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City of Green Cove Springs Mobility Fee Report

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1.0 Introduction

The Comprehensive Plan and Downtown Master Plan for the City of Green Cove Springs has envisaged a local transportation system that provides travel options, choices of different travel modes, developing an efficient, cost effective and adaptable system to address the future land use and demographic changes. This study creates a Mobility Fee that provides a local funding mechanism to address the additional burden on the transportation system associated with the future residents, jobs, and visitors.

The City has traditionally managed the impacts of land use development through transportation concurrency. This system has limited the opportunities to provide multimodal and long-term solutions that address the burden of growth and realize the vision set out in the Comprehensive Plan.

A Mobility Fee provides an alternative to concurrency to assess the fair and proportional cost of additional transportation capacity on new land use development. The Florida Constitution grants local governments broad home rule authority to establish assessments and fees. Impact fees and mobility fees are examples of these home rule revenue sources. These fees are a type of land use regulation that local governments use to generate revenue to construct additional mobility capacity to meet the needs associated with increases in travel demand from new land use development.

The Mobility Fee will provide more predictable outcomes for both the City and the land use development applicants using a creating a consistent process connected to the trip generation and size of the land development.

The Mobility Fee will support the City by directing funds to improve multimodal transportation capacity through additional walking and biking facilities, vehicular intersection improvements, and transit mobility hubs.

This report provides the background to support the change from concurrency, the forecast amount of land use growth and development, the types of transportation investments, and the derivation of the base Mobility Fee.

1.1 Methodology

Overview

The methodology for the Green Cove Springs Mobility Fee follows a 'needs-based' also known as a 'plan-based' approach by identifying the future transportation capacity necessary to mitigate the impacts of additional users generated by future land use development on the existing standards of service that users experience. Based on the data developed in the Northeast Florida Regional Planning Model (NERPM), the City is expected to increase the number of households by 251% and the amount of employment by 133%. The City of Green Cove Springs is forecast to grow faster than the north Florida region, which is expected to see a 68% increase in households and employment by 2045.

A plan-based approach develops a forecast of future demand and identifies and evaluates what capacity is needed to meet the needs of that growth. A proportionate share of the cost of

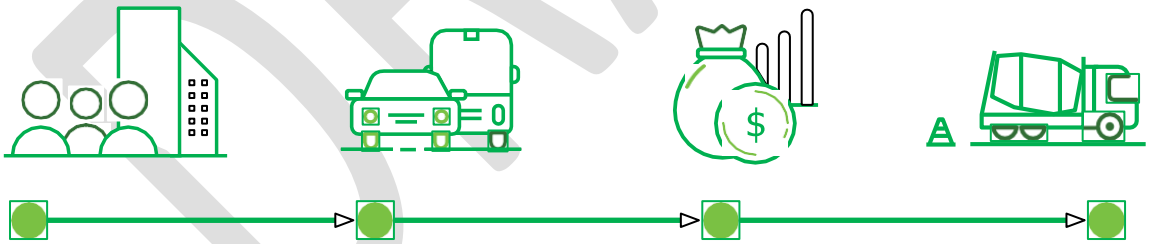
providing that capacity is then allocated to land use changes which create additional transportation demand.

Mobility plans and the subsequent fees that support the capital items are multimodal in nature. The future vision for the City of Green Cove Springs accounts for multimodal integration by supporting a mix of modal options that can meet various travel demands and can allow individuals to use the mode that meets their needs for the specific trip. Diverse land uses, multimodal travel options, and connectivity provide users with choices.

To develop such a fee, the future land use and resulting traffic volume forecasts were reviewed using the latest Northeast Florida Regional Planning Model – Activity Based_v2 (here after referred to as the NERPM). The NERPM model was used by the North Florida Transportation Planning Organization (TPO) for the Year 2045 Long Range Transportation Plan (LRTP). Using the NERPM, allowed for the analysis of travel behavior and complex land use interactions, as well as the analysis of how City of Green Cove Springs interacts with the rest of the TPO area. Using the model, provides the clear connection, or nexus, for imposing mobility fees.

The Mobility Fee develops a list of transportation capacity improvements that are necessary by 2045 to meet the mobility needs of the future users forecast to be added to Green Cove Springs over the next 22 years. The additional capacity is necessary to mitigate the adverse effects that these users will impose on the existing users of the transportation system. The plan presents a multimodal vision that will create additional capacity across various travel modes to provide users alternatives to the private vehicle including transit, walking and biking, golf carts, and future shared travel modes such as e-bikes, scooters, and micro transit.

Figure 1: Mobility Fee Concept



In general terms, more people create more trips. To accommodate those trips, new capacity is needed which can be funded through mobility fees.

General Methodology

The steps included in this Mobility Fee include:

- Land use planning
- Forecast demand
- Identification of transportation capacity and construction costs

- Calculation of base mobility fee as a cost per unit of demand
- Development of the net mobility fee after accounting for credits

Land Use Planning

The Mobility Plan uses the best available information on expected changes in land use within Green Cove Springs and within the overall North Florida TPO region, which covers a six-county area (Baker, Clay, Duval, Nassau, Putnam, and Saint Johns counties). Initial estimates for the changes were obtained through the NERPM travel model. The NERPM covers the six-county North Florida TPO area and has a base year 2015 and horizon year 2045 and was used in the LRTP Year 2045 update.

Changes in the Comprehensive Plan in both the Land Use and Transportation Elements are proposed as part of the Mobility Plan to align the documents with the change in the regulatory framework associated with replacing concurrency with the Mobility Fee.

A review of the land use changes within the NERPM indicated that minor revisions were necessary to reflect the more recent changes in expected land use development. These changes were integrated into the travel model, which was then run to inform the future changes in traffic generation and travel flow through the City and beyond.

A review of the volume-to-capacity of the vehicular network was used to inform where spot improvements to intersections or to roadway segments in the corridors could improve vehicular operations. The travel model was used particularly to inform trip lengths as well as vehicle and person miles of travel. Person miles of travel is used as the basis for the Mobility Fee.

Forecast Demand

The forecast demand was developed using the NERPM. The development of the LRTP is a federal requirement and is a process that is conducted every five years. The City of Green Cove Springs is located within Clay County. Clay County, as a member of the North Florida TPO, developed and/or reviewed the socioeconomic data and projects that are part of the LRTP process for the Clay County area, which includes the municipalities of the City of Green Cove Springs, City of Keystone Heights, Town of Orange Park and the Town of Penny Farms. As stated above, the socioeconomic data and the projects were developed for the years 2015 and 2045. The type of socioeconomic data used in the NERPM, are the number of households, number of persons in the household, school enrollment, and number of employees, among others.

The NERPM model is validated for the year 2015 and forecasted for the year 2045 by assigning the trips people make to different destinations within the study area. The forecasted growth is used in the mobility fee study. This growth is measured in miles traveled, average trip lengths, and by the congestion on the transportation network.

The miles traveled can be expressed in vehicle miles traveled (VMT) or person miles traveled (PMT). Since the City of Green Cove Springs mobility fee study is a multimodal study, and therefore includes pedestrian, bicycle, and transit facilities as well as roadways, the miles traveled are expressed in PMT.

Forecast changes, and in particular growth patterns in population, employment, and the related change in the number and distribution of the trips associated with these socioeconomic inputs were analyzed in the NERPM. The changes in the number of PMT are a direct result of the changes in the land use patterns. The changes in the PMT is the unit of growth used in the Mobility Fee.

Identification of Transportation Capacity and Construction Costs

A comprehensive and collaborative process with many stakeholders from the City of Green Cove Springs and Clay County was used to identify the suite of multimodal transportation improvements to meet the needs of the community over the next two decades. The plan incorporated previous planning efforts including the TPO's Trails and Paths plan, JTA's and Clay County Transit's plans, the Green Cove Springs' Downtown Master Plan, the US Route 17 Corridor Study, and the Green Cove Springs' Comprehensive Plan. Attention to creating practical alternatives to driving was made by filling in gaps in the sidewalk and bikeway network and by creating off-street paths for safe and efficient multimodal travel. Specific intersections as well as key vehicular corridors were identified for vehicle capacity enhancements.

The costs of the projects are estimated in current year dollars based on the Florida Department of Transportation (FDOT) Construction Costs for applicable facility types and adjustments were made based on more recent actual costs for construction projects in Green Cove Springs.

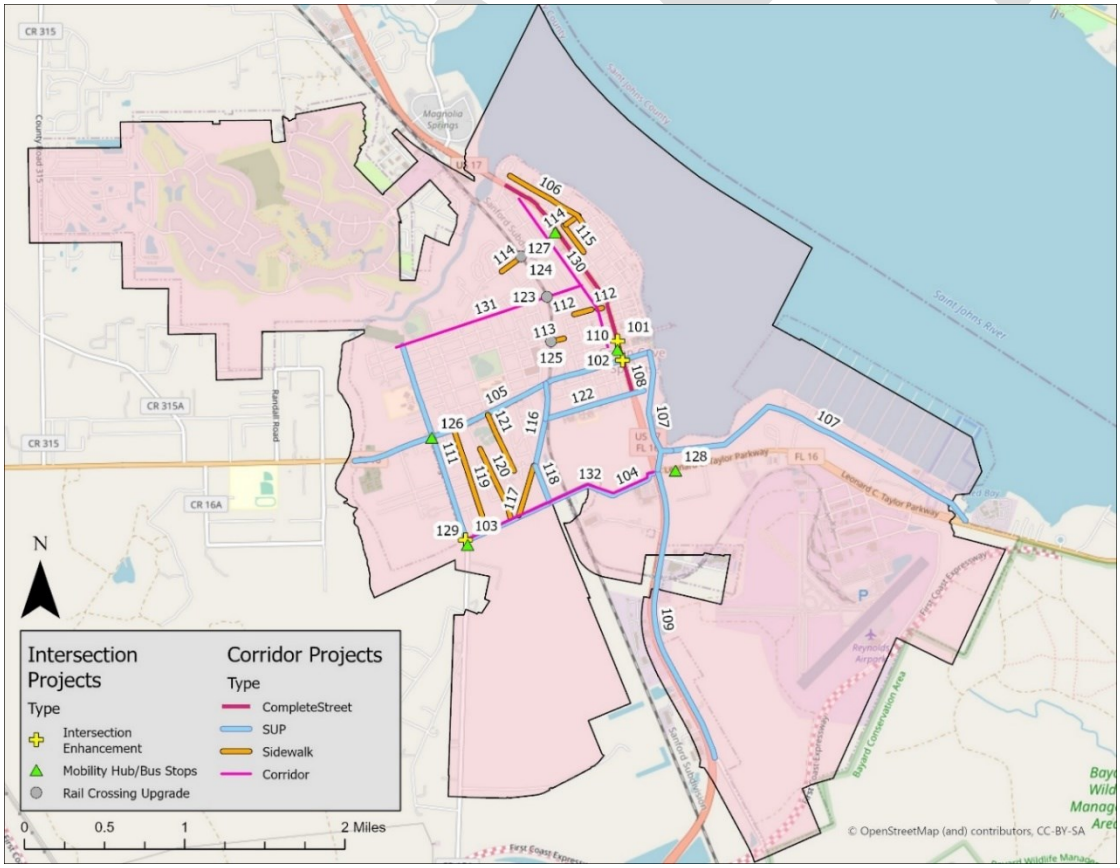


Figure 2: Identified Mobility Projects

Calculation of the Base Mobility Fee as a Cost per unit of Demand

The total cost of the mobility fee projects is divided by the total change in daily PMT within Green Cove Springs. The basis of a dollar cost per person capacity is then assessed based on the amount of travel demand generated by any specific land use change. The fee is proportional to the transportation intensity of the land use.

Table 1: Cost per PMT

Total Cost of new Capacity	$16,529,280
Cost for External (EE) Share of Capacity	$2,293,001
Cost for Local Share of Capacity	$14,236,279
Local PMT (non-EE)	85,621
Cost per PMT	$166.27

Development of the Net Mobility Fee

The net mobility fee accounts for credits which offset the chance that someone pays twice for the same capacity being funded by the mobility fee. This occurs since the cost per PMT is calculated by dividing the cost over the total change in PMT by 2045 where some of that PMT is unrelated to land use changes in Green Cove Springs (e.g., external traffic).

The portion of the project cost attributed to these users requires funding by non-mobility fees such as revenue from the ad valorem property tax. A mobility fee payee requires credit to offset the amount of non-mobility fee revenue that the land use would generate that would go toward bridging that funding gap associated with external traffic.

1.2 Summary of the Data Collected and Used

In close coordination with the Green Cove Springs staff, several documents were reviewed, and a variety of data sources analyzed. The documents that were reviewed and analyzed for the study were:

- US Route 17 Corridor Study
- NFTPO Trails and Paths
- Downtown Master Plan
- Clay County Mobility Plan and Fee
- Inventory of sidewalks and bikeways
- Inventory of transit infrastructure and route coverage

The review and analysis ensured that all projects were properly identified, prioritized, and costed out for inclusion in the mobility fee calculation.

1.3 Basis for a Mobility Plan

The Comprehensive Plan and Downtown Master Plan for the City of Green Cove Springs have envisaged a local transportation system that provides travel options, choice of different travel modes, to develop an efficient, cost effective and adaptable system to address future land use and demographic changes. This study creates a Mobility Fee that provides a local funding mechanism to address the additional burden on the transportation system associated with the future residents, jobs, and visitors.

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A mobility fee system collects revenues from the land use changes which are expected to impact the transportation system and would benefit from the proposed suite of transportation capacity enhancements. This relationship between those who generate the need for the projects and need to benefit, is known as the "dual rational nexus". The costs of the projects have been equally shared among all growth in demand, which treats all land uses equally with those generating a higher degree of impact on the system paying a higher share and those with less impact paying less.

Mobility plans and the related fee remains consistent with impact fees in the design and management of, as set out in Florida Statute 163.31801 and Florida Statute 163.3180 Section (5)(i). Plans also need to consider the following tools and techniques for complying with Section (5)(f), which states:

1. Adoption of long-term strategies to facilitate development patterns that support multimodal solutions, including urban design, and appropriate land use mixes, including intensity and density.

2. Adoption of an area wide level of service not dependent on any single road segment function.
3. Exempting or discounting impacts of locally desired development, such as development in urban areas, redevelopment, job creation, and mixed use on the transportation system.
4. Assigning secondary priority to vehicle mobility and primary priority to ensuring a safe, comfortable, and attractive pedestrian environment, with convenient interconnection to transit.
5. Establishing multimodal level of service standards that rely primarily on nonvehicular modes of transportation where existing or planned community design will provide adequate level of mobility.
6. Reducing impact fees or local access fees to promote development within urban areas, multimodal transportation districts, and a balance of mixed-use development in certain areas or districts, or for affordable or workforce housing.

2.0 Land Use

2.1 Assessment Framework

The purpose of this review is to assess land use planning by the City of Green Cove Springs and to identify potential changes to improve support for adoption and implementation of a multi-mobility fee. Two Future Land Use Element reports were reviewed: the data and analysis report, which describes current conditions and local concerns, and the policy report, which establishes policies for the city's land development code (LDC).

As shown in Figure 3, the City of Green Cove Springs occupies 7.5 square miles of land in Clay County, Florida, about 35 miles south of downtown Jacksonville and 27 miles northwest of St. Augustine. US 17 and SR 16 provide major highway access to the City.

