

# Newberry – Columbia Alternatives Analysis

Final Report

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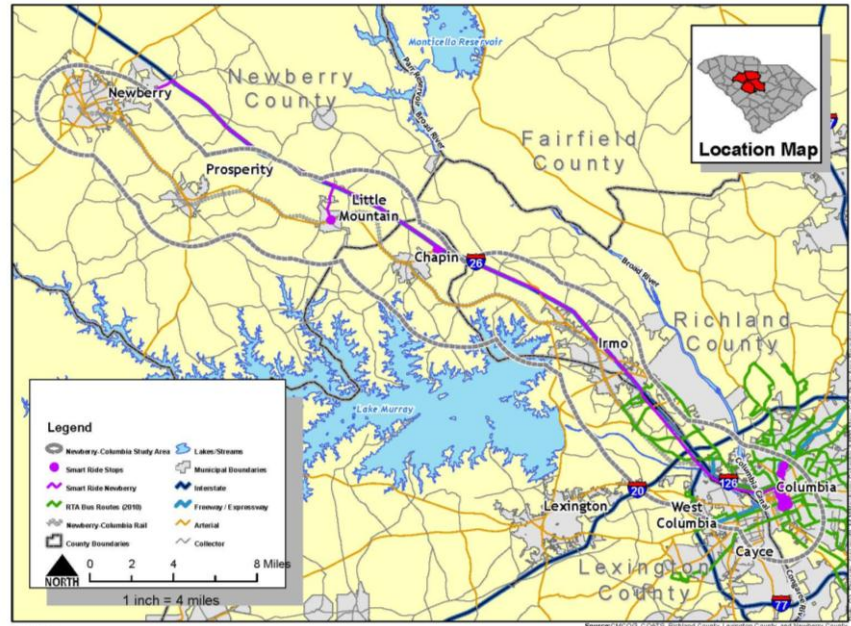
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## Executive Summary

### 1. Introduction

The Central Midlands Council of Governments has completed the Newberry-Columbia Alternatives Analysis to evaluate enhanced transit improvements in the Newberry-Columbia corridor which passes through Richland, Lexington, and Newberry counties. The Newberry-Columbia corridor is centered on the CSX rail line, traveling through the towns of Prosperity, Little Mountain, Chapin, and Irmo along a 40-mile alignment between its termini in the downtown areas of the cities of Newberry and Columbia. The Alternatives Analysis builds upon previous transit studies and related enhancements implemented in the region.



**Newberry-Columbia Corridor map**

### 2. Planning Context

The study collected existing and projected conditions data on several transit indicators within the corridor. Three of the most significant indicators include congestion, population growth, and employment opportunities, which are summarized by the tables below:

#### Roadway Level of Service in the Corridor

Level of service	2010		2035	
	Miles	Percent of total	Miles	Percent of total
D	20	3%	40	6%
E	12	2%	39	6%
F	20	3%	74	11%
<b>Total</b>	<b>52</b>	<b>8%</b>	<b>153</b>	<b>23%</b>

Source: CMOG, Straightline projections  
 LOS D indicates restricted flow with regular delays  
 LOS E indicates maximum capacity with extended delays  
 LOS F indicates forced flow with excessive delays

### Study Corridor Population and Percent Change

Geography	2000/2005 Population	2025/2035 Population	Percent Change
Newberry County (2000 – 2025 data)	26,248	31,081	18.5%
Lexington County (2005 – 2035 data)	73,721	99,702	35.2%
Richland County (2005 – 2035 data)	110,211	140,336	27.3%

Source: COATS, CMCOG, URS

### Number of Employees within the Study Corridor (Absolute and Percent Change, 2005 to 2035)

Geography	Number of Employees 2005	Number of Employees 2035	Percent Change in Number of Employees
Newberry County	n/a	n/a	n/a
Lexington County	45,632	76,017	66.5%
Richland County	113,645	135,785	19.4%

Source: COATS, URS

## 3. Purpose and Need

The purpose of the Newberry-Columbia Alternatives Analysis is to improve safety, mobility, and accessibility, connect communities, enhance the attractiveness of transit service, and energize development potential in the Newberry-Columbia corridor.

Interpretation of the existing and projected conditions within the region and corridor led to the development of the following problem statement.

*The 40-mile Newberry-Columbia corridor experiences high travel demand that is predominately confined to the existing roadway network. I-26, I-126, and US 76 all operate at or near capacity during peak hour travel periods. Expansion of the roadway network is limited and demand is expected to increase as commuting patterns, employment trends, and a strong mix of local and regional destinations all contribute to increased levels of traffic volume. The Newberry Express SmartRide peak hour bus service has been well received and demonstrates a desire for an alternative transportation option in the corridor, but, with limited service hours, modest vehicles, and informal park-and-ride facilities that are removed from community centers, ridership has been flat for over a decade. Development is expected to continue, but may be frustrated by transportation challenges in the corridor; the corridor has a local and regional reputation as a problem traffic area.*



The goals of the Newberry-Columbia Alternatives Analysis are to:

- **Enhance transportation performance**
- **Connect communities**
- **Increase the attractiveness of transit**
- **Support and energize economic development**
- **Sustain the natural, social, and built environments**
- **Craft implementable solutions with community ownership**

#### 4. Fatal Flaw Analysis

In order to meet the purpose and need of the study, a fatal flaw analysis was conducted to evaluate the effectiveness of alternative transit modes and alignments in achieving the stated goals and objectives. The following modes and alignments were screened against pre-determined criteria to exclude from further study those alternatives that would be difficult or improbable to finance, construct, or operate efficiently:

Modes	Alignments
Conventional bus	US 76/176
Bus rapid transit (BRT) in mixed traffic	CSX right-of-way
BRT in dedicated right-of-way	I-26/I-126
Modern streetcar	
Light rail	
Heavy rail	
Commuter rail	

The results of the screening conducted during the Newberry-Columbia Alternatives Analysis indicate that the following alternatives are viable and warrant additional refinement and evaluation to ultimately culminate in the selection of a locally-preferred alternative (LPA):

- **BRT in mixed traffic on US 76/176;**
- **Commuter rail within the CSX right-of-way;**
- **BRT in mixed traffic on I-26/I-126; and**
- **BRT in dedicated lane/right-of-way on I-26/I-126**

## 5. Path Forward

The work completed to date represents Phase I of 2 within the Alternative Analysis framework as governed by the Federal Transit Administration’s (FTA) New Starts Program under the SAFETEA-LU transportation authorization. However, with the passage of the MAP-21 transportation authorization while this study was underway, the Alternatives Analysis requirement has been repealed and superseded by a new project development process. In order to complete the planning work begun by this Alternative Analysis and to remain eligible for FTA construction funds, the Project Team recommends that future planning activities for the Newberry-Columbia corridor be shifted into the MAP-21 process by seeking FTA authorization for a Pre-Project Development (PPD) Study. During a PPD Study, the alternative modes and alignments that emerged from the fatal flaw analysis are subjected to further refinement, examination, and evaluation to assist the project sponsor with the selection of the LPA.

## 1.0 Introduction

The Central Midlands Council of Governments (CMCOG) has completed the Newberry-Columbia Alternatives Analysis along with its planning partners in local and state government agencies. The purpose of this study is to evaluate enhanced transit improvements in the Newberry-Columbia corridor which travels through Richland, Lexington, and Newberry counties in South Carolina.

As part of the Federal Transit Administration (FTA) New Starts Program, the Alternatives Analysis process was designed to identify appropriate mass transit alternatives, and to provide a standardized planning approach by which FTA’s competitive grant funding may be eligible to implement major transit capital improvements, including among others, light rail, commuter rail, and bus rapid transit.

The Newberry-Columbia corridor, shown in **Figure 1-1**, is centered on the CSX rail line, running approximately 40 miles southeast from downtown Newberry to downtown Columbia. Along the corridor, the rail line travels through the towns of Prosperity, Little Mountain, Chapin, and Irmo.



***Newberry-Columbia CSX Rail Line***

Richland, Lexington, and Newberry counties are expected to grow in both population and employment. As the region grows, congestion has also increased, particularly along US 76 between Newberry and Irmo and on I-26/I-126 between Irmo and Columbia. These locations have the highest density of employment and population. One proven method to manage congestion is to provide reliable transit in the corridor. Thus, in 2003 the South Carolina Department of Transportation (SCDOT) began a commuter research project on commuting preferences regarding alternative transportation options. The project determined there was demand for express service into Columbia. This service is now provided four times a day from Newberry and Camden. However, there are many areas in the corridor not served by express service, and additional transit opportunities were sought by local advocates. In 2006 the Central Midlands Council of Governments completed the *Central Midlands Commuter Rail Feasibility Study*. This study assessed the feasibility of commuter rail and other high capacity transit modes in the Central Midlands area. The corridors studied had been previously identified as appropriate for transit service and include:

- Newberry to Columbia
- Camden to Columbia
- Batesburg-Leesville to Columbia

The report indicated that each corridor had land use characteristics that could support rail. The Newberry-Columbia Alternatives Analysis was commissioned to build upon the Commuter Rail Feasibility Study for the Newberry to Columbia corridor to determine the most appropriate enhanced transit service for this corridor.

This document is divided into five sections. This **Introduction** provides a brief background to the Alternatives Analysis and documents its chronology relative to preceding transit studies. Baseline information that documents the current reality of the corridor is presented in **Planning Context**. **Purpose and Need** presents an argument for investing in transit improvements within the corridor, and establishes the local goals and objectives of such improvements. Potential alternative transit modes and alignments are screened in **Fatal Flaw Analysis** in order to eliminate from further study those modes and alignments which fail to meet the local goals and objectives and are therefore inappropriate for the corridor. Finally, **Path Forward** presents the next steps to guide regional transportation planners to determine a locally preferred alternative.

## 1.1 Corridor Description

The Newberry-Columbia corridor, depicted in **Figure 1-1**, is centered on the CSX freight rail line that runs approximately 40 miles southeast from downtown Newberry to downtown Columbia. Along the corridor, the rail line travels through the three counties of Newberry, Lexington, and Richland and the towns of Prosperity, Little Mountain, Chapin, and Irmo. In order to examine a broad range of potential transportation improvements, the width of the study corridor extends for two miles on either side of the CSX rail line.

The character of the 40-mile study area varies from dense, urban core laid out on a grid street network in the Columbia and West Columbia area, through suburban development patterns in the central portion of the corridor near St. Andrews, Irmo, and Chapin before transitioning to rural areas between Little Mountain and Prosperity, and ending in the urbanized area of Newberry. Downtown Columbia's land uses include office towers, multi- and single-family residential, State administrative functions including the State House, sports and entertainment venues, the University of South Carolina, retail, and a variety of bars and restaurants. Moving out from Columbia, as the corridor parallels I-126 and later St. Andrews Road, land development patterns change to a more suburban character defined by office parks, light

industrial, automobile dealerships, Riverbanks Zoo and Garden, regional recreational parks, strip commercial centers, and residential subdivisions.

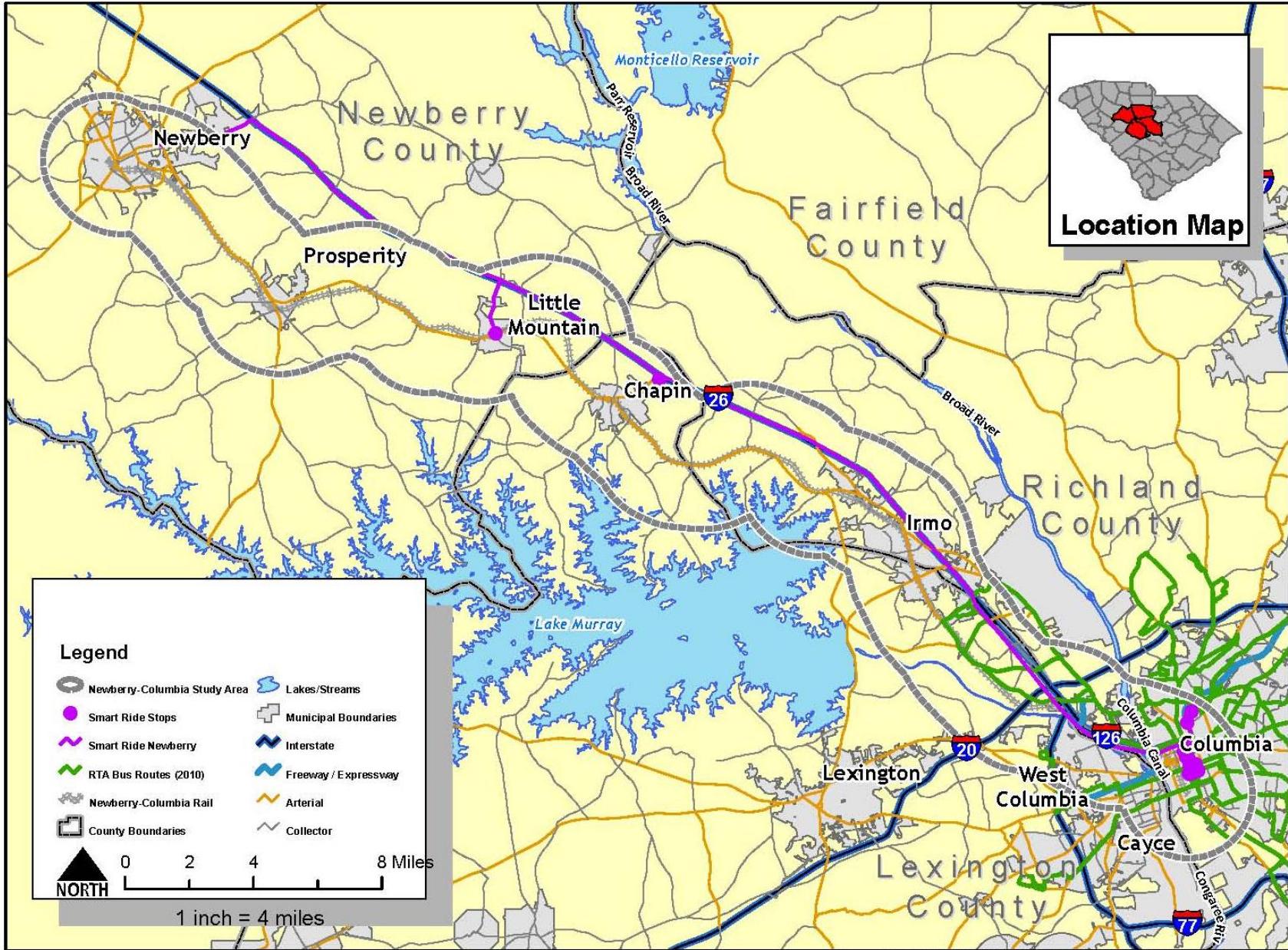
Once leaving the suburban area of Irmo, the corridor passes through mostly undeveloped, rural, agricultural areas. The communities of Chapin, Little Mountain, and Prosperity, each include pockets of commercial, large-lot low-density residential, and institutional uses. Large-scale industrial land uses, including Georgia-Pacific and International Paper, exist between Little Mountain and Prosperity. At the western end of the corridor in Newberry, development patterns are defined by two- and three-story historic buildings, including the Newberry County Courthouse, City Hall, and the Newberry Opera House, a regional entertainment attraction. Most of the buildings in downtown Newberry have been converted into mixed-use with retail and/or office on the ground floor and residential units in the upper floors.

## **1.2 Transportation Network Facilities**

Transportation facilities within the corridor are predominately focused on automobile traffic, including I-26, I-126, US 76, and US 176. As a limited access interstate, I-26 not only serves the local area but extends to the coast of South Carolina and the mountains of western North Carolina. I-126, an interstate spur, links I-26 to downtown Columbia. US 76 and US 176 provide connections between local communities along the corridor, with US 76 running virtually parallel to the rail line and I-26 from Newberry to the Broad River Road interchange. Numerous arterials, collectors, and local roads exist as well.

Public transportation services within the corridor do exist, but are limited. The South Carolina Department of Transportation (SCDOT) sponsors the SmartRide express bus service that is operated by the Newberry Council on Aging. Known as the Newberry Express, this SmartRide service runs during peak hours and has had a relatively consistent ridership, averaging just over 1,000 riders per month between January 2010 and October 2011 (i.e., the most recent data available). The Central Midlands Regional Transit Authority (CMRTA), now The Comet, operates fixed route service and Americans with Disability Act (ADA) paratransit service, but these are only available in the Columbia metropolitan area. In fact, Route 34 is the only Comet fixed route that operates within the corridor, traveling out of downtown Columbia on I-126 to serve the Irmo/St. Andrews communities along Broad River Road, Harbison Boulevard, Piney Grove Road, and St. Andrews Road.

Figure 1-1: Newberry-Columbia Corridor



Source:CMCOG, COATS, Richland County, Lexington County, and Newberry County

## 2.0 Planning Context

The alternatives analysis is influenced by the existing conditions within the corridor. This section summarizes the Newberry-Columbia corridor transportation network, and forms the foundation for transit enhancement alternatives analysis. Additional characteristics that define the corridor’s existing conditions can be found in **Appendix A - Existing Conditions Supplement**.

### 2.1 Roadways

#### 2.1.1 Physical Roadway Conditions

The following major roads/highways serve the corridor:

- **I-26** – Interstate 26 runs along the corridor from Newberry towards downtown Columbia. For much of the corridor, the interstate is a divided, limited access 4-lane highway with a grass median. However, south of Broad River Road (Exit 101), the roadway widens to six lanes with a concrete barrier median and additional auxiliary lanes for merging and diverging traffic.
- **I-126** – Interstate 126 functions as a spur of I-26 to reach downtown Columbia. Originating just southeast of Bush River Road, the interstate utilizes three lanes in each direction until Greystone Boulevard, beyond which the roadway widens to four lanes in each direction until it terminates in downtown Columbia.



*I-26 at St. Andrews Road*



*I-126 near Greystone Boulevard*

- US 176** – US 176 runs parallel and east of I-26 from Newberry towards Irmo with one lane in each direction. Crossing over I-26 at Exit 97 (Broad River Road), it then travels parallel to I-26 on the west side eventually merging with US 76 (Dutch Fork Road). US 76 and US 176 follow the same alignment until intersecting with I-26 at Exit 101, where US 76 follows the I-26 and I-126 alignments into downtown Columbia. US 176 continues on the east side of I-26 and I-126. East of SC-60 (Lake Murray Boulevard), US 176 widens to a 5-lane facility and continues that profile into downtown Columbia.



***US 176 in the Spring Hill Community***

- US 76** – US 76 travels southeast out of Newberry as a 5-lane roadway until the Town of Prosperity where it narrows to two lanes. The 2-lane profile generally continues until reaching the Chapin area, where three lanes are carried through the town limits. East of Chapin, US 76 continues primarily as a 2-lane roadway until reaching the unincorporated Ballentine area, where five lanes are utilized. East of Ballentine, the section varies between two and three lanes until reaching I-26, where it joins with the interstate’s alignment at Exit 101.



***US 76 in Ballentine***

### **2.1.2 Traffic Volumes and Patterns**

Traffic volumes for the facilities described above are shown in Table 2-1:



**Table 2-1 Traffic Volumes**

County	Roadway	Segment	2010	2011	2012
Newberry	US 76	SC 34 to Glenn Street (S-383)	16,800	14,600	16,800
Newberry	US 76	Glenn Street (S-383) to St. Phillips Church Road (S-82)	11,900	10,700	10,100
Newberry	US 76	St. Phillips Church Road (S-82) to Lexington County	5,000	5,300	4,600
Lexington	US 76	Newberry County to Lexington Avenue (S-83)	12,800	13,800	13,900
Lexington	US 76	Lexington Avenue (S-83) to Richland County	10,300	10,800	11,300
Richland	US 76	Lexington County to SC 6	20,100	20,400	20,800
Richland	US 76	SC 6 to Woodrow Street (S-27)	17,900	18,500	18,800
Richland	US 76	Woodrow Street (S-27) to Royal Tower Drive (S-1862)	15,100	14,100	14,400
Richland	US 76	Royal Tower Drive (S-1862) to I-26	24,900	23,400	23,800
Richland	US 176	I-26/US 76 to SC 60	13,200	12,300	12,600
Richland	US 176	SC 60 to Piney Woods Road (S-674)	16,000	15,400	15,800
Richland	US 176	Piney Woods Road (S-674) to St. Andrews Road (S-42)	22,000	20,300	20,800
Richland	US 176	St. Andrews Road (S-42) to Bush River Road (S-31)	36,700	34,900	35,700
Richland	US 176	Bush River Road (S-31) to Greystone Boulevard (S-3020)	27,300	25,900	26,500
Richland	US 176	Greystone Boulevard (S-3020) to SC 16	23,200	22,000	22,500
Richland	US 176	SC 16 to US 21	5,700	4,600	4,700
Newberry	I-26	SC 34 (Exit 74) to SC 219 (Exit 76)	33,000	33,400	34,100
Newberry	I-26	SC 219 (Exit 76) to SC 773 (Exit 82)	35,800	36,000	36,800
Newberry	I-26	SC 773 (Exit 82) to SC 202 (Exit 85)	37,300	37,700	38,700
Newberry / Lexington	I-26	SC 202 (Exit 85) to Columbia Avenue (S-48) (Exit 91)	37,800	38,300	39,200
Lexington / Richland	I-26	Columbia Avenue (S-48) (Exit 91) to US 176 (Exit 97)	46,400	46,200	47,100
Richland	I-26	US 176 (Exit 97) to US 176 (Exit 101)	47,800	47,700	48,800
Richland	I-26	US 176 (Exit 101) to SC 60 (Exit 102)	67,200	67,200	68,200
Richland	I-26	SC 60 (Exit 102) to Harbison Boulevard (S-757) (Exit 103)	89,000	88,400	89,900
Richland / Lexington	I-26	Harbison Boulevard (S-757) (Exit 103) to Piney Grove Road (S-671)	100,900	100,400	100,100
Lexington	I-26	Piney Grove Road (S-671) (Exit 104) to St. Andrews Road (S-36) (Exit 106)	113,000	111,100	111,600
Lexington / Richland	I-26	St. Andrews Road (S-36) (Exit 106) to I-20 (Exit 107)	131,700	130,000	128,800
Richland	I-26	I-20 (Exit 107) to I-126 (Exit 108)	111,300	110,100	111,700
Richland	I-126	I-26 to Colonial Life Boulevard (S-2963)	62,200	61,800	62,100
Richland	I-126	Colonial Life Boulevard (S-2963) to Greystone Boulevard (S-3020)	71,800	71,000	70,800
Richland	I-126	Greystone Boulevard (S-3020) to Huger Street (US 21)	72,100	71,200	71,500
Richland	I-126	Huger Street (US 21) to Gadsen Street	44,600	46,400	46,300

Traffic volumes in the corridor are highest on I-26 in Richland and Lexington Counties. 2012 Annual Average Daily Traffic (AADT) volumes range on I-26 from 34,100 to 128,800 (2011: 33,400 to 130,000), with peak volumes between St. Andrews Road (Exit 106) and I-20 (Exit 107). As traffic moves into downtown Columbia on I-126 volumes decrease.

On US 76 traffic volumes range from 4,600 to 23,800 AADT (2011: 5,300 to 23,400). Traffic volumes are highest on US 76 in Richland County between Royal Tower Drive and I-26 with AADT of 23,800 (2011: 23,400). US 176's highest volumes are in Richland County between St. Andrews Road to Bush River Road with AADT at 35,700 (2011: 34,900).

### 2.1.3 Congestion

Level of service (LOS) is a measurement of traffic flow that describes the operating conditions of a roadway as defined by the Federal Highway Administration (FHWA). There are six designated conditions, A through F. A describes the best operating conditions and F describes the worst. Table 2-2 provides a description of each LOS classification and the associated delays.



**Congested Traffic on I-26**

Congestion levels are often determined by a roadway's LOS. Table 2-3 indicates the levels of service for all of the 2,214 total roadway miles in the three county region of Lexington, Newberry and Richland Counties. Currently the three county region has 48 miles of roadway with a level of service F. The number of miles operating at a level of service F is expected to increase to 13% (290 miles) of the total miles in the three county region by 2035.

**Table 2-2 Level of Service Descriptions**

Level of Service	Delay per Vehicle (Seconds)		Description
	Signalized	Unsignalized	
A	≤10	≤10	Free flow, minimal delays
B	>10 and ≤20	>10 and ≤15	Stable flow, occasional delays
C	>20 and ≤35	>15 and ≤25	Stable flow, periodic delays
D	>35 and ≤55	>25 and ≤35	Restricted flow, regular delays
E	>55 and ≤80	>35 and ≤50	Maximum capacity, extended delays
F	>80	>50	Forced flow, excessive delays

Source: 2000 Highway Capacity Manual, Transportation Research Board

Congestion levels were then evaluated within the corridor. Table 2-4 indicates the levels of service within the corridor over 656 total roadway miles. The corridor has 20 miles of roadway with LOS F. Figure 2-1 shows that the congestion is largely concentrated along US 76 between Chapin and Irmo and along I-26 between Irmo and I-126. Roadways that are approaching capacity are along US 76 between Newberry and Prosperity, and segments of I-26 between Irmo and I-126. Table 2-4 indicates that the number of roadway miles operating at LOS F in the corridor is expected to increase to 74 (11%) in 2035. Figure 2-2 shows how the congested corridors are expected to increase. I-26 from Irmo to I-126 is anticipated to be over capacity or at capacity for much of the roadway. Also some of the minor roadways that link to US 76 at Chapin are projected to be over capacity.

**Table 2-3 Level of Service in the 3-County Region**

Level of service	2010		2035	
	Miles	Percent of total	Miles	Percent of total
D	66	3%	94	4%
E	39	2%	89	4%
F	48	2%	290	13%
<b>Total</b>	<b>153</b>	<b>7%</b>	<b>472</b>	<b>21%</b>

Source: CMCOG, Straightline projections

**Table 2-4 Level of Service in the Corridor**

Level of service	2010		2035	
	Miles	Percent of total	Miles	Percent of total
D	20	3%	40	6%
E	12	2%	39	6%
F	20	3%	74	11%
<b>Total</b>	<b>52</b>	<b>8%</b>	<b>153</b>	<b>23%</b>

Source: CMCOG, Straightline projections

Figure 2-1: Existing Congested Corridors

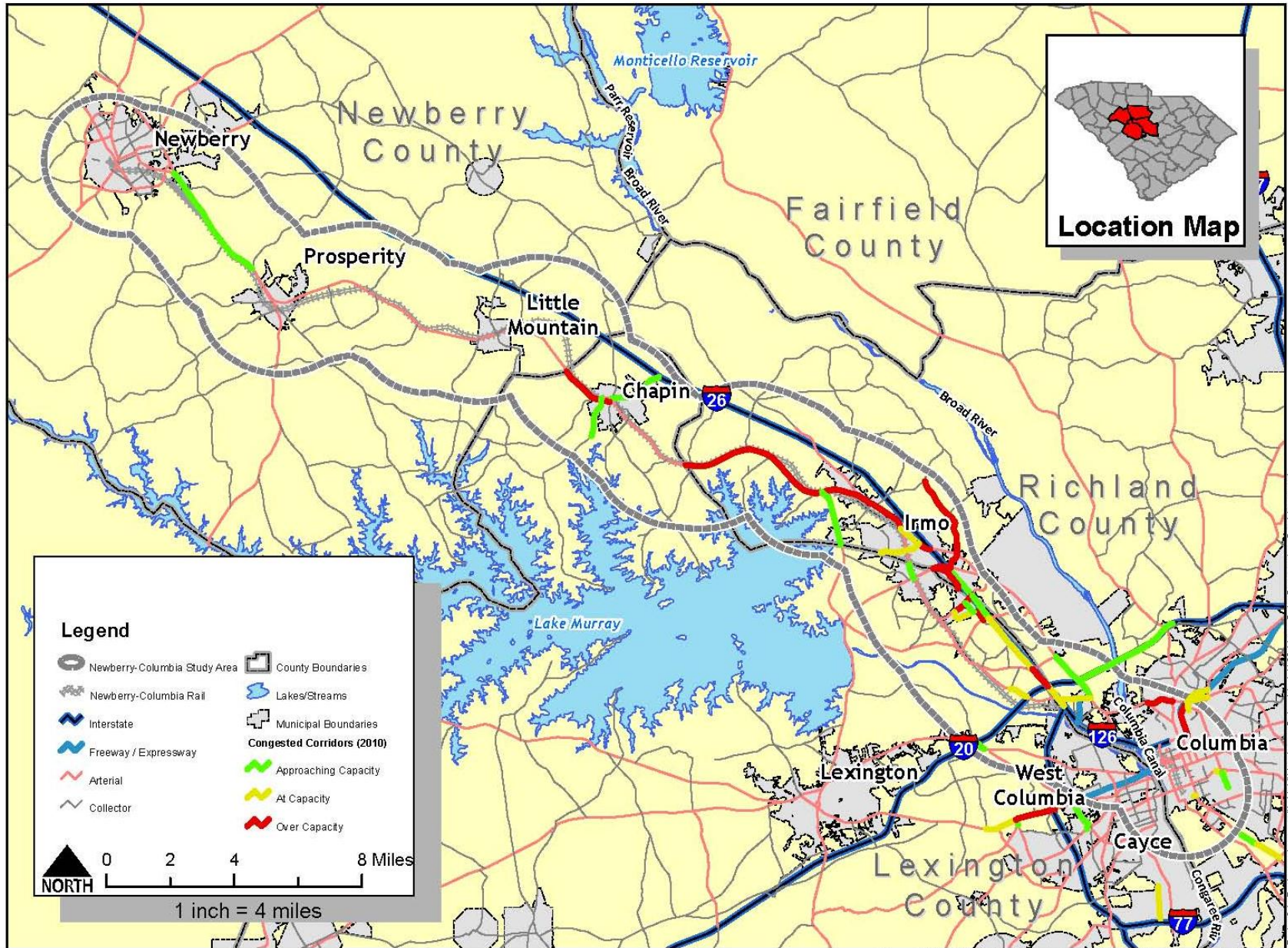
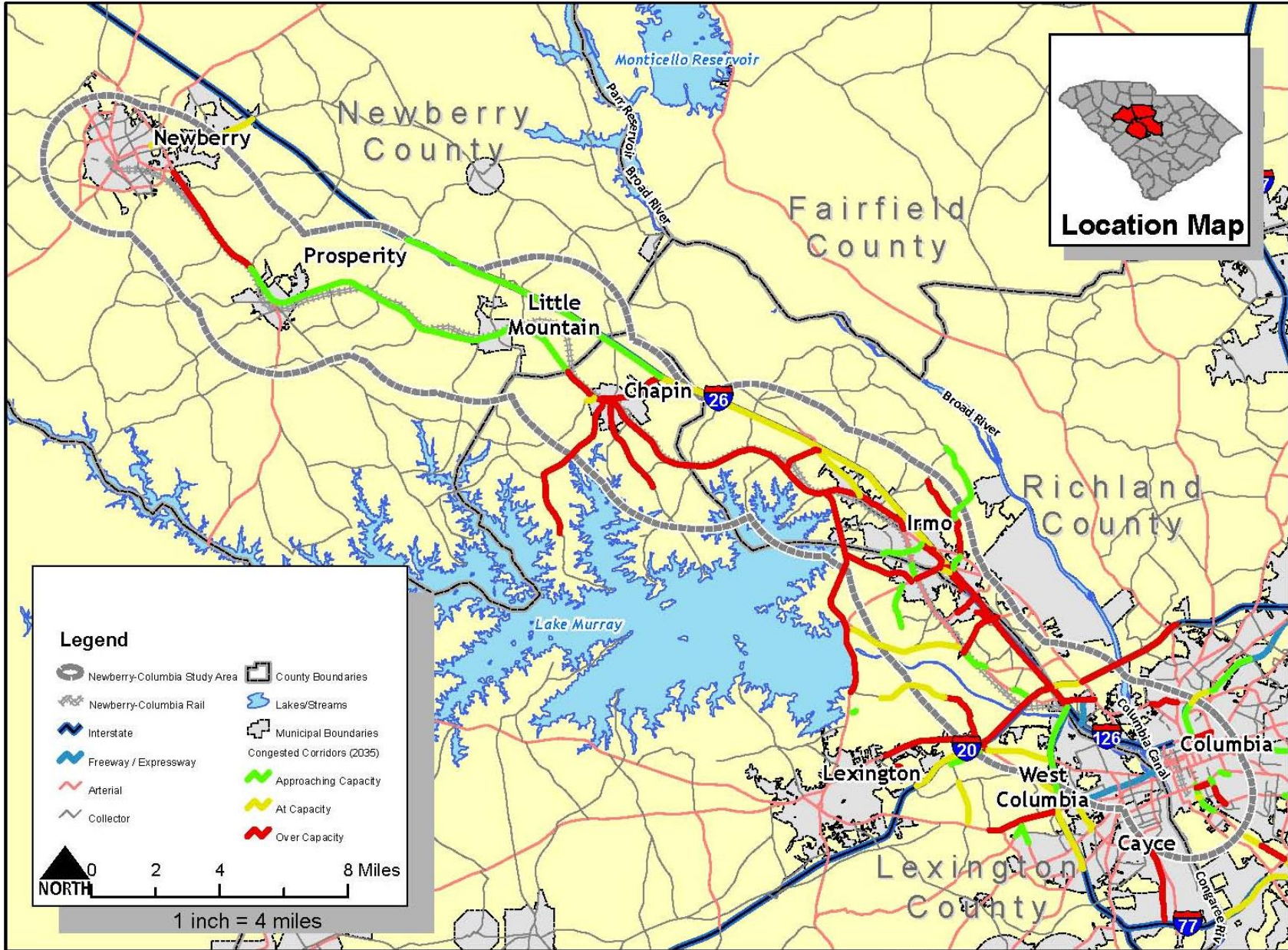


Figure 2-2: Forecasted Congested Corridors



## 2.2 Transit Services

Public transportation services in the Newberry-Columbia corridor include express bus, fixed route, and Americans with Disability Act (ADA) paratransit service. Peak hour express bus service runs throughout the corridor. However, fixed route bus service, as well as the complementary ADA paratransit service, is only available in the Columbia metropolitan area. South Carolina Department of Transportation (SCDOT) sponsors the SmartRide express bus service that runs from the City of Newberry to downtown Columbia. Central Midlands Regional Transit Authority (CMRTA), now The Comet, operates the fixed route bus service and the ADA paratransit service in the Columbia area. Each of these is described in more detail below.

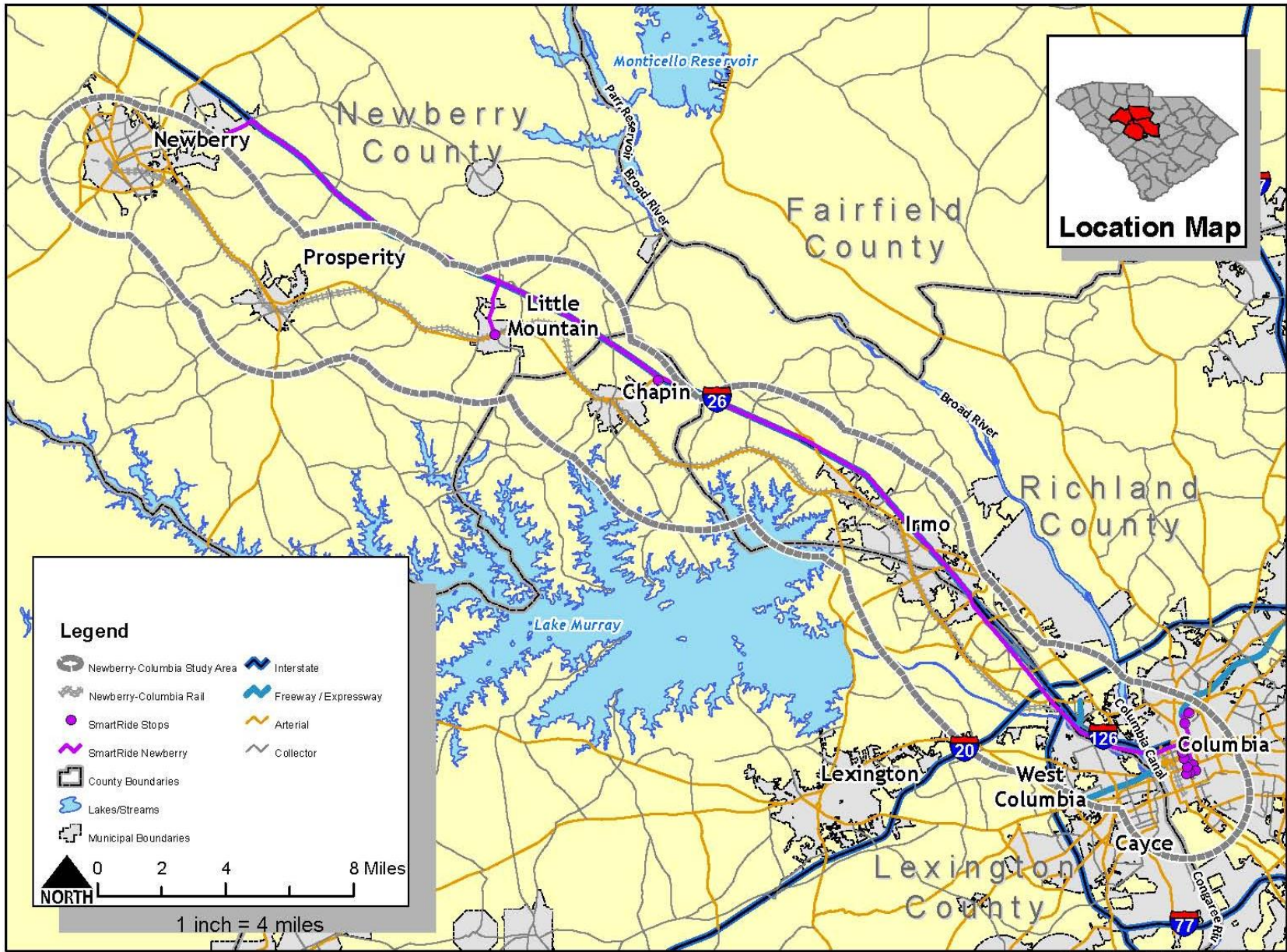
### 2.2.1 *SmartRide*

The SmartRide program is a partnership between SCDOT, the Newberry County Council on Aging, and the Santee Wateree Regional Transit Authority. This program offers express transit service into the City of Columbia from Newberry and Camden. The Newberry Express is the SmartRide service in the corridor. The Newberry Express, operated by the Newberry Council on Aging, provides weekday service between 6:00 a.m. and 6:30 p.m. Service originates in Newberry with two morning and two afternoon/evening trips. The last afternoon/evening trip returns to Newberry at 6:35 p.m. As shown in Figure 2-3, stops, and associated park-and-ride lots, are located in Little Mountain, Chapin, and Columbia. Ridership on the Newberry Express route has been relatively consistent for the last two years. Figure 2-4 shows the ridership for the Newberry Express route from January 2010 to October 2011.



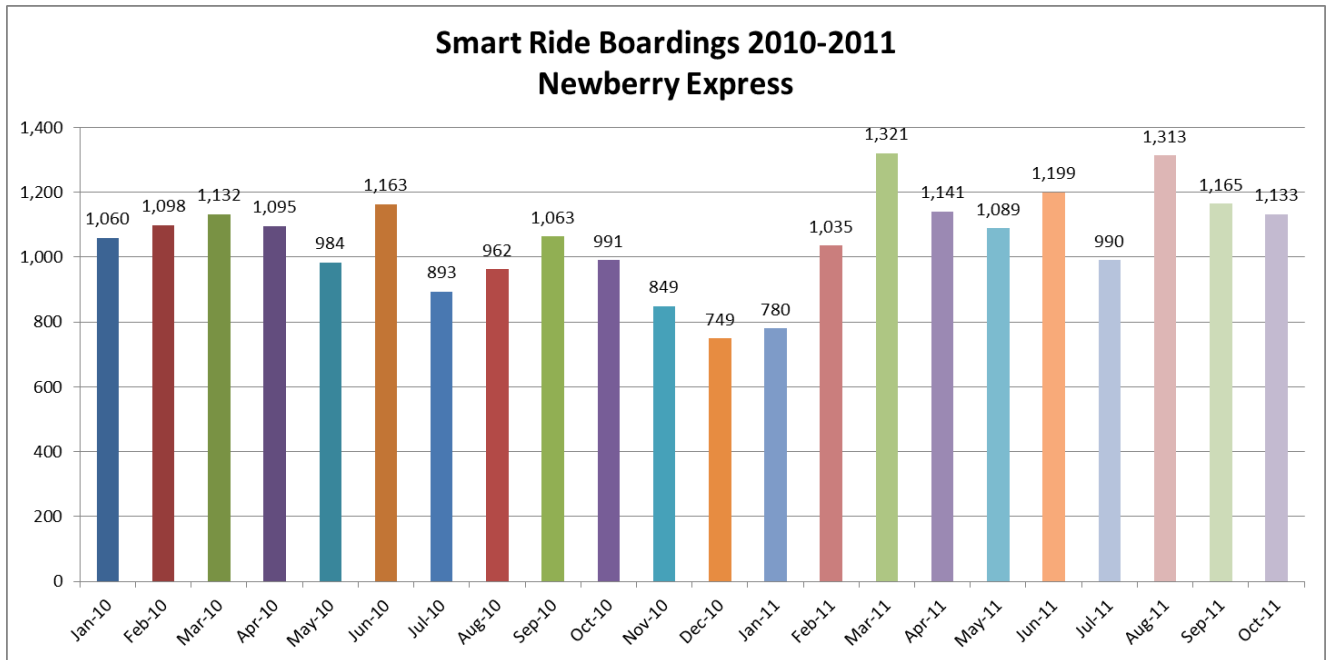
***Chapin SmartRide Park-and-Ride Lot***

Figure 2-3: Newberry Express SmartRide Route



Source:CMCOG, COATS, CMRTA, SmartRide

Figure 2-4 Newberry Express SmartRide Ridership (Jan 2010 – Oct 2011)



**2.2.2 Central Midlands Regional Transit Authority (The COMET)**

In 2002 SCANA, a diversified holding company focused on energy production and distribution, turned over operations and maintenance of Columbia’s bus system to the CMRTA, now The Comet. The Comet currently operates 20 fixed transit routes in the Columbia area. The majority of The Comet’s service is located within Richland County; however, a few routes operate in Lexington County. Communities in the corridor served by The Comet include West Columbia, St. Andrews, and Harbison.



**CMRTA (The COMET) Bus on Broad River Road**

The fixed routes operate on 30-60 minute headways Monday through Saturday with limited Sunday service. During the week, fixed route service operates between 5:00 a.m. and 8:00 p.m. On Saturday, most of the service operates from 6:30 a.m. to 7:00 p.m. The Comet’s routes are a radial network with most routes terminating and starting at the Downtown Transfer Center (DTC) at Laurel and Sumter Streets. Primary destinations along the routes include: shopping



and entertainment venues, higher education campuses, hospitals, recreation and leisure locations, and transportation connections.

CMRTA’s ridership peaked in 2005 and has seen a steady decline over the last five years. Table 2-5 shows the annual ridership numbers since 2003 and Table 2-6 shows the monthly ridership since 2009.

**Table 2-5 CMRTA Annual Ridership**

Service	2003	2004	2005	2006	2007	2008	2009	2010
<b>Fixed Route</b>	1.8M	2.5M	2.7M	2.5M	2.2M	2.2M	2.0M	1.9M
<b>Demand Response</b>	78K	70K	80K	92K	86K	83K	78K	73K

Source: NTD Reports 2003 through 2010

**Table 2-6 CMRTA Average Monthly Ridership**

Service	2009	2010	2011	2012*
<b>Fixed Routes</b>	162,302	156,277	147,567	142,616

Source: CMRTA Annual Revenue and Ridership Report 2009-2012

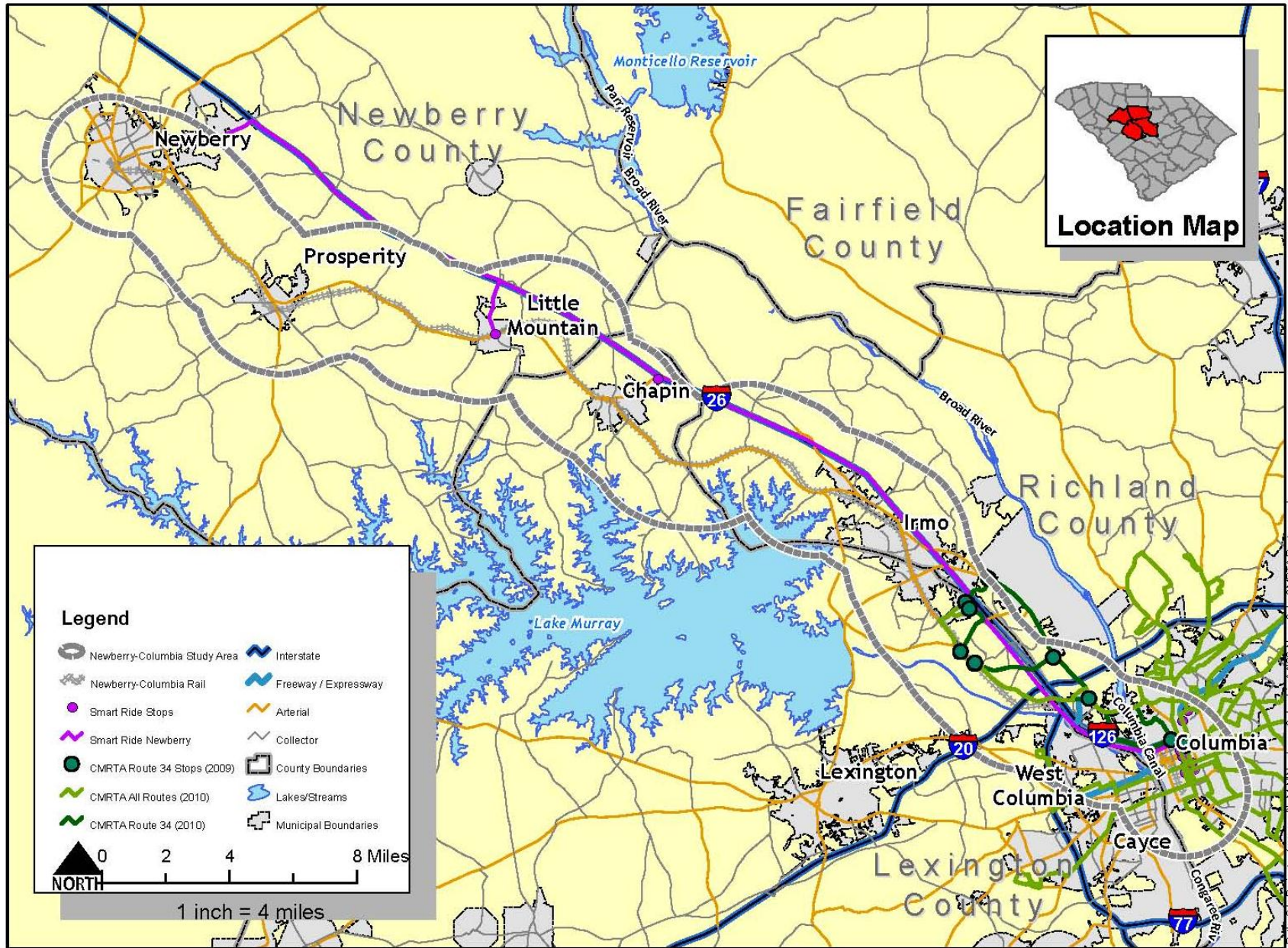
Route 34 is currently the only Comet fixed route that operates within the corridor. Route 34 service begins at the DTC and travels northwest on I-126 and serves the Irmo/St. Andrews communities along Broad River Road, Harbison Boulevard, Piney Grove Road, and St. Andrews Road. Service Monday through Friday is every 60 minutes between 5:00 a.m. and 5:45 p.m. On Saturdays service is every two hours between 6:45 a.m. and 4:45 p.m. Table 2-7 provides the average weekday ridership.

**Table 2-7 CMRTA Average Weekly Ridership**

Service	Weekday Ridership	Revenue Hours	Passengers per Revenue Hour
<b>Route 34 – Saint Andrews</b>	550	29.0	8.1

Source: CMRTA Comprehensive Operational Analysis, January 2010

Figure 2-5: The Comet Route 34



## 2.3 Pedestrian and Bicycle Facilities

The non-motorized transportation system includes elements such as pathways, trails, sidewalks, bike lanes, and other facilities used by pedestrians and bicyclists.

