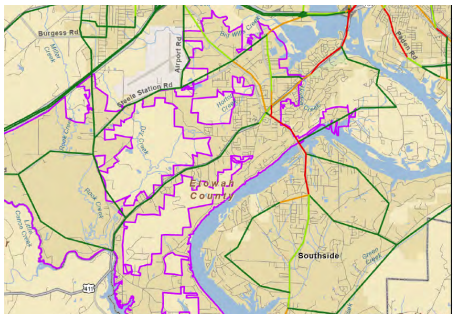
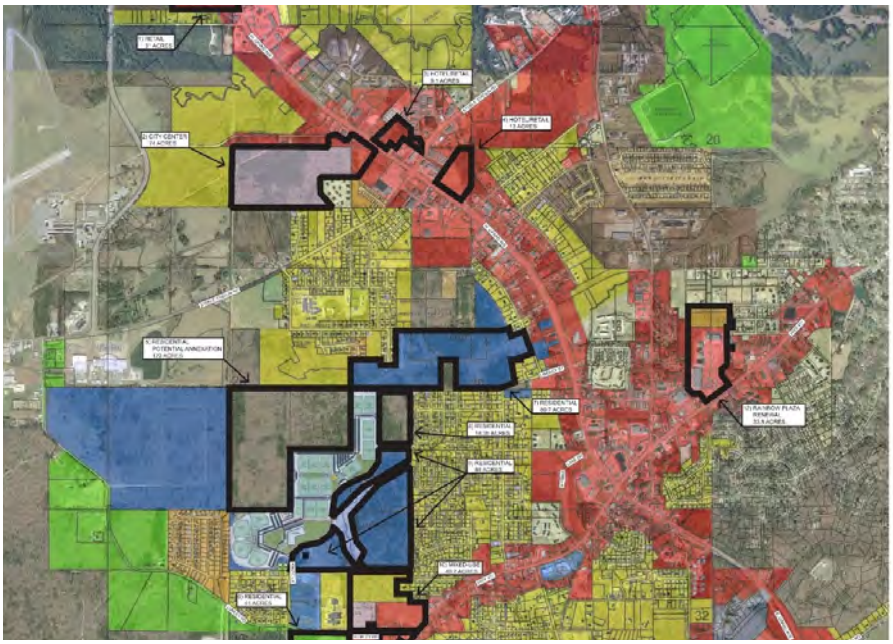
RAINBOW CITY TRANSPORTATION PLAN

Prepared for: Mayor Joe Taylor
Rainbow City
3700 Rainbow Drive
Rainbow City, AL 35906

Prepared by: Sain Associates, Inc.
Two Perimeter Park South, Suite 500 East
Birmingham, AL 35243
205.943.6420





RAINBOW CITY ALABAMA

APRIL 22, 2022

Table of Contents

List of Figures

List of Tables

1 Rainbow City Existing Transportation Conditions

1.1 Regional Accessibility

Regional vehicular access to Rainbow City is provided via I-59, US-411, and SR-77. The intersection of US-411 and SR-77 serves as the focal point for the City with retail and restaurants surrounding this intersection. I-59, accessible to the northwest via SR-77, extends southwestward and connects Rainbow City to Birmingham and also extends northeastward towards Chattanooga. US-411 runs generally parallel to I-59 and provides access to Ashville and Leeds to the southwest and Leesburg to the northeast prior to turning east and connecting to Rome, Georgia. Access to I-59 is provided by the interchange at SR-77 (Exit 181).

1.2 Roadway Characteristics

Roadways within the study boundary exhibit the following characteristics:

- I-59 is a four-lane, divided, northeast-southwest roadway classified as an interstate. It has a posted speed limit of 70 miles per hour. In 2020, the Average Annual Daily Traffic (AADT) for this roadway ranged from approximately 22,700 to 32,500 vehicles.
- US-411 is an undivided, east-west roadway classified as an urban minor arterial. It is a two-lane roadway west of SR-77 and a five-lane roadway east of SR-77. It has a posted speed limit of 45 miles per hour. In 2020, the AADT for this roadway, west of SR-77, was approximately 11,600 vehicles, while the AADT was approximately 25,500 vehicles for the segment east of SR-77.
- SR-77 is a five-lane, undivided, north-south roadway classified as an urban minor arterial. It has a posted speed limit ranging between 40 and 50 miles per hour. In 2020, the AADT for this roadway was approximately 26,500 vehicles south of US-411, approximately 18,000 vehicles for the segment between US-411 and Steele Station Road, and approximately 15,000 between Steele Station Road and I-59.
- Steele Station Road is an undivided, east-west roadway classified as an urban minor arterial, with a two-lane section west of SR-77 and a four-lane section east of SR-77. It has a posted speed limit ranging between 35 and 45 miles per hour. In 2020, the AADT for this roadway was approximately 6,000 vehicles between SR-77 and Airport Road, an average of approximately 3,000 vehicles between Airport Road and Pleasant Valley Road, approximately 18,000 vehicles for the segment between US-411 and Steele Station Road, and approximately 1,300 between Pleasant Valley Road and the St. Clair County line.
- Pleasant Valley Road is a two-lane, undivided, north-south roadway with segments classified both as a collector and a rural major collector. It has a posted speed limit of 45 miles per hour. In 2020, the AADT for this roadway was approximately 2,000 vehicles between US-411 and Steele Station Road and approximately 1,300 vehicles for the segment between Steele Station Road and I-59.

- Lumley Road is a two-lane, undivided, northwest-southeast roadway classified as a local street. It has a posted speed limit of 35 miles per hour. In 2020, the AADT for this roadway was approximately 2,000 vehicles.
- Sutton Bridge Road is a two-lane, undivided, north-south roadway classified as an urban principal arterial. It has a posted speed limit of 35 miles per hour. In 2020, the AADT for this roadway was approximately 5,700 vehicles between US-411 and Brown Avenue, approximately 6,400 vehicles for the segment between Brown Avenue and Greenview Avenue, and approximately 7,200 between Greenview Avenue and Steele Station Road.

A map reflecting the Rainbow City roadway network is shown in **Figure 1**.

A map reflecting the number of travel lanes for roadways within the city of Rainbow City, is shown in **Figure 2**.