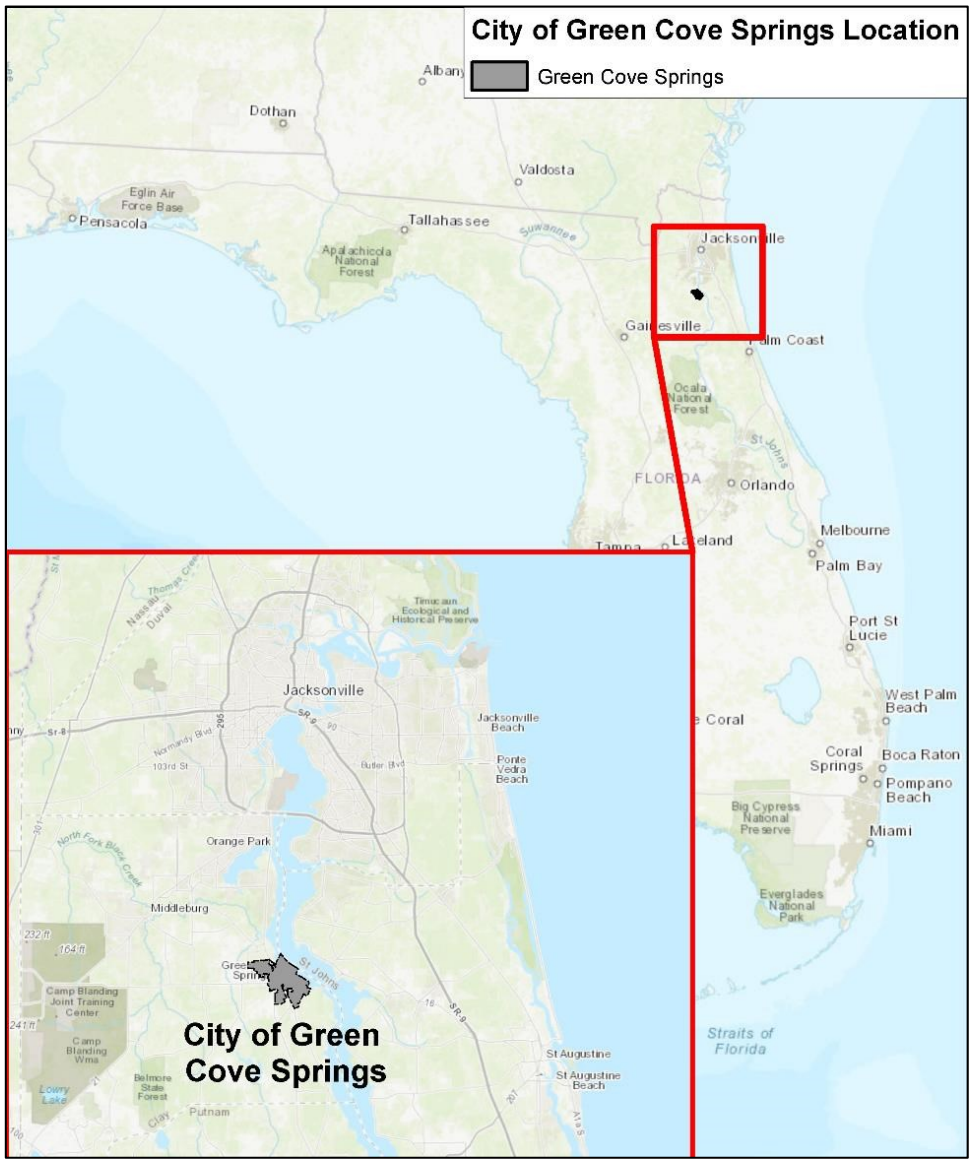


Figure 3: Location of the City of Green Cove Springs

Since its settlement in the early 1800s, the City has developed (or incorporated by annexation) four distinct areas:

1. Historic downtown and surrounding neighborhoods between Green Cove Avenue and Governors Creek. This central area comprises small lots organized by a gridded street network and occupied by varied community and economic uses. This area includes the Green Cove Springs historic district, which is listed on the National Register of Historic Places. This area is approximately 2.5 square miles.
2. Gustafson Farm and adjacent City property along South Oakridge Avenue. This area is approximately 1.1 square miles of agricultural land and woodlands and is largely undeveloped.
3. Reynolds (Industrial) Park, on the former Navy Yard site, and adjacent industrial development. This area is approximately 2.8 square miles. The area was redeveloped following the closure of the Navy Yard in 1961; portions are used for seafood processing, aviation technologies, railcar repair, pipe manufacturing and distribution, boat storage and manufacturing, and a private airport. A large portion is planned for mixed use redevelopment.
4. Magnolia Point. Magnolia Point is a 966-lot residential community, golf course and country club. Magnolia West is an adjoining 535-unit residential community. This area totals approximately 2.0 square miles and is fully developed.

The City's 2045 Comprehensive Plan was prepared in 2021. The plan acknowledges population growth from 6,908 in 2010 to 9,786 in 2020—an increase of 2,878—and anticipates additional community and economic development upon completion of the First Coast Expressway (SR 23), which will pass through the southern portion of Green Cove Springs. While a portion of the development increase may result from annexation of developed properties, new development and redevelopment are expected to generate increased demand on public infrastructure and services.

2.2 Recommendations

Land Use Element

Future Land Use Element: Data and Analysis Report

The data and analysis report presents information on current land use composition, projected population, related analysis of historic resources, natural resources, public facilities and services, including potential annexation areas, and community character. Key points of this research and analysis relevant to multi-mobility are listed below.

1. **Current Land Use Composition.** A significant portion of Green Cove Springs has not been intensively developed. (An exact acreage or percentage cannot be determined since the 2021 data and maps do not clearly reflect the annexation of the Gustafson Farm property in late 2021.) Prior activity on portions of the Gustafson Farm property, noted as 1,108 acres across two parcels, and the Reynolds (Industrial) Park, noted as more than 1,700 acres, has changed and more intensive redevelopment and transportation infrastructure has been envisioned.

2. **Projected Population.** The resident population is projected to increase from 9,786 in 2020 to 18,768 in 2045, an increase of 8,982 residents or 92 percent. This growth is expected as a result of planned development and potential annexations of existing nearby development:
   - Ayrshire, a planned residential community, is expected to develop up to 2,100 units, and house up to 5,153 residents, through 2040 on a portion of Gustafson's Farm property. The property was annexed by the City in 2021.
   - Redevelopment of the Reynolds (Industrial) Park has been outlined but no timeline has been established.
   - St. Johns Landing, a 392-unit multi-family apartment complex north of the City along US 17 housing 962 residents, is expected to be annexed by 2025.
3. **Community Character.** This section discusses land use in relation to location and access.
4. **Parking.** Current parking is perceived as inadequate for traditional downtown businesses and modern community and private events that draw people to downtown venues in large numbers.
5. **Gateway Corridors.** Suburban development patterns that cater to motorized access and visibility, particularly along US 17 and SR 16, were viewed as a threat to community character.
6. **Reynolds Park.** Redevelopment of Reynolds Park is envisioned to include multi-modal connection(s) to downtown.
7. **Waterfront access.** While there are approximately four miles of waterfront in the City, few locations allow public access. There is interest in connecting existing public access points via trails.
8. **Future Land Use.** Six Future Land Use Categories are characterized and mapped. Four of these promote a combination of residential, employment, and leisure/entertainment uses, which could be developed in walkable, bikeable, or transit served patterns.

Future Land Use Element: Policy Report

This portion of the review focuses on the policies of the Future Land Use Element of the 2045 Comprehensive Plan that support, hinder, or may have opportunity to enhance multi-mobility.

OBJECTIVE 1.1. Future Land Use Map

New development and redevelopment activities shall be directed in appropriate areas of the City as depicted on the Future Land Use Map (FLUM).
Policy 1.1.1. The following Future Land Use categories (FLUC), along with their intended uses, densities, and intensities, are established as follows (FAR only applies to non-residential uses):

a. Neighborhood (NBD):
b. Downtown (DT)
c. Mixed Use (MU)
d. Mixed-Use Reynolds Park (MURP)
e. Industrial (IND)
f. Public (PUB)

- This policy defines six broad future land use categories, four of which would allow for a combination of residential, employment, and leisure/entertainment uses. Such uses are regular origins and destinations for residents and could be interconnected and accessed by pedestrians, bicyclists, and transit riders where facilities are available. The Industrial and

Public categories do not include residential uses; however, workers, customers, and visitors may choose or rely on non-motorized modes to reach these destinations.

OBJECTIVE 1.2. Sustainability

The City shall strive to cultivate a sustainable land use pattern by preventing the proliferation of urban sprawl, ensuring the efficient provision of services, and implementing smart growth principles.

Policy 1.2.3. The City shall promote more compact and energy resource efficient residential development where the location and surrounding infrastructure supports multiple modes of transportation.

- This policy mentions "multiple modes of transportation" indicates that vehicular travel will not be the sole mode of transportation. No revision needed.

Policy 1.2.11. The City shall consider establishing a system of development incentives in the Land Development Code to encourage the provision of affordable housing, vertical mixed-use, green building and sustainable construction, dedication of public spaces (e.g., plaza, square) above and beyond what is already required, structure parking, pedestrian and bicycle facilities, transit amenities where transit service is provided, and other development features/treatments that would benefit the community.

- Regarding transportation options, this policy lacks a mention of pedestrian and bicycle facilities, which are both affordable and energy efficient means of travel with direct health and economic benefits to the individual traveler and broader transportation and environmental benefits to the traveling public at large. The addition of pedestrian, bicycle and transit facilities would strengthen this policy.

OBJECTIVE 1.3. Character & Compatibility

Future development and redevelopment projects shall protect the City's unique character, historic neighborhoods, and high quality of life.

Policy 1.3.2. The City shall establish locational criteria in the LDC for future rezoning of sites to higher density and/or intensity districts. The following principles shall be considered:

c. High density residential uses should generally be located in areas that have adequate multimodal access and proximity to service uses.

- Regarding transportation access, this policy only mentions vehicular access. High-density residential uses may include both market-rate housing and subsidized housing, which is targeted to low-income households. Pedestrian, bicycle and transit access is equally important for households looking for an urban lifestyle as well as households with limited economic means. A revision of "adequate vehicular access" to "multimodal access" would strengthen this policy.

Policy 1.3.3. As the City continues to grow, its LDC shall be updated to incorporate urban design principles, such as:

a. Form-based code regulations for the downtown and surrounding areas;

b. Smaller building setbacks and lot sizes;

c. Green infrastructure;

d. A reduction and relocation of vehicular parking spaces and areas to the rear or side of structures where appropriate, and

e. Multimodal facilities, i.e., pedestrian, bicycle and transit facilities and amenities, which include street trees, street furniture, bicycle racks, and bicycle repair stations, and transit shelters where transit service is provided.

- This policy fails to mention multimodal transportation options along its urban design principles. The addition of pedestrian, bicycle and transit facilities and amenities, such as street trees, street furniture, bicycle racks and repair stations, would strengthen this policy.

Policy 1.3.7. The City shall amend its LDC to provide additional design and compatibility requirements that address human scale and non-motorized multimodal access for developments located along major roadway corridors.

- This policy lacks definition of "design and compatibility requirements" though this may be understood locally. Specification of human-scale design to both structures and spaces would strengthen this policy in line with the city's desires to retain and promote its historic small city character.

Policy 1.3.9. The City shall seek to develop a signage and wayfinding master plan for motorists and non-motorized travelers to enhance the navigability, branding, and aesthetic character of the City.
Policy 1.3.10. The City shall work with FDOT and the North Florida TPO to improve the image of the US 17 and SR 16 corridors by adding landscaping, banners, and other elements that would help create a sense of place and portray the historic character and human-scale of the city for visitors.

- These two policies fall short by not defining the audience for signage and wayfinding (Policy 1.3.9) and community image along the US 17 and SR 16 corridors (Policy 1.3.10). The reader and implementor of Policy 1.3.9 may presume that motorists are the intended audience and large-scale signage readable at long distances could result. Adding "for motorists and non-motorized travelers" to the end of the policy would direct the plan to address both audiences. For Policy 1.3.10, adding "and portray the historic character and human-scale of the city for visitors" would help to welcome non-motorized travelers.

OBJECTIVE 1.6. Redevelopment and Renewal: The City shall continue to redevelop and invest in blighted areas of the City.
Policy 1.6.2. The City shall develop a master plan for the Downtown to update the overall vision for the area and address the following topics at a minimum: Economic vitality, multimodal access/connectivity to other parts of the City, balanced land use composition, vehicular and bicycle parking, streetscape design, urban form, public gathering spaces, and the identification of a pilot project.

- This policy broadly mentions access/connectivity and parking as topics for the downtown master plan. These topics are too often viewed from the perspective of motorized

travelers. Revisions to "multimodal access/connectivity" and "vehicular and bicycle parking" would strengthen this policy.

Policy 1.6.3. The City will assess Walnut Street and identify changes to make it safer and more attractive for all travelers.

- This policy should specify a "for whom" audience. Safety and attractiveness may be concerns for motorists, for non-motorists, or for all travelers.

Policy 1.6.7. The City shall assess the current demand and availability of public and private parking spaces in the downtown area and plan for vehicular and bicycle adequate for future redevelopment activities.

- Like Policy 1.6.2., this policy could be strengthened by incorporating a reference to vehicular and bicycle parking, such as "assess the current demand and availability of public and private parking spaces in the downtown area and plan for vehicular and bicycle parking adequate for future development conditions.

Policy 1.6.8. The City shall develop a neighborhood plan that addresses land use and multimodal access for the Martin Luther King, Jr. Avenue corridor.

- This policy falls short in defining what the neighborhood plan should address, as Policy 1.6.2 above defines for the downtown. If pedestrian, bicycle, and/or transit concerns exist, these should be identified.

OBJECTIVE 1.7. MURP-Designated Lands: Understanding the scale, economic importance and redevelopment potential of the Reynolds Park property, the City shall establish a framework for the redevelopment of MURP lands into a livable and sustainable community.
Policy 1.7.1. The City shall seek to develop a Small Area Plan (SAP) for all MURP-designated lands to establish a clear development path that implements the following planning and design principles:

c. Cultivate a multi-modal transportation network which supports pedestrian, bicycle, and vehicular travel to achieve high levels of safety and security, connectivity, and comfort between adjacent and nearby uses, character areas, and other FLU designations.

- This policy calls for "a multi-modal transportation network" and identifies key factors, such as safety and connectivity. Security and comfort are additional factors that make a network convenient and useable.

Policy 1.7.6. Development within the MURP FLUC shall include a Multi-Purpose Trail (MPT) system and other non-motorized access to provide connectivity within the development and to surrounding areas. The MPT shall consist of an eight-foot-wide paved surface and, if located along a street, shall be setback a minimum of 15 feet from the outside travel lane. The non-motorized connections shall include sidewalks, bicycle trails/lanes, and pedestrian connections and are not required to meet the MPT width or setback criteria. The MPT system shall consist of five primary connections as show in in the diagram below:

a. State Road (SR) 16 and US 17 MPTs. Prior to the approval of the first rezoning for the MURP category, a 20-foot-wide strip of land contiguous to the northern or southern rights of way of SR 16 of SR 16 and the eastern edge of US 17 shall be dedicated to the City for the construction

of trails by the City.

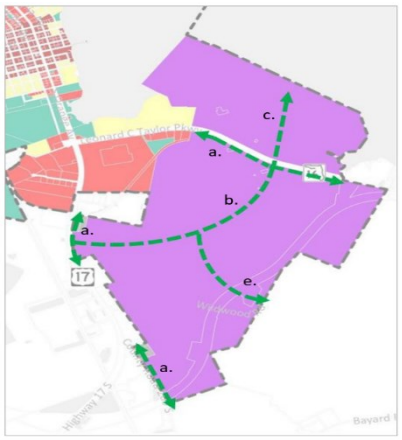
b. SR 16 to US 17 MPT. A MPT connecting SR 16 to US 17 (16/17 MPT) shall be built by the developer concurrent with the construction of the internal road system. The MPT shall be in lieu of a sidewalk on that portion of the internal road system along which it is located.

c. MPT to the Waterfront. A MPT or non-motorized connection shall be constructed by the developer between SR 16 and the waterfront concurrent with the provision of public Waterfront Access pursuant to Policy 1.7.7. The connection may be located adjacent to or within an internal road system right of way, within the Open Space System (OSS), or within a development character area.

d. County Road 209 MPT - Concurrent with the first development plan approval for a project that abuts County Road (CR) 209, a strip of land 20 feet in width and parallel to the easterly right of way of CR 209 shall be dedicated to the City for the purpose of the construction of a MPT by the City.

e. Access to lands south of the FCE and Bayard Conservation Area - If vehicular access is granted by FDOT to the parcels located southerly of the FCE, a MPT shall be constructed by the developer to connect the lands located north of the FCE to the southerly parcels. The required separation specified above between a MPT and the travel lane may be reduced within the limits of the right-of-way of the FCE and to provide transition approaching said right-of-way.

Primary Connections of a Multi-Purpose Trail System for Reynolds Park



a. MTPs along State Road (SR) 16 and US 17.
b. MPT connecting SR 16 to US 17 (16/17 MPT).
c. MPT to the Waterfront.
d. MPT along County Road 209 (not shown).
e. Access to lands south of the FCE and Bayard Conservation Area.