### 2.3.1 Pedestrian Pathways

Sidewalks are present intermittently throughout the study corridor. Sidewalks are most prevalent on major roadways in the urbanized areas in the corridor. Due to the rural setting between some of the municipalities, sidewalks are not readily available and some of the areas would not be considered walkable or pedestrian-friendly.

In the City of Newberry, sidewalks are present throughout the central business district and in several neighborhoods throughout the city.

In the Town of Prosperity, sidewalks are located on both sides of Main Street between Elm and Broad Street. South of Broad Street on Main Street the sidewalk is interrupted and not consistent street to street.

In Little Mountain, along Main Street, sidewalks are present on both sides of the street for most of the town limits. Recently installed sidewalks along South Boundary Street provide connections to Little Mountain Elementary School. The adjacent neighborhoods do not have sidewalks consistently on either side of the street.



***South Boundary Street Sidewalk***

In Chapin on Chapin Road (US 76), sidewalks are located on both sides of roadways through the main commercial district. A sidewalk is located along Columbia Avenue to connect Chapin High School with the US 76/Columbia Avenue intersection, but the sidewalk switches sides of the road at Peak Street, and no sidewalk is present east of the High School.

There are sidewalks installed on both sides of US 76 in the commercialized area of the Ballentine community.

Harbison is a planned community with mixed-use development including retail, office, and residential uses. The community has a pathway system that connects residential areas with community facilities and retail centers. Pathways are grade-separated at most major roadways reducing pedestrian and traffic conflicts.<sup>1</sup>



***Harbison Pathway Tunnel under Broad River Road***

In Irmo, sidewalks are located predominately along collector roads and within neighborhoods and are typically only on one side of the road. Columbia has a large network of sidewalks and crosswalks within its street grid. Most roads have sidewalks on both sides forming a connected system. Generally, the more urbanized areas of the corridor have more sidewalks. Strong pedestrian networks will be required to support transit enhancements.

### **2.3.2 Bicycle Facilities**

Within the corridor, Columbia and West Columbia have bike lanes located on Blossom Street and Knox Abbott Drive between Huger Street and 12<sup>th</sup> Street. These lanes are striped lanes in each direction of traffic. Adjacent to the corridor in West Columbia, bike lanes are located on Platt Springs Road between Charleston Highway and Divinci Road. The Three Rivers Greenway is also located in the corridor but is more of a recreational facility. The greenway is 9.2 miles of shared-use pathway through the communities of Columbia, West Columbia, and Cayce. This pathway intersects the corridor where I-126/US 76 crosses the river into downtown Columbia. Additionally, in the Town of Irmo, bike lanes along SC 60 (Lake Murray Boulevard) extend from Irmo Drive to the Lake Murray Dam, and link to bike lanes along SC 6 (North Lake Drive) providing connectivity across the dam towards the Town of Lexington.



***Bike Lane on Knox Abbott Drive***

<sup>1</sup> *Bike and Pedestrian Pathways Plan for the Columbia Area Transportation Study*, March 2006.

### 2.3.3 Walkability

Walkability is a measurement of the quality of non-motorized facilities combined with the compactness and connectivity of development. Although a detailed walkability audit along the roads in the corridor was not performed as part of this study, review of previous studies and observation during field reconnaissance indicate that the “downtown” areas of most of the smaller municipalities along the corridor are moderately walkable. The biggest limitations in those areas are the lack of connectivity and the sprawling development pattern. In the City of Newberry, Town of Irmo, and City of Columbia, there are larger areas that are connected and have a more compact development pattern, supporting a high degree of walkability. CMCOG’s 2006 *Bike and Pedestrian Pathways Plan for the Columbia Area Transportation Study* indicates quality walkability in a number of locations along the corridor, including Chapin, the Harbison area, Broad River Road’s commercial areas, and areas near the University of South Carolina.

### 2.4 Rail Service

The existing CSX rail line, which runs through each of the municipalities in the corridor, is an active line that carries freight through the midlands region. The track is rated as FRA Class 4 track, allowing passenger speeds up to 80 mph and freight speeds up to 60 mph. The line has 43 active and 51 passive crossings between Newberry and Columbia.



*CSX Rail Line in Chapin*

### 2.5 Employment Patterns

The location and density of jobs significantly impacts the transportation network: high volumes of residents traveling long distances in automobiles to dispersed employment destinations can result in recurrent traffic congestion. The study corridor is anchored by major institutions and employers on the eastern end, while comparatively smaller employers and employment clusters dominate the central and western portions of the corridor. Enhanced access to, from, and between these employers will support a well-functioning transportation network, which is a critical element in supporting a socially, economically and environmentally sustainable region.

#### 2.5.1 Major Employers

The City of Columbia has a concentration of major institutions, which generate a high volume of employee activity and trips. The State Capitol complex, the University of South Carolina’s main

campus, and the U.S. Army's Fort Jackson are located within or proximate to the study corridor. Other major employers in Richland County include Palmetto Health Alliance, Blue Cross & Blue Shield, and Bellsouth.

While a comparatively small portion of Lexington County is located within the study corridor, the county is home to several major regional employers, including Lexington Medical Center, United Parcel Service, and Michelin.

While Newberry County is characterized by rural landscapes and the Sumter National Forest, the employment base includes several large industrial companies. Newberry County is home to the international companies of Komatsu, Confalioniери, and Kiswire. Other major employers located in Newberry County include Caterpillar, Louis Rich Company, McKechnie Auto, Renfro, Shakespeare, and Georgia Pacific.



***Komatsu in Newberry County***

Table 2-8 lists major employers and their location. Although some of the employers listed in the table are not located directly within the corridor, they each impact traffic and mobility within the corridor.

**Table 2-8 Major Employers in the Region**

Company	Type of Business	Number of Employees	Location
<b>Palmetto Health Alliance</b>	Health Care	9,300	Richland
<b>Blue Cross &amp; Blue Shield of South Carolina</b>	Insurance	6,900	Richland
<b>Lexington Medical Center</b>	Health Care	4,794	Lexington
<b>USC</b>	Higher Education	4,500	Richland
<b>Walmart</b>	Retail	4,500	Region
<b>Fort Jackson – Civilian Employees</b>	Military Base	3,842	Richland
<b>United Parcel Service</b>	Distribution	3,788	Lexington/ Region
<b>Department of Mental Health</b>	State	3,179	Region
<b>BellSouth</b>	Utility	2,852	Richland
<b>Department of Corrections</b>	State	2,819	Region
<b>Department of Health and Environmental Control</b>	State	2,228	Region
<b>SCANA &amp; SCE&amp;G</b>	Utility	2,210	Lexington
<b>Humana/Tricare</b>	Insurance	2,100	Richland
<b>SCDOT</b>	Government	1,962	Richland
<b>Providence Hospital</b>	Health Care	1,800	Richland
<b>Michelin Tire Corporation</b>	Manufacturing	1,525	Lexington
<b>Wachovia Bank</b>	Banking	1,475	Region
<b>Dorn VA Medical Center</b>	Health Care	1,457	Richland
<b>Verizon</b>	Telecommunications	1,450	Richland
<b>Department of Social Services</b>	State	1,270	Region
<b>Babcock Center, Inc.</b>	Service	1,250	Richland
<b>Louis Rich</b>	Manufacturing	1,200	Newberry

Source: CMCOG, September 2006

As seen in Table 2-8, the area’s major employers are concentrated in the insurance, healthcare, and government-related industries. These industries require professional services employees and are part of what is often referred to as the “New Economy.” These employers tend to profit on the exchange of ideas and innovation rather than manufactured goods. This shift in output has implications for not only the type of worker that is hired, but for the locational

needs of these businesses: large parcels of land that are proximate to highways and railways are no longer as highly prized. Companies instead are seeking proximity to other businesses within their industry cluster: synergies and growth are generated through a free-flowing exchange of ideas, which is facilitated through physical proximity to both partners and competitors. Employees of New Economy businesses tend to be younger and prize living and working in urban environments. Successful, sustained adaption to this New Economy will be supported through the creation of an urban environment that attracts this younger, creative class of employees and their employers. Transit system investment can help to create this environment through increased (and context-sensitive) densification, an appropriate mix of land uses and pedestrian-friendly urban design.

As shown in Table 2-9, Lexington County’s office, service, and retail sectors are expected to experience the strongest growth between 2005 and 2035; Richland County’s retail sector is anticipated to have the strongest growth, closely followed by industrial, office, and service, in that same time period. Data for Newberry County is not available. Retail service sector jobs tend to be comparatively lower-income than professional services or office jobs, which may indicate a workforce that tends towards transit dependency.

**Table 2-9 Employment Trends by Industry (2005 to 2035)**

	Industry	2005	2035	Percent Change
Lexington County	Industrial	8,943	11,868	32.7%
	Retail	13,841	23,819	72.1%
	Office	4,679	8,551	82.8%
	Service	18,169	31,779	74.9%
	Education	2,110	2,703	28.1%
Richland County	Industrial	11,533	13,827	19.9%
	Retail	15,768	19,841	25.8%
	Office	34,794	41,564	19.5%
	Service	51,550	60,553	17.5%
	Education	8,263	9,401	13.8%

Source: CMCOG

### 2.5.2 Employment Growth

As shown below in Tables 2-10 and 2-11 and Figure 2-6, more than twice as many people are employed within study corridor portions of Richland County than Lexington County; data for Newberry County is not available. Current forecasts estimate that study corridor portions of both counties will experience growth within their employment bases through 2035, although



Lexington County’s employment base is anticipated to grow at a faster rate than Richland County’s.

**Table 2-10 Number of Employees within the Study Corridor  
(Absolute and Percent Change, 2005 to 2035)**

Geography	Number of Employees 2005	Number of Employees 2035	Percent Change in Number of Employees
<b>Newberry County</b>	n/a	n/a	n/a
<b>Lexington County</b>	45,632	76,017	66.5%
<b>Richland County</b>	113,645	135,785	19.4%

Source: COATS, URS

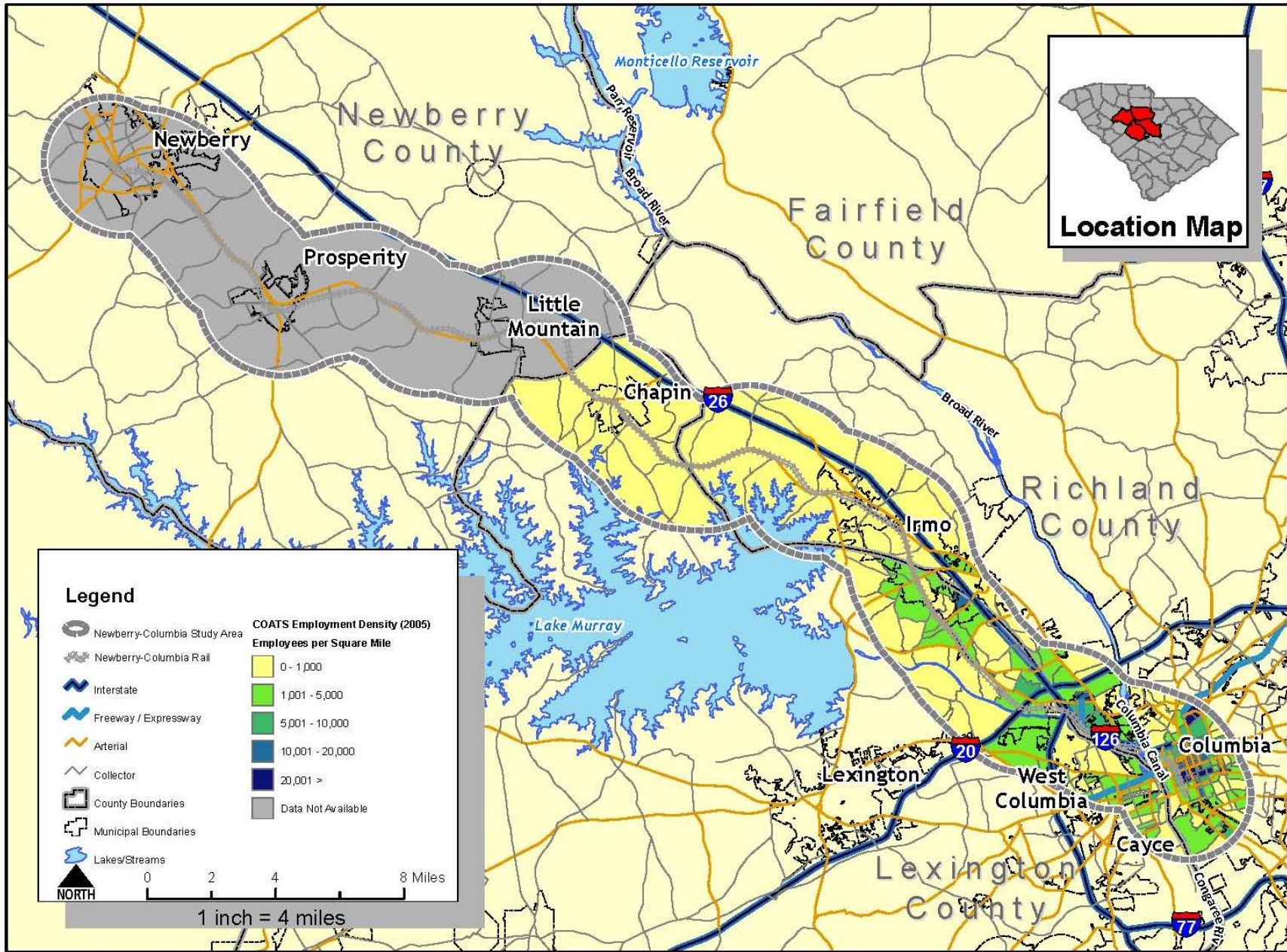
As shown in Table 2-11, employment within Lexington County is anticipated to densify at a much higher rate between 2005 and 2035 than Richland County.

**Table 2-11 Employment Density within the Study Corridor  
(Absolute and Percent Change, 2005 to 2035)**

Geography	Employees per Square Mile 2005	Employees per Square Mile 2035	Percent Change in Employment Density
<b>Newberry County</b>	n/a	n/a	n/a
<b>Lexington County</b>	1,539	2,507	63%
<b>Richland County</b>	13,218	15,169	15%

Source: COATS, URS

Figure 2-6: Existing Employment Density



### **2.5.3      *Employment Commuting Patterns***

Work trips typically provide the most regular and predictable travel patterns in an urban area, and are most likely to place a strain on the transportation system during the congested peak-hour periods. Table 2-12 shows the commuting patterns between the three counties included within the corridor. The majority of trips originates and terminates in Richland County. Trips to and from Lexington County are the second highest in the corridor. Trips between Lexington County and Richland County have the third highest number of trips. Newberry County has the least number of trips both to and from the county.

**Table 2-12 Newberry, Lexington, and Richland County Commuting Patterns**

Measures	Estimate	Percent within 3- county area	Percent of Total Worker Flow
<b>TRAFFIC FLOWS</b>			
Lexington County, SC   Lexington County, SC	67,370	58.4%	55.5%
Lexington County, SC   Newberry County, SC	625	0.5%	0.5%
Lexington County, SC   Richland County, SC	47,390	41.1%	39.0%
<b>Total 3-County Workers by Resident County - Lexington</b>	<b>115,385</b>		
<b>Total Workers by Resident County*</b>	<b>121,405</b>		
<b>Commuting Outside of 3-County Area</b>	<b>6,020</b>		<b>5.0%</b>
<b>Newberry County, SC   Lexington County, SC</b>			
Newberry County, SC   Lexington County, SC	2,525	16.3%	14.5%
Newberry County, SC   Newberry County, SC	11,335	73.2%	64.9%
Newberry County, SC   Richland County, SC	1,635	10.6%	9.4%
<b>Total 3-County Workers by Resident County - Newberry</b>	<b>15,495</b>		
<b>Total Workers by Resident County*</b>	<b>17,470</b>		
<b>Commuting Outside of 3-County Area</b>	<b>1,975</b>		<b>11.3%</b>
<b>Richland County, SC   Lexington County, SC</b>			
Richland County, SC   Lexington County, SC	24,760	14.6%	13.9%
Richland County, SC   Newberry County, SC	515	0.3%	0.3%
Richland County, SC   Richland County, SC	143,905	85.1%	80.7%
<b>Total 3-County Workers by Resident County - Richland</b>	<b>169,180</b>		
<b>Total Workers by Resident County*</b>	<b>178,410</b>		
<b>Commuting Outside of 3-County Area</b>	<b>9,230</b>		<b>5.2%</b>

Source: US Census Bureau, ACS 2006-2008 3yr est. Special Tabs for CTPP \* From 12100 – Total Workers (1) (Workers 16 years and over)

## **2.6 Population and Household Conditions and Trends**

The development and evaluation of alternatives within the Newberry-Columbia corridor will be heavily influenced by the demographic and socio-economic characteristics of corridor residents. Population size, rate of population growth, race, ethnicity, age, economic profile, and housing choices all influence the character of transit system investment that could most effectively meet the project's purpose and need. In advance of alternative development, it is critical to understand existing and future demographic and socio-economic conditions within the corridor, as described below.

### **2.6.1 Demographic Profile**

Population growth is a positive indicator for a community: it signals a vibrant, desirable place that is attractive to both residents and employers. However, increases in population in the absence of transportation system investment can result in strains on the existing transportation network and increased levels of congestion. Investment in a robust multi-modal network, with a strong transit component, can mitigate the potentially negative impacts of population growth in the absence of transportation system capacity expansion.

#### **2.6.1.1 Population**

Population in the counties and communities that comprise the study corridor has, with the exception of one community, grown in the decade between 2000 and 2010, as shown in Table 2-13; Chapin more than doubled in size during the decade, primarily through annexation of several residential subdivisions. The slowest rates of growth are found at the western end of the corridor in Newberry County; Newberry is the only community that lost population in the past decade. Lexington and Richland Counties exceeded statewide population growth averages.

**Table 2-13 Population Growth and Percent Change (2000 to 2010)**

Geography	2000 Population	2010 Population	Percent Change
<b>State of South Carolina</b>	4,012,012	4,625,364	15.3%
<b>Newberry County</b>	36,108	37,508	3.9%
<b>Lexington County</b>	216,014	262,391	21.5%
<b>Richland County</b>	320,677	384,504	19.9%
<b>City of Cayce</b>	12,150	12,528	3.1%
<b>Town of Chapin</b>	628	1,445	130.1%
<b>City of Columbia</b>	116,278	129,272	11.2%
<b>Town of Irmo</b>	11,039	11,097	0.5%
<b>Town of Little Mountain</b>	255	291	14.1%
<b>City of Newberry</b>	10,580	10,277	-2.9%
<b>Town of Prosperity</b>	1,047	1,180	12.7%
<b>City of West Columbia</b>	13,064	14,988	14.7%

Source: 2000 and 2010 US Census Bureau, URS

The area’s metropolitan planning organization, COATS, has prepared population forecasts to 2035 for its planning region, which include Lexington and Richland Counties; Newberry County, which falls outside of COATS’ current jurisdiction, has population forecasts available to 2025. This data is calculated by Traffic Analysis Zone (TAZ), a unit of geography that supports COATS’ travel demand model. Population forecast data from COATS for the area within the study corridor, shown below in Table 2-14, indicates that historic growth trends are anticipated to continue: a higher rate of population growth is anticipated for Richland and Lexington Counties. While lower than Lexington or Richland Counties, Newberry County’s forecasted growth rate is still strong. Growth in the Richland County portion of the study corridor will be concentrated near the State Capitol and University of South Carolina. Additional population growth is anticipated to occur in the Chapin vicinity.

**Table 2-14 Study Corridor Population and Percent Change**

Geography	2000/2005	2025/2035	Percent
<b>Newberry County (2000 – 2025 data)</b>	26,248	31,081	18.5%
<b>Lexington County (2005 – 2035 data)</b>	73,721	99,702	35.2%
<b>Richland County (2005 – 2035 data)</b>	110,211	140,336	27.3%

Source: COATS, CMCOG, URS

As shown in Table 2-15, forecast increases in study corridor population density generally trends with forecast increases in absolute population growth. Study corridor areas in Richland County, however, are anticipated to densify at a higher rate than study corridor areas in Lexington County, despite the fact that Lexington County is projected to experience stronger absolute population growth. Richland County’s higher projected rates of densification are likely driven by the growth of institutions in the Columbia area, including the University of South Carolina.

**Table 2-15 Study Corridor Population Density and Percent Change**

Geography	2000/2005	2025/2035	Percent Change
<b>Newberry County</b>	559	611	9.2%
<b>Lexington County*</b>	1,788	1,976	10.5%
<b>Richland County*</b>	2,972	3,823	28.6%

*Source: COATS, CMCOG, URS \* 2005-2035 data*

Figures 2-7, 2-8, and 2-9, on the following pages, visually display the statistical information above.

Figure 2-7 Existing Population Density (2000/2005)

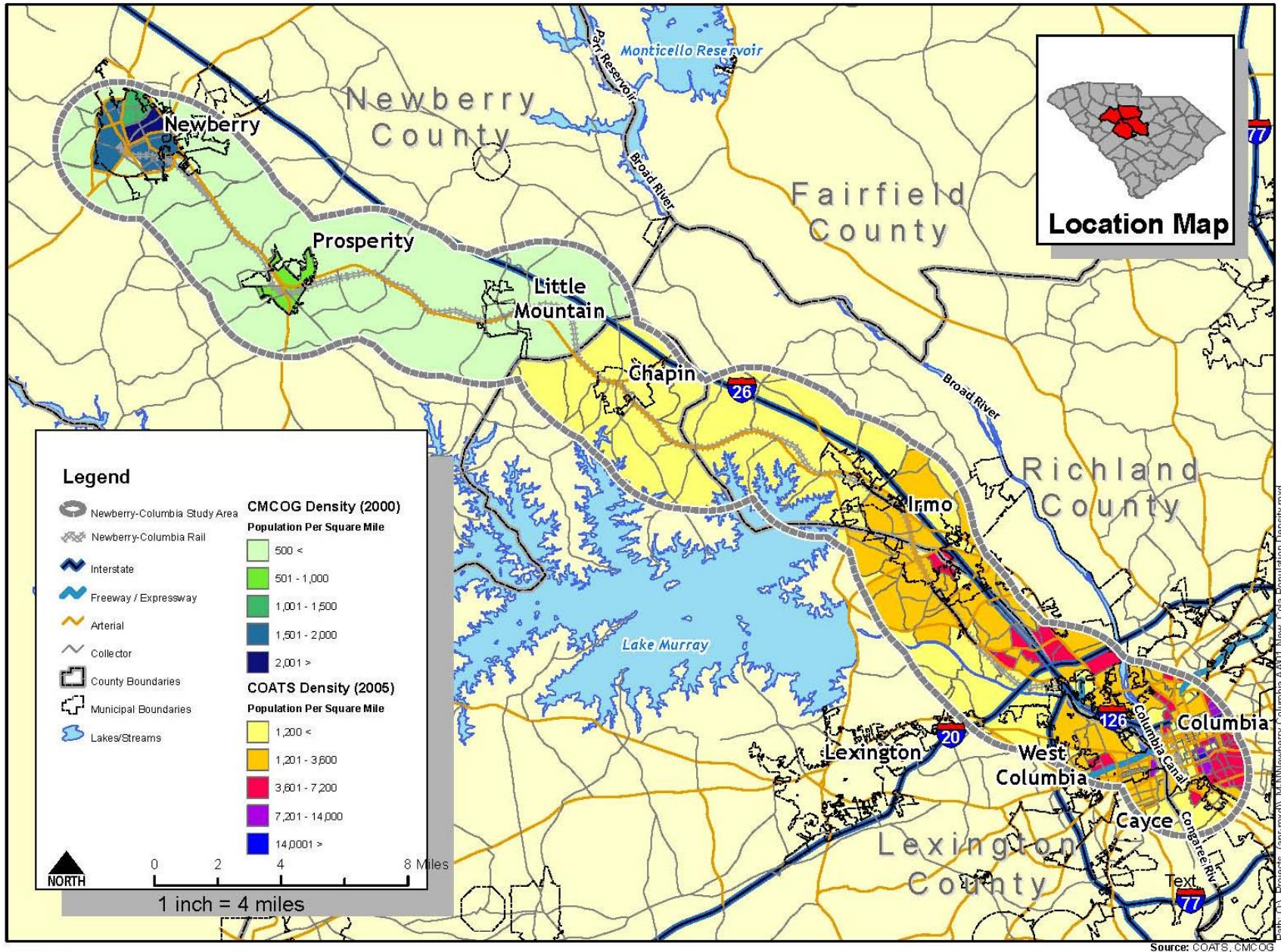




Figure 2-8: Future Population Density

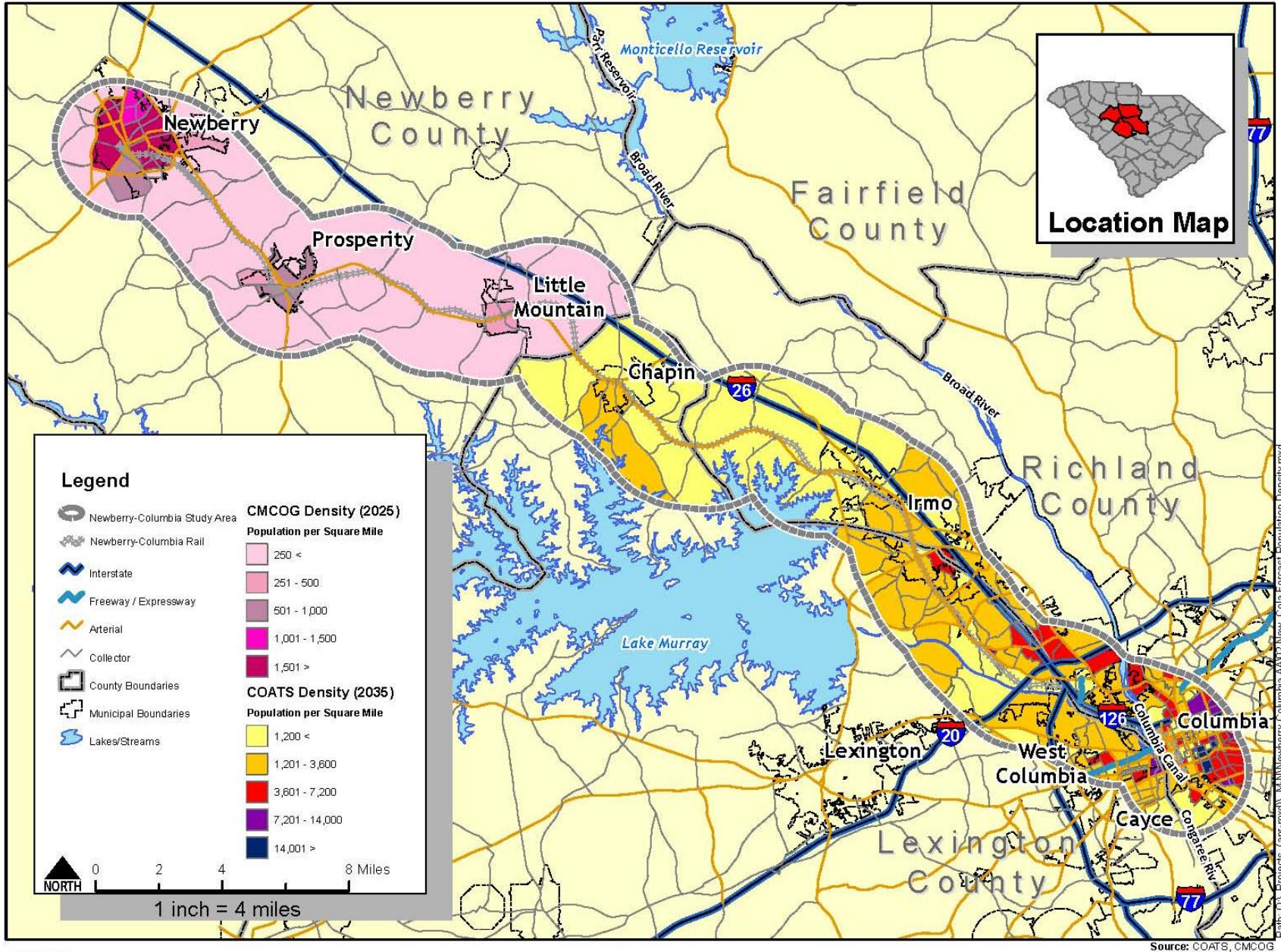
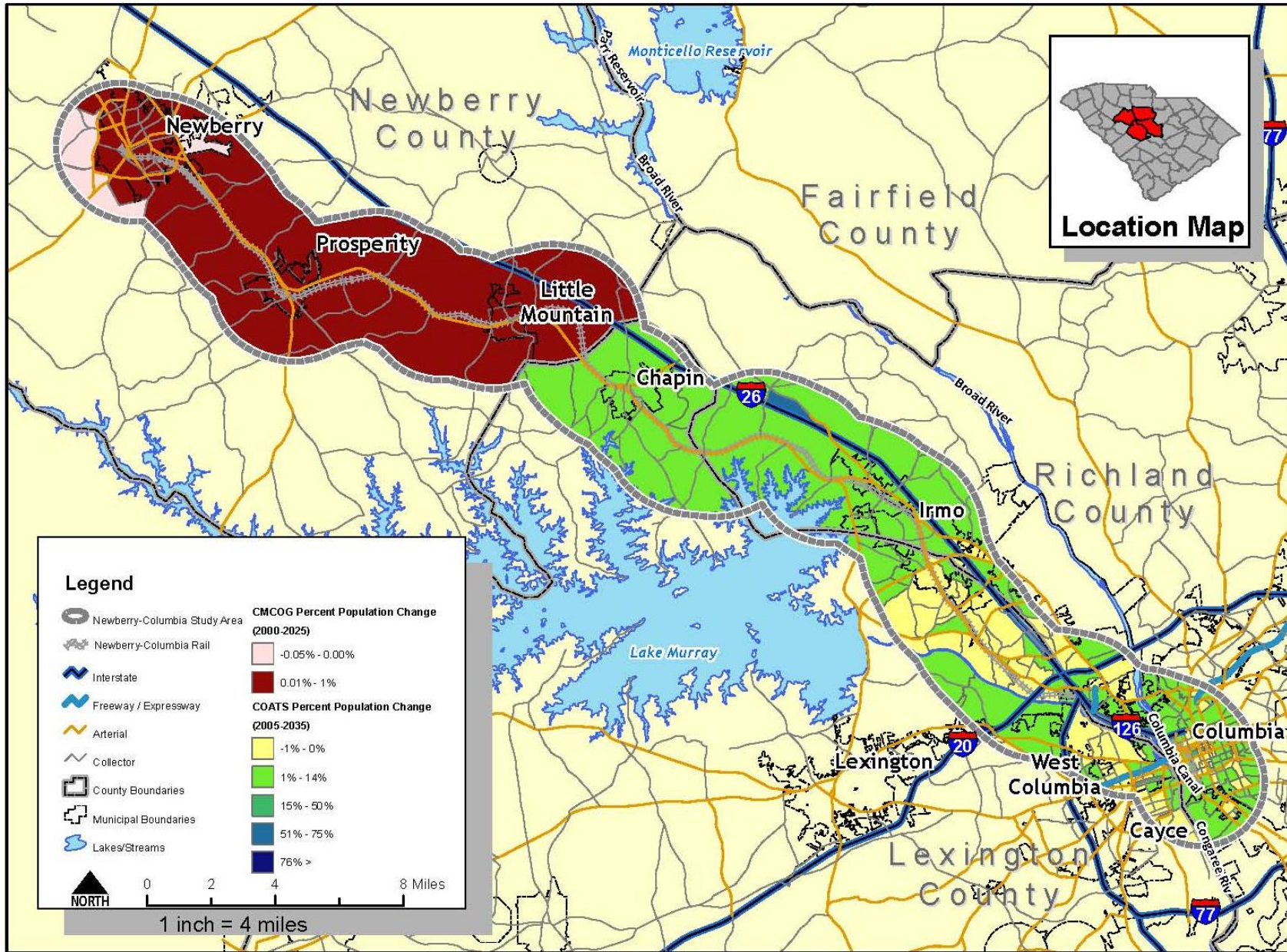


Figure 2-9: Population Density: Percent Change



### 2.6.1.2 Race and Ethnicity

The federal government, which may ultimately provide capital funding for the construction of a project that is identified and developed through this study, requires that federal agencies (including the FTA) engage in programs, policies, and activities that identify and avoid disproportionately high and adverse impacts to minority and low-income communities. These communities are commonly referred to as environmental justice communities, and are given specific consideration when planning transit investments.

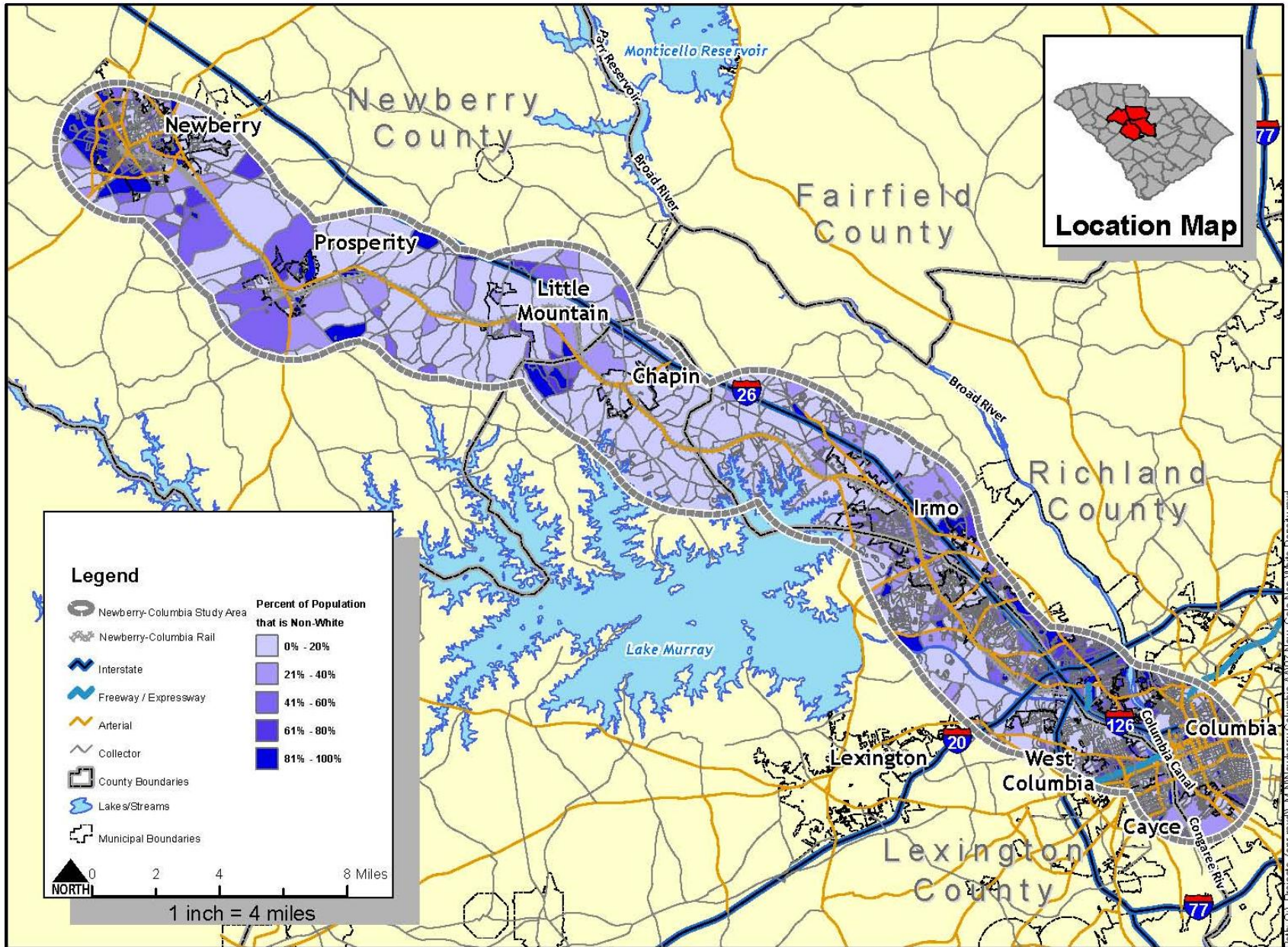
As shown in Table 2-16 and Figure 2-10, the distribution of the non-white population within the study corridor varies: higher percentages of non-white residents are found in Newberry and Richland Counties than Lexington County. On average, 39.6 percent of the study corridor’s residents identified themselves as a race other than white, which is above the statewide average of 33 percent. Communities with the highest concentrations of non-white populations are near Newberry, Prosperity, and on the eastern side of I-26 between Irmo and Columbia.

**Table 2-16 Percent of Population within Study Corridor that is Non-White**

Geography	Percent
Newberry County	47.5%
Lexington County	28.3%
Richland County	43.2%
Study Corridor	39.6%
South Carolina	32.7%

Source: 2006-2010 American Community Survey Five-Year Estimates, URS

Figure 2-10: Percent of Non-White Population



### 2.6.1.3 Age

The population of counties within the study corridor has, on average, increased in median age between 2000 and 2010; as shown in Table 2-17, Richland County remains comparatively younger than Newberry and Lexington Counties, which is likely influenced by the presence of the University of South Carolina and Fort Jackson.

**Table 2-17 Median Age by County and Change between 2000 and 2010**

Geography	2000	2010	Change (Years)
<b>Newberry County</b>	37.1	39.9	+2.8
<b>Lexington County</b>	35.7	37.9	+2.2
<b>Richland County</b>	32.6	32.6	0

Source: 2000 and 2010 US Census

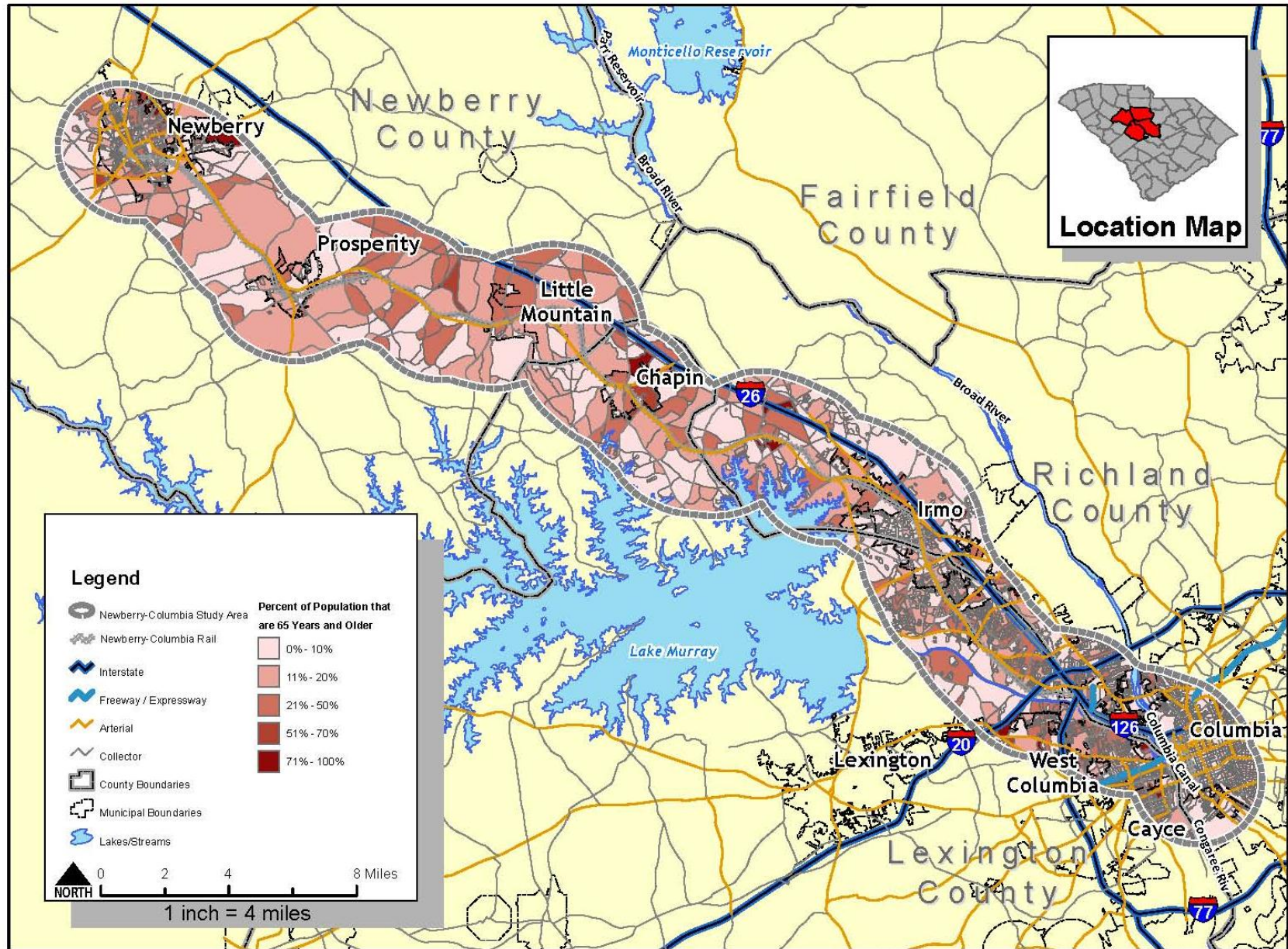
As shown in Table 2-18 and Figure 2-11, the percent of the study corridor population in Newberry and Lexington Counties that is 65 and older is slightly higher than the statewide average. Richland County’s elderly population comprises a comparatively smaller percentage of the total population; this demographic statistic is, similar to the median age, likely reflective of the presence of the University of South Carolina’s campus and Fort Jackson in Richland County. Additionally, with a more rural character, traditional small towns, and proximity to Lake Murray, Newberry and Lexington Counties may be more attractive to retirees. The elderly population within Newberry and Lexington Counties is fairly dispersed, as shown in Figure 2-11.

**Table 2-18 Percent of Population  
within Study Corridor that is 65 Years and Older**

Geography	Percent
<b>Newberry County</b>	15.2%
<b>Lexington County</b>	14.8%
<b>Richland County</b>	8.2%
<b>Study Corridor</b>	12.7%
<b>South Carolina</b>	13.2%

Source: 2006-2010 American Community Survey Five-Year Estimates, URS

Figure 2-11: Existing Elderly Population



**2.6.1.4 Income**

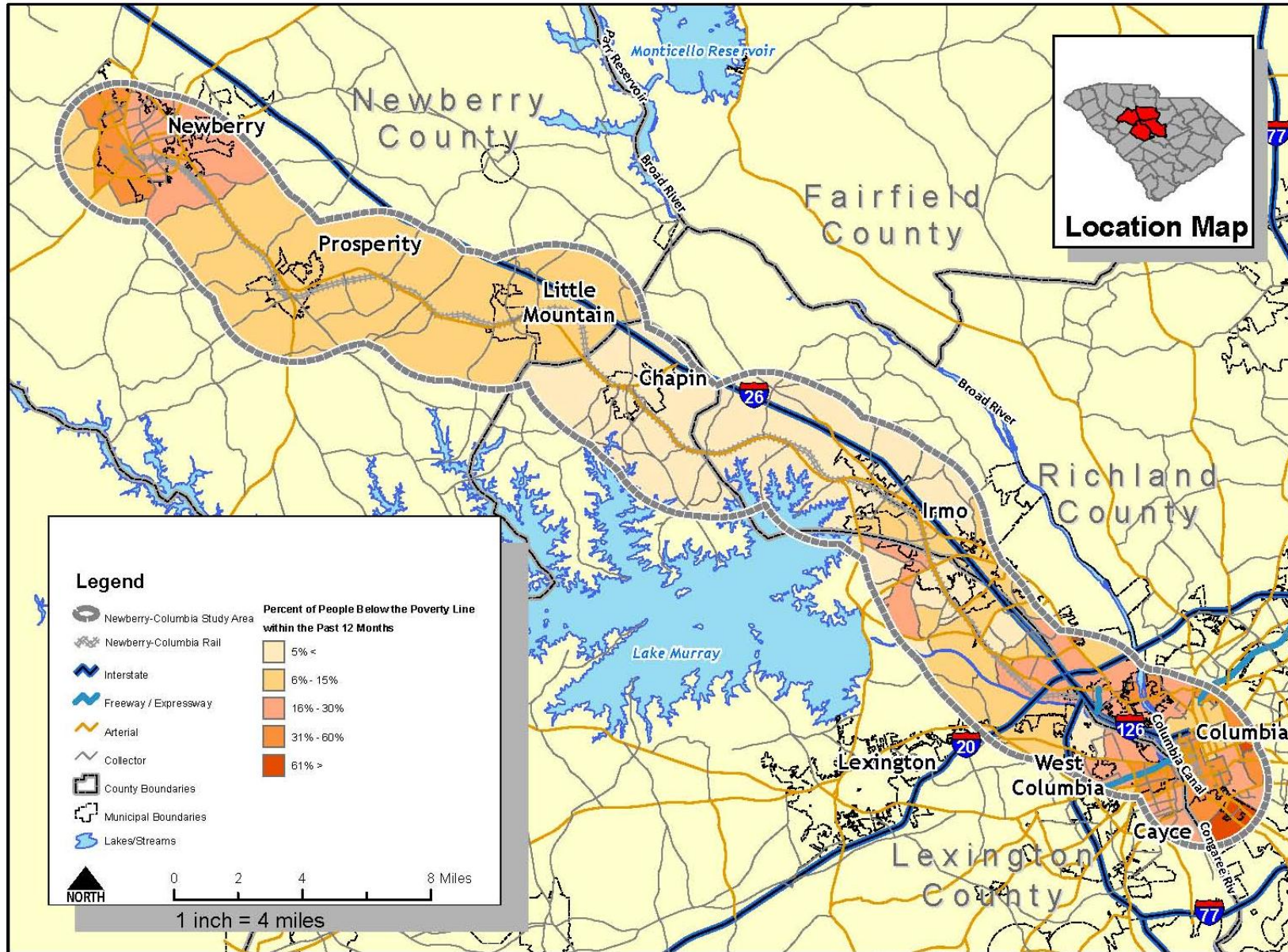
Richland County’s portion of the study corridor has significantly higher rates of people living below the poverty line than other study corridor counties; it is also higher than the statewide average (see Table 2-19 and Figure 2-12). This may be influenced by the presence of University of South Carolina students who report little or no income while pursuing their education. Newberry County’s poverty rates are similar to state averages, while Lexington County is well below both the study corridor and state averages.

**Table 2-19 Percent of People within Study Corridor  
 Below the Poverty Line in the Previous 12 Months**

Geography	Percent
Newberry County	15%
Lexington County	10%
Richland County	27%
Study Corridor	17%
South Carolina	16.4%

*Source: 2006-2010 American Community Survey Five-Year Estimates, URS*

Figure 2-12: Percent of Population Under the Poverty Line





As shown below in Table 2-20, the inflation-adjusted median income for households in most of the study corridor communities has decreased over the past decade. Median household income increased the most in real dollars in Little Mountain (22 percent), while median household income in Prosperity and West Columbia remained flat or increased slightly. The remaining corridor communities experienced reductions in median household income: median household income in Chapin, on average, declined by almost a third (32.4 percent) in the period between 2000 and 2010.

