



# AGENDA CAC

Citizens Advisory Committee  
ZOOM VIRTUAL MEETING  
Meeting ID: 952 1330 8420  
Password: 217659

Please click [here](#) to be directed to the Zoom website, or you may dial in at 1-646-876-9923.

**August 31, 2020  
2:00 pm**

1. **Call to Order**
2. **Roll Call**
3. **Approval of the Agenda**
4. **Approval of August 7, 2020 Meeting Minutes**
5. **Open to Public for Comments on Items Not on the Agenda**
6. **Agency Updates**
  - A. FDOT
  - B. MPO Executive Director
7. **Committee Action**
  - A. Endorse Transit Development Plan – Major Update
  - B. Endorse Transportation System Performance Report & Action Plan (TSPR)
  - C. Preliminary Review and Comment on 2045 Long Range Transportation Plan (LRTP) Draft Cost Feasible Plan (CFP) Roadway Network, Draft Chapter 4 - System-wide Needs Assessment and Draft Financial Resources Technical Memorandum
  - D. Endorse Collier County's Transit Safety Performance Targets
8. **Reports and Presentations (May Require Committee Action)**
  - A. FDOT Update on Current Project Development & Environmental (PD&E) Studies
9. **Member Comments**
10. **Distribution Items**
  - A. FY21-25 TIP – Administrative Modifications
11. **Next Meeting Date**

*September 28, 2020 – 2:00 p.m.*  
Will be VIRTUAL  
Governor's EO 20-193 extends virtual meetings through September 30<sup>th</sup>
12. **Adjournment**

#### ***PLEASE NOTE:***

This meeting of the Citizens Advisory Committee (TAC) to the Collier Metropolitan Planning Organization (MPO) is open to the public and citizen input is encouraged. Any person wishing to speak on any scheduled item may do so upon recognition of the Chairperson. Any person desiring to have an item placed on the agenda shall make a request in writing with a description and summary of the item, to the MPO Director 14 days prior to the meeting date. Any person who decides to appeal a decision of this Committee will need a record of the proceedings pertaining thereto, and therefore may need to ensure that a verbatim record of the proceeding is made, which record includes the testimony and evidence upon which the appeal is to be based. In accordance with the Americans with Disabilities Act, any person requiring special accommodations to participate in this meeting should contact the Collier Metropolitan Planning Organization 72 hours prior to the meeting by calling (239) 252-5814. The MPO's planning process is conducted in accordance with Title VI of the Civil Rights Act of 1964 and Related Statutes. Any person or beneficiary who believes that within the MPO's planning process they have been discriminated against because of race, color, religion, sex, age, national origin, disability, or familial status may file a complaint with the Collier MPO Executive Director and Title VI Specialist Ms. Anne McLaughlin (239) 252-5884 or by writing Ms. McLaughlin at 2885 South Horseshoe Dr., Naples, FL 34104.

**CITIZEN ADVISORY COMMITTEE of the  
COLLIER COUNTY METROPOLITAN PLANNING ORGANIZATION  
VIRTUAL MEETING  
ZOOM MEETING PLATFORM  
MEETING MINUTES  
August 7, 2020 2:00 p.m.**

**1. Call to Order**

**Mr. Gelfand** called the meeting to order at 2:03 p.m.

**2. Roll Call**

**Ms. McLaughlin** called the roll and confirmed a quorum was present.

**CAC Members Present**

Neal Gelfand, Chair, District II  
Rick Hart, Persons with Disabilities  
Karen Homiak, District I  
George Dondanville, At-Large  
Tammie Pernas, Everglades City  
Fred Sasser, City of Naples  
Suzanne Cross, City of Naples

**CAC Members Absent**

Josh Rincon, Representative of Minorities  
Dennis DiDonna, At-Large  
Pam Brown, District V  
Robert Phelan, Marco Island  
Bob Melucci, District IV

**MPO Staff**

Anne McLaughlin, Executive Director  
Brandy Otero, Principal Planner  
Josephine Medina, Planner  
Karen Intriago, Administrative Assistant

**Others Present**

Lorraine Lantz, TAC Chair  
Robert Grubel, Jacobs Engineering  
Tara Jones, Jacobs Engineering  
Bill Gramer, Jacobs Engineering  
Victoria Peters, FDOT  
Trinity Scott, Collier County  
Zachary Karto, CAT  
Valerie Nowotnick, Minute Taker



### **3. Approval of the Agenda**

*Ms. Pernas moved to approve the agenda. Ms. Cross seconded. Carried unanimously.*

### **4. Approval of July 8, 2020 Meeting Minutes.**

*Ms. Homiak moved to approve the July 8, 2020 meeting minutes. Ms. Pernas seconded. Carried unanimously.*

### **5. Public Comments for Items not on the Agenda**

None.