- The small graphic that accompanies this policy is not referenced, not titled, and not clearly labeled. A title such as "Primary Connections of a Multi-Purpose Trail System for Reynolds Park" is suggested. Labeling the dashed lines presenting the desired connections would improve clarity between the text and the graphic. These dashed lines and labels could also be added to the Future Transportation Map if trails are indeed considered an element of the City's multi-modal network.

Transportation Element

GCS Mobility Plan – Comprehensive Plan, Transportation Element Update

- Objective 2.1. Multi-Modal System

Policy 2.1.1. The City shall institute a program of protection and acquisition of right-of-way for the major roadway network, to ensure continuity of the system and the protection of existing and future roadway network from development or encroachments, while being cognizant of protecting private property rights. Right-of-way acquisitions needed for road improvements shall be kept to a minimum.

Policy 2.1.2. The City shall enhance the feasibility of transit and multimodal transportation by implementing higher densities and mixed-use as shown in the Future Land Use Map.

Policy 2.1.3. New and improved streets within the City shall be designed and operated to enable safe access for all users, including pedestrians, bicyclists, freight, motorists and transit, and other transportation options.

Policy 2.1.4. The City shall establish a Complete Streets design guidebook and corridor prioritization plan to implement these policies.

Policy 2.1.5. The City shall continue to coordinate with the North Florida Transportation Planning Organization (TPO), FDOT and Clay County to implement projects supporting multi-modal transportation options in accordance with the Complete Streets guidebook.

Policy 2.1.6. The City shall initiate coordination with the TPO, FDOT and Clay County to implement Complete Streets concepts along SR 16/Idlewild Avenue/Ferris Street. Other streets that should be considered for Complete Street designs include Oakridge Ave., Green Cove Ave, Palmetto Ave., and other local collectors.

Policy 2.1.9. Minimum right-of-way width standards shall be maintained in the land development code (LDC) for future new segments of the roadway network:

Policy 2.1.10. The City shall consider the following speed and multi-modal safety management strategies when designing or approving new roadways or modifying existing roads in the City:

a. *Enclosure*: Framing the road with street trees, buildings, on-street parking.
b. *Engagement*: Connecting the driver with the surrounding environment using tools such as on-
   street parking, narrower lanes, architectural details, and pedestrian or bicyclist activity.
c. *Deflection*: Creating vertical or horizontal shifts incorporating round-abouts, splitter medians, raised intersections, raised and or mid-block crosswalks, or similar designs.

Policy 2.1.11. Roadway improvement projects shall be evaluated, ranked, and added to the Five-Year Schedule of Capital Improvements based on the criteria established in Policy 8.1.3 in the Capital Improvements Element where applicable.

- Objective 2.2. Safe and Convenient

Policy 2.2.1. The City shall strive to reduce the number of traffic crashes and eliminate fatalities and serious injuries (FDOT's Vision Zero).

Policy 2.2.2. Intersections shall improve safety and ease of multimodal use by limiting the pedestrian crossing width; use of adequate lighting; adequate timing for traffic signals; and the provision of facilities for persons with disabilities.

Policy 2.2.3. Traffic operation improvements such as traffic signals, turn lanes, service roads, signing, and pavement marking shall be undertaken when warranted to improve the safety and efficiency of the existing roadway network for all transportation modes.

Policy 2.2.4. Where applicable, the City shall consider traffic signal enhancements such as Lead Pedestrian Interval (LPI), Rectangular Rapid Flashing Beacons (RRFB), and pedestrian hybrid signals such as a High-Intensity Activated Crosswalk beacon (HAWK) signals.
Policy 2.2.5. Crash records shall be investigated on a regular basis to determine whether improvements to the roadway network are warranted to relieve high crash conditions and cooperate with the FDOT on high crash locations on state highways.
Policy 2.2.6. The LDC shall require that all new roadways and access driveways intersecting with existing roadways shall provide a clear zone where no objects will impair the sight of multi-modal transportation at said intersections.
Policy 2.2.7. The City shall continue to pave, maintain, and resurface its roads to ensure safe conditions for multi-modal options including bicycles. The paving of unpaved streets shall be done according to priority of need. Complete Streets designs shall be considered as part of repaving and resurfacing projects, where feasible.

- Objective 2.3. System Performance

Policy 2.3.1. The City shall rely on level of service (LOS) standards adopted in the Capital Improvements Element to ensure that acceptable multimodal traffic conditions are maintained.
Policy 2.3.2. Using information from FDOT and Clay County, the City shall monitor the multimodal travel demand and Q/LOS conditions for the transportation system. The current Florida DOT Q/LOS Handbook shall be used to develop a baseline and monitor conditions over time. The multimodal system of performance will inform future investment priorities within the Mobility Fee program.
Policy 2.3.3. The City shall coordinate with FDOT and the North Florida TPO to utilize Intelligent
Transportation Systems (ITS) tools and strategies to improve mobility.
Policy 2.3.4. The LDC shall establish a connectivity index standard (number of street links divided by the number of nodes or link ends) for residential developments.
Policy 2.3.6. The City shall encourage local traffic to use alternate routes to alleviate traffic along the major thoroughfares.
Policy 2.3.7. The City shall continue to coordinate with the North Florida TPO and FDOT on a traffic flow management system (signal synchronization) for all signalization along US 17 and SR 16.
Policy 2.3.8. The City shall prioritize mobility projects that encourage people to walk, bicycle, use new mobility technology and ride public transit in lieu of adding capacity to roadways.

- Objective 2.4. Pedestrian and Bicycle System Safety

Policy 2.4.1. The City's LDC shall contain standards for the construction of multi-modal transportation facilities.
Policy 2.4.2. The LDC shall require the development of multi-use trails, where appropriate.
Policy 2.4.3. The City shall review development for consistency with the standards in the LDC to assure that adequate provisions exist for multi-modal transportation options, including pedestrians and bicycles.

Policy 2.4.4. The City shall coordinate with Clay County and the FDOT to incorporate pedestrian walkways and bicycle paths, or multi-use trails, in conjunction with road improvements.
Policy 2.4.5. The City shall continue to enforce all applicable bicycling laws. The City shall update the Green Cove Springs Trails Master Plan to address both sidewalks and trails, identify sidewalk gaps along major roadways, and establish main routes through the City, especially leading to the waterfront.
Policy 2.4.6. The Master Plan shall inventory existing crosswalks at signalized intersections and shall identify recommended locations for multi-modal transportation crossings and additional pedestrian crossings.
Policy 2.4.7. The City shall seek funds and grant opportunities and private/public partnerships to further the implementation of the Trails Master Plan.

- Objective 2.5. Development Design

Policy 2.5.1. A program shall be instituted in connection with development approvals for the dedication, preservation, or other protection of right-of-way for the existing and future major roadway network as defined in the Functional Classification Map.
Policy 2.5.2. The City shall maintain in the LDC minimum standards for the design and construction of transportation facilities.
Policy 2.5.3. The City shall review development applications to confirm the types and mix of uses and the resulting number of trip ends produced by the land use change. The latest version of Trip Generation Manual published by the Institute of Transportation Engineers (ITE) shall be used to determine the number of trips that the proposed development will produce or attract.
Policy 2.5.4. A Mobility Fee is assessed on the net additional new trips produced by the land use development. The Mobility Fee will be used to fund the necessary multimodal infrastructure improvements to accommodate future land use development based on the land use forecasts available at the time that the Mobility Fee was instituted.
Policy 2.5.5. In partnership with FDOT and Clay County requirements, the LDC shall require future developments to provide true multi-modal transit connectivity (as opposed to just "entrances" to the developments), internally and to surrounding areas, to provide multiple alternative access/exit points to/from the development.
Policy 2.5.6. The LDC shall require developments that locate on a principal or minor arterial to:

a. Provide adequate and safe entrance intersection(s) including turn lanes, acceleration/deceleration lanes, signalization, signage, and pavement marking as appropriate; and

b. Prevent the creation of hazardous traffic conditions, such as excessive curb cuts which may interfere with the function of the roadway.

Policy 2.5.7. The City shall require new subdivisions to provide "stub-outs" to adjoining undeveloped lands to promote road connectivity, and to connect to existing roadways that are "stubbed-out" at their boundaries.

Policy 2.5.8. The LDC shall require new developments to share access with existing development wherever physically possible, consistent with FDOT access management policies.
Policy 2.5.9. The LDC shall contain provisions for on- site parking for motorized and non-motorized vehicles, internal automobile circulation, circulation of motorized and non-motorized vehicles, bicycle use, golf carts, pedestrian movement, multi-use trails, and other features to minimize utilization of the major roadway network and provide facilities for multiple transportation options.

- Objective 2.6. Coordination with Other Entities

Policy 2.6.1. The City shall coordinate roadway improvements with Clay County and the Florida Department of Transportation to ensure effective application of available revenue.
Policy 2.6.2. The City shall review the traffic circulation plan and programs of Clay County, as they are amended in the future, for compatibility with this element.
Policy 2.6.3. The City shall attend workshops and periodic meetings with FDOT to coordinate with the Florida Department of Transportation Five-Year Transportation Plan.
Policy 2.6.4. The City shall provide Clay County information received in review of traffic studies performed within the City and shall request that Clay County provide the City with information obtained in their major traffic studies.
Policy 2.6.5. The City shall participate on the committees of the North Florida TPO.
Policy 2.6.6. The City shall work with the North Florida TPO, Clay County, and other applicable agencies to expand public transportation to residents of Green Cove Springs.
Policy 2.6.7. The City shall consider working with FDOT and CSX Railroad for the establishment of a "Quiet Zone" in Green Cove Springs.
Policy 2.6.8. The City shall work with North Florida TPO, Clay County, and the FDOT to promote light rail for residents of Green Cove Springs.

Capital Improvement Element

- Objective 8.3. Level of Service (LOS) Standards

Policy 8.3.1. The City shall require that public facilities meet or exceed the following Level of Service Standards.
[note: The table should be revised to remove the ROADS LOS Standards. The change to the Mobility Fee system eliminates the LOS criteria that defines concurrency. The Policy can remain intact given the reference to additional public facilities other than roads.]
Policy 8.3.2. The City shall annually review the adopted Level of Service Standards to determine their adequacy to meet public needs and to determine cost feasibility and budget implications.

3.0 Travel Demand

The NERPM is an activity-based model that allows for a detailed analysis of travel patterns. The model estimates pedestrian, bicycle, transit, and vehicular trips by a geographical area referred to as a traffic analysis zone (TAZ). The socioeconomic data is developed at a smaller geographically area, a subset of the TAZ, referred to as a micro analysis zone (MAZ). The model uses MAZs as well as TAZs to develop the land use data. The type of data used in the NERPM are number of households, population, school enrollment, and number of employees. Based on the American Community Survey (ASC) and the household surveys, the model also uses data associated with household characteristics such as income, number of workers, automobile availability, etc.

3.1 Overview

The socioeconomic data was summarized and reviewed within the municipality of the City of Green Cove Springs. Minor changes were made to the placement of households and employment in the year 2045 database, based on more recent information.

Across the City of Green Cove Springs, a significant amount of new growth and land use development is forecast. Over 6,700 new homes and 7,900 new jobs are expected by 2045. The City of Green Cove Springs is growing faster than the region as a whole, which expects to increase households and jobs by 68%.

Table 2 shows the city-wide changes in households and employment over the study period.

Table 2: Green Cove Springs Population and Employment Growth

Data	2015	2045	% Change
Households	2,688	9,424	251%
Employment	5,965	13,904	133%

Source: NERPM-AB_v2

Other important input variables to the NERPM are the different networks. The NERPM has transit and highway networks for the years 2015 and 2045. These networks simulate the transit service and the roadway system that was in place in 2015 and that is expected to be in place by the year 2045. The 2045 network is developed as part of the LRTP process and is referred to as the adopted Year 2045 Cost Feasible network.

Both the base year network and the future year network were reviewed to ensure that loadings points were correctly placed and that the roadway system was reflected with enough detail. The year 2045 network was updated to better reflect the travel patterns expected in 2045.

Accurately reflecting the networks and socioeconomic data is important to obtain the correct travel patterns within City of Green Cove Springs. Using the NERPM provides the clear connection, or nexus, for imposing mobility fees. Comprehensive use of the NERPM enables a stronger nexus between land use changes within City of Green Cove Springs and the necessary transportation infrastructure enabling mobility in the region.

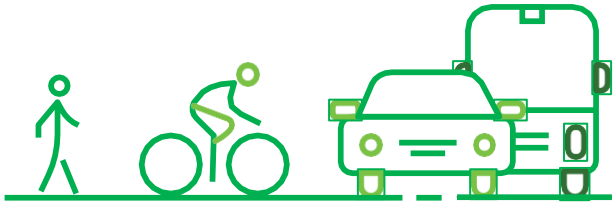
The Mobility Fee is designated for the entire city. The size of Green Cove Springs is appropriate for a single zone, meaning that the same mobility fee is charged throughout the City.

3.2 VMT and PMT

The length and the number of trips traveled within a mobility fee district is an important part of the Mobility Fee calculation. The NERPM allows for the tracing of all the trips on each of the network links. As such, every TAZ was identified within Green Cove Springs as was every link within the network. Tracing all the trips by origin and destination, allowed for the calculation of the trip length and the miles traveled associated with the land uses in the City.

As stated earlier, the model provides information regarding the VMT and the PMT. VMT are strictly associated with the automobile trips. One vehicle trip can be one person trip, if only the driver is in the vehicle. If there are two persons in the vehicle, then they represent two person trips but still one vehicle trip.

For example: One 10 mile car trip has 2 people in it. This trip creates 20 PMT and 10 VMT.



Person Miles Traveled (PMT)

Vehicle Miles Traveled (VMT)

The City of Green Cove Springs multimodal mobility fee study includes all modes of transportation and for that reason, it uses the PMT rather than the VMT. The relationship between the two is shown in

Table 3 and used in the mobility fee calculation. Since PMT accounts for the occupancy of any vehicle and the number of active modal trips (walking and biking), PMT is higher than the VMT produced by the same analysis.

Table 3 shows the amount of VMT and PMT generated in the 2015 base year and the 2045 future year.

Table 3: Green Cove Springs VMT and PMT Relationship

Miles Traveled Distribution	Green Cove Springs
2015 VMT	139,582
2045 VMT	366,661
Difference VMT	**227,079**
2015 PMT	192,845

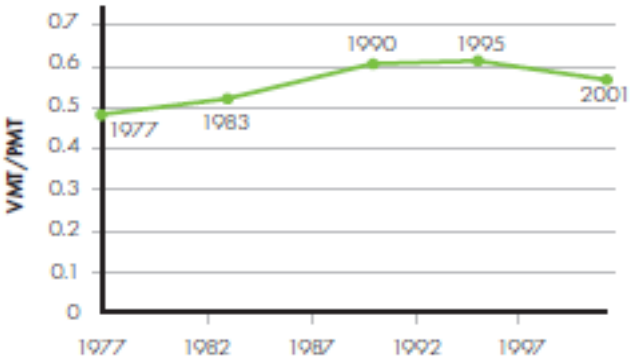
2045 PMT	482,551
Difference PMT	**289,705**

PMT is a standard measure of mobility that combines both the number and length of trips and is mode neutral. Because PMT accounts for all mobility regardless of mode it provides an assessment of the level of multimodal demand generated by the land use growth. Mobility fees are designed to fund a diverse set of travel options to provide users options as well as provide funding for high-capacity efficient modes such as walking, biking, and transit.

PMT is an available output from the NERPM by combining the estimates related to the occupancy of the vehicles on the network, the number of transit trips, and the number of walking and biking trips. The travel model is sensitive to the density, diversity, and accessibility so that areas more conducive to walking and biking will realize a higher active mode share.

Citywide in 2045 the amount of PMT to VMT is 1.32. This factor will be used in the mobility fee to convert the VMT generated by any land use to PMT. This VMT to PMT includes all the City and State roads within Green Cove Springs.

The Center for Urban Transportation Research, University of South Florida (CUTR) analyzed historical National Household Travel Survey data to show the relationship of VMT to PMT over time[1]. The Green Cove Springs data suggests that there is a closer relationship, with a VMT to PMT factor of 0.76. Likely due to the high single vehicle mode share related to the density and size of the City. The CUTR analysis is visualized in Figure 4.