**Table 2-20 Median Household Income and Percentage Change**

Geography	2000 (1999 data)	1999\$ adjusted to 2010\$	2010 (actual)	Percent Change (adjusted 1999\$ to 2010\$ actual)
<b>State of South Carolina</b>	\$37,082	\$48,535	\$43,939	-9.5%
<b>Newberry County</b>	\$32,867	\$43,018	\$41,815	-2.8%
<b>Lexington County</b>	\$44,659	\$58,452	\$52,205	-10.7%
<b>Richland County</b>	\$39,961	\$52,303	\$47,922	-8.4%
<b>City of Cayce</b>	\$35,850	\$46,923	\$40,627	-13.4%
<b>City of Columbia</b>	\$31,141	\$40,759	\$38,272	-6.1%
<b>Town of Chapin</b>	\$48,750	\$63,807	\$43,110	-32.4%
<b>Town of Irmo</b>	\$55,847	\$73,096	\$59,264	-18.9%
<b>Town of Little Mountain</b>	\$34,063	\$44,584	\$54,375	22.0%
<b>City of Newberry</b>	\$27,064	\$35,423	\$29,583	-16.5%
<b>Town of Prosperity</b>	\$30,875	\$40,411	\$40,809	1.0%
<b>City of West Columbia</b>	\$30,999	\$40,573	\$41,847	3.1%

*Source: 2000 US Census Bureau and 2006-2010 American Community Survey Five-Year Estimates; US Department of Labor, Bureau of Labor Statistics; URS*

As shown in Table 2-21, communities at either end of the study corridor have the highest percentage of population that has been identified by the United States Department of Housing and Urban Development (HUD) as low or moderate income. HUD annually calculates these statistics at the Census block group level, and uses them to determine eligibility for federal Community Development Block Grant (CDBG) funding; block groups with more than 51 percent of low to moderate income households are eligible for CDBG funding.

Beyond establishing eligibility for federal CDBG funding, this table provides another dimension for analysis when assessing the economic stability and health of communities. Between FY 2011 and FY 2012, both Lexington and Newberry Counties had fairly significant reductions in their low and moderate income (LMI) populations; Richland County’s LMI population increased slightly. While the median household income has generally declined in real dollars within the corridor over the past decade, there have been some short term reductions in the percent of the population that is considered by HUD to be low- and moderate-income.

**Table 2-21 Percent of Population that is Low and Moderate Income, FY 2011 and 2012**

Geography	Percent of Population that is Low and Moderate Income FY 2011	Percent of Population that is Low and Moderate Income FY 2012	Percent Change 2011-2012
<b>Newberry County</b>	46.8%	41.1%	-12.2%
<b>Lexington County</b>	41.0%	38.0%	-7.3%
<b>Richland County</b>	42.8%	43.0%	+0.5%
<b>City of Cayce</b>	n/a	47.8%	n/a
<b>City of Columbia</b>	n/a	54.3%	n/a
<b>Town of Chapin</b>	n/a	29.9%	n/a
<b>Town of Irmo</b>	n/a	24.0%	n/a
<b>Town of Little</b>	n/a	28.8%	n/a
<b>City of Newberry</b>	n/a	51.3%	n/a
<b>Town of Prosperity</b>	n/a	43.2%	n/a
<b>City of West Columbia</b>	n/a	52.7%	n/a

*Source: US Department of Housing and Economic Development, FY 2011 and FY 2012 estimates*

### 2.6.2 Housing

A diversity of housing stock types (single-family, multi-family, owner, rental), price points, and availability is critical to ensuring that a community’s existing residents can age in place (i.e., transitioning from a young family through empty nesting and into retirement), while also providing enough housing options to attract new residents. This type of housing sustainability is critical to ensuring that a community remains vibrant and dynamic over decades. Housing (i.e., its affordability, availability, physical design and placement) is an important element to consider when evaluating transportation network design and investment. A community and region must not only strategically guide the character of its housing stock, it must also ensure that the existing and future transportation network enables the efficient, multi-modal

movement of residents between their homes and places of work, education, health care, retail outlets, and recreation.

With the exception of the Town of Prosperity, every community within the study corridor saw growth in the number of households between 2000 and 2010 (see Table 2-22). Even the City of Newberry, which lost population between 2000 and 2010, saw a growth in the number of households.

**Table 2-22 Number of Households and Percentage Change, 2000 to 2010**

Geography	2000	2010	Percent Change
<b>State of South Carolina</b>	1,533,854	1,741,994	13.6%
<b>Newberry County</b>	14,026	14,266	1.7%
<b>Lexington County</b>	83,240	100,793	21.1%
<b>Richland County</b>	120,101	141,564	17.9%
<b>City of Cayce</b>	5,133	5,393	5.1%
<b>City of Columbia</b>	42,245	46,574	10.2%
<b>Town of Chapin</b>	249	542	117.7%
<b>Town of Irmo</b>	3,911	4,237	8.3%
<b>Town of Little Mountain</b>	121	131	8.3%
<b>City of Newberry</b>	3,970	4,126	3.9%
<b>Town of Prosperity</b>	415	379	-8.7%
<b>City of West Columbia</b>	5,968	6,509	9.1%

Source: 2000 and 2010 US Census, URS

As seen in Table 2-23, all study corridor communities and counties also saw a growth in the number of housing units between 2000 and 2010. The rate of housing unit change exceeds the rate of household growth in every county and community, with the exception of Little Mountain and Irmo. This indicates that household size has decreased over the past decade, which reflects an aging population and smaller family sizes. Additionally, this may be indicative of the recent recession, which has resulted in a surplus of single-family housing stock combined with an increase in multi-family rental units. This shift may have implications for transportation network demand: smaller households with older residents may place a premium on pedestrian facilities; smaller households of young couples with no children may value high-quality transit service; smaller households of students may seek bicycle amenities.

**Table 2-23 Number of Housing Units and Percentage Change, 2000 and 2010**

Geography	2000	2010	Percent Change
<b>State of South Carolina</b>	1,753,670	2,137,683	21.9%
<b>Newberry County</b>	16,805	17,922	6.6%
<b>Lexington County</b>	90,978	113,957	25.3%
<b>Richland County</b>	129,793	161,725	24.6%
<b>City of Cayce</b>	5,435	5,834	7.3%
<b>City of Columbia</b>	46,050	52,471	13.9%
<b>Town of Chapin</b>	262	658	151.1%
<b>Town of Irmo</b>	4,023	4,595	14.2%
<b>Town of Little Mountain</b>	133	136	2.3%
<b>City of Newberry</b>	4,374	4,521	3.4%
<b>Town of Prosperity</b>	469	519	10.7%
<b>City of West Columbia</b>	6,540	7,665	17.2%

Source: 2000 and 2010 US Census, URS

In addition to housing type, availability of affordable housing is a critical element in supporting a sustainable community. A household that pays more than approximately 30 percent of its gross income on monthly housing costs is considered, by industry standards, to be “housing burdened.” Paying more than 30 percent of income on housing costs can have negative implications on the balance of the household budget by reducing the available amount of money to pay for food, transportation, health care, education, and other necessities. As shown below in Table 2-24, three study corridor communities exceed the statewide average for percentage of households that are housing-burdened: Cayce, Columbia, and Newberry; West Columbia and Chapin are close to the threshold. The households in Little Mountain and Prosperity are the least housing-burdened.

**Table 2-24 Percent of Housing-Burdened Households**

Geography	Percent of Households That Are Housing-Burdened
South Carolina	30.6%
Newberry County	25.9%
Lexington County	27.0%
Richland County	33.8%
City of Cayce	33.0%
City of Columbia	38.8%
Town of Chapin	29.0%
Town of Irmo	27.5%
Town of Little Mountain	11.5%
City of Newberry	37.3%
Town of Prosperity	15.3%
City of West Columbia	30.0%

*Source: 2006-2010 American Community Survey Five-Year Estimates, URS*

## 2.7 Transit Dependent Populations

### 2.7.1 Zero-Vehicle Households

Members of households without access to a car are likely to depend on public transportation to meet their mobility needs. As shown in Table 2-25, the study corridor’s zero-vehicle households are concentrated at either end of the corridor. This statistic generally mirrors trends in median household income: households without cars generally tend to be concentrated in areas with comparatively lower median household income levels. The comparatively dense student population around the University of South Carolina could influence the comparatively high rates of zero-car households in the Columbia and West Columbia area.

While it important to document zero-vehicle households as part of this alternatives analysis, it is equally important to note that the 316 households without a vehicle represent one-tenth of one percent of total households (256,623) in the three county region.

**Table 2-25 Number of Zero-Car Households  
within the Study Corridor**

Geography	Number of Zero-Car Households
Newberry County	21
Lexington County	40
Richland County	255
<b>Study Corridor Total</b>	<b>316</b>

*Source: 2006-2010 American Community Survey Five-Year Estimates, URS*

## 2.8 Additional Contextual Information

Many other planning factors were considered to establish the context and character of the corridor. Although not specifically addressed in this final report, the following areas were investigated, and the associated data can be found in **Appendix A – Existing Conditions Supplement**:

- Land use and development patterns;
- Cultural resources;
- Natural environment concerns;
- Hazardous materials concerns;
- Air quality analysis; and
- Noise and vibration analysis.

### 3.0 Purpose and Need

This purpose and need statement includes a summary of transportation, land use, and development issues and opportunities within the study area. This document builds on the data and information presented in the analysis of the study corridor’s planning context (see Section 2.0).

#### 3.1 Purpose of the Proposed Action

The purpose of the Newberry-Columbia project is to improve safety, mobility, and accessibility, connect communities, enhance the attractiveness of transit service, and energize development potential in the Newberry-Columbia Corridor.

#### 3.2 The Problem Statement

The 40-mile Newberry-Columbia Corridor experiences high travel demand that is predominately confined to the existing roadway network. I-26, I-126, and US 76 all operate at or near capacity during peak hour travel periods. Expansion of the roadway network is limited and demand is expected to increase as commuting patterns, employment trends, and a strong mix of local and regional destinations all contribute to increased levels of traffic volume. The Newberry Express SmartRide peak hour bus service has been well received and demonstrates a desire for an alternative transportation option in the corridor, but, with limited service hours, modest vehicles, and informal park-and-ride facilities that are removed from community centers, ridership has been flat for over a decade. Development is expected to continue, but may be frustrated by transportation challenges in the corridor; the corridor has a local and regional reputation as a problem traffic area.

#### 3.3 Need for the Proposed Action

The need for the project is based on the following factors.

##### 3.3.1 *Travel Demand*

- **Population Growth** – Population in the counties and communities that comprise the study corridor, with the exception of Newberry County, grew in the decade between 2000 and 2010; several areas grew in excess of statewide averages. Population forecasts through 2035 indicate that these historic growth trends are anticipated to continue, as discussed in Section 2.0.

- ***Congestion*** – Currently, seven percent of roadways within the three-county region of Newberry, Lexington, and Richland experience congestion as indicated by level of service (LOS) of D, E, and F (see Table 2-3, Section 2.0). Rates of congestion are slightly higher within the corridor, with eight percent of roadways experiencing LOS D or worse (see Table 2-4, Section 2.0). Congestion is projected to increase by 2035 to 21 percent and 23 percent of roadways for the three-county region and corridor, respectively. As shown in Figure 2-2 within Section 2.0, congested corridors are expected to increase in number. Much of I-26 is projected to be over capacity between Irmo and I-126, increasing the likelihood of peak hour travel delay. Also some of the minor roadways that link to US 76 at Chapin are projected to be over capacity.
  
- ***Existing and Future Commuting Patterns*** – Observable peak hour volumes along I-26, I-126, and US 76, especially between Chapin and downtown Columbia, demonstrate the number of commuters living in the central portion of the corridor and traveling into the eastern portion for employment. Daily, these roads are packed with vehicles coming into Columbia in the morning and heading back out in the afternoon/evening. Table 2-12 as presented within in Section 2.0 shows the commuting patterns within and between the three counties included in the corridor. The majority of trips originates and terminates in Richland County, which is where most major employers are located. Over 40 percent of Lexington commuters travel to Richland County. While very few commuters travel to/from Newberry County today, it is possible that this will change as population increases and more jobs are attracted to, and additional housing stock is added, in Newberry County.
  
- ***Strong Local and Regional Destinations*** – Along the corridor, or within close proximity, are some of the most prominent destinations in the three-county region. Major employers include University of South Carolina, State of South Carolina, Komatsu, Georgia Pacific, and International Paper. Cultural and institutional destinations include EdVenture, Columbia Museum of Art, South Carolina State Museum, State Capitol, Riverbanks Zoo and



Botanical Gardens, Midlands Technical College, Newberry College, and Newberry Opera House. Recreational, entertainment, and shopping venues include Saluda Shoals Park, Harbison State Forest, Lake Murray, Colonial Life Arena, and Columbiana Centre Mall. With this many significant destinations, the corridor will continue to attract additional, synergistic destinations that will only increase travel demand.

- ***Opportunity to Expand Road Network is Limited*** – In more rural areas of the corridor, expansion of major roadways would be feasible from the perspective of having land adjacent to the roadways to accommodate such expansion. However, in more developed areas of the corridor, where buildings and parking lots have been constructed closer to the right-of-way, room for expansion is constrained; this is true in strip commercial areas along St. Andrews Road and Harbison Boulevard and even in smaller communities like Chapin and Prosperity. Additionally, even where property for expansion is available, funding for major roadway widening is limited and highly competitive.

### **3.3.2 Economic Development**

- ***Continued Development Potential*** – The corridor currently has a very strong and dynamic mix of land uses ranging from agricultural to commercial. It can be anticipated that the combination of forecasted population and employment growth, decrease in the average household size, and comparatively low level of construction activity over the past five or more years will result in pent-up demand for new residential construction in the coming decade. As residential construction activity accelerates, it is anticipated that commercial development activity will also begin to recover from recession-induced stagnation. Even with the recent recession, steady growth has been a hallmark of the corridor over the past 20 years; if traffic congestion does not negatively impact this development activity, the area should continue to be attractive to residential, commercial, office, and institutional uses over the next 20 years.

- **Employment Trends** – The area’s existing major employers are concentrated in the insurance, healthcare, and government-related industries. These industries require professional services employees and are part of what is often referred to as the “New Economy” or “Knowledge Industry.” Employees of New Economy businesses tend to be younger, enjoy living in vibrant, dense, urban environments, and are likely to value transit as a regular mode of transportation. While these New Economy businesses are expected to continue to thrive, other areas will grow as well. As discussed in Section 2.0, Lexington County’s employment opportunities are expected to experience the strongest growth reaching an average growth of 65% in the industries listed in Table 2-9. Richland County’s average growth within the same sectors is forecasted to be approximately 20%. Current forecasts estimate that study corridor portions of both Lexington and Richland Counties will experience growth within their employment bases through 2035.
- **Expanded Opportunities** – Currently, very few people who live in Newberry County work in Lexington and Richland Counties and very few who live in Lexington and Richland Counties work in Newberry County. This is not because quality work opportunities and quality workers do not exist in all three counties, but is more attributable to the distance between the counties. Prosperity, Little Mountain, and Newberry would all benefit from enhanced transit as it would allow them to be rediscovered as “bedroom communities” to Columbia; living in these outlying areas while working in Columbia would be a truly viable option for many if an enhanced transit connection existed. In having a strong transportation connection between all three counties, the available pool of workers would be enlarged and the ability of the entire corridor to attract new industry and expand existing businesses would be enhanced.

### 3.3.3 Existing Transit Service Opportunities

- Success of SmartRide** – The Newberry Express SmartRide peak hour bus service between Newberry and Columbia has been well received in the corridor, drawing a loyal customer base. The Newberry Express has accomplished this sustained success with limited service hours, modest vehicles, and informal park-and-ride facilities that are located along I-26, removed from community centers of activity. It is anticipated that enhanced transit service along a corridor that travels directly through communities could build upon the existing customer base, drawing a larger ridership with expanded hours of service, a greater number of destinations, newer technology, and greater convenience. The steady ridership rates over the past several years indicate that, in the absence of increased levels of investment, ridership will likely remain flat into the future.

- The Comet’s New Funding Source** – With the approved one percent sales tax referendum by Richland County voters on November 6, 2012, CMRTA, now The Comet,



is slated to receive over \$300 million in the next 22 years. The sales tax began collecting in May 2013, and The Comet began staffing and service improvements in anticipation of the new funding stream. In 2010 1.9 million riders used CMRTA’s fixed route service. With the new funding realized from the sales tax, The Comet should be able to improve service beyond 2005 levels when ridership was 50 percent higher at 2.7 million. With dedicated, long-term funding for new vehicles, more routes, enhanced amenities, and increased marketing, The Comet should improve the perception and usage of transit in the Columbia region and potentially position itself for growth further into the corridor. Additionally, now that The Comet has secured a dedicated, local funding source, its future is no longer in question and the Newberry-Columbia project can realistically consider the

opportunities presented through connectivity with existing and planned Comet routes.

### 3.3.4 *Land Use Integration*

- ***Growth Corridor*** – Local community planning throughout the corridor, and planning analysis on a regional level, acknowledge the growth potential of the area. Comprehensive plans and regional transportation planning documents focus on sustainable futures with a higher degree of livability, including more transportation choices. Future land use plans anticipate increased growth in the corridor and a logical next step would be to actually “point” growth to the corridor on a regional basis by formally identifying it as a growth corridor. This designation would encourage increased densities that would be more supportive of alternate travel modes, including enhanced transit.
- ***Community Character*** – During initial public participation efforts, local stakeholders have stressed the need to maintain the character of the individual communities along the corridor; this concern has been more pronounced in communities toward the western end of the corridor – Chapin, Prosperity, Little Mountain, and Newberry. Any future transportation improvements and land use developments need to be supportive of the scale and character of growth that is envisioned by local communities.
- ***Multimodal Transportation*** – Many of the corridor’s communities, through their comprehensive plans, promote the need and desire for multimodal transportation solutions. These plans acknowledge that traveling by foot, bike, and transit, as a complement to automobiles, provides a more livable environment. Additionally, most of the comprehensive plans make the connection between land use patterns and transportation and espouse more compact, denser development that will better support and encourage a multimodal transportation network.

### 3.4 Goals and Objectives

Based on the Purpose and Need for Newberry-Columbia Alternatives Analysis, the following goals and objectives have been developed:

- **Enhance Transportation Performance**
  - Reduce congestion
  - Provide acceptable traffic operations
  - Support multimodal transportation choices
  - Improve safety for all modes
  - Make the most efficient use of the transportation network's limited capacity
- **Connect Communities**
  - Connect suburban and rural communities to urban cores
  - Enhance connectivity within and to the regional transportation network
  - Improve connections between corridor activity centers, destinations, and transportation alternatives
- **Increase the Attractiveness of Transit**
  - Establish transit as a viable and attractive alternative to automobile travel
  - Maximize transit ridership
  - Improve visibility and understanding of transit options
  - Increase the convenience and reliability of transit service
  - Connect transit to community activity centers
- **Support and Energize Economic Development**
  - Provide transportation options and intermodal connectivity that help retain/expand existing businesses and attract new industry, resulting in new jobs
  - Support the transportation needs for growth of cultural economic development (i.e., entertainment, tourism, and recreational attractions)
  - Enlarge the available pool of workers by improving transportation mobility between housing and employment and education destinations
  - Provide convenience and choices to help individual travelers reduce their transportation costs

- **Sustain the Natural, Social, and Built Environments**
  - Minimize property acquisition
  - Minimize impacts to environmental resources, such as historic structures, parks, open space, and wetlands.
  - Enhance the vitality and character of existing neighborhoods and communities
  - Support improved transportation, housing, and economic opportunities for all persons regardless of economic, physical, or social characteristics
  - Improve air quality through reductions in idling times and vehicle miles traveled
  
- **Craft Implementable Solutions with Community Ownership**
  - Define solutions with strong public, stakeholder, and agency support and buy-in
  - Identify solutions that are financially feasible and competitive
  - Develop solutions that allow for phased implementation

### 3.5 Evaluation Criteria

Following are the evaluation criteria for the Fatal Flaw Analysis. Table 3-1 demonstrates the relationship between the goals of the project and the evaluation criteria.

- Increased access and mobility provided
- Probable right-of-way acquisition
- Potential environmental impacts
- Economic development
- Consistency with local and regional plans
- Capital costs
- Community support

In addition to providing alternatives that are responsive to local context and need, the screening process is designed to perform well against the federal evaluation criteria for New Starts projects. The evaluation criteria listed above for the Fatal Flaw Analysis have been developed to provide a high level of compatibility with the FTA New Starts criteria. Table 3-2 provides a direct comparison between the two sets of criteria.

**Table 3-1: Project Goals/Evaluation Criteria Matrix**

Evaluation Criteria	Project Goals					
	<i>Enhance Transportation Performance</i>	<i>Connect Communities</i>	<i>Increase Attractiveness of Transit</i>	<i>Support and Energize Economic Development</i>	<i>Sustain the Natural, Social, and Built Environments</i>	<i>Craft Implementable Solutions with Community Ownership</i>
<i>Increased access and mobility</i>	X	X	X	X	X	X
<i>Probable right-of-way acquisition</i>				X	X	X
<i>Potential environmental impacts</i>					X	X
<i>Economic development</i>		X	X	X		X
<i>Consistency with local and regional plans</i>	X	X	X	X	X	X
<i>Capital costs</i>						X
<i>Community support</i>	X	X	X	X	X	X



**Table 3-2: FTA New Starts Criteria/Evaluation Criteria Matrix**

Evaluation Criteria	FTA New Starts Project Criteria					
	Mobility Improvements	Environmental Benefits	Cost Effectiveness	Operating Efficiencies	Transit Supportive Land Use & Future Patterns	Other (includes economic impact)
Increased access and mobility	X			X	X	X
Probable right-of-way acquisition			X		X	X
Potential environmental impacts		X	X		X	X
Economic development					X	X
Consistency with local and regional plans	X	X			X	X
Capital costs			X		X	
Community support	X	X	X	X	X	X

## 4.0 Fatal Flaw Analysis

### 4.1 Alternative Development and Evaluation Process

A phased, three-step screening process that facilitates a comprehensive assessment of all potential alternatives was developed for the Newberry-Columbia Alternatives Analysis.

- **Phase 1** of the project includes the initial screening of alternatives, or the Fatal Flaw Analysis. During the Fatal Flaw Analysis, which this section summarizes, a series of conceptual alternatives was identified and evaluated against a series of pre-determined criteria to assess their ability to meet the project purpose and need.

The Fatal Flaw Analysis identifies alternatives that would be difficult or improbable to finance, construct, or operate efficiently. The goal of the Fatal Flaw Analysis is to limit the number of alternatives carried through to the subsequent, more detailed stages of evaluation.

- Any alternatives that emerge from the Fatal Flaw Analysis will be subject to increasing levels of detailed definition and evaluation in the Screen 2 (Initial Detailed Evaluation) and Screen 3 (Final Detailed Evaluation) analyses. The Screen 2 and Screen 3 analyses may be completed during a subsequent phase of the Newberry-Columbia Alternatives Analysis, and development of evaluation criteria for each will occur at that time.

The Fatal Flaw Analysis was structured to efficiently identify the alternatives that do not meet the project purpose and need or goals and objectives, and to remove them from further consideration in future phases of the project. This initial level of screening focuses on two areas:

- Transit modes
- Alignments

This initial screening is intended to rely on readily available information and focus on high-level, qualitative assessment of modal and alignment options as a means to evaluate a comparatively large number of alternatives. In cases where there is not sufficient information to dismiss modes or alignments from further consideration, those options were recommended for continuation into a subsequent phase of the project.

A series of evaluation criteria were developed to assess each alternative's ability to meet the stated project purpose and need, and its ability to ultimately be competitive for federal funding. Each of the modal and alignment options were evaluated against the criteria and

rated as “best,” “good,” “fair,” or “poor;” the modal and alignment options were rated in relation to each other.

In some cases, several sub-criteria supported a mode or alignment option’s “overall assessment” against an evaluation criterion. Sub-criteria are sometimes a mix of the “poor” to “best” ranking system in combination with other qualitative or quantitative characteristics; in these cases, the sub-criteria were aggregated and the mode or alignment option was assigned an “overall assessment” on the “poor” to “best” scale.

## 4.2 Transit Modes

Transit service can be provided through a variety of modes, including bus, bus rapid transit, streetcar, light rail, heavy rail, and commuter rail. The first step of the Fatal Flaw Analysis was to identify and screen out the transit modes that would be difficult or improbable to finance, construct, or operate efficiently. This screening was guided by an evaluation of a broad range of transit modes against the criteria listed in Table 4-1. These criteria were developed to identify the mode alternatives that are most likely to meet the project’s stated purpose and need.

**Table 4-1: Initial Screening Criteria - Transit Modes**

Criteria	Screening Output	Data Sources and References
<b>Increased access and mobility</b>	Qualitative evaluation of the ability for the mode to provide access to the community	Qualitative assessment based on: - typical stop spacing for mode's ability to meet existing travel market  - typical stop spacing compared to the location of special trip generators
<b>Transit capacity</b>	Qualitative evaluation of mode's ability to efficiently accommodate existing transit ridership in the corridor	Quantitative evaluation of existing transit ridership in the corridor, compared with typical transit capacity of mode
<b>Economic development</b>	Qualitative evaluation of the mode's ability to catalyze and support economic development within the study corridor	Qualitative assessment based on demonstrated ability of modes to catalyze economic development in communities across the country
<b>Capital costs</b>	Quantitative analysis of per-mile capital costs that are typical of each mode	Based on average per-mile capital costs of similar projects recently constructed around the country
<b>Consistency with local and regional plans</b>	Qualitative evaluation of mode's compatibility with local and regional plans	Qualitative assessment of how each mode fits in with local and regional planning efforts
<b>Community support</b>	Qualitative evaluation of mode compatibility from stakeholder interviews, public open houses, online surveys, meetings, and outreach activities	Qualitative assessment of the applicability of the mode based on public involvement activities to date

The modes under consideration in this Fatal Flaw Analysis were:

- Conventional bus
- Bus rapid transit (BRT) in mixed traffic
- BRT in dedicated right-of-way
- Modern streetcar
- Light rail
- Heavy rail
- Commuter rail

The typical characteristics of each of these modes are discussed in **Appendix B – Technology and Peer City Review**.

#### ***4.2.1 Increased Access and Mobility***

##### ***4.2.1.1 Screening Methodology***

The Newberry-Columbia corridor is approximately 40 miles long, which is a comparatively long corridor to connect using transit system investment. An analysis of major employers and special trip generators (cultural facilities, educational and historic institutions, recreational attractions) shows that these destinations tend to be clustered in either Newberry or Columbia, and are often within walking distance of each other (or through short trips on local transit in Columbia). These destinations are, however, concentrated on either end of the corridor. Each of the modes under consideration have unique operating characteristics: some are designed to minimize travel time over long distances through service to comparatively fewer stops, while some are designed to accommodate shorter-distance trips to a greater number of stops with a reduced priority on travel time improvements.

This qualitative analysis was designed to identify the modes whose operating characteristics support a balanced approach to achieving maximum access to key destinations within a 40-mile corridor at a travel time that will not be a disincentive to transit use.

##### ***4.2.1.2 Data Sources and References***

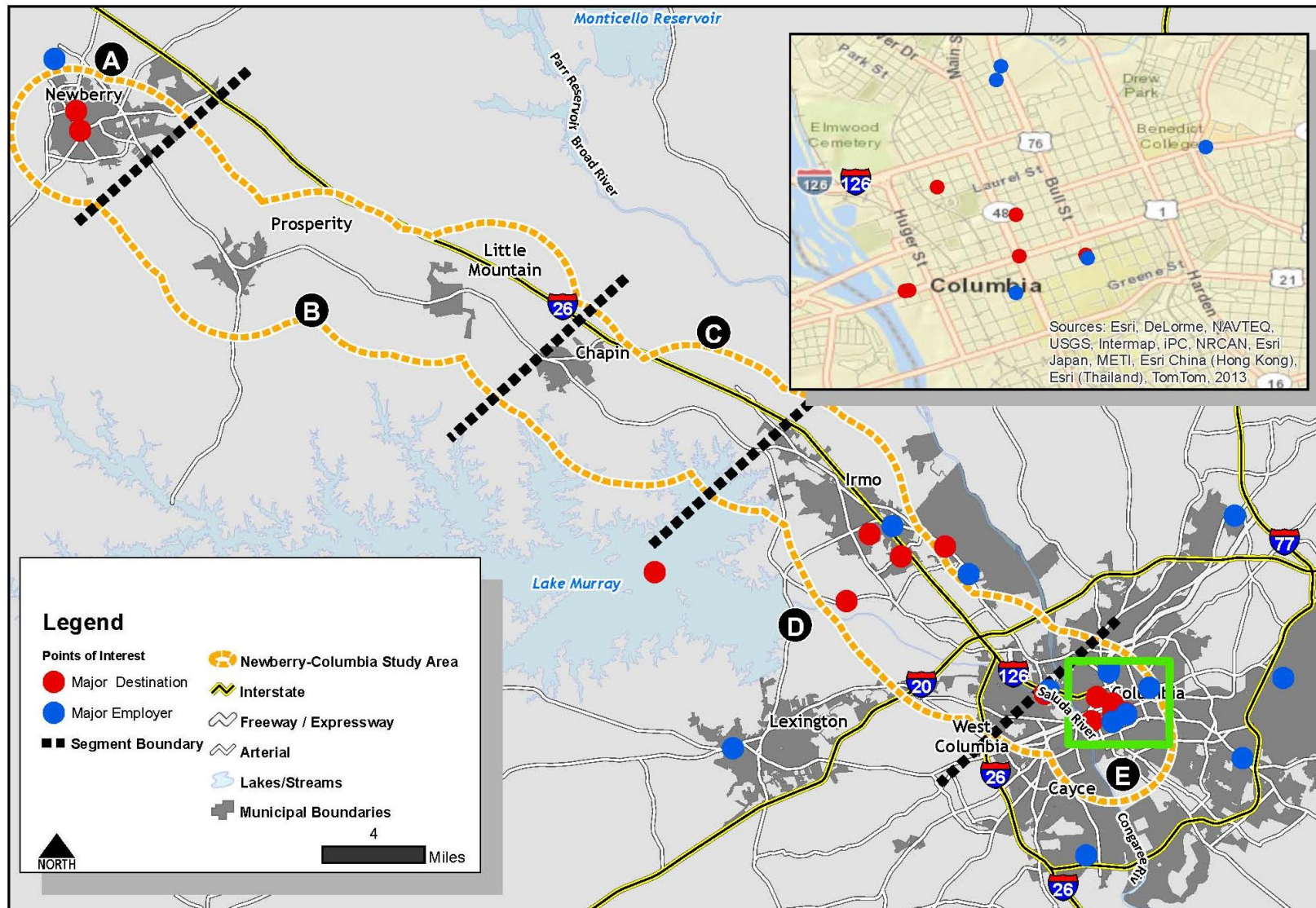
The locations of the region's top employers and major special trip generators were identified in Section 2.0 and are shown in Figure 4-1.

### 4.2.1.3 Screening Results

**Table 4-2: Screening Results: Increased Access and Mobility**

Mode Alternative	Typical Corridor Length	Typical Stop Spacing	Typical Stop Spacing Compared to Location of Special Trip Generators	Typical Stop Spacing Compared to Location of Major Regional Employers	Overall Assessment
<b>Conventional Bus</b>	Varies	1/8 to 3/8 mile	Fair	Fair	Poor
<b>BRT in Mixed Traffic</b>	5 to 20 miles	1/4 to 1/2 mile	Good	Fair	Fair
<b>BRT in Dedicated Right-of-Way</b>	5 to 20 miles	1/2 to 1 mile	Good	Good	Good
<b>Modern Streetcar</b>	2 to 5 miles	1/4 to 1/2 mile	Fair	Fair	Poor
<b>Light Rail</b>	10 to 20 miles	1 mile	Good	Good	Fair
<b>Heavy Rail</b>	5 to 20 miles	1 to 2 miles	Fair	Fair	Fair
<b>Commuter Rail</b>	20 to 100 miles	2 to 5 miles	Fair	Fair	Good

Figure 4-1: Distribution of Major Employers and Destinations



Path: K:\Johnson Research\Projects\Johnson Research\105 Vincennes\Eligibility figures\31 Points of Interest.mxd

Source:CMCOG, COATS, Richland County, Lexington County, and Newberry County

## **4.2.2 Transit Capacity**

### **4.2.2.1 Screening Methodology**

It is anticipated that the introduction of new transit service would increase transit mode share within the corridor. In advance of detailed ridership forecasting that will happen in future phases of this project, this analysis compares ridership on existing fixed route transit service within the corridor (SmartRide and The Comet) to the typical average weekday ridership of the modes under evaluation.

While it is important that a mode is capable of accommodating existing transit ridership and anticipated growth in ridership that will be generated by new service, it is also important that ridership be matched to the typical capacity of the mode. In other words, it is desirable to identify the modes that meet estimated ridership demand without an excess of capacity (which results in higher operating and maintenance costs).

### **4.2.2.2 Data Sources and References**

Ridership for existing transit service within the study corridor was drawn from data provided by the South Carolina Department of Transportation (SmartRide) and the Central Midlands Regional Transit Authority (The Comet). Average weekday ridership for the modes under consideration was drawn from the experiences of transit agencies across the country.



### 4.2.2.3 Screening Results

**Table 4-3: Screening Results: Transit Capacity**

Existing Study Corridor Transit Service	Mode Alternative	Number of Riders per Average Weekday	Overall Assessment
CMRTA (The Comet)*	--	6,389	--
SmartRide Newberry Express*	--	54	--
	Conventional Bus	500 to 20,000	Good
	BRT in Mixed Traffic	500 to 20,000	Good
	BRT in Dedicated Right-of-Way	7,000 to 50,000	Good
	Modern Streetcar	500 to 20,000	Good
	Light Rail	7,000 to 50,000	Good
	Heavy Rail	30,000 to 325,000	Poor
	Commuter Rail	10,000 to 20,000	Fair

\* October 2011 (SmartRide) and average monthly 2011 (CMRTA) ridership data

## 4.2.3 Economic Development

### 4.2.3.1 Screening Methodology

Each of the mode's under consideration for the Newberry-Columbia corridor have been previously constructed and operated in communities around the country. Based on case study research, the demonstrated ability of each of the modes under consideration to generate economic development activity is shown below in Table 4-4.

Table 4-4 also shows the development context in which these modes have been most successful in supporting economic development; examples include the HealthLine BRT in Cleveland, the MAX mixed-traffic BRT in Kansas City, the Portland Streetcar, Dallas' DART light rail system, the El in Chicago, and the MBTA commuter rail in Boston. These example systems have been successful in generating economic development activity because the transit mode and its service characteristics match the land use and development market it serves (e.g.,

implementing a streetcar in a rural area will not result in development outcomes that rival Portland’s Pearl District).

The overall economic development assessment compares each mode’s typical development context with the existing and projected development context of the Newberry-Columbia corridor.

#### 4.2.3.2 Data Sources and References

This analysis relied on case study research of each mode’s demonstrated ability to catalyze economic development in communities around the country.

#### 4.2.3.3 Screening Results

**Table 4-4: Screening Results: Economic Development**

Mode Alternative	Demonstrated Modal Impacts on Development	Typical Development Context	Overall Assessment
Conventional Bus	Poor	Suburban; urban	Poor
BRT in Mixed Traffic	Fair	Suburban; urban	Fair
BRT in Dedicated Right-of-Way	Good	Suburban; urban	Good
Modern Streetcar	Best	Densest urban	Poor
Light Rail	Good	Suburban; urban	Fair
Heavy Rail	Best	Densest urban	Poor
Commuter rail	Fair	Suburban; urban	Fair

#### 4.2.4 Capital Costs

##### 4.2.4.1 Screening Methodology

The typical capital costs of the modes under evaluation vary significantly. A qualitative assessment of the financial viability of implementing each of the transit modes was based on typical per-mile capital costs.

#### 4.2.4.2 Data Sources and References

Typical capital costs per mile were sourced from a sampling of current transit capital projects that are included in the FY 2013 Annual Report of Funding Recommendations for the FTA’s New/Small Starts Program. Three projects per mode were selected; the range of capital costs shown in Table 4-5 reflects the range of costs reported by the three example projects per mode. The capital costs shown for conventional bus are drawn from professional experience. The broad range of costs demonstrates the variability that can result from design, engineering and construction decisions. This range does, however, still enable a high-level qualitative analysis of which modes are not considered to be financially viable within the context of the Newberry-Columbia corridor project.

#### 4.2.4.3 Screening Results

**Table 4-5: Screening Results: Capital Costs**

Mode Alternative	Typical Capital Cost per Mile	Overall Assessment
Conventional Bus	< \$1 million	Good
BRT in Mixed Traffic	\$1 to \$6 million	Good
BRT in Dedicated Right-of-Way	\$10 to \$65 million	Fair
Modern Streetcar	\$40 to \$60 million	Poor
Light Rail	\$65 to \$130 million	Poor
Heavy Rail	\$250 million to \$2 billion	Poor
Commuter rail	\$10 million to \$70 million	Fair

#### 4.2.5 Consistency with Local and Regional Plans

##### 4.2.5.1 Screening Methodology

A qualitative evaluation of each mode’s compatibility with local and regional plans was conducted.

#### 4.2.5.2 Data Sources and References

The Newberry-Columbia corridor has been part of an ongoing regional analysis to consider implementing high-capacity transit. The initial screening included a review of existing local and regional plans. Specifically, this screening used the following documents as references:

- *Central Midlands Regional Rail Study*, Central Midlands Council of Governments, June 2000
- *Columbia Area Transportation Study*, Transportation Improvement Program, 2009-2015
- *Broad River Road Corridor and Community Master Plan*, Central Midlands Council of Governments and Richland County, South Carolina
- *Central Midlands Commuter Rail Feasibility Study*, Final Report, Central Midlands Council of Governments, July 2006
- *S-48 Columbia Avenue Corridor Study*, Central Midlands Council of Governments, August 2006
- *Columbia Area Congestion Management Process*, Final Report, Central Midlands Council of Governments, October 2008
- *Central Midlands Regional Transportation Authority (CMRTA), Transforming Our Transit System*, Final Report, January 2010
- *Irmo/Dutch Fork Sub-Area Transportation Study*, Central Midlands Council of Governments, June 2010
- *Camden to Columbia Alternatives Analysis*, Central Midlands Council of Governments, July 2011
- *Chapin Comprehensive Plan*, Town of Chapin, September 2011
- *City of Newberry Comprehensive Plan 2010 – 2020*, City of Newberry, July 2010
- *Newberry County Comprehensive Plan Draft 7-2-10*, Newberry County, draft July 2010
- *Lexington County Comprehensive Plan*, Lexington County
- *Richland County Comprehensive Plan*, Richland County, December 2009
- *Town of Irmo Comprehensive Plan*, Town of Irmo, April 2009
- *The Columbia Plan: 2018 and the 2009 Annual Update*, City of Columbia, 2009

### 4.2.5.3 Screening Results

**Table 4-6: Screening Results: Consistency with Local and Regional Plans**

Mode Alternative	Evaluation	Overall Assessment
<b>Conventional Bus</b>	Several plans recommend expanding and improving existing bus service as well as implementing new express service. The <i>Irmo/Dutch Fork Sub-Area Transportation Study</i> recommends express buses between Irmo and downtown Columbia. The <i>Richland County Comprehensive Plan</i> recommends the expansion of express buses. Other reports generally mention the support for more public transit including: <i>S-48 Columbia Avenue Corridor Study</i> ; <i>The Broad River Road Corridor and Community Master Plan</i> ; Central Midlands Regional Transportation Authority, <i>Transforming Our Transit System, Final Report</i> , and <i>The Columbia Plan: 2018</i>	Best
<b>BRT in Mixed Traffic</b>	Several plans recommend or consider bus rapid transit or an enhanced bus service: <ul style="list-style-type: none"> <li>• <i>Chapin Comprehensive Plan</i></li> <li>• <i>Camden to Columbia Alternatives Analysis</i>,</li> <li>• <i>Central Midlands Commuter Rail Feasibility Study, Final Report</i></li> </ul>	Good
<b>BRT in Dedicated Right-of-Way</b>	The following plan considers bus rapid transit in a dedicated right-of-way: <ul style="list-style-type: none"> <li>• <i>Camden to Columbia Alternatives Analysis</i></li> </ul>	Good
<b>Modern Streetcar</b>	None of the local or regional plans recommend modern streetcar for the Newberry-Columbia corridor	Poor
<b>Light Rail</b>	None of the local or regional plans recommend Light Rail Transit for the Newberry-Columbia corridor	Poor
<b>Heavy Rail</b>	None of the local or regional plans recommend heavy rail for the Newberry-Columbia corridor	Poor
<b>Commuter rail</b>	The Newberry-Columbia corridor has been considered for commuter rail in several regional studies including: <i>Central Midlands Regional Rail Study</i> ; <i>Central Midlands Commuter Rail Feasibility Study, Final Report</i> ; <i>Camden to Columbia Alternatives Analysis</i> ; <i>Chapin Comprehensive Plan</i> ; <i>City of Newberry Comprehensive Plan, Newberry County Comprehensive Plan</i> , and <i>The Columbia Plan: 2018</i>	Good

## **4.2.6 Community Support**

### **4.2.6.1 Screening Methodology**

In addition to technical analyses, community input is a critical element in defining and evaluating transit alternatives. Even if an alternative is technically sound and financially feasible, but does not meet the transportation needs and preferences of potential riders, it will not attract users and will not ultimately be a successful investment. In order to attract users and be successful, the Locally Preferred Alternative must reflect the priorities of the study corridor transportation network users, as expressed through community outreach activities.

### **4.2.6.2 Data Sources and References**

One set of public meetings was held in February 2012, 14 stakeholder interviews were conducted between April and June 2012, an online survey was available via the project website, and final public meetings were held in January 2014. Each of these outreach activities were undertaken to garner input into project purpose and need, as well as to get initial feedback about conceptual alternatives and alignments.

The Project Steering Committee has provided valuable input throughout the study period, including local knowledge of the transportation context within the region and expectations for future transit and traffic improvements to promote the goals of the project. During a committee meeting in February 2013, the Steering Committee participated in several interactive exercises designed to collect feedback to influence the findings and recommendations of the Alternatives Analysis. The exercises were designed to determine the priorities of potential connections among communities as well as evaluate the participants' perceptions of how various transit modes meet the goals of the project. The outcomes of the exercises are summarized in Table 4-7 and Table 4-8.

During the Critical Connections exercise, each participant was given an equal number of dots, with instructions to denote the links between communities that are most important within the corridor. As shown in Table 4-7, the connections between Chapin, Newberry, and Irmo to Columbia received the highest priorities. It should be noted that the connections amongst the smaller communities in the middle of the corridor (Prosperity, Little Mountain, and Chapin) received very little weight. These two findings support an expectation within the Steering Committee that ridership will reflect employment patterns more than other factors.

During the Corridor Potential exercise, each participant was provided six red, yellow, and green dots with instructions to rate each potential corridor (i.e., I-26/I-126, US 76/176, and the CSX right-of-way) as to its potential to achieve the six project goals. Red dots indicated low

potential; yellow dots medium potential, and, green dots high potential to achieve each goal. As shown in Table 4-8, the I-26/I-126 corridor rated the lowest among the participants in achieving the goals of the project, while the CSX right-of-way appears to hold the most merit.

**Table 4-7: Critical Connection Exercise Summary**

Origin	Destination							
	Newberry	Prosperity	Little Mountain	Chapin	Irmo	Harbison	St. Andrews	Columbia
Newberry		2	1	2	2	5	0	7
Prosperity	2		0	0	0	0	0	2
Little Mountain	1	0		0	0	0	0	2
Chapin	4	0	0		1	3	1	9
Irmo	1	0	0	0		1	0	7
Harbison	2	0	0	2	0		1	4
St. Andrews	0	0	0	1	0	0		5
Columbia	5	0	0	5	3	2	1	

**Table 4-8: Corridor Potential Exercise Summary**

Potential Corridor	Project Goals					
	Enhance Transportation Performance	Connect Communities	Increase Attractiveness of Transit	Support and Energize Economic Development	Sustain the Natural, Social, and Built Environments	Craft Implementable Solutions with Community Ownership
1-26/I-126	●● ●●●●	●●●●●●	●●●● ●●	●●●● ●●●	●●●●●● ●	●●●●●● ●●
US 76/176	●●●●● ● ●	●●●●● ●●●	●●●●●	●● ●●●●●	● ●●●● ●●●	●●● ●●●
CSX Right-of-Way	● ●●●●●	●●● ●●●●●	●● ●●●●●	●●● ●●● ●●	●●● ●●●●	● ●● ●●●

#### 4.2.6.3 Screening Results

**Table 4-9: Screening Results: Community Support**

Mode Alternative	Evaluation	Overall Assessment
<b>Conventional Bus</b>	No specific community support expressed	Poor
<b>BRT in Mixed Traffic</b>	Very limited community support expressed	Fair
<b>BRT in Dedicated Right-of-Way</b>	Very limited community support expressed	Fair
<b>Modern Streetcar</b>	No specific community support expressed	Poor
<b>Light Rail</b>	No specific community support expressed	Poor
<b>Heavy Rail</b>	No specific community support expressed	Poor
<b>Commuter rail</b>	Strong community support expressed in stakeholder interviews and through online survey	Best

#### 4.2.7 Summary of Initial Screening: Modes

Table 4-10 summarizes the results of the initial screening of modes. Modes with three or more “poor” ratings have been removed from further definition and evaluation in subsequent phases of the study. Therefore, BRT in mixed traffic, BRT in dedicated right-of-way, and commuter rail are recommended for more detailed definition and evaluation in subsequent project phases.



**Table 4-10: Summary Results of the Initial Screening of Modes**

Mode Alternative	Increased Access and Mobility	Transit Capacity	Economic Development	Capital Costs	Consistency with Local and Regional Plans	Community Support
Conventional Bus	Poor	Good	Poor	Good	Best	Poor
BRT in Mixed Traffic	Fair	Good	Fair	Good	Good	Fair
BRT in Dedicated Right-of-Way	Good	Good	Good	Fair	Good	Fair
Modern Streetcar	Poor	Good	Poor	Poor	Poor	Poor
Light Rail	Fair	Good	Fair	Poor	Poor	Poor
Heavy Rail	Fair	Poor	Poor	Poor	Poor	Poor
Commuter Rail	Good	Fair	Fair	Fair	Good	Best

**Table 4-11: Modes for Detailed Definition and Evaluation of Alternatives**

Mode Alternative	Overall Assessment	Modes for Detailed Definition and Evaluation of Alternatives
Conventional Bus	Fail	--
BRT in Mixed Traffic	Pass	BRT in Mixed Traffic
BRT in Dedicated Right-of-Way	Pass	BRT in Dedicated Right-of-Way
Modern Streetcar	Fail	--
Light Rail	Fail	--
Heavy Rail	Fail	--
Commuter Rail	Pass	Commuter Rail

### 4.3 Alignments

The second step of the Fatal Flaw Analysis was to evaluate a variety of alignments within the study corridor. This evaluation was undertaken following the completion of the mode evaluation previously described. The three alignments under consideration during this screening were:

- US 76/176 between Newberry and Columbia;
- The existing CSX rail right-of-way between Newberry and Columbia; and
- I-26/I-126 between Newberry and Columbia.

While sections of the US 76/176 and I-26/I-126 alignments briefly extend outside of the study corridor for this project, the entirety of these alignments were included in this analysis for purposes of consistency.