### **6. Agency Updates**

#### **A. FDOT**

**Ms. Peters** – No updates.

#### **B. MPO Executive Director**

**Ms. McLaughlin** – will have federal certification review as MPO. Certification occurs every 4 years. Public meeting Tuesday (08/11/2020) at 5 pm. Wednesday and Thursday (08/12/2020, 08/13/2020) also public meetings on Zoom. FHWA, FDOT and MPO collaborative meeting. All information on MPO website. **Ms. Cross** – requested that **Ms. McLaughlin** ask the certifying board how they are handling the COVID and how it is affecting the transportation plan overall. **Mr. Gelfand** – inquired about questions in LRTP appendix [State and Federal requirements of LRTPs], who answers questions and if it would be included in certification review. **Ms. McLaughlin** – certification review team will likely ask questions related to Federal “expectation letters”. Related to qualifying for state and federal funding. **Ms. Otero** – consultant will complete checklist for the 2045 LRTP.

### **7. Committee Action**

#### **A. Provide Input on 2045 Long Range Transportation Plan (LRTP) Preliminary Draft Cost Feasible Network Alternative 5, Project Evaluation Matrix, Cost Estimates and Revenue Projections**

**Ms. McLaughlin** – introduced consultants with Jacobs Engineering. Focus on FDOT model run for Alternative 4 – required to move on to Alternative 5. Jacobs has reviewed revenue projections and what Cost Feasible Plan will cover. Additional information on MPO website for remaining items. **Ms. Jones** – reviewed models and maps in agenda packet depicting traffic study. Provided spreadsheet of currently scheduled projects. Detailed Exhibit 1 – 2045 Needs Plan Projects – received results on Alternative 4 on July 31, 2020 (Exhibit A). Discussed traffic study color-coded

maps explaining differences between Alternative 3 and Alternative 4. Green Blvd. may remain on needs list but may not advance to cost feasible list due to lack of traffic volume. Alternative 5 is due to FDOT on August 14, 2020. Alternative 5 will be fiscally constrained. **Ms. Cross** – inquired about how fiscally constrained is Alternative 5. **Ms. Jones** – based on revenue sources identified in memo (federal, state, county, local). Alternative 5 will be constrained to dollar amount in memo. Provided Exhibit C to illustrate budget amounts: \$1.12B estimated for the 2040 LRTP compared to \$1.57B for the 2045 LRTP. Some SIS related and some federal related. Assumption is 5% is Connected and Autonomous Vehicle (“CAV”) volume. Alternative 4 allows for 35% of CAV. **Mr. Gelfand** – inquired about project toll lanes – will it be unmanned and tolls are captured via license plate. **Ms. Jones** – I-75 managed lane (10 lanes) – 6 would not be tolled and 4 would be tolled (electronically). **Mr. Gelfand** – what is projected percentage of usage for toll section. **Ms. Jones** – do not know results of FDOT study but revenue will be included in that report. **Ms. Peters** – Bayshore Road is other point in Collier County [correction: Lee County] for PD&E study. Will be a public hearing – website has more info: [www.swflinterstates.com](http://www.swflinterstates.com). Also [www.swflroads.com](http://www.swflroads.com).

**Ms. McLaughlin** – putting together Alternative 5 for final model run by FDOT. Future meetings will discuss other aspects of LRTP that are not captured in this model, such as transit and other modes. **Ms. Jones** – Alternative 5 is between Alternative 4 and Alternative 3 plans. Certain projects have already been flagged for removal but may be added back if revenue is available. **Ms. McLaughlin** – Alternative 5 must be submitted August 15, 2020. Plan is amended every 5 years at a minimum. May need to be sooner depending on final decisions regarding FDOT’s SIS Cost Feasible network.