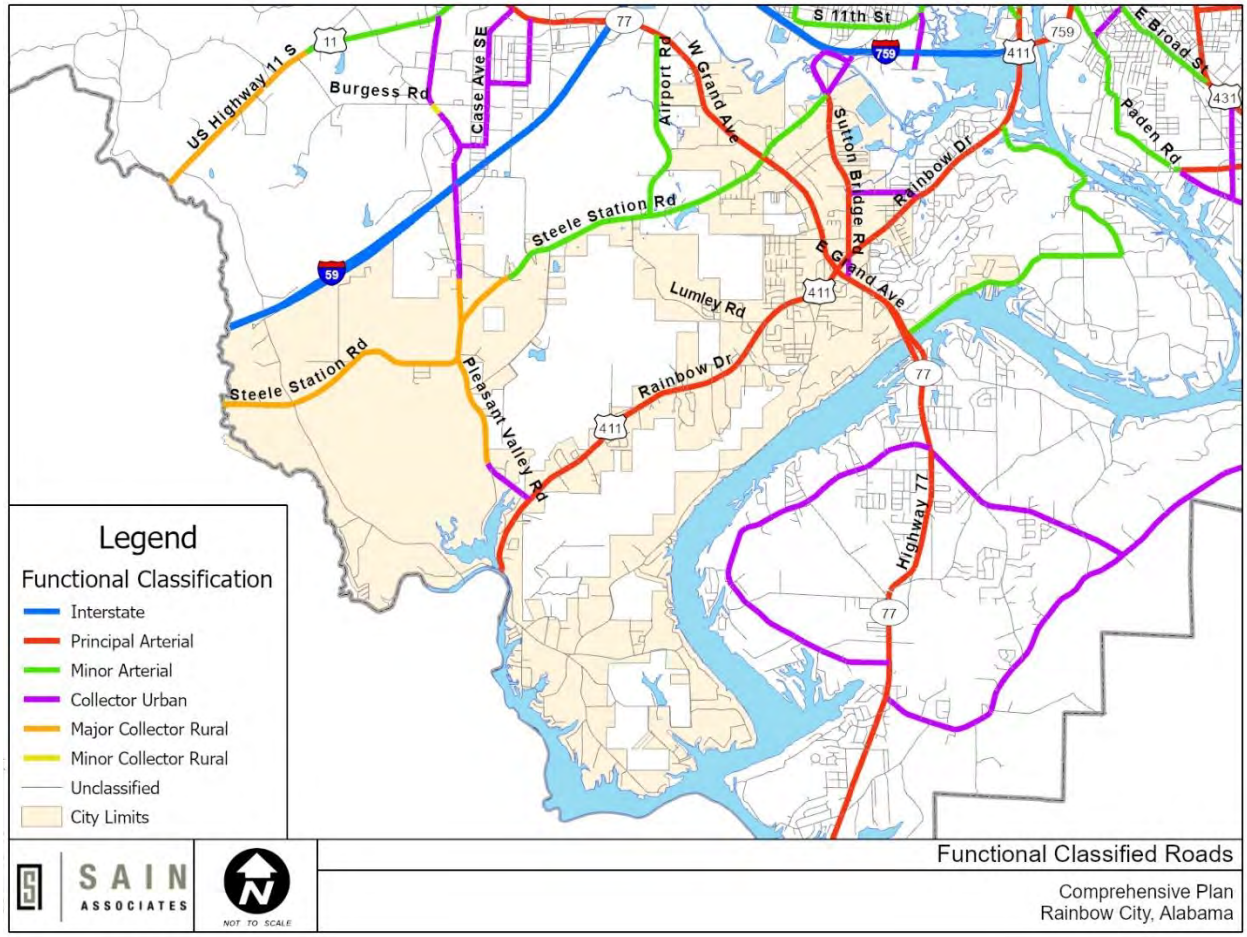


Figure 1: Functional Classification Map

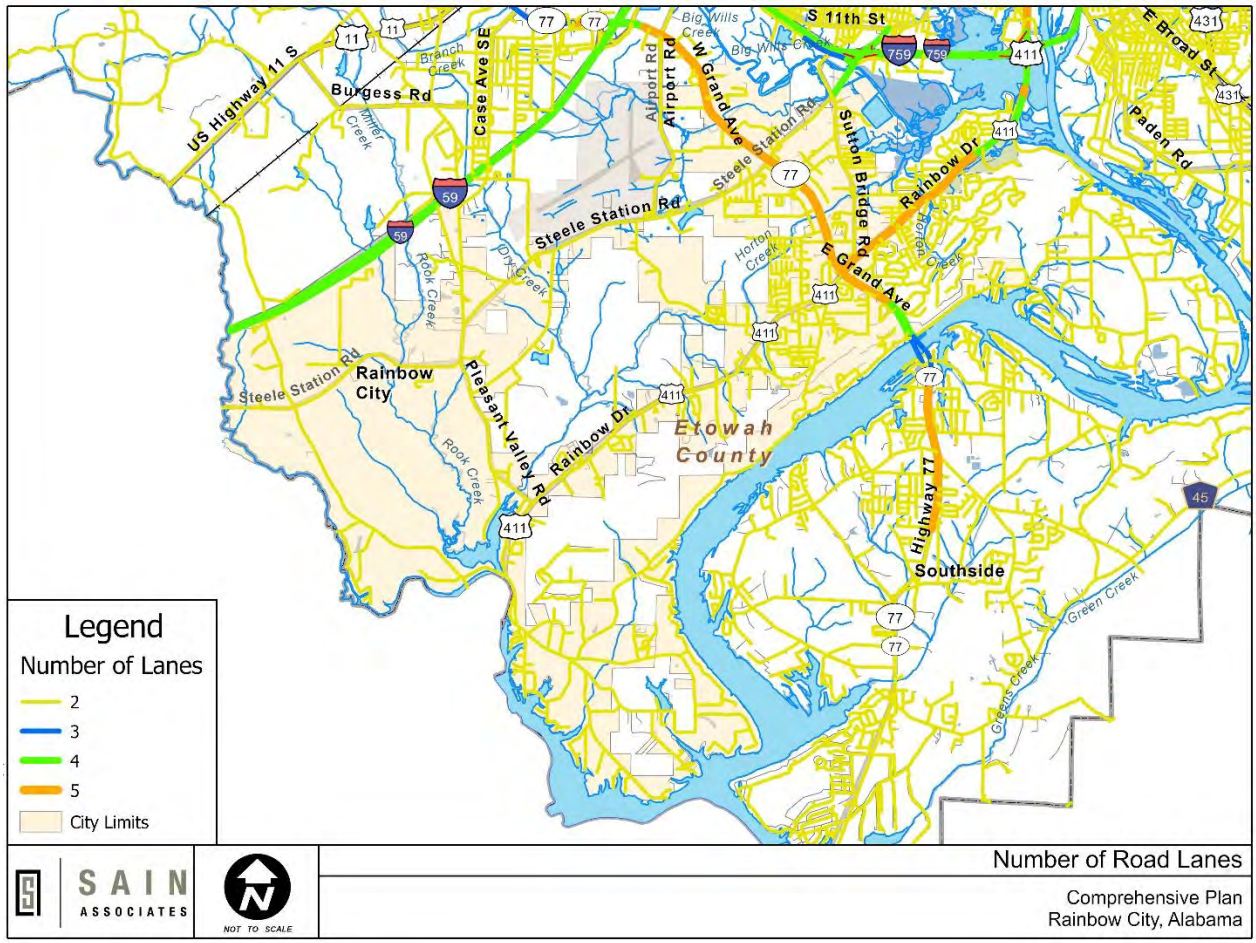


Figure 2: Roadway Lane Count Map

1.3 Congestion Status

Congestion within the city is primarily a peak hour concern along major routes within the area. Three schools (two public, one private) are located in the City. The two public schools, John S. Jones Elementary School and Rainbow Middle School, are located in close proximity to one another along Lumley Road. This can cause congestion along Lumley Road near the schools during the peak student drop-off and pick-up times. The elementary school requires students arrive by 7:50am and releases students at 3:00pm. The middle school requires students arrive by 7:45am and releases students at 2:40pm. Westbrook Christian School, a private school serving students from 3K to 12th grade, is located on Westminster Drive, just off Steele Station Road.

Peak hour observations were conducted along the roadway network within the commercial areas along US-411 and SR-77 in Rainbow City during the morning and afternoon peak hours on Thursday, September 2, 2021. The morning and afternoon peak hours were determined to be 7:00am to 8:00am and 4:30pm to 5:30pm, respectively.

Most of the subdivisions within Rainbow City follow a cul-de-sac layout. One negative impact of this layout is the potential for congestion during the peak ingress and egress periods. This is due to the limited number of access points for these subdivisions, causing most of the vehicles to enter or exit the subdivision via a singular access location.

The morning peak hour traffic observations were as follows:

- The longest queue during the morning peak hour was observed along the eastbound US-411 approach to SR-77, extending approximately 0.2 miles to Yorkshire Place. This queue did not always clear during one cycle.
- All the vehicle queues along approaches to the intersection of US-411 and SR-77 typically made it through the intersection in one cycle except for the peak eastbound US-411 approach to SR-77.
- The peak left turn queues for both the eastbound US-411 and southbound SR-77 approaches exceeded the left turn storage and spilled into the nearest through lane.
- No queuing or capacity concerns were noted at other nearby intersections along the corridors.

The afternoon peak hour traffic observations were as follows:

- Far more congestion was observed during the afternoon peak hour than during the morning peak hour.
- Both the westbound US-411 approach to SR-77 and the southbound SR-77 approach to US-411 included traffic queues which routinely did not clear the intersection in one cycle.

  - The westbound US-411 queue extended beyond the Church Street/Sutton Bridge Road intersection to the east. The total observed queue length was approximately 1,300 feet from the SR-77 intersection.
  - The southbound US-411 queue extended beyond the Independent Drive intersection to the north. The total observed queue length was approximately 1,100 feet from the SR-77 intersection.
- The left turning vehicle queue along the northbound SR-77 approach to US-411 extended past the Church Street intersection to the south at times, for a queue length of approximately 800 feet from the US-411 intersection. It appeared that this queue was able to make it through the intersection in one cycle.
- No queuing concerns were noted along other side-streets at intersections along the corridors. Congestion along US-411 and SR-77 impacted the intersections due to the amount of traffic on these mainline roadways as a result of the conditions at the US-411 and SR-77 intersection.

Figures 3-5 show examples of congestion on approaches to the intersection of US-411 and SR-77.

Figure 3: Congestion along US-411 WB queued back from the SR-77 intersection through the Church Street/Sutton Bridge Road intersection during the PM peak hour

Figure 4: Congestion along SR-77 SB queued back from the US-411 intersection through the Independent Drive intersection during the PM peak hour

Figure 5: Left turn traffic along SR-77 NB queued back from the US-411 intersection to the Church Street intersection during the PM peak hour

Figure 6 illustrates peak hour drone observations along the SR-77 corridor during the PM peak hour, including observed queue lengths at the approaches of the intersection of US-411 and SR-77. The drone observations illustrate significant queuing at this intersection that impact adjacent intersection operations.

Figure 6: PM Peak Hour Drone Observations

The Gadsden MPO regional travel demand model was used to identify congested roadways in Rainbow City. The travel demand model volume/capacity ratio was used to illustrate areas that are currently experiencing congestion.

As shown in **Figure 7**, approximate locations of roadway segments exhibiting heavy to severe congestion based on analysis of the volume to capacity ratios seen from the 2015 base year model 24-hour volumes include:

- SR-77, between Sutton Bridge Road and the Coosa River
- US-411, between Lister Ferry Road and SR-77
- US-411, between Sutton Bridge Road and Brown Avenue

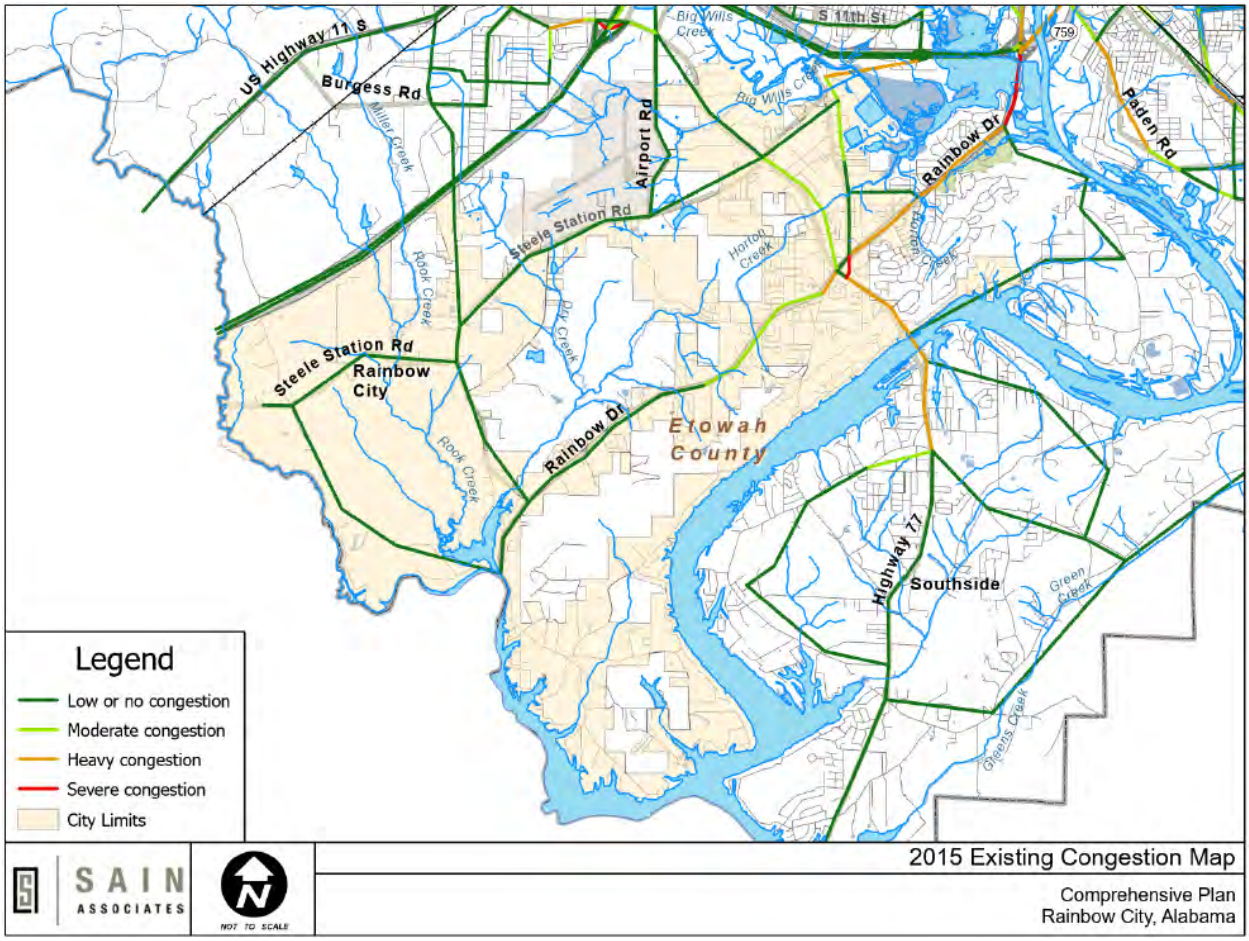


Figure 7: Roadway Congestion Map

1.4 Crash Analysis

The information presented in this section is exempt from open records, discovery, or admission under Alabama Law and 23 U.S.C. §§ 148(h)(4) and 409). The collection of safety data is encouraged to actively address safety issues on regional, local, and site-specific levels. Congress has laws, 23 U.S.C. § 148(h)(4) and 23 U.S.C. § 409 which prohibit the production under open records and the discovery or admission of crash and safety data from being admitted into evidence in a Federal or state court proceeding. This document contains text, charts, tables, graphs, lists, and diagrams for the purpose of identifying and evaluating safety enhancements in the project area. These materials are protected under 23 U.S.C. §409 and 23 U.S.C. § 148(h)(4). In addition, the Supreme Court in Ex parte Alabama Dept. of Trans., 757 So. 2d 371 (Ala. 1999) found that these are sensitive materials exempt from the Alabama Open Records Act.

Crash data for the city of Rainbow City was obtained through the Critical Analysis Reporting Environment (CARE) database available through the Center for Advanced Public Safety at the University of Alabama. This data is helpful in processing general crash statistics for an area without providing information or data about specific crashes,

intersections, or corridors. For this safety analysis, available crash data was analyzed for a three-year period from September 1, 2018 through August 31, 2021 for the City of Rainbow City. According to the CARE data, a total of 858 crashes occurred within the City during the specified period.

The crash data was analyzed to identify common trends which are associated with specific crash patterns within the city. The citywide ratios for crash severity and crash type are shown in **Figure 8** and **Figure 9**, respectively.