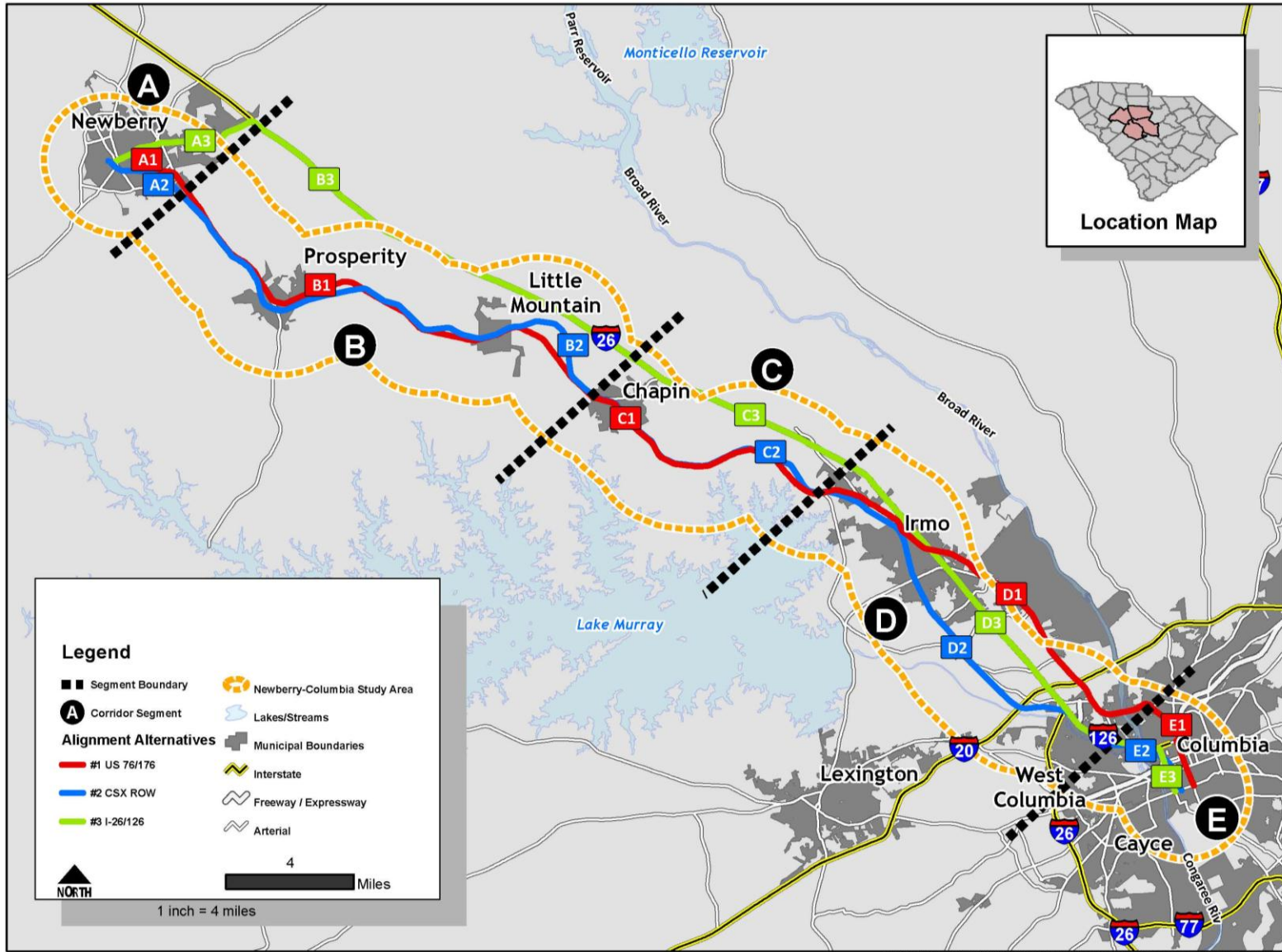
The study corridor was divided into five segments in order to:

- Reflect the diversity of land uses, development patterns, and activity centers within the corridor; and
- Provide a consistent geographical framework to document how each of the alignments would interact within the variety of environments found throughout the study corridor.

The segmentation of the study corridor is shown in Figure 4-2; the boundaries of the segments are listed below.

- **Segment A:** Western edge of the study corridor boundary to the eastern municipal boundary of Newberry
- **Segment B:** Eastern municipal boundary of Newberry to St. Peters Church Road
- **Segment C:** St. Peters Church Road to Bickley Road
- **Segment D:** Bickley Road to Greystone Boulevard
- **Segment E:** Greystone Boulevard to the eastern edge of the study corridor boundary

Figure 4-2: Newberry-Columbia Study Corridor Segments



Source:CMCOG, COATS, Richland County, Lexington County, and Newberry County

The three alignments were evaluated against a series of four criteria, as shown in Table 4-12. Consistent with the criteria used in the mode evaluation, these criteria are designed to help identify the alignments that best meet the project’s purpose and need, as well as those alignments that would be difficult or improbable to finance, construct, or operate efficiently.

**Table 4-12: Initial Screening Criteria - Transit Alignments**

Criteria	Screening Output	Data Sources and References
<b>Probable right-of-way acquisition</b>	Qualitative evaluation of ability to accommodate modes within the existing right-of-way alignment	Based on typical cross section for modes and an assessment of the available right-of-way along the corridor
<b>Traffic impacts</b>	Qualitative assessment of vehicular and rail impacts of alternative mode operations within an alignment	Qualitative assessment based on existing roadway level-of-service and rail traffic activity
<b>Potential environmental impacts</b>	Qualitative assessment of potential environmental impacts of transit service within the alignments	Qualitative assessment based on anticipated construction activity and transit operations impacts along the alignments
<b>Community support</b>	Qualitative evaluation of the compatibility of the alignment from stakeholder interviews, public open houses, online surveys, meetings, and outreach activities	Qualitative assessment of the applicability of the alignment based on public involvement activities to date

### **4.3.1 Probable Right-of-Way Acquisition**

#### **4.3.1.1 Screening Methodology**

The potential right-of-way impacts of each of the modes under consideration are presented in Table 4-13; the modes that could potentially operate within each of the alignments are presented in Table 4-14. This screening was based on an analysis of typical mode operating characteristics applied to the physical context of the Newberry-Columbia corridor.

**Table 4-13: Typical Right-of-Way Requirements by Mode**

Mode Alternative	Potential Right-of-Way Impacts
<b>BRT in Mixed Traffic</b>	Operates in mixed traffic with stations located either on median platforms or integrated with sidewalks. On-street parking would likely be prohibited at station locations.
<b>BRT in Dedicated Right-of-Way</b>	Operates in a dedicated right-of-way; if at grade, it would require two transit-dedicated travel lanes, which would reduce the number of general traffic lanes. Where less than 80 feet of right-of-way is available, existing general traffic lanes and/or on-street parking may need to be removed.
<b>Commuter rail</b>	Operates in a dedicated right-of-way (typically a freight rail corridor). Coordination with the host railroad to establish available capacity, need for infrastructure upgrades, and the provision of passenger rail facilities must be undertaken, particularly when considering an active freight corridor.

**Table 4-14: Potential Modes within Alignment/Segment Alternatives**

Alignment/ Segment Alternative	BRT in Mixed Traffic	BRT in Dedicated Right-of-Way	Commuter Rail
(1) US 76/176	✓	✓	
(2) CSX Right-of-Way			✓
(3) I-26/I-126	✓	✓	

#### 4.3.1.2 Data Sources and References

The right-of-way impacts summarized in Table 4-13 are based on engineering requirements and the experience of communities across the country in designing and constructing the modes under consideration. Table 4-14 shows which of the remaining modes under consideration could potentially operate in each of the alignments under consideration. The analysis presented in Table 4-15 is the result of a desktop right-of-way review of the alignments and segments under consideration.

### 4.3.1.3 Screening Results

**Table 4-15: Screening Results: Probable Right-of-Way Acquisition**

Alignment/ Segment Alternative	Probable Right-of-Way Acquisition	Overall Assessment
<b>A1</b>	Within this segment, US 76 includes four lanes of general traffic and one turning lane/median. It is likely that mixed-traffic BRT could operate within the existing right-of-way; BRT in a dedicated right-of-way would require the removal of an existing parking/traffic lane or substantial land acquisition. Depending on the preferred mode and subsequent design decisions, the construction of passenger facilities (stops, parking facilities) may also require land acquisition.	<p><b>Dedicated Right-of-Way:</b> Poor</p> <p><b>Mixed Traffic:</b> Good</p>
<b>A2</b>	The existing CSX rail facility within this segment is single-track with passing sidings and four at-grade crossings. The introduction of passenger rail service in this segment would require the construction of passenger amenities (terminal station in downtown Newberry and parking facilities), as well as a layover facility for light vehicle cleaning and temporary storage.	Good
<b>A3</b>	This alignment will likely include the use of Main Street as the connection between downtown Newberry and I-26. This roadway includes two lanes of general traffic and one lane of on-street parking in the downtown area, and expands to four lanes with a median/turning lane east of Kinard Street. It is likely that right-of-way acquisition will be required west of Kinard Street to support dedicated right-of-way transit operations, parking lots, and passenger and support facilities.	<p><b>Dedicated Right-of-Way:</b> Fair</p> <p><b>Mixed Traffic:</b> Good</p>
<b>B1</b>	US 76 continues to include four lanes of general traffic and one turning/median lane until just south of State Road S-36-516, where it becomes a two-lane general traffic roadway. BRT in a dedicated lane/right-of-way would require substantial right-of-way acquisition. All modes would likely require land acquisition for passenger and operations support facilities.	<p><b>Dedicated Right-of-Way:</b> Poor</p> <p><b>Mixed Traffic:</b> Good</p>
<b>B2</b>	The existing CSX alignment would support commuter rail operations only. The addition of passenger rail sidings could likely be accommodated in the existing right-of-way, but stations, parking lots, and other improvements associated with the introduction of passenger rail service may require some land acquisition.	Good

Alignment/ Segment Alternative	Probable Right-of-Way Acquisition	Overall Assessment
<b>B3</b>	I-26 includes four lanes of general traffic and a grass median in this segment. BRT in an exclusive lane/dedicated right-of-way could potentially operate within the highway median or in a lane that is currently general traffic; mixed traffic BRT could operate within the existing roadway. All passenger and operations support facilities would likely require land acquisition.	<p><b>Dedicated Right-of-Way:</b> Good</p> <p><b>Mixed Traffic:</b> Good</p>
<b>C1</b>	Within the Town of Chapin, US 76 expands into a two-lane roadway with a center median/turning lane and no street parking. Outside of downtown, it loses the center median/turn lane, and returns to a two-lane roadway. East of Gates Road, US 76 becomes four lanes with a center turning lane. BRT in a dedicated lane/right-of-way would require substantial land acquisition. All modes would likely require land acquisition for station and parking facilities.	<p><b>Dedicated Right-of-Way:</b> Poor</p> <p><b>Mixed Traffic:</b> Good</p>
<b>C2</b>	The existing CSX alignment would support commuter rail operations only. The addition of passenger rail sidings could likely be accommodated in the existing right-of-way, but stations, parking lots, and other improvements associated with the introduction of passenger rail service may require some land acquisition.	Good
<b>C3</b>	I-26 includes four lanes of general traffic and a grass median in this segment. BRT in an exclusive lanes/right-of-way could potentially operate within the highway median; mixed traffic BRT could operate within the existing roadway. Passenger and operations support facilities for all modes would likely require land acquisition.	<p><b>Dedicated Right-of-Way:</b> Good</p> <p><b>Mixed Traffic:</b> Good</p>
<b>D1</b>	US 76 fluctuates between a two-lane roadway and a four-lane roadway with a median/turn lane. US 76 is joined by US 176 near the Irmo municipal border. BRT in an dedicated lane/right-of-way would require substantial land acquisition. Both mixed-traffic and dedicated right-of-way operations may require land acquisition for station and parking facilities.	<p><b>Dedicated Right-of-Way:</b> Poor</p> <p><b>Mixed Traffic:</b> Good</p>

Alignment/ Segment Alternative	Probable Right-of-Way Acquisition	Overall Assessment
D2	The existing CSX alignment would support commuter rail operations only. The addition of passenger rail sidings could likely be accommodated in the existing right-of-way, but stations, parking lots, and other improvements associated with the introduction of passenger rail service may require some land acquisition.	Good
D3	I-26 transitions from a four-lane to a six- to eight-lane divided interstate in this segment of the corridor. The alignment then follows I-126 south of Bush River Road. BRT in an exclusive lanes/right-of-way would likely require right-of-way acquisition; mixed traffic BRT could operate within the existing roadway. All passenger and operations support facilities would likely require land acquisition.	<b>Dedicated Right-of-Way:</b> Good  <b>Mixed Traffic:</b> Good
E1	Once in downtown Columbia, the US 76 alignment will transition to local arterial roadways that include on-street parking facilities. Any candidate alignments in the downtown area will be able to support mixed-traffic transit (many currently support The Comet local bus service), but use of a dedicated right-of-way will require the removal of on-street parking, a general travel lane, or the acquisition of additional right-of-way.	<b>Dedicated Right-of-Way:</b> Poor  <b>Mixed Traffic:</b> Good
E2	The existing CSX alignment would support commuter rail operations only. A layover facility, stations, parking lots, and other improvements associated with the introduction of passenger rail service may require some land acquisition, particularly at a downtown Columbia terminal station.	Good
E3	Once in downtown Columbia, the I-26/I-126 alignment will transition to local arterial roadways that include on-street parking facilities. Any candidate alignments in the downtown area will be able to support mixed-traffic transit (many currently support The Comet local bus service), but use of a dedicated right-of-way will require the removal of on-street parking, a general travel, or the acquisition of additional right-of-way.	<b>Dedicated Right-of-Way:</b> Fair  <b>Mixed Traffic:</b> Good



## 4.3.2 Traffic Impacts

### 4.3.2.1 Screening Methodology

Traffic impacts were assessed by evaluating the roadway capacity of the study corridor segments to determine if the implementation of the modes under consideration would result in reduced roadway levels of service. In Section 2.0, each alignment’s existing (2010) and future (2035) level of congestion was identified as approaching capacity, at capacity, or over capacity. These levels of congestion are indicated by the colored dots, as shown in Table 4-16.

**Table 4-16: Levels of Congestion**

Level of Congestion	Symbol
Adequate Capacity	--
Approaching Capacity	●
At Capacity	●
Over Capacity	●

Impacts on freight rail traffic are more difficult to assess because of the limited freight volume information that is available at this level of analysis. While train counts through the CSX right-of-way within the study corridor have gone down over the past several years, it is difficult to assign a level of impact on existing and future freight traffic resulting from the introduction of commuter rail service. Consequently, the CSX right-of-way was given a “fair” rating in this category, per the decision to recommend a mode/alignment for continued study if not enough information was available for analysis and evaluation.

BRT’s impact on congestion, which is largely influenced by its operation within either mixed traffic or a dedicated lane, was assessed as high, medium or low, and an overall assessment of each mode’s traffic impact was then made. This analysis will help identify alignments that should be removed from consideration in further levels of analysis.

In future phases of the study, left-turning vehicular movements and parcel access impacts within the corridor will be more thoroughly investigated. Pedestrian facilities will also be discussed during a future phase of the study. In addition, transit ridership will be discussed during a future phase because some amount of travel mode shift from vehicles to transit and

non-motorized modes is anticipated within the study corridor following transit service implementation.

#### 4.3.2.2 Data Sources and References

The roadway congestion information was sourced from previous sections of this report; the freight volume information was sourced from the Federal Railroad Administration (FRA). The assessment of impact reflects how the introduction of each type of transit mode would impact existing and future traffic volumes.

#### 4.3.2.3 Screening Results

**Table 4-17: Screening Results: BRT in a Dedicated Right-of-Way**

BRT in a Dedicated Right-of-Way (Alignment 1: US 76/176; Alignment 3: I-26)				
Corridor Segment	2010 Congestion	2035 Congestion	Impact on Congestion	Overall Assessment
A1*	●	●	Low	Good
A3**	--	--	Low	Good
B1*	--	●●	Low	Good
B3**	--	●	Low	Good
C1*	●●	●	Low	Good
C3**	--	●●	Low	Good
D1*	●●●	●●●	Low	Good
D3**	●●●	●●	Low	Good
E1*	●●●	●●●	Low	Good
E3**	--	--	Low	Good

\* Assumption: BRT operating in a new dedicated lane resulting from land acquisition

\*\* Assumption: BRT operating in new dedicated lane operating in the median/on highway shoulder

**Table 4-18: Screening Results: BRT in Mixed Traffic**

BRT in Mixed Traffic (Alignment 1: US 76/176; Alignment 3: I-26)				
Corridor Segment	2010 Congestion	2035 Congestion	Impact on Congestion	Overall Assessment
A1	●	●	Medium	Fair
A3	--	--	Low	Good
B1	--	●●	Medium	Fair
B3	--	●	Low	Good
C1	●●	●	Medium	Fair
C3	--	●●	Low	Good
D1	●●●	●●●	Medium	Fair
D3	●●●	●●	Low	Good
E1	●●●	●●●	Medium	Fair
E3	--	--	Low	Good

**Table 4-19: Screening Results: Commuter Rail in CSX Right-of-Way**

Commuter Rail in CSX Right-of-Way (Alignment 2: CSX Right-of-Way)				
Corridor Segment	2010 Congestion	2035 Congestion	Impact on Congestion	Overall Assessment
A2	--	--	--	Fair
B2	--	--	--	Fair
C2	--	--	--	Fair
D2	--	--	--	Fair
E2	--	--	--	Fair

### 4.3.3 Potential Environmental Impacts

#### 4.3.3.1 Screening Methodology

The potential environmental impacts of each mode under consideration are presented in Table 4-20. Table 4-21 summarizes the potential environmental impacts by

alignment/segment alternative. The screening was based on the need for additional right-of-way and required land acquisition for each mode and alignment:

- When a proposed alignment is completely within an existing right-of-way, environmental impacts are generally minimal but can be associated with social/economic considerations, such as environmental justice, neighborhood and community facilities, cultural resources, Title VI compliance and visual and aesthetic resources. Natural impacts such as biological resources, endangered species, wetlands and flood plains are typically minimally impacted by construction within an existing right-of-way.
- If a mode or an alignment cannot be accommodated within the existing right-of-way and requires land acquisition for transit-supportive facilities such as vehicle storage and maintenance facilities, power stations, park and ride lots and stations, further analysis will be required to determine specific impacts related to both social/economic and natural resources.

#### **4.3.3.2 Data Sources and References**

The potential environmental impacts analysis is based on the modes under consideration and the location of each proposed alignment alternative for the Newberry-Columbia corridor.

### 4.3.3.3 Screening Results

**Table 4-20: Screening Results: Potential Environmental Impacts by Mode**

Mode Alternative	Potential Environmental Impacts	Overall Assessment
<b>BRT in Mixed Traffic</b>	As this mode does not require any additional right-of-way or disruption of the existing uses of the right-of-way, it is not anticipated to have any environmental impacts associated with this mode. Some environmental impacts may be associated with right-of-way acquisition required for stops, park-and-ride lots, and other passenger facilities.	Good
<b>BRT in Dedicated Right-of-Way</b>	This mode operates in a dedicated right-of-way; if at grade, it would require two transit-dedicated travel lanes, which would reduce the number of general traffic lanes. As this mode may require additional right-of-way in narrow street sections, some environmental impacts may be associated with right-of-way acquisition required for stations, park-and-ride lots, and other passenger facilities.	Fair
<b>Commuter rail</b>	As this mode operates in a dedicated right-of-way (typically a freight rail corridor), potential environmental impacts are anticipated when additional land is required for rail-supportive facilities. Potential environmental impacts may be associated with the vehicle and storage maintenance facility, stations, and park-and-ride lots.	Good

**Table 4-21: Screening Results: Potential Environmental Impacts by Alignment**

Alignment/ Segment Alternative	Potential Environmental Impacts	Overall Assessment
<b>A1</b>	Depending on the preferred mode and subsequent design decisions, the construction of passenger facilities (stops, parking facilities) may also require land acquisition. Where additional land is required, particularly for modes in a dedicated-right-of-way, potential environmental impacts may be associated with the required land acquisition. Minimal environmental impacts are anticipated for modes that can be accommodated in the existing right-of-way.	<p><b>Dedicated Right-of-Way:</b> Poor</p> <p><b>Mixed Traffic:</b> Good</p>

Alignment/ Segment Alternative	Potential Environmental Impacts	Overall Assessment
A2	Passenger rail service in this segment would require the construction of passenger amenities (terminal station in downtown Newberry and parking facilities), as well as a layover facility for light vehicle cleaning and temporary storage. Potential environmental impacts may be associated with the required land acquisition.	Fair
A3	With the exception of BRT in mixed traffic, it is likely that right-of-way acquisition will be required west of Kinard Street to support transit operations, parking lots, and passenger and support facilities. Potential environmental impacts may be associated with the required land acquisition. Minimal environmental impacts are anticipated for modes that can be accommodated in the existing right-of-way.	<b>Dedicated Right-of-Way:</b> Fair  <b>Mixed Traffic:</b> Good
B1	Mixed traffic BRT may require land acquisition for station and parking facilities; modes operating in a designated right-of-way would likely require land acquisition for operations. Potential environmental impacts may be associated with the required land acquisition for all modes. Minimal environmental impacts are anticipated for modes that can be accommodated in the existing right-of-way.	<b>Dedicated Right-of-Way:</b> Poor  <b>Mixed Traffic:</b> Good
B2	The addition of passenger rail sidings could likely be accommodated in the existing right-of-way, but a layover facility, stations, parking lots, and other improvements associated with the introduction of passenger rail service may require some land acquisition. Potential environmental impacts may be associated with the required land acquisition for all modes.	Fair
B3	BRT in exclusive lanes/right-of-way could potentially operate within the highway median; modes that operate in mixed traffic could operate within the existing roadway. Mixed traffic BRT is anticipated to have minimal environmental impacts. All passenger and operations support facilities would require land acquisition. For modes in dedicated right-of-way, potential environmental impacts may be associated with required land acquisition and new right-of-way.	<b>Dedicated Right-of-Way:</b> Fair  <b>Mixed Traffic:</b> Good

Alignment/ Segment Alternative	Potential Environmental Impacts	Overall Assessment
C1	Mixed traffic BRT operations may require land acquisition for station and parking facilities; modes operating in a designated right-of-way would likely require land acquisition for operations. Potential environmental impacts may be associated with the required land acquisition. Minimal environmental impacts are anticipated for modes that can be accommodated in the existing right-of-way.	<p><b>Dedicated Right-of-Way:</b> Poor</p> <p><b>Mixed Traffic:</b> Good</p>
C2	The addition of passenger rail sidings could likely be accommodated in the existing right-of-way, but a layover facility, stations, parking lots, and other improvements associated with the introduction of passenger rail service may require some land acquisition. Potential environmental impacts may be associated with the required land acquisition.	Fair
C3	BRT in exclusive lanes/right-of-way could potentially operate within the highway median; mixed traffic BRT could operate within the existing roadway. Modes that can be accommodated within existing right-of-way are anticipated to have minimal environmental impacts. All passenger and operations support facilities would require land acquisition. For modes in a dedicated right-of-way, potential environmental impacts may be associated with required land acquisition and new right-of-way.	<p><b>Dedicated Right-of-Way:</b> Fair</p> <p><b>Mixed Traffic:</b> Good</p>
D1	BRT in a dedicated lane/right-of-way would require substantial right-of-way acquisition. Potential environmental impacts may be associated with the required land acquisition. Mixed traffic BRT operations may require land acquisition for station and parking facilities. Potential environmental impacts may be associated with the required land acquisition. Minimal environmental impacts are anticipated for modes that can be accommodated in the existing right-of-way.	<p><b>Dedicated Right-of-Way:</b> Poor</p> <p><b>Mixed Traffic:</b> Good</p>
D2	The addition of passenger rail sidings could likely be accommodated in the existing right-of-way, but a layover facility, stations, parking lots, and other improvements associated with the introduction of passenger rail service may require some land acquisition. Potential environmental impacts may be associated with the required land acquisition.	Fair

Alignment/ Segment Alternative	Potential Environmental Impacts	Overall Assessment
<b>D3</b>	BRT in exclusive lanes/right-of-way would require right-of-way acquisition; mixed traffic BRT could operate within the existing roadway. Modes that can be accommodated within existing right-of-way are anticipated to have minimal environmental impacts. All passenger and operations support facilities would require land acquisition. For modes operating in a dedicated right-of-way, potential environmental impacts may be associated with required land acquisition and new right-of-way.	<p><b>Dedicated Right-of-Way:</b> Fair</p> <p><b>Mixed Traffic:</b> Good</p>
<b>E1</b>	Once in downtown Columbia, the US 76 alignment will transition to local arterial roadways that include on-street parking facilities. Any candidate alignments in the downtown area will be able to support mixed-traffic transit (many currently support The Comet local bus service), but use of a dedicated right-of-way will require the removal of on-street parking, a general travel, or the acquisition of additional right-of-way. Modes that require dedicated right-of-way have the potential for environmental impacts associated with the removal of travel and parking lanes and additional right-of-way.	<p><b>Dedicated Right-of-Way:</b> Poor</p> <p><b>Mixed Traffic:</b> Good</p>
<b>E2</b>	A layover facility, stations, parking lots, and other improvements associated with the introduction of passenger rail service may require some land acquisition, particularly at a downtown Columbia terminal station. Potential environmental impacts may be associated with the required land acquisition.	Fair
<b>E3</b>	Once in downtown Columbia, the I-26/I-126 alignment will transition to local arterial roadways that include on-street parking facilities. Any candidate alignments in the downtown area will be able to support mixed-traffic transit (many currently support The Comet local bus service), but use of a dedicated right-of-way will require the removal of on-street parking, a general travel, or the acquisition of additional right-of-way. Modes that require dedicated right-of-way have the potential for environmental impacts associated with the removal of travel and parking lanes and additional right-of-way.	<p><b>Dedicated Right-of-Way:</b> Fair</p> <p><b>Mixed Traffic:</b> Good</p>



#### 4.3.4 Community Support

##### 4.3.4.1 Screening Methodology

In addition to technical analyses, community input is a critical element in defining and evaluating transit alternatives. Even if an alternative is technically sound and financially feasible, but does not meet the transportation needs and preferences of potential riders, it will not attract users and will not ultimately be a successful investment. In order to attract users and be successful, the locally preferred alternative must reflect the priorities of the study corridor transportation network users, as expressed through community outreach activities.

##### 4.3.4.2 Data Sources and References

One set of public meetings was held in February 2012, 14 stakeholder interviews were conducted between April and June 2012, an online survey was available via the project website, and final public meetings were held in January 2014. Each of these outreach activities were undertaken to garner input into project purpose and need, as well as to get initial feedback about conceptual alternatives and alignments.

##### 4.3.4.3 Screening Results

As summarized in Table 4-22, the CSX right-of-way received the greatest amount of community support.

**Table 4-22: Screening Results: Community Support**

Segment Alternative	Evaluation	Overall Assessment
<b>A1 Dedicated</b>	No specific community support expressed	Poor
<b>A1 Mixed Traffic</b>	No specific community support expressed	Poor
<b>A2</b>	Community support expressed	Good
<b>A3 Dedicated</b>	No specific community support expressed	Poor
<b>A3 Mixed Traffic</b>	No specific community support expressed	Poor
<b>B1 Dedicated</b>	No specific community support expressed	Poor
<b>B1 Mixed Traffic</b>	No specific community support expressed	Poor
<b>B2</b>	Community support expressed	Good
<b>B3 Dedicated</b>	No specific community support expressed	Poor
<b>B3 Mixed Traffic</b>	No specific community support expressed	Poor
<b>C1 Dedicated</b>	No specific community support expressed	Poor
<b>C1 Mixed Traffic</b>	No specific community support expressed	Poor

Segment Alternative	Evaluation	Overall Assessment
C2	Community support expressed	Good
C3 Dedicated	No specific community support expressed	Poor
C3 Mixed Traffic	No specific community support expressed	Poor
D1 Dedicated	No specific community support expressed	Poor
D1 Mixed Traffic	No specific community support expressed	Poor
D2	Community support expressed	Good
D3 Dedicated	No specific community support expressed	Poor
D3 Mixed Traffic	No specific community support expressed	Poor
E1 Dedicated	No specific community support expressed	Poor
E1 Mixed Traffic	No specific community support expressed	Poor
E2	Community support expressed	Good
E3 Dedicated	No specific community support expressed	Poor
E3 Mixed Traffic	No specific community support expressed	Poor

#### 4.3.5 Summary of Initial Screening: Alignments

Table 4-23 summarizes the results of the initial screening of alignments. Those alignments that rated as “poor” in two or more categories were removed from consideration in future project phases. As shown in Table 4-24, mixed traffic operations along US 76/176, the existing CSX right-of-way, and both mixed traffic and dedicated operations along I-26/I-126 are recommended for more detailed definition and evaluation in subsequent project phases.

**Table 4-23: Summary Results of the Initial Screening of Alignments**

Alignment Alternative	Possible Right-of-Way Acquisition	Traffic Impacts	Potential Environmental Impacts	Community Support
A1 Dedicated	Poor	Good	Poor	Poor
A1 Mixed Traffic	Good	Fair	Good	Poor
A2	Good	Fair	Fair	Good
A3 Dedicated	Fair	Good	Fair	Poor
A3 Mixed Traffic	Good	Good	Good	Poor

Alignment Alternative	Possible Right-of-Way Acquisition	Traffic Impacts	Potential Environmental Impacts	Community Support
B1 Dedicated	Poor	Good	Poor	Poor
B1 Mixed Traffic	Good	Fair	Good	Poor
B2	Good	Fair	Fair	Good
B3 Dedicated	Good	Good	Fair	Poor
B3 Mixed Traffic	Good	Good	Good	Poor
C1 Dedicated	Poor	Good	Poor	Poor
C1 Mixed Traffic	Good	Fair	Good	Poor
C2	Good	Fair	Fair	Good
C3 Dedicated	Good	Good	Fair	Poor
C3 Mixed Traffic	Good	Good	Good	Poor
D1 Dedicated	Poor	Good	Poor	Poor
D1 Mixed Traffic	Good	Fair	Good	Poor
D2	Good	Fair	Fair	Good
D3 Dedicated	Good	Good	Fair	Poor
D3 Mixed Traffic	Good	Good	Good	Poor
E1 Dedicated	Poor	Good	Poor	Poor
E1 Mixed Traffic	Good	Fair	Good	Poor
E2	Good	Fair	Fair	Good
E3 Dedicated	Fair	Good	Fair	Poor
E3 Mixed Traffic	Good	Good	Good	Poor

**Table 4-24: Alignments for Detailed Definition and Evaluation of Alternatives**

Alignment Alternative	Overall Assessment	Alignments for Detailed Definition and Evaluation of Alternatives
US 76/176 Dedicated	Fail	--
US 76/176 Mixed Traffic	Pass	US 76/176 Mixed Traffic
CSX Right-of-Way	Pass	CSX Right-of-Way
I-26/I-126 Dedicated	Pass	I-26/I-126 Dedicated
I-26/I-126 Mixed Traffic	Pass	I-26/I-126 Mixed Traffic

## 5.0 Path Forward

To support the detailed evaluation of alternatives recommended for further definition following this initial screening, it is recommended that the following alternatives be developed to facilitate cost estimating and ridership forecasting:

- **BRT in mixed traffic on US 76/176;**
- **Commuter rail within the existing CSX right-of-way;**
- **BRT in mixed traffic on I-26/I-126; and**
- **BRT in dedicated lane/right-of-way on I-26/I-126.**

At the time the Newberry-Columbia Alternatives Analysis was initiated, legislation established within the Safe, Accountable, Flexible, Efficient Transportation Act – A Legacy for Users (SAFETEA-LU) required the completion of an Alternatives Analysis during the project development process for FTA New Starts projects. The major objective of this analysis, typically conducted through a multi-phase planning process, was the identification of a locally-preferred alternative (LPA) to compete for federal funds under FTA’s Major Capital Investment program.

The Phase I scope completed thus far by the Newberry-Columbia Alternatives Analysis has established the problem statement, the purpose and need, the goals and objectives of future capital investment, and has screened alternatives through a fatal flaw analysis to identify alternatives that are appropriate for further evaluation. Subsequent Phase II steps of the Alternatives Analysis, if completed, would develop, refine, analyze, and evaluate those alternatives that emerged from the fatal flaw analysis. The evaluation would rate each alternative’s potential to satisfy the identified goals and objectives, and would assess the transportation, environmental, and financial impacts of each alternative. The results of this technical evaluation would assist the Metropolitan Planning Organization (MPO) in selecting the LPA.

Under SAFETEA-LU, in order to complete the Alternatives Analysis, the LPA would be adopted into the MPO’s fiscally-constrained Long Range Transportation Plan (LRTP). FTA approval would then be required before the LPA enters into the next stage of New Starts project development – Preliminary Engineering – during which the LPA progresses through the environmental review process required by the National Environmental Policy Act (NEPA). Those projects that successfully emerge from the NEPA process with 50% of its non-federal project funding identified may, with FTA review and approval, advance to the Final Design stage. Ultimately those projects that complete Final Design with convincing justification for implementation may be selected through a competitive process for construction funding.

Significant changes were made to the FTA project development process when the Moving Ahead for Progress in the 21st Century Act (MAP-21) was signed into law on July 8, 2012 by President Obama. Effective October 1, 2012, the new law governs the expenditure of the federal transportation budget during fiscal years 2013 and 2014. Relevant to this discussion, MAP-21 repealed the requirements for an Alternatives Analysis as a prerequisite for FTA New Starts projects. Instead, the new MAP-21 project development process relies on the MPO transportation planning process and the environmental review process mandated by NEPA. In lieu of the Alternatives Analysis, project sponsors will identify and examine reasonable alternatives, evaluate all environmental impacts, and develop measures to mitigate any adverse environmental effects. The following text taken from the Federal Register provides a detailed explanation of this change.

*MAP-21 removes the requirement for a separate alternatives analysis as a prerequisite for entry into the New Starts or Small Starts program. Instead, project sponsors will undertake a step called "project development," during which the NEPA process is to be completed, a locally preferred alternative is to be adopted and included in the region's long range transportation plan, and information is to be developed for evaluation and rating of the project by FTA. FTA notes that during the NEPA process project sponsors are required to consider a reasonable range of alternatives. Thus, while the New Starts Alternatives Analysis step is eliminated, project sponsors are still required to consider a reasonable range of alternatives prior to selection of a locally-preferred alternative, based on consideration of a wide range of local goals and objectives in the context of the environmental review process. Thus, much of the same analysis now undertaken during New Starts Alternatives Analysis will be accomplished before a project is identified for advancement into the New Starts process. MAP-21 creates a single subsequent step called "engineering," at which time FTA must evaluate and rate the proposed project.*

*- Excerpt from the Federal Register, Volume 78, Number 6; January 9, 2013*

Alternatives Analyses that were in-progress at the sunset of SAFETEA-LU may continue to completion if desired by the project sponsor. This approach may ultimately streamline the MAP-21 environmental review process, because the results of the evaluation of alternatives conducted during the Alternatives Analysis may be incorporated into the NEPA review. If project sponsors select this approach, FTA involvement in the Alternatives Analysis will be minimal, and FTA staff will not comment on the deliverables of the Alternatives Analysis, other than its appropriateness for inclusion into the NEPA review. Securing federal funding for subsequent phases of the Alternatives Analysis may prove exceedingly difficult. As the Alternatives Analysis requirement has been eliminated from the FTA project development process, there are no 2013 or 2014 federal funds designated to complete the scope of in-progress Alternatives Analysis. Although any unobligated 2012 or prior year FTA funds remain

eligible for follow-on work to complete an Alternatives Analysis, it is unlikely that unobligated SAFETEA-LU funding remains available.

A second option the project sponsor may consider is to forgo completion of the Alternatives Analysis, and instead transition to a NEPA review of the corridor. FTA lists the Early Scoping stage of the NEPA process as a likely transition point. Early Scoping is an optional stage prior to formal NEPA Scoping, and is recommended when the LPA is not yet identified and a number of alternative modes and alignments are still under consideration. If the Early Scoping stage is to include a screening of alternatives, certain requirements linking transportation planning and the NEPA process must be met, if the elimination of alternatives is to be accepted by the NEPA process. These requirements include:

- During the Alternatives Analysis, the alternatives must be fully evaluated;
- There must be an appropriate amount of public involvement;
- The appropriate federal, state, and local environmental and regulatory agencies must be involved;
- The results of the Alternatives Analysis must be documented;
- The NEPA scoping participants must agree on the alternatives entering the NEPA review; and
- The NEPA document must include the evaluation of the alternatives from the Alternatives Analysis.

The decision to complete or terminate an Alternatives Analysis already underway is a local one. Should the project sponsor have difficulty identifying unobligated federal funds (2012 or prior) to complete the planning work, financial considerations may weigh heavily in the decision. If it can be shown that the Alternatives Analysis process has met the listed requirements for acceptance into the NEPA process, it can be in the best interest of the project sponsor to forgo additional transportation planning in favor of initiating a NEPA review of the corridor. However, project schedule may prove to be a major deterrent to selecting this course of action. Current FTA guidelines require a New Starts application to be completed within two years of initiating a NEPA study. For fledgling projects such as the Newberry-Columbia Alternatives Analysis, it is difficult to garner the necessary public support and financial commitments in this short timeframe.

A third option the project sponsor may consider is to transition to the MAP-21 project development process. FTA has approved the transition for several project sponsors with ongoing Alternative Analyses in similar circumstances. Under this scenario, a Pre-Project Development (PPD) Study may be initiated to carry over the previous Alternative Analysis results and begin a scope of work that aligns the project with entry into the MAP-21 Project Development stage. During a PPD Study, the alternative modes and alignments that emerged

from the fatal flaw analysis are subjected to further refinement, examination, and evaluation. Additional public involvement and technical analyses are utilized to assist the project sponsor with the selection of the LPA. Following FTA approval, the MAP-21 Project Development stage can be initiated to complete a streamlined NEPA process that tests only the LPA against the no-build alternative. Contrary to the second option, a PPD does not create a suspense to complete a New Starts application, providing the project sponsor additional time to generate public support and identify local funding sources.

The Project Team believes it is unlikely that sufficient unobligated SAFETEA-LU funds remain to complete the Newberry-Columbia Alternatives Analysis (option one). Additionally, it does not appear that sufficient political will, grass-roots support, and local revenue sources are in place to submit a New Starts application within two years of initiating a NEPA study (option two). As such, it is the recommendation of the Project Team to forgo the remaining Alternatives Analysis phases and request FTA approval to enter a Pre-Project Development Study. With FTA concurrence, the key tasks of a PPD Study to continue the work begun by the Newberry-Columbia Alternatives Analysis may include the following:

- Identify the stakeholders for a Technical Advisory Committee
- Identify the stakeholders for a Policy Advisory Committee
- Social media / website development
- Transit Travel Demand Market Analysis
- Review / refine the current Purpose and Need and Goals and Objectives
- Develop the initial alternatives to provide increased detail
- Technical evaluation of detailed alternatives, to include
  - Transit Operating Plan
    - Route
    - Termini
    - Station locations
    - Service frequency (headway)
    - Service span
    - Operating speed, etc.
  - Ridership forecast
  - Capital cost estimate

- Operating and maintenance cost estimate
- Community support assessment
- Transportation system relationship (interaction with existing systems)
- Assessment of social, environmental, and economic impacts
- Select a Locally Preferred Alternative

In addition to the regional actions of the Central Midlands Council of Governments, there are steps that can be taken at local levels to strengthen the Newberry-Columbia corridor’s case for future federal funding. In August 2013, FTA released its final policy guidance for evaluating and rating projects competing under the New Starts program. The rating criteria consist of:

- **Mobility improvements** – the total number of linked trips using a proposed transit system.
- **Economic development effects** – the extent to which a proposed transit system is likely to induce additional, transit-supportive development based on local plans and policies.
- **Environmental benefits** – the direct and indirect cost benefits to health, safety, energy, and air quality based on the change in vehicle miles traveled (VMT) resulting from a proposed transit system.
- **Cost effectiveness** – the annual capital and operating and maintenance cost per trip of a proposed transit system.
- **Land use** – the existing corridor and station area development, character, accessibility, pedestrian facilities, parking supply, and availability and proximity of affordable housing.
- **Congestion relief** – until subsequent rulemaking is completed, no guidance has been established to evaluate this criterion

Existing transit agencies, as well as the counties and municipalities through which the corridor passes, may elect to implement measures that seek to improve the ranking of each criteria within their jurisdictions, and thereby increase the aggregate score of the Newberry-Columbia corridor as a whole. For example, transit agencies may increase the corridor’s projected number of linked trips by adopting policies that provide for future system connections and passenger transfers. Towns and counties may amend existing land development regulations and zoning ordinances to implement some of the land use policy recommendations discussed in **Appendix C – Transit-Supportive Development Concepts**. Additionally, these government agencies can complete small area or neighborhood plans to catalyze transit-supportive development in the vicinity of potential transit stops. Each of these measures implemented in a vacuum may not be a deciding factor, but the cumulative effect of these contributions will significantly strengthen the corridor’s standing during FTA’s competitive evaluation.





**Appendix A**  
**Existing Conditions Supplement**

# Newberry – Columbia Alternatives Analysis

Existing Conditions Supplement

March 2014



Prepared by

**URS**

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**APPENDIX**

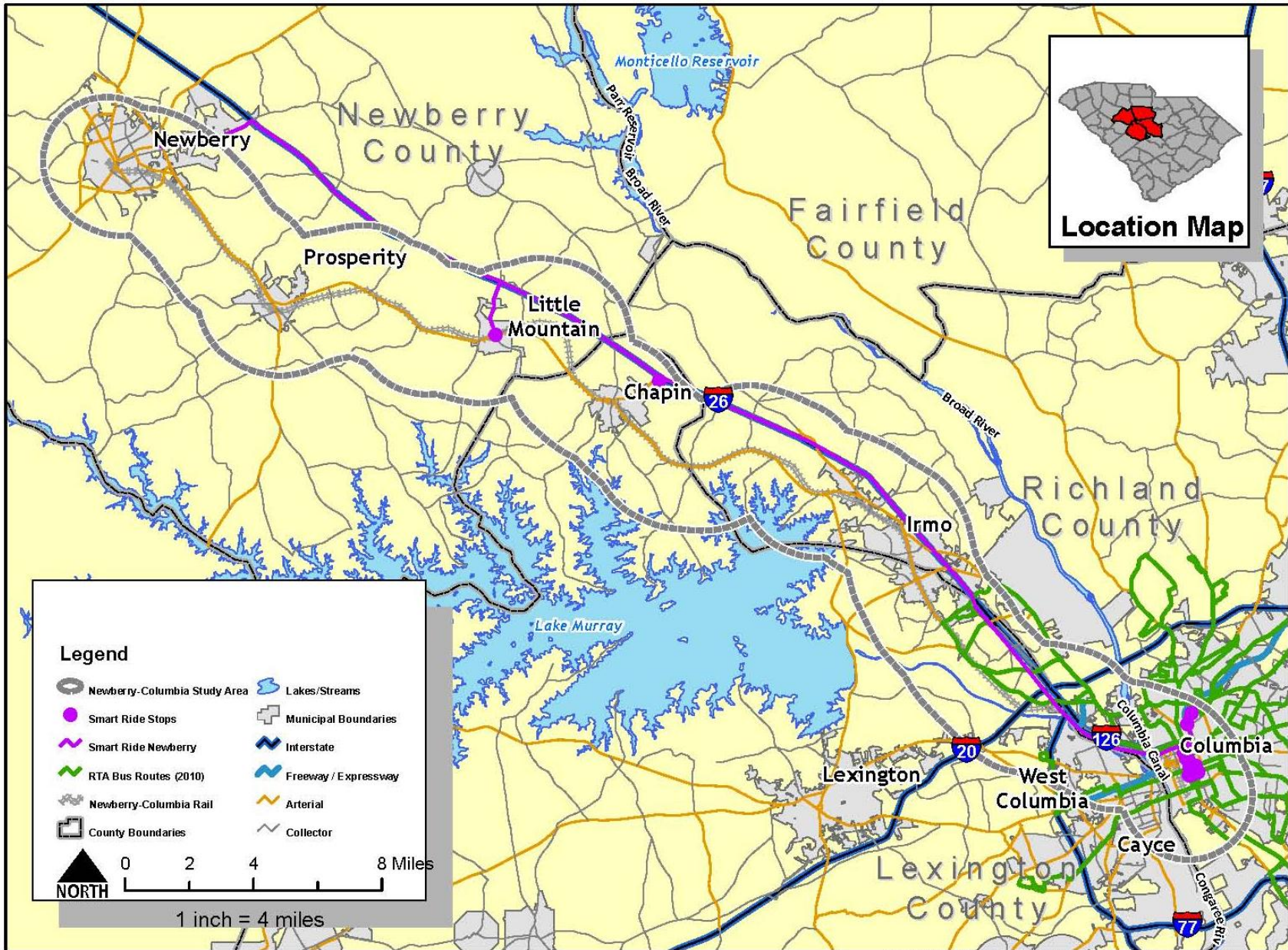
APPENDIX 1: RARE, THREATENED, AND ENDANGERED SPECIES

## 1.0 Introduction

As part of the Alternatives Analysis, an existing conditions analysis was conducted. This Appendix supplements the information provided in the Final Report and includes the following sections:

- Section 1 lists the components of the Existing Conditions Supplement and summarizes several preceding transit studies
- Section 2 provides an overview of the land uses and development patterns in the corridor
- Section 3 provides an overview of cultural resource needs analysis in the region and corridor, and 4(f) and 6(f) impacts
- Section 4 provides a summary of natural environment concerns including floodplains, wetlands, groundwater, vegetation and wildlife
- Section 5 describes hazardous materials/waste site analysis in the Corridor
- Section 6 provides an overview of air quality analysis and the process to identify the regulatory framework for corridor air quality
- Section 7 provides an overview of noise and vibration analysis to be conducted during the study of alternatives

Figure 1-1: Newberry-Columbia Corridor



Source:CMCOG, COATS, Richland County, Lexington County, and Newberry County

## 1.1 Previous Transit Studies

Richland, Lexington, and Newberry counties are growing in both population and employment. Several studies have been conducted to determine appropriate service for the corridor, as summarized below.

In 2006 CMCOG completed the *Central Midlands Commuter Rail Feasibility Study*. This study assessed the feasibility of commuter rail and other high capacity transit modes in the Central Midlands area. The corridors studied had been previously identified as appropriate for transit service and include:

- Newberry to Columbia
- Camden to Columbia
- Batesburg-Leesville to Columbia



***Newberry-Columbia CSX Rail Corridor***

The report indicated that each corridor had land use characteristics that could potentially support rail. The Newberry-Columbia Alternatives Analysis will build upon the Commuter Rail Feasibility Study for the Newberry to Columbia corridor to determine the most appropriate enhanced transit service for the corridor.

CMRTA, now The Comet, conducted a comprehensive system evaluation that included an analysis of the current fixed route system, a performance review of the operator management, and county-wide park-and-ride opportunities. The evaluation focused on CMRTA's on-time performance, route design, and accessibility.

The recommendations from the study were developed in Near-Term, Short-Range, and Long-Range timeframes. The Near-Term recommendations concentrate on the reliability of the existing service. Improving on-time performance is necessary prior to any type of expansion of the current service. The Short-Range recommendations seek to enhance the service by identifying new connections and transfer points away from the DTC. Finally, the Long-Range recommendations focus on expanding the current service into new areas, utilizing different service types, to attract new riders.

The combined recommendations from the fixed route evaluation would result in an increase in the current operations budget by more than 100 percent. CMRTA had recently been forced to

evaluate the current service in light of a budget shortfall. However, in November 2012, Richland County voters approved a one-cent sales tax increase to finance transportation projects. 29% of the revenue generated by the new tax will provide dedicated funding to The Comet for the next 22 years.

In addition to the fixed route evaluation, a Park-and-Ride Study (PRS) was completed for the CMRTA region. The results of the PRS included the identification of potential locations in the Newberry to Columbia corridor. Along with the existing SmartRide locations and the station locations identified in the 2006 Commuter Rail Study, the PRS identified nine potential Park-and-Ride locations. The locations of the sites were intentionally identified near interstate interchanges. The locations include the following:

- I-26/Winnsboro Road (Exit 74)
- I-26/Main Street/SC 219 (Exit 76)
- I-26/SC 773 (Exit 82)
- I-26/SC 202 (Exit 85)
- I-26/Columbia Avenue (Exit 91)
- I-26/Broad River Road (Exit 97)
- I-26/Columbiana Center Mall (Exit 103)
- I-26/Piney Grove Road (Exit 104)
- I-26/St. Andrews Road (Exit 106)



## 2.0 Land Use and Development

The character of a community’s land uses and development patterns both influences and is influenced by the transportation network. Throughout history, communities have developed around transportation facilities and as transportation networks expand, access to land is achieved, resulting in greater development opportunities. Because of this symbiotic relationship, land use policy must play a larger role in transportation decision-making. The type and scale of investments, including investment in multi-modal services and facilities, is a major determinant of a community’s quality of life and character.

Transportation infrastructure investment should complement existing land uses while supporting targeted land use transitions, as described in a community’s comprehensive plan. Transportation networks not only enable mobility and access – they can also shape a community’s future growth patterns.

Before developing, evaluating, and recommending investments for the study corridor, it is essential to understand existing land uses and development patterns, the policies and guidelines that shape these land uses and development patterns, and how each community envisions its future growth.

### 2.1 Existing Land Uses

The character of the 40-mile study corridor varies from dense, urban core laid out on a grid street network in the Columbia and West Columbia area, through suburban development patterns in the central portion of the corridor before transitioning to rural areas between Little Mountain and Prosperity, and ending in the urbanized area of Newberry, as shown in Figure 2-1. Existing land uses along the alignment for each of the corridor communities are described below.



