investigate ways to improve the accessibility to important economic engines and activity centers located within and adjacent to the corridor. This more detailed level of analysis must build upon the analysis provided by the macroscopic model and examine specific bottlenecks or chokepoints within a sub-area surrounding the corridor that could reduce the accessibility to key locations. These locations can be examined independently and solutions developed to address these problem areas. However, in many cases relieving a problem at a single location only serves to move the problem to another location downstream. Thus, examination of bottlenecks and chokepoints cannot be undertaken using an isolated analysis approach. Rather, a more system-wide approach focused on the sub-area study needs to be embarked upon. This more detailed level of analysis is generally referred to as a mesoscopic analysis.

This mesoscopic analysis was carried out by using a more rigorous analysis process that incorporated an increased level of analysis procedures such as dynamic traffic assignment (DTA). The DTA process specifically addresses the issue of motorist selection of differing routes during periods of congestion along with the changing of these routes within the congested time period itself. For this study process, route selection was made for 15 minute time slices. This DTA process allowed for an examination of queues and delays associated with congestion. Using the DTA process is a relatively new approach that has become available with the advent of new software programs and enhanced computer hardware. DTA procedures have recently been tested successfully in the Atlanta metropolitan 20-county region to determine its viability in large scale applications. This step down process provides the necessary integration of macroscopic and mesoscopic analysis procedures to ensure analysis consistency and compatibility. This level of analysis allowed for an examination of travel and transportation network characteristics during peak periods. The trips for each of the AM and PM peak periods within the study area are developed by extracting the trips from the regional travel demand model using hourly assignments. Thus, regional travel demand model assignments are made for the AM peak period (6:00 AM – 9:00 AM) and PM peak period (3:00 PM – 7:00 PM) by mode (SOV, SR 2, SR 3+, commercial vehicle, medium trucks, and heavy trucks). This process maintains the trip pattern connection between the regional travel demand model and the mesoscopic model. These trips are then assigned to the study area network using DTA procedures for each time period in 15-minute increments. General evaluation measures developed at this level of analysis include: vehicle-hours of delay, average peak period speed on the various facilities by mode, and locations of major queues.

The third level of analysis is microscopic analysis which dealt with the detailed operational characteristics of the transportation network at specific locations, along the corridor, or within isolated areas of the overall corridor. This microscopic analysis was carried out by extracting the area to be studied in detail from the mesoscopic model and using more rigorous analysis procedures of a micro traffic simulation model. The traffic volumes and travel patterns established in the mesoscopic analysis are incorporated into the microscopic analysis, thus maintaining the integration with the macroscopic and mesoscopic levels of analysis.

1.2 Report Organization

This report is organized as follows:

- Chapter 2.0 – Overview of Study Area
- Chapter 3.0 – Scenario Development Process
- Chapter 4.0 – Testing Results
- Chapter 5.0 – Conclusions

Section 2: Overview of Study Area

The study area (analysis sub-area) is generally bounded on the north by Southside Industrial Parkway, on the south by I-285 and Conley Road, on the east by Jonesboro Road and on the west by Airport Loop Road. The Study area is shown in **Figure 2**.

The following streets provide for east-west travel in the study area: I-285, Southside Industrial Parkway, Aviation Boulevard and Conley Road. North-south travel is provided by I-75, Old Dixie Highway, and Jonesboro Road.

Figure 3 shows the details for highway network in the corridor.

Figure 2: Study Area for Aviation Boulevard/Conley Road Case Study

Figure 3: Aviation Boulevard/Conley Road Corridor

Section 3: Scenario Development Process

The scenarios developed for testing were developed through the utilization of two steps:

- Step 1: Researching recommendations of previous plans, studies or projects that apply to the subject corridors– such as roadway, transit, and bicycle and pedestrian enhancements in addition to redevelopment and land use strategies – that would set a framework for a testing scenarios; and
- Step 2: Based on previous plans and studies, input from focus group members was utilized to develop and/or alter scenarios developed from the first step based on current conditions and/or subsequent events from the time these plans and studies were completed.

In all cases, the scenarios included an Existing 2010 Network, Long Range Plan Network, and an additional transportation scenario coupled with various land use/socioeconomic variables.

3.1 Land Use Overview

The Aviation Boulevard/Conley Road case study area is characterized by industrial/ warehousing development with a mixture of residential and commercial uses along Jonesboro Road. West of Old Dixie Road the majority of land uses are industrial/ warehousing in nature. East of Old Dixie Highway there is significant undeveloped land along Conley Road. There is significant future commercial and other non-residential development anticipated in this undeveloped portion of the corridor.