## **B. Provide comments on Draft 2045 LRTP Chapters 1-3 and Appendix A**

**Ms. McLaughlin** – reviewed goals and objections from agenda packet (Executive Summary). Will extend comment period to August 21, 2020 to receive comments from committee. **Ms. Jones** – Chapters 4, 5, 6, and 7 are to be prepared. **Ms. McLaughlin** – related plans and studies feed into LRTP at various stages. Transit was discussed extensively with TAC committee. Will be working with FDOT, consultants, County transit to collaborate on specific elements of plan. Ultimately will compose Cost Feasible Plan and address performance measures. **Ms. Cross** – model is predicated on comparison of single-family v. multi-family v. commercial. Shared thoughts on potential COVID impacts on LRTP. Also Chapter 3 – weighting goals – how is it used. **Ms. Jones** – customized to Collier County. Will see similar goals in other area MPO plans. **Mr. Gelfand** – complimentary on overall content but saw overlap in common terminology used in Chapters. Asked for clarification of defining terms in report. **Ms. Jones** – will request that terms be clarified. **Ms. Pernas** – mentioned Section 3-2, second bullet point, “increase safety and security” – typographical error. **Mr. Dondanville** – affirmed Ms. Cross comments and agreed. Brief discussion among committee members of chapter content, potential COVID impacts, and improvements in LRTP.

## **C. Elect Vice-Chair**

**Ms. McLaughlin** – seeking nominee for Vice Chair.

*Ms. Homiak nominated Ms. Pernas. Ms. Cross seconded. Passed unanimously.*

## **8. Reports and Presentations (May Require Committee Action)**

None.

## **9. Member Comments**

None.

## **10. Distribution Items**

None.

## **11. Next Meeting Date**

*August 31, 2020 – 2:00 p.m. - Virtual Meeting (current Executive Order expires September 1, 2020)*

## **11. Adjournment**

*There being no further comment or business to discuss, **Mr. Gelfand** asked for motion to adjourn. **Ms. Homiak** moved. **Ms. Cross** seconded. The meeting was adjourned at 2:56 p.m.*

**COMMITTEE ACTION**  
**ITEM 7A**

**Endorsement of the Transit Development Plan (TDP) Major Update**

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**OBJECTIVE:** For the Committee to endorse the Transit Development Plan (TDP) Major Update.

**CONSIDERATIONS:**

The Florida Department of Transportation (FDOT) requires each transit agency to develop a Transit Development Plan (TDP) Major Update every five years and an annual update/progress report for all other years in order to be eligible to receive State Block Grant Funds for transit system operations. This year, the requirement is to develop a Major Update.

The TDP sets the strategic guidance for public transportation in the community over the next 10 years. The plan identifies community mobility needs and includes cost and revenue projections along with transit goals, objectives and policies.

The Consulting Team of Tindale Oliver & Associates has been hired to assist the Public Transit & Neighborhood Enhancement (PTNE) and Metropolitan Planning Organization (MPO) staff with the development of the TDP Major Update.

As MPO funds were expended in developing the TDP, the Committees and MPO Board are being asked to review and endorse the draft TDP 2021-2030 (**Attachment 1**), to ensure consistency with the MPO's Long Range Transportation Plan (LRTP), and to allow for opportunities for public comments and feedback as part of the public involvement process. Tindale Oliver & Associates will provide an overview of the draft TDP at the meeting. The TDP will be taken to the Board of County Commissioners (BCC) for adoption on October 13, 2020. The final TDP will be prepared based on comments from outreach and submitted to FDOT by November 1, 2020.

**STAFF RECOMMENDATION:** Staff recommends for the Committee to endorse the Transit Development Plan (TDP) Major Update.

Prepared By: Josephine Medina, Senior Planner

Attachments:

1. Draft TDP 2021-2030



**Collier County  
Metropolitan Planning Organization**

# **Ten-Year Transit Development Plan**

**Draft Report**  
**August 2020**

*Prepared by*



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## 1.0 Introduction

Collier Area Transit (CAT) provides fixed-route transit service to the urbanized areas of Collier County, with routes serving Naples, Golden Gate, North Naples, Ave Maria, Immokalee, and Marco Island, and more. In addition, CAT's Routes 11, 27, and 12 serve the Creekside Transfer Center, providing regional connectivity to Lee County.

CAT initiated this study in coordination with Collier County Metropolitan Planning Organization (MPO) to update CAT's Transit Development Plan (TDP) according to Florida Administration Code (F.A.C.) Rule 14-73.001 – Public Transportation—"The TDP shall be the applicant's planning, development and operational guidance document to be used in developing the Transportation Improvement Program and the Department's Five Year Work Program." This TDP serves as the strategic guide for public transportation in the community during the next 10 years and represents the transit agency's vision for public transportation in its service area during this period.

### 1.1 Objectives of this Plan

This document is an update to the TDP for CAT services in Collier County, as currently required by State law. Upon completion, this TDP will result in a 10-year plan for transit and mobility needs, cost and revenue projections, and community transit goals, objectives, and policies.