Source: CUTR Florida

Figure 4: Historical National VMT/PMT Relationship

3.3 Network Performance

In simulating the highway network in the NERPM, each roadway is represented by a link. Several characteristics are associated with each of the links, such as the type of roadway facility, number of lanes, and the area type the link is located in. The combination of these characteristics allows for the calculation of the speed and capacity of the roadway. The trips generated by the

[1] https://www.cutr.usf.edu/oldpubs/The%20Case%20for%20Moderate%20Growth%20in%20VMT-%202006%20Final.pdf

socioeconomic data in the model, are assigned to the network. Once the trips are assigned, the model is run until an equilibrium in the assignment is reached. The volume on the assigned network together with the capacity provides information related to the volume capacity ratio on each link. This ratio allows to determine the amount of congestion on the roadway. When the capacity is equal to the volume, the volume capacity ratio is one (1), which in real life would result in standstill. In a travel demand model, such as the NERPM we are estimating the demand of the land use and the model allows for an "over-assignment" which shows the total need of the travelers.

The NERPM was run for the year 2015 and for the year 2045 to analyze the increase in congestion. The plots in Figure 5 and Figure 6 show the level of congestion in the year 2015 and the year 2045 networks. In comparing the volume capacity plots the amount of congestion increases significantly in 2045. The orange links are nearing capacity, while the red, magenta, and black links are functioning over capacity. The future plots include the new facilities that will be constructed bythe 2045.

3.4 Travel Characteristics

The NERPM is a sophisticated tool that can be used to evaluate the travel characteristics of trips in City of Green Cove Springs. Analyzing the trip patterns on the different roadways within the City of Green Cove Springs informs us about the degree to which the land use changes within the mobility fee districts affect the capacity and operations of the transportation network.

Trip Lengths

Based on the socioeconomic data in the model, trips are made from an origin to a destination. For example, a typical trip in the model is a trip that starts at the home and goes to work, referred to as a home-based work trip. The model has a variety of different trip purposes that it assigns to the networks. There are eleven trip purposes in the NERPM, other examples of trip purposes are home-based shop, home-based school, etc.

A trip starts in a particular TAZ and ends in a specific TAZ. The model keeps track of all the starting and ending points of all the trips that take place during an average day.

For this study, all TAZs within the City were identified to ensure that only the trips that use the City of Green Cove Springs portion of the networks are included in the fee calculation. Trips are analyzed in three categories:

- Start and end within the City of Green Cove Springs - Internal- Internal [II] trips
- Start or end inside the City of Green Cove Springs - External-Internal [EI] or Internal-External [IE] trips
- Drive through the City of Green Cove Springs without stopping – External-External [EE] trips

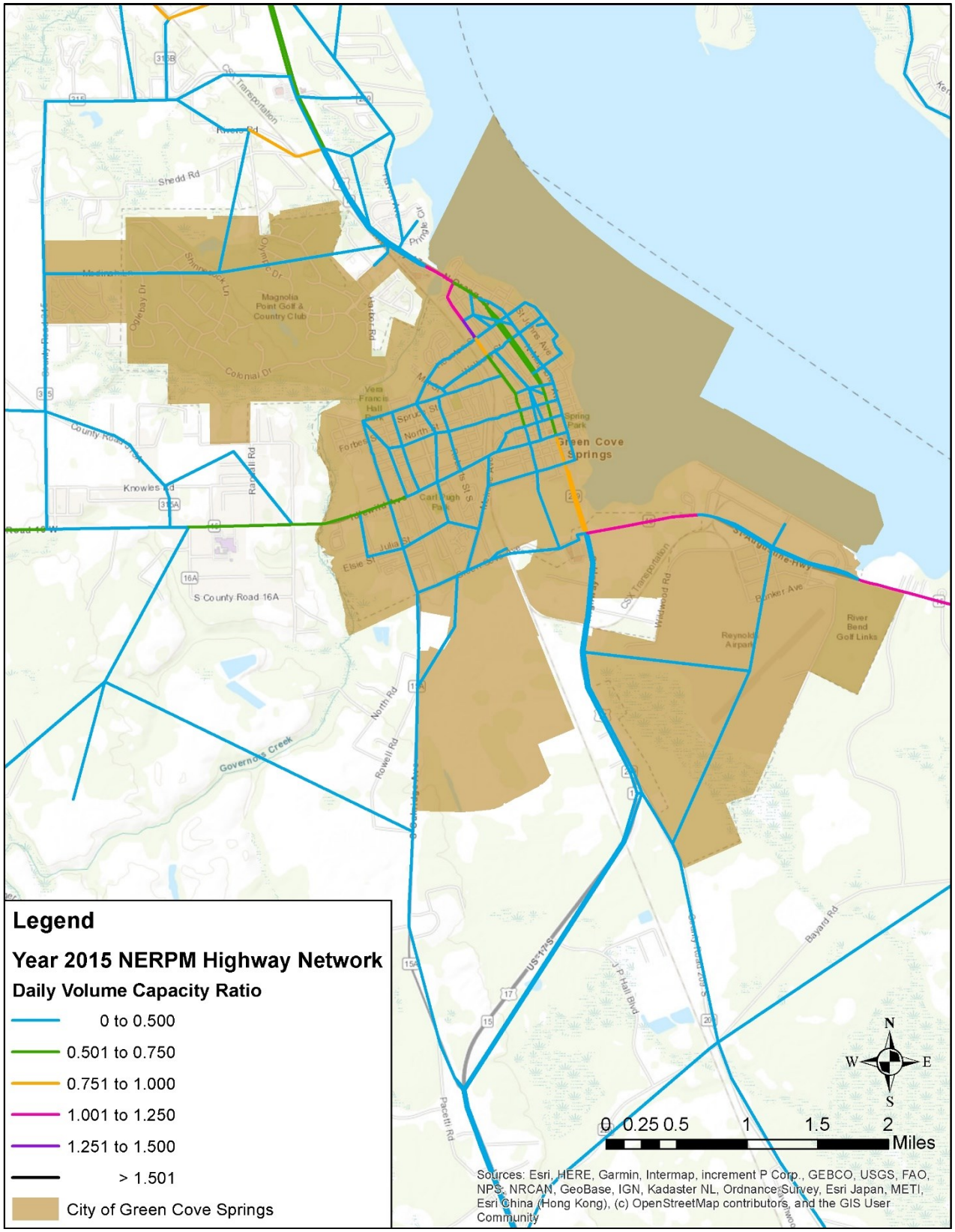


Figure 5: Year 2015 Green Cove Springs Roadway Volume Capacity Plot

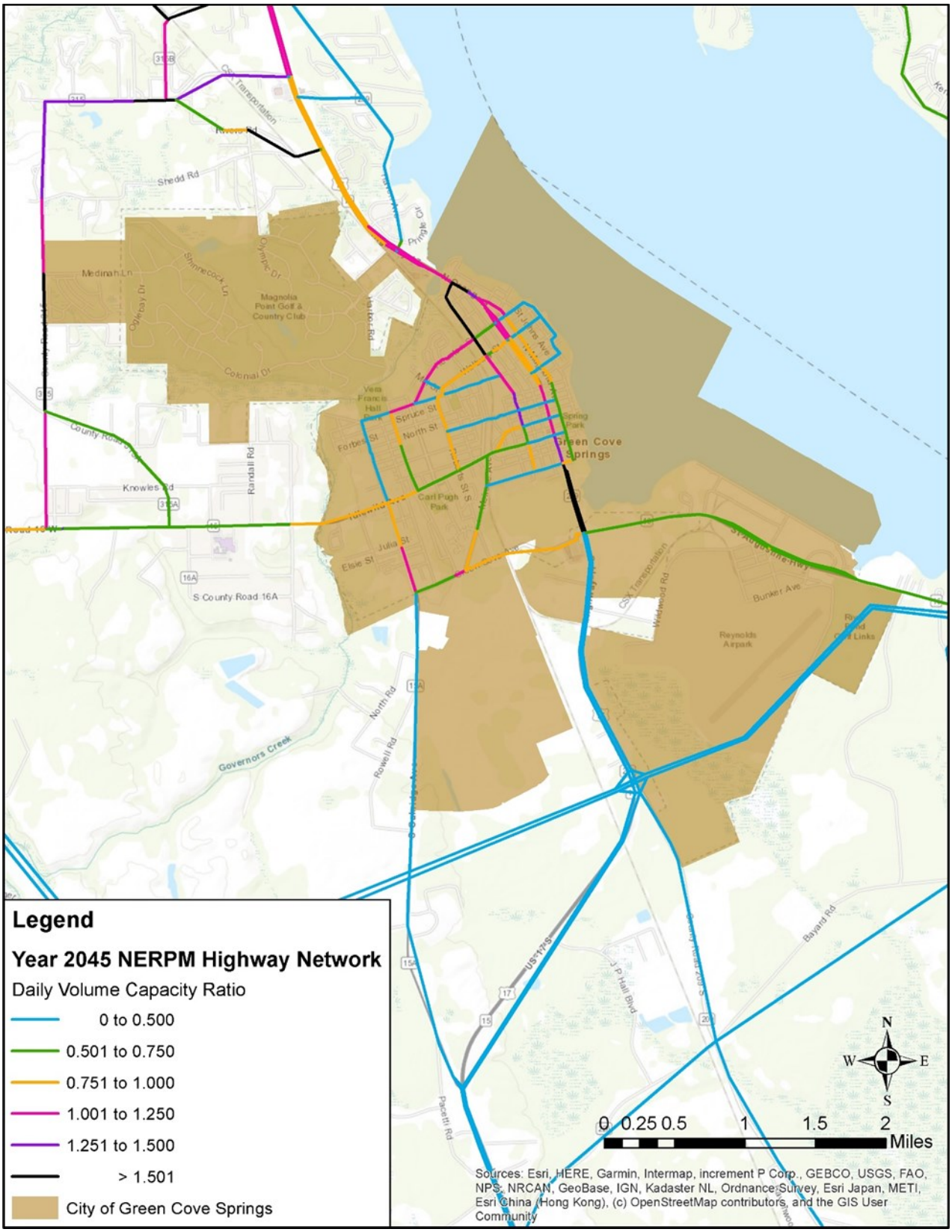


Figure 6: Year 2045 Green Cove Springs Roadway Volume Capacity Plot

This is an important concept because we cannot assess the mobility fee to trips that drive through Green Cove Springs in the calculations. After all, if the trip does not stop in Green Cove Springs, then it is not linked to the land uses in the City.

The model tracks which TAZs and roadway links that are within which city. This allows for keeping track of the origin and destination of the trip, but also of the path the trip travels on. Using this set-up allows for the calculation of the vehicle and person miles traveled by the trips that either originate or have a destination within the City.

The trip lengths used in the Mobility Fee are generally short, given the small physical size of the City itself. Only the length of the trip that occurs within the City is subject to the Mobility Fee. The trip length of 2.29 miles, as shown in Table 4 per average trip is used in the calculation of the base Mobility Fee. Table 5 shows the analysis results for person trip lengths by trip purpose that were collected as part of the 2017 Household Travel Survey conducted by the North Florida TPO[2] . This data included observations from 550,389 households across the TPO region.

Table 4: Person Trip Length in Green Cove Springs

Mobility Fee Area	Average Person Trip Length (miles)
Green Cove Springs	2.29

Source: NERPM-AB_v2

Table 5: Household Travel Survey Trip Lengths (2017 NFTPO)

Destination Purpose	Person Trips by Any Mode	
	Trip Count (n)	Mean Trip Length (Miles)
Activity at home	8,769	9.62
Work/work-related	3,782	18.7
Attending my school/class	1,047	7.19
Shopping/errands/appointments	4.319	7.18
Eat at restaurant/bar/get take-out	1,664	7.07
Recreation/entertainment	2,019	12.76

Source: NFTPO Travel Survey data

The second source of data comparison was the 2017 National Household Travel Survey Data. The vehicle trip length was compared with the NERPM results (which are longer than person trips because walking and biking trips are often shorter than vehicle trips). This survey was conducted throughout the nation and provides a national average as another benchmark against the data

[2] http://northfloridatpo.com/images/uploads/NorthFloridaHTS_FinalReport_07122018.pdf

used. Table 6 lists the results of the National HTS trip lengths by trip purposes.

Table 6: 2017 National HTS Trip Lengths by Trip Purpose

Trip Purpose Summary	Vehicle Trip Length	
	Sample Size	Mean Trip Length (miles)
Home	205,743	9.93
Work	92,392	11.98
School/Daycare/Religious activity	16,288	9.11
Medical/Dental services	11,568	10.14
Shopping/Errands	134,048	7.08
Social/Recreational	52,877	12.6
Transport someone	44,991	7.25
Meals	43,347	7.49
Something else	10,045	11.95
All	**611,299**	**9.55**

Source: Tabulation created on the NHTS website at https://nhts.ornl.gov

Double Counting Factor

The double counting factor accounts for the differences between PMT that remains internal to the City and PMT that has only one end of the trip within the City. The City of Green Cove Springs naturally lends itself to few trips that have both ends of the trip within the city limits, even in the future with the significant expected increase in land use intensity.

The travel demand modeling for the City indicates that approximately 24% of the PMT is associated with trips that have both an origin and a destination in Green Cove Springs. The double counting factor is derived to discount the fee to account for the chance that a Mobility Fee is assessed on the land uses for each end of this trip. Simply put, only half of the internal-to-internal PMT will be assessed.

All other PMT associated with land use in the City, as it has the other end of the trip somewhere outside of Green Cove Springs will be assessed for the length of the trip within the City boundary. The double counting factor is a weighted factor based on the amount of PMT that remains internal versus the share that is associated with trips outside of the City. The final double counting factor is then 88% which is (100%-(24%/2) = 88%).

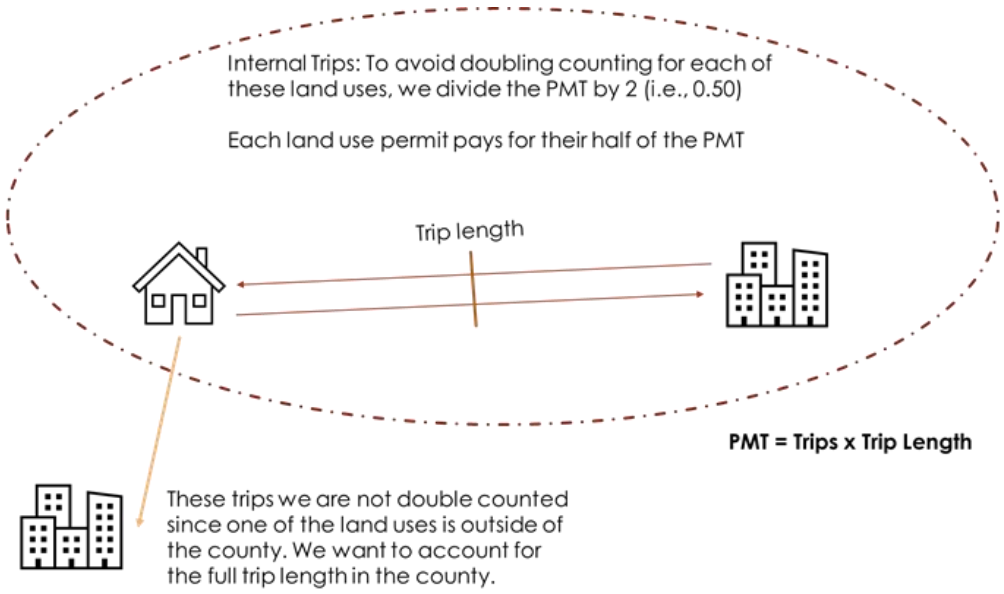


Figure 7: Double Counting Factor

Trip Rates

The daily trips rates for the land uses of interest to the City of Green Cove Springs are included in Table 7. The residential land uses for single family detached dwelling units uses an adjusted trip rate based on national and Florida specific income and size characteristics. See Appendix B for more information.

These trip rates are provided on a daily basis to correspond to the network analysis that uses a daily demand and capacity. These rates are derived from the 11th edition of Trip Generation by the Institute of Transportation Engineers (ITE) and are intended to represent vehicle trips.