*Colonial Life Area*

- Columbia area:** This city is the most densely populated, urbanized area within the study corridor. A number of local, regional, and national institutions are located within the downtown core, and it is a major regional employment center. A number of cultural, sports, and entertainment venues are located within the downtown core, including the State Museum, Colonial Life Arena, and a variety of bars and restaurants. Residential

uses are interspersed within the core and are concentrated around the University of South Carolina’s main campus.

In the area immediately surrounding the rail right-of-way, retail and office uses occupy the older brick buildings, while newer buildings house a mixture of retail, office and residential. On the east side of the rail right-of-way, the buildings are generally occupied by governmental entities such as South Carolina Department of Transportation, South Carolina Secretary of State and the State Assembly buildings. The University of South Carolina campus is located along Greene Street. Local business establishments such as restaurants, service-oriented businesses and apartment buildings are located within close proximity to the University of South Carolina community and the State government buildings.



***Lincoln and Gervais Streets***

- **West Columbia area:** After crossing the Saluda River, the rail right-of-way generally parallels I-126 until it reaches the Riverbanks Zoo and Garden. The surrounding land uses include large single-story industrial buildings located along Rivermount Street and multi-story office buildings. Single-family residential dots the areas that are adjacent to the south side of Riverbanks Zoo, and Greystone Boulevard, which intersects with I-126, is a wide boulevard that is lined by auto-oriented businesses. Outside of the Riverbanks Zoo and Garden campus, the rail right-of-way is bound on the eastern side by I-126 and undeveloped riverfront land on the western side.



***Rail Crossing near Riverbanks Zoo***

Once the alignment crosses underneath I-26, a retail area anchored by a Walmart and other larger-format retail lines the northern edge of the alignment before transitioning

to single-family suburban residential. The southern edge of the alignment continues to be bordered by undeveloped open space.

In the vicinity of St. Andrews Road, the alignment passes through a small cluster of elementary educational facilities and Seven Oaks Park (operated by Irmo Chapin Recreation Commission) that are surrounded by suburban residential uses. The southern edge of the alignment is bordered by single-story buildings that primarily house fast food restaurants, gas stations, and other auto-oriented businesses. Bi-Lo supermarket and other small retail stores are located along the west side of St. Andrews Road. Shaw, an industrial and manufacturing facility located south of Bi-Lo, occupies a large tract of land and is a major local employer.



***Seven Oaks Park***

- Irmo:** The rail alignment continues to pass through suburban residential uses and runs parallel to St. Andrews Road until crossing Harbison Boulevard; Irmo High School is located on the western side of the tracks. Low-density suburban residential uses characterize the surrounding area. The rail alignment runs immediately parallel to St. Andrews Road from just past the high school until the roadway splits into Ashbourne Road and Woodrow Street. Auto-oriented, big-box retailers dominate the street frontage, and the surrounding residential uses are a mixture of older, low-density residential and master-planned residential subdivisions.



***Residential near St. Andrews Road***

The alignment passes through undeveloped open space once west of Irmo, until reaching the Ballentine community, where it crosses under Dutch Fork Road. This vicinity of Ballentine is comprised of single-story strip commercial development. CVS Pharmacy is located at the northeast quadrant of the intersection of Dutch Fork Road and Bickley Road and a light industrial area, currently Ballentine Storage, is in the

northwest quadrant. Food Lion Supermarket and supporting retail stores are located in the southeast quadrant of the intersection, and strip commercial and office buildings line both sides of Dutch Fork Road. Ballentine Soccer Complex and Ballentine Elementary School are located along Bickley Road. Surrounding uses include single family residential, vacant lands, and open space agricultural lands.

The rail alignment then continues to parallel Dutch Fork Road/Chapin Road and pass through undeveloped open space, agricultural, and very low-density residential uses.

- **Chapin:** Land use along the alignment within Chapin is comprised of suburban strip commercial with single-story buildings located along Chapin Road. Several grocery stores, small-scale national retailers, and local retail shops are located south of Chapin Road along both sides of Amicks Ferry Road. Chapin is home to several schools and churches, and single-family residential is adjacent to the strip commercial areas.



*Commercial along Chapin Road*

The land uses transition to rural undeveloped and very low-density residential outside of Chapin until the alignment reaches Little Mountain.

- **Little Mountain:** The alignment runs parallel to Little Mountain’s Main Street and Church Street, which passes through the community’s downtown. Gas stations and small-scale retail line the alignment, and churches, Little Mountain Elementary School, and the United State Post Office are located just off the alignment. The surrounding land uses are largely rural undeveloped land with pockets of very low-density residential.

Outside of Little Mountain the alignment runs through rural land uses before passing large-scale industrial land uses, including Georgia-Pacific and International Paper.

- **Prosperity:** The alignment passes through Prosperity, which has small-scale commercial uses along its Main Street and is surrounded by rural and low-density residential land uses. The alignment generally parallels US 76 outside of Prosperity until it enters Newberry.

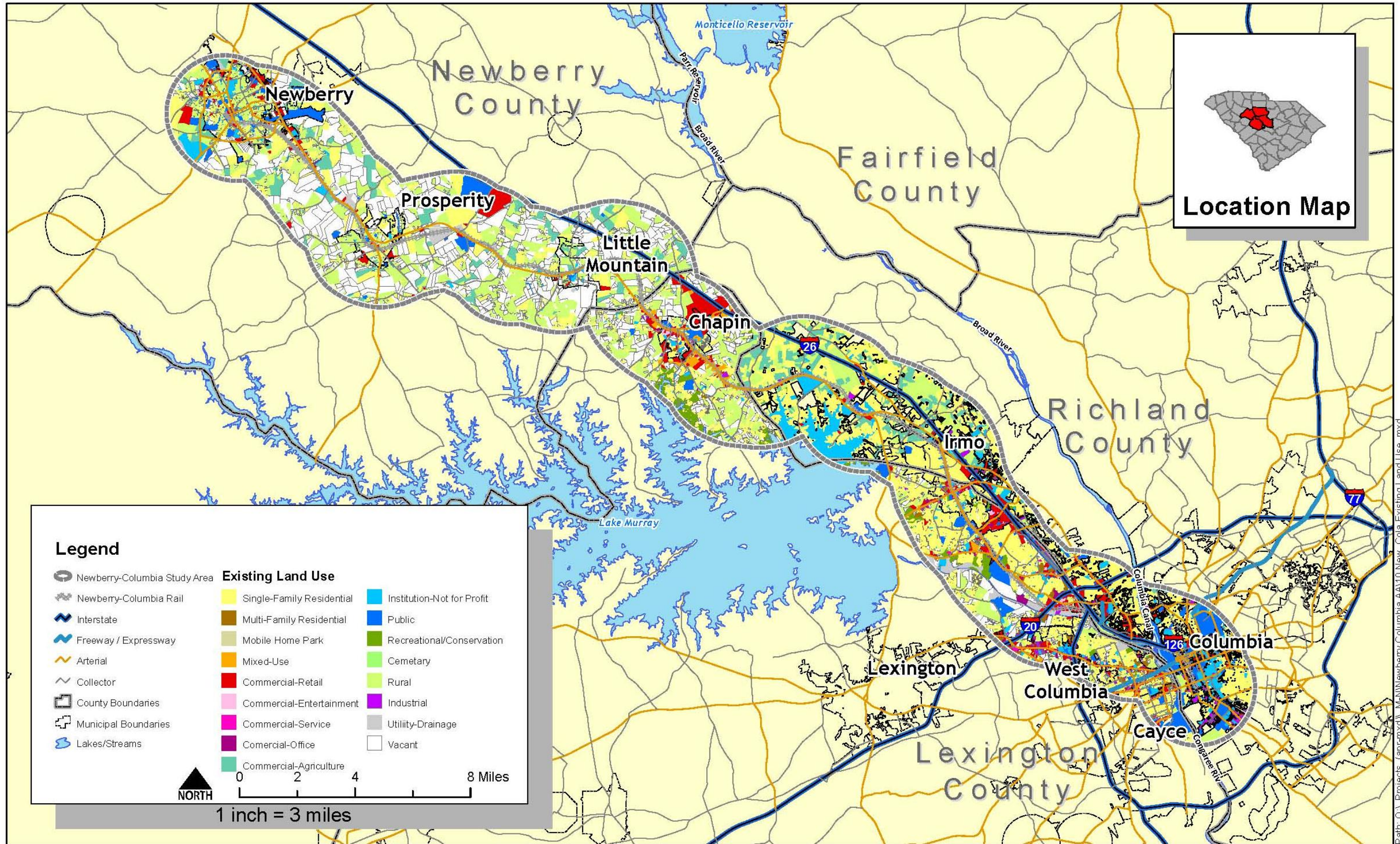
- **Newberry:** Main Street, with on-street parking on both sides, is lined with two- to three-story historic buildings. Government offices, such as the Newberry County Courthouse, Newberry County Administrative Office, and the City of Newberry’s City Hall are located along College Street between Main Street and Trench Street. Several places of worship are located within walking distance in the downtown district, and the Newberry Opera House is an important local attraction. Boundary Street Elementary School, with a playground and adjacent to single-family residential, is located along Coates Street and Boundary Street.



***Downtown Newberry On-Street Parking***

Most of the buildings in downtown Newberry have been converted into mixed-use with retail and/or office on the ground floor and residential units in the upper floors. Several vacant parcels in the downtown area are used as surface parking; some of these parcels are left as open space.

Figure 2-1: Existing Land Use



### 2.1.1 Major Destinations

There are a number of destinations of local, regional, and national significance within the study corridor, as described below and shown in Figure 2-2. These centers of government, arts and culture, recreation, education, and commerce generate activity within the transportation network; their sustained growth will be supported by a multi-modal transportation network that effectively accommodates movement to and between these destinations from both within and outside the region. Destinations are listed geographically along the corridor from Columbia to Newberry.

1. **University of South Carolina** – Founded in 1801, the main campus of the University of South Carolina (a public university that, in addition to the main campus, is comprised of three four-year satellite campuses and four two-year satellite campuses throughout the state) is located in downtown Columbia. More than 30,000 students and 1,600 full-time faculty attend or teach at the university, and the 80,250-seat Williams-Brice Stadium hosts Gamecock football games and other athletic events throughout the year. Major facilities on or in close proximity to the campus include the Innovista Research District, the Koger Center for the Arts, the Colonial Life Arena, Carolina Stadium, and the McKissick Museum.
2. **State Capitol** – The South Carolina State House and associated offices are located on Gervais Street in downtown Columbia. In addition to serving as the seat of state government, the campus attracts visitors and tourists from around the state and country.
3. **Columbia Museum of Art** – This museum, located on Main Street in downtown Columbia, has over 200 pieces of art housed in 25 galleries, including Old Master paintings, works by Claude Monet, and a 14-foot tall Dale Chihuly chandelier in the museum’s atrium. In addition to hosting temporary exhibitions, the museum holds educational events, hosts musical performances, and screens films that are related to the museum’s art collection and exhibitions. Annual visitation is approximately 75,000.
4. **South Carolina State Museum** – This museum, located in Columbia and opened in 1988, houses more than 70,000 artifacts of South Carolina’s history and culture on four floors.



***State Capitol from Main Street***

The museum ranks third in the state for school field trips, and students from all 46 South Carolina counties visited the museum in the 2010/2011 school year. The majority of visitors come from within South Carolina, although the museum hosted visitors from every state and 11 foreign countries during 2011. Recorded attendance over the last three years has exceeded 154,000 (2009), 156,000 (2010), and 136,000 (2011).

5. **EdVenture** – Located on Gervais Street in downtown Columbia, this children’s museum, which opened in 2003, has eight exhibit galleries (housing more than 350 hands-on exhibits), a library, learning laboratories, a resource center, two outdoor gallery spaces, and, at 40-feet tall sitting down, “EDDIE – The World’s Largest Child.” Average annual attendance is 200,000, and 40 percent of the visitors come from outside of the Midlands area of South Carolina.
6. **Governor’s Mansion** – This mansion, which has served as the home of more than 30 governors and their families since 1868, is also a repository of historical objects and is often where visiting dignitaries are officially entertained. The mansion is part of a nine-acre complex in downtown Columbia that is open for tours year-round.
7. **Riverbanks Zoo and Botanical Garden** – Located along I-126 at Greystone Boulevard, the 170-acre Riverbanks Zoo and Botanical Garden is home to more than 2,000 animals, 70 acres of gardens and several historic landmarks. Annual attendance at the zoo and garden ranges between 950,000 and 1,150,000 visitors, making it South Carolina’s number one tourist attraction.



*Riverbanks Zoo and Botanical Gardens*

8. **Saluda Shoals Park** – Operated by Irmo Chapin Recreation Commission, this 400-acre park is located along the Saluda River and offers a variety of recreational opportunities, including hiking, biking and horseback riding trails, a river observation deck, boat ramp, and picnic shelters. The park also includes an 11,000-square-foot Environmental Education Center and Exhibit Hall and a 10,000-square-foot conference facility.
9. **Columbiana Centre Mall** – This regional mall, located along I-26 in the Harbison area, has 105 retail stores that include 820,000 square feet of retail space, and is anchored by a Belk, Dillard’s, JCPenney and Sear’s. The mall’s size and inclusion of regionally-exclusive tenants make it both a local and regional shopping destination.



10. **Harbison State Forest** – This 2,135-acre forest includes 16 miles of roads and trails, and is one of the largest public greenspaces inside the city limits of a metropolitan area (Columbia) in the eastern United States.

11. **Midlands Technical College** - Harbison Campus – Midlands Technical College is the result of a 1974 merger of three separate career-oriented institutions. The college currently educates approximately 18,000 students on six campuses; the 19-acre Harbison campus is located in the Irmo area along I-26. 84 percent of the college’s students are residents of Richland or Lexington County.



*MTC Harbison Campus Theater*

12. **Lake Murray** – This reservoir, which was created in the early twentieth century as a source of hydro-electric power for the region, today provides a variety of recreational opportunities for residents of and visitors to the region.

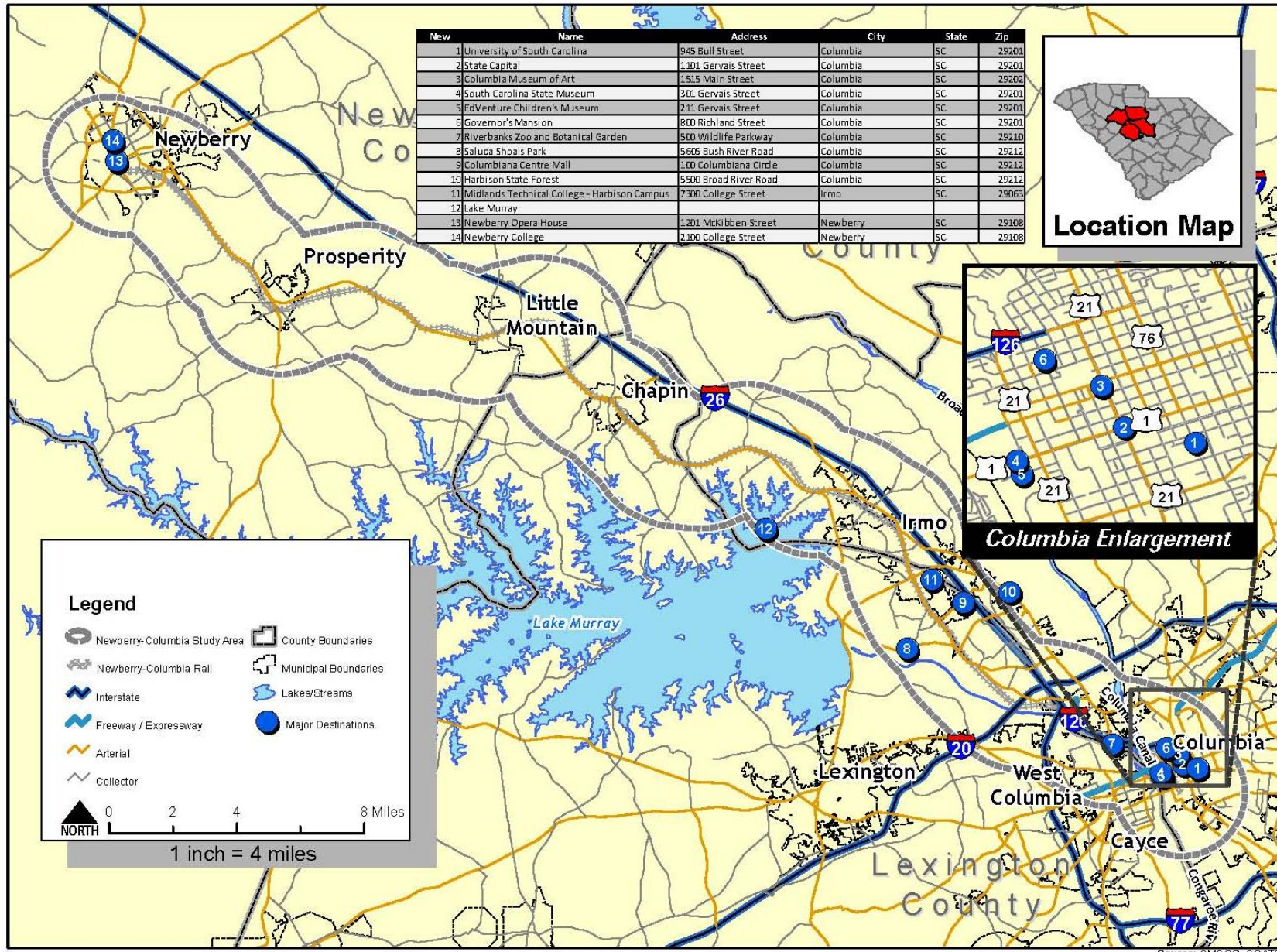
13. **Newberry Opera House** – This cultural center, which was originally built in 1881 and is listed on the National Register of Historic Places, is located in downtown Newberry. Following a decline in the mid-twentieth century and a subsequent \$5.5 million renovation, the Opera House re-opened in 1997 with state-of-the art sound and lighting systems. The Opera House currently houses a variety of musical and community performances, and draws patrons and visitors from around the state and region.



*Newberry Opera House*

14. **Newberry College** – This 90-acre campus, located in Newberry, was founded in 1856 by the Lutheran Church. Following a tumultuous series of moves in the nineteenth and twentieth centuries, this liberal arts college has grown to a current enrollment of more than 1,000 students.

Figure 2-2: Major Destinations



## 2.2 Future Land Use

Several of the communities and two of the counties within the study corridor have explicitly planned for future land uses. While understanding existing land uses is important to estimating the short-term impact of transit system investment, it is also necessary to understand the degree to which this investment complements the community's vision for its growth in the long-term.

### City of Columbia

The City of Columbia's *The Comprehensive Plan for Columbia, South Carolina: 2008-2018* (October 2008) outlines a series of goals, policies and objectives, many of which are supportive of transit service and the type of development patterns and land uses that encourage transit usage. Recommendations included within the *Comprehensive Plan* include:

- Create incentives to provide quality multi-family rental units that are affordable under the standards of affordable housing as outlined by the Department of Housing and Urban Development.
- Encourage the diversity of housing types to meet the needs of all citizens.
- Create policies and incentives that permit and encourage contextual in-fill development.
- Foster economic vitality by supporting an inclusive environment of livability and opportunity encouraging innovation and creativity.
- Plan for and promote mixed-use development by locating and regulating areas for more flexible development, including the creation of integrated live/work areas throughout Columbia creating new nodes of economic activity.
- Protect and revitalize inner city neighborhoods.
- Reduce the need of single occupancy vehicle trips and travel through better land planning techniques.
- Increase the potential for transit oriented development to achieve proper density needed for mass transit feasibility.
- Allow higher densities in proximity to existing [public transit] corridor and locations.

Columbia's growth has largely been the product of aggressive annexation; the results of recent annexations have been characterized in the *Comprehensive Plan* as "haphazard" and resulted in a series of recommendations for proactive, as opposed to reactive, annexation. Additionally, South Carolina's annexation laws often make effective annexations challenging.

The *Comprehensive Plan* includes a future land use map with six future land use zones:

- Urban core (medium/high density; mixed use; vertical and horizontal design variations, pedestrian-orientation; emphasis on structured parking; grid street network)
- Urban (low/medium density; mixed income; mixed-use; interconnected street patterns; small block sizes)
- Trans-urban (suburban zones experiencing rapid developed and urbanization; large tract developments; mixing previous and new land uses)
- Suburban (low/medium density; mixed income; sometimes non-connected streets)
- Military (low density development; open space)
- Rural (very low density; limited development; large setbacks; large lots)

The southern terminus of the corridor is in the urban core area of the city, which is the existing downtown core. The immediate surrounding area is planned for urban uses, and the corridor passes through or close to urban, trans-urban, suburban and rural zones.

### **Richland County**

Richland County completed its *Comprehensive Plan* in 2009, and identified demographic and development trends that may influence future land use and development patterns, including:

- Comparatively high rates of growth in unincorporated areas.
- Inefficient growth patterns in the northeast and northwest portions of the County.
- Incompatible land uses in the vicinity of Fort Jackson.
- Missed opportunities for in-fill development, which is resulting in sprawl greenfield development and the loss of agricultural land.
- Insufficient supply of affordable housing.

The *Comprehensive Plan* includes a future land use plan divided into five planning areas; while some of the areas overlap with the City of Columbia, the County's North West Planning Area includes areas that fall outside of existing municipal boundaries. The County believes that the amount of rural land in this area will continue to decrease as suburban areas continue to extend toward Chapin. Lake Murray is a major driver in this development trend; in an effort to control unplanned growth, and the resulting sprawl and inefficient land uses, the County has provided a suburban/rural boundary as a guideline for land use transition.

Land use goals of the *Comprehensive Plan*, which are focused on encouraging sustainable development patterns through infill development and redevelopment, include:

- Develop incentives promoting reuse of existing structures and vacant lands.
- Promote urban and suburban infill development projects.

- Growth in a responsible way, eliminating inefficient land use patterns.
- Promote compact developments: high density compact mixed-use residential development designed to reduce the amount of infrastructure and impervious surfaces.
- Promote transit oriented development: moderate- to high-density mixed-use developments centered on a major transit stop which are designed for pedestrians without excluding automobiles.

### **City of West Columbia**

The City of West Columbia’s future land use goal, as defined in the 2011 *City of West Columbia Comprehensive Plan*, is to “provide for a land use pattern that facilitates pedestrian and transit oriented development while preserving environmentally sensitive land.” The City’s transportation goal is to “provide for an adequate transportation system which reduces congestion, increases access, and ensures public safety.” West Columbia’s *Comprehensive Plan* includes land use and transportation policies that acknowledge the influence of land use patterns and the transportation network on each other, and advocate the pursuit of mixed-use development and multi-modal transportation network as a means to implement the *Plan’s* land use and transportation policies. While the majority of land uses within the study corridor boundary are planned to remain as single-family residential, the City’s plan to encourage mixed-use, compact development in adjacent areas will promote and support the use of non-vehicular transportation, which is likely to support transit use.

### **Town of Irmo**

Future land uses in Irmo will be guided by the Town’s 2009 *Comprehensive Plan*, which indicates that the town will continue to be predominantly single-family residential, with commercial clustered along I-26, US 176 and SC 60. The corridor travels through or proximate to several land use types, as defined by the Town. These include:

- Single Family Residential (up to six units an acre that is designed to “...conserve and protect the character and present use of existing single family neighborhoods and subdivisions...”)
- General Residential (designed to enable the development of non-single-family residential; comparatively higher density)
- General Commercial (regional or general commercial and business development activity)
- Limited Commercial (lower-intensity community and/or convenience retail and business development proximate to residential areas)
- Public Resource Area (education and recreational sites and facilities)
- Industrial (promote industrial development in designated areas)

Irmo's *Comprehensive Plan* identifies a series of policies that, if successfully implemented, are likely to acknowledge changing demographics and support transit investment within the study corridor, including:

- “Provide a framework for land utilization and development, to ensure an orderly, efficient, equitable and compatible arrangement and distribution of the town’s physical resources” (coordinated land use and infrastructure planning; coordinated land use and development decisions).
- “Protect existing residential areas, promote land use compatibility, and provide for an orderly, efficient arrangement of the land use” (adopt and use *Comprehensive Land Use Plan*; revise the zoning ordinance to support the *Plan’s* implementation; identify market-responsive and context-sensitive uses for development sites).

### **Town of Chapin**

The Town of Chapin’s future land use plan, contained in the Town’s 2011 draft *Comprehensive Plan*, includes extended commercial corridors along S-48 and US 76, expanded interstate commercial at the I-26 interchange, and increased residential uses along the edges of the current town limits. A mixed-use district will buffer the commercial and residential areas, which may support increased density and the creation of a more pedestrian-friendly environment. The *Plan* also includes an expanded town center district that will become Chapin’s economic and cultural focal point.

### **City of Newberry**

The City of Newberry’s *Comprehensive Plan 2010-2020* introduces a mixed land use category, which is designed to enable development flexibility and accommodate a mixture of future land uses. The City’s existing land use is primarily residential, and is planned to remain that way into the future; the new mixed-use category will primarily be drawn from land that is currently used for residential and parks/open space uses. Of the City’s identified potential growth areas, which are largely concentrated along the City’s western and eastern boundaries, more than 70 percent of the land will be planned for mixed uses. The alignment will pass through each of the City’s six future land use categories before terminating in the Central Business District.

## **2.3 Development Trends**

When reviewing development trends the intent is to reasonably anticipate future land use scenarios and transportation requirements through consideration of historic building permits and existing development patterns along the corridor. The past decade has produced dramatic pendulum swings in activity. The building boom of the early part of this century gave way to a national economic downturn in 2007 and 2008. As shown in Table 2-1, residential building

permits within the corridor began a dramatic descent in 2007 and by 2010 had reached levels less than half those experienced just four years prior. Non-residential permits showed a similar decline, but the non-residential drop has been less dramatic and did not begin to occur until one year later in 2008.

**Table 2-1 Annual Number of Issued Study Corridor Residential and Non-Residential Building Permits**

Type	2005	2006	2007	2008	2009	2010
<b>Residential</b>	980	928	737	658	415	406
<b>Non-Residential</b>	1,313	1,409	1,552	1,466	1,095	1,116

Source: CMCOG

The recession’s effect on development, and lingering economic uncertainty, make straight-line projections of future development impossible. However, it is still possible to have a reasonable idea of where development will occur, and thus where transportation demands may increase. This can be accomplished through examination of historic development patterns and demographic data. It can be anticipated that the combination of forecasted population and employment growth, decrease in the average household size, and comparatively low level of new construction activity over the past five or more years will result in pent-up demand for new residential and non-residential structures over the coming decade.

Anecdotal evidence indicates that the single-family residential market is beginning to show signs of emerging from its recession slumber. It is safe to assume that the geographic areas that were blossoming with residential development prior to the downturn will be attractive once again. As is common in suburban environments, residential building permits were scattered throughout the corridor between 2005 and 2010. However, even within the suburban pattern of development, there were noticeable clusters of residential construction focused in three primary areas:

- Around established community cores, including Newberry, Prosperity, and Chapin;
- Areas with immediate or proximate access to Lake Murray; and
- East of I-26 in the Dutch Fork area along major roadways, including Broad River, Kennerly, and Hollingshed Roads.

As residential development returns to these areas, it can be anticipated that commercial will follow. Based on previous development patterns, new commercial construction will continue to be located in relatively close proximity to residential subdivisions and be automobile

oriented in its design (i.e., strip, village, or lifestyle centers with large parking capacities). However, if enhanced transit improvements were implemented, coupled with supportive land use scenarios, commercial uses might be lured to congregate more centrally around transit stops and associated park-and-ride locations. Additionally, residential might too begin to move proximally to the transit line.



### 3.0 Cultural Resources

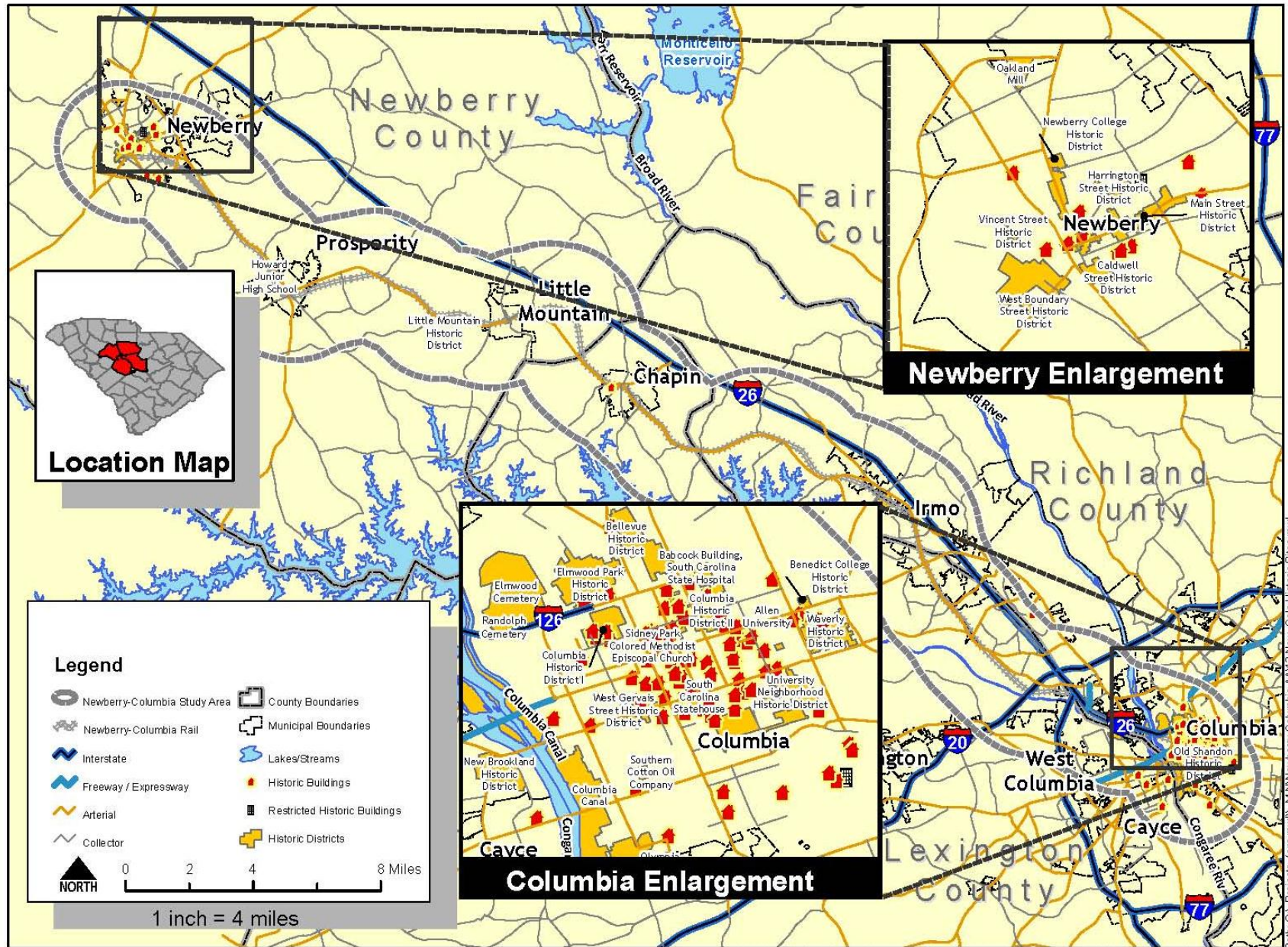
#### 3.1 Historical and Archaeological Resources

Historic properties are defined as prehistoric or historic districts, sites, buildings, and structures significant in American history and listed in, or eligible for, the National Register of Historic Places (NRHP). The National Historic Preservation Act (NHPA) of 1966, as amended, the National Environmental Policy Act (NEPA) of 1969, and other applicable federal, state, and local legislation govern the identification, analysis, and treatment of historic resources. FTA, and other involved federal agencies, are required to take into account the effect of the proposed project on historic properties. The NRHP was established at the Federal level by NHPA to record resources significant in our understanding of American history and culture. For purposes of this discussion, archeological resources (sites) refer to cemeteries, prehistoric, historic, and archeological sites, while historic resources refer to buildings, structures, or districts.

Figure 3-1 provides a listing and locations of National State Historic Sites and Landmarks within the Newberry-Columbia corridor. As the project continues to move forward into the alternatives analysis, those historic sites and/or landmarks will be considered as to whether a particular alternative has an effect, and subsequently, if that affect is adverse. Using the Criteria of Adverse Effect, 36 CFR §800.5(a)(1), and the Definition of Effect specified in 36 CFR §800.16(i) and 36 CFR §800.4(d)(1), three basic findings can be made:

- No Effect: there is no effect, either harmful or beneficial, on the historic property.
- No Adverse Effect: there could be an effect, but the effect would not be harmful to those characteristics that qualify the property for inclusion in the NRHP.
- Adverse Effect: there could be an effect, and that effect could diminish the integrity of such characteristics.

Figure 3-1: Existing Historic Sites



Source: Newberry County, Lexington County, Richland County, CMOG, COATS, National Register of Historic Buildings

### 3.2 Section 4(f) and 6(f) Resources

Under Section 4(f), FTA and other involved agencies cannot approve a transportation program or project that requires the use of any publicly owned land from a significant public park, recreation area, or wildlife and waterfowl refuge, or any land from a significant historic site, unless a determination is made that:

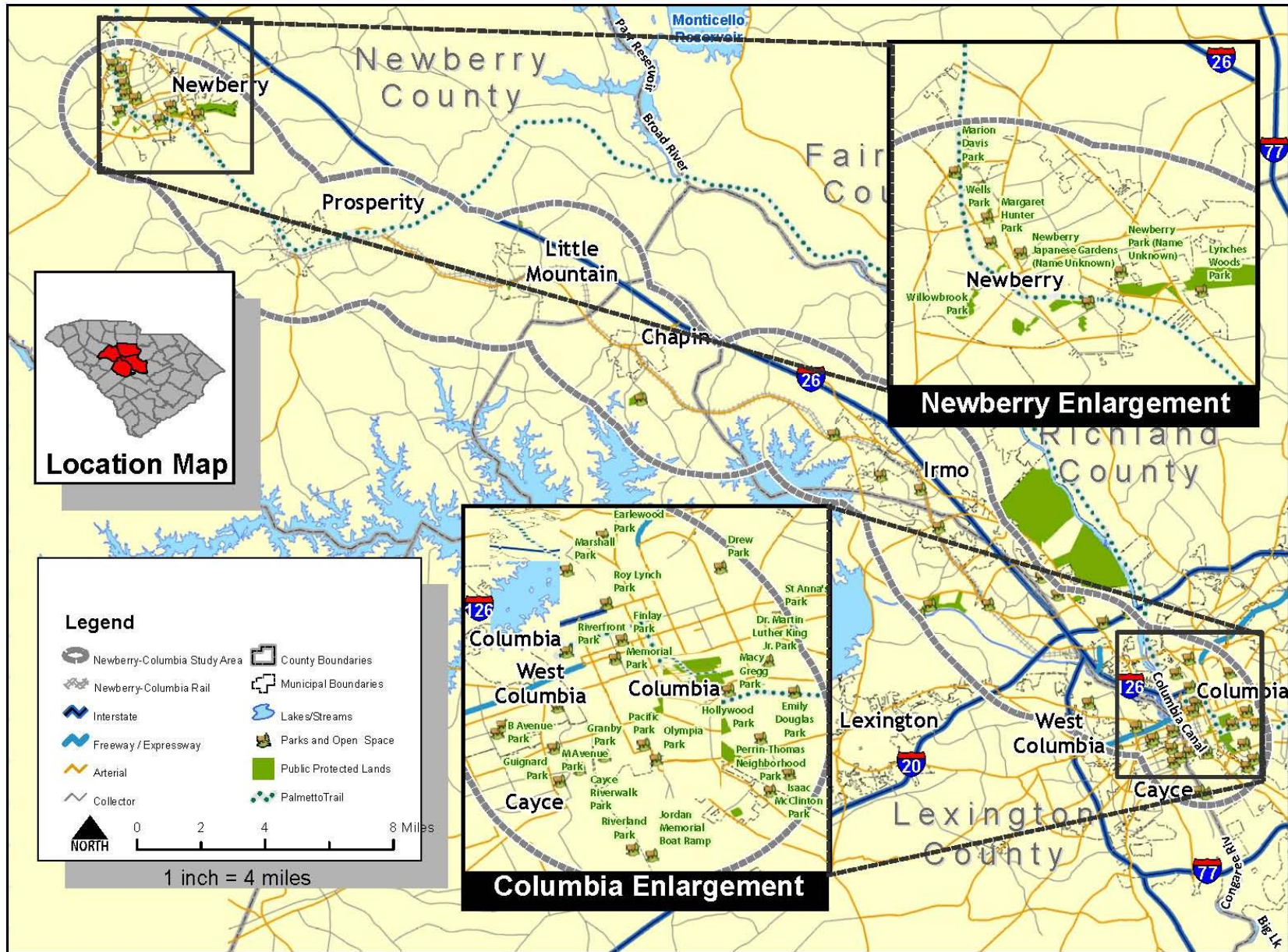
- The use will have no more than a de minimis (i.e., so minor as to be disregarded) impact on the area; or
- There is no feasible and prudent alternative to using the property; and
- The program or project includes all possible planning to minimize harm to the property resulting from the use.

Before approving use of these lands for a transportation project, supporting information must demonstrate that there are unique problems or unusual factors involved in the use of alternatives that avoid these properties, or that the cost, social, economic, and environmental impacts, or community disruption resulting from such alternatives reach extraordinary magnitude. Section 6(f) of the Land and Water Conservation Fund Act (LWCFA) concerns transportation projects that propose to convert outdoor recreation property that was acquired or developed with LWCFA grant assistance. Section 6(f) assures that replacement lands of equal value, location, and usefulness are provided as conditions to approval of land conversions. Where a Section 6(f) land conversion is proposed for a transportation project, replacement land will be necessary, and the land transfer must be documented.

Because it is not uncommon for recreational resources to receive LWCFA funding, Section 6(f) may be an integral part of Section 4(f) when recreation resources are involved. When addressing Section 4(f) parks and recreation areas, it is critical to determine if the resources were acquired or developed with LWCFA funds.

A summary of existing parks and recreation areas for the Newberry-Columbia corridor is included in Figure 3-2. Park and recreational areas within the Corridor will be evaluated to determine if Section 4(f) and/or 6(f) designations apply. As the project continues to move forward into the alternatives analysis, those park and recreational areas with 4(f) and/or 6(f) designations will follow with a summary description, existing conditions, impacts, avoidance alternatives, and measures to minimize harm.

Figure 3-2: Existing Parks and Open Space



## **4.0 Natural Environment**

### **4.1 Floodplain**

US Department of Transportation Order 5650.2 entitled Floodplain Management and Protection prescribes policies and procedures for ensuring that proper consideration is given to the avoidance and mitigation of floodplain impacts. The Federal Emergency Management Agency (FEMA) estimated floodplain limits for 100-year storm events using Flood Insurance Rate Maps for the Newberry-Columbia corridor as show on Figure 4-1. All three counties have flood zones within the corridor.

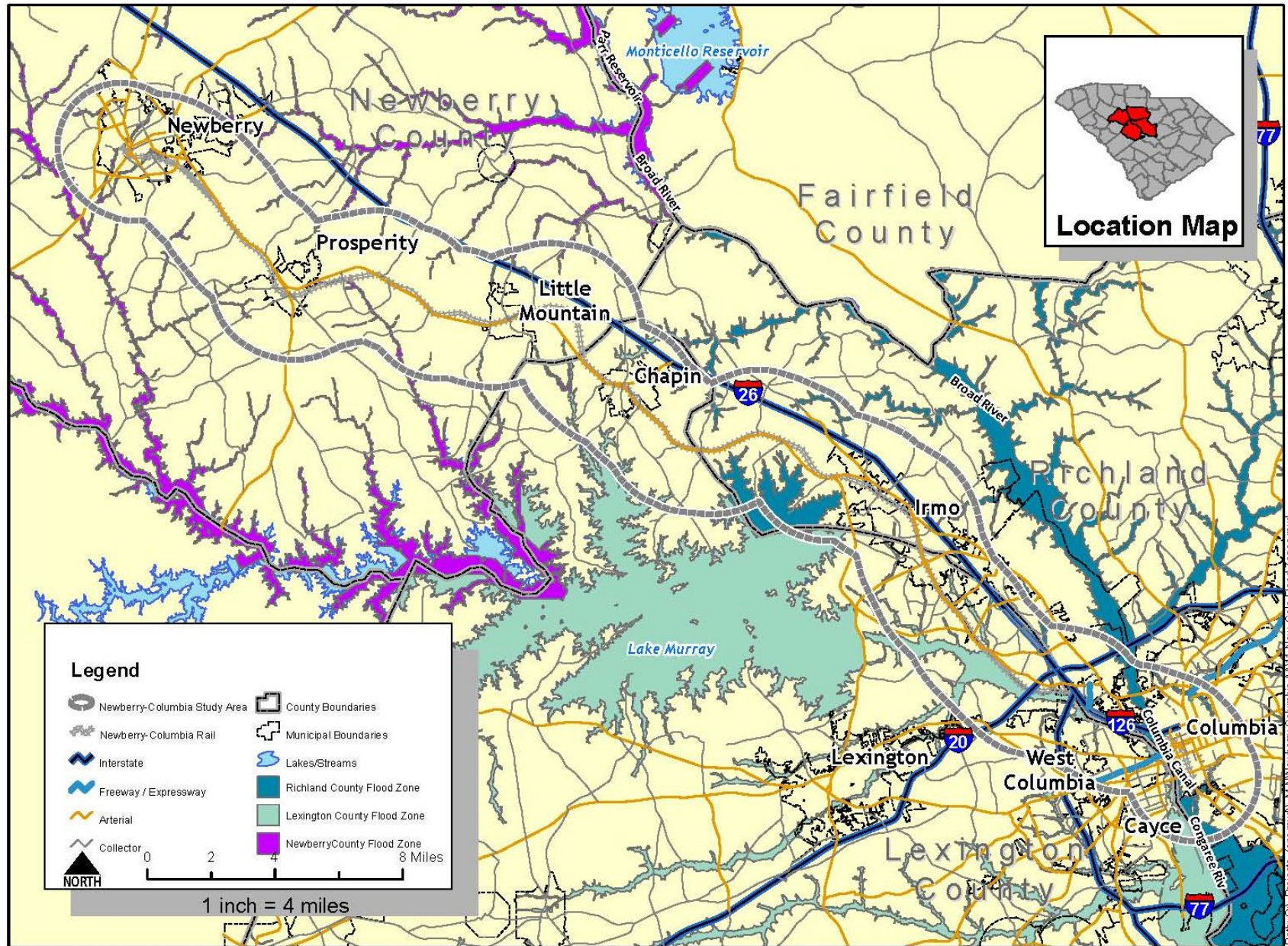
The significance of any floodplain encroachment will be evaluated with respect to the criteria in Executive Order 11988 *Floodplain Management*. This Order requires federal agencies to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of flood plains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative.

### **4.2 Wetlands**

South Carolina does not have a comprehensive wetland program. The EPA and the US Army Corps of Engineers are responsible for administering the federal regulations, Section 404 (for Dredge and Fill activities) and 401 (Water Quality Certification) of the Federal Clean Water Act.

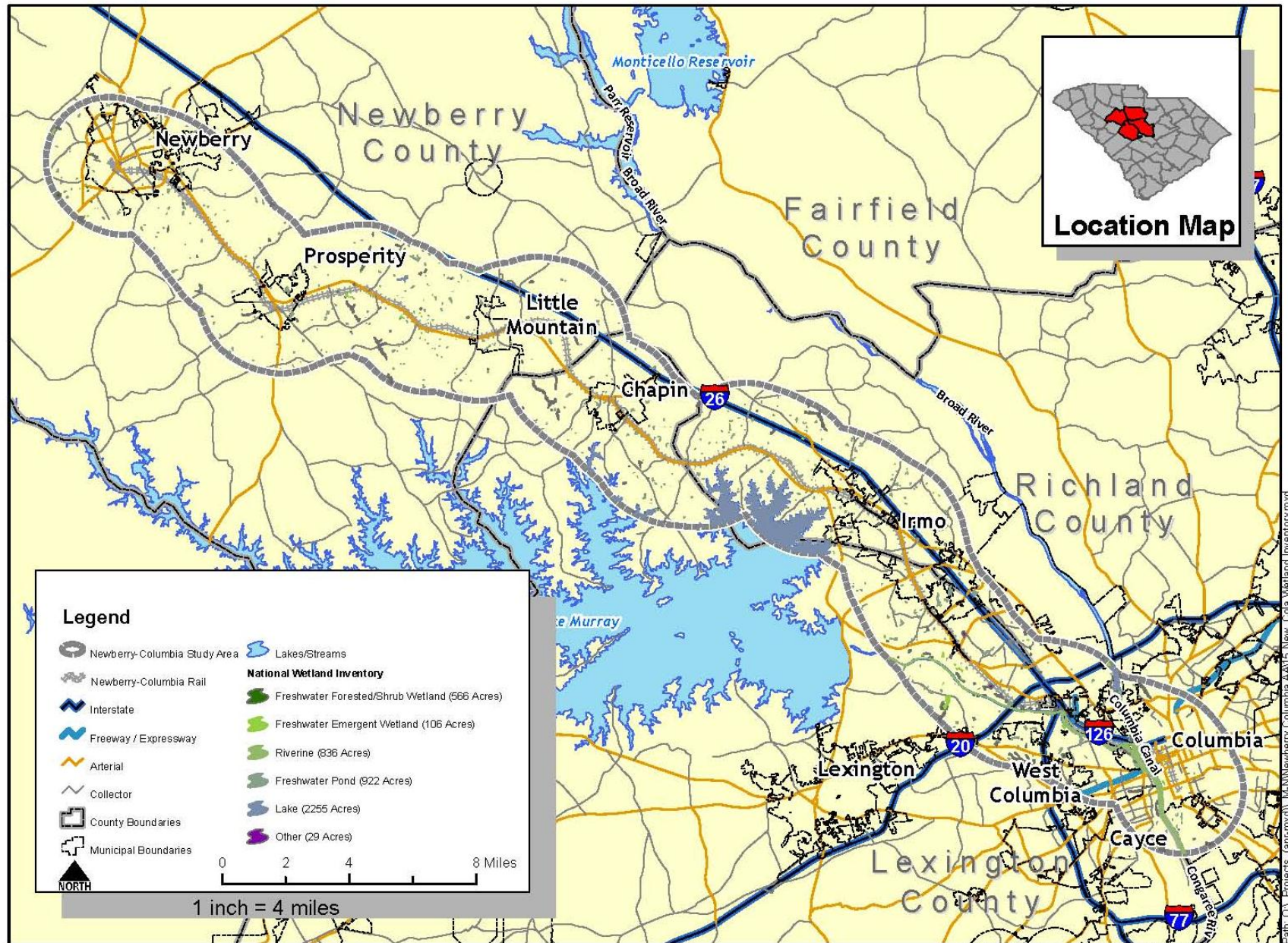
Figure 4-2 provides the wetlands in the Newberry-Columbia corridor. As the project continues to move forward into the alternatives analysis, investigations of avoidance and minimization measures of wetlands will continue through all phases of the project.