#### 1.1.1 TDP Requirements

As a recipient of State Public Transit Block funds, the Florida Department of Transportation (FDOT) requires a major update of the CAT TDP every five years to ensure the provision of public transportation is consistent with the mobility needs of the local community. FDOT formally adopted the current requirements for TDPs on February 20, 2007. Major requirements of the regulation include the following:

- Major updates must be completed every 5 years, covering a 10-year planning horizon.
- A Public Involvement Plan (PIP) must be developed and approved by FDOT or consistent with the approved MPO public participation plan.
- FDOT, the Regional Workforce Development Board, and the MPO must be advised of all public meetings at which the TDP is presented and discussed, and these entities must be given the opportunity to review and comment on the TDP during the development of the mission, goals, objectives, alternatives, and 10-year implementation program.
- Estimation of the community's demand for transit service (10-year annual projections) using the planning tools provided by FDOT or a demand estimation technique approved by FDOT.

The Florida Legislature added a requirement for the TDP in 2007 with the adoption of House Bill 985. This legislation amended Florida Statutes (F.S.) 341.071, requiring transit agencies to "... specifically address potential enhancements to productivity and performance which would have the effect of increasing farebox recovery ratio." FDOT subsequently issued guidance requiring the TDP and each

annual update to include a 1–2-page summary report as an appendix to the full major or annual TDP report on the farebox recovery ratio and strategies implemented and planned to improve it.

## 1.2 TDP Checklist

This 10-year plan meets the requirements for a TDP Major Update in accordance with Rule Chapter 14-72, F.A.C. Table 1-1 is a list of TDP requirements from Rule 14-73.001 and indicates whether or not the item was accomplished in this 10-year plan.

## 1.3 Organization of this Report

**Section 2** summarizes the **Baseline Conditions** for Collier County, including a physical description of the study area, a population profile, and demographic and journey-to-work characteristics as well as a review of new developments and tourism information. Land use trends, major transit trip generators and attractors, economic factors, existing roadway conditions, major employers, and commuter workflow patterns are also explored. The information compiled and presented in this section provides the basis for subsequent tasks of the TDP. Additional areas explored include land use trends, major transit trip generators and attractors, and existing roadway conditions.

**Section 3** presents the **Transit Performance Evaluation** for CAT, including a review and evaluation of the existing transit services in the study area, including a ridership trend, a vehicle inventory, public transportation service providers, a trend analysis conducted to examine the performance of CAT's transit services, and a peer review to assist CAT in setting measurable targets for ridership and improvements.

**Section 4** describes **Public Outreach** efforts to date, including an onboard survey, discussion group workshops, stakeholder interviews, Review Committee meetings, virtual outreach, and online survey results.

**Section 5** provides the **Transit Demand Assessment** of current transit service, including a review of GIS-based tools to identify discretionary and traditional markets in Collier County and of the 10-year ridership projections for CAT. Also included is a **Gap Analysis** for CAT, which presents the gaps in service compared to the data gathered. This step is vital in assessing the performance of public transit in meeting the needs of the transportation-disadvantaged populations in the CAT service area.

**Section 6** presents the **Existing Transit Assessment**, documenting existing ridership by month for the whole system, followed by a breakdown of ridership by month by route. Also included are an examination of route productivity by comparing ridership per revenue hour and mile and an evaluation of average daily passenger boardings by stop using Automatic Passenger Counting (APC) data from 2019 to evaluate productivity at the stop level compared to other stops in the service.

**Section 7** presents the **Situation Appraisal**, which reviews the current overall planning and policy environment within the county to better understand the operating context of CAT. First, a review of local plans and documents is presented, which reviews current planning and policy environment within the county to better understand transit needs. It begins with a Plans and Policy Review, a

