



By Mac Martin, AICP  
City Planner



# Transportation Plan

- Introduction
- Background
- Existing Conditions
- The Plan / Implementation Strategy
- Conclusion

# Introduction

- This plan shall serve as the transportation component of the overall master planning effort of the City of Athens, Alabama entitled “A Vision for Athens”
- Initial step was the “Future Land Use and Development Plan”, adopted in December 2013

# Introduction

- The transportation component is meant to serve as an additional step in fulfilling the duty conveyed upon the City and its Planning Commission to “make and adopt a master plan for the physical development of the municipality” and, more specifically, to make the plan with the “general purpose of guiding and accomplishing a coordinated, adjusted, and harmonious development of the municipality...in accordance with present and future needs, best promote health, safety, morals, order, convenience, prosperity, and general welfare...including, among other things, adequate provision for traffic...”, according to Sections 11-52-8 through 11-52-10 of the Code of Alabama 1975, as amended.

# Introduction

- The purposes of the transportation component are to assess the effectiveness of the existing transportation system, considering the present land uses and transportation network, and to develop a transportation plan that will mitigate current and future deficiencies, increase mobility, support the FLUP, and create a safe and efficient means of travel for the future.
- The plan has a 10 to 20 year outlook.
- The plan takes a more conservative approach than the 2003 plan.

# Background

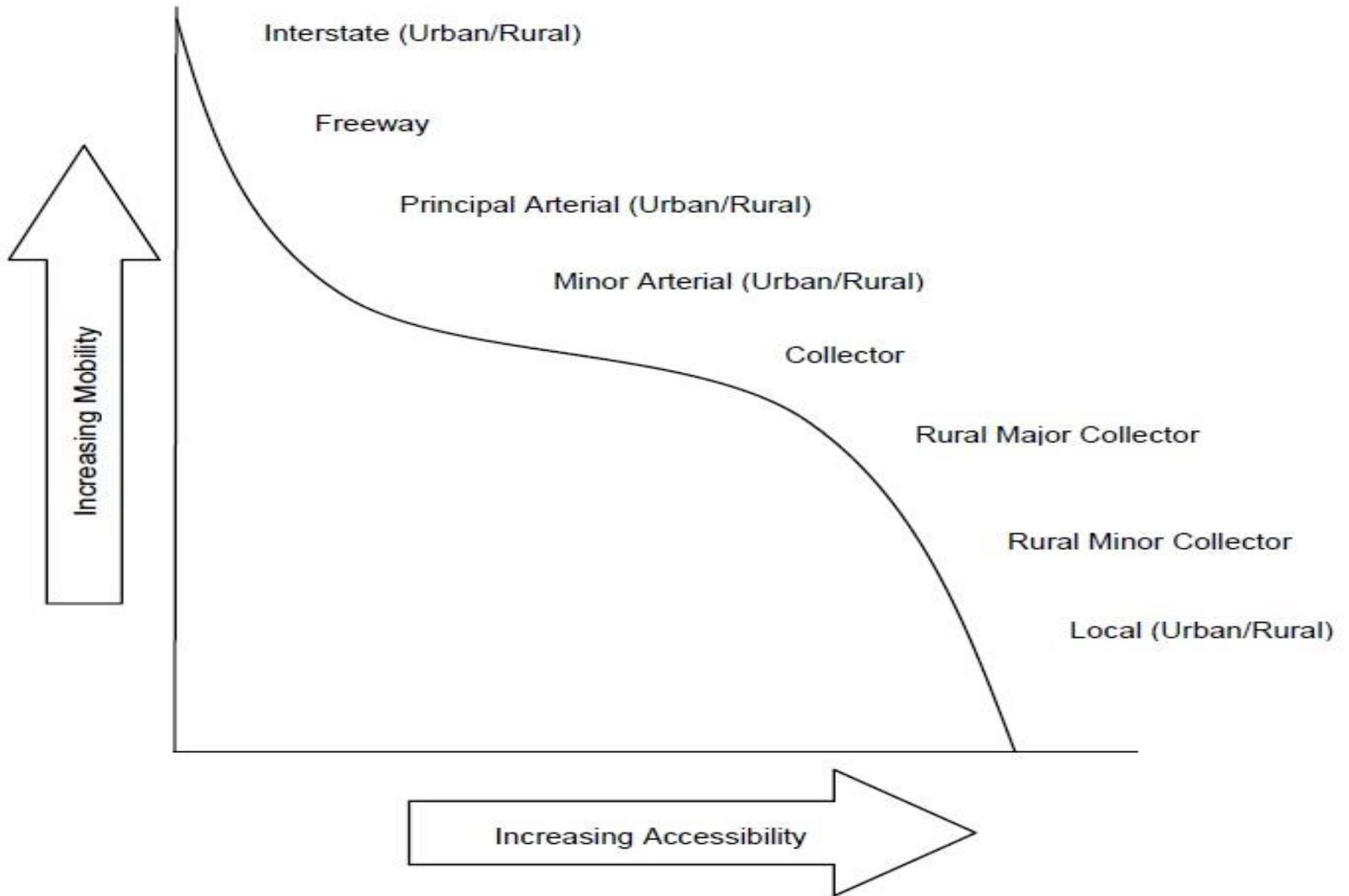
- Athens is fortunate to have good access to a variety of modes of transportation (land, air, water).
- With such connectivity and access to the greater transportation network, Athens is poised to be a relevant option for continued residential, commercial, and industrial growth for the foreseeable future.
- As we continue to grow, our network will need to keep pace.

# Current Conditions



**Legend**  
Functional Classification

- Urban Interstate - 11
- Urban Principal Arterial - 14
- Urban Minor Arterial - 16
- Collector - 17



- Functionality of Road Classifications.
- Source: ALDOT Access Management Manual, 2014.

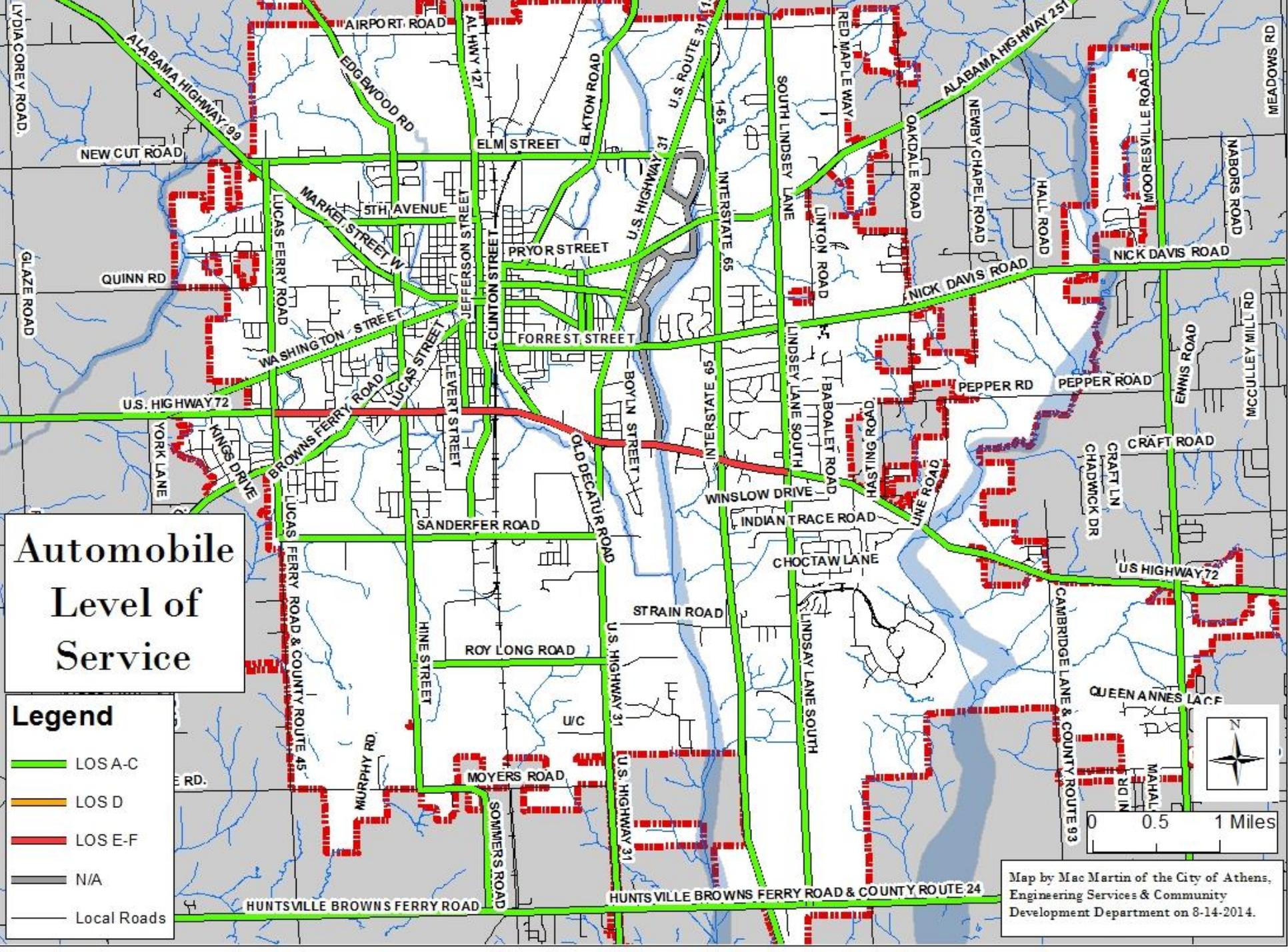


# Level of Service (LOS)

Level of Service A		Free traffic flow (0% –35% of capacity)
Level of Service B		Stable traffic flow (35% –50% of capacity)
Level of Service C		Stable traffic flow (50% –62% of capacity)
Level of Service D		High-density stable traffic flow (62% –75% of capacity)
Level of Service E		Capacity level traffic flow (75% –100% of capacity)
Level of Service F		Forced or breakdown traffic flow (>100% of capacity)

- Automobile Level of Service Scale (LOS).
- Source: Highway Capacity Manual, Transportation Research Board

Functional Classification	# of Lanes	Daily Capacity
Freeways	4	68,000
	6	102,000
	8	136,000
	10	170,000
Expressways	4	50,000
	6	75,000
	8	100,000
Divided Principal Arterials	2	22,000
	4	33,900
	6	50,000
	8	73,600
Undivided Principal Arterials	2	17,800
	4	31,000
	6	45,800
	8	63,100
Divided Minor Arterials	2	21,000
	4	31,900
	6	45,600
	8	
Undivided Minor Arterials	2	17,800
	4	27,400
	6	
	8	
Divided Collectors	2	20,800
	4	28,500
	6	42,000
Undivided Collectors	2	16,600
	4	26,200
	6	38,700



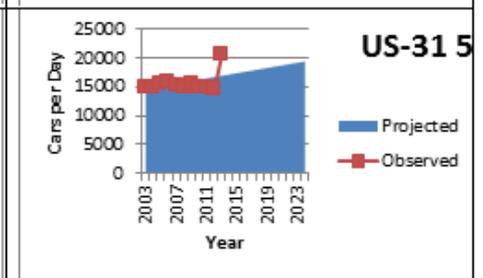
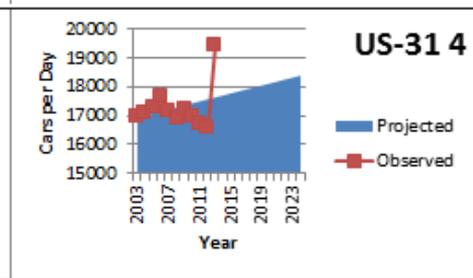
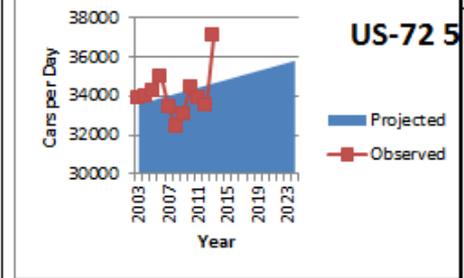
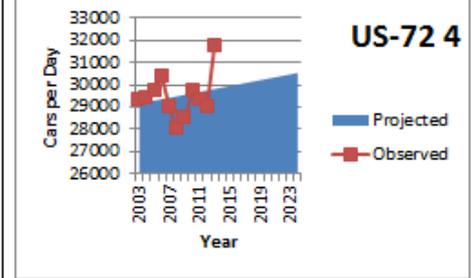
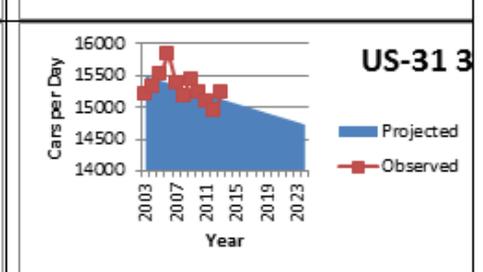
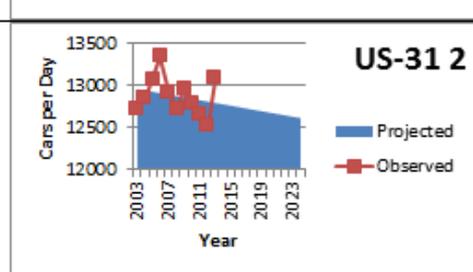
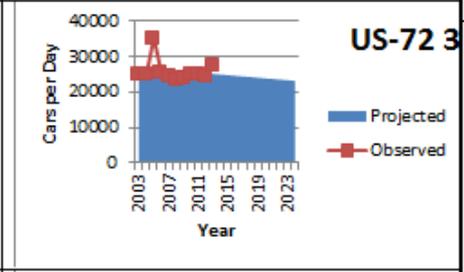
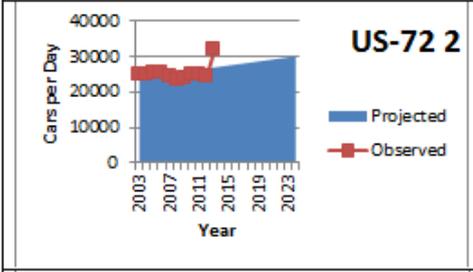
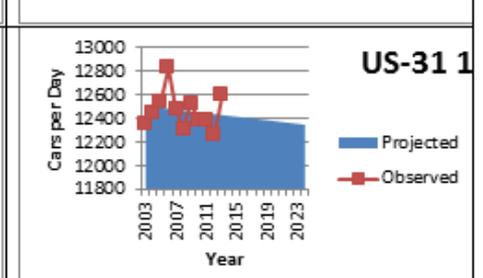
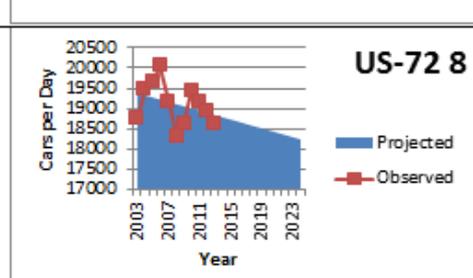
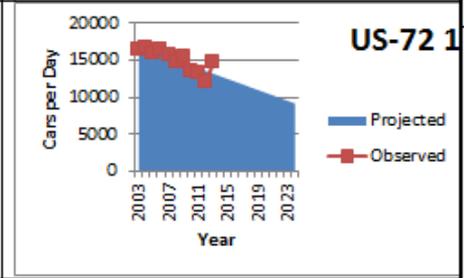
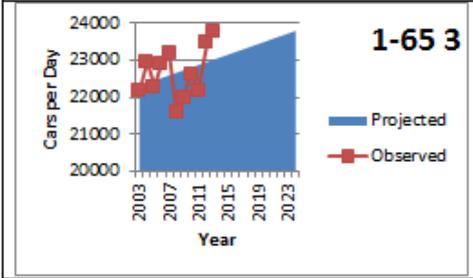
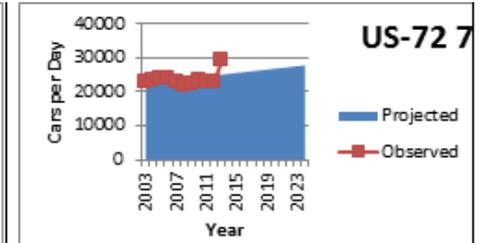
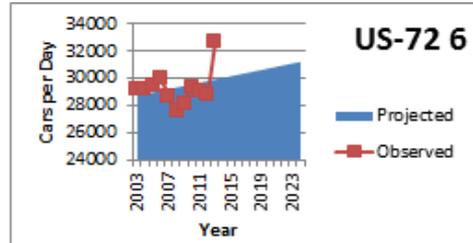
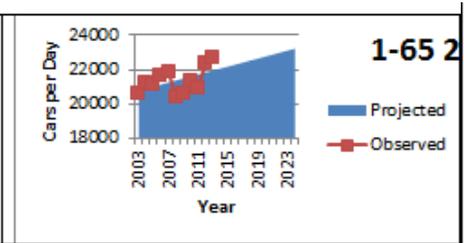
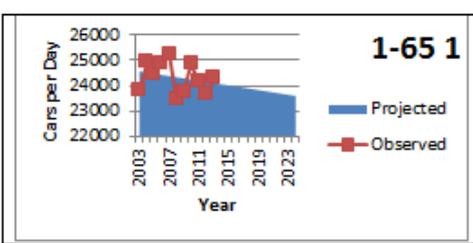
# Automobile Level of Service