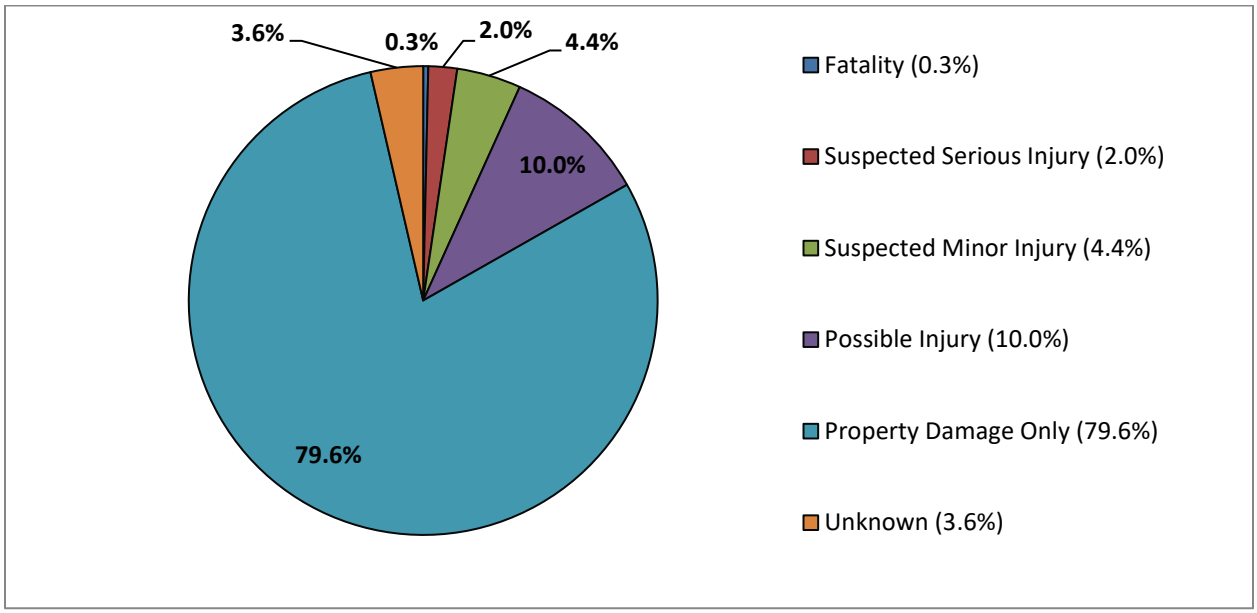


Figure 8: Crash Severity – Citywide (2018-2021)

Crash severity is an important metric in crash analysis. Crash severity categorizes crashes by fatality, level of injury, or property damage only crashes. For the study period, 79.6% of the crashes were classified as "Property Damage Only" crashes, while 4.4% of the crashes were "Suspected Minor Injury" and 10.0% were "Possible Injury" crashes. 2.0% of the crashes were "Suspected Serious Injury" and 0.3% of the crashes involved fatalities.

Statewide crash severity statistics were also analyzed for the same time period, for the purposes of comparison, with the percentages of injury and fatal crashes in the City of Rainbow City being noticeably less than statewide percentages. For the statewide percentages for the study period, 77.2% of the crashes were classified as "Property Damage Only" crashes, while 8.1% of the crashes were "Suspected Minor Injury" and 8.8% were "Possible Injury" crashes. 2.6% of the crashes were "Suspected Serious Injury" and 0.6% of the crashes involved fatalities.

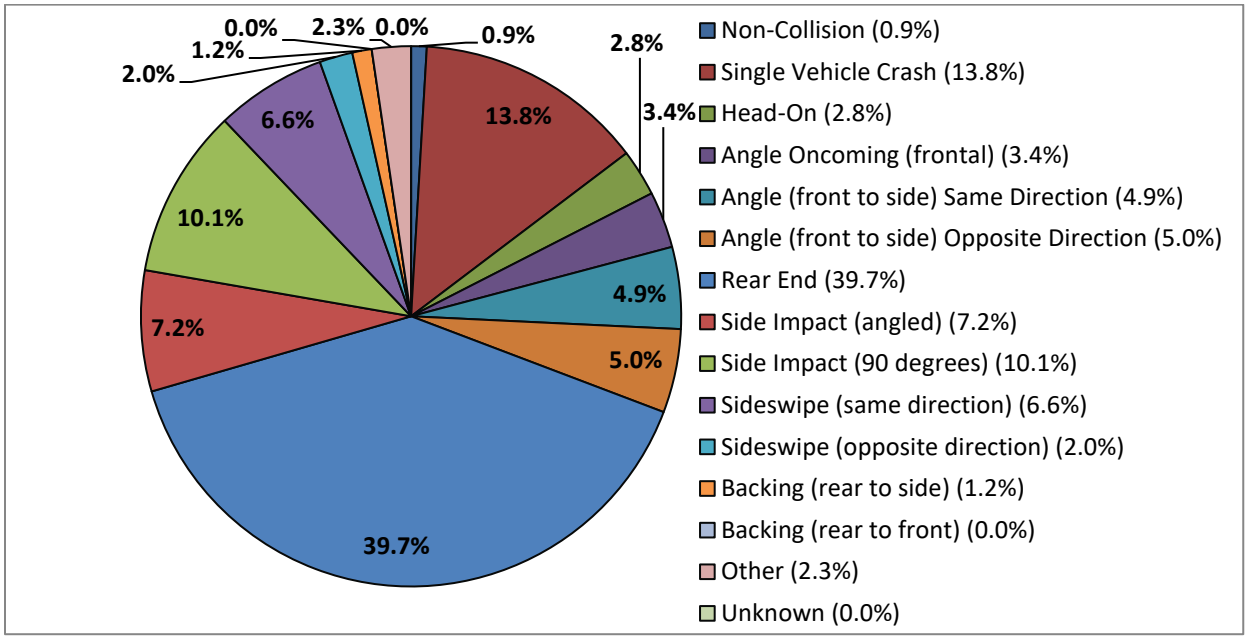


Figure 9: Crash Type – Citywide (2018-2021)

The crash type statistics were analyzed within the City of Rainbow City. Crash type categorizes were identified during the crash analysis by the manner of crash such as head-on, rear end, sideswipe, single vehicle, etc. The most common crash type in the area was noted to be rear-end crashes, which represented 39.7% of the total crashes. It is typical for rear-end crashes to be the most common crash type in urbanized areas. Single vehicle crashes (13.8%) were found to be the second most common crash type for the area, likely related to the hills and curves prevalent in the roadway network. While analyzing the statewide crash statistics, it was found that rear-end crashes (34%) and single vehicle crashes (20%) were also the most common categories of crashes statewide. In general, the percentages of varying crash types found in Rainbow City are reflective of the statewide percentages for the state of Alabama.

Crashes are to some degree random events; therefore, crash frequencies naturally fluctuate over time at a given site. This randomness indicates that short-term crash frequencies alone are not a reliable estimator of long-term crash frequency. The crash fluctuation over time makes it difficult to determine whether changes in the observed crash frequency are due to changes in site conditions or are due to natural fluctuations. When a period with high crash frequency is observed, it is statistically probable that the following period will have low crash frequency. This tendency is known as regression-to-the-mean (RTM). Not accounting for the effects of RTM introduces the potential for "RTM bias" (Refer to the Highway Safety Manual for more information).

Site-specific crash data at the US-411 at SR-77 intersection and the US-411 at Church Street/Sutton Bridge Road intersection was provided by the ALDOT Traffic Safety and Planning Office in conjunction with the US-411 at SR-77 Intersection Analysis Study, being

conducted for ALDOT by Sain Associates. Data included crash information from police reports for the period from September 2018 to August 2021. A summary of this crash data was prepared solely for the purpose of identifying, evaluating, and planning safety improvements on public roads; and is therefore exempt from open records, discovery, or admission under Alabama law and 23 U.S.C. §§ 148(h)(4), and 409.

The crash data was analyzed to identify common trends which are associated with specific crash patterns for the study intersection. A breakdown of the intersection crashes for the intersection of US-411 and SR-77 by crash severity and crash type can be found in **Figure 10** and **Figure 11**, respectively.

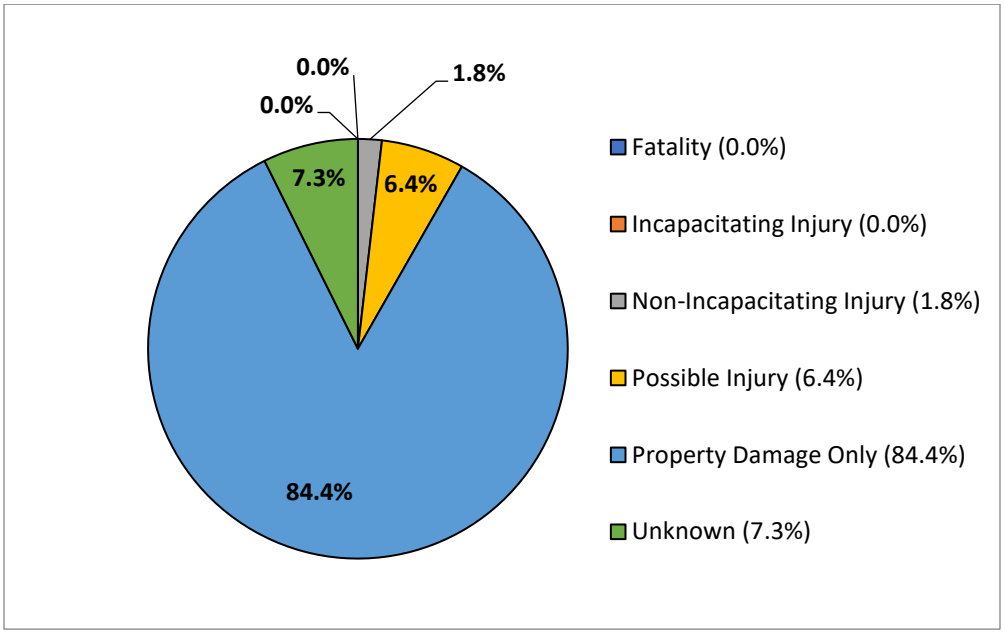


Figure 10: Crash Severity – US-411 at SR-77 (2018-2021)

For the study period, 84.4% of the crashes at the intersection of US-411 and SR-77 were classified as "Property Damage Only" crashes, while 6.4% of the crashes were "Possible Injury" and 1.8% were "Non-Incapacitating Injury" crashes. The severity of 7.3% of the crashes was unknown, and none of the crashes involved incapacitating injuries or fatalities.

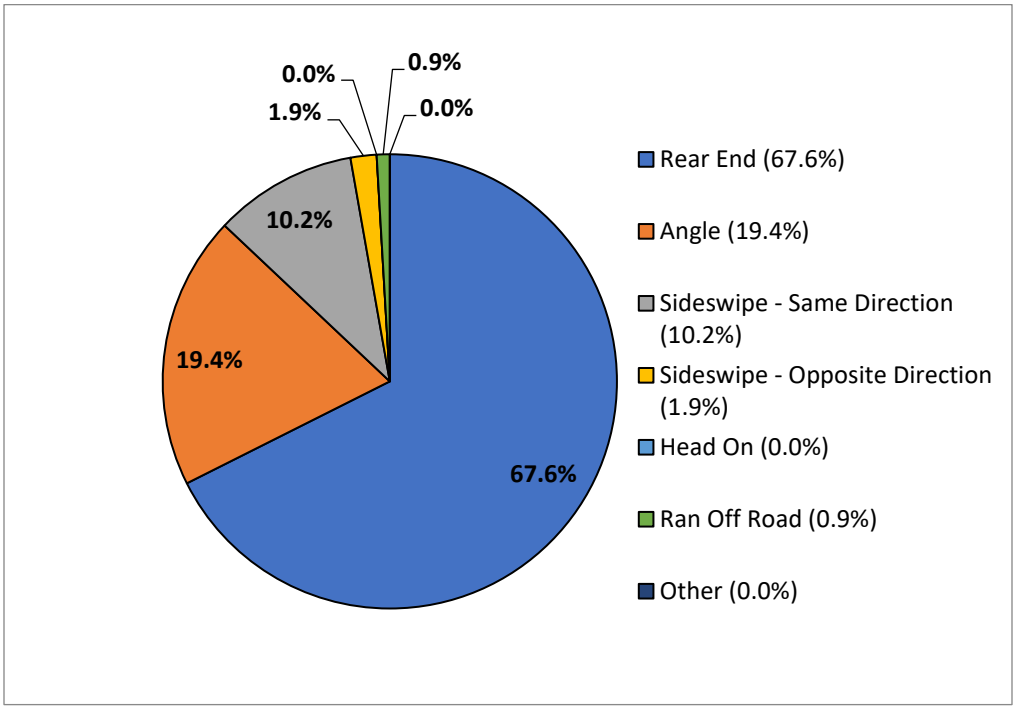


Figure 11: Crash Type – US-411 at SR-77 (2018-2021)

The crash type statistics were analyzed at the intersection of US-411 and SR-77. Crash type categories were identified during the crash analysis by the manner of crash such as rear end, angle, sideswipe, and ran off road. The most common crash type at the intersection was noted to be rear-end crashes, which represented 67.6% of the total crashes. It is typical for rear-end crashes to be the most common crash type at signalized intersections. Angle crashes (19.4%) were found to be the second most common crash type for the area, typically a result of either a motorist's failure to yield or red-light running.