Pass-by percentages by percentages apply to some land use categories to account for the portion of trips which are already on the network. Instead of being new trips added to the system, these are existing users who are expected to utilize the site but do not require additional capacity to the system. For example, a gasoline service station is estimated to have a 55% pass-by rate. Out of the 265 daily vehicle trips per fueling pump, 120 of those are new to the network.

It is expected that the City will update the land uses and the trip generation rates as new information becomes available.

Table 7: ITE Trip Generation Rates (Daily by Land Use)

Land Use Code	Land Use Categories	Land Use Categories	Unit of Measure	Daily Vehicle Trips/ Unit [B]	[pass-by]	New Trips [D]	New Daily trips/ unit	Avg. Trip Length [C]	Double Counting Factor [E]	PMT Factor	Total Eligible PMT	Base Impact Fee per Unit
220	*Residential*	Multiple Family (low rise)	dwelling	6.74	0%	100%	6.74	2.29	0.88	1.32	17.93	$ 2,981
221	*Residential*	Multiple Family (mid-rise)	dwelling	4.54	0%	100%	4.54	2.29	0.88	1.32	12.08	$ 2,008
251	*Residential*	Senior Adult Housing - detached and independent	dwelling/bed	4.31	0%	100%	4.31	2.29	0.88	1.32	11.46	$ 1,906
253	*Residential*	Assisted Living/Congregate Care Facility	dwelling	2.21	0%	100%	2.21	2.29	0.88	1.32	5.88	$ 977
210.1	*Residential*	Single Family (less than 1,500 sqft) & Very Low Income	dwelling	2.94	0%	100%	2.94	2.29	0.88	1.32	7.82	$ 1,300
210.2	*Residential*	Single Family (less than 1,500 sqft) & Low Income	dwelling	4.42	0%	100%	4.42	2.29	0.88	1.32	11.75	$ 1,953
210.3	*Residential*	Single Family (less than 1,500 sqft)	dwelling	6.66	0%	100%	6.66	2.29	0.88	1.32	17.72	$ 2,946
210	*Residential*	Single Family (1,500 sqft to 2,499 sqft)	dwelling	8.35	0%	100%	8.35	2.29	0.88	1.32	22.21	$ 3,693
210.4	*Residential*	Single Family (> 2,499 sqft)	dwelling	9.43	0%	100%	9.43	2.29	0.88	1.32	25.08	$ 4,171
240	*Residential*	Mobile Home	dwelling	7.12	0%	100%	7.12	2.29	0.88	1.32	18.94	$ 3,149
255	*Residential*	Continuing Care Retirement Community	occupied units	2.47	0%	100%	2.47	2.29	0.88	1.32	6.57	$ 1,092
260	*Residential*	Recreational Home/Vehicle	dwelling	3.55	0%	100%	3.55	2.29	0.88	1.32	9.44	$ 1,570
110	*Industrial*	Light Industry (110)	ksq ft of GFA	4.87	0%	100%	4.87	2.29	0.88	1.32	12.95	$ 2,154
150	*Industrial*	Warehouse	ksq ft of GFA	1.71	0%	100%	1.71	2.29	0.88	1.32	4.55	$ 756
151	*Industrial*	Mini-Warehouse	ksq ft of GFA	1.45	0%	100%	1.45	2.29	0.88	1.32	3.86	$ 641
140	*Industrial*	Manufacturing	ksq ft of GFA	4.75	0%	100%	4.75	2.29	0.88	1.32	12.64	$ 2,101
911	*Commercial – Services*	Bank - walk in bank	ksq ft of GFA	101.08	20%	80%	80.87	2.29	0.88	1.32	215.11	$ 35,767
565	*Commercial – Services*	Day Care	ksq ft of GFA	47.62	0%	100%	47.62	2.29	0.88	1.32	126.67	$ 21,062
492	*Commercial – Services*	Health Club / Fitness	ksq ft of GFA	1.31	0%	100%	1.31	2.29	0.88	1.32	3.48	$ 579
310	*Commercial – Services*	Hotel	rooms	7.99	0%	100%	7.99	2.29	0.88	1.32	21.25	$ 3,534
320	*Commercial – Services*	Motel	rooms	3.35	0%	100%	3.35	2.29	0.88	1.32	8.91	$ 1,482
312	*Commercial – Services*	Business Hotel	rooms	4.02	0%	100%	4.02	2.29	0.88	1.32	10.69	$ 1,778
945.1	*Commercial – Services*	Service Station (2-4k sq ft)/ Gasoline Sales with Convenience Market	veh fuel pos	265.12	55%	45%	119.30	2.29	0.88	1.32	317.36	$ 52,767
945.2	*Commercial – Services*	Service Station (5.5k-10k sq ft)/ Gasoline Sales with Convenience Market	veh fuel pos	345.75	55%	45%	155.59	2.29	0.88	1.32	413.87	$ 68,815
947	*Commercial – Services*	Carwash (self wash)	wash stall	108.00	65%	35%	37.80	2.29	0.88	1.32	100.55	$ 16,719
948	*Commercial – Services*	Carwash (automated wash)	wash stall	77.50	65%	35%	27.13	2.29	0.88	1.32	72.15	$ 11,997
445	*Commercial – Services*	Movie Theater/Event Hall	ksq ft of GFA	78.09	0%	100%	78.09	2.29	0.88	1.32	207.72	$ 34,538
420	*Commercial – Retail*	Marina	berth	2.41	0%	100%	2.41	2.29	0.88	1.32	6.41	$ 1,066
850	*Commercial – Retail*	Supermarket	ksq ft of GFA	93.84	36%	64%	60.06	2.29	0.88	1.32	159.76	$ 26,563
851	*Commercial – Retail*	Convenience Market (pass by mix of 851 & 853)	ksq ft of GFA	762.28	55%	45%	343.03	2.29	0.88	1.32	912.47	$ 151,717
815	*Commercial – Retail*	Free Standing Retail Store	ksq ft of GFA	53.87	26%	74%	39.86	2.29	0.88	1.32	106.04	$ 17,631
816	*Commercial – Retail*	Hardware / Paint Store	ksq ft of GFA	8.07	26%	74%	5.97	2.29	0.88	1.32	15.89	$ 2,641
817	*Commercial – Retail*	Nursery (Garden Center)	ksq ft of GFA	68.10	26%	74%	50.39	2.29	0.88	1.32	134.05	$ 22,289
818	*Commercial – Retail*	Nursery (Wholesale)	ksq ft of GFA	43.67	26%	74%	32.31	2.29	0.88	1.32	85.96	$ 14,292
880	*Commercial – Retail*	Pharmacy/Drugstore w/o Drive Thru	ksq ft of GFA	90.08	53%	47%	42.34	2.29	0.88	1.32	112.62	$ 18,726
881	*Commercial – Retail*	Pharmacy/Drugstore with Drive Thru	ksq ft of GFA	108.40	53%	47%	50.95	2.29	0.88	1.32	135.52	$ 22,534
820	*Commercial – Retail*	Shopping Center (>150k)	ksq ft of GFA	37.01	34%	66%	24.43	2.29	0.88	1.32	64.98	$ 10,804
821	*Commercial – Retail*	Shopping Plaza (40-150k), no supermarket	ksq ft of GFA	67.52	34%	66%	44.56	2.29	0.88	1.32	118.54	$ 19,710
822	*Commercial – Retail*	Strip Retail Plaza (<40k)	ksq ft of GFA	54.45	34%	66%	35.94	2.29	0.88	1.32	95.59	$ 15,895
850	*Commercial – Retail*	Supermarket	ksq ft of GFA	93.84	36%	64%	60.06	2.29	0.88	1.32	159.76	$ 26,563
814	*Commercial – Retail*	Variety Store	ksq ft of GFA	63.66	34%	66%	42.02	2.29	0.88	1.32	111.76	$ 18,583
857	*Commercial – Retail*	Discount Club	ksq ft of GFA	42.46	17%	83%	35.24	2.29	0.88	1.32	93.75	$ 15,587
863	*Commercial – Retail*	Electronics Superstore	ksq ft of GFA	41.05	34%	66%	27.09	2.29	0.88	1.32	72.07	$ 11,983
849	*Commercial – Retail*	Tire Superstore	ksq ft of GFA	20.37	28%	72%	14.67	2.29	0.88	1.32	39.01	$ 6,487
890	*Commercial – Retail*	Furniture Store	ksq ft of GFA	6.30	0%	100%	6.30	2.29	0.88	1.32	16.76	$ 2,786
932	*Commercial – Restaurant*	High-Turnover (sit-down) restaurant	ksq ft of GFA	107.20	44%	56%	60.03	2.29	0.88	1.32	159.69	$ 26,552
934	*Commercial – Restaurant*	Quick Service Restaurant (Drive- Though)	ksq ft of GFA	467.48	49%	51%	238.41	2.29	0.88	1.32	634.20	$ 105,449
710	*Commercial – Office*	General Office Building	ksq ft of GFA	10.84	0%	100%	10.84	2.29	0.88	1.32	28.84	$ 4,794
720	*Commercial – Office*	Medical Office / Clinic	ksq ft of GFA	36.00	0%	100%	36.00	2.29	0.88	1.32	95.76	$ 15,922
760	*Commercial – Office*	Research & Development Center	ksq ft of GFA	11.08	0%	100%	11.08	2.29	0.88	1.32	29.47	$ 4,901
550	*Institutional*	University / College / Jr College	students	1.36	0%	100%	1.36	2.29	0.88	1.32	3.60	$ 599
520	*Institutional*	School, K-12	students	3.19	0%	100%	3.19	2.29	0.88	1.32	8.49	$ 1,411
536	*Institutional*	Private School, K-12	students	1.85	0%	100%	1.85	2.29	0.88	1.32	4.92	$ 818
411	*Institutional*	Park	acre	0.78	15%	85%	0.66	2.29	0.88	1.32	1.76	$ 293
610	*Institutional*	Hospital	ksq ft of GFA	10.77	0%	100%	10.77	2.29	0.88	1.32	28.65	$ 4,763
620	*Institutional*	Nursing home	ksq ft of GFA	6.75	0%	100%	6.75	2.29	0.88	1.32	17.96	$ 2,985
560	*Institutional*	Place of worship	ksq ft of GFA	7.60	0%	100%	7.60	2.29	0.88	1.32	20.22	$ 3,361

Mode Share

The NERPM provides information regarding the modal use for each of the trips made. The actual mode choice is depended on a variety of factors. Factors such as transit service levels, accessibility, density and diversity are important in the mode choice decision. Table 8 shows the mode choice by percentage and total number for the years 2015 and 2045.

Table 8: Travel Model Share by Year

Area	TRIP MODES	Number	Percent	Number	Percent
City of Green Cove Springs	Walk	3,617	9.50%	8,659	10.70%
	Bike	649	1.70%	1,431	1.80%
	Transit	11	0.10%	208	0.30%
	Auto	33,610	88.70%	70,453	87.20%

4.0 Transportation Improvements

4.1 Background

The City of Green Cove Springs has undertaken extensive planning efforts over the past several years including an extensive corridor study for US Route 17 and the Downtown Master Plan.

These plans support a multimodal vision for the City providing residents and visitors convenient, safe, and accessible ways to travel by a variety of modes. The vision includes an outer grid of off-street 8' paths, completing sidewalks within the existing street grid, creating a context sensitive streetscape downtown, paths that connect the City to Clay County and additional transit and mobility hubs.

The rapid growth and intensity of land use change in Green Cove Springs will be supported by the multimodal investments with additional roadway capacity at specific intersections.

4.2 Needs and Priority Lists

The travel modeling provides insight into the ability of the overall roadway network in the City to accommodate the future travel demands. Although limitations exist given the significant regional scale of the model relative to the scale of the City, it is obvious which streets may experience the higher levels of demand in the future. The forecast volume-to-capacity of the network is used as a guide to inform where spot intersection improvements may be helpful in the future to improve safety and efficiency.

4.3 Transportation Network Improvements

Roadway Corridors

The future travel demand in Green Cove as estimated using the NERPM travel model indicated vehicle travel would likely experience additional congestion along US route 17 as well as the key routes into and around the downtown. The following roads are identified for future capacity improvements to improve safety and operations as demand increases associated with land use development within Green Cove Springs. The capacity improvements could include intersection turn lanes, roundabouts or signalization. Green Cove Avenue and Cooks Lane would be improved by widening and enhancing the multimodal capacity of the important east-west link in the southern part of the City.

- Palmetto Avenue
- Martin Luther King Jr. Boulevard
- Green Cove Avenue and Cooks Lane

Orange Avenue (US Route 17) was the focus of a corridor study within Green Cove Springs. The corridor study, completed in June 2021, identified alternative cross sections with medians, narrower lanes, and improved multimodal capacity. The vision for the corridor was further defined through the 2022 Downtown Master Plan process that several alternative corridor reconfigurations to slow vehicle traffic, improve multimodal access through wider sidewalks, and

improved intersection controls for walking, biking, and golf carts. The complete street vision for Orange Avenue is shown in Figure 8 and Figure 9.

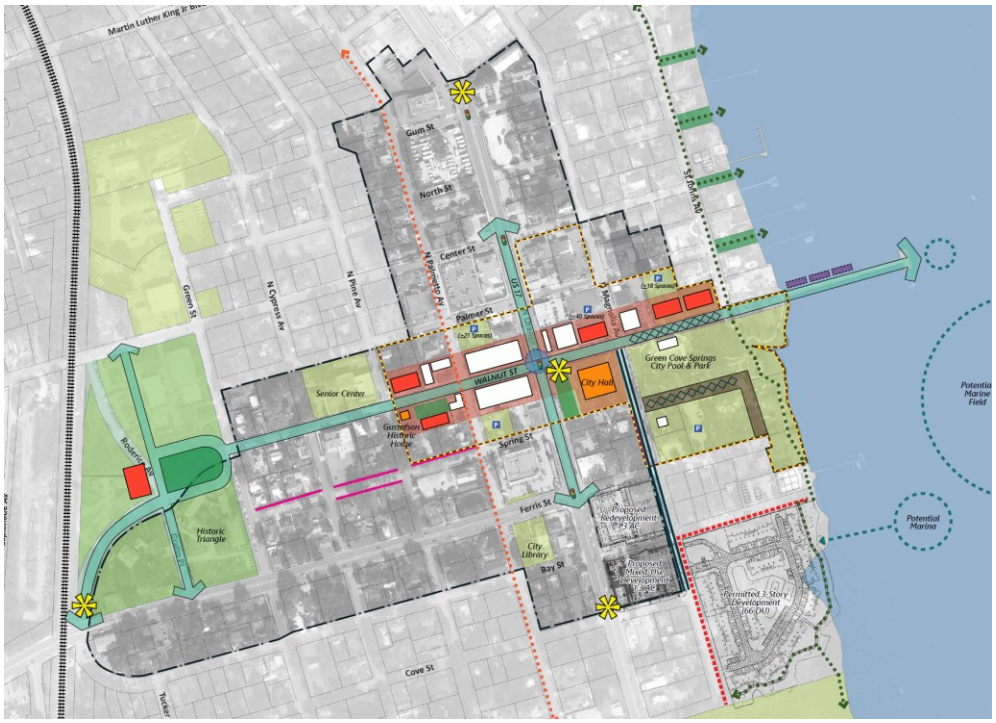


Figure 8: Orange Avenue Improvements (source: Downtown Master Plan)

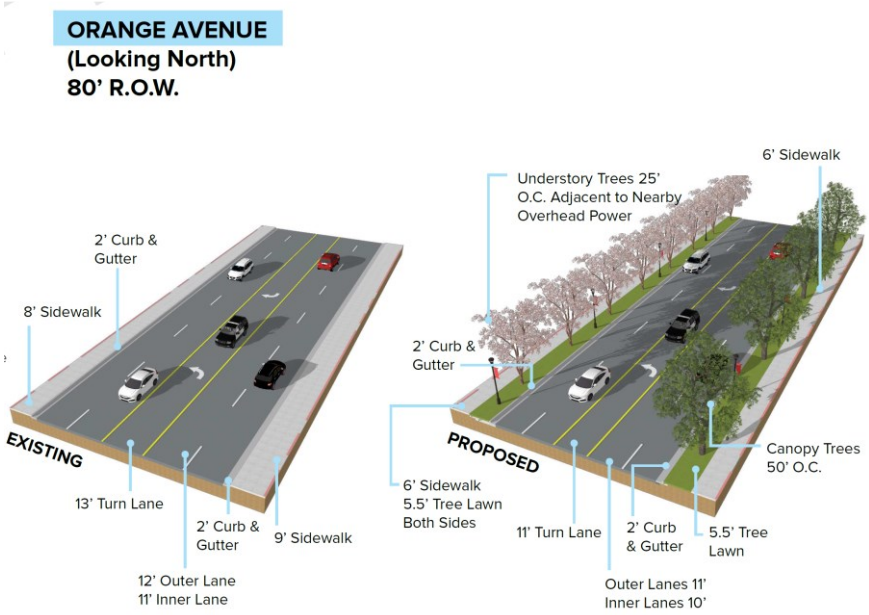


Figure 9: Orange Ave Cross Section (source: Downtown Master Plan)

Figure 10: Visual of US 17 Improvements (Source: Downtown Master Plan)

Active Travel Network

Green Cove Springs' growth is anticipated to occur within downtown, the Community Redevelopment Agency (CRA) district, areas in the southern part of the City and the Reynolds Park area to southeast. The intensification expected in the downtown area support greater ability for residents and visitors to complete their trip by non-car means by offering wide sidewalks, bike lanes, and facilities for golf carts.