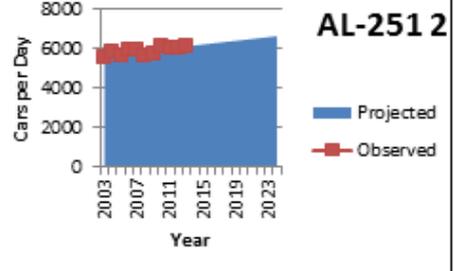
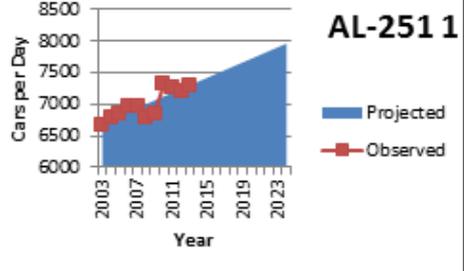
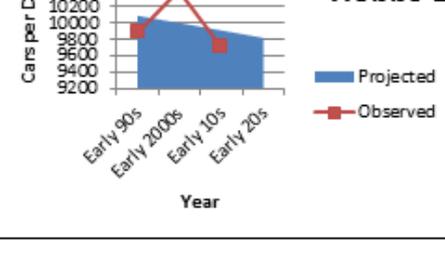
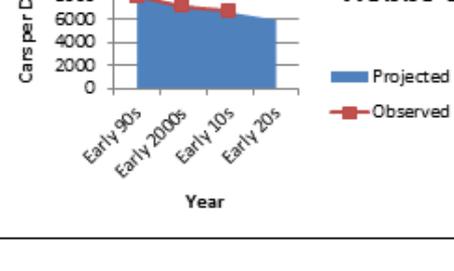
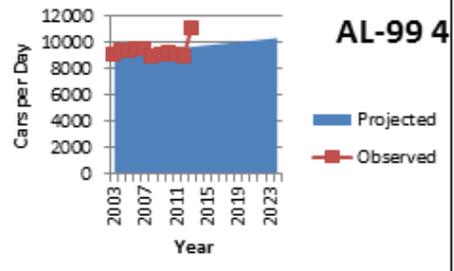
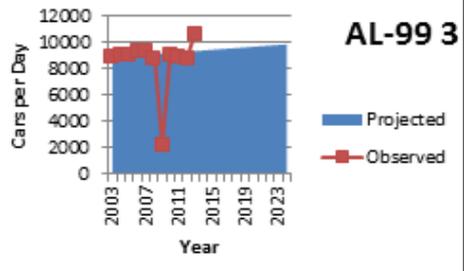
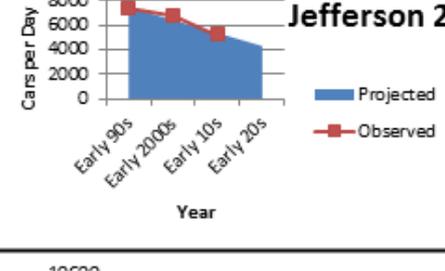
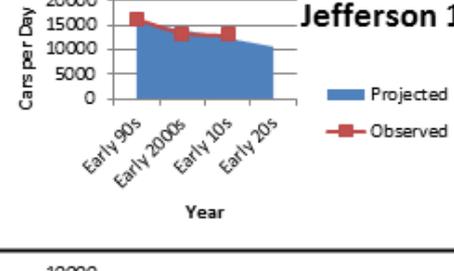
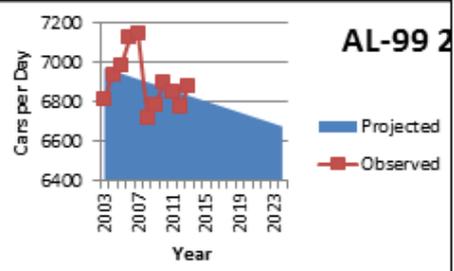
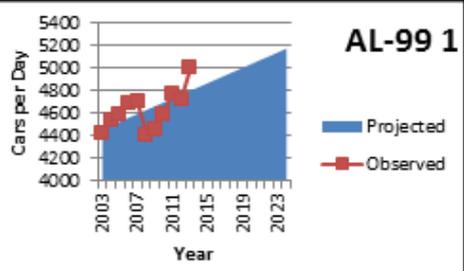
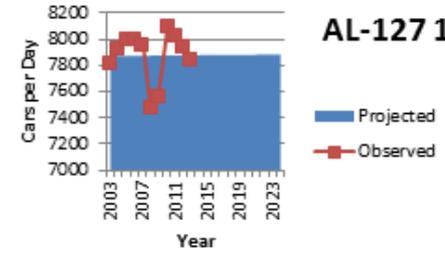
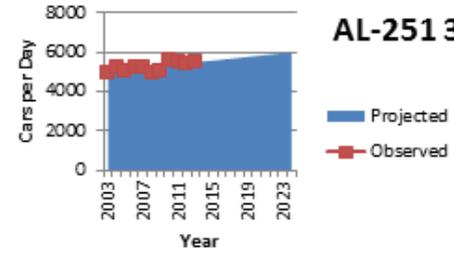
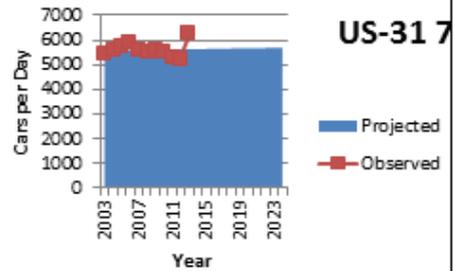
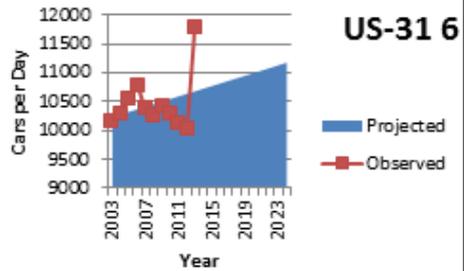
- Legend**
- LOS A-C
  - LOS D
  - LOS E-F
  - N/A
  - Local Roads



0 0.5 1 Miles

Map by Mac Martin of the City of Athens, Engineering Services & Community Development Department on 8-14-2014.

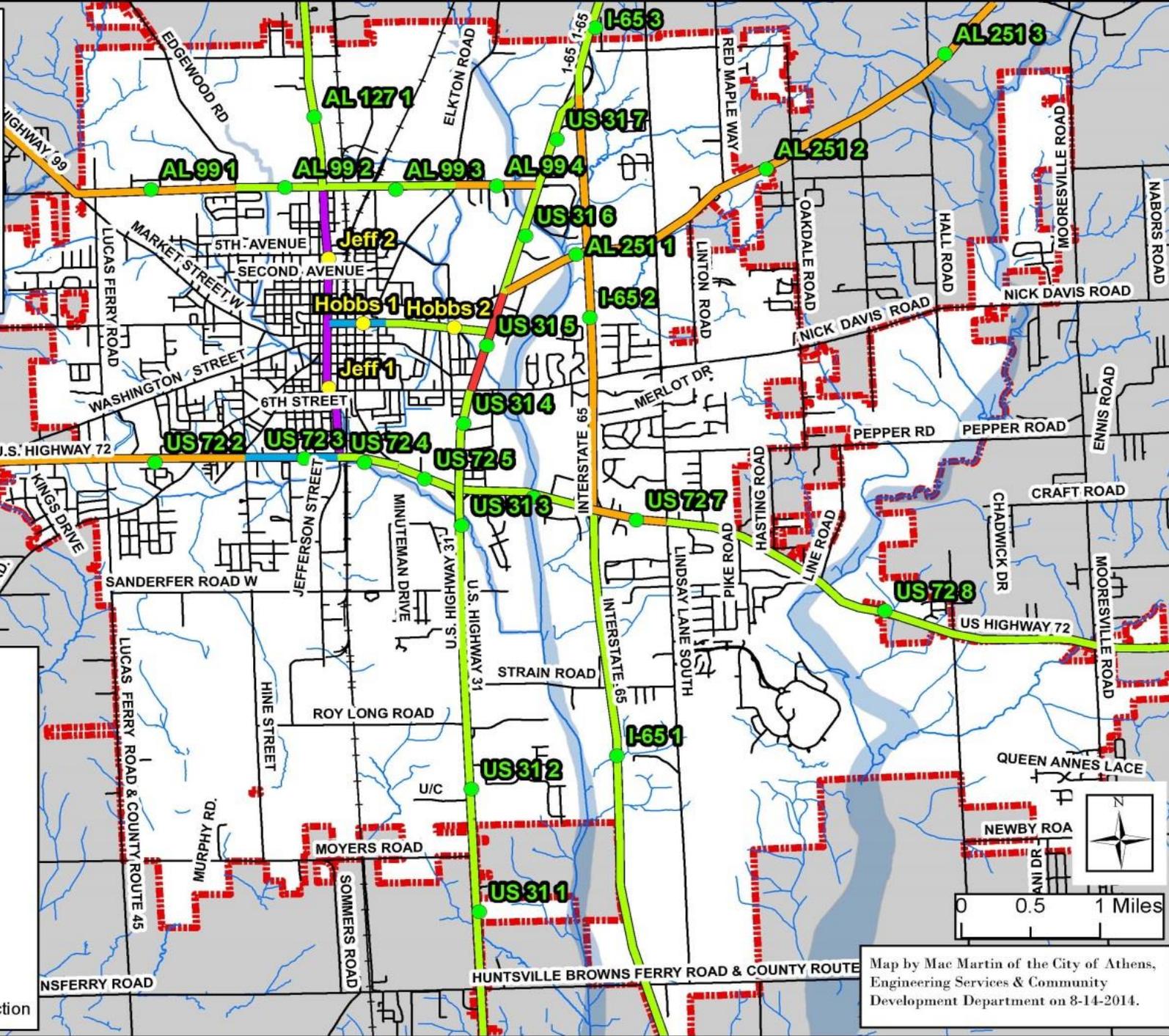




# Projected 10 Year % Change Traffic Volume

## Legend

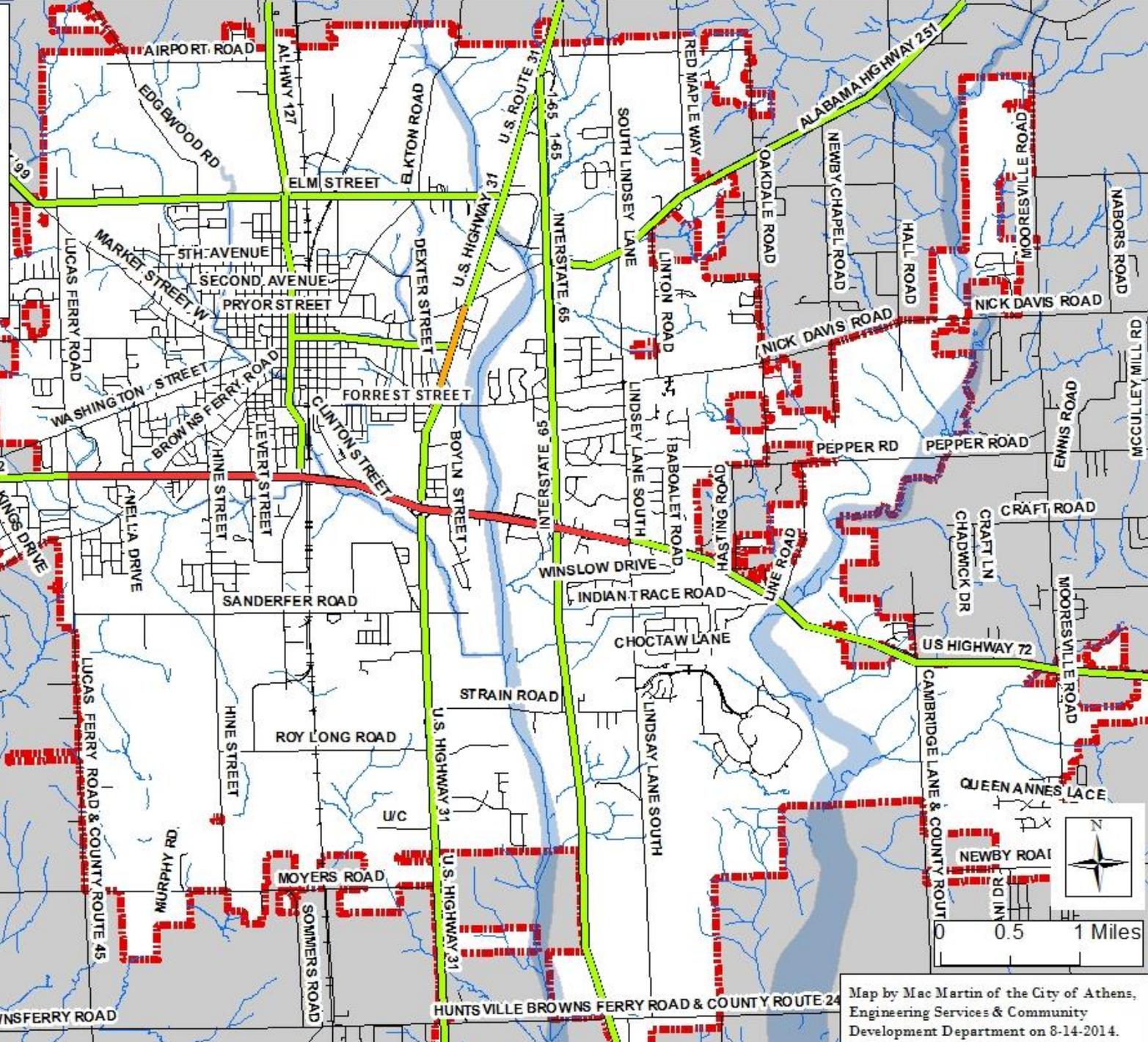
- Local Stations
- State Stations
- > +10
- +5% to +10%
- 5% to +5%
- 10% to -5%
- > -10%
- Roads w/out Projection



Map by Mac Martin of the City of Athens, Engineering Services & Community Development Department on 8-14-2014.

# Future Automobile Level of Service (10 years)

- Legend**
-  N/A
  -  LOS A-C
  -  LOS D
  -  LOS E-F
  -  Local Roads



Map by Mac Martin of the City of Athens, Engineering Services & Community Development Department on 8-14-2014.

# Level of Service (LOS)

- The only thoroughfare currently registering a failing LOS grade is US 72, from Lindsay Lane to Lucas Ferry Road.
- During the time spent in the field, the author observed that traffic on US 72 generally increases throughout the day, becoming heaviest from the time schools adjourn through the evening commute.
- Traffic flow was largely uninterrupted during the morning.
- Traffic became heavier from lunchtime on, the flow of traffic became increasingly interrupted. This was particularly the case along portions of US 72 where the number of signalized intersections increases and distances between them decrease.
- The traffic signals, excessive numbers of access points, inadequate or no turn lanes seemed to be primary factors in stymieing traffic flow.

# US 72 Signals

- Each intersection operates on an independent loop system.
- Timing of the signals remains under the explicit control of ALDOT
- The last time an exercise was conducted to synchronize the timing of the signals on US 72 was in 2002.
- The current programming of the signals does not take into account the comprehensive nature of present traffic conditions along the thoroughfare.