**Table 1-1: TDP Checklist**

Public Involvement Process		TDP Section
√	Public Involvement Plan (PIP) drafted	Section 4, Appendix B
√	PIP approved by FDOT	
√	TDP includes description of Public Involvement Process	
√	Provide notification to FDOT	
√	Provide notification to Regional Workforce Board	
Situation Appraisal		
√	Land use	Section 7
√	State and local transportation plans	Section 7
√	Other governmental actions and policies	Section 7
√	Socioeconomic trends	Section 7
√	Organizational issues	Section 7
√	Technology	Section 7
√	10-year annual projections of transit ridership using approved model	Section 5
√	Assessment of whether land uses and urban design patterns support/hinder transit service provision	Section 7
√	Calculate farebox recovery	Section 3, Appendix D
Mission and Goals		
√	Provider's vision	Section 8
√	Provider's mission	Section 8
√	Provider's goals	Section 8
√	Provider's objectives	Section 8
Alternative Courses of Action		
√	Develop and evaluate alternative strategies and actions	Section 9
√	Benefits and costs of each alternative	Section 9
√	Financial alternatives examined	Section 9, Section 10
Implementation Program		
√	Ten-year implementation program	Section 10
√	Maps indicating areas to be served	Section 9
√	Maps indicating types and levels of service	Section 9
√	Monitoring program to track performance measures	Section 8, Appendix E
√	Ten-year financial plan listing operating and capital expenses	Section 10
√	Capital acquisition or construction schedule	Section 10
√	Anticipated revenues by source	Section 10
Relationship to Other Plans		
√	Consistent with Florida Transportation Plan	Section 7
√	Consistent with local government comprehensive plan	Section 7
√	Consistent with Collier MPO long-range transportation plan	Section 7
√	Consistent with regional transportation goals and objectives	Section 7
Submission		
	Adopted by Collier County Board of County Commissioners	N/A
	Submitted to FDOT	N/A



review of key local plans and documents and an overview of how each address and highlight key implications for transit within Collier County. A Situation Appraisal is presented, which identifies and assesses strengths and weaknesses of the system and potential threats to the provision of service in the county. Insights and key opportunities for addressing the threats impacting the provision of transit service in the county are presented based on review of socioeconomic trends, travel behavior and trends, tourism, public involvement, land use assessments, organizational attributes and funding issues, and technologies.

**Section 8** sets forth CAT's **Mission, Goals and Objectives** to serve as a policy guide for implementation of the CAT TDP. A review and update to the existing service, policy, and financial goals and objectives for the public transit services was completed to match the goals of the local community with respect to transportation and land use.

**Section 9** presents potential transit improvements for the 10-year transit plan, as known as the **Alternatives Development**. The proposed improvements for transit service represent community needs for the next 10 years and were developed without consideration of funding constraints. The improvements are prioritized using the evaluation process located in the 10-year implementation and financial plan.

**Section 10** summarizes the **10-Year Implementation Plan**. Unconstrained and constrained cost feasible plans are presented; the constrained plan identifies the funded service and capital improvements as well as unfunded needs and includes a discussion of the revenue assumptions and capital and operating costs used.

## 2.0 Baseline Conditions

Components of the study area in the context of the TDP were reviewed and include:

- Physical description of the study area
- Population profile
- Demographic characteristics
- Labor and employment characteristics
- Work force
- Tourism
- Major trip generators
- Major developments
- Existing and future land use
- Commuter travel patterns
- Roadway conditions

A series of maps and tables illustrates selected population, demographic, and socioeconomic characteristics. Data from the U.S. Census, the American Community Survey (ACS), Collier County, and the Collier MPO 2045 Long Range Transportation Plan (LRTP) were used as primary data sources and were supplemented by other data from local and regional agency sources, as available. Note that the LRTP update is in the process of being completed, so some future data do not reflect 2045 projections.