A breakdown of the intersection crashes for the intersection of US-411 and Church Street/Sutton Bridge Road by crash severity and crash type can be found in **Figure 12** and **Figure 13**, respectively.

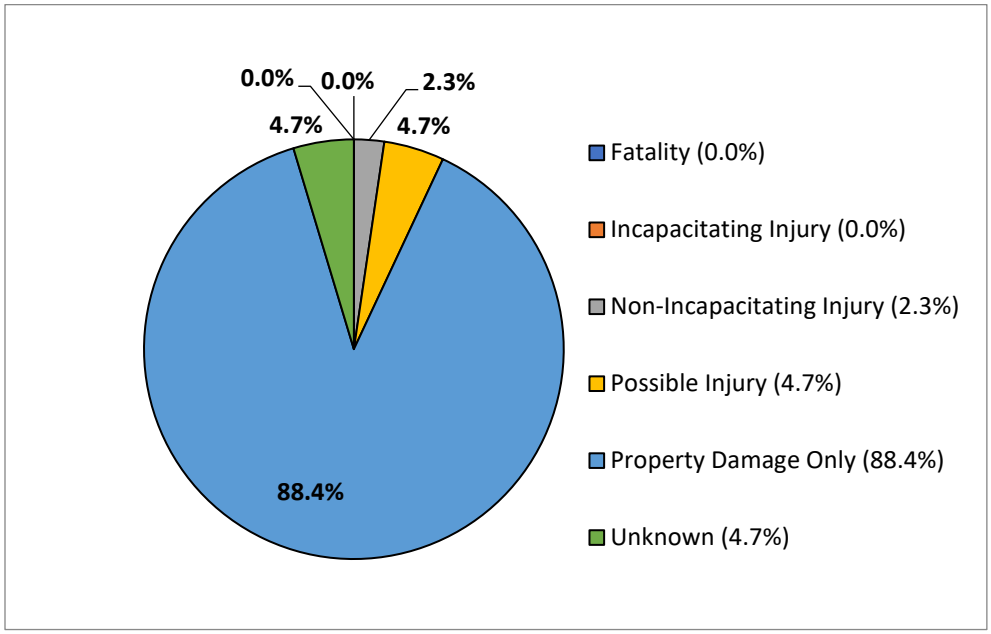


Figure 12: Crash Severity – US-411 at Church Street/Sutton Bridge Road (2018-2021)

For the study period, 88.4% of the crashes at the intersection of US-411 and Church Street/Sutton Bridge Road were classified as "Property Damage Only" crashes, while 4.7% of the crashes were "Possible Injury" and 2.3% were "Non-Incapacitating Injury" crashes. The severity of 4.7% of the crashes was unknown, and none of the crashes involved incapacitating injuries or fatalities.

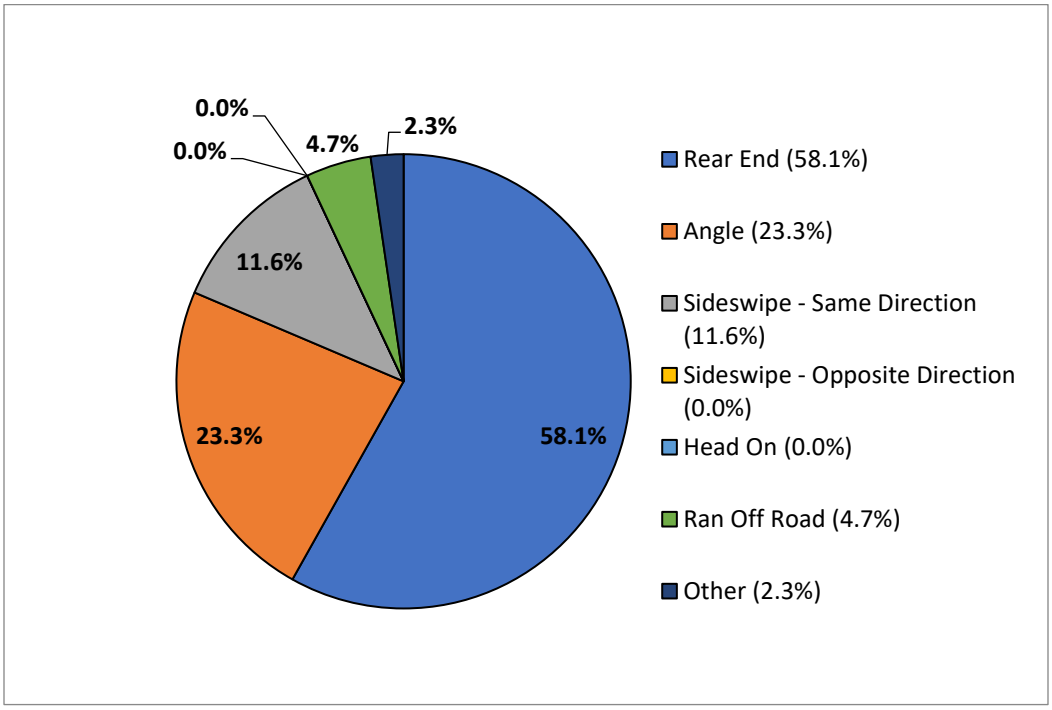


Figure 13: Crash Type – US-411 at Church Street/Sutton Bridge Road (2018-2021)

The most common crash type at the intersection of US-411 and Church Street/Sutton Bridge Road was noted to be rear-end crashes, which represented 58.1% of the total crashes. It is typical for rear-end crashes to be the most common crash type at signalized intersections. Angle crashes (23.3%) were found to be the second most common crash type for the intersection, typically a result of either a motorist's failure to yield or red-light running.

1.5 Commercial Areas

The primary commercial areas within Rainbow City are located along the US-411 corridor, with other smaller commercial areas scattered along the SR-77 corridor. These areas include numerous commercial developments, including shopping centers, grocery stores, restaurants, pharmacies, and other uses.

1.6 Transit

No public city-specific transit options are currently available within Rainbow City. Public transportation is provided to the area by Etowah County Rural Transportation, a demand response program currently offered between the hours of 8:00am and 4:30pm. Private transportation options are also available, including taxi service and rideshare services.

1.7 Vulnerable Road User Accessibility

The developed area within the city limits of Rainbow City includes predominately residential areas. The layout of the residential areas primarily reflects a cul-de-sac pattern, rather than a grid pattern. While the cul-de-sac layout has benefits and strengths, it does restrict mobility and accessibility for pedestrians, causing pedestrians to walk longer routes to access areas outside of their subdivision. This limited connectivity is seen in some portions of the City, including neighborhoods surrounding commercial areas. The largest schools in the city include John S. Jones Elementary School, Rainbow Middle School, and Westbrook Christian School.

The current pedestrian and bicycle connectivity is very limited within the City. No inter-subdivision pedestrian connectivity or commercial connectivity is offered under existing conditions. A shared use path is present along Lumley Road, connecting Vivian Lee Maddox Sports Complex to John S. Jones Elementary School and Rainbow Middle School. This shared use path is an eight-foot-wide paved path servicing both pedestrians and cyclists but offers little residential connectivity to the schools. A section of the path is shown in **Figure 14**. It is generally considered that students living within a 0.25-mile radius of schools are the most likely to walk to school and should have pedestrian facilities aiding access to the schools, while students within a 0.5-mile radius may also be expected to walk to school. These radii standards are met under existing conditions for Rainbow Middle School but not for John S. Jones Elementary School. Approximately four miles of trails are located in the area around Vivian Lee Maddox Sports Complex. "Share the Road" bicycle signage is located along the remainder of Lumley Road, Lindsay Street,

and Canoe Creek Road. No pedestrian or bicycle facilities are located near Westbrook Christian School.

Figure 14: Shared Use Path along Lumley Road at Rainbow Middle School

1.8 Commuting Behavior

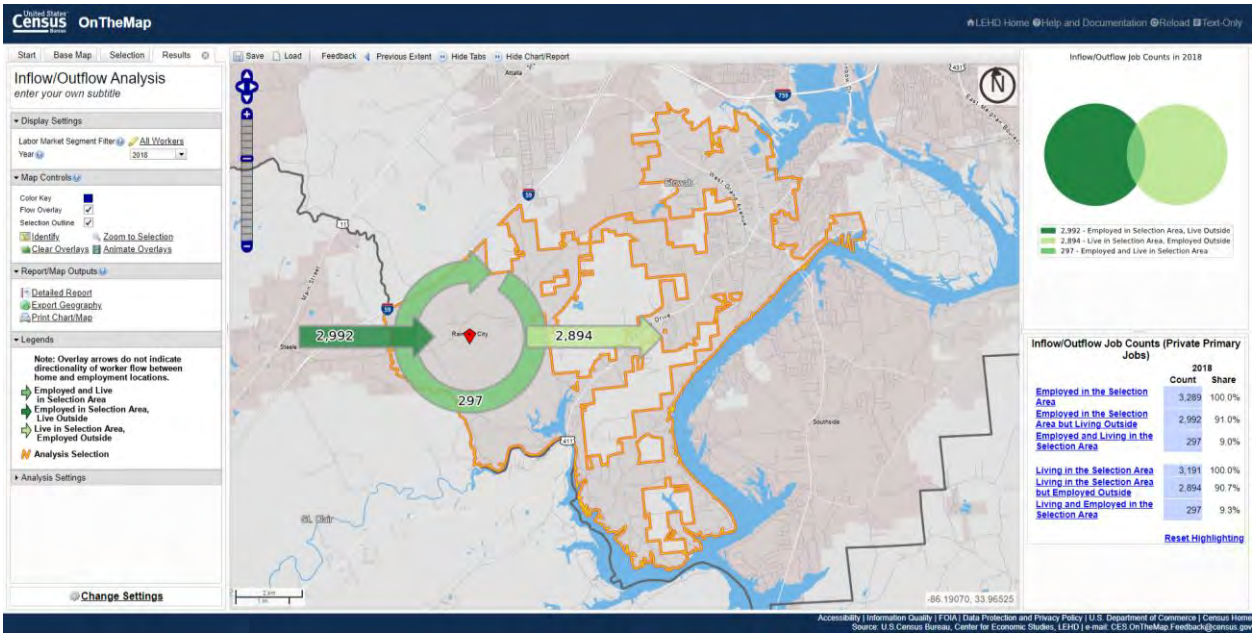
Rainbow City is located approximately 60 miles northeast of Birmingham and directly south of Gadsden. City staff and elected officials estimated 30-35% of Rainbow City citizens work in the Birmingham region based on their observations. Several data sources were used to confirm the commuting estimates from City officials including U.S. Census data, Census Transportation Planning Products (CTPP) data, and traffic count data on I-59 south of Rainbow City. **Table 1** illustrates that over 25% of Rainbow City citizens travel over 30 minutes to work which would be the minimal time required to reach the northeastern portion of the Birmingham region, and over 15% of Rainbow City citizens travel over 45 minutes to work which is consistent with commuting to work locations in Birmingham.