Connecting areas of growth by bike lanes and paths will provide travel options. Additional walking and biking infrastructure will create greater network connectivity and provide safe and efficient options to travel. The recent demand in e-bikes and the associated increase in average miles traveled reinforces that these facilities may increase in demand and provide an active alternative way to travel.[3] Providing choices in the transportation system is essential for a more equitable and efficient transportation system. By enabling individuals to choose the mode of travel that is best for that trip, it can spread the demand across the system and improve overall system utilization.

The projects have been identified as those addressing a transportation need, helping meet those mobility needs of future residents, employees, and visitors.

[3] Research published in 2018 states that e-bikes are being used approx. 50% of total trips for commuting or errands, with most of that substituting from the private automobile. Average trip lengths of 9.3 miles by automobile were observed shifting to e-bikes. Source: MacArthur, John, Christopher Cherry, Michael Harpool and Daniel Scheppke. A North American Survey of Electric Bicycle Owners. NITC-RR-1041. Portland, OR: Transportation Research and Education Center (TREC), 2018.

Transit Improvements

Downtown Mobility Hub

Green Cove Springs will consider mobility hubs as a key tool towards network connectivity goals. Mobility hubs are infrastructure designed to support and facilitate multimodal transportation use. These facilities are defined by their intent and structure to aggregate mobility options in one place, allowing individuals greater travel choices and ease of transfer amongst different travel modes.

Mobility hub design focuses on transit, shared-use mobility, and active transportation. Hubs often endeavor to address the "first mile/last mile" issue whereby access to transit and other longer-distance mode usage is stifled by insufficient supportive options to easily reach those modes. While each mobility hub may take on unique form based upon location and context, these hubs tend to support connection between at least a few of the following specific transportation modes:

- Public transportation: stops/stations for trains, buses, vans, and micro transit.
- Transportation Network Companies (TNCs): pick up/ drop off zones for ride-hail providers.
- Carshare: parking and charging stations for carshare vehicles, including electric vehicles.
- Bicycles and scooters: parking, storage, charging stations, and designated paths for personal bicycles, bikeshare, and e-scooters.
- Pedestrian: paths and spaces to pass through as well as rest for those walking or rolling with assistive devices.

In addition to facilitating traveler choice and transfers between these modes, mobility hubs provide a flexible physical space that can support other associated uses:

- Deliveries: a parking location for food or goods delivery vehicles to limit stops/congestion in travel lanes and improve curb management.
- Retail options: collocated stores, food stands, and other businesses which provide value to individuals passing through the space.
- Park features: park amenities which make these hubs more enjoyable places to wait or linger between travel and other activities.

The downtown mobility hub is anticipated to be downtown Green Cove between Ferris Street and Walnut Street on the west side of Orange Avenue. This hub is anticipated to serve as the key downtown hub to the Clay County Transit which can connect to regional routes run by the Jacksonville Transportation Authority (JTA). The hub can be scaled based on the amount of funding available and constraints of the site. It is anticipated that the site will serve as an enhanced transit stop, providing information to visitors to Green Cove Springs, provide parking for micromobility including e-scooters, bikes, and golf carts. The hub would operate as a community destination and connect the transit system with first/ last mile services.

Transit Stops

Enhanced transit stops are expected where existing and future local bus service are likely to provide residents access to jobs and services throughout the region. Four locations have been identified during this plan development, however, they will be confirmed during any final planning process.

- Oakridge Avenue / State Route 16

- US 17 / Houston Street
- US 17 / Reynolds Park
- Oakridge Avenue / Green Cove Avenue

4.4 Network Standards of Service & Improvements

The NERPM evaluates how future users associated with land use changes in the region travel on the roadway network as well as the non-motorized, active mode network. The travel model assigns the traffic flow to the network which can be evaluated for how much the demand compares to the capacity of the system. This specific metric, volume-to-capacity (V/C) is the most common metric used in Florida. Section 3.0 includes plots of the network showing the V/C ratios in color bands. Multimodal Mobility Fees moves beyond the vehicular based V/C ratio system to account for total person miles of travel and person miles of capacity. The shift away from a simple V/C ratio approach for vehicles to one that recognizes multimodal trip making can be defined in person miles capacity (PMC).

The Mobility Fee shifts away from a Level of Service (LOS) defined by travel speed (average delay per vehicle) toward a supply and accessibility based multimodal transportation system. The provision for high quality walking, biking, and transit capacity to support multimodal demand is set out in the Florida DOT Q/LOS Handbook. The handbook informs how quality affects the experience for non-vehicular modes as it relates to the design of that facility or the frequency of transit service.

The Florida Q/LOS Handbook shall be used to monitor multimodal level of service to inform future investment priorities and change investments accordingly to maintain a diverse, accessible, and multimodal suite of travel options at each update interval to the Mobility Fee.

This Mobility Plan and the projects within it start to develop a true multimodal system and the performance for each mode can be tracked over time to inform where and what future investments may be necessary to meet future travel demand. As stated in the Comprehensive Plan, building capacity for non-auto means should be the first priority before widening roads for additional cars. The size of Green Cove Springs can support many trips to be made by non-auto means if safe, efficient, and high-quality non-auto infrastructure is available.

Table 9 shows the existing miles of different infrastructure types and approximate daily capacity for each mode of travel. The number of users in the city is also used to represent the person demand for travel. This is represented as the resident population plus half of any employed persons in the city. The total person miles capacity is the result of the daily person capacity multiplied by the miles of capacity. All of the capacity here excludes private facilities.

The existing transportation system currently has an estimated 181 daily person miles of capacity. The number in isolation has not much value. However, it can show the amount of total transportation capacity available for travel within the City across all modes and is used to compare how that service standard may change as new users are added associated with land use development.

Table 9: Existing Transportation Person Miles Capacity

Infrastructure Type	Daily Capacity at Service Standard Target	Existing Miles (2020)
Off-Road Shared Use Path (8')	9,000	2
Bike lanes and cycleways (on road bike facilities)	8,000	2.4
Footway (5 to 6 foot sidewalks)	980	28
Roads (1 direction lane miles)	11,700	144.4
Daily Person Miles Capacity		**1,755,251**
Users (resident population + 1/2 jobs) in Green Cove		9,674
Person Miles Capacity per User (Capacity / Users)		**181**

Table 10: Current Capacity and Service Standards

Infrastructure Type	Daily Capacity at Service Standard Target	Existing Miles (2020)	Mobility Fee Miles / Proposed Nodes	Total Future Miles or Nodes of Capacity by 2045
Off-Road Shared Use Path (8')	9,000	2	9.4	11.4
Bike lanes and cycleways (on road bike facilities)	8,000	2.4	0	2.4
Footway (5 to 6 foot sidewalks)	980	28	2.8	30.8
Roads (1 direction lane miles)	11,700	144.4	0	144.4
Transit Stops	3,000.00		5	5
Intersection Upgrades	5,000.00		3	3
Corridor (Mix of Green Cove Ave & Orange Ave)	10,000.00		7	7

Mobility fees must comply with basic legal fundamentals such as ensuring that the new users of the system do not pay for more than their impacts. This is interpreted as that the standards of the service do not improve in the future beyond what is experienced today. The analysis shows that in the absence of the additional transportation capacity, the person miles of capacity standard drops from 181 to 68. With the Mobility Fee projects, capacity per user drops from 181 to 75. The significant growth in users anticipated within Green Cove Springs (more than doubling by 2045) is the major driver behind this change.

Table 11: Existing and Future Person Miles Capacity

Existing	Daily Person Miles Capacity (existing)	1,755,251
	Existing Users (resident population + 1/2 jobs) in Green Cove springs	9,674
	Existing Person Miles Capacity per User (Capacity / Users)	181
	Future Users	**25,735**
Future	Existing Person Miles Capacity per User with no expansion (Capacity / Users)	68
	Daily Person Miles Capacity (Future with Mobility Fee Projects)	1,942,284
	Future Person Miles Capacity per User with Mobility Fee Projects (Capacity / Users)	75

This method also converts all modes to one common person miles of capacity. In practice, it is true that not all trips can be made by all modes. However, the principle within the Mobility Fee concept is to provide the multimodal capacity to provide choice and allow the user to use the most appropriate and convenient mode for that trip. As congestion increases for one mode, e.g., cars and roads, it may be faster and more convenient to travel via e-bike. Transit can offer higher capacity vehicles and through dedicated lanes or signal preemption can bypass vehicle queues and reduce travel time.

The significant reduction in person miles of capacity in this analysis suggests that as growth continues in Green Cove Springs the existing system will provide ample capacity to accommodate growth and travel will need to become more diverse in the modes used. In summary, the existing system provides a high level of service (using capacity per user) to the existing users (residents and visitors). Maintaining the high level of service, particularly in terms of roadway lane miles, is unrealistic given the cost burden.

Table 12: Unit Cost per Mile per Infrastructure Type

Infrastructure Type	Existing Miles	Approx Unit Cost (2023$)[4]	Value of Existing System
8' SUP (off road shared use path)	2.0	$500k	$1 million
Cycleway (on-road bike facilities)	2.4	$900k	$2.2 million

[4] Unit costs are derived using FDOT unit costs for facilities. Increased by 45% to represent recent price increases, local conditions and the 2022-2023 cost estimate for the Palmetto Shared Use Path.

If the current value per user is the cost of offering the same transportation service to future users, the cost of delivering that infrastructure would be over $355 million (16,062 new users forecast between 2015 and 2045).

4.5 Mobility Fee Projects

The projects show in Figure 11 and listed in Table 13 were identified for the Mobility Fee project list.

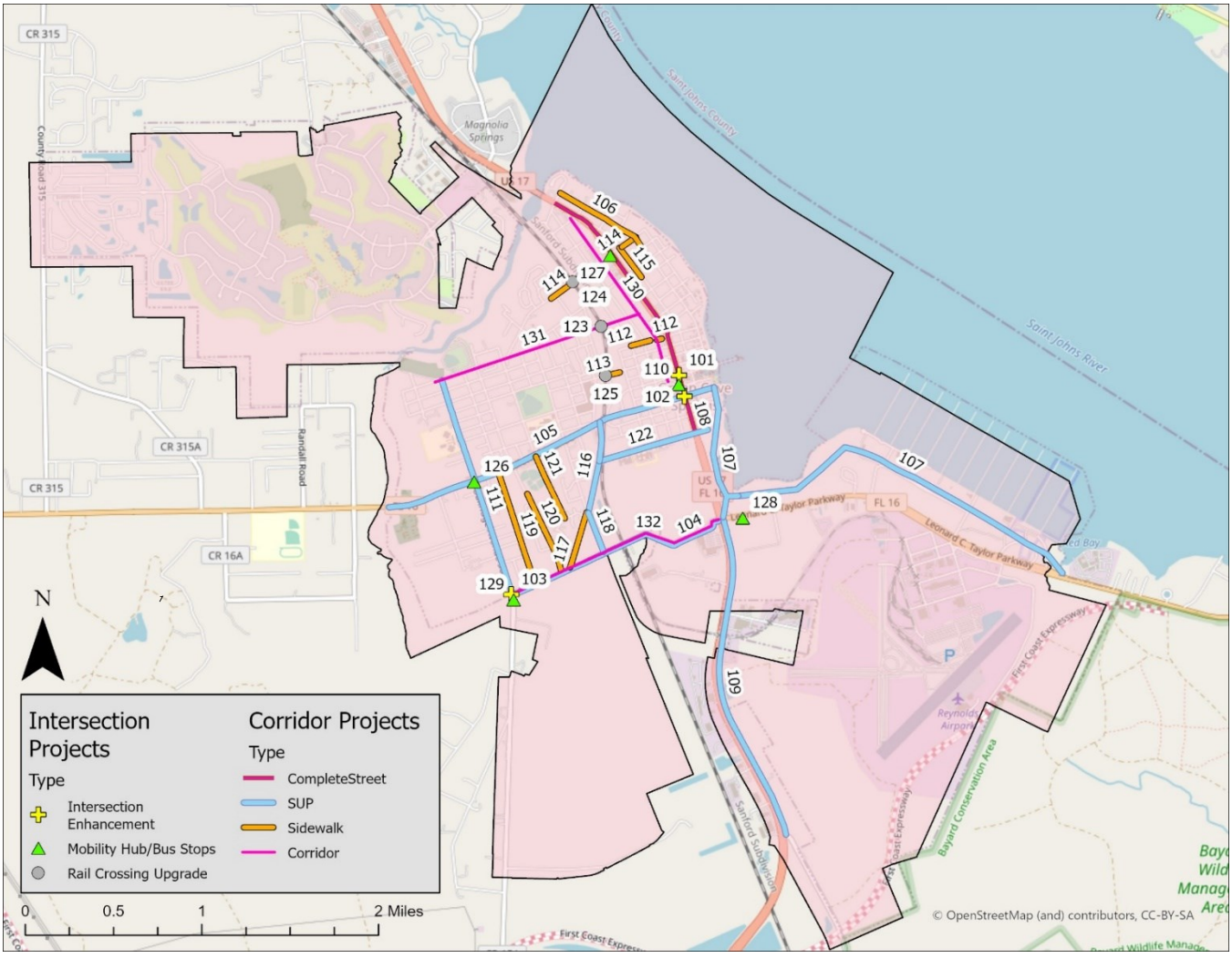


Figure 11: Mobility Fee Projects (2045 Planning Horizon)

Cost of Mobility Fee Projects

A total of $16.5 million of new transportation capacity will expand the person miles of capacity within Green Cove Springs by 2045. These projects will expand capacity for several modes of travel throughout the city to provide choices beyond the private car for residents, employed persons, and visitors to the city.

Table 13: Mobility Fee Projects

Project ID	Location	Improvement
101	US 17/Walnut Steet	Multimodal Intersection Enhancements
102	US 17/SR 16 (Ferris St.)	Multimodal Intersection Enhancements
103	Green Cove Ave and Oakridge Ave	Intersection / Vehicular Capacity Improvements
104	Green Cove Ave	Trail Project
105	SR 16 West	Trail Project connection to Clay-Duval Trail
106	St Johns Ave Sidewalks	Sidewalk Project
107	SR 16/US 17	Trail Project
108	US 17	Reconstruct Cross Section. Local Contribution (PD&E)
109	US 17 Corridor: South side path project	Palatka-GCS Trail
110	Mobility Hub - multimodal downtown. Bus Stop	Mobility Hub and Bus Stop
111	Oakridge Ave	SUP connection to Green Cove Ave
112	Gum St	Gum St 6' sidewalk improvements
113	Center St	Center St 6' sidewalk improvements
114	Houston St	Houston St 6' sidewalk improvements
115	Magnolia Ave North	Magnolia Ave North 6' sidewalk improvements
116	Melrose Ave	6' sidewalk
117	Melrose Ave	8' SUP addition
118	Roberts St South	8' SUP addition
119	Highland Ave South	Highland St 6' sidewalk addition
120	Vermont St	Vermont St 6' sidewalk addition
121	West St	West St 6' sidewalk addition
122	Oak St	8' SUP addition
123	MLK JR Blvd - Rail crossing	Pedestrian Crossing upgrade
124	Houston St	Pedestrian Crossing upgrade
125	Center St	Pedestrian Crossing upgrade
126	Oakridge Ave / SR 16	Bus stop. Shelter. Amenities, etc.
127	US 17 / Houston St.	Bus stop. Shelter. Amenities, etc.
128	US 17 / Reynolds Park Bus Stop	Bus stop. Shelter. Amenities, etc.
129	Oakridge - Green Cove Ave	Bus stop. Shelter. Amenities, etc.
130	Palmetto Intersection Improvements	Roundabouts, turn lanes, or signalization
131	Martin Luther King Jr Blvd Improvements	Roundabouts, turn lanes, or signalization
132	Green Cove Avenue / Cooks Lane	Roadway lanes, intersections

5.0 Mobility Fees

The base mobility fee for a land use change is derived by accounting for the quantity of travel generated by the land use change (number of trips and the lengths of the trips) and the cost of providing the additional transportation capacity. The base fee is before any credits or other fee reductions are made.