### 2.1 Physical Description of Study Area

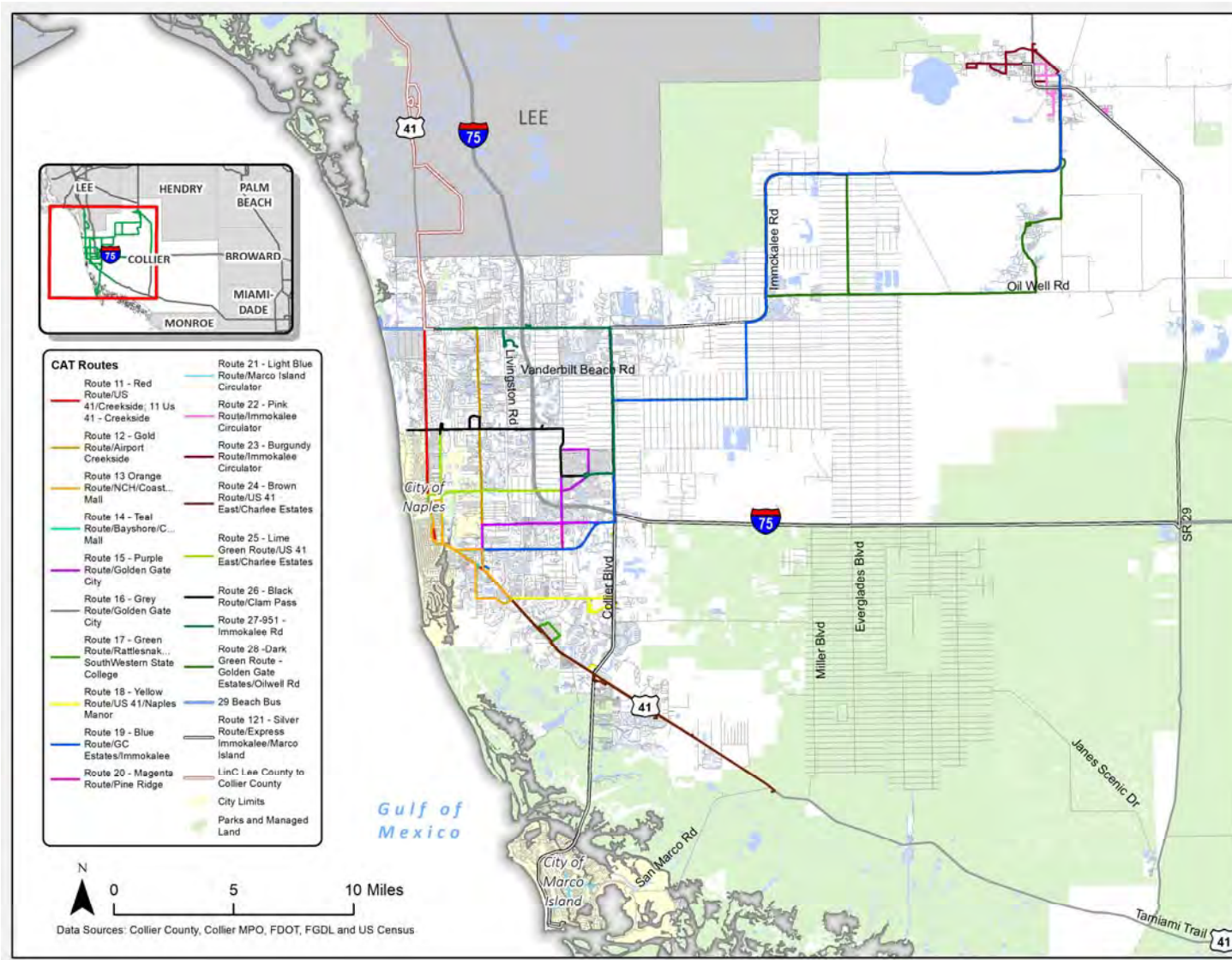
Collier County is located in southwest Florida and is bordered on the northwest by Lee County, on the northeast by Hendry County, on the east by Broward and Miami-Dade counties, on the west by the Gulf of Mexico, and on the south by Monroe County. There are three municipalities within Collier County—Everglades City, Marco Island, and Naples, the County seat.

Collier County is the largest county in Florida geographically, at approximately 1,998 square miles.<sup>1</sup> A significant portion (more than 1.2 million acres), primarily in the eastern and southern areas of the county, is designated as protected lands. Map 2-1 shows the study area. For the purpose of transit service peer and trend analysis, presented in Section 3, the service area was reduced to the area of the county accessible to the fixed-route network based on a  $\frac{3}{4}$ -mile radius of the centerlines of the route network for route segments with bus stops. This reduced the service area to 310 square miles.

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<sup>1</sup> US Census Bureau, Census of Population and Housing. Land area based on current information in TIGER database, calculated for use with Census 2010.