# Signals on Other Streets



# Affordability and Automobile Dependency

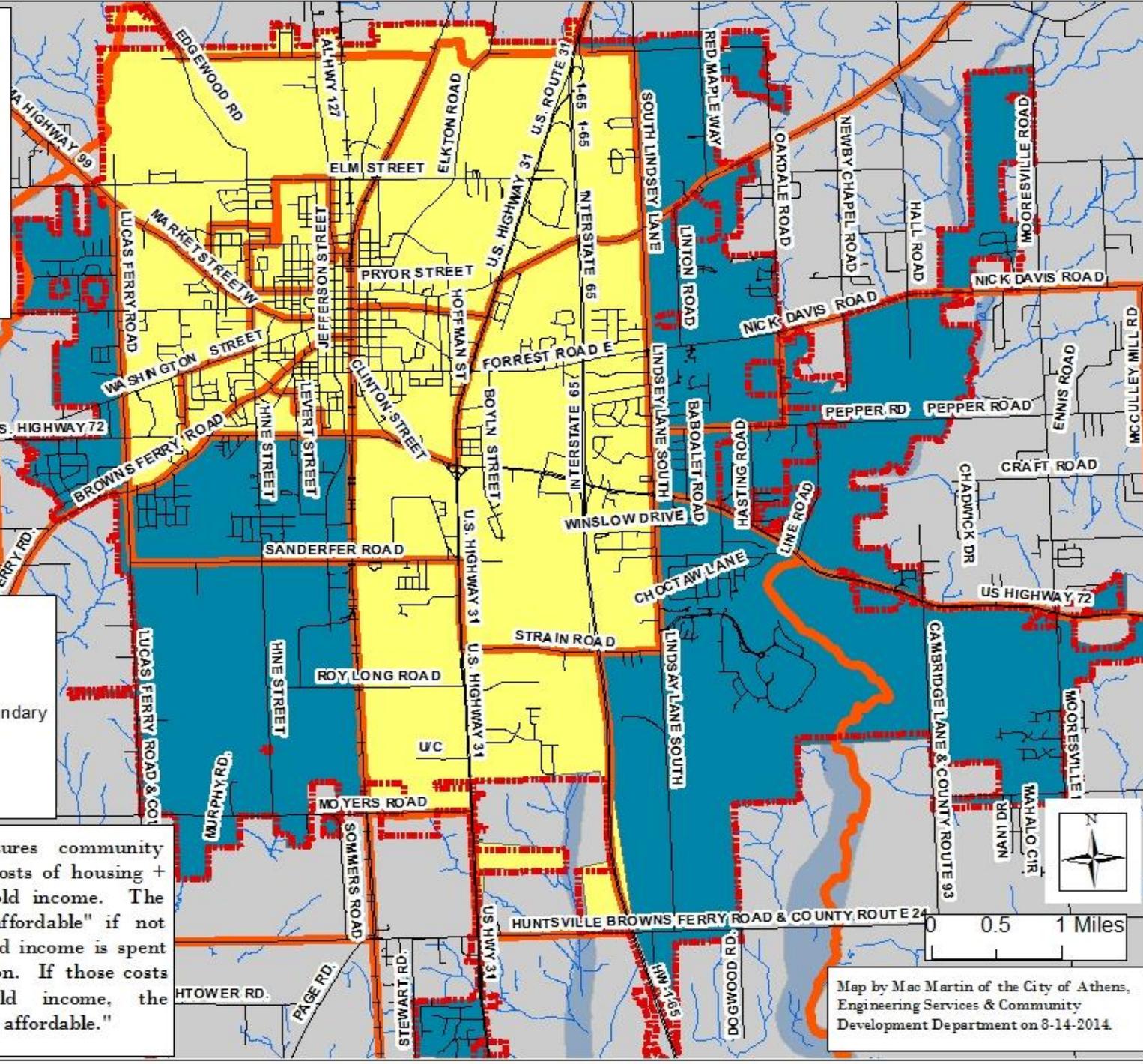
- For the average American family, the largest expense beyond housing is transportation. Transportation costs consume 25% of an average household's income in the United States living in automobile dependent communities. Additionally, those same families are spending, on average, 32% of their income on housing, leaving a mere 43% of disposable income for all other family expenses (FHWA 2014).
- The H+T (Housing plus Transportation) Affordability Index states that a community is considered affordable when housing and transportation costs do not exceed 45% of a household's income

# Affordability of Neighborhoods Based on the H+T Model

**Legend**

-  Roads
-  Census Block Group Boundary
-  Affordable (<45%)
-  Not Affordable (45%+)

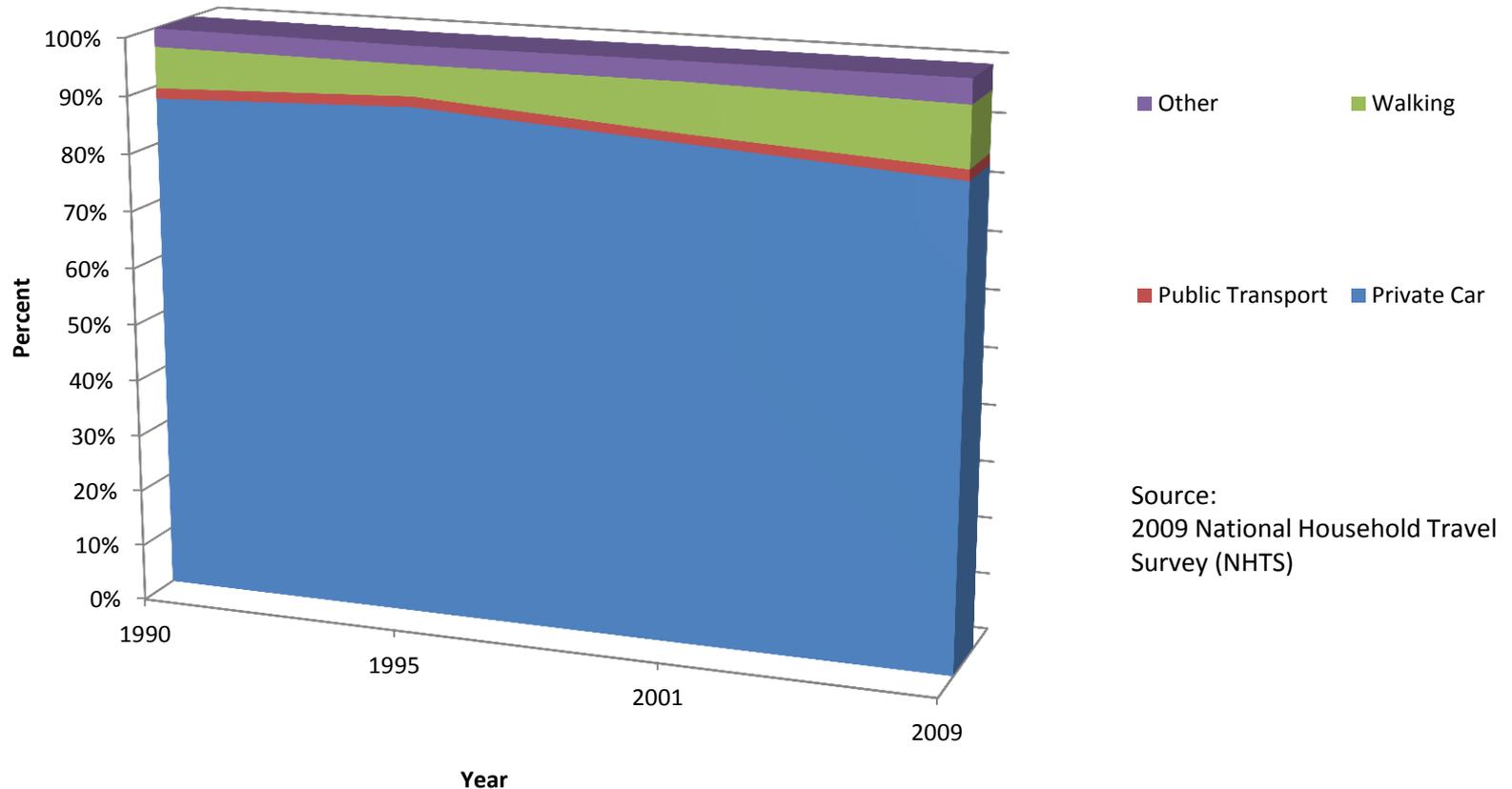
Note: This model measures community affordability by comparing costs of housing + transportation with household income. The community is considered "affordable" if not more than 45% of household income is spent on housing and transportation. If those costs exceed 45% of household income, the community is considered "not affordable."



Map by Mac Martin of the City of Athens, Engineering Services & Community Development Department on 8-14-2014.

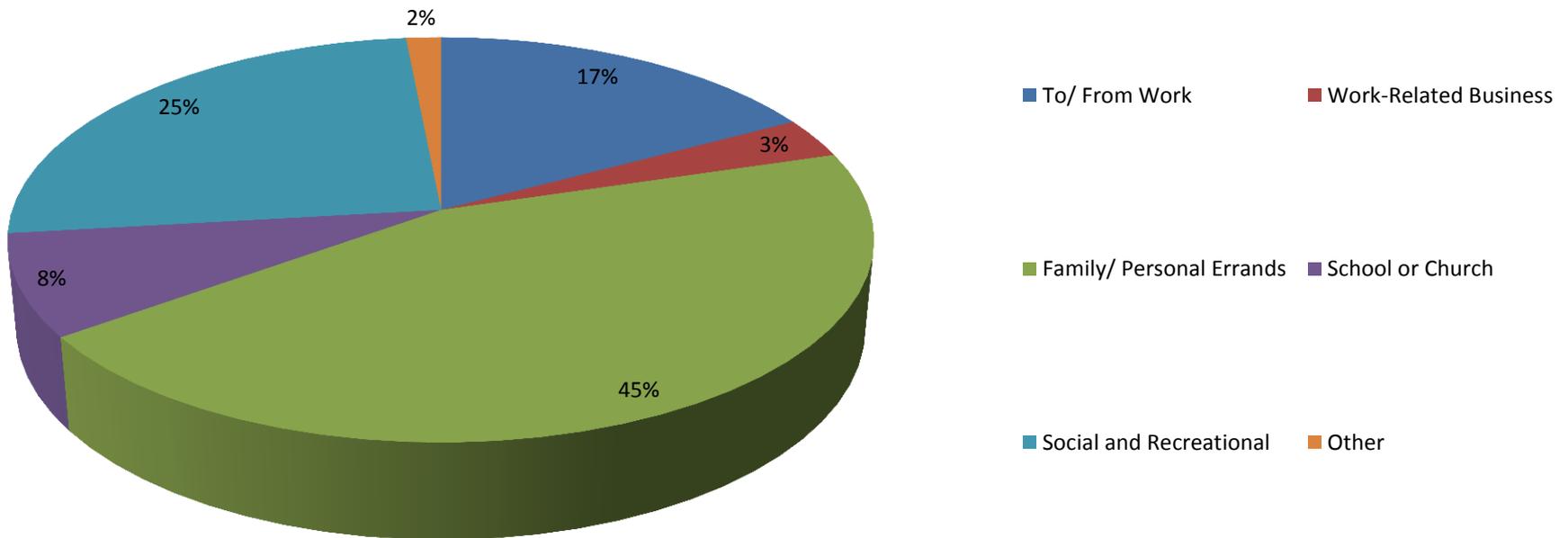
# Alternative Transportation Modes

## Percent of Person Trips by Mode of Transportation



# Alternative Transportation Modes

## Percent Share of Trip Purposes by Private Car



\*“Family/Personal Errands” includes personal business, shopping, and medical/dental.

# Bike and Pedestrian LOS

## BLOS/PLOS Calculator Form

Bicycle Level of Service (BLOS) and Pedestrian Level of Service (PLOS) are two nationally-used measures of user comfort level as a function of a road corridor's geometry and traffic conditions. (Note that BLOS only measures *on-road* bicyclist comfort level.) The [League of Illinois Bicyclists \(LIB\)](#) created this calculator for the formulas, which were published by Sprinkle Consulting.

To calculate BLOS and PLOS of a particular roadway section, fill out the following for the typical cross-section. Results will pop up in a new window. Default values will be used for any fields left empty.

Some details on the BLOS input fields and their ranges are below. Further information and references on these measures are [here](#).

Through lanes per direction: (Default = 1)

Width of outside lane, to outside stripe, in ft: (Default = 12)

Paved shoulder, bike lane, OR marked parking area - outside lane stripe to pavement edge, in ft: (Def=0)

Bi-directional Traffic Volume, in ADT: (Default = 12000)

Posted speed limit in mph: (Default = 40)

Percentage of heavy vehicles: (Default = 2)

FHWA's pavement condition rating: (5 = Best, 1 = Worst; Default = 4)

Percentage of road segment with occupied on-street parking: (Default = 0)

Percentage of segment with sidewalks: (0 - 100, default = 100)

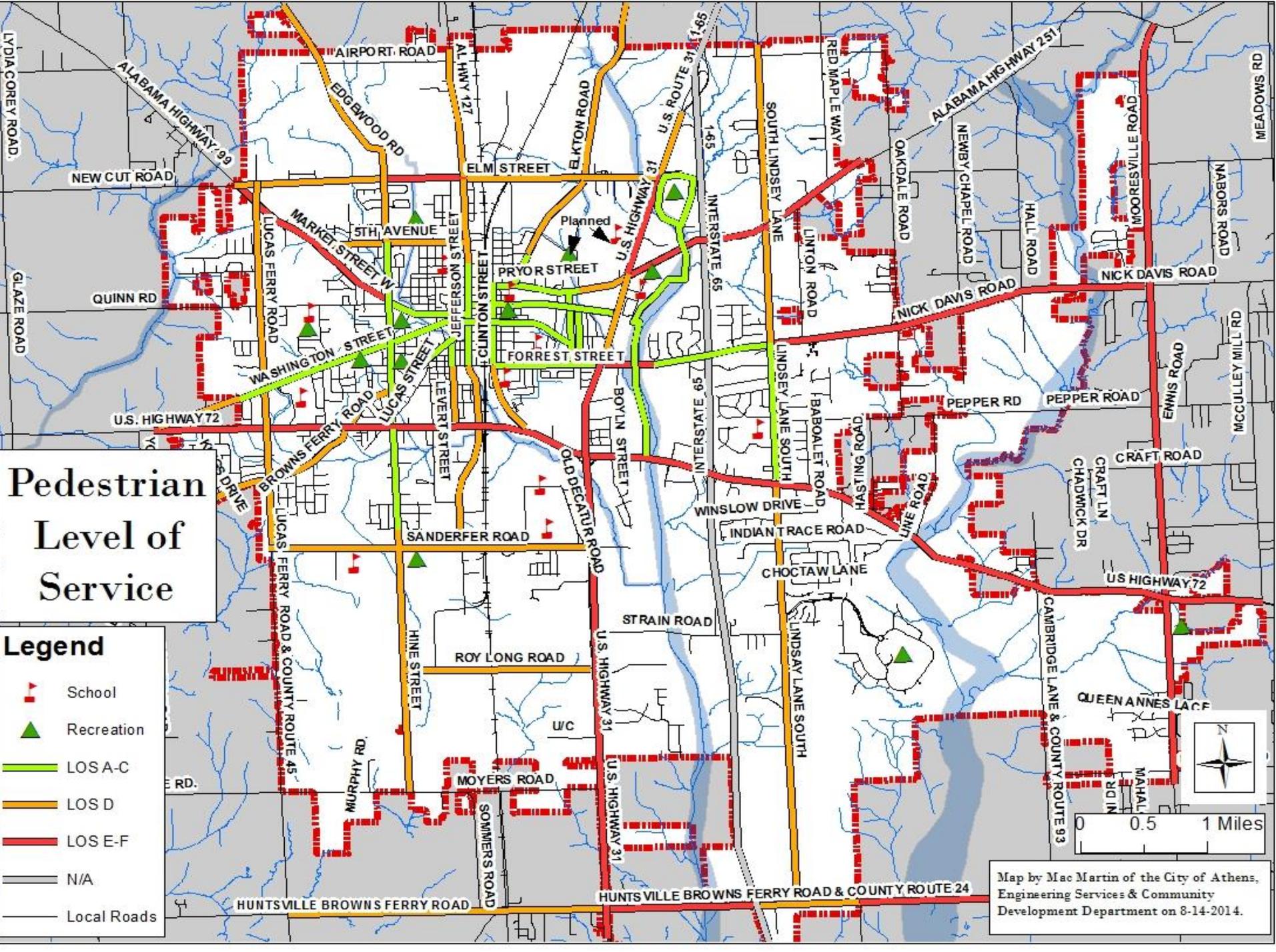
Sidewalk width, in ft: (Default = 5)

Sidewalk buffer/parkway width, in ft: (Default = 10)

Buffer/parkway average tree spacing, in ft: (Default = 80, 0 for no trees)