3.2 Relevant Plans, Policies or Projects

Mountain View Redevelopment Plan Update

This study was completed in May 2007 and addresses future land use development as well as capital improvement needs within the Mountain View area. This area has significant development implications with regard to the Hartsfield-Jackson Atlanta International Airport. The purpose of the redevelopment plan is to encourage consistent development with compatible land uses that will provide appropriate transportation facilities to accommodate the development and connection to the airport and its associated future demands.

3.3 Planned and Programmed Improvements

There are several improvements to the Aviation Boulevard/Conley Road subarea network, found in the ARC Envision6 RTP. They are as follows:

- New interchange at Conley Rd/I-285
- Conley Road widening 2-lanes to 4-lanes between Old Dixie Hwy and Jonesboro Rd
- I-75 HOV lanes extended through south boundary of study area
- Additional Collector-Distributor and ramp lanes along I-75 between C.W. Grant Pkwy and I-285 interchange.
- Interchange reconfiguration along I-75 between I-285 and Forest Parkway interchanges
- Commuter Rail line from Downtown Atlanta to Griffin
- Southern Crescent Intermodal Station

3.4 Focus Groups

One of the critical steps in the case study process was to establish focus groups – with a targeted membership of 10-15 participants - to help guide the case study. The focus groups met twice to:

- Provide input into the development of potential scenarios for testing (Meeting #1); and
- Provide feedback on the testing results of those scenarios (Meeting #2).

The members of each of the corridor focus groups were determined through an initial meeting with jurisdictional staff to identify persons that have been active in neighborhood/community associations and/or participated in previous studies related to the study corridors. Members were also solicited from the SRTP Environmental Justice outreach program.

Input Provided

Overview of Current Conditions

The group mainly discussed mobility challenges of the thoroughfare. The group also discussed the challenges to redevelopment.

- There are projects associated with the airport and I-285 that will impact the area, but there's not a great deal of redevelopment currently underway.
- Given its proximity to Hartsfield-Jackson Atlanta International Airport (H-JAIA), one of the busiest in the world, the study area should have more corporate presence.
- There is no direct access from H-JAIA to I-75, which is extremely close.

Presentation of Previous/Current Initiatives and Discussion of Potential Scenarios

To improve the mobility along the corridor, the following strategies and/or scenarios were discussed:

- Gradation project. The realignment with Dixie Rd. and added lane project was reviewed. The improvements will be modeled with the land use improvements discussed (below).
- Southern Crescent Transportation Center. The Center is to be located along an existed rail corridor to service commuter rail. There's potential to add local bus, MARTA and airport connections as well. We can translate the commuter rail service to determine the impact. More feasibility (trip generation) data would help the effort.

In terms of land use, the following ideas were discussed:

- The Mountain View Redevelopment Plan. While adding hotel and retail establishments, the area could also accommodate private parking facilities. There will still be industrial uses; the idea is to transition some of the distribution activity into corporate use. A museum is in the plans. It would be ideal to have easily accessible transit to this redeveloped area. The scenario can demonstrate premium transit service and a full-build out of services.

3.5 Scenarios Tested

This case study examined three scenarios:

- 2010 Existing Conditions
- 2040 Existing RTP
- 2040 With Transportation Improvements and Mountain View Redevelopment Plan

The transportation and land use assumptions within each scenario are summarized in **Table 1**.

Table 1: Scenario Transportation and Land Use Assumptions

	Transportation Assumptions	Land Use Assumptions
Scenario 1	• Existing conditions for the network year (2010)	• Existing 2010 land use
Scenario 2	• All regional capacity projects are included from the Envision6 Regional Transportation Plan.	• Official 2040 land use forecast from the *Envision6* Plan
Scenario 3	• All regional capacity projects are included from the Envision6 Regional Transportation Plan as basis. • Grant Pkwy/Conley Rd intersection realignment and grade separation • Transit Facility connecting to HJAIA International Terminal • MARTA Heavy Rail Spur from East Point Station to Southern Crescent Intermodal .	• Official land use forecast from the *Envision6* Plan • Mountain View parcels subdivided according to redevelopment plan • Land Use adjusted to account for redevelopment plan -Parking (40 acres) -Service Commercial (13 ac) -Hotel (6 ac) -Office/Professional (75 ac) -Business/Distribution (200 ac) -Public/Institutional (2 ac) -Light Industrial (15 ac)

Section 4: Scenario Testing Results

Major Findings – Comparison

When comparing the Study Area statistics, it can be seen that when going from 2010 to 2040 RTP there is significant reduction in average speed in the AM Period and the PM Period. In the AM Peak Period, vehicle miles of travel (VMT) is increased by about 30% with a corresponding increase in the vehicle hours of travel (VHT) by over 75%. The PM Peak also shows a much smaller increase in VMT (9%) with a larger increase in VHT (81%). In the Scenario case, it can be seen that with improvements to the transportation system within the corridor, VMT is able to be increase with less of an increase in VHT compared to 2040 RTP. This results in a slight decrease for the average speed in the study area for both AM (-7%) and PM (-13%) Peak Periods compared to 2040 RTP.