**Map 2-1: Study Area**

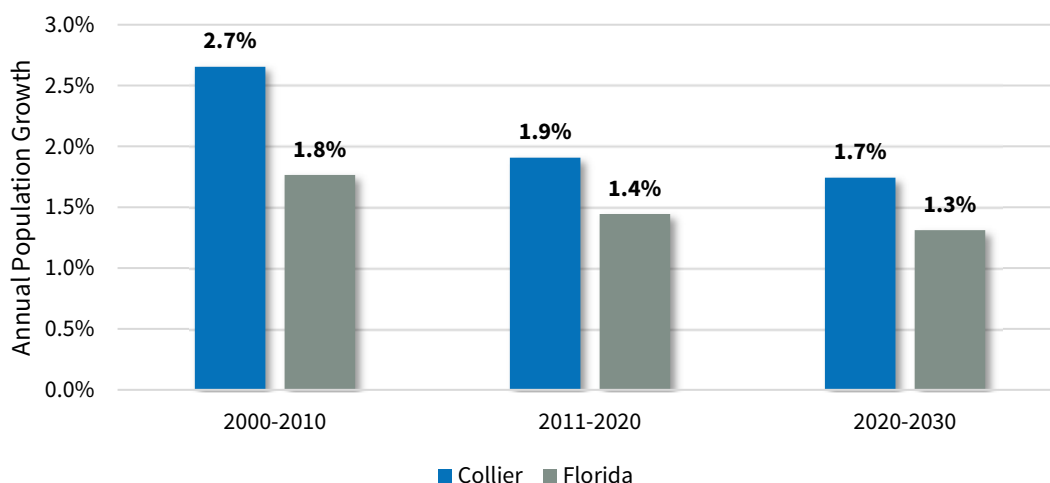


## 2.2 Population Profile

In 2019, Collier County was ranked the 16<sup>th</sup> most populous county in Florida, with 1.8% of the state's total population, anticipated to grow to 2.1% by 2045 based on State population projections.<sup>2</sup> The majority (90%) of the county's population resides in unincorporated areas of the county.

As with the rest of Florida, Collier County experienced a high rate of growth in recent decades. Except for during the Great Recession, the county's population growth generally has been consistently higher than that of Florida, averaging 2.5% annually compared to the state average of 1.7%. The county's annual growth rates are projected to continue outpacing that of Florida through 2030 (Figure 2-1).

**Figure 2-1: Historical and Projected Annual Growth Rate Trends (2000–2030)**



Source: BEBR, Projections of Florida Population by County, 2020–2045, Estimates for 2018

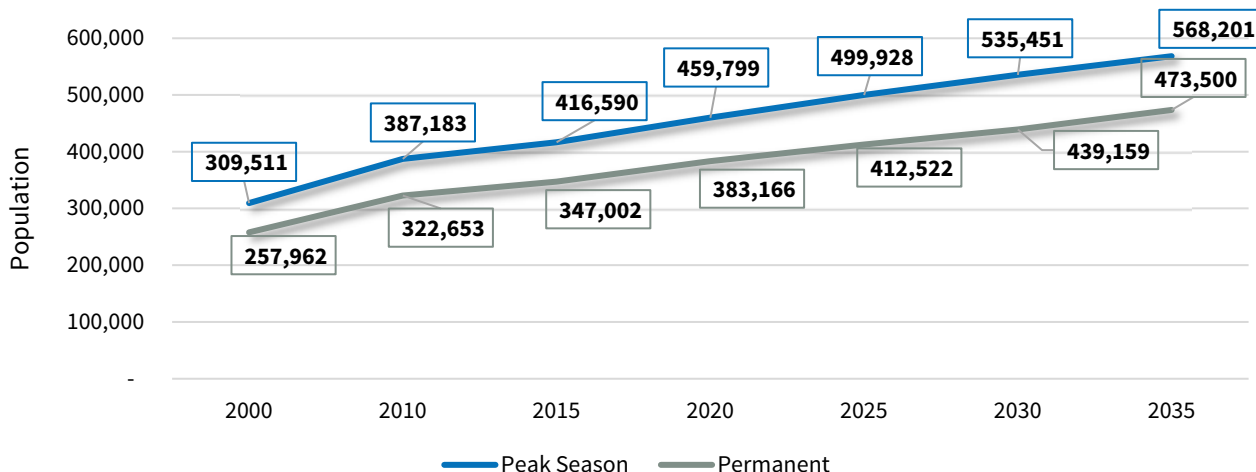
Annually, Collier County experiences a significant influx of tourists and seasonal residents, which greatly increases traffic congestion, particularly in the urbanized area and near the beaches. To better plan for the impact of this demand on public facilities, the County developed annual peak seasonal population estimates and projections.

<sup>2</sup> University of Florida, Bureau of Economic and Business Research (BEER), Projections of Florida Population by County, 2020–2045, Estimates for 2018.

Figure 2-2 compares the historical and projected permanent and peak seasonal population figures countywide. As the county’s peak seasonal population is projected using a constant adjustment factor, annual growth rates for the county’s peak seasonal population mirror those of its resident population.