# Pedestrian Level of Service

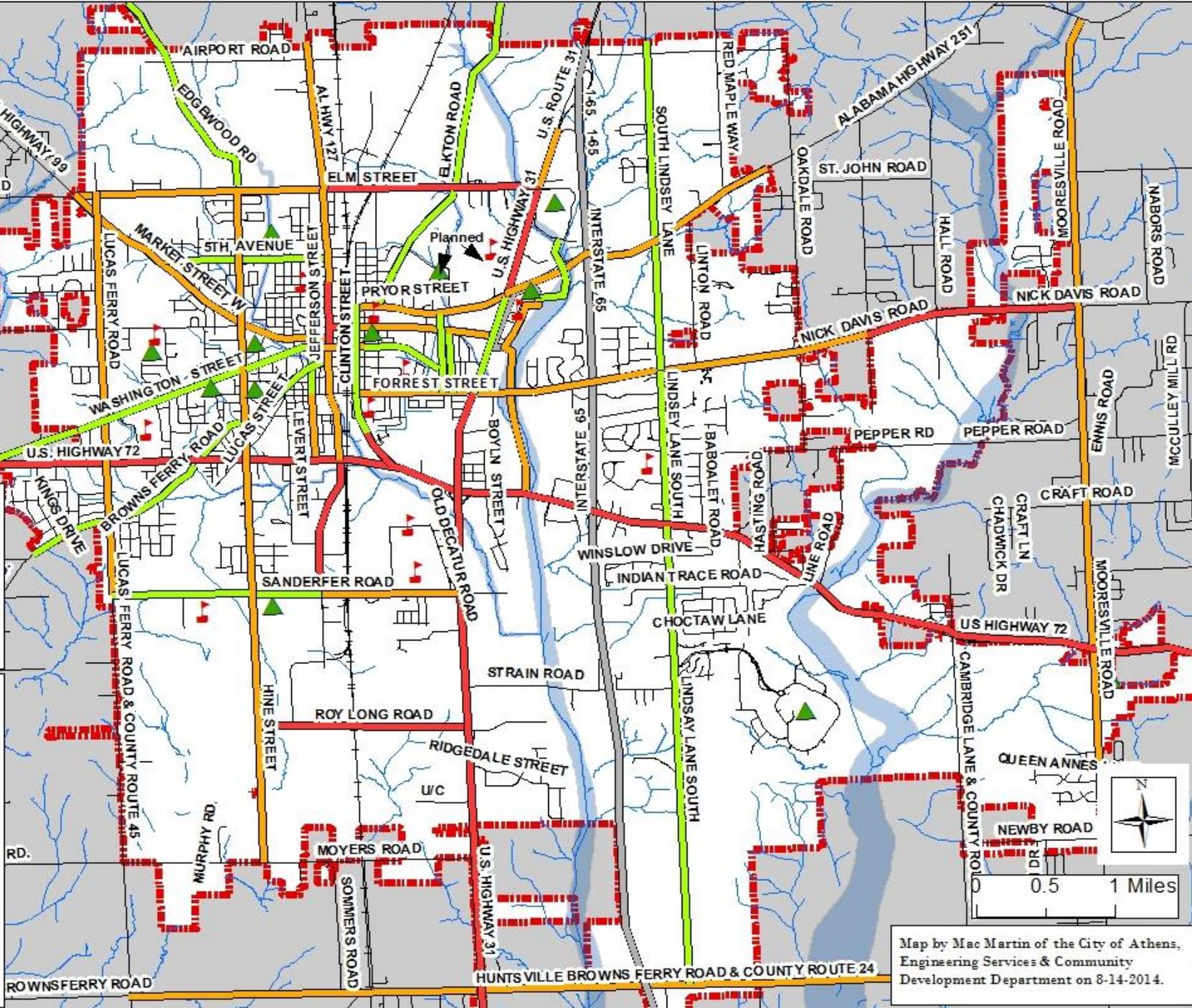
- Legend**
-  School
  -  Recreation
  -  LOS A-C
  -  LOS D
  -  LOS E-F
  -  N/A
  -  Local Roads



Map by Mac Martin of the City of Athens, Engineering Services & Community Development Department on 8-14-2014.

# Bicycle Level of Service

- Legend**
-  School
  -  Recreation
  -  LOS A-C
  -  LOS D
  -  LOS E-F
  -  N/A
  -  Local Roads



Map by Mac Martin of the City of Athens, Engineering Services & Community Development Department on 8-14-2014.

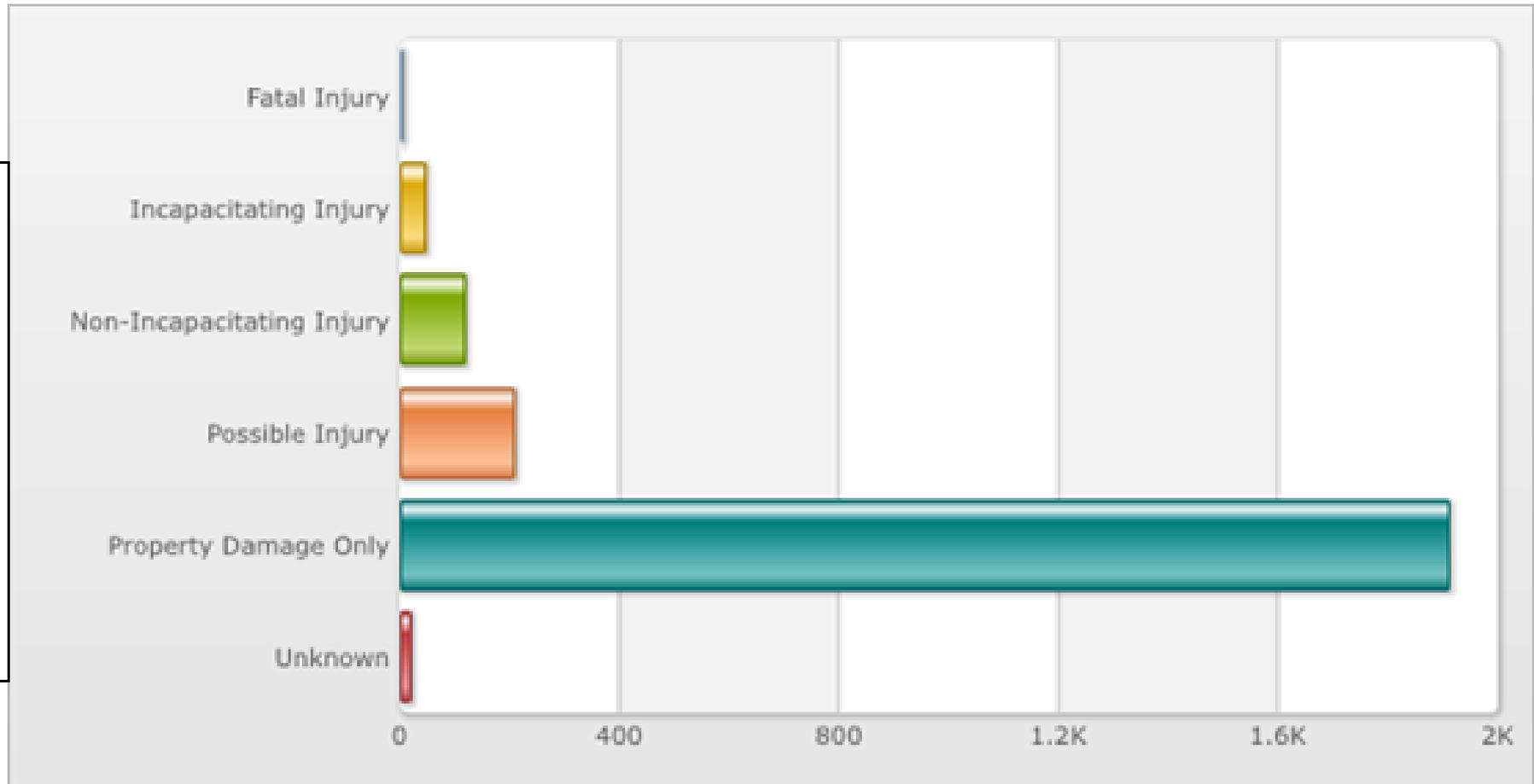
# Safety and Efficiency

- Safety and efficiency are the City's primary concerns.
- Safety and efficiency can be addressed in large part by efforts to improve the LOS.
- According to ALDOT, "allowing roadways to operate according to their functional classification increases efficiency and enhances safety for all roadway users"

# Safety

- The University of Alabama's Center for Advanced Public Safety reports a total of 2,324 automobile accidents within the city of Athens from January 2009 to December 2013