The base mobility fee formula is shown below:

Base Mobility Fee =
PMT Generated by Land Use
x Cost of Infrastructure per PMT

5.1 PMT Generated by Land Use

The fee is assessed on the quantity of travel, measured with PMT, that impacts the transportation systems within the City of Green Cove Springs. To estimate the quantity of PMT that impacts the transportation system the following factors are considered:

PMT Generated by Land Use =
[A] * [B] * [C] * [D] * [E]

[A] Vehicle Trip Rate

The daily trip rate per unit of development (residential units, beds, or square feet) as determined by the 11th Edition of ITE's Trip Generation. Some land uses included in the schedule in Section 8.0 have been adapted to fit specific goals such as income sensitivity for housing or where two land uses have been averaged together.

[B] Trip Length

The weighted average trip length for trips within Green Cove Springs is calculated using the NERPM activity-based model at 2.29 miles. These trips include those that start and end in the City as well as those which have either a start or an end in Green Cove Springs.

[C] % New Trips

This factor is obtained through ITE's Trip Generation and accounts for the portion of trips which may enter and exit the project but were previously already on the network (i.e., pass-by trips). For example, residential uses generate 100% new trips while fuel stations may generate only 50% new trips.

[D] Double Counting Factor

The double counting factor of 88% accounts for the differences between PMT that remains

internal to the City and PMT that has one end of the trip within the City.

[E] VMT to PMT Factor

This factor (1.32) converts the estimated VMT from the land use change to PMT. See Section 3.0 for more information.

5.2 Cost of Infrastructure per PMT

The Mobility Fee projects are analyzed for their likelihood to serve local users versus users which may be passing through the City. Given the location of the City and the Shands Bridge there is a sizeable amount of 'through traffic', however, that will change in the future with the First Coast Expressway. As such, the share of users benefiting and generating the demand for the Mobility Fee projects varies within the City, with some locations having more through traffic than others.

Table 14 below shows the mobility fee projects and the share of local traffic (all modes). It is important to consider that only traffic associated with local land use development is eligible to be assessed a mobility fee. Therefore, only the Local Cost in

Table 14 is able to be funded through Mobility Fees. The difference between the Total Project Cost and the Local Cost must be funded with non-mobility fee dollars.

Table 14: Local Cost vs Total Project Cost of Mobility Fee Projects

Project ID	Location	Improvement	Total Project Cost	Mobility Fee Cost	Percent Local Traffic	Local Cost
101	US 17/Walnut Steet	Multimodal Intersection Enhancements	$300,000	$300,000	40%	$120,000
102	US 17/SR 16 (Ferris St.)	Multimodal Intersection Enhancements	$800,000	$800,000	40%	$320,000
103	Green Cove Ave and Oakridge Ave	Intersection / Vehicular Capacity Improvements	$1,500,000	$1,500,000	50%	$750,000
104	Green Cove Ave	Trail Project	$423,672	$423,672	95%	$402,489
105	SR 16 West	Trail Project connection to Clay-Duval Trail	$642,975	$642,975	95%	$610,826
106	St Johns Ave Sidewalks	Sidewalk Project	$128,581	$128,581	100%	$128,581
107	SR 16/US 17	Trail Project	$981,951	$981,951	95%	$932,854
108	US 17	Reconstruct Cross Section. Local Contribution (PD&E)	$400,000	$400,000	100%	$400,000
109	US 17 Corridor: South side path project	Palatka-GCS Trail	$611,424	$611,424	95%	$580,853
110	Mobility Hub - multimodal downtown. Bus Stop	Mobility Hub and Bus Stop	$200,000	$200,000	100%	$200,000
111	Oakridge Ave	SUP connection to Green Cove Ave	$90,678	$90,678	100%	$90,678
112	Gum St	Gum St 6' sidewalk improvements	$32,033	$32,033	100%	$32,033
113	Center St	Center St 6' sidewalk improvements	$15,796	$15,796	100%	$15,796
114	Houston St	Houston St 6' sidewalk improvements	$84,965	$84,965	100%	$84,965
115	Magnolia Ave North	Magnolia Ave North 6' sidewalk improvements	$47,148	$47,148	100%	$47,148
116	Melrose Ave	6' sidewalk	$169,658	$169,658	100%	$169,658
117	Melrose Ave	8' SUP addition	$73,633	$73,633	100%	$73,633
118	Roberts St South	8' SUP addition	$76,940	$76,940	100%	$76,940
119	Highland Ave South	Highland St 6' sidewalk addition	$147,149	$147,149	100%	$147,149
120	Vermont St	Vermont St 6' sidewalk addition	$106,988	$106,988	100%	$106,988
121	West St	West St 6' sidewalk addition	$87,363	$87,363	100%	$87,363
122	Oak St	8' SUP addition	$208,326	$208,326	100%	$208,326
123	MLK JR Blvd - Rail crossing	Pedestrian Crossing upgrade	$200,000	$200,000	100%	$200,000
124	Houston St	Pedestrian Crossing upgrade	$200,000	$200,000	100%	$200,000
125	Center St	Pedestrian Crossing upgrade	$200,000	$200,000	100%	$200,000
126	Oakridge Ave / SR 16	Bus stop. Shelter. Amenities, etc.	$75,000	$75,000	100%	$75,000
127	US 17 / Houston St	Bus stop. Shelter. Amenities, etc.	$75,000	$75,000	100%	$75,000
128	US 17 / Reynolds Park Bus Stop	Bus stop. Shelter. Amenities, etc.	$75,000	$75,000	100%	$75,000
129	Oakridge - Green Cove Ave	Bus stop. Shelter. Amenities, etc.	$75,000	$75,000	100%	$75,000
130	Palmetto Intersection Improvements	Roundabouts, turn lanes, or signalization	$4,000,000	$4,000,000	100%	$4,000,000
131	Martin Luther King Jr Blvd Improvements	Roundabouts, turn lanes, or signalization	$3,000,000	$3,000,000	100%	$3,000,000
132	Green Cove Avenue / Cooks Lane	Roadway lanes, intersections	$1,500,000	$1,500,000	50%	$750,000

Table 15 shows the cost per PMT calculation accounting for the total project cost, the local project cost, and the difference which must be funded with other funds. The non-local share,

shown in the table below as the 'cost for external capacity', is based on the estimated traffic flow through the city that didn't have a start or stop of the trip within the city. The Cost per PMT used in the mobility fee is obtained by dividing the local cost by the growth in local PMT.

Table 15: Cost per PMT

Total Cost of new Capacity	$16,529,280
Cost for External (EE) Share of Capacity	$2,293,001
Cost for Local Share of Capacity	$14,236,279
Local PMT (non-EE)	85,621
Cost per PMT	**$166.27**

5.3 Base Mobility Fee

The base mobility fee is derived by calculating the PMT for each land development proposal and assessing the cost per PMT (Table 15).

The base mobility fee per land use type is shown below for three sample land uses: Single Family Detached (LUC 210), a 10,000 square foot general office building, and a 10,000 square foot general shopping plaza. The base mobility fee is the multiplication of the factors and the cost per PMT. The mobility fee for the 10,000 square foot building is calculated by determining the base mobility fee per 1,000 square feet and then multiplying this by 10 (A*B*C*D*E*PMT Fee * 10).

Table 16: Sample Base Mobility Fee Calculations

Land Use	PMT Fee	Trip Rate	Trip Length	New Trips	PMT Factor	Double Counting Factor	Base mobility Fee
Residential (Single Family Detached between 1500 sq. ft and 2500 sq. ft) (ITE LUC: 210)	$166	8.35	2.29	100%	1.32	0.88	$3,693
General Office 10,000 Square Feet (ITE LUC: 710)	$166	10.84	2.29	100%	1.32	0.88	$47,944
Shopping Plaza 10,000 Square Feet (ITE LUC: 822)	$166	54.45	2.29	74%	1.32	0.88	$178,212

6.0 Credits

Mobility fee credits are developed to mitigate and offset the chance that a land use development would contribute twice to the same capacity being funded through the payment of a mobility fee.

The landowners or applicants of a land use change that is subject to a Mobility Fee contribute other funds through fuel taxes and other taxes as well as direct contributions, either monetary or in kind. Credits address these contributions and reduce the mobility fee liability associated with any land use change accordingly.

The following types of credits are applicable for Green Cove Springs:

- Developer Contribution Credits
- Revenue Credits

6.1 Developer Contribution Credits

Mobility Fee credits for contributions made by those either donating land or constructing improvements identified in this mobility plan and included in setting the Mobility Fee. The credit is limited by the lesser of either the value of the Mobility Fee liability or the cost of the Mobility Fee improvement, as identified in this study.

6.2 Revenue Credits

Revenue credits account for revenues obtained from both the Mobility Fee and other revenues that the City will use to complete the Mobility Fee projects. Specifically, the share of the project costs associated with the external (non-local) traffic will need to be paid for by non-mobility fee funds. The anticipated source of funds will be the general fund using funds from the local ad valorem tax that will be redirected to fund this portion of the mobility fee projects.

The non-local share of $2,293,001 per Table 17 could be called on at any point before 2045. Therefore, dividing the total by 23 years produces an annual amount of $99,696 that may be needed from the ad valorem tax source (shown in column [b]. This amount of funding as a portion of the overall city tax base is expected to decrease as additional development occurs in the City and the overall property valuation increases. Therefore, the annual millage rate shows a real decline on a per annual basis, shown in column [c].

The credit is a reduction of the base Mobility Fee calculated when the fee is paid. The credit represents a net present value at the time of development based on the future stream of ad valorem tax payments which may contribute to the same mobility fee projects which are paid for through the base Mobility Fee. Therefore, the credit offsets the non-local share of the mobility fee project for any development assessed a Mobility Fee. The net present value of the discounted stream of tax payments is shown in the column [d] of the table based on the year of development. The revenue credit inputs and look up table by year of development is shown in Table 17.

The table includes the inputs:

- Base municipal assessed value
- Assumed annualized growth in taxable property values and a discount rate

Table 17: Revenue Credit Lookup Table

$556,461,965	2021 Municipal Assessed Value (excluding govt buildings)
5.00%	City Appraised Property Values will continue to grow annually at this rate
3.00%	Discount Rate
23	Years for funding non-mobility eligible infrastructure (2045-2022)
$2,293,001	Cost of Capacity not eligible for mobility fee funding
$99,695.70	Per year capacity funding through property taxes (=$2.29 million / 23)

Building Year	Annual Expense	Millage Rate Needed (per assessment)	Net Present Value of Discounted Stream of Taxes (millage rate)
[a]	[b]	[c]	[d]
2023	$99,696	0.170629	$1.84
2024	$99,696	0.162503	$1.72
2025	$99,696	0.154765	$1.61
2026	$99,696	0.147395	$1.50
2027	$99,696	0.140377	$1.40
2028	$99,696	0.133692	$1.30
2029	$99,696	0.127326	$1.21
2030	$99,696	0.121263	$1.12
2031	$99,696	0.115488	$1.03
2032	$99,696	0.109989	$0.94
2033	$99,696	0.104751	$0.86
2034	$99,696	0.099763	$0.78
2035	$99,696	0.095012	$0.71
2036	$99,696	0.090488	$0.63
2037	$99,696	0.086179	$0.56
2038	$99,696	0.082075	$0.49
2039	$99,696	0.078167	$0.43
2040	$99,696	0.074445	$0.36
2041	$99,696	0.070900	$0.30
2042	$99,696	0.067524	$0.23
2043	$99,696	0.064308	$0.17
2044	$99,696	0.061246	$0.11
2045	$99,696	0.058329	$0.06

Process for Calculating the Revenue Credit

The following steps are used to calculate the revenue credit.

1) Determine the year of development. When will the construction permits be provided to the land use project.

2) Identify the future assessed value of the project.

3) Assess the net present value of the discounted stream of taxes. Use the assessed value divided by 1,000 and multiply that result by the discounted value in column [d] for the year of development.

7.0 Net Mobility Fees

The net mobility fees are set by land use type. The net mobility fees are calculated by starting with the base Mobility Fee and subtracting the revenue credit based on the value of the property and the year of development.

The net mobility fee formula is shown below:

Net Mobility Fee =
Base Mobility Fee
— Credits

Three examples are included in the table below.

Table 18: Net Mobility Fee Calculation

Land Use	Base mobility Fee [a]	Estimated Assessed Value [b]	NPV Millage Rate (Permits in 2023) [c]	Mobility Fee Credit [(Assessed value / 1000) * NPV Millage Rate] [d]	Net Mobility Fee (Base Fee - Credits) [e]
Residential (Single Family Detached btwn 1500 sq. ft and 2500 sq. ft)	$3,693	$350,000	$1.84	$642	$3,051
General Office 10,000 Square Feet	$47,944	$1,725,000	$1.84	$3,166	$44,778
Shopping Plaza 10,000 Square Feet	$158,946	$1,500,000	$1.84	$2,753	$156,193

8.0 Mobility Fee Schedule and Application

The Green Cove Springs Mobility Fee is assessed on land uses given the trip rates as determined by the ITE Trip Generation and other characteristics developed within this study, such as trip length, and person miles travel relative to vehicle miles, and the cost per PMT. Appendix A includes the mobility fee schedule.

8.1 Inter-Jurisdictional Fee Issues

The travel demand modeling and assessment of the future conditions include an analysis of the entire North Florida TPO region. By modeling for the entire region, the effects and changes of the land use developments within Green Cove Springs are included, as well as how growth in Clay County and other surrounding counties affect travel and network performance within the City. Through this inter- regional modeling there is confidence in the degree to which land use changes in Green Cove Springs affect the larger transportation system and how through traffic changes in the future with the First Coast Expressway.

Although it is likely that travel demand associated with land use development within Green Cove Springs will impact Clay County roadways, and vice-versa, there is a jurisdictional divide in the analysis that treats the County as an external jurisdiction. The opposite relationship is true as well, with travel associated with land use development within the County likely to travel on facilities owned and maintained by the City. This jurisdictional divide allows any municipality to develop mobility fees (or impact fees) of their own and apply them to the transportation demand associated with land use changes within the municipality. The Green Cove Springs Mobility Fee is designed to assess the fees only the portion of travel within the City by travel model results for travel changes on city roads but also by using the trip length which considers the length of travel within the City boundary.

The fee does not consider inter-jurisdictional revenue sharing or what the degree of sharing looks like. However, this could be done in the future using data from the travel model if Green Cove Springs and Clay County would like to pursue this option.

9.0 Legal Application of Mobility Fees

9.1 Overview

Florida has been a legal pioneer in the development and application of impact fees since the 1980's. Driven primarily through case law the tools and methods were developed by precedence. In 2006 the Florida Legislature adopted the "Impact Fee Act" that codified many of these concepts. One of these was the determination that impact fees must comply with a "dual rational nexus" test that requires:

- 1st (Need): A reasonable connection between the anticipated need for transportation system improvements and the growth generated by new development.
- 2nd (Benefit): A reasonable connection between the expenditure of fees collected and the benefit to the development. Other guiding principles established over time that should be considered when designing any impact fee (or mobility fee) include:
    - Impact fees should not exceed the cost of the planning and delivering the specific necessary facilities.
    - Fees should be proportional to the demand generated by the development.
    - New development should not be required to pay for a higher level of service than what existing users experience.
    - New development should not have to pay twice for the same capacity through impact fees and through other taxes or fees.