Table 1: Travel Time to Work

Residence	Worked at home	Did not work at home	Travel Time to Work								
			Less than 5 minutes	5 to 14 minutes	15 to 19 minutes	20 to 29 minutes	30 to 44 minutes	45 to 59 minutes	60 to 74 minutes	75 to 89 minutes	90 minutes or more
Rainbow City, AL	6.38%	93.62%	4.72%	23.44%	26.21%	11.37%	10.54%	6.80%	6.24%	2.91%	1.39%

Source: Census Transportation Planning Products (CTPP)

U.S. Census Longitudinal Employer-Household Dynamics (LEHD) data collected in 2018 further illustrates Rainbow City's role as a bedroom community as approximately 9% of Rainbow City Citizens currently live and work within the city limits while over 90% work outside of the city limits as illustrated on **Figure 15.**



Source: U.S. Census Longitudinal Employer-Household Dynamics (LEHD)

Figure 15: Rainbow City Commuting Patterns

Table 2 illustrates the hourly traffic counts by direction on I-59 southwest of Rainbow City. The AM peak period, in particular, illustrates a directional flow towards the southwest, with the directionality towards Birmingham being most acute in the early AM peak period hour from 6-7 AM. This is consistent with commuting behavior that involves long distances as workers have to leave earlier than average in order to make it to work on time given the longer travel times.

Table 2: Interstate-59 Traffic Counts

Daily Volume Report by Direction for CCS 53			
Day of Tuesday-08/10/2021			
Direction:NB/SB Lane:1-2 County:Saint Clair			
Hourly Direction Totals			
Hour Beginning	Northbound	Southbound	Total
0:00am	230	171	401
1:00am	127	158	285
2:00am	127	123	250
3:00am	131	176	307
4:00am	189	292	481
5:00am	292	595	887
6:00am	441	902	1,343
7:00am	657	866	1,523
8:00am	748	804	1,552
9:00am	710	808	1,518
10:00am	771	862	1,633
11:00am	770	777	1,547
12:00pm	818	915	1,733
1:00pm	798	871	1,669
2:00pm	909	951	1,860
3:00pm	992	953	1,945
4:00pm	1,027	882	1,909
5:00pm	946	929	1,875
6:00pm	704	625	1,329
7:00pm	511	545	1,056
8:00pm	380	444	824
9:00pm	337	398	735
10:00pm	226	221	447
11:00pm	192	219	411
Grand Total	13,033	14,487	27,520
Percentage	47.36%	52.64%	100.00%

AM/PM Peak Hour and Totals	
	Tuesday 08/10/2021
Peak AM Hour	10:00am - 11:00am
Peak AM Volume	1,633
Peak AM Percentage	5.93%
Peak PM Hour	3:00pm - 4:00pm
Peak PM Volume	1,945
Peak PM Percentage	7.07%

1.9 Existing Documents

2040 Long Range Transportation Plan (2015)

The 2040 Long Range Transportation Plan contains a 25-year strategy for the Gadsden Etowah Urbanized Area in preparing for the region's future transportation needs. Improvements stated within the plan with regards to Rainbow City include the following:

1. Widen US-411 from 0.1 mile north of CR-181 (Township Road) to SR-77 in Rainbow City for the purpose of reducing congestion and improving mobility.
    a. This project would include the installation of four-foot-wide sidewalks on each side of the roadway.
2. The Plan referenced the previously conducted Gadsden Transit Analysis, 2010, which evaluated public transportation needs in the region, identifying the addition of corridor service in Rainbow City as a long-term improvement.

Gadsden Etowah Metropolitan Planning Organization (GEMPO) Bicycle and Pedestrian Plan (2015)

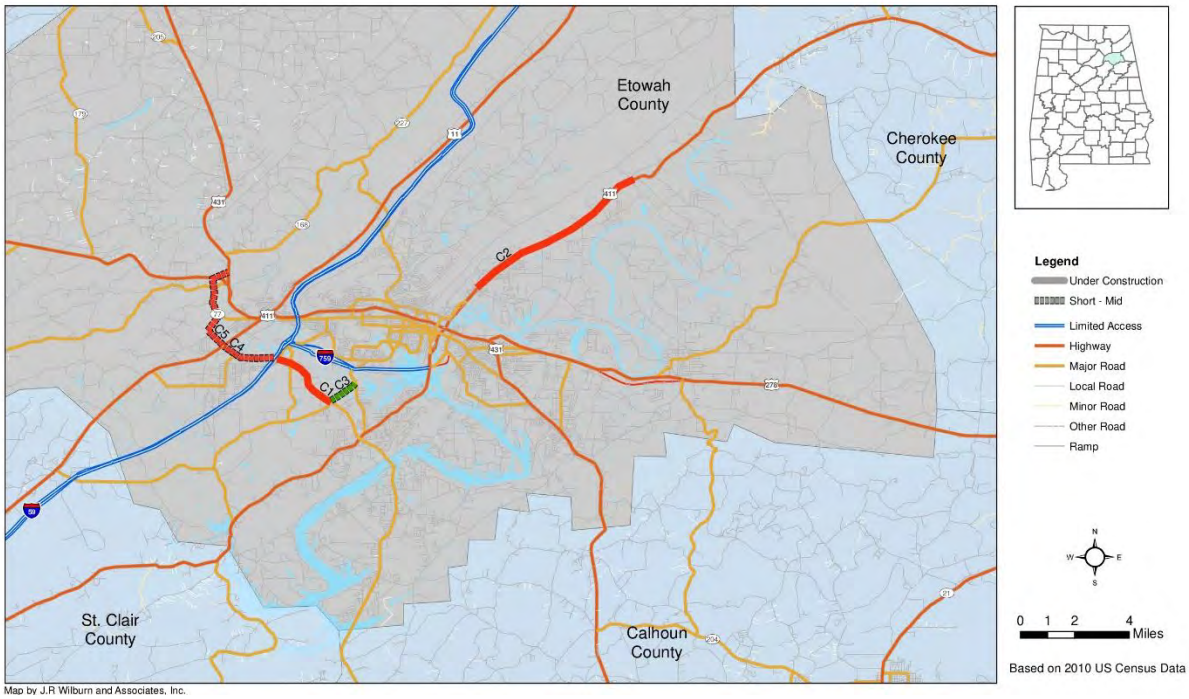
The GEMPO Bicycle and Pedestrian Plan lists recommended facility improvements for corridors across the MPO area. The Plan breaks these down into bike facility improvements and pedestrian facility improvements. The identified improvement options and the associated roadway segments are as follows:

Bicycle Facility Recommendations

1. Target Bicycle Level of Service Met (no improvement recommended)
    a. Steele Station Road, between Pleasant Valley Road and SR-77
    b. Steele Station Road, between Pleasant Valley Road and the western city limits
    c. Airport Road, between Steele Station Road and SR-77
    d. Lumley Road, between Steele Station Road and US-411
    e. Pleasant Valley Road, between US-411 and the northern city limits
    f. Canoe Creek Road, between Steele Station Road and US-411
    g. Brown Avenue, between Sutton Bridge Road and US-411
    h. Church Street, between SR-77 and US-411
    i. Wharton Bend Road, between SR-77 and the eastern city limits
2. Add Paved Shoulder
    a. US-411, between SR-77 and the western city limits
    b. Sutton Bridge Road, between US-411 and Black Creek Parkway
    c. Steele Station Road, between SR-77 and Sutton Bridge Road
3. Detailed Corridor Study Needed
    a. US-411, between SR-77 and the eastern city limits
    b. SR-77, between Steele Station Road and the Coosa River Bridge

Pedestrian Facility Recommendations

1. Target Pedestrian Level of Service Met (no improvement recommended)
    a. Steele Station Road, between Pleasant Valley Road and the western city limits
    b. Canoe Creek Road, between Steele Station Road and US-411
    c. Airport Road, between Steele Station Road and SR-77
    d. Lumley Road, between Steele Station Road and US-411
    e. Steele Station Road, between Westminster Drive and SR-77
    f. Brown Avenue, between Sutton Bridge Road and US-411
    g. Church Street, between SR-77 and US-411
2. Add Sidewalks
    a. US-411, between SR-77 and the eastern city limits
    b. Wharton Bend Road, between SR-77 and the eastern city limits
3. Detailed Corridor Study Needed
    a. US-411, between SR-77 and the western city limits
    b. SR-77, between Steele Station Road and the southern city limits
    c. Sutton Bridge Road, between US-411 and Black Creek Parkway
    d. Steele Station Road, between SR-77 and Sutton Bridge Road
    e. Steele Station Road, between Westminster Drive and Pleasant Valley Road
    f. Pleasant Valley Road, between US-411 and the northern city limits