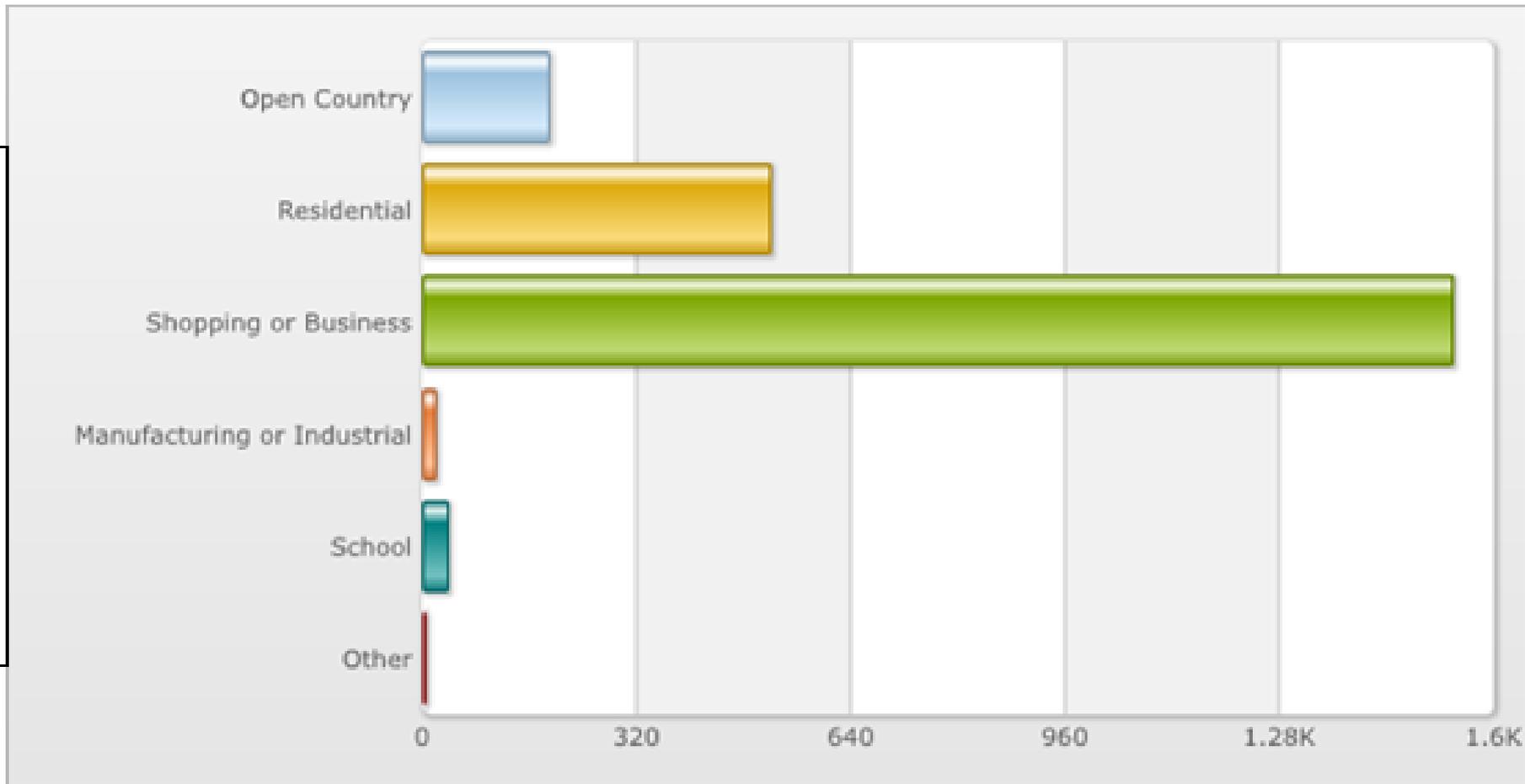
# Severity of Crashes



Crash Severity

Number of Crashes

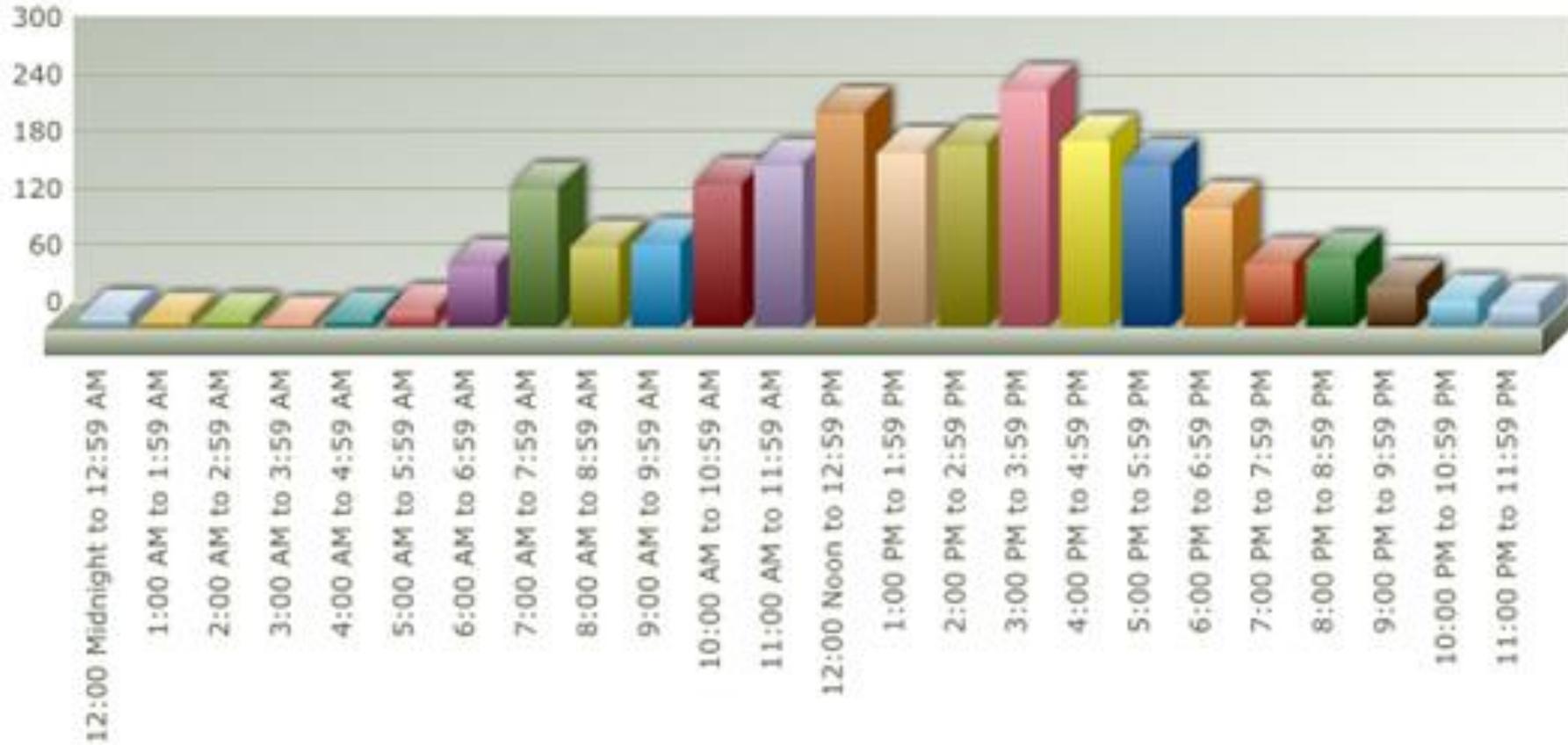
# Locale of Crashes



Number of Crashes

# Time of Crashes

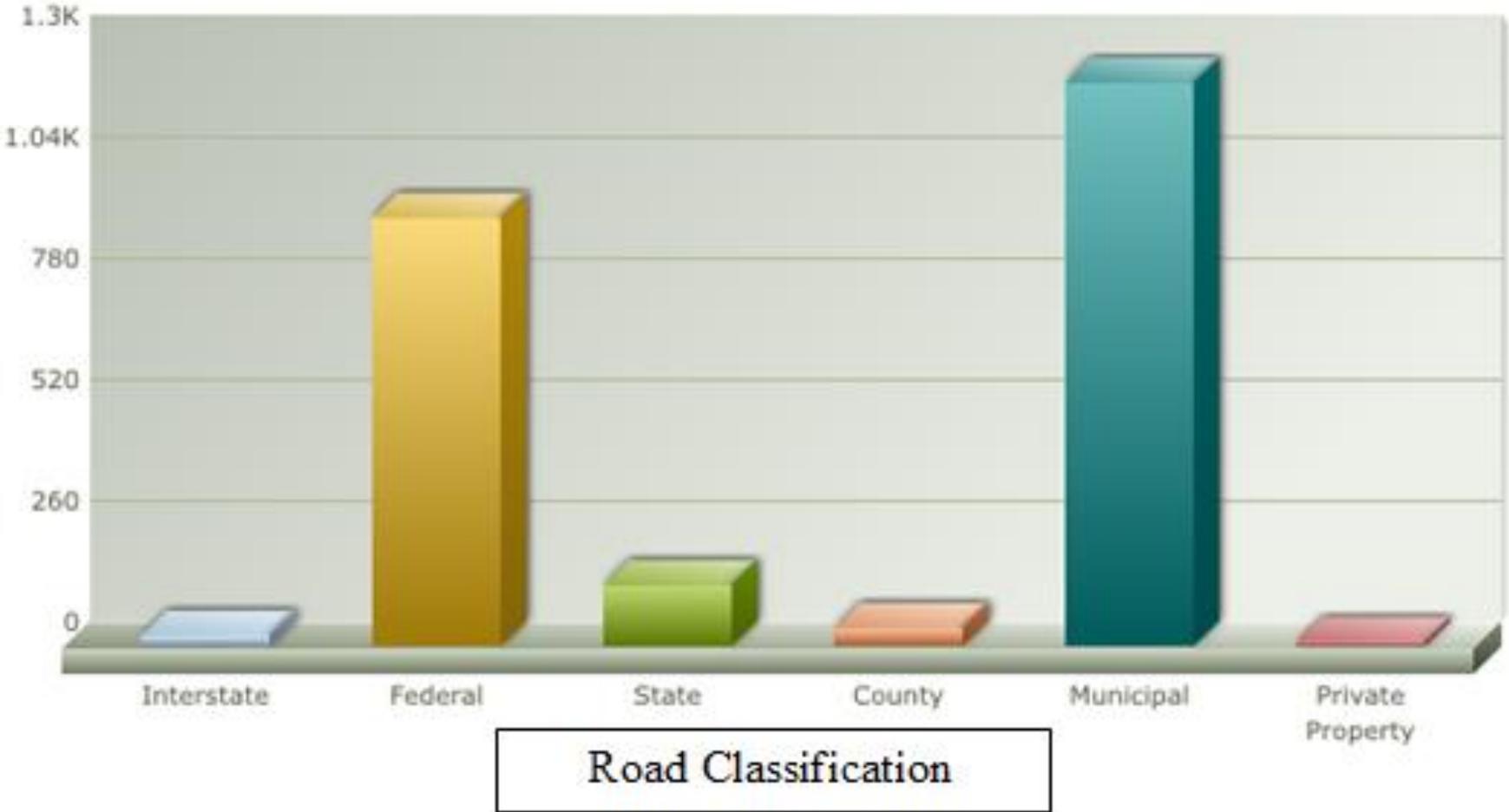
Number of Crashes



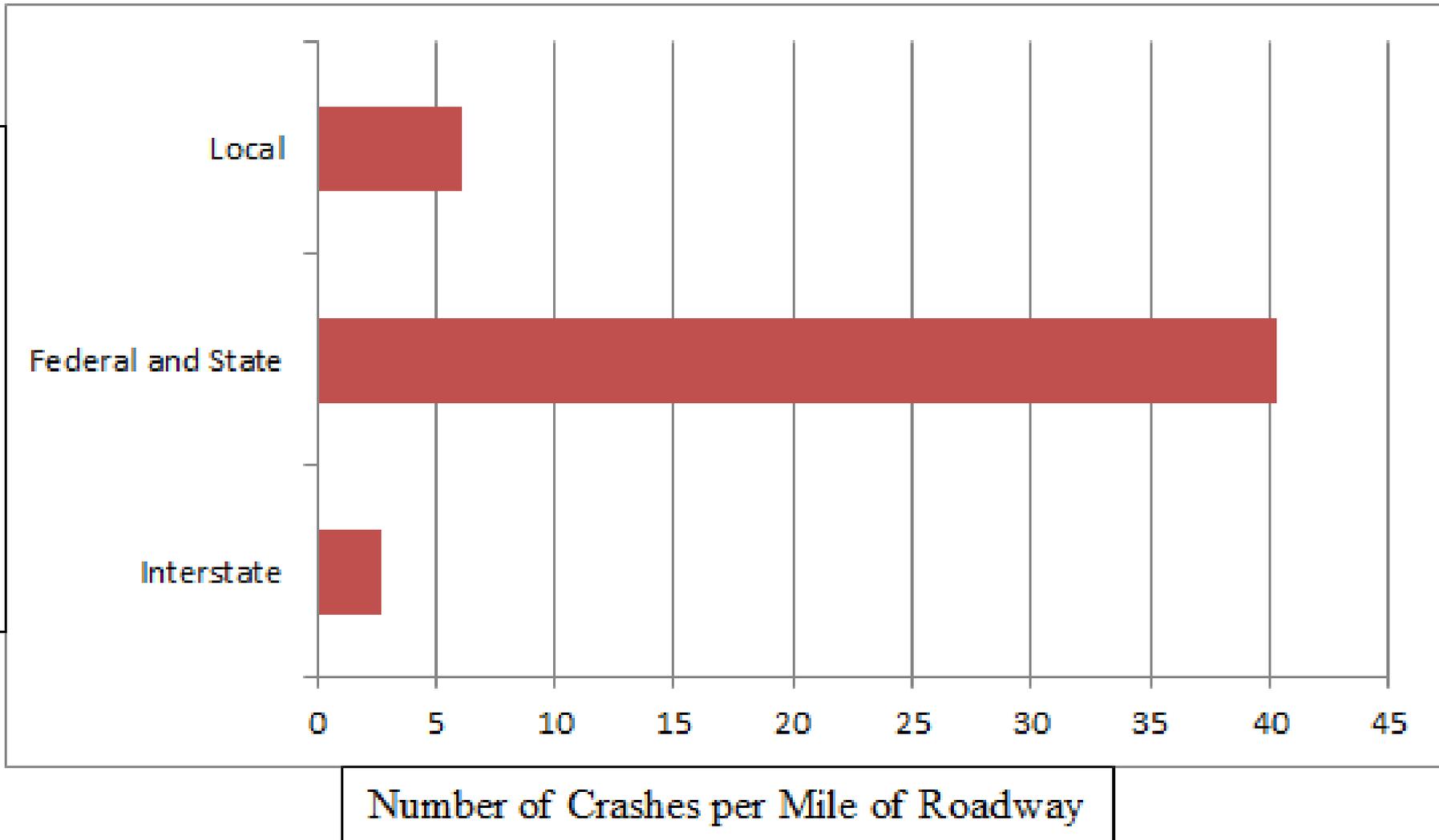
Time of Day

# Crashes by Road Classification

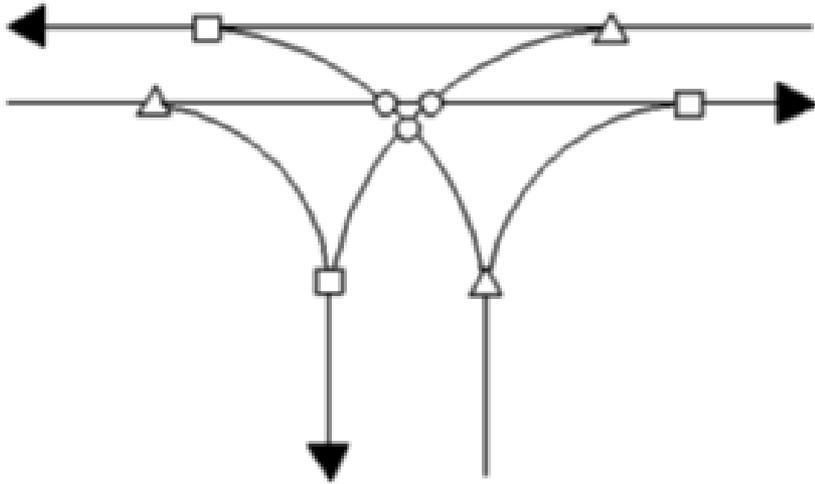
Number of Crashes



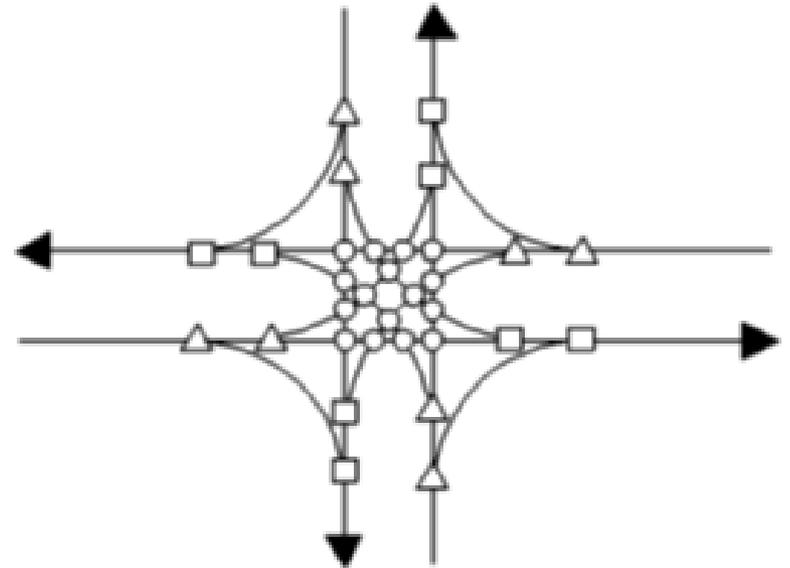
# Crashes by Road Classification



# Conflict Points by Intersection Type



Vehicular Conflict Points	
○	3 Crossing
△	3 Diverge
□	3 Merge
<hr/>	
9 Total	



Vehicular Conflict Points	
○	16 Crossing
△	8 Diverge
□	8 Merge
<hr/>	
32 Total	

# Concerns at Specific Locations

- Intersection of US 72, Athens-Limestone Blvd., and Audubon Ln.



# Concerns at Specific Locations

- US 72 underpass at CSX railroad, turn lane onto Jefferson St. South.



# Concerns at Specific Locations

- Turn lane length at Exit 351



# Concerns at Specific Locations

- Intersection of US 72 and Cambridge Ln.



# Concerns at Specific Locations

- Intersection of Nick Davis Rd. and Oakdale Rd.



# Concerns at Specific Locations

- Intersection of US 72 and Mooresville Rd.



# Concerns at Specific Locations

- Access management along retail corridor of US 72 – excessive driveways.



# Concerns at Specific Locations

- Unwarranted median crossings



# Concerns at Specific Locations

- Pedestrians crossing Swan Creek bridge on Elm St./AL 99.



# Concerns at Specific Locations

- 4-lane undivided roadways.



# Current Projects

- Old Decatur Road/French Farms Blvd Bridge
- ATRIP
  - Especially Forrest Street Bridge Replacement\*\*\*
    - Will push additional traffic onto Lindsay Ln, AL 251, US 72
- Local Street Paving
- Forrest Street and Lindsay Lane Sidewalk
- General Sidewalk Maintenance
- These projects are expected to cover the majority of transportation funds available to the City for the next couple of years

# **THE PLAN AND IMPLEMENTATION STRATEGY**

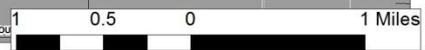
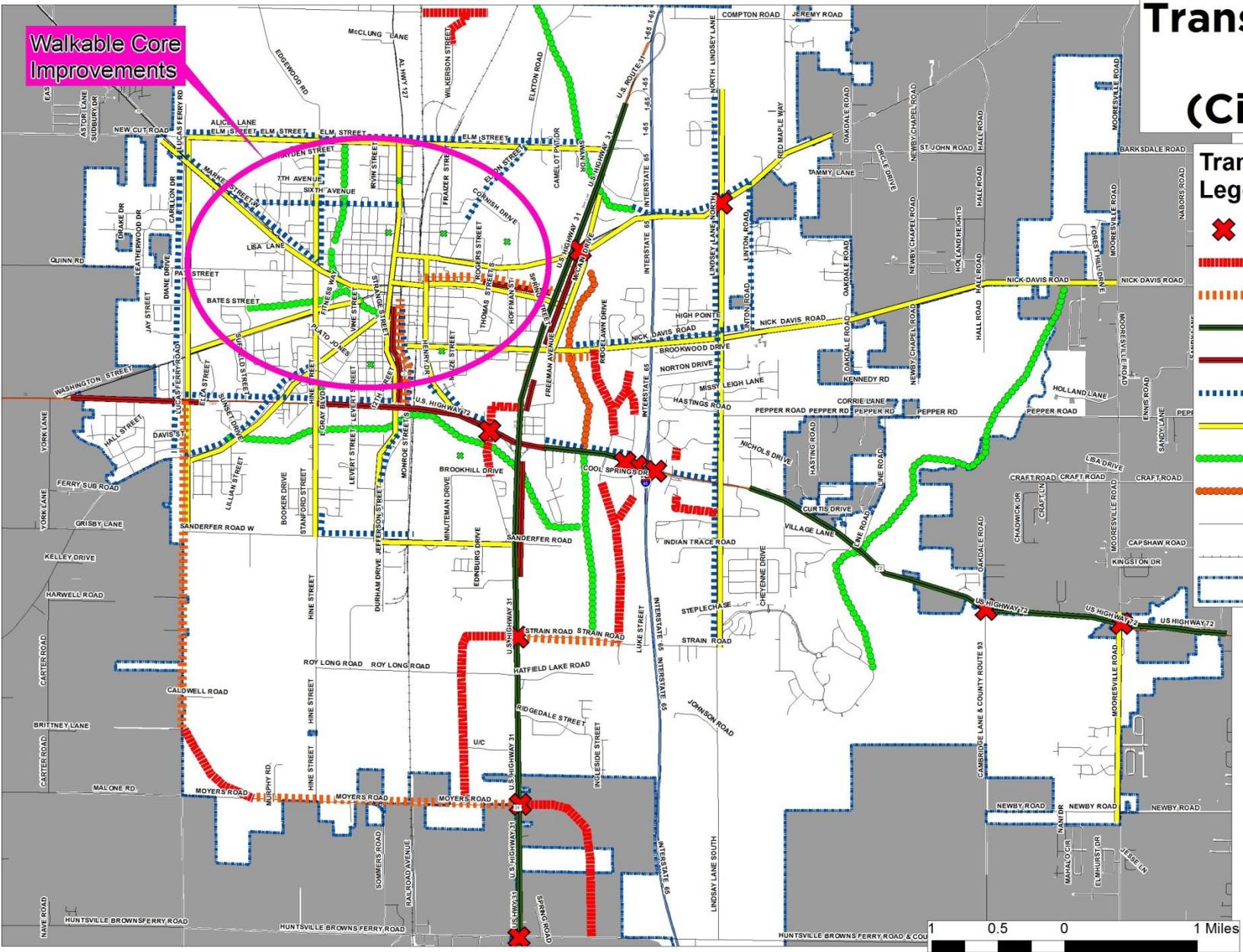
# Vision Statement

- We, the City of Athens, desire to develop a transportation network comprised of a variety of modes that allow people and goods to safely and efficiently travel around and through the community.

# Transportation Plan (City-wide)

Walkable Core Improvements

- ### Transportation Legend
- Intersection Upgrade
  - New Road
  - Improve Road
  - Median Improvements
  - Outer Access Improvement
  - New Sidewalk
  - New Bicycle
  - New Multipurpose Trail
  - Trail Improvement
  - Roads
  - Railroad
  - City Limits



Map produced by  
Mac Martin, City Planner,  
City of Athens, AL  
1/14/2015  
The City of Athens does not  
warrant the accuracy of the  
displayed information.