Figure 4-1: Flood Zone Inventory



Source: Newberry County, Lexington County, and Richland County Flood Zone

Figure 4-2: Wetlands Inventory



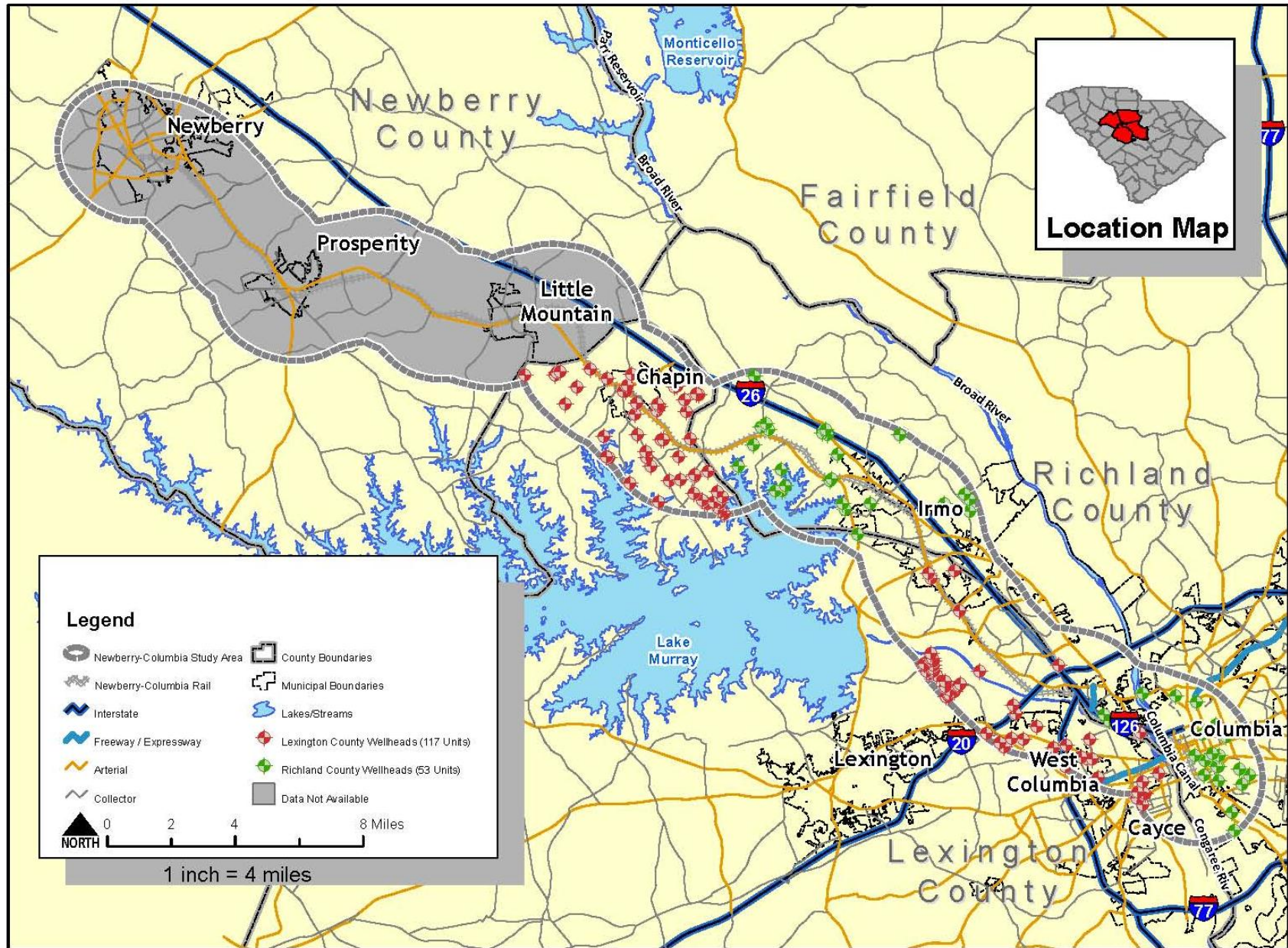
SOURCE: <http://www.fws.gov/wetlands/Data/State-Downloads.html>

### **4.3 Groundwater**

Aquifers in the Newberry-Columbia corridor will be characterized from available groundwater documentation, such as wellhead protection plans, mapping, and review of the State’s list of sensitive aquifers. Figure 4-3 graphically depicts existing wellhead inventory in Richland, Newberry and Lexington Counties.



Figure 4-3: Wellhead Inventory



Source: Richland County, Lexington County, SCDHEC

#### 4.4 Vegetation and Wildlife

Potential Conservation Areas (PAC) are defined as places on the landscape dominated by native vegetation that have various levels of potential for harboring high quality natural areas and unique natural features. In addition, these areas may provide critical ecological services such as maintaining water quality and quantity, soil development and stabilization, pollination of cropland, wildlife travel corridors, stopover sites for migratory birds, sources of genetic diversity, and floodwater retention. Figure 4-4 presents the project open spaces and public lands within the corridor. As the project continues to move forward into the alternatives analysis, potential PAC impacts will follow with a summary description, existing conditions, impacts, avoidance alternatives, and measures to minimize harm.

Table 4-1 provides a summary of the endangered, threatened, and candidate species from March 2010. Appendix A provides a list of the rare, threatened, and endangered species in Lexington, Richland and Newberry counties.

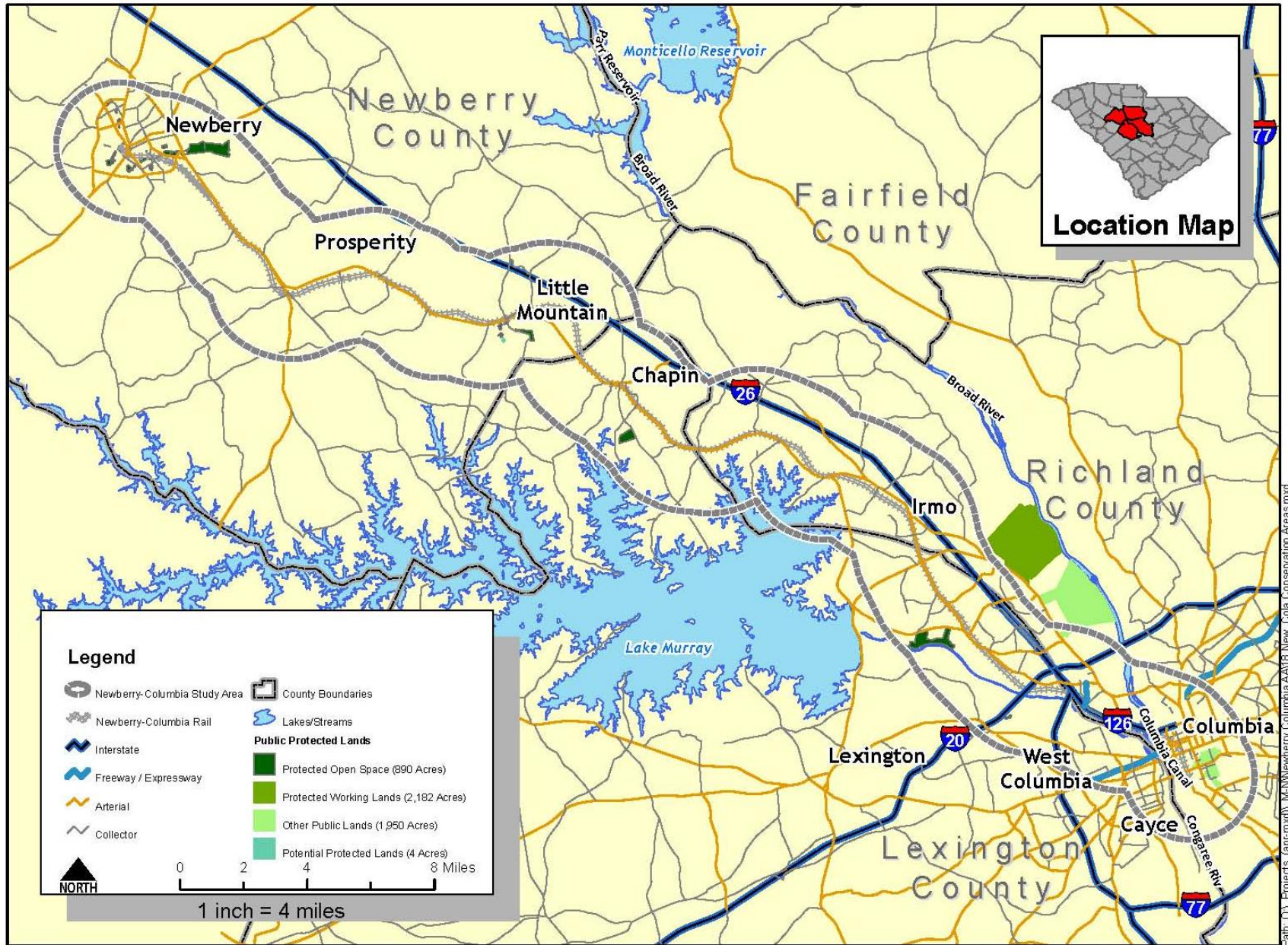
**Table 4-1: Endangered Species by County**

County	Common Name	Status
Lexington	Bald Eagle	BGEPA
	Red-cockaded woodpecker	E
	Shortnose sturgeon	E
	Smooth coneflower	E
Newberry	Bald Eagle	BGEPA
Richland	Bald Eagle	BGEPA
	Canby's dropwort	E
	Georgia aster	C
	Red-cockaded woodpecker	E
	Rough-leaved loosestrife	E
	Shortnose sturgeon	E
	Smooth coneflower	E
Wood stork	E	

*Source: South Carolina List of Endangered, Threatened and Candidate Species, March 2010*

*E: federally endangered; C: The US Fish and Wildlife service or National Marine Fisheries Service has on file sufficient information on biological vulnerability and threats to support proposals to list species; BGEPA Federally protected under the Bald and Golden Eagle Protection Action*

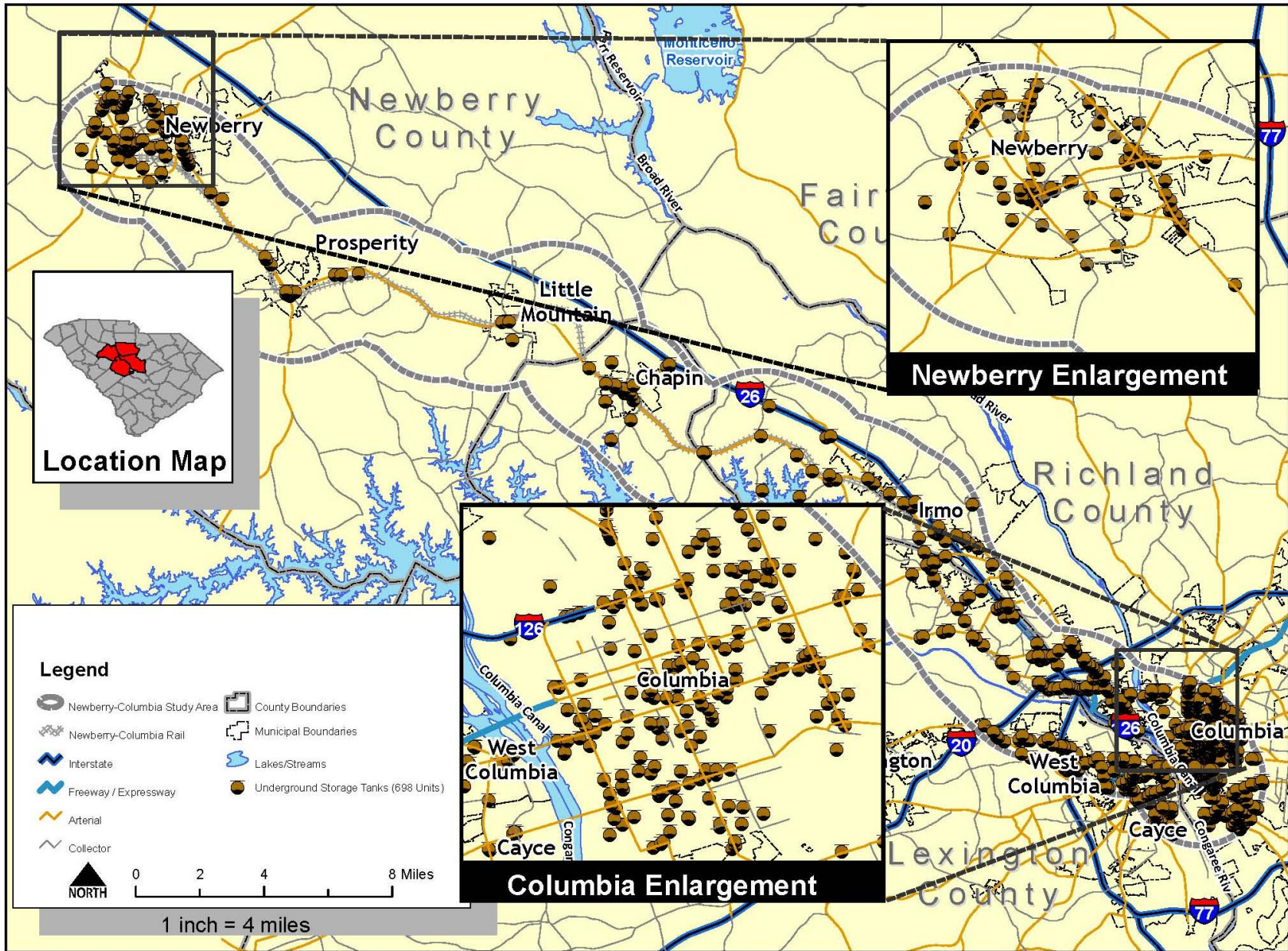
Figure 4-4: Potential Conservation Areas



## 5.0 Hazardous Materials

Figure 5-1 displays Underground Storage Tanks (USTs) within the corridor. It is recommended that more detailed environmental assessments be performed for specific sites of concern and large property acquisitions following approval of a Locally Preferred Alternative (LPA) and prior to property acquisition and negotiation. A regulatory database search should be performed to update the documentation on known contaminant releases along the LPA alignment. Where appropriate, based on site observations and available documentation, assessment efforts may include Phase I Environmental Site Assessments with soil and/or groundwater sampling and analysis.

Figure 5-1: Underground Storage Tanks



Path: O:\Projects\ap-fmxd\1\_MNNewberry-Columbia\AA19 New\_Cola Existing Underground Storage Tanks.mxd

Source: <http://www.scdhec.gov/gis/GIS.aspx>

## 6.0 Air Quality

Air pollution is a general term that refers to one or more chemical substances that degrade the quality of the atmosphere. Individual air pollutants degrade the atmosphere by reducing visibility, damaging property, reducing the productivity or vigor of crops or natural vegetation, or reducing human or animal health. The Clean Air Act and Amendments of 1990 (CAAA) and the Final Transportation Conformity Rule (40 CFR Parts 51 and 93) direct the EPA to implement environmental policies and regulations that will ensure acceptable levels of air quality. The EPA has established the National Ambient Air Quality Standards (NAAQS) in accordance with the requirements of the CAAA and requirements of the Conformity Rule. The Greater Columbia and Central Midlands region which includes the Newberry Columbia Corridor are in attainment of NAAQS. Additionally, the Bureau of Air Quality at the South Carolina Department of Health and Environmental Control (SCDHEC) has determined that transportation control measures (TCMs) are not currently required to maintain the area's air quality.

## **7.0 Noise and Vibration**

### **7.1 Noise Analysis**

Noise criteria, as they apply to highway and transit projects, provide a general determination of noise levels that would adversely impact a community. Noise Abatement Criteria (NAC) have been developed for different land use categories (23 CFR 772). The NAC are considered to be maximum noise levels for outdoor activities, and for certain indoor activities. If noise levels approach or exceed the maximum, a noise impact occurs, and noise abatement will be considered.

Existing noise levels will be recorded at yet-to-be determined locations within the corridor. Noise monitoring will be placed representative of typical uses within the corridor. As the project continues to move forward into the alternatives analysis, those noise monitoring locations areas will follow with a summary description, existing conditions, impacts, avoidance alternatives and measures to minimize harm.

### **7.2 Vibration Analysis**

The objective for conducting a vibration analysis is to evaluate vibration effects of project alternatives on the adjacent community and the ability to avoid, minimize or mitigate predicted impacts that may occur as a result of transit improvements (e.g. LRT, BRT, potential O&M facilities etc.). Transit noise and vibration procedures set forth by the FTA may be used to predict transit generated noise and vibration levels. FTA uses vibration criteria to measure potential vibration impacts generated by a transit project. FTA guidelines apply to transit vehicles operating on the transit corridor, near stations, and near other supporting transit facilities. The criteria are based on the maximum vibration levels in decibels (vibration decibels or VdB) for three land use categories generated by a single pass-by event.

Typically, the major sources of vibration in transit corridors are those generated predominately from automobiles, trucks, and buses. Typical velocity levels generated by these types of vehicles range from 50 to 60 vibration decibels (VdB) and are well below the threshold of annoyance. As the project continues to move forward into the alternatives analysis, potential vibration impact areas will follow with a summary description, existing conditions, impacts, avoidance alternatives, and measures to minimize harm.

**Appendix 1**  
**Rare, Threatened, and Endangered Species**



Rare, Threatened, and Endangered Species and Communities Known to Occur in Lexington County, South Carolina

March 13, 2012

Scientific Name	Common Name	USESA Designation	State Protection	Global Rank	State Rank
<u>Vertebrate Animals</u>					
<i>Haliaeetus leucocephalus</i>	Bald Eagle		ST: Threatened	G5	S2
<i>Micrurus fulvius</i>	Eastern Coral Snake			G5	S2
<i>Picoides borealis</i>	Red-cockaded Woodpecker	LE: Endangered	SE: Endangered	G3	S2
<i>Sciurus niger</i>	Eastern Fox Squirrel			G5	S4
<i>Seminatrix pygaea</i>	Black Swamp Snake			G5	SNR
<u>Vascular Plants</u>					
<i>Andropogon gyrans</i> var. <i>stenophyllus</i>	Elliott's Bluestem			G4Q	S1
<i>Aristida condensata</i>	Piedmont Three-awned Grass			G4?	S2
<i>Asplenium pinnatifidum</i>	Lobed Spleenwort			G4	S1
<i>Burmannia biflora</i>	Northern Burmannia			G4G5	S2
<i>Carex collinsii</i>	Collins' Sedge			G4	S2
<i>Ceratiola ericoides</i>	Sandhills Rosemary			GNR	S1
<i>Chrysoma pauciflosculosa</i>	Woody Goldenrod			G4G5	S1S2
<i>Coreopsis gladiata</i>	Southeastern Tickseed			G4G5	SNR
<i>Euonymus atropurpureus</i>	Eastern Wahoo			G5	S1
<i>Gaylussacia mosieri</i>	Woolly Huckleberry			G4	S1
<i>Hymenocallis coronaria</i>	Shoals Spider-lily			G2Q	S2
<i>Hypericum nitidum</i>	Carolina St. John's-wort			G4	S1
<i>Liatris microcephala</i>	Small-head Gayfeather			G3G4	S1
<i>Lobelia sp. 1</i>	Lobelia			G3	SNR
<i>Lycopus cokeri</i>	Carolina Bugleweed			G3	S2
<i>Menispermum canadense</i>	Canada Moonseed			G5	S2S3
<i>Mysiophyllum laxum</i>	Piedmont Water-milfoil			G3	S2
<i>Nolina georgiana</i>	Georgia Beargrass			G3G5	S3
<i>Oxypolis ternata</i>	Piedmont Cowbane			G3	S1
<i>Pityopsis pinifolia</i>	Pine-leaved Golden Aster			G4	S2
<i>Polygala nana</i>	Dwarf Milkwort			G5	S1
<i>Rhynchospora alba</i>	White Beakrush			G5	S1
<i>Rhynchospora inundata</i>	Drowned Hornedrush			G4?	S2?
<i>Rhynchospora leptocarpa</i>	Narrow-fruited Beaksedge			G3	S1
<i>Rhynchospora stenophylla</i>	Chapman Beakrush			G4	S2
<i>Rorippa sessiliflora</i>	Stalkless Yellowcress			G5	SNR

Scientific Name	Common Name	USES Designation	State Protection	Global Rank	State Rank
<i>Sagittaria isoetiformis</i>	Slender Arrow-head			G4?	S3
<i>Sarracenia rubra</i>	Sweet Pitcher-plant			G4	S3S4
<i>Scirpus subterminalis</i>	Water Bulrush			G4G5	SNR
<i>Sporobolus teretifolius</i>	Wire-leaved Dropseed			G2	S1
<i>Stylisma pickeringii</i> var. <i>pickeringii</i>	Pickering's Morning-glory			G4T3	S2
<i>Tridens carolinianus</i>	Carolina Fluff Grass			G3G4	S1
<i>Vaccinium crassifolium</i>	Creeping Blueberry			G4G5	SNR
<i>Vaccinium crassifolium</i> ssp. <i>sempervirens</i>	Rayner's Blueberry			G4G5T1	S1
<i>Warea cuneifolia</i>	Nuttall Warea			G4	S1
<i>Xyris chapmanii</i>	Chapman's Yellow-eyed Grass			G3	S1
<u>Communities</u>					
Atlantic white cedar swamp				G2	S2
Bay forest				G3G4	S3
Bottomland hardwoods				G5	S4
Oak - hickory forest				G5	S5
Pine - scrub oak sandhill				G4	S4
<i>Pinus palustris</i> / <i>Quercus laevis</i> / <i>Leiophyllum</i> <i>buxifolium</i> - <i>Cyrilla racemiflora</i> - <i>Clethra</i> <i>alnifolia</i> Woodland	Sandstone/Gravel Longleaf Pine Woodland			G1	SNR
Seepage pocosin				G3	S1S2
Small stream forest				G5	S5
Swamp tupelo pond				G3	S3
Upland pine - wiregrass woodland				G3	S3
Xeric sandhill scrub				G5	S3
<u>Ecological</u>					
Carolina bay				GNR	SNR
Outcrop				GNR	SNR
Sandstone outcrop				GNR	SNR

Rare, Threatened, and Endangered Species and Communities Known to Occur in Newberry County, South Carolina  
January 27, 2012

Scientific Name	Common Name	USES A Designation	State Protection	Global Rank	State Rank
<u>Vertebrate Animals</u>					
<i>Haliaeetus leucocephalus</i>	Bald Eagle		ST-Threatened	G5	S2
<i>Mycteria americana</i>	Wood Stork	LE: Endangered	SE-Endangered	G4	S1S2
<i>Ursus americanus</i>	Black Bear			G5	S3?
<u>Invertebrate Animals</u>					
<i>Distocambarus youngineri</i>	Newberry Burrowing Crayfish			G1	S1
<i>Elliptio lanceolata</i>	Yellow Lance			G2G3	SNR
<u>Vascular Plants</u>					
<i>Dirca palustris</i>	Eastern Leatherwood			G4	S2
<i>Eupatorium fistulosum</i>	Hollow Joe-pye Weed			G5?	SNR
<i>Frasera caroliniensis</i>	Columbo			G5	S2
<i>Heteranthera reniformis</i>	Kidneyleaf Mud-plantain			G5	S1
<i>Juglans cinerea</i>	Butternut			G4	S3
<i>Liparis liliifolia</i>	Large Twayblade			G5	S1
<i>Magnolia pyramidata</i>	Pyramid Magnolia			G4	S1
<i>Monotropsis odorata</i>	Sweet Pinesap			G3	S2
<i>Philadelphus hirsutus</i>	Streambank Mock-orange			G5	S2
<i>Rhododendron eastmanii</i>	May White			G2	S2
<i>Viola pubescens</i> var. <i>leiocarpon</i>	Yellow Violet			G5T5	S2
<u>Communities</u>					
Basic forest				GNR	S2
Bottomland hardwoods				G5	S4
Cove forest				G5	S4
Oak - hickory forest				G5	S5
<u>Ecological</u>					
Granitic flatrock				G3	S2

Rare, Threatened, and Endangered Species and Communities Known to Occur in Richland County  
February 13, 2012

Scientific Name	Common Name	USESA Designation	State Protection	Global Rank	State Rank
<u>Vertebrate Animals</u>					
<i>Condylura cristata</i>	Star-nosed Mole			G5	S3?
<i>Corynorhinus rafinesquii</i>	Rafinesque's Big-eared Bat		SE: Endangered	G3G4	S2?
<i>Etheostoma collis</i>	Carolina Darter	SC: Sp. of Concern	ST: Threatened	G3	SNR
<i>Fundulus diaphanus</i>	Banded Killifish			G5	S1
<i>Haliaeetus leucocephalus</i>	Bald Eagle		ST: Threatened	G5	S2
<i>Heterodon simus</i>	Southern Hognose Snake			G2	SNR
<i>Hyla andersonii</i>	Pine Barrens Treefrog		ST: Threatened	G4	S2S3
<i>Notropis chiliticus</i>	Redlip Shiner			G4	S1?
<i>Picoides borealis</i>	Red-cockaded Woodpecker	LE: Endangered	SE: Endangered	G3	S2
<i>Rhinichthys obtusus</i>	Blacknose Dace			G5	S1
<i>Sciurus niger</i>	Eastern Fox Squirrel			G5	S4
<i>Spilogale putorius</i>	Eastern Spotted Skunk			G5	S4
<i>Sylvilagus aquaticus</i>	Swamp Rabbit			G5	S2S3
<i>Tyto alba</i>	Barn-owl			G5	S4
<i>Ursus americanus</i>	Black Bear			G5	S3?
<u>Invertebrate Animals</u>					
<i>Elimia catenaria</i>	Gravel Elimia			G4	SNR
<i>Pyganodon cataracta</i>	Eastern Floater			G5	SNR
<i>Strophitus undulatus</i>	Creeper			G5	S2
<i>Villosa delumbis</i>	Eastern Creekshell			G4	S4
<u>Animal Assemblage</u>					
Waterbird Colony				GNR	SNR
<u>Vascular Plants</u>					
<i>Agalinis tenella</i>				G4Q	SNR
<i>Andropogon gyrans</i> var. <i>stenophyllus</i>	Elliott's Bluestem			G4Q	S1
<i>Aristida condensata</i>	Piedmont Three-awned Grass			G4?	S2
<i>Astragalus michauxii</i>	Sandhills Milkvetch			G3	S3
<i>Balduina atropurpurea</i>	Purple Balduina			G2	S1
<i>Botrychium lunarioides</i>	Winter Grape-fern			G4?	S1
<i>Calamovilfa brevipilis</i>	Pine-barrens Reed-grass			G4	S1
<i>Carex cherokeensis</i>	Cherokee Sedge			G4G5	S2

Scientific Name	Common Name	USESA Designation	State Protection	Global Rank	State Rank
<i>Carex collinsii</i>	Collins' Sedge			G4	S2
<i>Carex crus-corvi</i>	Ravenfoot Sedge			G5	S2
<i>Carex elliotii</i>	Elliott's Sedge			G4?	S1
<i>Carex socialis</i>	Social Sedge			G4	S1
<i>Cayaponia quinqueloba</i>	Cayaponia			G4	S1?
<i>Collinsonia serotina</i>	Southern Horse-balm			G3G4	S1
<i>Coreopsis gladiata</i>	Southeastern Tickseed			G4G5	SNR
<i>Dryopteris carthusiana</i>	Spinulose Shield Fern			G5	S1
<i>Echinacea laevigata</i>	Smooth Coneflower	LE: Endangered		G2G3	S3
<i>Eleocharis robbinsii</i>	Robbins Spikerush			G4G5	S2
<i>Hymenocallis coronaria</i>	Shoals Spider-lily			G2Q	S2
<i>Hypericum adpressum</i>	Creeping St. John's-wort			G3	S2
<i>Hypericum nitidum</i>	Carolina St. John's-wort			G4	S1
<i>Ilex amelanctica</i>	Sarvis Holly			G4	S3
<i>Ipomopsis rubra</i>	Red Standing-cypress			G4G5	S2
<i>Juncus abortivus</i>	Pinebarren Rush			G4G5	S2
<i>Lechea torreyi</i>	Piedmont Pinweed			G4	SNR
<i>Liatris microcephala</i>	Small-head Gayfeather			G3G4	S1
<i>Lindera subcoriacea</i>	Bog Spicebush			G2G3	S3
<i>Lobelia</i> sp. 1	Lobelia			G3	SNR
<i>Ludwigia spathulata</i>	Spatulate Seedbox			G2	S2
<i>Lycopus cokeri</i>	Carolina Bugleweed			G3	S2
<i>Lysimachia asperulifolia</i>	Rough-leaved Loosestrife	LE: Endangered		G3	S1
<i>Macbridea caroliniana</i>	Carolina Bird-in-a-nest			G2G3	S3
<i>Magnolia macrophylla</i>	Bigleaf Magnolia			G5	S1
<i>Magnolia pyramidata</i>	Pyramid Magnolia			G4	S1
<i>Myriophyllum laxum</i>	Piedmont Water-milfoil			G3	S2
<i>Nestronia umbellula</i>	Nestronia			G4	S3
<i>Ophioglossum vulgatum</i>	Adder's-tongue			G5	S2
<i>Oxypolis canbyi</i>	Canby's Dropwort	LE: Endangered		G2	S2
<i>Paspalum bifidum</i>	Bead-grass			G5	S2
<i>Pityopsis pinifolia</i>	Pine-leaved Golden Aster			G4	S2
<i>Platanthera lacera</i>	Green-fringe Orchis			G5	S2
<i>Potamogeton confervoides</i>	Algae-like Pondweed			G4	S1
<i>Prunus alabamensis</i>	Alabama Black Cherry			G4	S1
<i>Psilotum nudum</i>	Whisk Fern			G5	S1

Scientific Name	Common Name	USESA Designation	State Protection	Global Rank	State Rank
<i>Pteroglossaspis ecristata</i>	Crestless Plume Orchid			G2G3	S2
<i>Quercus oglethorpensis</i>	Oglethorpe's Oak			G3	S3
<i>Rhexia aristosa</i>	Awned Meadowbeauty			G3	S3
<i>Rhododendron eastmanii</i>	May White			G2	S2
<i>Rhynchospora inundata</i>	Drowned Hornedrush			G4?	S2?
<i>Rhynchospora macra</i>	Beak Rush			G3	S1
<i>Rhynchospora oligantha</i>	Few-flowered Beaked-rush			G4	S2
<i>Rhynchospora pallida</i>	Pale Beakrush			G3	S1
<i>Rhynchospora stenophylla</i>	Chapman Beakrush			G4	S2
<i>Sarracenia rubra</i>	Sweet Pitcher-plant			G4	S3S4
<i>Scirpus etuberculatus</i>	Canby Bulrush			G3G4	SNR
<i>Symphyotrichum elliotii</i>	Elliott's Aster			G4	S3
<i>Symphyotrichum georgianum</i>	Georgia Aster	C: Candidate		G2G3	SNR
<i>Tofieldia glabra</i>	White False-asphodel			G4	S1S2
<i>Trepocarpus aethusae</i>	Aethusa-like Trepocarpus			G4G5	S1
<i>Tridens chapmanii</i>	Chapman's Redtop			G3	S1
<i>Urtica chamaedryoides</i>	Weak Nettle			G4G5	S2
<i>Vaccinium crassifolium</i> ssp. <i>sempervirens</i>	Rayner's Blueberry			G4G5T1	S1
<i>Warea cuneifolia</i>	Nuttall Warea			G4	S1
<u>Nonvascular Plant</u>					
<i>Plagiochila sullivanii</i>				G2	SNR
<u>Communities</u>					
Atlantic white cedar swamp				G2	S2
Bald cypress - tupelo gum swamp				G5	S4
Mesic mixed hardwood forest				G5	S4
<i>Nyssa aquatica</i> - <i>nyssa biflora</i> forest	Water Tupelo - Swamp Blackgum Swamp Forest			G4G5	SNR
<i>Nyssa biflora</i> - ( <i>acer rubrum</i> ) / <i>ilex opaca</i> / <i>leucothoe axillaris</i> / <i>carex atlantica</i> ssp. <i>capillacea</i> forest	Swamp Blackgum Floodplain Seepage Forest			G2G3	SNR
Oak - hickory forest				G5	S5
Pine savanna				G3	S2

Scientific Name	Common Name	USESA Designation	State Protection	Global Rank	State Rank
<i>Pinus palustris</i> - <i>pinus (echinata , taeda)</i> - <i>quercus (incana , margarettiae , falcata , laevis)</i> woodland	Longleaf Pine - (Shortleaf Pine, Loblolly Pine) - (Bluejack Oak, Sand Post Oak, Southern Red Oak, Turkey Oak) Forest			G3?	SNR
<i>Pinus serotina</i> - ( <i>liriodendron tulipifera</i> ) / <i>lyonia lucida</i> - <i>clethra alnifolia</i> - <i>ilex glabra</i> woodland	Pond Pine - (Tuliptree) / Shining Fetterbush - Coastal Sweet-pepperbush - Little Gallberry Woodland			GNR	SNR
<i>Pinus serotina / arundinaria gigantea</i> ssp. <i>tecta</i> woodland				G1	SNR
Pond cypress pond				G4	S4
<i>Quercus alba</i> - <i>carya alba</i> / <i>euonymus americana</i> / <i>hexastylis arifolia</i> forest	Mesic Subacid Southern Piedmont Oak - Hickory Forest			G5?	SNR
Rhododendron thicket				G5	S5
Streamhead pocosin				G4	S4
Xeric sandhill scrub				G5	S3
<u>Ecological</u>					
Carolina bay				GNR	SNR



**Appendix B**  
**Technology and Peer City Review**



# Newberry – Columbia Alternatives Analysis

Technology and Peer City Review

March 2014



Prepared by

**URS**

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## 1. Introduction

The Central Midlands Council of Governments (CMCOG) has completed the Newberry-Columbia Alternatives Analysis (AA) along with its planning partners in local and state government agencies. The purpose of the Newberry-Columbia AA is to improve safety, mobility, and accessibility, connect communities, enhance the attractiveness of transit service, and energize development potential in the Newberry-Columbia Corridor.

The Newberry-Columbia Corridor is centered on the CSX freight rail line that runs approximately 40 miles southeast from downtown Newberry to downtown Columbia. Along the corridor, the rail line travels through the three counties of Newberry, Lexington, and Richland and the towns of Prosperity, Little Mountain, Chapin, and Irmo. In order to examine a broad range of potential transportation improvements, the width of the study corridor extends for two miles on either side of the CSX rail line.

The AA was conducted in accordance with the Federal Transit Administration (FTA) New Starts Application procedures. As part of the New Starts process, the FTA requires a broad range of transit technologies be examined. Section 2 of this document identifies and describes a range of transit technologies that could potentially be utilized in the corridor. The technologies reviewed include:

- Conventional Bus
- Bus Rapid Transit (BRT)
- Light Rail Transit (LRT)
- Modern Streetcar
- Heavy Rail
- Commuter Rail

In addition to the transit technology inventory, this document also provides a review of transit systems in a number of peer cities across the United States. Section 3 of this document reviews six peer cities:

- Albuquerque, New Mexico
- Burlington, Vermont
- Charlotte, North Carolina
- Eugene, Oregon
- Greensboro, North Carolina
- Nashville, Tennessee

## 2. Transit Technology Inventory

### 2.1 Conventional Bus

Bus transit is the most widely used type of public transportation in the United States and is currently in use by the Central Midlands Regional Transit Authority (CMRTA), now The Comet, in the Columbia region. Conventional bus transit consists of driver-operated, rubber-tired vehicles. Buses can operate on fixed routes according to published schedules, or may be dispatched individually to pick up passengers on a



**CMRTA (The COMET) Conventional Bus**

*Source: Trey Hodges, URS*

demand-responsive basis. The majority of bus transit operates within the regular flow of traffic on standard roadways. All bus vehicles are self-propelled by an onboard engine and power source. Frequency of stops is typically every two to three blocks, or every quarter of a mile. Express or limited service is characterized by fewer stops and higher average speeds.

A variety of power sources are employed for bus transit. The majority of buses in operation are diesel powered. However, vehicles powered by alternative fuels, such as clean diesel, biodiesel, natural gas, and hybrid-electric are becoming more widespread as a means of reducing emissions. Battery-powered buses have seen some use; however, their short operating range limits them primarily to short-haul, special use operations in activity centers and special event venues. Fuel cell buses are in the testing stage by manufacturers and transit agencies.

Buses' predominance as a transit technology can be attributed to several key advantages. To begin, it has the least expensive capital cost of available technologies because of its lower infrastructure construction and maintenance costs through the use of existing roadways. Since it is not tied to a fixed guideway and can travel almost anywhere an automobile can, bus routing flexibility is unmatched. Finally, vehicles are scalable from small to large, allowing service of a wide range of passenger demands.

Of course, disadvantages of bus transit also exist. With labor wages and benefits easily doubling the capital cost of vehicles on an annual basis, busses have a high labor cost per passenger carried. Unless they are operated in a dedicated right-of-way, buses are just as susceptible as single passenger vehicles to roadway congestion. And, buses have a less favorable perception from an environmental perspective due to noise and diesel fuel emissions.

**Table 2-1** summarizes the general characteristics of conventional bus.

**Table 2-1: Conventional Bus Characteristics**

Characteristic	Conventional Bus
Capital Cost per Mile (\$ millions)	Depends on the number of vehicles
Running Surface	Mixed in traffic or separate right-of-way
Speed (max/average)	65 mph/Local: 10-20 mph; Express: 20-40 mph
Stop/Station Spacing	Local: Every one to three blocks, or ¼ mile; Express: 1+ mile
<b>Person/Vehicle Capacity</b>	40-50 seats; 50-80 passengers per vehicle
<b>Vehicles Per Set</b>	One
<b>Suspension</b>	Rubber tire on pavement
<b>Advantages</b>	<ul style="list-style-type: none"> <li>• Can operate in mixed traffic or on its own guideway</li> <li>• Adaptable to a variety of fuels</li> <li>• Lower capital cost</li> <li>• Unequaled routing flexibility</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>• Higher operating cost per passenger in very high-volume corridors</li> <li>• Travel times and reliability compromised in mixed traffic</li> <li>• Higher emissions with diesel engines</li> </ul>

## 2.2 Bus Rapid Transit

Bus Rapid Transit (BRT) is designed to operate in environments with moderate to heavy passenger volumes, on medium-distance trips. BRT is a lower-cost, rubber-tired alternative to light rail, combining the quality of rail transit with the flexibility of bus transit. The key defining factor of BRT is its use of an integrated, well-defined system that provides flexibility to incorporate significant performance improvements over conventional bus transit. FTA guidance explains six major element options and typical applications. The major elements and some of their typical options include:



**Cleveland HealthLine BRT**

Source: [www.urbanindy.com](http://www.urbanindy.com)

- **Running Ways:** Options range from general traffic lanes to fully grade-separated BRT transitways. Bus priority running ways include queue-jump lanes, bus lanes, bus streets, and busways. Queue-jump lanes are installed at major intersections to allow buses to bypass traffic. A bus lane reserves a lane on an arterial or city street for the exclusive or near-exclusive use of buses. Bus streets or transit malls can be created in an urban center by dedicating all lanes of a city street to the exclusive use of buses. Busways physically separate buses from other vehicles.
- **Stations:** BRT station spacing is typically every one-half to one mile. Stations located on highways and interstates generally are further apart to allow for higher speeds. Closer stations are the norm on local roads where BRT is operated in mixed traffic. Stations and associated amenities are of a higher level of style and finish, more on par with rail transit. Depending on the system, shelters, passenger waiting areas, lighting, pedestrian bridge crossings, and park-and-ride lots may be included.
- **Vehicles:** BRT vehicles typically have a higher ridership capacity, utilizing articulated vehicles with two to three doors along their length. The propulsion system may be conventional diesel engines or overhead electric catenary. As alternative, cleaner fuels have become more accessible and reliable, BRT systems have begun to utilize low-sulfur diesel fuel, diesel-electric hybrids, CNG, and fuel cell technology.

- **Fare Collection:** Options range from traditional pay-on-board methods to pre-payment with electronic fare media (e.g., smart cards). Barrier-free fare collection systems are often used to increase the efficiency of passenger boarding and alighting.
- **Intelligent Transportation Systems (ITS):** ITS options that can improve system performance and service include vehicle priority, operations and maintenance management, operator communications, real-time passenger information, and safety and security systems. Bus signal priority or pre-emption at intersections is common for BRT systems, which involves the extension of green time or actuation of the green light at signalized intersections upon the detection of an approaching bus.
- **Service Operations Plan:** Because BRT vehicles can travel anywhere there is pavement, BRT can be tailored to the unique origin and destination patterns of a corridor’s travel market. There can be a limited-stop or express service that compliments the local line that serves all stops on the route. Headways can be as short as every 10 minutes, resulting in frequency similar to train service. Buses may operate non-stop and exclusive to the running way or exit the running way to provide local service on adjacent streets. Additionally, BRT vehicles can be used on high-occupancy vehicle facilities such as high-occupancy-vehicle (HOV) lanes. Headways can be as short as every 2-3 minutes, resulting in frequency similar, or better than train service.

Although a relatively new mode of transit in the United States, BRT is a popular, efficient, and cost effective transit solution that is seeing increased implementation, including systems in Boston, Cleveland, New York City, Las Vegas, Los Angeles, Minneapolis, Orlando, and Pittsburgh. A few examples of BRT and the wide variation in BRT characteristics include:

- **Cleveland Euclid Corridor:** Cleveland Transit Authority is operating the “Health Line” in exclusive busways transitioning curb lanes with signal priority with unique, 62-foot aerodynamic vehicles, off-board fare collection, enhanced station amenities and ITS features.
- **Eugene, Oregon:** Lane Transit operates the Emerald Express (EmX). This line opened in 2007 and has ten stops along a four-mile route with dedicated runningway along most of the route. This line cost \$25 million to design and build. Rush hour travel times were reduced by 6 minutes, or 27%.
- **Las Vegas MAX:** Operates on arterial streets, primarily in exclusive bus lanes, with specialized vehicles, off-vehicle fare collection (transit vending machines or TVMs), enhanced station amenities and extensive use of ITS features.



- **Los Angeles Orange Line:** Operates in an exclusive lane similar to a light rail line to and from the North Hollywood Metro Station in the San Fernando Valley. The 14-mile line operates in dedicated right-of-way, with stations approximately at one-mile intervals, off-board fare collection and articulated buses.
- **Minneapolis Cedar Avenue:** This line, now called the Metro Red Line, is a 16-mile bus line currently under construction between Lakeville and Bloomington, south of Minneapolis. This project includes dedicated bus lanes along MN 77, and BRT stations with park-and-ride lots. Multiple bus lines will operate on this facility, with buses operating at the Mall of America, downtown Minneapolis and downtown St. Paul. Service is to begin operation in June 2013.

When appropriately planned and integrated with land use decisions, BRT can result in surrounding economic development comparable to that of rail transit. In April 2013, the Institute for Transportation & Development Policy, based in New York City, cited the Greater Cleveland Transit Authority's HealthLine Euclid Avenue Corridor BRT as the best BRT system in the United States. This designation was due in part to the more than \$4 billion in economic development that has occurred along the corridor since the BRT opened in 2008.<sup>1</sup>

**Table 2-2** summarizes the general characteristics of BRT.

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<sup>1</sup> "RTA's HealthLine gets International Honor, Cash Support." Tom Breckenridge, *The Plain Dealer*. April 16, 2013.

**Table 2-2: BRT Characteristics**

Characteristic	BRT
Capital Cost per Mile (\$ millions)	\$1 to \$65
Running Surface	Mixed traffic but separate right-of-way preferred
Speed (max/average)	65 mph/15-45 mph (depends on application)
Stop/Station Spacing	½ to several miles (depends on application)
Person/Vehicle Capacity	40-60 seats; 50-80 passengers per vehicle
Vehicles Per Set	One
Power Supply	Diesel, CNG, hybrid; electric in some applications
Suspension	Rubber tire on pavement
Advantages	<ul style="list-style-type: none"> <li>• Can operate in mixed traffic or on its own guideway; this can reduce the number of transfers for many passengers</li> <li>• Moderate to high capacity system for less cost than LRT and other fixed guideway systems</li> <li>• Bus operating speed and reliability is improved by eliminating various types of delays</li> <li>• Can access both high- and low-density land uses</li> </ul>
Disadvantages	<ul style="list-style-type: none"> <li>• Higher operating cost in very high-volume corridors</li> <li>• Travel times compromised in mixed traffic</li> <li>• Wider guideway in station areas</li> </ul>

### 2.3 Light Rail Transit

Light Rail Transit (LRT) operates in more than 20 urban areas in the United States, including Baltimore, Buffalo, Charlotte, Dallas, Denver, Los Angeles, Minneapolis, Portland, San Jose, and St. Louis. LRT utilizes electric cars, operated in single units or as short trains of multiple units. LRT runs on electric power via an overhead wire (catenary), to eliminate the issues associated with having a live third rail at ground level. The overhead power collection feature allows LRT systems to be integrated with other at-grade transportation modes and pedestrians. Diesel-electric power is beginning to see some use, but the conditions and setting must be appropriate for such.



**Charlotte LYNX Blue Line LRT**

Source: [www.flickrriver.com](http://www.flickrriver.com)

While LRT does operate in multiple unit trains, it is essential that train length not exceed the minimum city block length to avoid blocking intersections or crosswalks when the train is stopped. LRT operates primarily in a semi-exclusive right-of-way with total corridor lengths generally not exceeding 15 to 20 miles. While many LRT systems operate at-grade, they can also be separated by operating in a tunnel, on elevated structure, or at-grade but alongside motor vehicles.

A distinct advantage of LRT is that it is conducive to a variety of environments. LRT alignments can be placed in highly pedestrian, dense employment areas like downtowns. Many times, LRT is placed directly in-line with vehicular traffic. Station spacing can be as close as one-quarter mile in activity centers, but typically ranges between one-half to one mile in other areas. Similar to BRT, stations include passenger amenities such as shelters, lighting, park-and-ride lots, and passenger notification technology.

The maximum operating speed of modern LRT systems is 55 to 65 mph making it suitable for medium distance trips in suburbs or between central business districts and other major activity centers. System operating speeds are a function of the level of exclusivity of the right-of-way and the number of stops.

As with BRT, LRT can act as a catalyst for economic development. Transit oriented development (TOD) is a mix of residential, office, and commercial development strategically placed in close proximity of a transit station. By placing such development within walking distance of transit, commuters can live and work closer transit, creating more walkable, livable,

sustainable communities. Additionally, encouraging a rich, 24/7 development character assists in enhancing the performance of LRT, as it thrives in denser population and employment areas.

**Table 2-3** summarizes the general characteristics of LRT.

**Table 2-3: LRT Characteristics**

Characteristic	LRT
Capital Cost per Mile (\$ millions)	\$65 to \$130
Running Surface	Mixed in traffic or separate right-of-way
Speed (max/average)	55-65 mph/22 mph (including stops)
Stop/Station Spacing	½ to 1 mile
Person/Vehicle Capacity	70 seats; 120 persons per vehicle
Vehicles Per Set	Typically 2-3; can be single or up to 4-car trains
Power Supply	Electrically powered via overhead catenary wires
Suspension	Steel wheel on steel rail
Advantages	<ul style="list-style-type: none"> <li>• May operate in mixed traffic, with cross traffic, or exclusive right-of-way</li> <li>• Moderate to high capacity system</li> <li>• Can negotiate steeper grades and small radius curves than heavy rail</li> <li>• Less noise and emissions than buses</li> </ul>
Disadvantages	<ul style="list-style-type: none"> <li>• Cannot operate jointly with freight trains</li> <li>• Overhead catenary system may be visually intrusive</li> <li>• Moderately high capital cost</li> <li>• Routing not as flexible as buses or BRT</li> </ul>

## 2.4 Modern Streetcar

Modern streetcar systems usually operate single cars powered by an electrified overhead catenary. It is possible for a modern streetcar system to be designed with the ability to join two vehicles together, making the vehicle quite long (attenuated streetcar). Attenuated streetcars can bend 90 degrees allowing the streetcar to make sharp turns at intersections. Similar to conventional buses, modern streetcars operate primarily in mixed traffic with a station frequency of every one-quarter to one-third mile. Streetcar speeds are limited to the speed of adjacent traffic. Modern streetcar station/stops typically are of very modest design and can be located on every block.



**Tampa Streetcar**

Source: [www.lightrailnow.org](http://www.lightrailnow.org)

Streetcars often are utilized as circulators in downtown environments because they require low-to-moderate ridership levels and have a distinctive design, making them visually appealing.

As with BRT and LRT, modern streetcars can be catalysts for economic investment. Modern streetcars have a degree of nostalgia to them that allows them to enhance the character of key districts within communities. Cities in the United States currently utilizing modern streetcars include New Orleans, Portland, Seattle, and Tampa.