Note: Project C1 has been completed

Figure 16: Planned Roadway Capacity Improvements – Gadsden MPO LRTP

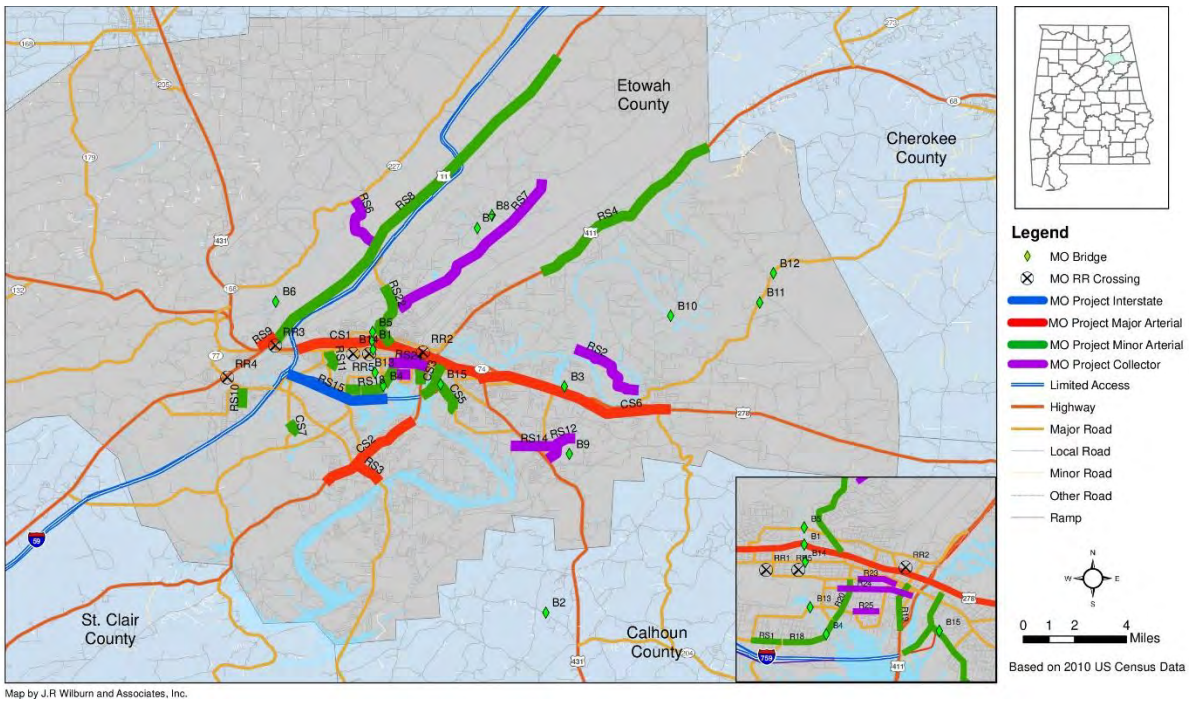
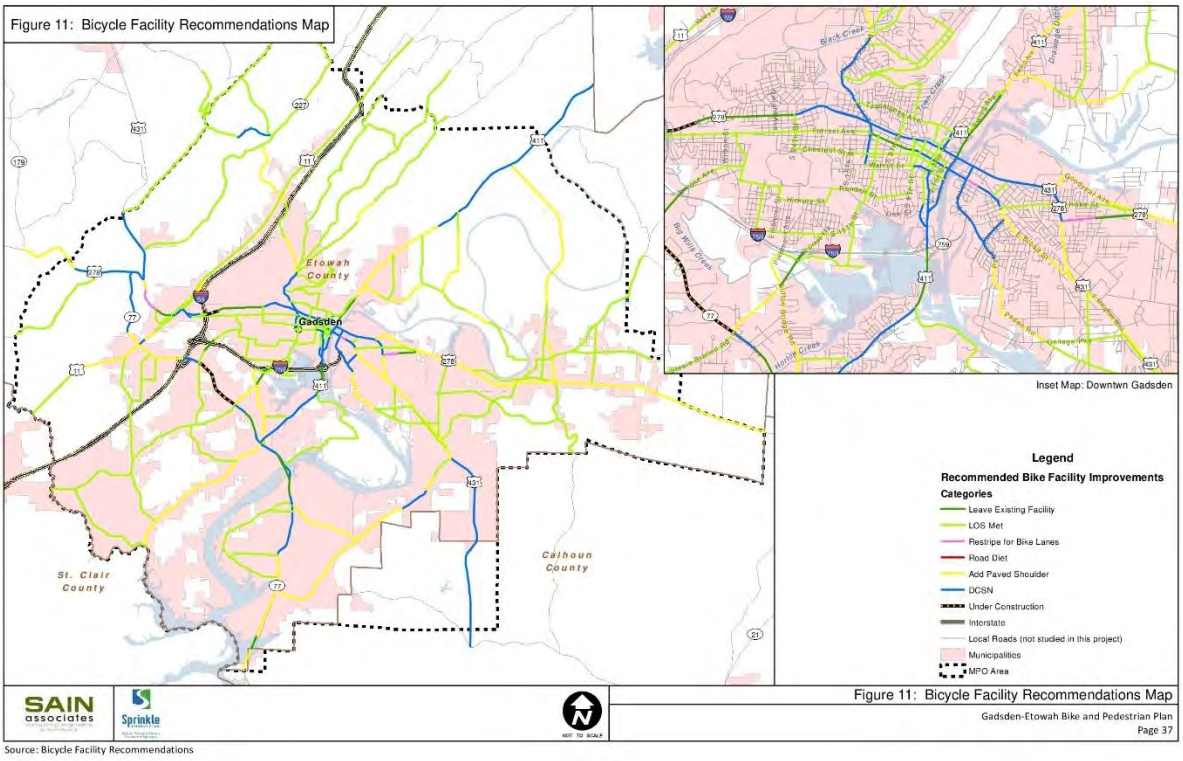
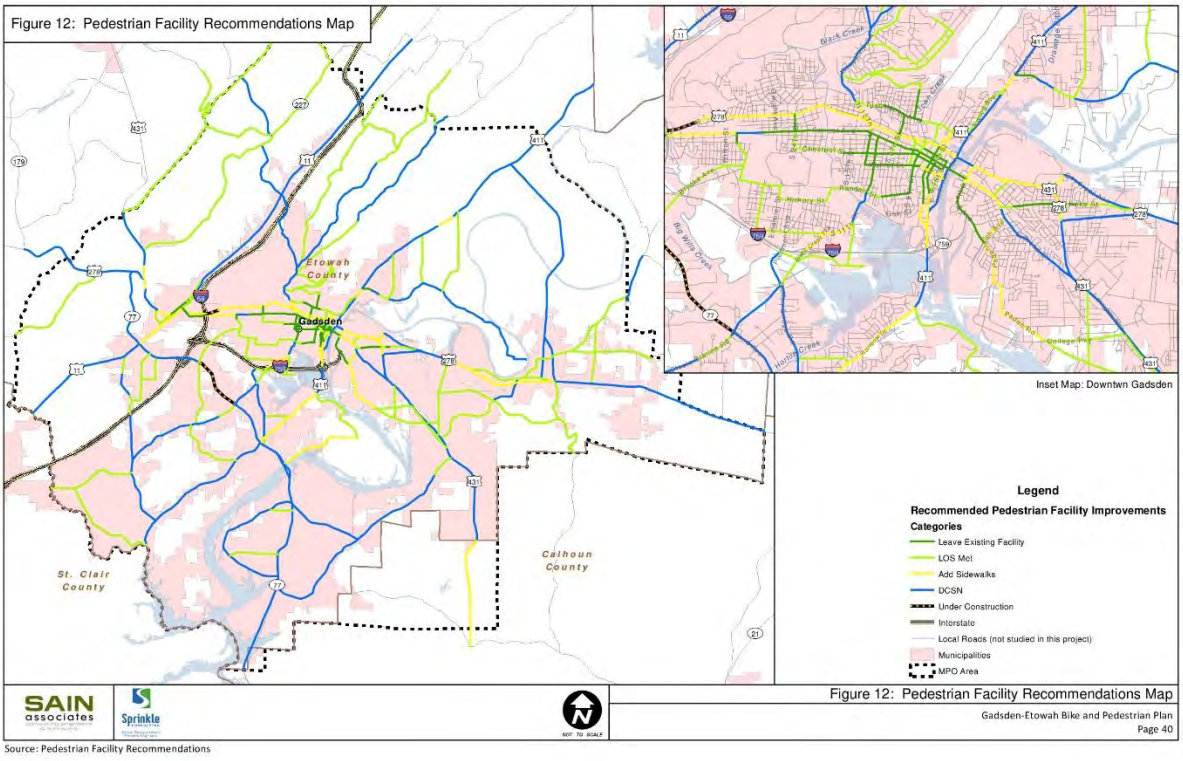


Figure 17: Planned Roadway Maintenance & Operations Projects – Gadsden MPO LRTP



Source: Bicycle Facility Recommendations

Figure 18: Bicycle Recommendations – Gadsden MPO Bicycle and Pedestrian Plan



Source: Pedestrian Facility Recommendations

Figure 19: Pedestrian Recommendations - Gadsden MPO Bicycle and Pedestrian Plan

1.10 Survey Summary

A survey was conducted in Rainbow City to gather information from the general population to determine what people like about the City and what opportunities for improvement are available.

- When citizens were asked their favorite part of living in Rainbow City, the top answers were:
    - Community
    - Proximity to family
    - Connection to the Coosa River
- According to the citizens surveyed, the most important amenities the community needs include:
    - A main street
    - Greenway trails
    - Grocery store options
    - Shopping (both big box stores and general shopping)
- Challenges that Rainbow City is facing include:
    - Limited retail, entertainment, and dining options
    - Lack of sidewalks or poor maintenance
    - Lack of adequate parks and recreation facilities
    - Limited access to the Coosa River
    - Need for aesthetic improvements across the city
    - Traffic congestion
    - Need for pedestrian and bike connections
    - Lack of housing variety
- The most common reasons that citizens of Rainbow City venture away from the City include:
    - Sit-down dining
    - Fast casual dining
    - Shopping
    - Cultural opportunities
    - Medical services
- The most frequent types of recreation programs people are interested in include:
    - Family Activities
    - Social Activities (dance, theater, music, etc.)
    - Outdoor Recreation (hiking, boating, fishing, etc.)
    - Youth Sports
    - Adult Sports
    - Arts and Crafts
- When asked what should be the highest transportation priority for Rainbow City, the most common answers included:

  - Additional lanes
  - Traffic signal timing
  - Street maintenance
  - Additional sidewalks
  - New roads
- Locations that citizens of Rainbow City would like to see sidewalks, new roads, and additional lanes include:
  - US-411
  - SR-77
  - Rainbow Drive
  - Steele Station Road
  - Lumley Road
- Several citizens considered it important to improve local road connectivity and improve walking and bicycle options in Rainbow City.
- The most common walking/biking destinations in Rainbow City include:
  - Vivian Lee Maddox Sports Complex
  - Rainbow Landing
  - General shopping
- Citizens would like to see future development in Rainbow City at the following locations:
  - Riverfront
  - Downtown
  - SR-77
- Citizens of Rainbow City would like to see the following areas protected from future development:
  - Riddles Bend
  - Coosa River
  - The location of a proposed rendering plant
  - Property near the airport
- Ideas for the future of Rainbow City include:
  - City center/downtown area
  - Entertainment district
  - Outdoor recreation/utilization of the river
  - Big box stores (Target, Costco, Home Depot)
  - Amphitheater
  - Water park
  - Splash pad

2 Future Transportation Conditions

The existing transportation conditions assessment evaluated existing vehicular, pedestrian, and bicycle accessibility in Rainbow City and the surrounding area. Rainbow City has direct access to I-59 for regional mobility and additional regional and local mobility is provided by US-411 and SR-77. The City has minimal bicycle and pedestrian infrastructure, most of which is concentrated in the City parks. The City's leadership has actively sought to enhance the community's transportation infrastructure through new and improved facilities for all modes of transportation with an emphasis on providing connections between communities and City amenities including the park and riverfront.

During the development of the Rainbow City Master Plan, the following challenges and opportunities were repeatedly expressed by citizens and City leaders:

- Maintaining the small-town character of Rainbow City is paramount to citizens and elected officials
- Future development should be concentrated along the Riverfront, downtown, and along SR-77
- The following areas should be protected from future development
    - Riddles Bend
    - Coosa River
    - The location of a proposed rendering plant
    - Property near the airport
- Peak hour congestion is focused around the intersection of US-411 and SR-77 and schools
- More pedestrian and bicycle facilities are needed to connect local neighborhoods to city amenities including Vivian Lee Maddox Sports Complex, Rainbow Landing, and commercial areas
- Street connectivity is very important to support balanced and evenly dispersed traffic demand
- Multimodal transportation improvements should be prioritized at the following locations:
    - US-411
    - SR-77
    - Rainbow Drive
    - Steele Station Road
    - Lumley Road
- Street design and operation should be consistent with the adjacent land uses.
- More local job, recreational, shopping, and education/training opportunities are needed within the city limits to reduce the number of trips in and out of the city and make the city's transportation network more sustainable into the future

These concerns seem to reflect a desire among citizens that Rainbow City maintain its residential "hometown" character while still providing efficient travel options that support growth and future economic development. Several global strategies will need to be implemented if that vision is to be accomplished. The City will need to:

1. Maintain existing transportation system integrity.
2. Develop a connected street system in new growth areas.
3. Be sensitive to roadside context when planning new or modified transportation projects.
4. Consider the needs of all transportation users in planning and designing new transportation facilities.
5. Apply access management principles to important collector and arterial streets to preserve capacity.
6. Encourage alternative modes of travel through design and policy decisions.

System maintenance includes managing a number of roadway related elements including pavement, drainage, markings, signage, and traffic signals. A regular assessment of operational performance on the City's major roadways is an excellent way to identify low-cost improvements as well as higher-cost projects that may take years to plan and implement.

The following pages provide more detailed guidance and recommendations for these global transportation strategies. Included in the discussion is a summary of anticipated future traffic volumes and levels of service on Rainbow City's roadway network. At the conclusion of the transportation strategies discussion is a list of recommended projects and strategies for short and long-term implementation.