# Transportation Plan (City-wide)

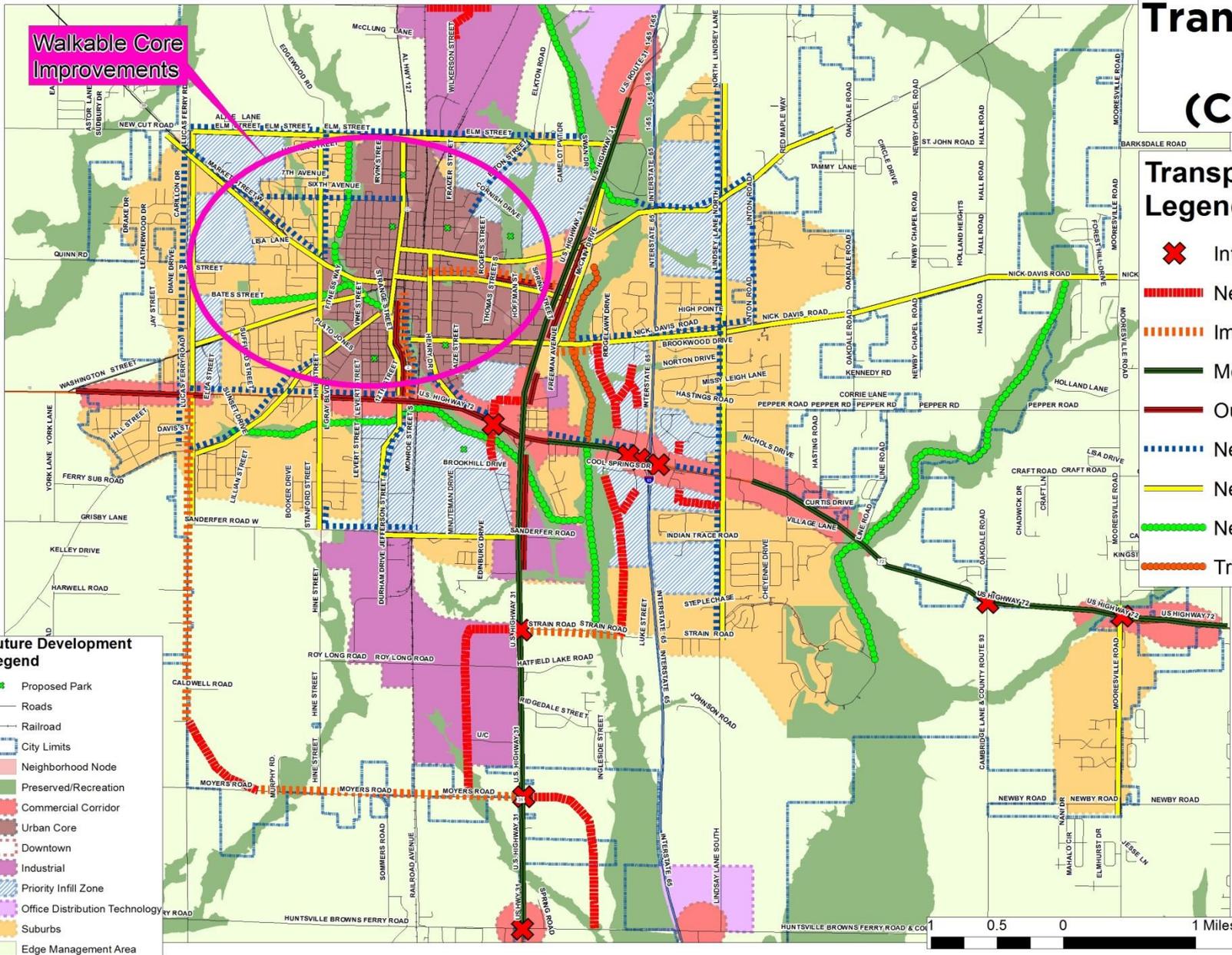
Walkable Core Improvements

## Transportation Legend

-  Intersection Upgrade
-  New Road
-  Improve Road
-  Median Improvements
-  Outer Access Improvement
-  New Sidewalk
-  New Bicycle
-  New Multipurpose Trail
-  Trail Improvement

## Future Development Legend

-  Proposed Park
-  Roads
-  Railroad
-  City Limits
-  Neighborhood Node
-  Preserved/Recreation
-  Commercial Corridor
-  Urban Core
-  Downtown
-  Industrial
-  Priority Infill Zone
-  Office Distribution Technology
-  Suburbs
-  Edge Management Area



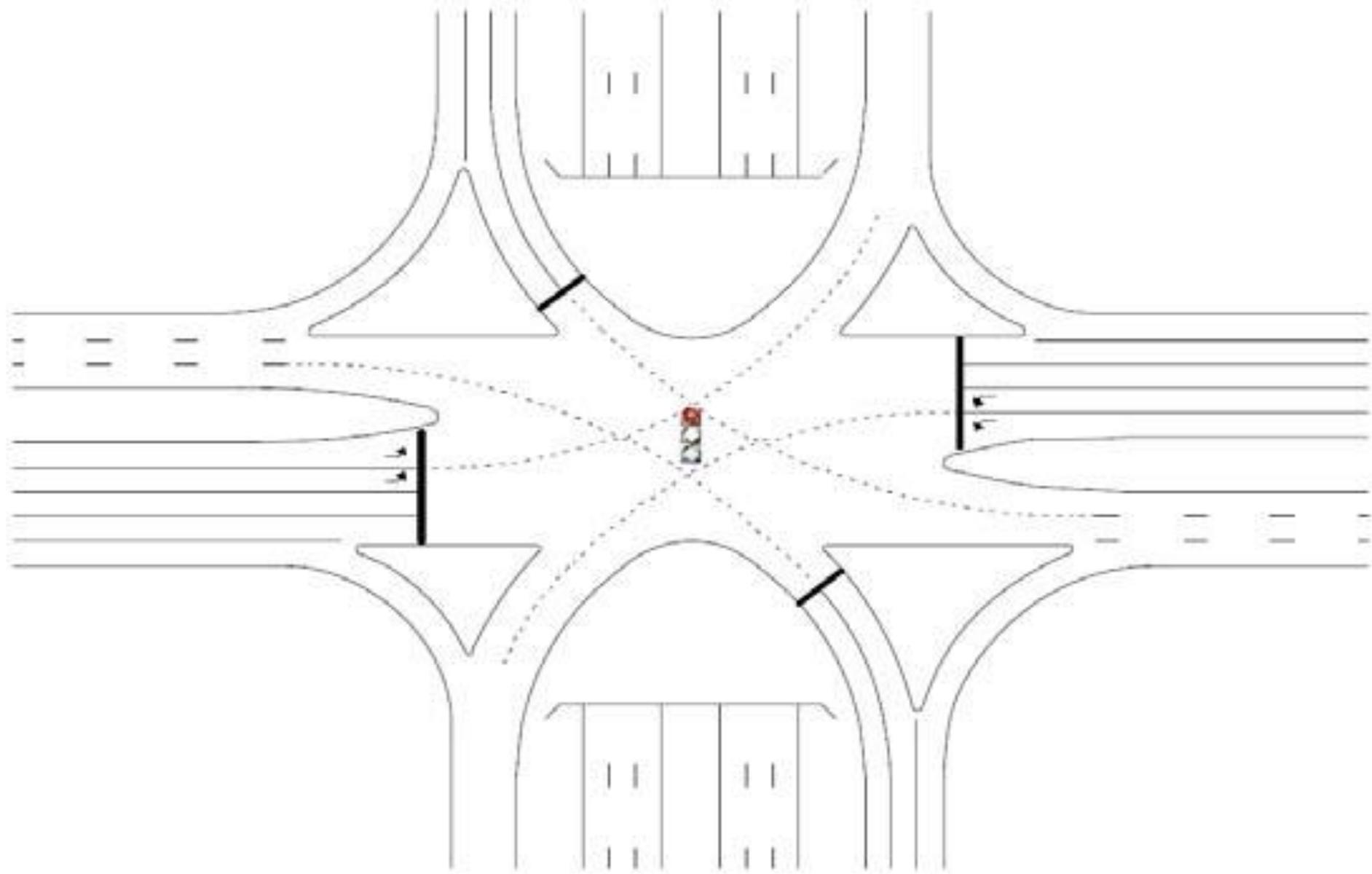
Map produced by  
Mac Martin, City Planner,  
City of Athens, AL  
6/07/2013  
The City of Athens does not  
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displayed information.



# Goals and Objectives

- Goal #1: Improve the safety and efficiency of the existing network.

- Objective: Address pressing safety concerns identified in the field.
- Objective: Install larger street signs for cross streets at intersections along arterials.
- Objective: Redesign and reconfigure intersections identified as needing improvements in alignment and traffic movement. **Note: More extensive studies need to be conducted for each intersection prior to designing and constructing improvements.**
  - US 72 and Mooresville Rd.
  - US 72 and Cambridge Ln.
  - US 72 and I-65, Exit 351
    - Consider: Converting the interchange into a Single Point Urban Interchange (SPUI).



• FHWA Diagram of a SPUI



- SPUI constructed outside of Boise, Idaho



- Landscaping and brickwork at a SPUI in Madison, Mississippi



- Monument in ramp median at a SPUI in Franklin, TN

– Objective: Re-design and reconfigure intersections identified as needing improvements in alignment and traffic movement. **Note: More extensive studies need to be conducted for each intersection prior to designing and constructing improvements.**

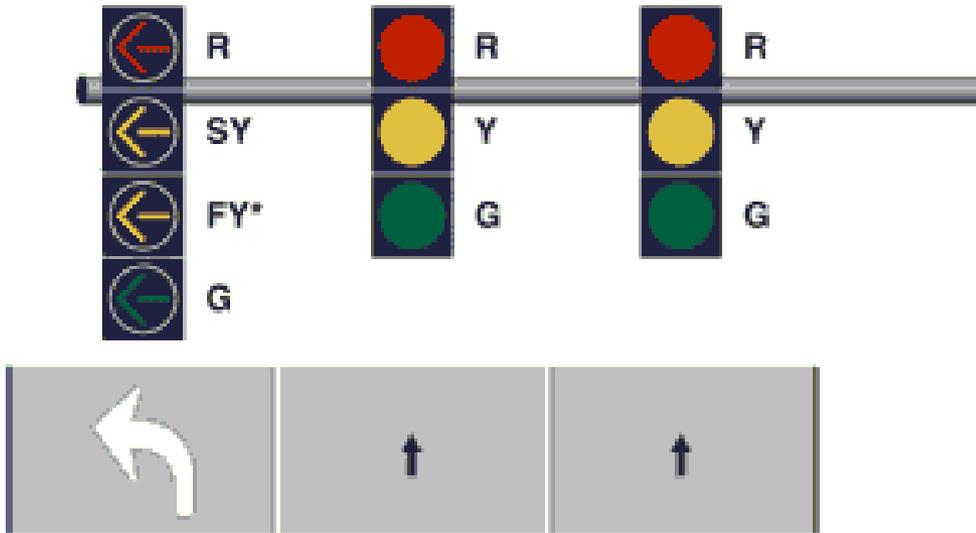
– Continued

- US 72 and Audubon Ln/Athens-Limestone Blvd.
- US 72 and Athens-Limestone Blvd./Braly Blvd.
- US 72 and French Farms Blvd.
- US 31 and AL 251\*\*\*
- Lindsay Ln and AL 251 \*\*\*
- US 31 and Strain Rd.
- US 31 and Moyers Rd.
- US 31 and Huntsville-Brownsferry Rd. (Currently in queue).
- Nick Davis Rd. and Oakdale Rd.

– Objective: Improve traffic signal coordination along US 72.

- Time signals along US 72 to permit traffic groupings to pass through the city with minimal interruption.
- Program signals at intersections with lower traffic counts to “caution” setting (flashing yellow on US 72, flashing red on secondary road) after primary travel hours in the evening. Program them to return to normal phasing before morning primary travel times.
- Implement newer signalization techniques, such as giving dedicated left turn traffic a flashing caution (yellow arrow) signal

### A - Typical position



#### Legend

- Direction of travel
- SY Steady yellow
- FY Flashing yellow

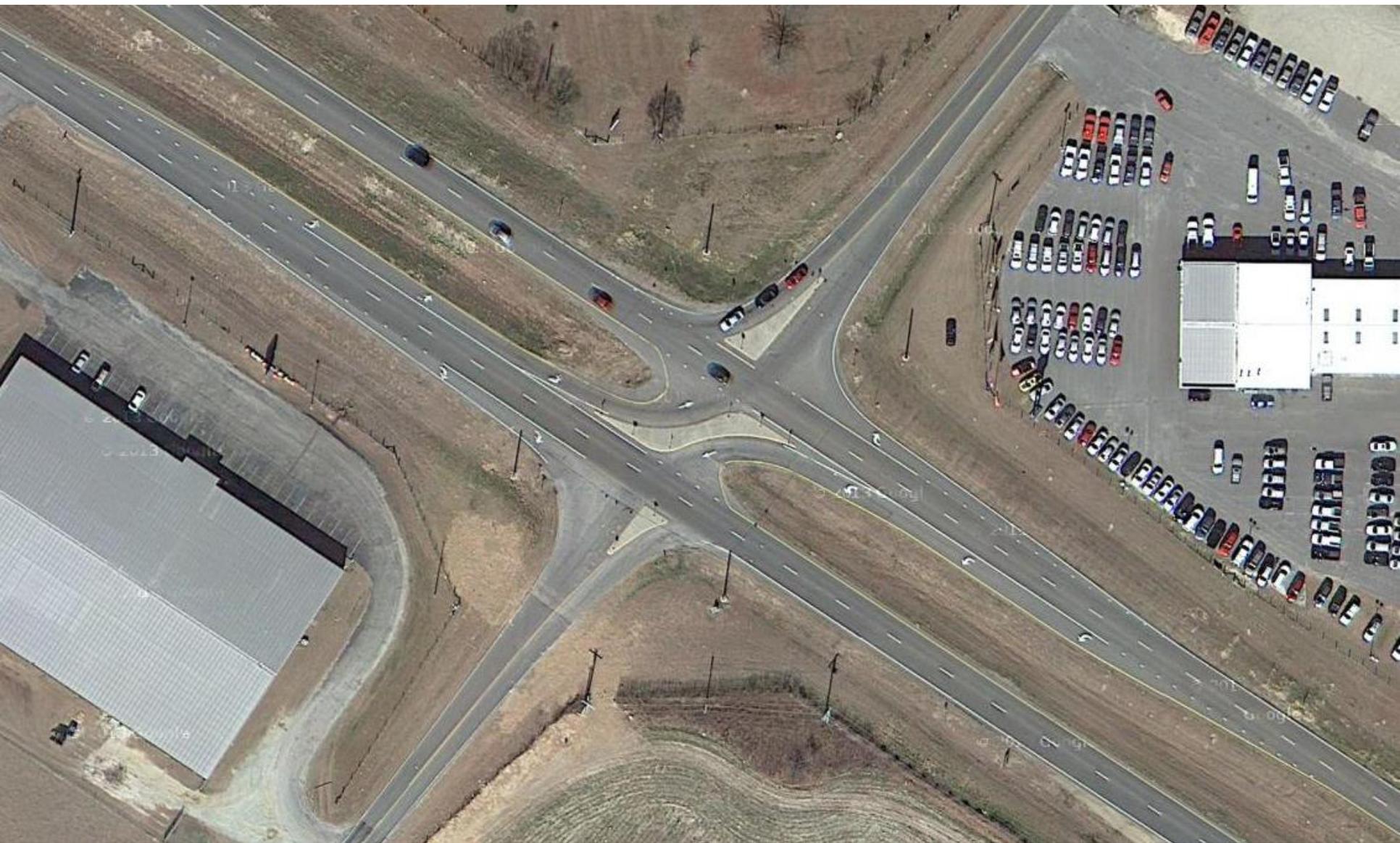
### B - Typical arrangements



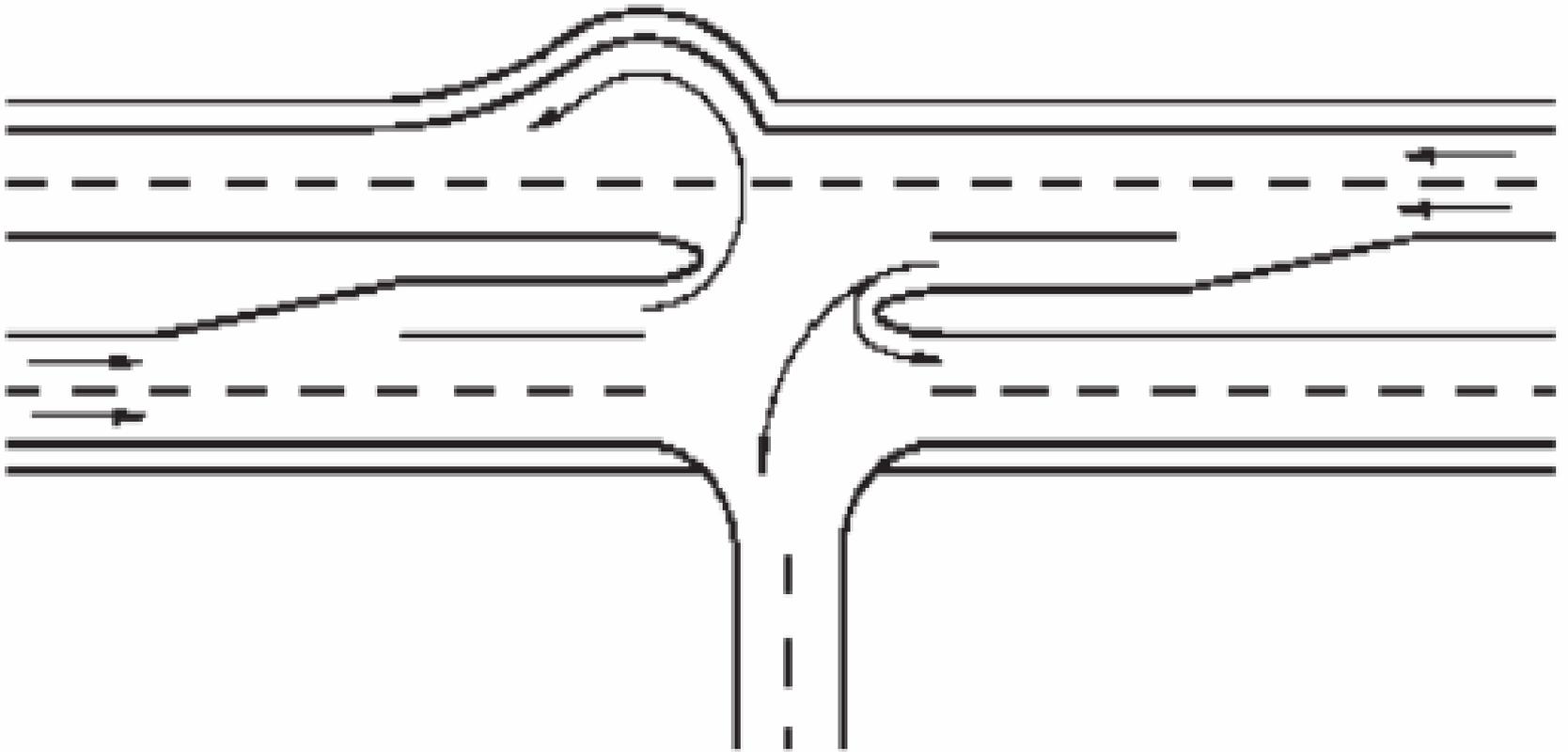
- \* Shall not be displayed when operating in the protected only mode

Typical Position and Arrangements of Separate Signal Faces with Flashing Yellow for Protected/Permissive Mode and Protected Only Mode Left Turns

- Objective: Improve and preserve traffic flow along US 72 and US 31 through access and traffic conflict management
  - Reduce unwarranted median crossovers and driveways.
  - Full access should be limited to signalized intersections wherever possible.
  - Alternative intersection designs should be implemented at intersections not warranting signals.
  - Left turn movements should be channelized with deceleration lanes.
  - U-turn facilities should be provided to allow access to properties fronting the roadway where medians are closed and to improve safety and traffic flow at non-signalized intersections, particularly when visibility is poor.