**Table 2-4** summarizes the general characteristics of modern streetcar.

**Table 2-4: Modern Streetcar Characteristics**

Characteristic	Modern Streetcar
Capital Cost per Mile (\$ millions)	\$40 to \$60
Running Surface	Mixed in traffic
Speed (max/average)	30-45 mph/15 mph
Stop/Station Spacing	¼ to 1/3 mile
Person/Vehicle Capacity	Up to 55
Vehicles Per Set	Usually one but could be two
Power Supply	Electrically powered via overhead catenary wires
Suspension	Steel wheel on steel rail
Advantages	<ul style="list-style-type: none"> <li>• Oriented in downtown area (circulator) rather than express travel along a corridor</li> <li>• Small scope projects and lack of grade separation are less costly to build and maintain and quick to implement</li> <li>• Serves low-to-moderate ridership</li> </ul>
Disadvantages	<ul style="list-style-type: none"> <li>• Travel times compromised in mixed traffic</li> <li>• Overhead catenary may be visually intrusive</li> <li>• Routing not as flexible as buses or BRT</li> </ul>

## 2.5 Heavy Rail

Heavy rail systems are at the upper end of the transit spectrum in terms of speed, capacity, and reliability. Heavy rail is a fully grade separated rail mode with electrically powered vehicles. Because most heavy rail systems receive power from an electrified third rail, exclusive right-of-way is necessary. Grade separation is most common, either through the use of elevated structures or tunnels, but heavy rail can also be run at-grade. No crossings of the right-of-way are permitted in the same plane with heavy rail operations. Station spacing typically ranges between one and two miles, but can be as close as one-third mile in activity centers and downtowns.



**Atlanta's MARTA Heavy Rail**

Source: [www.railfanguide.us](http://www.railfanguide.us)

With trains between two and ten or more cars, heavy rail is efficient at handling large passenger volumes. Passenger boarding and alighting is quick and efficient due to the use of long trains, pre-board payment, level access from platform to train, and multiple downstream doors. Headways are frequent with little wait time between trains and service typically runs during both peak and off-peak hours.

Due to infrastructure costs, heavy rail is implemented where very high passenger capacity is required. Historically, heavy rail was the predominant rail travel model in urban areas of the United States. New York City's Subway and Chicago's "L" are two of the more well known systems, and other are currently operating in Atlanta, Miami, Baltimore, Philadelphia, San Francisco, and Washington, DC. In recent decades, expansion of heavy rail in the United States has been limited due to the high cost of construction associated with grade-separated rights-of-way.

**Table 2-5** summarizes the general characteristics of heavy rail.

**Table 2-5: Heavy Rail Characteristics**

Characteristic	Heavy Rail
Capital Cost per Mile (\$ millions)	\$250 to \$2,000
Running Surface	Exclusive fixed guideway
Speed (max/average)	80 mph/40 mph
Stop/Station Spacing	1 to 2 miles
Person/Vehicle Capacity	64 seats; 120-300 passengers
Vehicles Per Set	Two to 10
Power Supply	Electrified third rail
Suspension	Steel wheel on steel rail
Advantages	<ul style="list-style-type: none"> <li>• Very high capacity system</li> <li>• Lower operating and maintenance costs per passenger basis in very high-volume corridors</li> <li>• High capacity system good for both short and long distance travel</li> <li>• Higher speeds</li> </ul>
Disadvantages	<ul style="list-style-type: none"> <li>• Very high capital costs</li> <li>• No crossing of right-of-way permitted</li> <li>• Large grade-separated structures can have major impacts</li> </ul>



## 2.6 Commuter Rail

Commuter rail is a type of passenger rail utilized for long-distance trips. Most commuter rail systems provide suburban to urban service with little central business district coverage. A transit agency may have exclusive ownership of the right-of-way or may have a use agreement with a freight railroad.

Station spacing typically ranges from 2 to 5 miles. Commuter rail systems usually provide more frequent service in the peak period/peak direction and may also offer limited midday, evening, and weekend service.



**Massachusetts Bay Transportation Authority  
Commuter Rail**

Source: [www.boston.cbslocal.com](http://www.boston.cbslocal.com)

A major advantage of commuter rail is its ability to share track with freight trains and other intercity passenger service (Amtrak). Commuter rail operations must meet Federal Railroad Administration (FRA) crash worthiness regulations when operating on active freight trackage. Collision requirements are usually based on a crush load design of 2G or double the vehicle weight (e.g., about 200,000 lbs. buff strength). Other shared operational considerations include appropriate track time, geometry, separation, buffering, and other safety measures.

Federal regulations require an automatic train control system for speeds in excess of 79 mph. Most commuter rail systems, however, operate below this maximum speed. Service headways usually range from 20 to 90 minutes at average operating speeds between 40 and 50 mph. Commuter rail systems tend to be grade separated in dense urbanized areas and at grade in suburban areas. Due to its slower acceleration and longer braking distances compared with other rail technologies, commuter rail is best suited to longer distance trips with widely-spaced stations. Corridors can range from 20 to 100 miles in length, with stations generally spaced five or more miles apart.

Commuter rail passenger cars can accommodate high or low platform boarding and up to 160 seated passengers with a normal capacity of 300 passengers. Although individual trains have a high capacity (e.g., 10 to 12 cars), the total line capacity of commuter rail is typically less than heavy rail because headways are longer.

Commuter rail operations in the United States typically consist of one to 10 single or bilevel passenger cars that are pushed or pulled by a diesel or electrically-powered locomotive. In an electric system, power is supplied by a third rail or overhead catenary system. Examples of commuter applications are noted below.

### **Locomotive-Hauled Commuter Rail**

Locomotive-hauled trains can be diesel or electric-powered. Examples of conventional, diesel locomotive-hauled commuter rail systems include Metrolink in Los Angeles, Tri-Rail in South Florida, MARC in Baltimore, Northstar in Minneapolis, the Music City Star in Nashville, and commuter operations in New York and Chicago. Electric-powered locomotives haul commuter trains to and from New York, Chicago, and Philadelphia.

### **Self-Propelled Commuter Rail**

Self-propelled rolling stock is an alternative to locomotive-powered trains for commuter rail service. Sometimes called Diesel Multiple Units (DMUs), they are generally designed for one-person operation whether operated as single cars or in trains. Self-propelled railcars have been around almost as long as the internal combustion engine. Although they have seen only limited service in the United States, new designs in Europe and Australia are performing reliably and economically in a wide range of regional passenger services.

DMUs do not require a locomotive to push or pull them, and can operate singly or in trains of up to 10 cars. These vehicles are typically 85 feet long and seat 60 to 100 passengers. They are capable of speeds from 80 to 120 miles per hour. Examples of this type of commuter rail service are MetroRail in Austin, TX and the A-Train in Denton, TX (Dallas/Fort Worth area).

**Table 2-6** summarizes the general characteristics of commuter rail.

**Table 2-6: Commuter Rail Characteristics**

Characteristic	Commuter Rail
Capital Cost per Mile (\$ millions)	\$10 to \$70
Running Surface	Exclusive right-of-way
Speed (max/average)	79 mph/45-50 mph
Stop/Station Spacing	2 to 5 miles
Person/Vehicle Capacity	Varies, up to 300 passengers
Vehicles Per Set	Varies, up to 12 vehicles
Power Supply	Varies: Diesel locomotive, electrically-powered third rail or overhead catenary system
Suspension	Steel wheel on steel rail
Advantages	<ul style="list-style-type: none"> <li>• Can share existing track with freight</li> <li>• Competitive peak hour travel times</li> </ul>
Disadvantages	<ul style="list-style-type: none"> <li>• Not suitable for short distances</li> <li>• Stations are farther apart than other rail modes</li> </ul>

### 3. Peer City Review

The Commuter Rail Feasibility Study completed for CMCOG in 2006 included a review of public transit initiatives in six urban areas of comparable size to the Columbia metropolitan area. The intent of this “peer city” review was to understand the various approaches to high-capacity public transit undertaken by similar cities, and to learn from the lessons of those endeavors. The six peer cities that investigated were:

- Albuquerque, New Mexico
- Burlington, Vermont
- Charlotte, North Carolina
- Eugene, Oregon
- Greensboro, North Carolina
- Nashville, Tennessee

These cities were selected at the time because each was in the process of exploring or implementing mass transit alternatives to include commuter rail and bus rapid transit. Now seven years after the completion of the 2006 Commuter Rail Feasibility Study, the experience of each of these cities in implementing mass transit continues to be relevant to the Columbia metropolitan area. In the sections that follow, public transportation advancements in each of the original peer cities have been revisited for additional lessons learned that may benefit the Columbia metropolitan area.

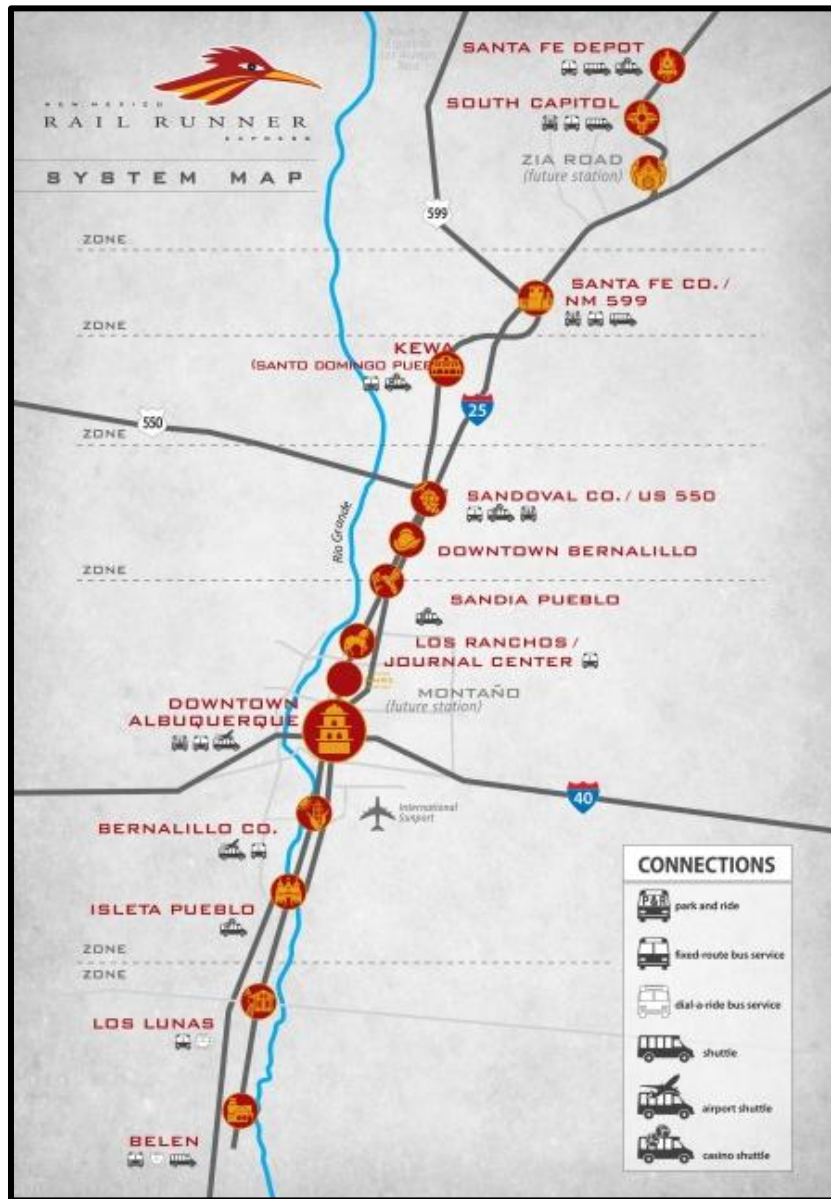
#### 3.1 Albuquerque, New Mexico

The Rail Runner Express commuter rail service began operation in 2006 between the City of Albuquerque and the City of Belen to the south on 65 miles of existing track and right-of-way purchased from BNSF Railway. A 25-mile extension from Albuquerque to the north to the City of Santa Fe was completed in December 2008. The system currently operates thirteen stations, with two additional stations planned (see **Figure 3-1**).

According data included in the FTA National Transit Database (NTD), the total annual ridership in 2009 (the first year of full capacity) was 1,083,003, or about 3,000 riders per day. Operating expenses in 2009 exceeded \$19 million, while revenue generated from fares fell just shy of \$2.7 million. Additional data for 2010 and 2011 are provided in **Table 3-1**.

**Table 3-1: Rail Runner Express Metrics**

Year	Passenger Trips Total/Per Day Avg.	Operating Cost	Fare Revenues	Operating Cost per Passenger Trip
2009	1,083,003	\$19,056,806	\$2,669,729	\$17.60
2010	1,240,518	\$22,323,336	\$2,846,221	\$18.00
2011	1,219,111	\$24,813,589	\$2,856,263	\$19.87



**Figure 3-1: Rail Runner Express System Map**

Source: [www.nmrailrunner.com](http://www.nmrailrunner.com)

Initial capital expenditures to construct the rail and stations and purchase the trains exceeded \$400 million (or about \$4 million per mile).



***Rail Runner Express – Albuquerque, New Mexico***

*Source: [www.nmrailrunner.com](http://www.nmrailrunner.com)*

According to the Rio Metro Regional Transit District (Rail Runner’s manager), the fare system is a tiered-structure, with passenger fares based on the number of zones a trip will traverse. As shown on the Rail Runner Express system map, there are six zones in the system. The one-way fare to ride within one zone is \$2, two zones \$3, three zones \$5, and increases incrementally to \$10 to traverse all six zones. Day passes are available to allow round-trip service for an additional dollar per zone. Monthly and annual passes are also available options. A six-zone annual pass costs \$1,210.00.

Several communities along the rail system have adopted transit-oriented-development (TOD) planning documents to guide development near stations inside their planning jurisdictions; several TOD developments have been completed. According to a report by the Mid-Region MPO, 146 residential units had been completed by June 2010, with approximately 2,000 additional units planned. Additionally, 114,000 square feet of TOD commercial, retail, and office space had been completed, and an additional 291,000 square feet was planned.

### **3.2 Burlington, Vermont**

The Champlain Flyer operated as a commuter rail service between Burlington and Charlotte, Vermont in 2001 and 2002. Envisioned as an alternative to vehicular travel on Route 7, which was projected to experience significant congestion during a planned construction project, the rail system never achieved projected ridership volumes, and was cancelled in early 2003 amid budgetary pressures. According to a state-level financial audit conducted in February 2003, projected ridership was approximately 215,000 per year, but only reached 85,000 and 83,000 in 2001 and 2002, respectively. In the years since the project was terminated, proponents of commuter rail have continued to seek funding for the return of rail operations.

### 3.3 Charlotte, North Carolina

The Charlotte Area Transportation System (CATS) recently implemented an LRT system, completing the LYNX Blue Line in November 2007 (see **Figure 3-2**). The dual-track LRT extends 9.5 miles southward from the City center, parallel to Interstate I-77, towards the I-485 interchange at South Boulevard. Implemented at a cost of \$462.7 million, the system includes 15 stations, seven park-and-ride lots, and in May 2011, served an average *weekday* ridership of 15,474 trips per day. NTD metrics since the inception of the system are included in **Table 3-2**.



**Figure 3-2: LYNX Blue Line**

Source: [www.lynxcharlotte.com](http://www.lynxcharlotte.com)

**Table 3-2: LYNX Blue Line Metrics**

Year*	Passenger Trips Total/Per Day Avg.	Operating Cost	Fare Revenues	Operating Cost per Passenger Trip
2005	330,041	\$1,243,022	\$194,980	\$3.77
2006	175,329	\$1,932,840	\$212,637	\$11.02
2008	2,262,631	\$9,495,402	\$1,622,813	\$4.20
2009	3,551,153	\$16,800,197	\$3,184,675	\$4.73
2010	3,250,020	\$16,042,893	\$3,211,891	\$4.94
2011	4,769,933	\$16,572,939	\$3,678,428	\$3.47

\*Operational data was not available for 2007.

As of April, 2013, the LYNX website lists fare costs at \$2 per one-way trip, \$4 per round trip, \$6 for a one-day pass, and \$20 for a seven-day pass.

In December 2011, CATS was awarded an FTA Transportation Investment Generating Economic Recovery (TIGER) III grant to expand the capacity of the existing Blue Line system. The \$18 million grant will fund improvements to lengthen existing station platforms, add capacity to existing trains through the addition of additional cars, and add power supply substations to operate the longer, more frequent trains.

The LYNX Blue Line enjoys strong public support, and CATS expects projected daily ridership in 2030 to approach 25,000. Capitalizing on the success of the LYNX Blue Line, CATS has proposed an extension of the service from the City center 9.4 miles northeast to the UNC Charlotte campus. An alternative to the Interstate I-85 and North Tryon Street corridors, the LYNX Blue Line Extension would include 11 stations, four park-and-ride lots, and is projected to serve 24,500 trips per day in 2035. The Extension, estimated to cost \$1.16 billion, is scheduled to begin construction in 2014 with revenue service commencing in 2017.

In addition to light rail, CATS is advancing a commuter rail concept to connect Charlotte to several communities to the north along the Interstate I-77 corridor. Dubbed the Red Line, the commuter rail would provide service to the communities of Huntersville, Cornelius, Davidson, and Mooresville, among others. The 25-mile commuter rail would share existing Norfolk-Southern track with that railway's freight trains to provide weekday service to 10 stations and nine park-and-ride lots. The 2030 projected daily ridership is approximately 4,600.



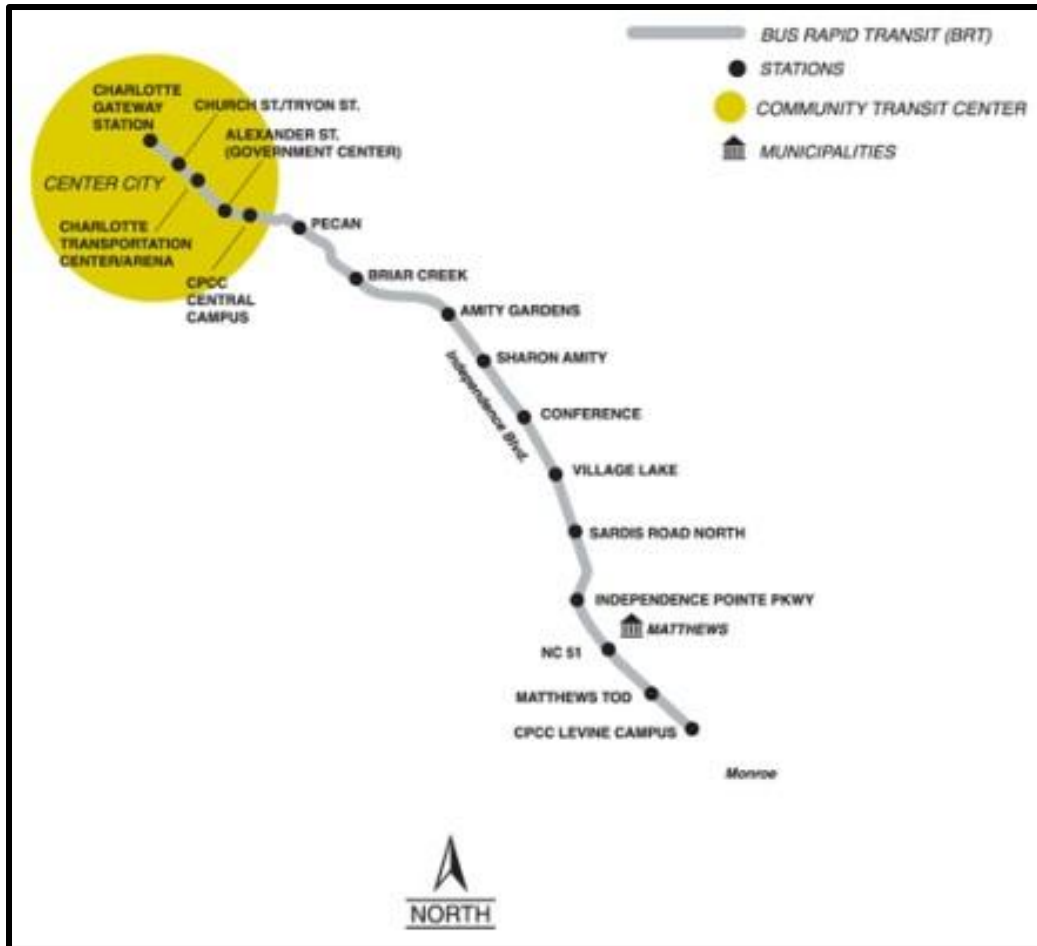
A Draft Business/Finance Plan was completed in December 2011 for the Red Line Regional Rail project, recommending funding sources for the estimated \$452 million needed for construction. Half of the budget would be provided by the North Carolina Department of Transportation and CATS (i.e., equal shares of 25% each), while the remaining 50% would be provided through local revenues generated by the creation of Tax Increment Financing Districts and Special Assessment District Financing.



***Proposed Red Line Commuter Rail***

*Source: [www.lynxcharlotte.com](http://www.lynxcharlotte.com)*

In addition to the LYNX Blue Line, Blue Line Extension, and Red Line Regional Rail, the CATS 2030 Transit System vision plan includes two streetcar lines, the West Streetcar Line and Center City Streetcar Line, and the LYNX Silver Line, a proposed BRT system (see **Figure 3-3**). The West Streetcar Line would service 3,400 trips per day (2030 est.) on 6.4 miles of track between the City center and Charlotte-Douglas International Airport to the west, while the Center City Streetcar Line would span nearly 10 miles with 2030 ridership estimated at 16,000 per day. Finally, the LYNX Silver Line would operate along Independence Boulevard as a bus rapid transit line between Charlotte and Matthews, NC. The 13.5-mile two-lane corridor would operate 16 stations and seven park-and-ride lots, with 2030 projected daily ridership of 15,500.



**Figure 3-3: Proposed LYNX Silver Line**

Source: [www.lynxcharlotte.com](http://www.lynxcharlotte.com)

### 3.4 Eugene, Oregon

In January 2007, Lane Transit District (LTD), the transportation service provider for the Eugene-Springfield, Oregon metropolitan area, initiated BRT service along Franklin Boulevard to connect the two municipalities, primarily through the use of exclusive bus lanes. The 4-mile BRT corridor also serves the University of Oregon. The BRT system, completed at a cost of \$24 million, utilizes 60-foot articulated buses propelled by hybrid-electric motors. The buses cost approximately \$1 million each.

Of the \$24 million needed to begin service, \$19.2 million was provided by the FTA in Section 5307 and 5309 funds. The NTD included data only from 2011 as presented in **Table 3-3**.

**Table 3-3:** EmX BRT Metrics

Year	Passenger Trips Total/Per Day Avg.	Operating Cost	Fare Revenues	Operating Cost per Passenger Trip
2011	2,106,484	\$4,028,978	\$156,662	\$1.91

In 2011, a 7.8-mile extension to the BRT system was completed at a cost of \$41 million. The system operates on 10-minute headways during weekdays, 15-minutes on weekday evenings and Saturdays, and 30-minutes during late night and Sundays. The typical fare is \$1.75, with day passes available for \$3.50. Ten-ride tickets are available at a discounted rate of \$10.00. Monthly passes cost \$48.00, while three-month passes cost \$130.00.



**EmX BRT**

Source: [www.intransitionmag.org](http://www.intransitionmag.org)

LTD has proposed an extension of the system into West Eugene (see **Figure 3-4**) with construction planned for 2014-2015 at a projected cost of \$95.6 million. \$74.9 million is anticipated in FTA Section 5309 funds, with the remaining \$20.7 million provided by state lottery proceeds. In December 2012, the FTA issued the West Eugene Extension project a Finding of No Significant Impact (FONSI), and service is expected to commence in 2017.



**Figure 3-4: West Eugene EmX Extension**

Source: [www.ltd.org](http://www.ltd.org)

### 3.5 Greensboro, North Carolina

The cities of Greensboro, Winston-Salem, and High Point, North Carolina, collectively termed the “Piedmont Triad,” each operate independent public transit systems. A regional transit provider, the Piedmont Authority for Regional Transportation (PART), was established in 1997 to connect the city bus systems of the Triad cities. PART operates an Express Bus service on weekdays with 30 minute headways during peak hours and one-hour headways off-peak (see **Figure 3-5**).

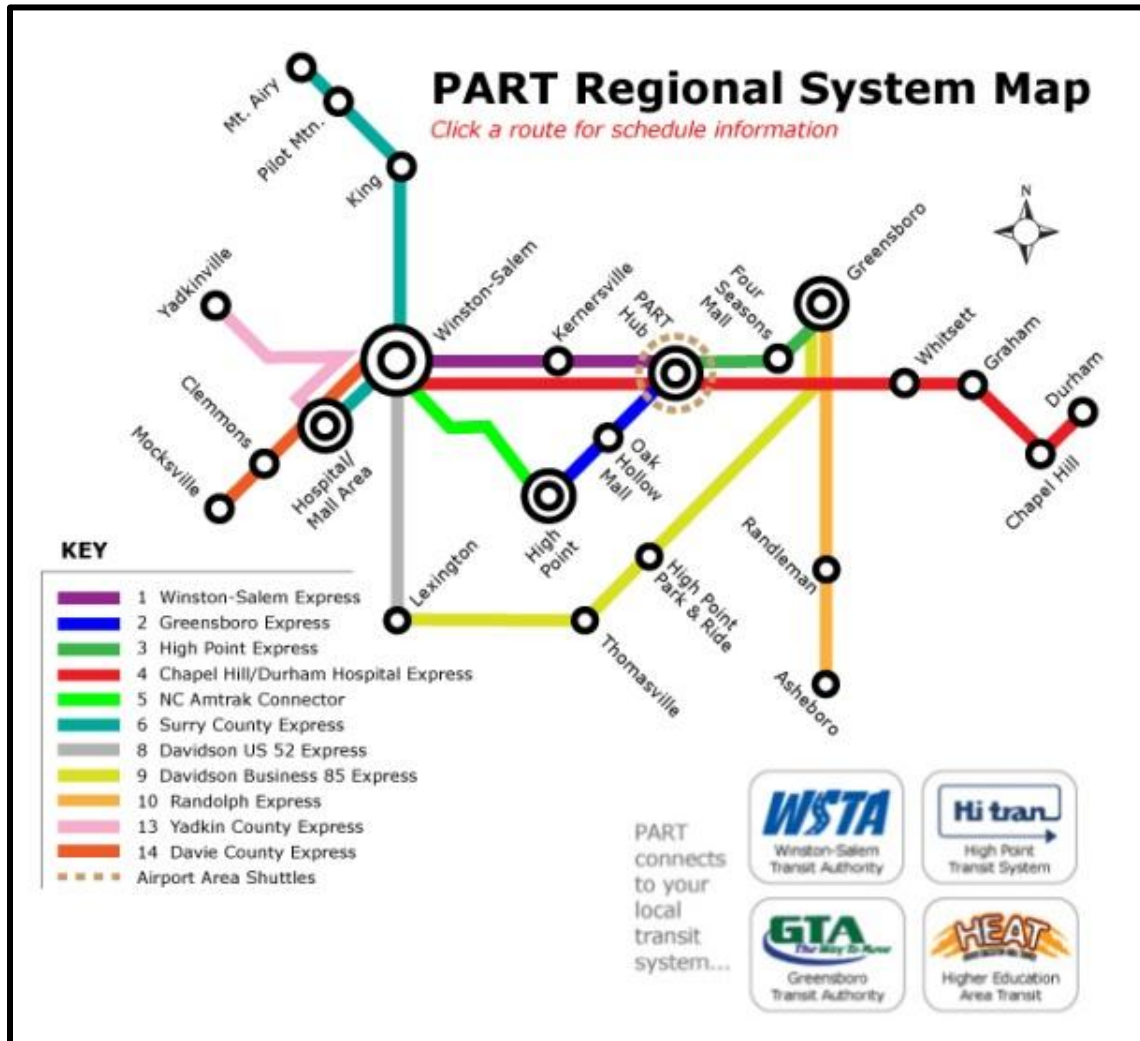


**PART Express Bus**

Source: [www.partnc.org](http://www.partnc.org)

According to the Greensboro Urban Area 2035 Long Range Transportation Plan Update, the PART service commenced in 2002, funded by a 5% tax on rental car receipts collected in

Guilford (Greensboro) and Forsyth (Winston-Salem) counties. Enabling legislation allows PART to levy rental car taxes up to 5% and vehicle registration fees up to \$5 with the approval of each affected county. As PART expanded its service area beyond Guilford and Forsyth counties, the outlying counties were given the option of instituting either the rental car tax or vehicle registration fee. All of the outlying counties except one elected to approve the rental car tax option, but this mechanism generates little revenue due to the relatively low volume of rental car business conducted in these counties.



**Figure 3-5: PART Regional System Map**

Source: [www.partnc.org](http://www.partnc.org)

The funding pool was adversely affected by the recent economic downturn, as airport travel and rental car use fell sharply. For example, prior to 2010, an annual average of \$3.2 million was generated by the rental car tax, but that revenue stream had declined to \$2.4 million by 2011. Subsequently, PART sought a \$1 vehicle registration fee from each of its territorial

member counties, but all members declined to adopt a resolution to provide the new revenue stream. In response, PART has reduced services on all of its operating corridors to adjust to its new budgetary reality.

According to system maps and fare information obtained from the PART website, 11 express routes are currently in operation. Fares are based loosely on trip length, as urban-area route fares are \$2.40 and rural-area fares \$3.00. PART offers 10-ride passes for \$24.00 (urban) or \$30.00 (rural), as well as 31-day passes for unlimited rides at \$74.50 (urban) and \$90.00 (rural). The urban-area routes are identified as routes 1, 2, 3, and 5 on the system map.

According to the FTA NTD, PART’s annual ridership and operating costs are shown in **Table 3-4**:

**Table 3-4: PART Express Bus Metrics**

Year	Passenger Trips Total/Per Day Avg.	Operating Cost	Fare Revenues	Operating Cost per Passenger Trip
2009	520,966	\$5,897,341	\$753,239	\$11.32
2010	485,746	\$7,180,493	\$659,252	\$14.78
2011	520,636	\$7,133,111	\$695,053	\$13.70

In addition to the Express Bus system, PART provides several Transportation Demand Management (TDM) services to achieve an additional measure of traffic congestion reduction. PART staff assists employers and commuters with carpool start-up and planning, as well as providing a vanpool service. PART maintains 7- and 15-passenger vans it leases to commuting drivers, who partner with PART to provide daily transportation to a pool of commuters. In a PART vanpool, the commuting driver collects monthly fares from the commuting passengers based on a matrix of daily mileage and number of commuters traveling. The greater the distance, the greater the monthly fare charged. Conversely, a greater number of commuting passengers requires incrementally lower monthly fares.

The Triad region has been subject to several studies to investigate the feasibility of mass transit alternatives, such as commuter rail and BRT. The North Carolina Railroad Company, a private company that owns the 317-mile rail corridor between the Port of Morehead City and Charlotte studied commuter rail feasibility in 2008 along four segments of their right-of-way, including a segment between Greensboro and Burlington, North Carolina. The “Green Line” train was modeled with four Burlington departures between 6:15 AM and 8:15 AM, with the return trains departing Greensboro between 5:09 PM and 7:09 PM. The 22-mile trip would likely include five stations. A main purpose of the study was to generate cost estimates for infrastructure

improvements necessary to allow shared use of the existing right-of-way among freight, passenger, and commuter service.

It was determined that the “Green Line” would require \$9.3 million per mile, or approximately \$213 million. The study included no recommendations, but rather a budgetary/programming figure for local transportation planning agencies to use in determining the fiscal feasibility of implementing commuter rail. Two additional studies, a Major Investment Study and Alternatives Analysis have been completed to determine the feasibility of mass transit, but in each case projected ridership estimates fell short of qualifying under the FTA New Starts program. Although a fixed guideway, rail-based system is included in the Greensboro Urban Area 2010 Comprehensive Transportation Plan, the system is not part of the fiscally constrained LRTP, and it appears that under existing densities and traffic congestion, rail may be out of reach in the foreseeable future. In light of this, PART’s Regional Transit Development Plan and 2025 Transit Vision has included a proposed “Gold Line” BRT along the Interstate I-40 corridor between Goldsboro and Winston-Salem as a potential precursor to rail.

### 3.6 Nashville, Tennessee

The Regional Transit Authority (RTA) of Middle Tennessee operates the Music City Star, a commuter rail system that connects the Nashville Riverfront and Lebanon, Tennessee, approximately 32 miles to the east. The Music City Star operates six weekday inbound trains with 50-minute trip duration, arriving in the Nashville Riverfront at 6:35 AM, 7:30 AM, 8:15 AM, 4:10 PM, 4:50 PM, and 5:35 PM. Six outbound trains depart the Riverfront Station at 6:58 AM, 7:45 AM, 8:25 AM, 4:20 PM, 5:05 PM, and 5:45 PM.



**Music City Star commuter rail**

Source: [www.flickr.com](http://www.flickr.com)

Fares are \$5.00, unless the commute originates in Donelson, for which \$2.00 is required due to the shorter nature of that commute segment. Ten-ride and monthly passes are also available; the monthly pass varies between \$64.00 at the Donelson Station and \$168.00 at the Lebanon Station.

The Lebanon corridor of the Music City Star was constructed on existing track and right-of-way owned by the Nashville & Eastern Railroad Authority, a public agency, at a cost of \$41 million, or approximately \$1.3 million per track mile. Service began in September, 2006.

According to Trains magazine, the first several years of operation were characterized by lower than projected ridership and an additional \$4.4 million in state and local funding was required to subsidize the operation through 2011. But motorist frustration with rising gas prices began to increase ridership in 2010, and a third passenger car was added to the trains to accommodate the increases. Daily ridership increased 45% in 2011 to 1,225 trips per day, but this number does not reach the 1,500 estimate projected before the commuter rail system went operational. The annual operating costs for the Music City Star were obtained from the FTA NTD, and are summarized in **Table 3-5**.

**Table 3-5: Music City Star Metrics**

Year	Passenger Trips	Operating Cost	Fare Revenues	Operating Cost per Passenger Trip
2007	108,035	\$3,654,665	\$411,942	\$33.83
2008	166,750	\$4,057,861	\$615,915	\$24.33
2009	181,356	\$4,072,168	\$748,902	\$22.45
2010	204,679	\$3,608,304	\$505,562	\$17.63
2011	250,656	\$3,696,851	\$568,827	\$14.74

RTA also provides carpooling set-up and ridesharing services, as well as a vanpool. RTA maintains a fleet of over 110 12-, 14-, and 15-passenger vans for the program. Annual ridership has steadily increased, as shown by **Table 3-6**.



**RTA Vanpool vehicle**

Source: [www.musiccitystar.org](http://www.musiccitystar.org)



**Table 3-6: RTA Vanpool Metrics**

Year	Passenger Trips	Operating Cost	Fare Revenues	Operating Cost per Passenger Trip
2007	117,096	\$380,118	\$365,433	\$3.25
2008	127,008	\$312,227	\$122,722	\$2.46
2009	154,349	\$438,128	\$438,127	\$2.84
2010	164,592	\$710,995	\$710,996	\$4.32
2011	166,393	\$797,402	\$797,402	\$4.79

The Nashville Metropolitan Transit Authority (MTA) operates a local bus system, and also operates seven Express Bus routes under contract to RTA. Between MTA and RTA, a total of 16 Express Bus routes and 28 park-and-ride lots service the Nashville metropolitan area. The Express Bus system charges a \$4 fare, and 20-ride passes are available for \$70.00.



**Nashville MTA BRT-Lite vehicle**

Source: [www.nashvillemta.org](http://www.nashvillemta.org)

MTA operates two of its local routes with BRT-like equipment. Termed BRT-lite, the Gallitan Pike and Murfreesboro Pike routes utilize 60-foot long articulating BRT vehicles first delivered in 2009 at a cost of \$860,000 each. These routes operate on 15-minute headways during the weekday and 30-minute headways on Saturdays. Annual ridership increases of 9%-10% have been typical since inception, indicating an appetite exists for additional mass transit.



**Proposed Nashville MTA BRT vehicle**

Source: [www.nashvillecitypaper.com](http://www.nashvillecitypaper.com)

MTA used the BRT-lite routes as a foundation for a more robust BRT endeavor, and initiated an Alternatives Analysis in 2011. BRT operating in exclusive lanes along the

Broadway-West End corridor was selected as the locally preferred alternative. The 7.1-mile corridor's east-west alignment traverses the densest segment of the city, and connects universities, hospitals, entertainment and cultural venues, dense residential, and federal, state, and local government agencies. The annual ridership is projected at 1.6 million in the first year of operation (5,197 per day). According to estimates, annual ridership should near 2.5 million by 2022. The environmental document has been submitted to FTA, and construction is expected to begin in 2014-2015, with operational service planned for 2016.



**Appendix C**  
**Transit-Oriented Development**

# Newberry – Columbia Alternatives Analysis

Transit-Supportive Development Concepts

March 2014



Prepared by

**URS**

In association with

***Community Design Group***

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## 1. Introduction

Coordinating land use policy and transportation planning is a hallmark of progressive communities. These communities often provide choices for living, destinations that are accessible via different modes of transportation, and many amenities within walking distance. However, planning for such communities requires synergy among several professional disciplines to ensure that the diminishing natural resources are effectively managed.

Land use is the sectioning of land for different types of uses. It involves managing and modifying the natural environment into built environments such as open space, agricultural and human settlement areas to provide areas for places to live, work, and play. Within urban settings, how the land is sectioned determines whether the land use pattern is walkable or automobile-oriented.

Transit is simply a means to move people from one place to another using a local public transportation system. Transit, in the form of buses, light rail or trains, is an efficient method to move people since each form can accommodate a large number of passengers per trip. When properly employed, effective transit systems can entice drivers away from personally-owned vehicles, thereby reducing congestion on a community's roadway network. Additionally, with emerging green technologies such as electric and hybrid buses and light-rail, transit systems can further reduce pollutant emissions.

Urbanized areas with transit-supportive land uses can have vibrant and economically-viable communities that promote sustainable growth patterns. A transit-supportive community is often characterized by a mixed-use development pattern with living quarters or office above retail, close to a transit system and buildings built at a human scale. This compact and walkable development pattern with a mixture of land uses close to a transit station (normally within ½ mile) is the core element of transit-supportive development.

The purpose of this report is to provide a framework for adopting transit-supportive development pattern along the Newberry-Columbia transit corridor. The intent is not to create a transit-supportive development along the whole length of the corridor but at key transit stations areas where the need is most apparent.

## 2. Benefits of Enhanced Transit

When an enhanced transit system is implemented, whether it is bus rapid transit, light rail, or commuter rail, the region can realize several direct benefits. Better neighborhood connections result in enhanced community facilities and increased private investment. With dedicated rails and bus or priority lane(s) with limited stops along the transit corridor, the commute times from the current non-priority transit lane route can be significantly reduced due to the system’s flexibility and efficiency. Moreover, by removing cars from the roads and potentially utilizing alternative fuels, transit contributes to better air quality for the region.

Transit corridor improvements can stimulate land development especially near transit stations as experienced by communities around the country, including Charlotte’s LYNX light rail line, Minnesota North Star commuter rail system, and Seattle’s RapidRide bus rapid transit line. However transit system investment alone is not sufficient to catalyze economic development: strong policy, regulatory, and infrastructure investment from the public sector in the form of transit-supportive regulations and plans and market-sensitive development incentives must be pursued. Additionally, some level of density is required, making it unlikely that transit will promote development to any significant degree in rural areas.



**Northstar Commuter Rail**

Source: [www.bing.com](http://www.bing.com)



**Charlotte Lynx LRT**

Source: [CDGllc](http://CDGllc)



**Seattle RapidRide BRT**

Source: [www.seattletransitblog.com](http://www.seattletransitblog.com)

Transit system investment, when supported by the appropriate local policy, regulatory and financial framework, has been shown to produce the following benefits for communities across the country:

- **Increased property values and tax revenues.** Residential and commercial projects near transit stations typically appreciate in value more rapidly than others thus, increasing tax revenues collected by local governments.
- **Greater consumer choices.** Transit-supportive development can help to serve the area’s elderly, singles, empty-nesters, and other demographic groups who may prefer housing within walking distance of comfortable transit service. Development near a transit station offers the option of living with having a single car or without a car, a significant financial savings.

- **Enhanced retail opportunities.** With the improved access and convenience, transit corridors normally attract retail activity and other commercial opportunities. These buildings typically have higher aesthetic quality and public spaces to promote the marketability and real estate sustainability.



**Compact Mixed-use Development  
Charlotte, NC**

Source: CDGllc

- **Concentrated development patterns.** The corridor has many areas with land uses that are either single-use, auto-oriented, or strip commercial and adopting a transit-supportive system can provide an alternative development type that is more efficient, mixed-use, and compact. Adopting this type of development pattern will reduce construction costs for roads and infrastructure.



**Bike Rental Station  
LYNX LRT Station, Charlotte, NC**

Source: CDGllc

- **Improved environmental quality.** Transit-supportive development offers the opportunity to refocus growth within the transit core, the transit neighborhood, and areas outside of the neighborhoods. With



the introduction of well-planned and safe public amenities such as bikeways, sidewalks, and greenways that connect neighborhoods to the transit stations, the use of private automobiles is significantly reduced. In doing so will improve the region’s air quality and better use of the area’s natural resources.

- **Increased system ridership.** Regardless of the type of transit system, locating higher density housing and employment centers within the transit core and the adjacent transit neighborhood, all within walking distance, could increase system ridership. A key component is the use of connector buses to these neighborhoods and parking flexibility.



***LYNX Connector Bus  
Charlotte, NC***  
*Source: CDGllc*

### 3. Characteristics of Successful Transit Corridors

Successful transit corridors typically have characteristics that require consideration of several interrelated layers including:

- Land use and its arrangement, intensity, and design
- Infrastructure and public facilities
- Parks, open space, and community facilities
- Circulation and parking for various types of transportation, including transit, pedestrians, and automobiles

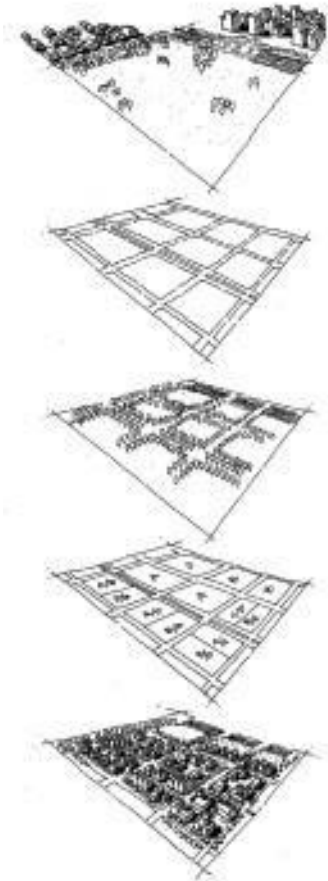
Understanding these layers during the planning process can assist decision makers in identifying the missing gaps as they manage and plan future growth for the region.

The following characteristics are common to many existing transit corridors that have been successful in encouraging transit ridership and promoting development that is supportive of transit.

#### 3.1 Mixed Use Development

Mixed-Use developments are environments that bring compatible land uses, public amenities and utilities at various scales that enable people to live, work, play, and shop in one place. These developments can consist of vertical mixed-use buildings, horizontal mixed-use sites, or mixed-use walkable areas. Key aspects include the following.

- Support increased densities
- Provide a transition to adjacent neighborhoods
- Incorporate public, private, and civic space
- Encourage walking and biking
- Integrate mutually compatible land use

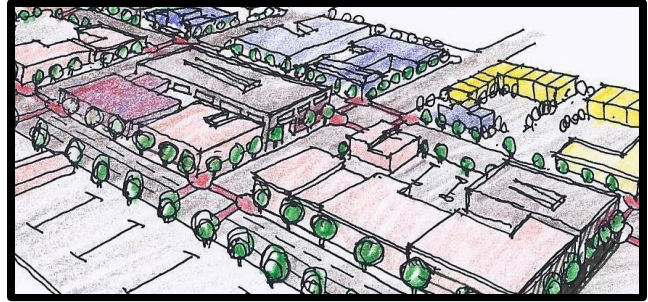


**Proposed Mixed-use Development  
Gateway Overlay District Redevelopment Plan  
West Columbia, SC**

Source: URS and CDGllc

### 3.2 Concentrated Development

This development pattern is typically mixed-use, intense, and grouped in a small area about a quarter-mile to one-half-mile radius and is easily accessible by pedestrian traffic. Key aspects include the following.



- Supports increased densities and commercial traffic
- Allows land uses to support one another
- Consolidates short trips
- Makes walking and biking more convenient options

### 3.3 Varied and Complementary Land Uses

These are land uses that support each other to create a walkable and vibrant environment such as urban parks with retail, office, or condo living. Key aspects include the following.

- Makes the transit trip more convenient
- Makes the transit station area more interesting and lively
- Can be designed as community focal point
- Increases security and promotes day-night activity
- Encourages higher aesthetic quality and public spaces

### 3.4 Good Transit Stops that are Accessible by All Modes

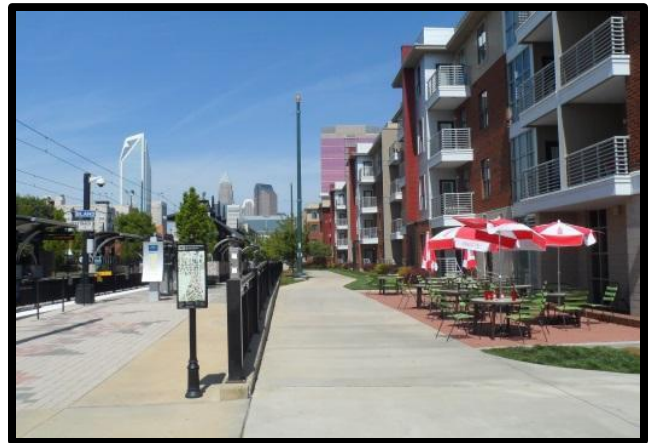
These are stops that have bike stations, wide sidewalks, on- and off-street parking, and are within a 5-minute walk from most surrounding destinations. Key aspects include the following.

- Promotes transit ridership
- Connects to the surrounding neighborhoods more efficiently
- Links activities and uses

### 3.5 Pleasant Pedestrian and Bicycle Environment

These are wide, clearly defined, and separated areas for walking and biking, safe for all users, and allow resting along the route. Key aspects include the following.

- Encourages walking, biking and other street activities
- Provides site amenities such as trees, benches, lighting, etc.
- Increases safety and security for all within the transit environment
- Enhances flow toward transit station
- Helps achieve mixed-use and concentrated development
- Provides alternative to the automobile from the neighborhoods to the station



**LYNX LRT Station, Charlotte, NC**

Source: CDGllc

### 3.6 Adequate Parking

Typically used as an incentive, quality transit provides parking duration flexibility for both automobiles and bicycles close to station areas at no cost or a nominal fee. Key aspects include the following.

- Provides convenient and safe parking
- Enhances retail access
- Improves pedestrian environment
- Off-Street parking is centralized and close to stations ensuring safety and accessibility
- On-Street parking provides a buffer between automobiles and pedestrians



**LYNX LRT Park-and-ride, Charlotte, NC**

Source: CDGllc



**Birkdale Structured Parking, Huntersville, NC**

Source: CDGllc

- Structured parking decreases the amount of land needed for parking, reserving it for other redevelopment needs.

## 4. Newberry-Columbia Corridor Districts and Guiding Principles

The proposed Newberry-Columbia Corridor touches several communities, urban areas, and open spaces, and these diverse land uses provide varied opportunities and challenges. The distinct characteristics of the corridor fall under three broad categories:

- 1) Urban or downtown district such as in downtown Newberry and downtown Columbia;
- 2) Suburban district such as in Irmo, Ballentine, and Chapin; and
- 3) Rural district which are areas consisting of undeveloped natural open spaces, agricultural land, or limited rural development surrounded by large lot agricultural and natural areas.

### 4.1 Urban or Downtown District

This district is within the urban core with very concentrated, mixed-used development that allows for easy access by walking, bicycling, and other modes of transportation. An example of this district is in downtown Columbia where the height limitations for vertical mixed-use buildings are not restricted. In downtown Newberry, however, the mixed-use building heights may be restricted to the height of the surrounding buildings. Regardless of the building typology in either downtown, the pedestrian environment and public spaces remain very similar – safe, pleasant, and



**Mixed-use Development, Columbia, SC**

Source: CDGllc

flexible for all street functions and activities. As an established district, the architectural vernacular typically has a higher aesthetic quality in terms of the craftsmanship and materials used and would generally set the tone for future urban design improvement. **Figure 4-1** depicts a prototypical model for transit-supportive development in the urban or downtown district.