2.1 Rainbow City Future Conditions

The Rainbow City Master Plan future conditions assessment was conducted to evaluate the future transportation impacts of land use decisions made during the planning process and to develop recommendations that would support future growth and improve mobility and safety for all modes of transportation in the City. The transportation assessment was conducted at the city-wide level. As documented in the Existing Transportation Conditions assessment, approximate locations of roadway segments exhibiting heavy to severe congestion based on analysis of the volume to capacity ratios seen from the 2015 base year model 24-hour volumes include:

- SR-77, between Sutton Bridge Road and the Coosa River
- US-411, between Lister Ferry Road and SR-77
- US-411, between Sutton Bridge Road and Brown Avenue

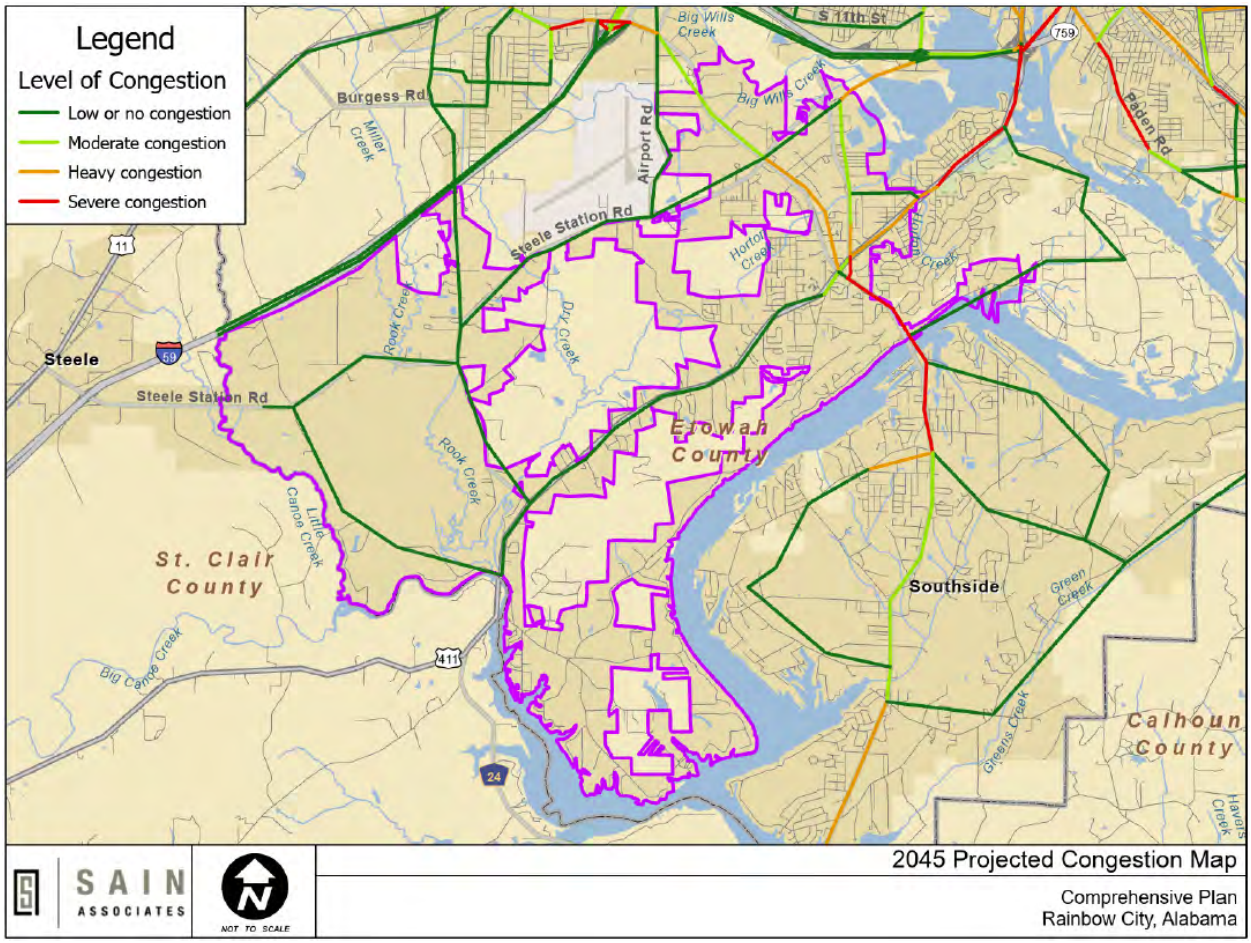


Figure 20: 2045 Traffic Conditions

The 2045 regional travel demand analysis was based on the demographic and highway network assumptions used in the Gadsden MPO regional planning process. As shown on **Figure 20**, the 2045 traffic conditions based on the output from the Gadsden MPO regional travel demand model illustrate that the existing congested areas will continue to experience congestion in the future. Overall congestion is forecast to increase in the City as a function of future population and employment growth. Additional roadway segments projected to be under heavy to severe congestion by 2045 include:

- SR-77, between Steele Station Road and US-411
- SR-77, between Church Street and the Coosa River
- US-411, between Church Street and the eastern city limits
- Sutton Bridge Road, between US-411 and Wilson Avenue

A review of the land use plan (shown in **Figure 21**) indicated that the proposed land use in Rainbow City would significantly increase the number of households in the southwestern portion of the City as well as the employment along SR-77 when compared to the Gadsden MPO population and employment forecasts. This will lead to increased

traffic on US-411, SR-77, Lumley Road, and Steele Station Road when compared to Gadsden MPO forecasts.

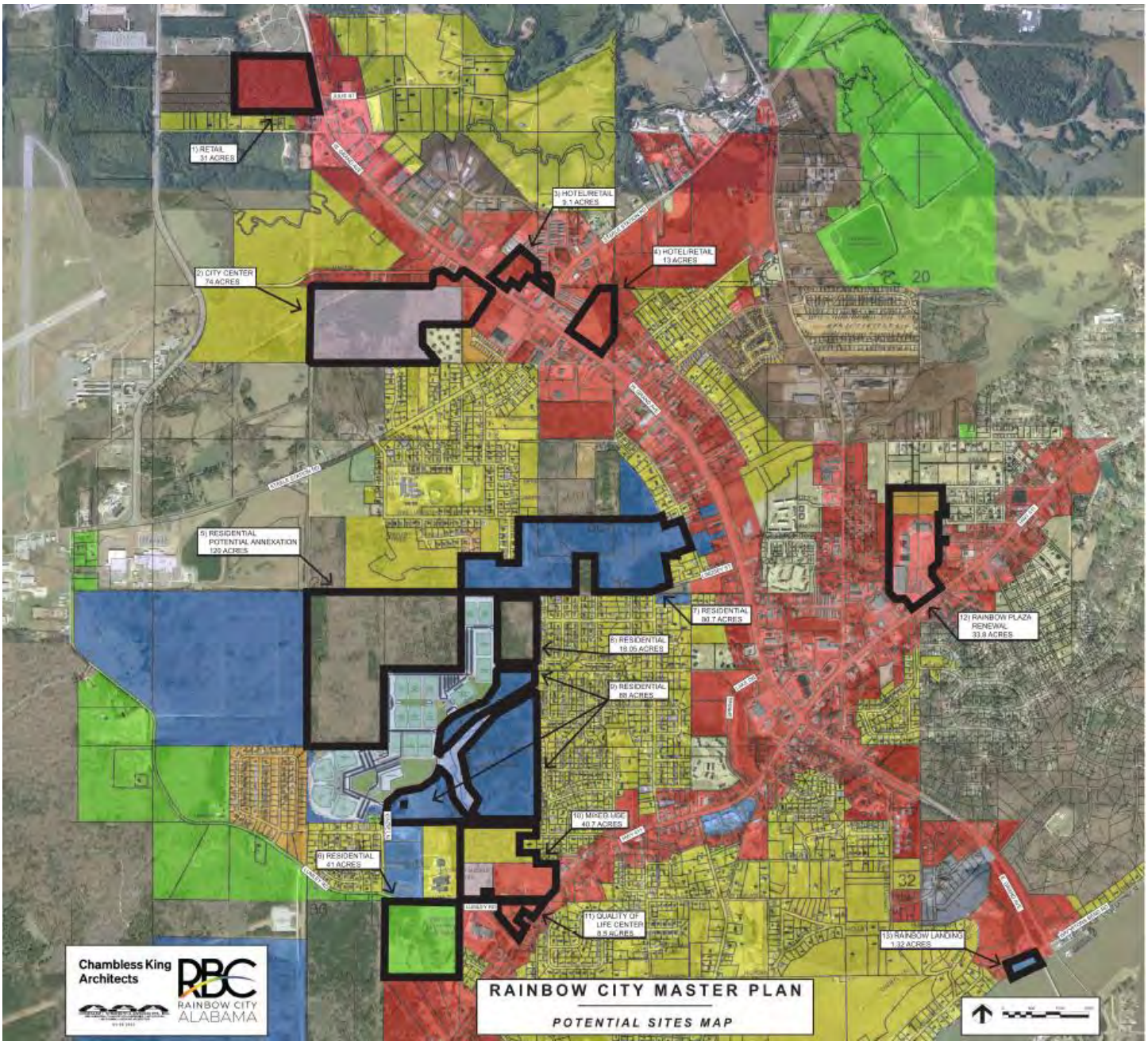


Figure 21: Proposed Land Use Plan

2.2 Future Intersection Evaluation

Existing and future conditions analysis was conducted at intersections along SR-77 and US-411 using Vistro. The Vistro analysis was conducted at the following intersections:

- SR-77 at US-411
- SR-77 at Independent Drive
- SR-77 at Church Street
- US-411 at Sutton Square
- US-411 at Sutton Bridge Road/Church Street
- US-411 at Market Way
- US-411 at Sonic Drive-in Access

Three scenarios were analyzed: (1) existing conditions, (2) future no-build, and (3) future build. The future no-build scenario included a 1.34% regional growth rate applied over a 20-year analysis period. The future build scenario included the same growth rate plus planned future developments in the area, per the land use plan (**Figure 21**). **Table 3** summarizes the analysis results.

Table 3: Level of Service Summary

Intersection	Approach		Level of Service					
			Existing		2042 No Build		2042 Build	
			AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
SR-77 @ US-411	NB	SR-77	C	C	C	D	D	E
	SB	SR-77	C	C	D	D	D	F
	EB	US-411	C	C	D	D	D	E
	WB	US-411	C	C	D	D	D	F
	Total Intersection LOS		**C**	**C**	**D**	**D**	**D**	**F**
SR-77 @ Independent Drive	NB	SR-77	A	A	A	A	A	B
	SB	SR-77	A	A	A	A	A	B
	EB	Independent Dr	B	B	B	B	B	B
	WB	Independent Dr	B	B	B	B	B	C
	Total Intersection LOS		**A**	**A**	**A**	**B**	**A**	**B**
SR-77 @ Church Street	SB	Church St	C	C	D	D	E	F
	EB	SR-77	A	A	A	A	A	A
	WB	SR-77	A	A	A	A	A	A
US-411 @ Sutton Square	SB	Sutton Sq	C	D	D	F	D	F
	EB	US-411	A	A	A	A	A	A
	WB	US-411	A	A	A	A	A	A
US-411 @ Church Street/Sutton Bridge Road	NB	Church St	B	C	B	C	C	C
	SB	Sutton Bridge Rd	B	C	B	D	B	D
	EB	US-411	B	B	B	B	B	B
	WB	US-411	B	C	C	F	B	F
	Total Intersection LOS		**B**	**B**	**B**	**E**	**B**	**F**
US-411 @ Market Way	NB	Bojangles Access	A	C	A	C	A	C
	SB	Market Way	B	C	C	C	C	C
	EB	US-411	A	A	A	A	A	A
	WB	US-411	A	A	A	B	A	B
	Total Intersection LOS		**A**	**A**	**A**	**B**	**A**	**B**
US-411 @ Sonic Drive-in Access	NB	Sonic Access	B	C	B	C	C	C
	SB	Doc Prince Dr	B	C	B	D	C	F
	EB	US-411	A	B	B	B	B	B
	WB	US-411	A	B	A	C	B	C
	Total Intersection LOS		**A**	**B**	**B**	**C**	**B**	**D**

Note: The Vistro analysis was unable to fully capture the queueing conditions observed in the field at SR-77 at US-411

The results of the Vistro analysis indicate that, with the growth rate applied for the 2042 no build scenario, the intersection of US-411 at Church Street/Sutton Bridge Road is projected to operate with unacceptable LOS. The addition of new development in the area pushes more approaches into the failing LOS range, especially during the PM peak hour. The intersection of SR-77 and US-411 in particular is projected to experience failing conditions in the 2042 build scenario. The intersections that are projected to have failing LOS have been observed during field reviews to currently experience significant queueing.

3 Global Transportation Strategies

Global transportation strategies that could be implemented in the City to address existing transportation deficiencies and position the City for future growth include the following:

3.1 Maintain System Integrity

In a climate of limited transportation funds and many competing interests, maintenance and preservation of existing facilities has become a top priority. If you are unable to construct new roadways, then it is imperative that you get the highest possible performance out of the existing roadway network. System maintenance includes managing items associated with roadway performance such as pavement, drainage, markings, signage, and traffic signals. A regular assessment of operational performance on the City's major roadways would be an excellent way to identify low-cost improvements as well as higher-cost projects that may take years to plan and implement. Repaving streets also provides opportunities to restripe cross-sections to include bicycle lanes and introduce road diets to reduce vehicular speeds within City limits.