Alternative intersection design with restricted and channelized left turn movements. This design is usually accompanied by a designed U-Turn opportunity



Conventional median opening with left-turn lanes and loons at three-leg intersection



Example of a Michigan Right-Turn, U-Turn (RTUT) intersection

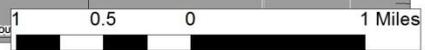
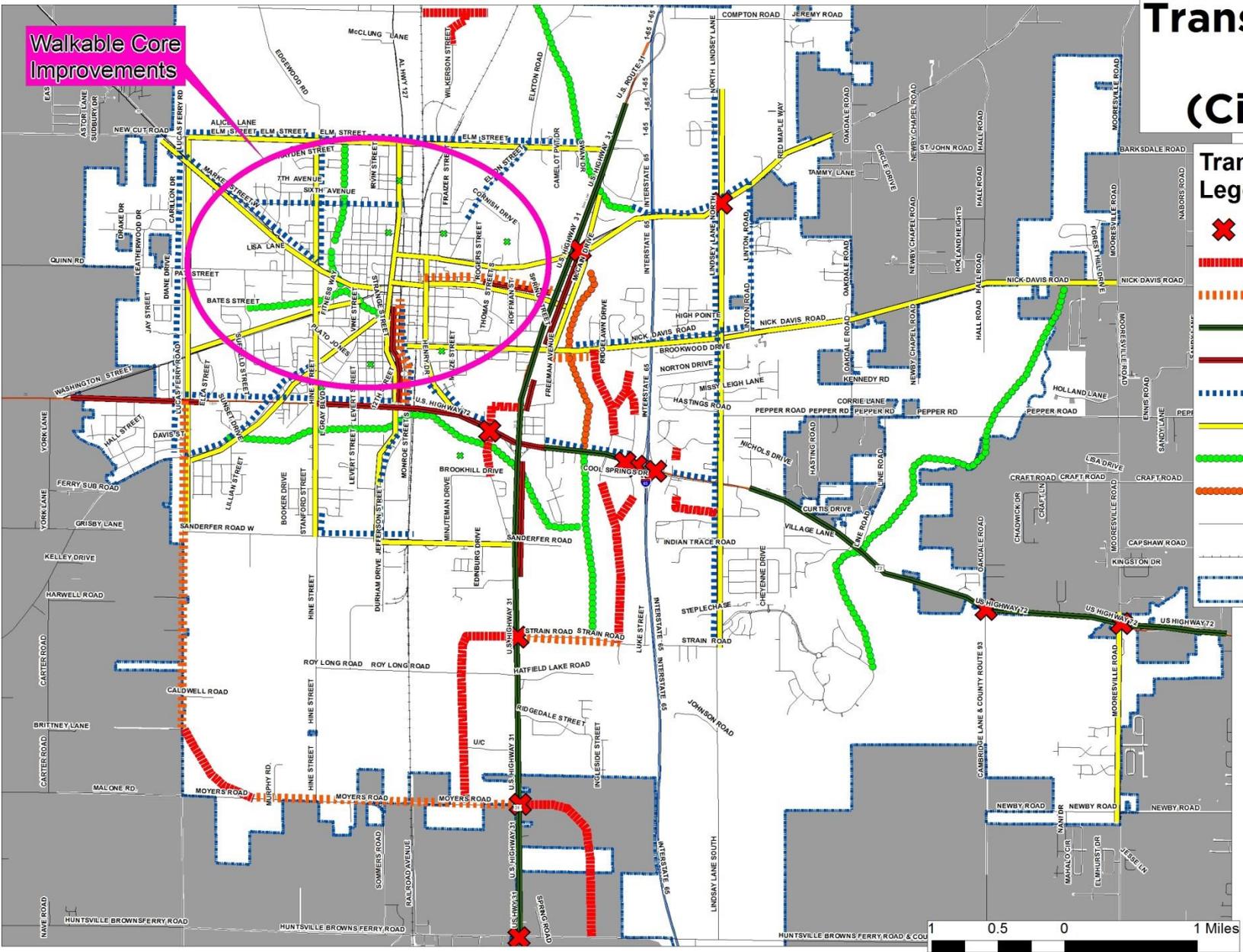
# Goals and Objectives

- Goal #2: Expand the transportation network to meet growing travel demands and open territories to more direct access to the network.

# Transportation Plan (City-wide)

Walkable Core Improvements

- ### Transportation Legend
- Intersection Upgrade
  - New Road
  - Improve Road
  - Median Improvements
  - Outer Access Improvement
  - New Sidewalk
  - New Bicycle
  - New Multipurpose Trail
  - Trail Improvement
  - Roads
  - Railroad
  - City Limits



Map produced by  
Mac Martin, City Planner,  
City of Athens, AL  
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The City of Athens does not  
warrant the accuracy of the  
displayed information.

# Roads

- Objective: Construct new roads in the four quadrants around Exit 351 to open land for development along interstate frontage and create greater network connectivity in the vicinity.
  - Reasoning: Doing so will give access to developable land close to our main interstate interchange and provide alternative routes to this regional commercial center, providing relief to US 72.
- Objective: Construct new roads within the Elm Industrial Park to open land for further industrial development and create greater network connectivity in the vicinity.
  - Reasoning: Doing so will provide access to remaining land available in the park.

– Objective: Construct new roads to the west and north of Wal-Mart to open land for development and create more network connectivity in the vicinity. New roads would tie into existing signalized intersections at US 72/French Farms Blvd and US 32/Freeman Ave.

- Reasoning: Doing so will open farmland to commercial and residential development and provide access at two existing lights – one on US 72 and the other on US 31. This project would also create secondary routes within three of the quadrants of the US 72 and US 31 interchange, leading to greater network connectivity and relieving some traffic on the major arterials.

- Objective: Construct new roads on both sides of US 31 in the southern periphery of the city to open land for industrial development.
- Reasoning: With Elm Industrial Park close to being developed out, the City will have to look elsewhere for industrial development. The most appealing area from a geographic standpoint is to the south of town proper along US 31. This area is largely flat and has good access to US 31, the railroad, and the interstate (via Exit 346). New access roads on both sides of US 31 would increase the area's capacity for industrial development. Additionally, said improvements will help additional traffic expected due to the Greenbrier Parkway in Huntsville to access Athens proper, industrial developments on the south side of town, and areas to the west of Athens.

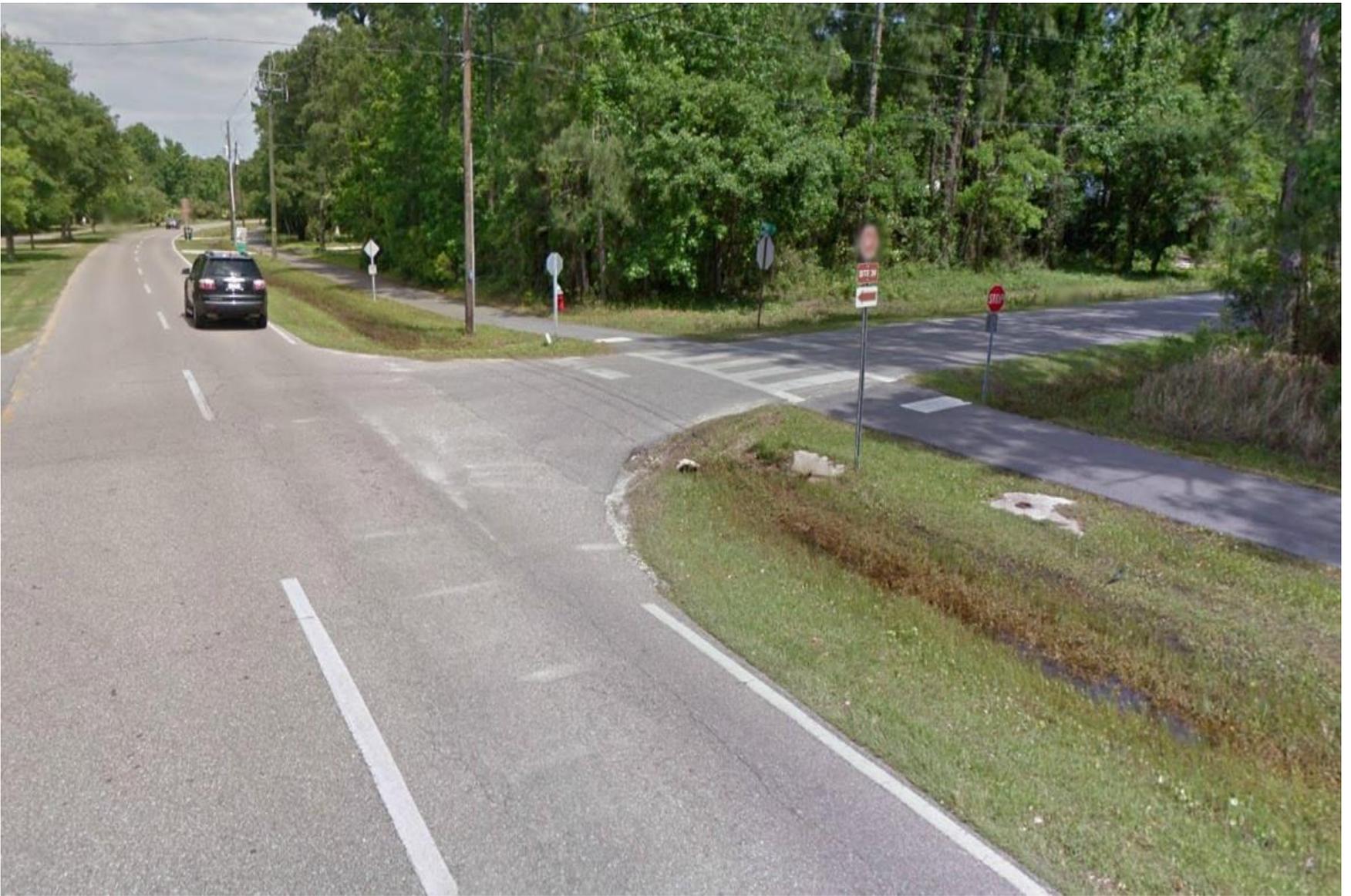
- Objective: When able, acquire additional right-of-way and make improvements along collector streets anticipating future travel lane(s) or complete street improvements.
  - Reasoning: Although current traffic projections may not warrant additional lanes on certain collector streets not specifically addressed in the Plan at this time, it would be wise to acquire additional right-of-way along collector streets in anticipation that at least one additional lane (turn lane) will be needed in the long-term future (beyond 20 years). Additionally, improvements such as sidewalks, widened shoulders, and wider culverts may be placed within additional right-of-way. Acquiring additional right-of-way along collector streets now will relieve the pressure to do so should we experience increased growth beyond what current projections suggest.

# Alternative Modes

- Objective: Expand greenway network, particularly along Swan Creek, Town Creek, and other tributaries and wooded areas.
- Objective: Expand sidewalk network, primarily along arterials and collectors with lower levels of service, where residents can have greater access to destinations and recreation.
- Objective: Provide more opportunities for bicycle travel, particularly along arterials and collectors with lower levels of service. The City can do so in a variety of ways including adding dedicated lanes, constructing multipurpose side paths, widening shoulders, and installing adequate signage and markings. A reasonable objective would be to try to elevate the level of service by a letter grade.



Dedicated bicycle lanes



Dedicated bicycle lanes



Bicycle signage



Dedicated bicycle share lanes

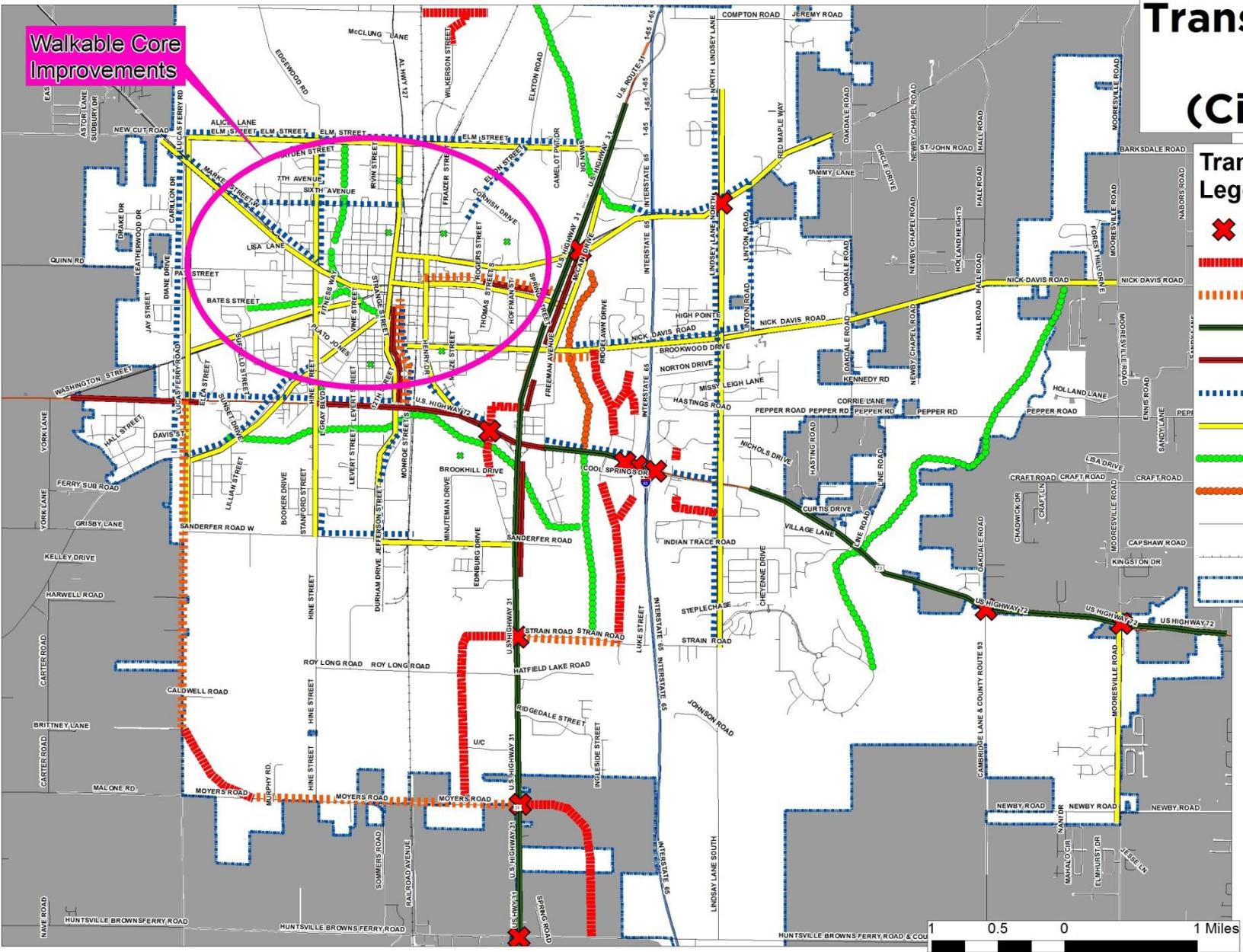
# Goals and Objectives

- Goal #3: Create a transportation environment in the urban core that is accessible and usable by travelers of all ages and abilities and accommodates all modes of transport available in the community. The term “walkable” is sometimes utilized to summarize this preferred urban transportation environment.