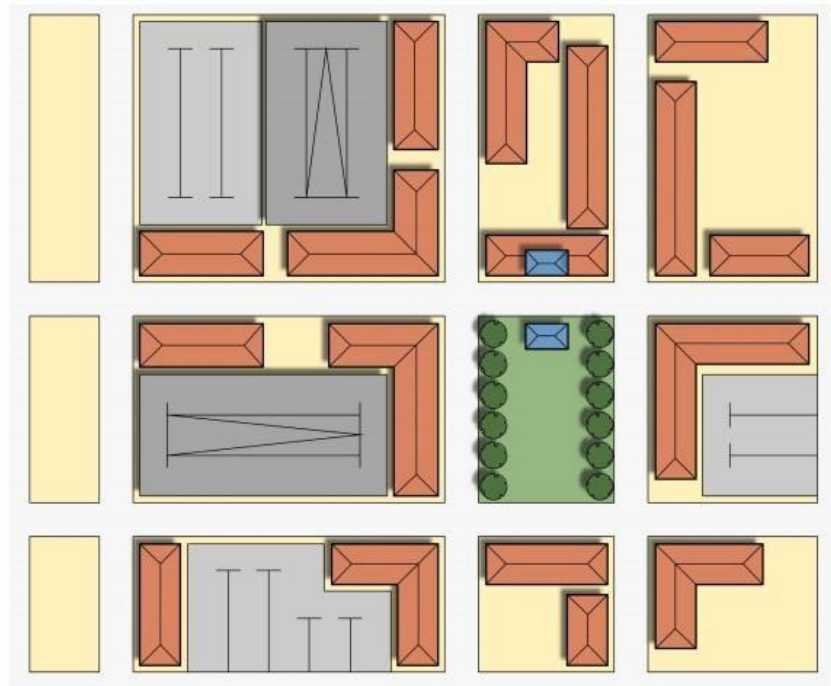
**Guiding Principle – Mixed and Concentrated Land Use**

Within the existing urban district development pattern, this guiding principle is designed to result in a development pattern that includes complementary land uses within walking distance to proposed transit stations. It would also support multi-modal transit system accessibility through robust bicycle and pedestrian facilities. In addition, it would promote balanced levels of transit ridership and provide pedestrian safety throughout the day.



**Baxter Village Town Center, Fort Mill, SC**

Source: CDGllc



**TRANSIT-SUPPORTIVE DEVELOPMENT  
PROTOTYPICAL URBAN / DOWNTOWN DISTRICT**

**LEGEND**

	Transit Station
	Commercial / Mixed-Use
	Parking Garage
	Parking Lot

**Figure 4-1:** Transit-Supportive Development – Prototypical Urban or Downtown District



## 4.2 The Suburban District

This district development pattern generally consists of single- or two-story buildings with complementary land uses in a concentrated commercial area. Surface parking lots are plentiful as they serve the various commercial establishments found in the suburban commercial district. This district can be found in the St. Andrews, Irmo, and Chapin areas. Residential land use is normally located just outside of the commercial suburban district but accessibility, especially for pedestrians and bicyclists, is spotty or isolated at best. **Figure 4-2** depicts a prototypical model for transit-supportive development in the suburban district.

### ***Guiding Principle – Accessibility and Complementary Uses***

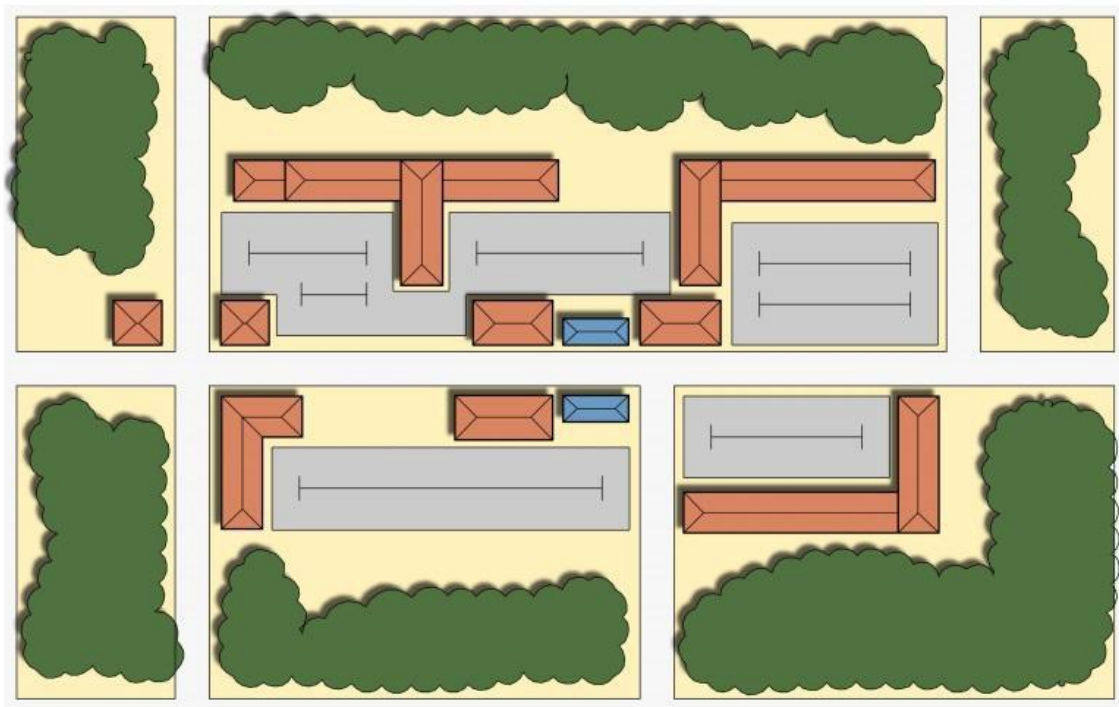
Despite being located as little as one mile from a commercial district, the limited availability of pedestrian and bicycle facilities in suburban districts acts as a disincentive to non-auto travel. With proper planning and comparatively low levels of public investment in bike lanes and sidewalks, residents from adjacent neighborhoods will be more encouraged to use transit facilities. Bike programs and other transit ridership benefits could promote the use of the transit system.



***Birkdale, Huntersville, NC***

*Source: CDGllc*

Within the suburban district, planned compact development patterns should be encouraged and incentivized. Mixed-use developments that include residential units and shared parking should be fostered to minimize the use of land for parking. In addition, a limited shuttle bus system (for am/pm peak hour service) from residential areas to nearby transit stations could encourage a shift from automobiles to transit.



**TRANSIT-SUPPORTIVE DEVELOPMENT  
PROTOTYPICAL SUBURBAN DISTRICT**

**LEGEND**  
 Transit Station  
 Commercial / Mixed-Use  
 Parking Lot

**Figure 4-2:** Transit-Supportive Development – Prototypical Suburban District

### 4.3 Rural District

This district development pattern within the Newberry-Columbia Corridor is characterized by either undeveloped natural open spaces and agricultural land, stand-alone single use buildings surrounded by natural areas, or single-story commercial buildings with side or front parking or strip commercial buildings with parking in front. This development typology can be found in and around Prosperity and Little Mountain, as well as stretches of US 76. Some of these establishments have become neighborhood landmarks either as a result of the goods and services they provide to the community or the architectural layout of the buildings. Minimum pedestrian and bicycling facilities are available outside of the district. However, since this rural/open space land use dominates the middle portion of the corridor it may be unlikely that any type of transit investment could catalyze significant levels of development. This rural/open space with low-density communities may be suited for this region until a shift in market demand occurs. **Figure 4-3** depicts a prototypical model for transit-supportive development in the rural district.

#### ***Guiding Principle – Enhanced Rural District Environment***

As a rural district destination, a catalyst future development could include flexible mixed-use development with residential units. Surface parking for park-and-ride facilities should be established to encourage riding transit and as a development incentive for future investment. Greenways could be planned to connect the station to other land uses. Urban parks and other public amenities could enhance this district into a more transit-friendly destination station.



TRANSIT-SUPPORTIVE DEVELOPMENT  
PROTOTYPICAL RURAL DISTRICT

- LEGEND
- Transit Station
  - Commercial / Mixed-Use
  - Single Family Residential
  - Parking Lot

Figure 4-3: Transit-Supportive Development – Prototypical Rural District

## 5.0 Recommended Land Use Policy Actions

Changing an existing automobile-oriented land use development pattern to a transit-supportive development pattern requires a shift in land use policy and transportation planning. Many communities around the country have successfully transformed their communities towards a transit-supportive development pattern, utilizing the following tools to varying degrees. These tools are potential mechanisms that local jurisdictions and regional agencies may employ to strengthen the transit-supportive environment within the Newberry-Columbia corridor.

- **Small Area Plans.** While developing a detailed regional plan along the corridor can be very difficult and expensive, small area plans are more manageable and address key site issues that regional plans by design overlook. Small area plans provide increased detail with specific land use, transit and transportation network recommendations. These plans may be best developed within a ½ to one-mile radius from a transit station.
- **Overlay districts.** An Overlay district is typically used to allow the land use recommendations from small area plans to be implemented within the existing planning context. It applies special restrictions to an area in addition to those required by local zoning.
- **Urban design guidelines.** The adoption of urban design guidelines is an effective tool to create desirable built environments. In addition to building form, heights, and materials of new construction, these guidelines may also address infill development, urban open space, multi-modal transportation and parking flexibility. These guidelines may not be required in the Newberry or Downtown Columbia stations, but the proposed stations between these two termini would benefit significantly.
- **Engage property owners.** When property owners, especially those within the vicinity of proposed transit stations, are educated with the benefits of transit-supportive development, opposition to transit improvements may reduce. Property owners should be engaged throughout the planning process, particularly during visioning and design workshops.
- **Provide incentives.** To encourage transit-supportive development pattern, several development incentives should be considered. These include reduction in parking requirements when developments are adjacent to transit stations or reduction in fares for residents within a defined radius (e.g., ½ mile) from transit stations. Other incentives such as development density bonus or property tax reduction may be considered in the corridor.



**Appendix D**  
**Summary of Public Involvement**

# Newberry – Columbia Alternatives Analysis

Summary of Public Involvement

March 2014



Prepared by

**URS**

In association with

***Planners for Environmental Quality***

and

***SR Concepts***

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## 1. Introduction

The Newberry-Columbia Alternatives Analysis developed and implemented a public participation process to engage stakeholders, regulatory agencies, and the general public in order to provide the Project Team with perspective and an understanding of local and regional expectations for the future of public transit in the corridor. Public acceptance and support is vital to transit capital improvements that seek federal funds for construction. Therefore, the Project Team utilized multiple methods of outreach to solicit input throughout the project. These methods included:

- One-on-one interviews with stakeholders, including existing transit service providers, local leaders, and interest groups
- Steering Committee meetings
- Public open-house meetings in Newberry and Columbia
- Newberry College student survey
- Online public survey



***Open-house meeting held at Newberry City Hall***



***Steering Committee meeting***

The following reports and surveys summarize the results of these efforts.



## NEWBERRY/COLUMBIA ALTERNATIVES ANALYSIS

### PUBLIC OUTREACH SUMMARY

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The overall goals of the public involvement program were to capitalize on committee input that would guide the process and to have the public participate at key milestones. Various strategies were utilized to educate the public on the purpose for the Alternatives Analysis study, invite potentially impacted communities to participate in discussion, and to document ideas, perceptions, and opinions expressed throughout the planning process. The input received throughout the involvement activities was used to determine the qualitative extent of community support during the screening of various modes and alignments during the fatal flaw analysis. The following table summarizes the outreach activities.

Involvement Method	Date input received	Organization
Steering Committee meeting #1	8-Feb-12	Various
Public Open House #1 (Newberry/Columbia)	21-Feb-12	General Public
Stakeholder Interview	16-Apr-12	City of Columbia
Stakeholder Interview	3-May-12	CMCOG Rail Transit Committee
Stakeholder Interview	11-Jun-12	CMRTA
Stakeholder Interview	9-May-12	FHWA
Stakeholder Interview	9-May-12	FHWA
Stakeholder Interview	30-May-12	Greater Columbia Chamber of Commerce
Stakeholder Interview	10-Apr-12	Newberry County
Stakeholder Interview	12-Apr-12	SCDHEC
Stakeholder Interview	26-Apr-12	Town of Chapin
Stakeholder Interview	3-May-12	Town of Irmo
Stakeholder Interview	24-Apr-12	Town of Little Mountain
Stakeholder Interview	12-Apr-12	Newberry College
Stakeholder Interview	10-Apr-12	CSX
Stakeholder Interview	9-May-12	University of South Carolina
Steering Committee meeting #2	28-Jun-12	Various
Steering Committee meeting #3	4-Feb-13	Various
Online Survey Post	Throughout	Various
Final Public Meetings (Newberry/Columbia)	21-Jan-14 22-Jan-14	General Public



**NEWBERRY/COLUMBIA ALTERNATIVES ANALYSIS**  
**PUBLIC OUTREACH SUMMARY**

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All public involvement efforts in conjunction with CMCOG staff were supplemented with newsletter and fact sheet distribution, email notifications, meeting announcements on various organizational websites, and direct calls to organization representatives. Two rounds of open house format public meetings were conducted along with Stakeholder Advisory Committee interviews. There were 26 attendees for the first round of public meetings simultaneously held on University of South Carolina campus and at Newberry’s City Hall. A total of 14 Stakeholder interviews were scheduled and conducted during the months of April, May and June 2012. Similar to the public meeting formats, these interviews began with informative presentations on the current status of the project, allowed participants to provide input on current experiences commuting between Newberry and Columbia, and identify transportation alternatives they felt would be feasible for the region in the near future.

**Initial Steering Committee Members**

<b>Representing Agency</b>	<b>Last</b>	<b>First</b>
City of Columbia	Hampton	Krista
City of Columbia	Hudson	Skip
City of Newberry	DeWitt	Matt
Lexington County	Compton	Charles
Midlands Friends of Public Transit	Mood	Lill
Newberry County	Powers	Terresa
Newberry County Council on Aging	Stockman	Lynn
Richland County	Leger	Holland
SCDOT	Frate	Doug
SCDOT	Tolson	Roy
SCDOT	Lackey	Diane



**NEWBERRY/COLUMBIA ALTERNATIVES ANALYSIS**  
**PUBLIC OUTREACH SUMMARY**

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**Initial Stakeholder Advisory Committee Members**

Representing Agency	Last	First
City of Columbia	Wilson-Florence	Teresa
City of Columbia	Knoche	David
CMCOG Rail Transit Committee	Hoefer	Marshall
CMRTA	Schneider	Rob
FHWA	Hekter	Jessica
FHWA	Morris	Yolanda
Greater Columbia Chamber of Commerce	McLease	Ike
Lexington County	Williams	Synithia
Newberry County	Ann	Peters
SCDHEC	Jack	Porter
SCDOT	Burgess	David
SCDOT	Donahue	Scott
Town of Chapin	Shealy	Stan
Town of Irmo	King	Hardy
Town of Little Mountain	Johnson	O. L.
Town of Little Mountain	Bowers	Melvin
Town of Prosperity	Underwood	Derek
Town of Pomaria	Hentz	Darryl
Newberry College	Banks	Kay
CSX	John	Dillard
Norfolk Southern	Macchiaverna	Frank
University of South Carolina	Wright	Lin

In addition to stakeholder interviews committee members were asked to place a link on their websites for the 11 question general public survey. The organizations were asked to allow the link to be displayed for a period of 30 days. Other organizations preferred to distribute the hard copy version of the survey to their respective members/residents along with updated versions



**NEWBERRY/COLUMBIA ALTERNATIVES ANALYSIS**  
**PUBLIC OUTREACH SUMMARY**

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of the project’s newsletter and factsheet. These documents were also placed at other busy public places such as libraries, community/recreation centers, and churches.

**Survey Host Websites**

<b>Representing Agency</b>	<b>Host Website</b>
City of Columbia	<a href="http://www.columbiasc.net/">http://www.columbiasc.net/</a>
CMRTA	<a href="http://www.gocmrta.com/">http://www.gocmrta.com/</a>
Greater Columbia Chamber of Commerce	N/A - Requested hard copies
Newberry County	<a href="http://www.newberrycounty.net/">http://www.newberrycounty.net/</a>
SCDHEC	<a href="http://www.scdhec.gov/">http://www.scdhec.gov/</a>
Town of Chapin	
Chapin Chamber	<a href="http://chapinchamber.com/">http://chapinchamber.com/</a>
Town of Irmo	<a href="http://www.townofirmosc.com/News.aspx">http://www.townofirmosc.com/News.aspx</a>
Greater Irmo Chamber	<a href="http://www.greaterirmochamber.com/home">http://www.greaterirmochamber.com/home</a>
University of South Carolina	
City of Newberry	<a href="http://www.cityofnewberry.com/">http://www.cityofnewberry.com/</a>
Newberry County Council on Aging	N/A - Requested hard copies
Richland County	<a href="http://www.richlandonline.com/">http://www.richlandonline.com/</a>
Midlands Friends of Public Transit	Email distribution
Town of Prosperity	<a href="http://www.prosperitysc.com/">http://www.prosperitysc.com/</a>



## NEWBERRY - COLUMBIA ALTERNATIVES ANALYSIS PUBLIC MEETING SUMMARY

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**February 21, 2012**  
**Public Open House**  
**5:30pm – 7:30 pm**

### **Questions/Comments**

The following questions/comments were heard during the meeting:

#### **Newberry City Hall**

Q: Have you determined the ridership numbers for commuters that would use the service from Newberry to Columbia?

C: Parking in Columbia along with the price of gas can be expensive...there have been several studies but no results in the past

C: The rail line should be a public/private venture

Q: Is there any way that we can connect to the Richmond/Washington line or Atlanta/New Orleans

C: we should consider going both ways to Columbia and Greenville

C: we need an efficient system that is convenient for local riders

C: we should start with a small line and see what the ridership is like...park & ride lots should also be considered

C: The demographics in the area would want the system for recreational purposes versus just to and from work. The Opera house would be a good pull factor for the city of Newberry

Comments Submitted in writing:

- ❖ I-26 already stops in Lexington County during peak commute times. Half of the time when I must go into Columbia I ride-share. Freeway needs signals to regulate on-ramps during peak times. Any new freeway lanes should be HOV lanes. Transit would help fill empty housing stock and help better utilize already existing infrastructure. Prefer light rail with a tie-in to statewide commuter rail.
- ❖ Why did the utility company stop paying for transit for the right to have a monopoly and poor decision.
- ❖ I avoid shopping in Harribarson due to traffic congestion. Whitmire would make a excellent light rail commuter community
- ❖ Students of Newberry College are in full support
- ❖ Retirees in the area are growing, they like to go places and have time to for recreational activities, with a return home safely

#### **Sustainable Learning Center – USC (Columbia)**

Comments Submitted in writing:

- ❖ Suggest possibly talking to Bill Roger, Director of S.C. Press Association
- ❖ I suggest getting in touch with the local bike chapter- Palmetto Cycling



## NEWBERRY - COLUMBIA ALTERNATIVES ANALYSIS

### PUBLIC MEETING SUMMARY

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- ❖ Also suggest getting PR Irmo on board to educate the Midlands- Invite state reporters to your meeting
- ❖ Next meeting needs to be at a location with adequate parking
- ❖ Publicize meetings more in advance



## NEWBERRY - COLUMBIA ALTERNATIVES ANALYSIS FINAL PUBLIC MEETING SUMMARY

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**January 21, 2014**

**Newberry City Hall Public Open House**

**4:30pm – 7:30 pm**

### **Verbal Questions/Comments**

The following questions/comments were heard during the meeting:

Q: Is a SmartRide leg being considered west along I-20 to Lexington?

C: Maintenance on vehicles is an issue that needs proper planning and funding.

C: New technology will be important – the old CMRTA buses that ran to Newberry in the past were plagued by engine problems (including an example of an engine fire on I-26)

C: The Newberry Express route needs an improved marketing approach to increase ridership

Q: The eventual system will need to address connectivity between the transit stops and the local communities

### **Written Comments**

The following comments were submitted in writing:

- ❖ In favor of commuter rail system. Please continue to pursue this option. Everyone that I speak with on a regular basis is highly interested and in favor of this option.
- ❖ Prefer commuter rail, with each town developing their own bus or trolley service.
- ❖ Transit routes need to serve the industrial parks that the county is developing in Newberry County.

**January 22, 2014**

**Central Midlands Council of Governments Public Open House**

**5:00pm – 7:00 pm**

No verbal and/or written questions or comments were submitted



# NEWBERRY - COLUMBIA ALTERNATIVES ANALYSIS

## NEWBERRY COLLEGE STUDENT SURVEY QUESTIONS



The Central Midlands Council of Governments is conducting a study to evaluate the potential improvements/upgrades to the current transportation options in the corridor between Newberry and Columbia. Part of that evaluation is to better understand the needs of potential riders in the corridor. This survey is intended to get a clearer understanding of your current and future needs for transportation in this corridor. We appreciate your time in considering the following questions:

**1.) What year of college are you completing?**

- Freshman
- Sophomore
- Junior
- Senior

**2.) If you've declared a major, what program are you pursuing?**

\_\_\_\_\_

**3.) Do you live on-campus or in the immediate area?**

- Yes
- No

**4.) If you answered "No" to question #3, where do you live/commute from?**

\_\_\_\_\_

**5.) What would you rate the level of traffic congestion along the Interstate 26 corridor? ( 1 being minimal 10 being extreme)**

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

**6.) How often do you travel between Newberry and Columbia (this can include destinations in between the cities, like Chapin or Irmo)?**

- Daily
- Weekly
- Monthly
- Hardly ever

**7.) I primarily travel in the corridor for:**

- Work
- Scholl
- Recreation
- Other \_\_\_\_\_

**8.) Do you participate in any programs, organizations or clubs that require commuting off-campus to destinations between Newberry and Columbia?**

- Yes
- No

**NEWBERRY - COLUMBIA ALTERNATIVES ANALYSIS**  
**NEWBERRY COLLEGE STUDENT SURVEY QUESTIONS**



9.) If you answered “Yes” to question #8, where do you go?

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10.) Which type of transportation technology would you be more likely to use?

- Local Bus                       Passenger rail  
 Express Bus                       Other \_\_\_\_\_

11.) Upon graduation, I plan to stay in the Central Midlands Region (Newberry, Lexington, Richland County area).

- Strongly agree                       Agree                       Disagree                       Strongly disagree

**Additional Comments**

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**Thank you for taking the time to complete this survey.**



**1. What year of college are you completing?**

A total of ninety-four students completed the survey. Of those: 38 percent were freshmen, 21 percent were sophomores, 26 percent were juniors and 13 percent were seniors.

**2. If you've declared a major, what program are you pursuing?**

Of the 94 respondents, five did not answer this question. Majors provided ranged from business, education and the sciences to Liberal Arts degrees in history, psychology and Sociology.

**3. Do you live on-campus or in the immediate areas?**

Ninety-six percent responded yes that they live on or near campus.

**4. If you answered "No" to question #3, where do you live/commute from?**

Ninety-seven percent did not respond. The only two responses provided were: "My house is in Newberry" and "Newberry".

**5. What would you rate the level of traffic congestion along the Interstate 26 corridor? (1 being minimal 10 being extreme).**

Sixty-three percent of the students ranked the level of traffic congestion in the 4 to 7 range.

**6. How often do you travel between Newberry and Columbia? (This can include destinations in between the cities, like Chapin or Irmo.)**

Forty percent stated they use transit on a weekly basis; 34 percent monthly; 20 percent hardly ever; and 5 percent on a daily basis. One individual responded they use transit on a bi-weekly basis.

**7. I primarily travel in the corridor for: Work, School, Recreation, Other.**

Two students did not answer the question and five provided multiple answers. At 44.6 percent, recreation was listed as the top reason most of the students use transit, followed equally by work and school at 13.8 percent each. Thirty-four percent responded they use transit for other purposes; visiting family and friends was the top reason; other purposes given were to go to church, go out to eat, play golf and go to bars.

**8. Do you participate in any programs, organizations of clubs that require commuting off-campus to destinations between Newberry and Columbia?**

Sixty-eight percent of the students responded no and 31.9 percent responded yes.



**9. If you answered "Yes" to question #8, where do you go?**

Seventy-four percent did not respond to this question.

The students who did respond did not list geographical areas but provided the type of activities in which they are involved. Most activities centered around recreation or were related to the students' areas of study. Several students did specifically mention that they drive to Columbia.

**10. Which type of transportation technology would you be more likely to use?**

Multiple responses to this question were provided by 8.5 percent of the students. Express bus came in at 43.6 percent, Local at 25.5 percent, passenger rail at 24.4%. The largest number of the 9.5 percent who responded "Other", specified car.

**11. Upon graduation, I plan to stay in the Central Midlands Region (Newberry, Lexington, Richland County area).**

Almost 60 percent of the students responded that they do not plan to remain in the area after graduation.

# NEWBERRY - COLUMBIA ALTERNATIVES ANALYSIS

## GENERAL PUBLIC SURVEY QUESTIONS



The Central Midlands Council of Governments is conducting a study to evaluate options for improving commuter connections between Newberry and Columbia. Part of that evaluation is to better understand the needs of potential riders in the corridor. This survey is intended to get a clearer understanding of your current and future needs for transportation in this corridor. We appreciate your time in considering the following questions:

### 1.) Where do you live?

- Newberry (city)    Little Mountain    Irmo    Newberry County    Richland County  
 Prosperity    Chapin    Columbia    Lexington County    Other \_\_\_\_\_

### 2.) Where do you work?

- Newberry (city)    Little Mountain    Irmo    Newberry County    Richland County  
 Prosperity    Chapin    Columbia    Lexington County    Other \_\_\_\_\_

### 3.) Do you currently use the Newberry Express (SmartRide) or CMRTA service in this corridor?

- Newberry Express    CMRTA    Neither

### 4.) If you use either the Newberry Express or CMRTA, how often do you use it?

- Daily    Weekly    Monthly    Seldom

### 5.) How would you rate the importance of increasing transit services in the Newberry-Columbia corridor as opposed to widening the existing highways/roads?

- Must be done to improve current and future traffic and air quality issues  
 It would be good to do for future traffic  
 The existing highways/roads handle the traffic effectively  
 Transit services would not be utilized by enough people to make it worth the cost

### 6.) How often do you travel in the corridor between Newberry and Columbia (this can include destinations in between, like Chapin or Irmo)?

- Daily    Weekly    Monthly    Seldom

### 7.) I primarily travel in the corridor for:

- Work    Recreation    Medical  
 School    Other \_\_\_\_\_

# NEWBERRY - COLUMBIA ALTERNATIVES ANALYSIS

## GENERAL PUBLIC SURVEY QUESTIONS



**8.) What type of improved transit service would interest you the most? Park-and-Ride facilities may be utilized to support some or all of these services.**

- Local Bus** – Similar to the current CMRTA transit service
- Express Bus** – Similar to the current Newberry Express (SmartRide) transit service
- Bus Rapid Transit** – Bus service that travels in a dedicated right-of-way instead of mixing with traffic
- Passenger Rail** – Along the existing rail corridor with stops at various locations along the corridor
- Other** \_\_\_\_\_

**9.) For what purposes would you be willing to use the service selected in #8?**

- Work                       Recreation                       Medical
- School                       Other \_\_\_\_\_

**10.) Which factor(s) determine your preferred mode of transportation? (select all that apply)**

- Cost                       Reliability                       Availability                       Safety                       Accessibility

**11.) What is your most common form of transportation along this corridor to work, school, etc.?**

- Drive Alone     Carpool     CMRTA     Newberry Express     Other \_\_\_\_\_

### Demographic Information

### Additional Comments

**Sex**

- Male     Female

**Age**

- 18 or under     19 – 64     65 or older

**Household Income Level**

- Under \$30,000                       \$30,000 - \$60,000
- \$60,000 - \$90,000                       More than \$90,000

**Number of Vehicles in Household**

- 0     1     More than 1

**Race**

- Caucasian                       African-American
- Latino                       Asian                       Other

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1. Where do you live?





		Response Percent	Response Count
Newberry (city)		16.2%	29
Prosperity		9.5%	17
Little Mountain		5.0%	9
<b>Chapin</b>		<b>24.6%</b>	<b>44</b>
Irmo		5.0%	9
Columbia		7.3%	13
Newberry County		15.1%	27
Lexington County		2.8%	5
Richland County		7.3%	13
Other (please specify)		7.3%	13
		<b>answered question</b>	<b>179</b>
		<b>skipped question</b>	<b>0</b>

## 2. Where do you work?





		Response Percent	Response Count
Newberry (city)		20.4%	29
Prosperity		0.0%	0
Little Mountain		0.7%	1
Chapin		2.8%	4
Irmo		4.2%	6
<b>Columbia</b>		<b>57.7%</b>	<b>82</b>
Newberry County		3.5%	5
Lexington County		4.9%	7
Richland County		5.6%	8
	Other (please specify)		31
<b>answered question</b>			<b>142</b>
<b>skipped question</b>			<b>37</b>







**3. Do you currently use the Newberry Express (SmartRide) or Central Midlands RTA service in this corridor?**

		Response Percent	Response Count
Newberry Express		17.6%	31
Central Midlands RTA		5.1%	9
Newberry Express and Central Midlands RTA		0.6%	1
<b>Neither</b>		<b>76.7%</b>	<b>135</b>
<b>answered question</b>			<b>176</b>
<b>skipped question</b>			<b>3</b>





**4. If you use either the Newberry Express or Central Midlands RTA, how often do you use it?**

		Response Percent	Response Count
<b>Daily</b>		<b>47.5%</b>	<b>29</b>
Weekly		11.5%	7
Monthly		6.6%	4
Seldom		34.4%	21
<b>answered question</b>			<b>61</b>
<b>skipped question</b>			<b>118</b>

**5. How would you rate the importance of increasing transit services in the Newberry-Columbia corridor as opposed to widening the existing highways/roads?**

		Response Percent	Response Count
Increasing transit services must be done to improve current and future traffic and air quality issues.		52.1%	88
Increasing transit services would be more effective in helping to reduce future traffic congestion.		30.8%	52
The existing highways/roads handle the traffic effectively.		1.2%	2
Transit services would not be utilized by enough people to make it worth the cost.		16.0%	27
<b>answered question</b>			<b>169</b>
<b>skipped question</b>			<b>10</b>





**6. How often do you travel in the corridor between Newberry and Columbia? (This can include destinations in between, like Chapin or Irmo)**

		Response Percent	Response Count
Daily		54.3%	94
Weekly		27.7%	48
Monthly		9.8%	17
Seldom		8.1%	14
<b>answered question</b>			<b>173</b>
<b>skipped question</b>			<b>6</b>

## 7. What is the main purpose of your trip when you travel in the corridor?

		Response Percent	Response Count
Work		62.3%	99
School		1.9%	3
Recreation		29.6%	47
Medical		6.3%	10
	Other (please specify)		30
<b>answered question</b>			<b>159</b>
<b>skipped question</b>			<b>20</b>

**8. What type of improved transit service would interest you the most? (Park and ride facilities may be utilized to support some or all of these services.)**

		Response Percent	Response Count
Local Bus - Similar to the current Central Midlands RTA transit service.		8.8%	14
Express Bus - Similar to the current Newberry Express (SmartRide) transit service.		25.2%	40
Bus Rapid Transit - Bus service that travels in a dedicated right-of-way instead of mixing with traffic.		10.7%	17
<b>Passenger Rail - Along the existing rail corridor with stops at various locations along the corridor.</b>		<b>55.3%</b>	<b>88</b>
	Other (please specify)		13
		<b>answered question</b>	<b>159</b>
		<b>skipped question</b>	<b>20</b>





**9. For what purposes would you be willing to use the service selected in question #8?  
(select all that apply)**

		Response Percent	Response Count
Work		73.7%	115
School		11.5%	18
Recreation		64.7%	101
Medical		35.3%	55
Other (please specify)			16
<b>answered question</b>			<b>156</b>
<b>skipped question</b>			<b>23</b>



**10. Which factor(s) determine your preferred mode of transportation? (select all that apply)**

		Response Percent	Response Count
Cost		70.4%	119
Reliability		73.4%	124
<b>Availability</b>		<b>76.9%</b>	<b>130</b>
Safety		56.2%	95
Accessibility		60.9%	103
<b>answered question</b>			<b>169</b>
<b>skipped question</b>			<b>10</b>

## 11. What is currently your most common form of transportation along this corridor to work, school, etc.?

		Response Percent	Response Count
Drive alone		71.8%	122
Carpool		10.0%	17
Central Midlands RTA		4.7%	8
Newberry Express		13.5%	23
Other (please specify)			5
answered question			170
skipped question			9

## 12. Sex

		Response Percent	Response Count
Male		40.3%	71
Female		59.7%	105
answered question			176
skipped question			3

### 13. Age

		Response Percent	Response Count
18 or under		0.0%	0
<b>19 - 64</b>		<b>81.0%</b>	<b>141</b>
65 or older		19.0%	33
<b>answered question</b>			<b>174</b>
<b>skipped question</b>			<b>5</b>





### 14. Household Income Level

		Response Percent	Response Count
Under \$30,000		10.7%	18
<b>\$30,000 - \$60,000</b>		<b>39.3%</b>	<b>66</b>
\$60,000 - \$90,000		21.4%	36
More than \$90,000		28.6%	48
<b>answered question</b>			<b>168</b>
<b>skipped question</b>			<b>11</b>

### 15. Number of Vehicles in Household

		Response Percent	Response Count
Zero		4.0%	7
One		22.2%	39
<b>More than One</b>		<b>73.9%</b>	<b>130</b>
<b>answered question</b>			<b>176</b>
Summary of Public Involvement	<b>skipped question</b>	D-23	<b>3</b>

## 16. Race

		Response Percent	Response Count
Caucasian		81.2%	138
Latino		2.4%	4
African-American		15.9%	27
Asian		0.6%	1
	Additional comments		34
	<b>answered question</b>		<b>170</b>
	<b>skipped question</b>		<b>9</b>



**Q1. Where do you live?**

1	Joanna	Jan 10, 2014 2:24 PM
2	Silverstreet	Jan 10, 2014 12:55 PM
3	Lake Murray - Newberry County	Feb 24, 2013 6:35 PM
4	Pomaria area	Jan 25, 2013 2:46 PM
5	chappells	Nov 2, 2012 8:23 AM
6	Winnsboro, SC	Jul 24, 2012 12:26 PM
7	Whiterock	Jul 24, 2012 9:10 AM
8	West Wallaceville	Jul 22, 2012 2:03 PM
9	Saluda County/Hwy. 391	Jul 19, 2012 8:16 AM
10	Ballentine	Jul 19, 2012 7:16 AM
11	Columbia	Jul 14, 2012 11:34 AM
12	You need to make Public Service announcement over the Midland's Communication Services TV, and Radio Stations	Jul 2, 2012 5:24 PM
13	Forest Acres	Jun 25, 2012 6:02 PM

**Q2. Where do you work?**

1	SCDEPARTMENT OF TRANSPORTATION	Jan 15, 2014 1:49 PM
2	truck driver	Aug 15, 2013 6:17 AM
3	v.C. Summer Units 2 and 3 Construction	Aug 10, 2013 11:43 AM
4	retired	Aug 7, 2013 7:09 PM
5	Retired	Jun 24, 2013 2:45 PM
6	retired	May 19, 2013 10:32 AM
7	Retired	May 10, 2013 10:11 PM
8	Fairfield County	Jan 30, 2013 1:36 PM
9	Retired	Dec 7, 2012 8:28 PM
10	retired	Nov 8, 2012 5:01 PM
11	Jenkinsville, SC	Nov 6, 2012 11:10 AM
12	Fairfield County	Aug 16, 2012 9:01 AM
13	retired from job in Chapin	Aug 2, 2012 11:52 AM
14	retired	Jul 27, 2012 10:24 AM
15	retired	Jul 24, 2012 7:07 PM
16	Currently unemployed	Jul 24, 2012 8:30 AM
17	Retired	Jul 22, 2012 2:03 PM
18	RETIRED	Jul 21, 2012 4:29 PM
19	retired	Jul 20, 2012 10:18 AM
20	Retired	Jul 20, 2012 8:07 AM
21	Retired	Jul 20, 2012 5:31 AM
22	retired teacher	Jul 19, 2012 9:32 PM
23	Retired	Jul 19, 2012 12:47 PM
24	Retired	Jul 19, 2012 11:31 AM
25	Retired	Jul 19, 2012 8:34 AM
26	Ballentine	Jul 19, 2012 7:16 AM
27	retired	Jul 18, 2012 10:18 PM

**Q2. Where do you work?**

28	Retired	Jul 18, 2012 8:08 PM
29	retired	Jul 18, 2012 6:56 PM
30	Retired	Jul 18, 2012 5:27 PM
31	retired	Jul 18, 2012 3:25 PM

**Q7. What is the main purpose of your trip when you travel in the corridor?**

1	passing through	Feb 5, 2014 1:21 PM
2	shopping	Dec 2, 2013 6:54 PM
3	Shopping	Nov 29, 2013 4:57 PM
4	shopping	Aug 7, 2013 7:09 PM
5	Church	Jun 6, 2013 11:03 AM
6	shopping	May 10, 2013 10:11 PM
7	shopping	Jan 30, 2013 1:36 PM
8	Shopping	Dec 7, 2012 8:28 PM
9	shopping	Nov 8, 2012 5:01 PM
10	shopping	Aug 23, 2012 4:33 PM
11	shopping, errands	Aug 16, 2012 9:01 AM
12	running errands	Jul 30, 2012 1:44 PM
13	shopping	Jul 27, 2012 10:24 AM
14	Visiting Mother	Jul 24, 2012 7:07 PM
15	do not work	Jul 23, 2012 3:55 PM
16	Family	Jul 20, 2012 8:07 AM
17	meetings	Jul 19, 2012 1:38 PM
18	Shopping and meetings	Jul 19, 2012 8:16 AM
19	Shopping,recreation,etc.	Jul 19, 2012 7:43 AM
20	shopping	Jul 19, 2012 7:16 AM
21	Various reasons (about 3 times a week)	Jul 18, 2012 8:08 PM
22	Opera House Direction	Jul 18, 2012 7:40 PM
23	shopping	Jul 18, 2012 7:25 PM
24	shopping	Jul 18, 2012 6:56 PM
25	visiting relatives and work	Jul 18, 2012 5:25 PM
26	volunteer work	Jul 18, 2012 3:25 PM
27	We have a lake house so only come on the weekends Friday to Monday	Jul 14, 2012 11:34 AM

**Q7. What is the main purpose of your trip when you travel in the corridor?**

28	Taking care of elderly family members who live in Newberry,Chapin and Pomaria	Jun 30, 2012 1:30 PM
29	na	Jun 28, 2012 1:55 PM
30	visit the Upstate	Jun 26, 2012 10:53 AM

**Q8. What type of improved transit service would interest you the most? (Park and ride facilities may be utilized to support some or all of these services.)**

1	Park & Ride in Columbia along I126	Dec 17, 2013 5:09 PM
2	None	Dec 2, 2013 6:54 PM
3	Smarter, Faster, Wider, and More Efficient roadways and intersections	Oct 24, 2013 6:13 PM
4	park & ride	Oct 9, 2013 1:57 PM
5	teleportation	Feb 18, 2013 5:51 PM
6	Transportation to more destination stops so more people can take advantage of this service	Feb 10, 2013 11:03 AM
7	Inter-city Passenger Rail (Columbia-Charleston-Charlotte-Greenville)	Jul 24, 2012 8:56 AM
8	rail would be the best	Jul 21, 2012 5:02 PM
9	NONE	Jul 21, 2012 4:29 PM
10	Reducing Traffic, Improving Time	Jul 20, 2012 8:07 AM
11	Passenger rail	Jul 19, 2012 7:43 AM
12	University Workers Shuttles from Newberry to Campus	Jul 3, 2012 9:22 AM
13	Passenger Rail would be a great benefit	Jun 30, 2012 1:30 PM

**Q9. For what purposes would you be willing to use the service selected in question #8? (select all that apply)**

1	SHOPPING	Jan 10, 2014 3:06 PM
2	Would not	Dec 2, 2013 6:54 PM
3	shopping	Aug 7, 2013 7:09 PM
4	everything	Feb 18, 2013 5:51 PM
5	shopping	Jan 30, 2013 1:36 PM
6	Shopping	Dec 7, 2012 8:28 PM
7	dining, shopping	Aug 16, 2012 9:01 AM
8	running errands	Jul 30, 2012 1:44 PM
9	visiting relatives	Jul 24, 2012 7:07 PM
10	work, midical, recreation, shopping	Jul 24, 2012 1:34 PM
11	Easier Movement-Less polution	Jul 20, 2012 8:07 AM
12	Shopping	Jul 19, 2012 7:43 AM
13	Various reasons	Jul 18, 2012 8:08 PM
14	shopping	Jul 18, 2012 7:40 PM
15	shopping	Jul 18, 2012 7:25 PM
16	volunteer work	Jul 18, 2012 3:25 PM

**Q11. What is currently your most common form of transportation along this corridor to work, school, etc.?**

1	drive with spouse	Aug 7, 2013 7:09 PM
2	chauffered	May 19, 2013 10:32 AM
3	carpool with wife and kid(s)	Aug 16, 2012 9:01 AM
4	Bike	Aug 8, 2012 7:03 PM
5	drive with family	Jun 26, 2012 10:53 AM

**Q16. Race**

1	will not answer because I was a victim of racial profiling traveling through this county. Was told by several friends of different races how those cops are in this county.	Feb 5, 2014 1:21 PM
2	Transit service is important to reduce traffic, need for additional parking structures, road rage and improve quality of air. Designated lane for transit service would ensure all riders get to work on time. Otherwise more buses and routes would be needed. Consider additional routes for other qualified riders who currently don't have routes available.	Jan 20, 2014 12:09 PM
3	I very much enjoy utilizing the Newberry Express bus. They are courteous and dependable. It saves me money on gas, wear and tear on my car, stress from having to drive, and having some time to relax and unwind after the work day before returning home. I sincerely hope that the bus service will continue!	Jan 15, 2014 5:14 PM
4	I have used the Smatride since it's beginning. I depend on it daily. I could not get to work without it. I enjoy my trip both to work and home. Thank you for everything.	Jan 15, 2014 1:49 PM
5	While I seldom utilize the New berry Express, a lot of that is my poor scheduling. When I have used the service I have found it very useful and helpful. I very much would like to see it continue. Light rail would be interesting.	Jan 10, 2014 6:57 PM
6	I love the SMART ride bus offered by the Newberry Council on Aging. I believe this type of service will be needed more and more in the future as more cars compete for space on our Interstates during the morning/evening commute to work.	Jan 10, 2014 4:27 PM
7	I would ride monday -Friday if there was a bus that left at after 730 am	Jan 10, 2014 3:27 PM
8	Increasing bus service by adding additional runs would be beneficial. Say, 10 AM, noon, 2 PM, and evenings. Also, much more publicity is needed to make the bus service known to more potential customers.	Jan 10, 2014 3:09 PM
9	THE Newberry Smart Ride has been VERY helpful and instrumental in me being able to live on the budget and conduct a fairly normal life style.	Jan 10, 2014 3:06 PM
10	SmartRide is a great service--much better service under Newberry Council on Aging than when CMRTA provided service. Increasing awareness would increase ridership. Something must be done about Columbia area transit service before any rail service would be utilized significantly.	Jan 10, 2014 2:30 PM
11	If it were not for the Newberry Express Bus system to Columbia, I would not be able to afford to go to work. Gas is just too expensive and my old car would not make it far.	Jan 10, 2014 12:55 PM
12	I love riding the Newberry Express. It is a great program. As a matter of fact, I enjoy it so much that I refuse to drive into work now. :D	Jan 10, 2014 12:43 PM
13	Before the Interstate comes to a complete stand still, it would be good to build an alternative - light rail transit.	Aug 15, 2013 12:09 PM
14	There will be an estimated 3,500 employees on site congesting 175 to 215 - and	Aug 10, 2013 11:43 AM

**Q16. Race**

	I-26 from 5:30 AM leaving by 5 PM daily clogging your roads. Newberry is an excellent relocation area for those moving in as commute time is 25 minutes to site. Realtors, businesses, should capitalize and reach out to this new incoming source of income to the Newberry economy!	
15	We need public transportation from the traffic circle to Prosperity and Newberry. Taxis cost way too much. It costs \$24.00 one way from my house to Newberry! I live off of 391 in the Ira Kinard area.	Jun 24, 2013 2:45 PM
16	I am near 395 and the Saluda River. The only transportation I have anywhere is to drive.	Jun 9, 2013 7:42 PM
17	Current transportation options and changeover station time schedules are limited so i cannot take advantage of this and get back and forth to work at appropriate times. But if regular schedules are in the future, people can even plan to use the system just to go shopping at the malls and etc also.	Feb 10, 2013 11:03 AM
18	Transit service between Newberry and Columbia that provides more flexibility in departure and arrival times would be most helpful. I realize this would require an almost continuous service, i.e. 12 or 14 service, but it would provide the greatest flexibility for individuals that are going in for doctors appointments and for citizens working in Columbia that may work part-time or encounter a need to get home earlier in the day. Thank you for this survey.	Nov 23, 2012 9:08 AM
19	Because my commute to Columbia does not go to downtown, any mass transit will be impractical for me to use.	Oct 20, 2012 3:25 PM
20	Passenger rail is something I would love to support. I feel that the major metropolitan areas need to be involved for it to be cost-effective and have high utilization. A route from Greenville through Columbia to Charleston would be very advantageous.	Aug 16, 2012 9:01 AM
21	Increase the times the CMRTA runs, since many classes and jobs in the area end after 6pm.	Aug 8, 2012 7:03 PM
22	For rail to be successful there must be additional local transportation..... ie bus service. The ability to bring bicycles for local transportation would be a big incentive.	Jul 24, 2012 1:34 PM
23	A transit system in this rural area would be benefical to provide transportation services to the welfare recipients and other low-income individuals to and from jobs, trainings, and childcare. Also, the transit system would allow individuals to apply for employment in the central cities and suburban areas.	Jul 24, 2012 10:14 AM
24	While I strongly support passenger rail, I don't believe that our region can support commuter passenger rail without heavy public subsidy. However, I do believe the State of SC can support inter-city passenger rail between Columbia-Charlotte-Charleston-Greenville-Beaufort/Savannah-MyrtleBeach. Possibly, a commuter segment could be a component of such a system. They do something similar to this in North Carolina. That's what we truly should be pushing for, an extension of the Carolinian from Charlotte to Columbia and on to Charleston.	Jul 24, 2012 8:56 AM
25	We, all of us, must join together, and solve the terrible VEHICLE traffic problems.	Jul 20, 2012 8:07 AM



**Q16. Race**

26	I'm a train "nut."	Jul 18, 2012 8:08 PM
27	This light-rail is a MUST for this corridor. The expense to widen 26 would be enormous. This has been proposed since 1992----it is time to act!!!	Jul 18, 2012 7:40 PM
28	Widen the highways	Jul 14, 2012 11:34 AM
29	Don't have enough information to answer no. 5. I would guess there are not currently enough people who commute to Cola from Newberry to justify cost of expanding service, but I hope a survey of potential commuters is made to determine this. I would take a train to work, for instance, if I could save enough on gas and time. It takes me an hour to drive to work. If I drive to a bus station, it adds 30-40 minutes to my commute time--I'm not willing to sacrifice this. A train would be faster, I think, so I would consider using this mode. NLT	Jul 10, 2012 11:35 AM
30	I believe this would be a great asset to the Midlands Community. Often Newberry locals are intimidated by the travel of the corridor's and to the city.	Jul 3, 2012 9:22 AM
31	You done need race you need people, race don't ride buses!!!	Jul 2, 2012 5:24 PM
32	Thank you for even considering offering to upgrade the existing services.	Jun 30, 2012 1:30 PM
33	See the Newberry Express pick up and drop off in Chapin but no little about the service such as cost / payment methods accepted / or schedule. No marketing is done for this service that I know of.	Jun 26, 2012 11:47 AM
34	RTA needs to get some park & ride going ASAP. They are doing better, based on what I read in the paper and hear. Since traffic is bad only for 45 minutes in the AM and PM, I do NOT want BILLIONS of my tax dollars wasted in rail or widening the road. Instead, buy empty land, pave it cheap and start runnign buses for a few hours in the AM & PM. Anyone with common sense sees this makes more sense!	Jun 22, 2012 6:06 AM