3.2 Develop Connected Streets in New Growth Areas

The Rainbow City Comprehensive Plan outlines growth areas for Rainbow City: west of the intersection of SR-77 and Steele Station Road, the intersection of SR-77 and US-411, and near the intersection of Rainbow Drive and Lumley Road. As these areas develop, it will be important to plan for and construct a local street system to provide access as well as to disperse traffic in a balanced, less concentrated fashion. As these areas begin to develop, it would be wise for the City to require a master plan that designates a hierarchy of streets (alley, local, collector, and major collector) that is sufficient to support the vision for pedestrian/bicycle use, land use, and density. Emphasis should be placed on connectivity within the street network.

3.3 Be Sensitive to Roadside Contexts

Citizens expressed concerns about maintaining quality of life in their community. Perceptions about quality of life and aesthetics are often heavily influenced by transportation facilities. Throughout the United States one can find numerous examples of roadways that were "improved" in a way that increased capacity and travel speed but did significant damage to the appearance and quality of the adjacent community. An alternative approach is to consider the roadside context when making transportation decisions. Mobility, typically measured as capacity or level of service, is not the only important consideration for transportation improvements. Instead, transportation decision making should consider a wide range of issues, including but not limited to safety, community values, environmental impacts, aesthetics, cost, and mobility and safety for all modes. Rainbow City has some streets that will have deficient capacity and less than desirable traffic operations in the coming years. For some of those streets, adding capacity would mean a significant trade-off for adjacent land uses. As Rainbow City considers future projects and priorities, it is strongly recommended that a

collaborative public process be used to encourage broad consideration of the impacts and opportunities created by those projects.

3.4 Consider All Transportation Users

The City of Rainbow City should evaluate pushing for consideration of pedestrian accommodations in new subdivision developments. It is recommended that City leaders develop a Complete Streets resolution to guide developers on the appropriate typical sections (including number and width of vehicle lanes, bicycle facilities, buffer zones, sidewalks, and/or parking lanes) required for future development based on the magnitude, location, and land use of the proposed development. "Complete Streets" is a name adopted by the National Complete Streets Coalition to describe a process of planning and design that considers the entire roadway area (travel way, shoulders, and adjacent space) and all potential users. Potential typical sections are illustrated for rural/suburban highway, rural/suburban collector, residential street, Town Center arterial, and Town Center collector are illustrated on **Figures 22-26**. Additional cross section types can be developed based on the City's future needs as development and travel patterns change over time.

Figure 22: Complete Street Cross Section – Rural/Suburban Highway

Figure 23: Complete Street Cross Section – Rural/Suburban Collector

Figure 24: Complete Street Cross Section – Residential Street

Figure 25: Complete Street Cross Section – Town Center Arterial

Figure 26: Complete Street Cross Section – Town Center Collector

3.5 Encourage, Implement and Enforce Access Management

Access management is the planning, design, and implementation of various land use and transportation strategies to maintain traffic flow and safety along a primary roadway, while still considering access needs of various land uses and development types. Allowing unlimited or unrestricted access to roadside development eventually degrades the carrying capacity and safety of a roadway. By managing roadway access however, a governing agency can increase safety, extend the functional life of a major

road, reduce traffic congestion, support alternative modes of transportation, and improve the appearance and quality of the built environment. It is recommended that the City designate several important roadways as "access management corridors" where the City would either retrofit access management where feasible or enforce access management principles on existing properties when they re-develop over time. A list of the recommended access management corridors is provided in the recommended projects subsection of this report. The ALDOT Access Management Manual provides detailed guidance on the implementation of Access Management strategies in Alabama.

Figure 27: Example of Access Management on US-411 near SR-77 Intersection

3.6 Support Alternative Modes of Travel

The City of Rainbow City is currently quite limited in availability of choices for travel. There is a modest network of sidewalks, even fewer acceptable bicycle routes and no fixed route transit service. Encouraging the design and construction of new bike and pedestrian facilities is an excellent way to support and encourage citizens to make alternative choices for their transportation. Developing bicycle and pedestrian connections between residential neighborhoods and the Coosa River, parks, and retail establishments should be prioritized based on the feedback from City officials and residents. Establishment of park and ride lots for commuters to Birmingham would help to encourage carpooling. Within the next decade, it may even be feasible to start a small transit or rideshare initiative to provide service to the downtown Birmingham and University of Alabama at Birmingham areas.

4 Other Recommendations

4.1 System Management and Intelligent Transportation System (ITS) Projects

1. Traffic Signal Optimization
    - Update traffic signal timing along the following corridors:
        - SR-77
        - US-411
2. School Traffic Management Plans
    - Conduct a detailed traffic study and traffic management plan for each public school within Rainbow City.
3. Neighborhood Traffic Management Plans
    - Conduct neighborhood traffic management plans for neighborhoods with documented traffic concerns.
4. Corridor Operations Management
    - ALDOT has plans to design and construct a Gadsden Area Advanced Corridor Management (ACM) project which includes the SR-77 and US-411 corridors in Rainbow City. The project will deploy field devices in these corridors such as upgraded traffic signals, CCTV cameras, fiber optic cable, message boards, and other ITS applications. The field devices will be connected to the ALDOT Regional Traffic Management Center (RTMC).
5. Evaluation of Alternative Intersection Configurations
    - ALDOT is actively evaluating alternative intersection configurations to improve the efficiency and signal operation at the intersection of SR-77 and US-411.

4.2 Street Connectivity Projects

1. City Center
    - Develop a grid network as a part of the future City Center development. The grid should provide connections to Steele Station Road, Martin Road, and Airport Road to efficiently disperse traffic.
2. East-West Residential Connections
    - If feasible, construct local East-West connectors between proposed residential developments to provide local mobility and connections to Lumley Road.

4.3 Capacity Projects

1. Lumley Road
    - Conduct a detailed feasibility study to explore widening Lumley Road to four lanes with bike lanes and sidewalks between Rainbow Drive and Steele Station Road.
2. New North-South Roadway

- Conduct a detailed feasibility study to explore constructing a new North-South roadway between the proposed Town Center and Rainbow Drive.

3. Pleasant Valley Road Interchange
   - Complete an Interchange Justification Report to evaluate the feasibility of constructing an interchange at I-65 and Pleasant Valley Road. The interchange would provide access to a Mega-Site that the City may annex in the future.

4.4 General Recommendations/Policy Considerations

The Comprehensive Plan outlines the future vision for the City of Rainbow City and is underpinned by technical analysis and public/stakeholder input. Both the technical analysis and public/stakeholder input indicated that the City has opportunities to support future economic development by improving the City parks and recreation centers. Improving pedestrian and bicycle accessibility between these attractions and the surrounding neighborhoods is a key aspect of improving the overall parks and recreation system. The City of Rainbow City does not currently have a trail system. Opportunities exist to develop a trail system to connect various parks, greenspaces, schools, the downtown area, and other local attractions. Trail options for implementation include multi-use paths, greenway trails, and bicycle paths. Sidewalks, bicycle lanes, and sharrows can be used to complete the trail network.

Additional general and policy recommendations to support multi-modal travel in the city include:

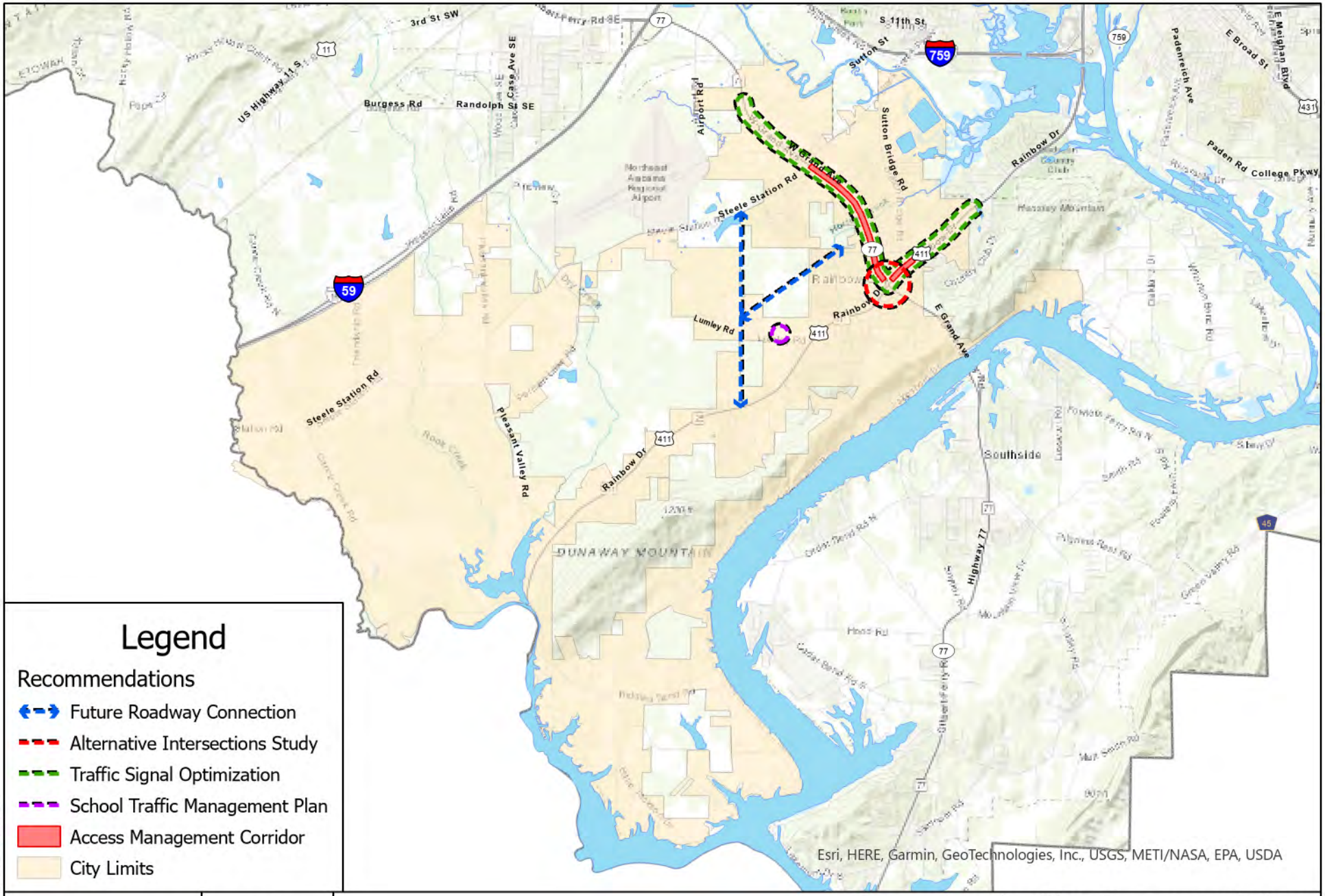
1. It is recommended that the City work to reduce the gaps in the network by funding and conducting a comprehensive bicycle and pedestrian plan for the City and adjacent areas. Particular emphasis should be given to connecting residential neighborhoods to schools, parks, the riverfront, and the City Center. The bicycle and pedestrian plan should include considerations for traversing the steep grades around the river.

4.5 Access Management Corridors

1. Designate the following roadways as access management corridors and conduct studies to identify areas for access management retrofit and/or new access standards for development or re-development.
   - SR-77 between US-411 & Steele Station Road
   - US-411 between SR-77 & Sutton Bridge Road
2. Implement policies to promote access management consideration as part of the site plan approval process.

4.6 Park & Ride Lots

1. Coordinate with the Gadsden MPO to establish one or two park and ride lots at locations to be determined.



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Comprehensive Plan Recommendations

Comprehensive Plan
Rainbow City, Alabama