9.2 Legal History

Legislation passed in 1985 required all governments in Florida to develop and adopt Comprehensive Plans to guide future land use and infrastructure development. The language included a provision requiring that adequate facilities must be provided "concurrent" with new growth and development. As a tool of 'police power', concurrency was adopted as a measure to maintain the standards of service for existing users as new users were added to the system. During the 1990's and 2000's there were numerous issues raised with concurrency – namely greenfield development and 'sprawl' because of using available capacity. The costs of widening, both in terms of dollars and social impacts, became obvious in many urbanized areas.

The House Bill 227 passed in 2009 amended the F.S. 163.31801 to include "the government has the burden of proving by a preponderance of the evidence that the imposition or amount of the fee or credit meets the requirements of state legal precedent and this section. The court may not use a deferential standard for the benefit of the government."

State Bill 360 passed in 2009 amended F.S. 163.31801 to remove the necessary 90 days before an effective date when fees are to decrease, be suspended, or be eliminated. State Bill 360, also known as the Florida Community Renewal Act, instructed the Florida Departments of Community Affairs and Transportation to evaluate and consider the implementation of a mobility fee system to replace the existing concurrency system.

House Bill 7207 passed in 2011 adopting the "Community Planning Act" that abolished transportation concurrency, eliminating the Department of Community Affairs, and placed restrictions on local governments ability to implement transportation concurrency. House Bill 319 passed in 2013 introduced changes to F.S. 163.3180 - Concurrency that encouraged local

governments to adopt alternative mobility systems, such as mobility fees, and included the six tools and techniques for developing an alternative mobility system. Under House Bill 319 a mobility fee system must also comply with F.S. 163.31801 governing impact fees.

House Bill 207 passed in 2019 amended the 163.31801 "Impact Fee Act" to clarify language on the timing of the collection of fees, requirements on administrative costs, and added text specifying how bonded projects or previously approved projects must be reasonably connected to or have a rational nexus with the increased impact generated by new development. House Bill 7103 passed in 2019 amended the 163.31801 "Impact Fee Act" to specify how credits will be carried forward and value match the full benefit of the intensity or density of the credit when it was first established. The bill also specified that if the local government offers an exception or waiver for affordable housing, it is not required to use any revenues to offset the impact.

House Bill 337 passed in 2021 amended Section 163.31801 to include several provisions important for the design of this fee and future updates. Specifically, no more than 25% increase from a current impact fee rate, no increase more than once every 4 years, fees could be increased beyond that rate given public workshops documenting the 'extraordinary circumstances' that would warrant a rate increase beyond these limits, and annual financial reporting requirements.

Key Principles

A onetime transportation system charge on new development that allows local governments to assess the proportionate cost of transportation improvements needed to serve the demand generated by development projects.

Mobility Fee vs. Tax

- A mobility fee is a regulatory tool available to local governments to protect the public's experience and use of infrastructure in the face of additional users and burden posed by new development.
- Mobility fees have a designated source of funding to address a specific set of needs, whereas taxes have broad discretion on their application once they are collected.
- Mobility fees must have a rational nexus between the cost levied and the impact caused by the new development. Additionally, the benefits of the infrastructure must convey a proportional benefit to the new development.

9.3 Legal Compliance

The Florida Impact Fee Act F.S. 163.31801 and its complementary statute on concurrency, 163.3180 provide the primary legal guidance regarding the design and requirements of the mobility fee. Specifically:

- Green Cove Springs has developed an ordinance to adopt the Mobility Fee. The ordinance governs the collection, accounting, credits, and the expenditure of funds.
- The Mobility Fee system is proportional and reasonably connected to benefits and impact generated by new land use development. This system complies with the "dual rational nexus" test by:

- The need for the additional transportation capacity is documented by previous studies and evaluation which the City has conducted over the past decade. In the absence of additional capacity, the anticipated land use and development would cause increased burden and deteriorate the standard of service for existing users. The City is investing in building a more diverse and dense land use base which supports active travel as well as providing improved access to the public transit system.
- The benefit of the transportation capacity improvements accrues to those paying for the projects by creating multimodal travel options for existing and future residents and visitors to take the mode that is most convenient for them. This increases total capacity within the ground transportation system within the City, creating benefits for those who are assessed a Mobility Fee.
- The Mobility Fee calculation is based on the most recent and localized data. The current regional travel model used in the North Florida region was used to analyze the effects of land use development on the transportation system. The land use data within the City is based on the current anticipated changes anticipated and are incorporated into the regional travel model. Trip lengths have been obtained through the use of the travel model and align with the size of the Green Cove Springs boundary.
- The projects to be funded through the mobility plan have been identified as necessary capacity to manage and facilitate safe and efficient mobility for the City residents, employees, and visitors. Several stakeholder meetings were held to identify and plan for the best strategies to increase multimodal capacity to meet the future travel demands of the anticipated land use development. The travel model and the district wide service standards validate that the projects will partially mitigate the impacts that new development will place on the transportation system.
- Credits have been designed to offset the chance for new development to contribute twice to the same transportation capacity funded by different revenue sources. Specifically, revenue credits have been designed to offset ad valorem revenues which may be used to fund non-local shares of the mobility fee projects.

Mobility plans and the related fee structure that underpins it is compliant with Florida Statute 163.3180 Section (5)(i). The mobility plan considers the following tools and techniques for complying with Section (5)(f). Specifically:

- The future land use element and mobility plan support greater density and intensity of land use. The mobility plan can continue to adapt the trip length, the share of multimodal trips and ratio of PMT vs VMT, and the suite of projects to support these long-term strategies.
- Adoption of an area wide level of service is not dependent on any single road segment function. The evaluation of a City service standard reflects the demands and capacity of the City acknowledging that as route choice and travel options increase, greater system utilization can occur, reducing the effect on one road accommodating all the demand. The mobility sets a total person miles capacity (PMC). The travel model identifies the growth in person miles travel over time associated with local and use development. Periodic local studies can monitor the PMC and attempt to derive a PMT based on multimodal traffic counts.

- Green Cove Springs seeks to encourage downtown redevelopment through the application of local funds to reduce the Mobility Fee assessed for specific land uses within parts of the City. The revenues used for these discounts occur after a net fee has been calculated and do not increase the mobility fee for others and therefore is not explicitly accounted for in the mobility plan.
- Sensitivity to the income characteristics and the size of the single-family dwelling units is included by comparing average incomes and the size of homes in Green Cove Springs with national averages. Reduced trip generation rates are observed for households with lower income and smaller square footages. The City ordinance may also take further steps to waive the Mobility Fee requirement for eligible households based on income criteria.

Appendix A

Fee Schedule

MOBILITY FEE RATE SCHEDULE

Land Use Code	Land Use Categories	Land Use Categories	Unit of measure	daily trips	pass by	new trips	new trips/unit	avg trip length	double counting factor	PMT factor	Total Eligible PMT	Base Impact fee per unit
220	*Residential*	Multiple Family (low rise)	dwelling	6.74	0%	100%	6.74	2.29	0.88	1.32	17.93	$ 2,981
221	*Residential*	Multiple Family (mid-rise)	dwelling	4.54	0%	100%	4.54	2.29	0.88	1.32	12.08	$ 2,008
251	*Residential*	Senior Adult Housing - detached and independent	dwelling/bed	4.31	0%	100%	4.31	2.29	0.88	1.32	11.46	$ 1,906
253	*Residential*	Assisted Living/Congregate Care Facility	dwelling	2.21	0%	100%	2.21	2.29	0.88	1.32	5.88	$ 977
210.3	*Residential*	Single Family (less than 1,500 sqft)	dwelling	6.66	0%	100%	6.66	2.29	0.88	1.32	17.72	$ 2,946
210	*Residential*	Single Family (1,500 sqft to 2,499 sqft)	dwelling	8.35	0%	100%	8.35	2.29	0.88	1.32	22.21	$ 3,693
210.4	*Residential*	Single Family (> 2,499 sqft)	dwelling	9.43	0%	100%	9.43	2.29	0.88	1.32	25.08	$ 4,171
240	*Residential*	Mobile Home	dwelling	7.12	0%	100%	7.12	2.29	0.88	1.32	18.94	$ 3,149
255	*Residential*	Continuing Care Retirement Community	occupied units	2.47	0%	100%	2.47	2.29	0.88	1.32	6.57	$ 1,092
260	*Residential*	Recreational Home/Vehicle	dwelling	3.55	0%	100%	3.55	2.29	0.88	1.32	9.44	$ 1,570
110	*Industrial*	Light Industry (110)	ksq ft of GFA	4.87	0%	100%	4.87	2.29	0.88	1.32	12.95	$ 2,154
150	*Industrial*	Warehouse	ksq ft of GFA	1.71	0%	100%	1.71	2.29	0.88	1.32	4.55	$ 756
151	*Industrial*	Mini-Warehouse	ksq ft of GFA	1.45	0%	100%	1.45	2.29	0.88	1.32	3.86	$ 641
140	*Industrial*	Manufacturing	ksq ft of GFA	4.75	0%	100%	4.75	2.29	0.88	1.32	12.64	$ 2,101
565	*Commercial – Services*	Day Care	ksq ft of GFA	47.62	0%	100%	47.62	2.29	0.88	1.32	126.67	$ 21,062
492	*Commercial – Services*	Health Club / Fitness	ksq ft of GFA	1.31	0%	100%	1.31	2.29	0.88	1.32	3.48	$ 579
310	*Commercial – Services*	Hotel	rooms	7.99	0%	100%	7.99	2.29	0.88	1.32	21.25	$ 3,534
320	*Commercial – Services*	Motel	rooms	3.35	0%	100%	3.35	2.29	0.88	1.32	8.91	$ 1,482
312	*Commercial – Services*	Business Hotel	rooms	4.02	0%	100%	4.02	2.29	0.88	1.32	10.69	$ 1,778
947	*Commercial – Services*	Carwash (self wash)	wash stall	108.00	65%	35%	37.80	2.29	0.88	1.32	100.55	$ 16,719
948	*Commercial – Services*	Carwash (automated wash)	wash stall	77.50	65%	35%	27.13	2.29	0.88	1.32	72.15	$ 11,997
420	*Commercial – Retail*	Marina	berth	2.41	0%	100%	2.41	2.29	0.88	1.32	6.41	$ 1,066
850	*Commercial – Retail*	Supermarket	ksq ft of GFA	93.84	36%	64%	60.06	2.29	0.88	1.32	159.76	$ 26,563
815	*Commercial – Retail*	Free Standing Retail Store	ksq ft of GFA	53.87	26%	74%	39.86	2.29	0.88	1.32	106.04	$ 17,631
816	*Commercial – Retail*	Hardware / Paint Store	ksq ft of GFA	8.07	26%	74%	5.97	2.29	0.88	1.32	15.89	$ 2,641
817	*Commercial – Retail*	Nursery (Garden Center)	ksq ft of GFA	68.10	26%	74%	50.39	2.29	0.88	1.32	134.05	$ 22,289
818	*Commercial – Retail*	Nursery (Wholesale)	ksq ft of GFA	43.67	26%	74%	32.31	2.29	0.88	1.32	85.96	$ 14,292
880	*Commercial – Retail*	Pharmacy/Drugstore w/o Drive Thru	ksq ft of GFA	90.08	53%	47%	42.34	2.29	0.88	1.32	112.62	$ 18,726
881	*Commercial – Retail*	Pharmacy/Drugstore with Drive Thru	ksq ft of GFA	108.40	53%	47%	50.95	2.29	0.88	1.32	135.52	$ 22,534
820	*Commercial – Retail*	Shopping Center (>150k)	ksq ft of GFA	37.01	34%	66%	24.43	2.29	0.88	1.32	64.98	$ 10,804
821	*Commercial – Retail*	Shopping Plaza (40-150k)	ksq ft of GFA	67.52	34%	66%	44.56	2.29	0.88	1.32	118.54	$ 19,710

Appendix B
Trip Rates

Residential Trip Rate Derivation

The income and size based residential trip rates remain consistent with the 2017 Road Impact Fee Update Study prepared by Tindale Oliver for Clay County. The narrative, methodology and tables are included here to record this process. It is determined that these assumptions remain valid for use within the mobility fee study for Green Cove Springs.

Single Family Residential Trip Generation Rate Tiering

As part of this study, the single family residential trip generation rate tiering was included to reflect a three-tier analysis to ensure equity by the size of a home. To facilitate this, an analysis was completed on the comparative relationship between housing size and household travel behavior. This analysis utilized data from the 2009 National Household Travel Survey (NHTS) and the 2015 American Housing Survey (AHS) to examine overall trip-making characteristics of households in the United States.

Table A-2 presents the trip characteristics being utilized in the proposed roadway impact fee schedule for the single family (detached) land use. The 2009 NHTS database was used to assess average annual household vehicle miles of travel for various annual household income levels. In addition, the 2015 AHS database was used to compare median annual family/household incomes with housing unit size. It is important to recognize that the use of the income variable in each of these databases is completed simply to provide a convenient

linking mechanism between household VMT from the NHTS and housing unit size from the AHS.

Table A-2
Calculated Single Family Trip Characteristics

Calculated Values Excluding Tiering	Trip Rate	Assessable Trip Length	Daily VMT
Single Family (Detached)	7.81	6.62	51.70

Source: Florida Studies for LUC 210 included in this Appendix (Page A-5)

The results of the NHTS and AHS analyses are included in Tables A-3 and A-4. First, the data shown in Table A-3 presents the average income in the U.S. for families/households living in the three housing tiers. As shown, the average income for housing units between 1,500 and 2,499 square feet in size ($70,371) is higher than the overall average income for the U.S. ($63,584). Table A-4 presents the median household income levels for low and very low income levels in Clay County. These levels were used to create additional trip generation rate tiers for smaller homes (less than 1,500 sq ft).

Table A-3
Annual Income by Housing Size

2015 AHS Average Income Data by Housing Size (Single Family, detached)	Annual Income[1]
Less than 1,500 sf	$48,880
1,500 to 2,499 sf	$70,371
2,500 sf or more	$87,897
Average of All Houses	$63,584

Source: American Housing Survey for the United State in 2013
1) Weighted average of annual income for each tier

Table A-4
Annual Income by Housing Size

Clay County SHIP Definitions	
Median Income	$64,400
Low Income[1]	$51,500
Very Low Income[2]	$32,200

Source: Florida Housing Finance Corporation, 2016 Income Limits; SHIP (4 person household)
1) Defined as 80% of the median income
2) Defined as 50% of the median income

To calculate a corresponding trip rate for the new tiers it was necessary to rely on comparative ratios. As an example, consider the $44,880 annual income category. First, it was determined that the average annual household VMT for this income level is 20,736 miles. This figure was then compared to the overall average annual VMT per household in the U.S. and normalized to the average of the $63,584 (24,496 miles) category to derive a ratio of 0.798, as shown in Table A-5.

Table A-5
NHTS Annual VMT by Income Category

2009 NHTS Travel Data by Annual HH Income	Annual VMT/HH	Days	Daily VMT	Ratio to Mean	Normalized to 1.061
Average of $16,100	9,145	365	25.05	0.373	0.352
Average of $25,750	13,748	365	37.67	0.561	0.529
Average of $48,880	20,736	365	56.81	0.847	0.798
Total (All Homes)	24,496	365	67.11	1.000	
Average of $70,371	25,995	365	71.22	1.061	1.000
Average of $87,897	29,347	365	80.40	1.198	1.129

Source: 2009 National Household Travel Survey Database, Federal Highway Administration

Table A-6
Trip Generation Rate by Single Family Land Use Tier

Estimation of Trip Rate by Tier	Trip Rate[1]	Assessable Trip Length[2]	Daily VMT[3]	Ratio to Mean[4]
Single Family (Detached)				
Less than 1,500 sf & Very Low Income	**2.75**	6.62	18.20	0.352
Less than 1,500 sf & Low Income	**4.13**	6.62	27.35	0.529
Less than 1,500 sf	**6.23**	6.62	41.26	0.798
1,500 to 2,499 sf	**7.81**	6.62	51.70	1.000
2,500 sf or larger	**8.82**	6.62	58.37	1.129

1) Daily VMT (Item 3) divided by assessable trip length (Item 2) for each tiered single family land use category
2) Source: Table A-2
3) Ratio to mean (Item 4) multiplied by total daily VMT for the 1,500 to 2,499 sf tier for each tiered single family land use category
4) Source: Table A-5

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Green Cove Springs Mobility Fee Report

Developed by:

Gannett Fleming

RSG