# Transportation Plan (City-wide)

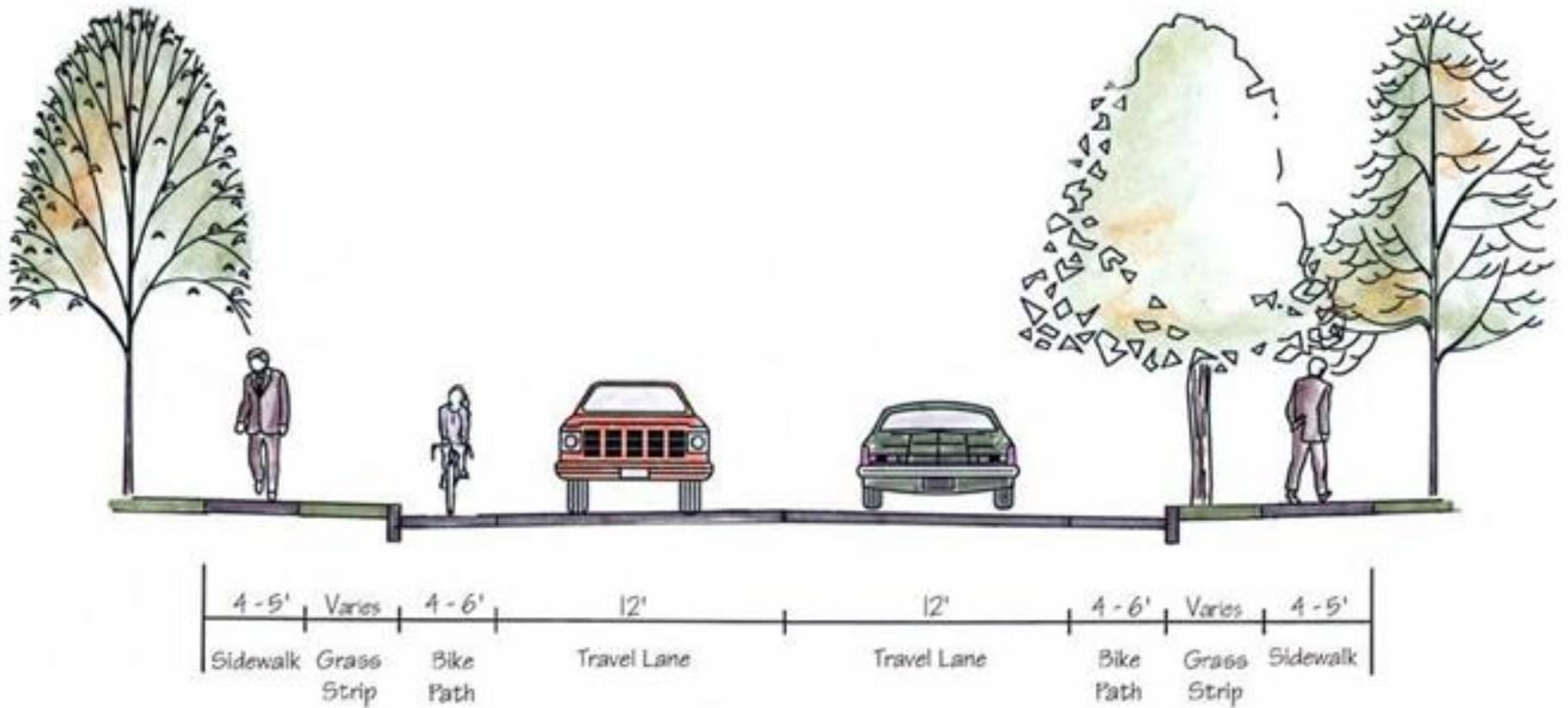
Walkable Core Improvements

- ### Transportation Legend
- Intersection Upgrade
  - New Road
  - Improve Road
  - Median Improvements
  - Outer Access Improvement
  - New Sidewalk
  - New Bicycle
  - New Multipurpose Trail
  - Trail Improvement
  - Roads
  - Railroad
  - City Limits

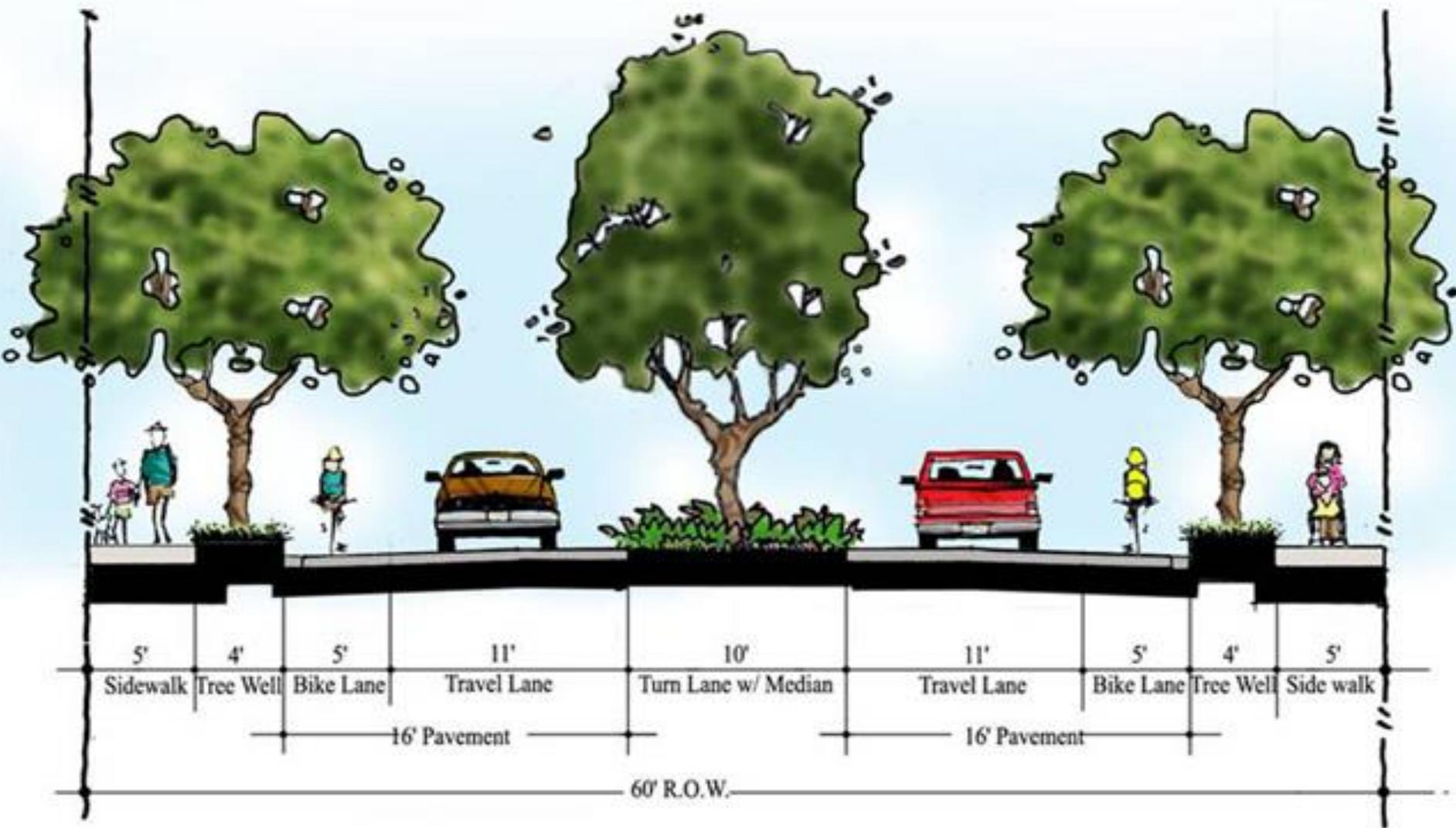


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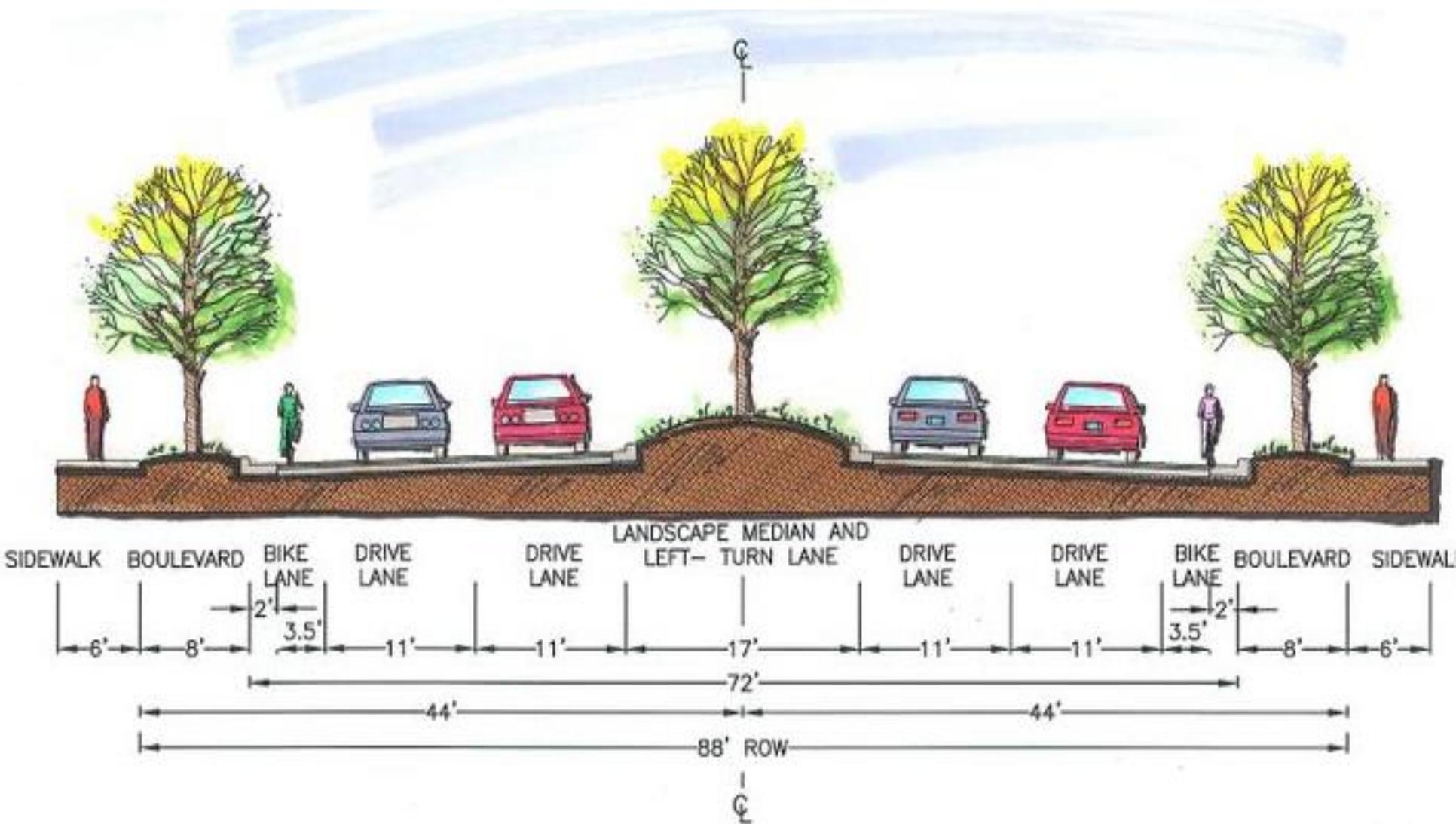
- Objective: Improve arterials, collectors, and local streets according to “complete street” design appropriate for said classifications and adjoining land uses . This can include a “road diet” for the portions of Hobbs Street and Jefferson Street with the 4-lane undivided configuration.



– Example of two-lane complete street



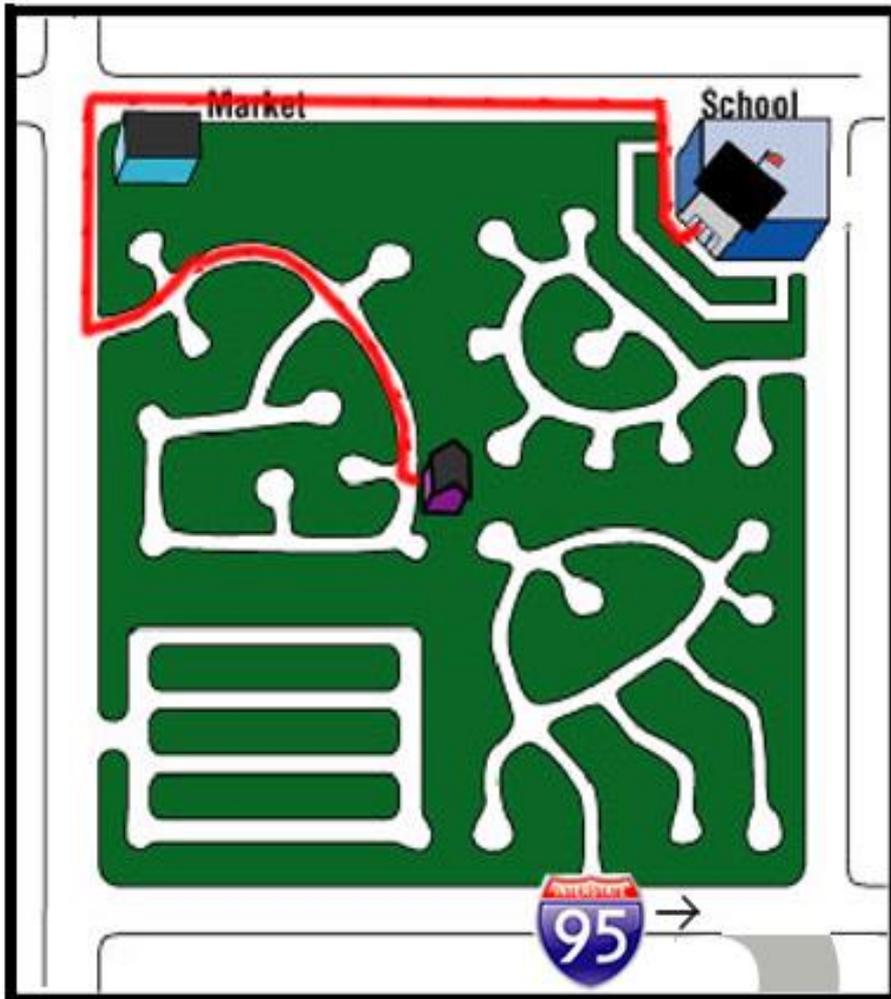
– Example of two-lane complete street with median, left turn lane



– Example of 4-lane complete street design for boulevard

# Goals and Objectives

- Goal #4: Ensure a high degree of connectivity and efficiency in the transportation network.
  - Providing a strong connected network of roads and pedestrian facilities can help distribute traffic, reduce travel distances and times, improve routing for transit and reduce walking distances. Good connectivity also provides better routing opportunities for emergency and delivery (solid waste, recycling, mail) vehicles. All of these effects can play a positive role in reducing congestion on the street network.



Driving-only transportation pattern

Walkable connected transportation network

- Typical suburban vs. traditional connected street network

- Objective: **Update Subdivision Regulations** to ensure that new developments have a high degree of connectivity. Said update should cross-reference the City's other development policies.
- Objective: **Update Traffic Circulation Standards** for development/redevelopment to reflect the following:
  - (1) Desires of the community as presented in this plan;
  - (2) current best practices in access management,
  - (3) latest criteria commonly used to determine if Traffic Studies are warranted.Said update should cross-reference the City's other development policies.
- Objective: **Update Zoning Ordinance** parking lot design standards to ensure the implementation of the latest design techniques for on-site/off-street parking and drive areas. Said update should cross-reference the City's other development policies.

# CONCLUSION

The plan can be summarized in four goals:

1. Expand the network where it is advantageous to do so;
2. Improve safety and efficiency of existing network;
3. Make the network in the urban core accessible and usable by all travelers through all modes available; and
4. Ensure going forward that the highest level of connectivity in the network is achieved.

# Next Steps

- Adoption of the Plan
- Prioritization of the various projects
  - Will require close examination of each project by the City's administration based on criteria such as safety, functionality, and possible funding. In some cases, the City will have to work with other agencies, such as ALDOT and Limestone County, to prioritize projects and commence work..

**QUESTIONS OR COMMENTS?**