When comparing the Corridor Peak Period statistics, it can be seen that there is significant reduction in average speed and corresponding increase in vehicle delay between 2010 and 2040 RTP conditions. The implementation of the transportation improvements in the Scenario network indicates an increase in average speed for both AM and PM Peak hours. The corridor Scenario improvements show a dramatic decrease in the average delay per vehicle or the 2040 RTP network.

The Dynamic Traffic Assignment and Microsimulation Model results are presented in **Tables 2** and **3**, respectively.

Table 2: Study Area Peak Hour Transportation System Operating Characteristics

Scenario	AM Peak Period			PM Peak Period		
	Vehicle Miles of Travel (VMT)	Vehicle Hours of Travel (VHT)	Average Speed (MPH)	Vehicle Miles of Travel (VMT)	Vehicle Hours of Travel (VHT)	Average Speed (MPH)
2010	424,012	22,876	18.5	535,670	22,234	24.1
2040 Base (RTP)	550,843	40,035	13.8	585,445	40,363	14.5
2040 Scenario (with Mountain View Redevelopment)	567,053	44,325	12.8	568,333	45,521	12.5

Table 3: Corridor Peak Period Transportation System Operating Characteristics

Scenario	AM Peak Hour		PM Peak Hour	
	Average Speed (MPH)	Average Delay (Sec. Per Veh.)	Average Speed (MPH)	Average Delay (Sec. Per Veh.)
2010	22.4	15.5	21.2	19.3
2040 Base (RTP)	17.0	55.6	5.4	217.2
2040 Scenario (with Mountain View Redevelopment)	18.4	46.1	15.8	51.0

Section 5: Conclusion

5.1 Implications for RTN

One of the major conclusions is that land use and transportation improvements can have a significant impact on the evaluation measures. As can be seen the increasing of the development in the Build Scenario in cooperation with transportation improvements can significantly reduce travel delays in the corridor when compared to the base RTP scenario. On the other hand the overall delays in the study area are generally increased. The most significant impact can be seen due to the realignment of the Conley Rd/Old Dixie Highway intersection which greatly reduces the overall delay on the Conley Rd corridor.

5.2 Implications for Multimodal Corridor Studies

In order to promote a balance between providing multimodal mobility and preserving the area land use context along the more significant RTN facilities, the ARC will be undertaking its Multimodal Corridor Scoping and Concept Design (MMCS) program. The scope of services for MMCS will incorporate Context Sensitive Solution (CSS) principles to address design needs as well as technical analyses carried through in the case studies performed during the SRTP effort.

The sample case study experience indicates that the interactive approach was very beneficial to problem definition and alternatives development. The following aspects of the case studies were particularly useful, and should be carried forward into the MMCS program:

- Focus groups – Given their local expertise, a focus group consisting of a combination of technical staff from local jurisdictions, GDOT officials (along state roadways), and representatives from citizen and business groups along the subject corridor provides an effective tool for scenario building.
- Scenario-building methodology – Through developing the alternative scenarios based on the recommendations of previous plans and studies in combination with input from the corridor focus groups, the MMCS will preserve the utility of past efforts in a context that reflects current conditions along a given corridor.
- Alternative testing methodology – Unlike previous corridor studies conducted by the ARC, the scenario testing methodology employed here (described in previous section) provides more detailed results based on area travel trends.

The end result of the MMCS will be a recommended design concept developed through a cooperative process that, in turn, mitigates potential conflicts during the environmental assessment (as prescribed by the National Environmental Protection Act (NEPA)), final design and construction phases of the project. As such, the ARC will be developing corridor plans that lead to a project further along in the implementation stages. In addition, regional travel trends will be considered in developing the concept by carrying through the travel analysis methodology tested in the case study process. Also, given the level of analysis prescribed herein, another potential result of the MMCS is the identification of short-term safety and/or operational improvements for a corridor.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