**Figure 2-2: Countywide and Peak Season Population Estimates and Projections**



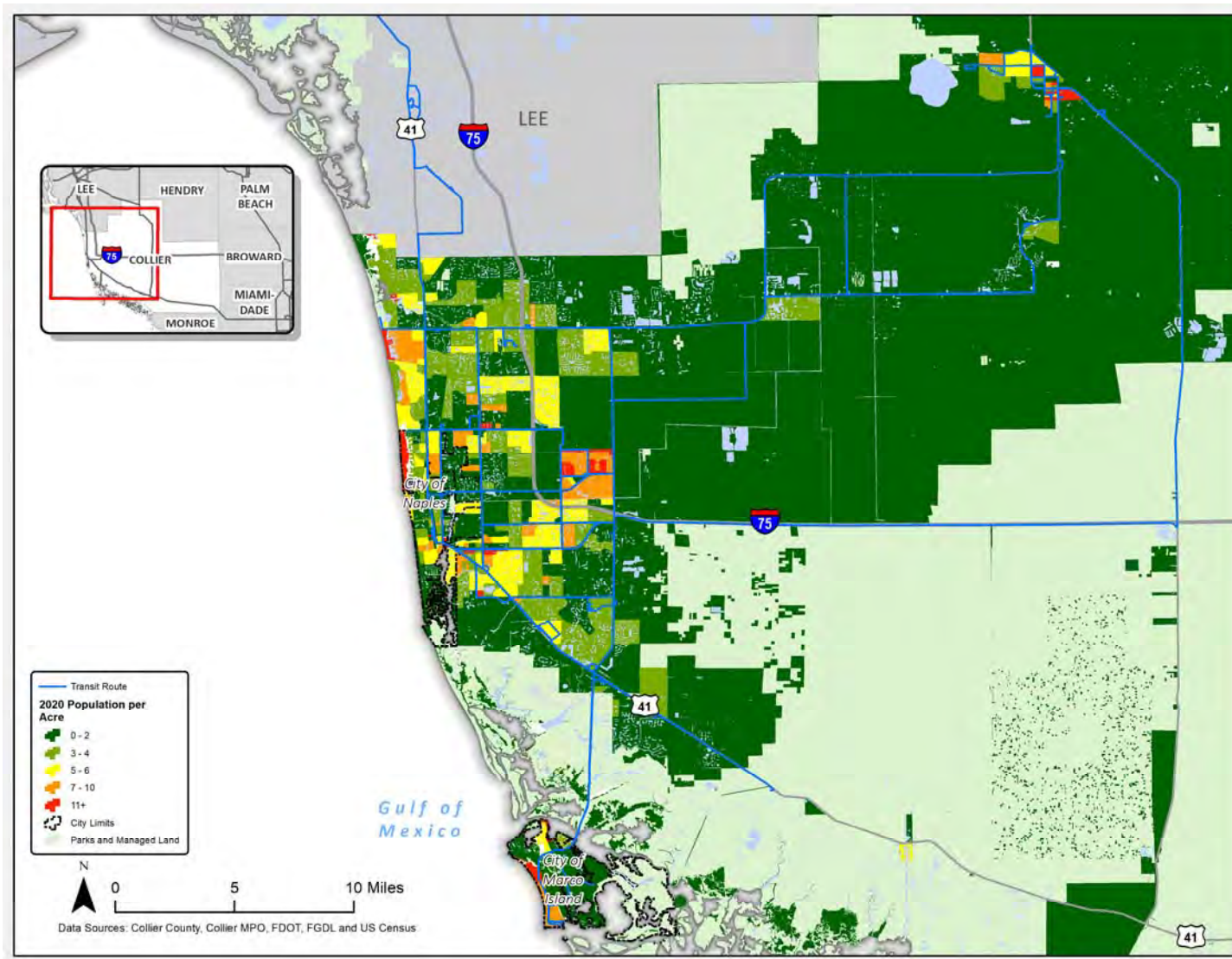
Notes: Estimates and projections derived from data obtained from 2010 Census, BEBR population bulletins, Collier County Comprehensive Planning staff, and Planning staff from Naples and Marco Island. Peak season population derived by increasing each year's October 1 permanent population by 20% based on BEBR Medium Range growth rate projections. Source: Collier County Growth Management Division, Comprehensive Planning Section, Population and Demographics (2018 Population Estimates & Projections)

To analyze population growth at a smaller geographic sub-unit, population projections by Traffic Analysis Zone (TAZ) were used. Maps 2-2 and 2-3 show population densities by TAZ for 2020 and 2030, developed based on socioeconomic data prepared to support the Collier County's 2045 LRTP. Currently, most (~ 77%) of the county's population lies west of CR-951 (Collier Boulevard) in what is the more urbanized coastal area. In addition to growth within the urbanized area primarily due to redevelopment, future growth is projected around Orangetree, Ave Maria, east/southeast of Naples, and, to some degree, in Immokalee. Slightly more growth in these areas is expected through 2045.

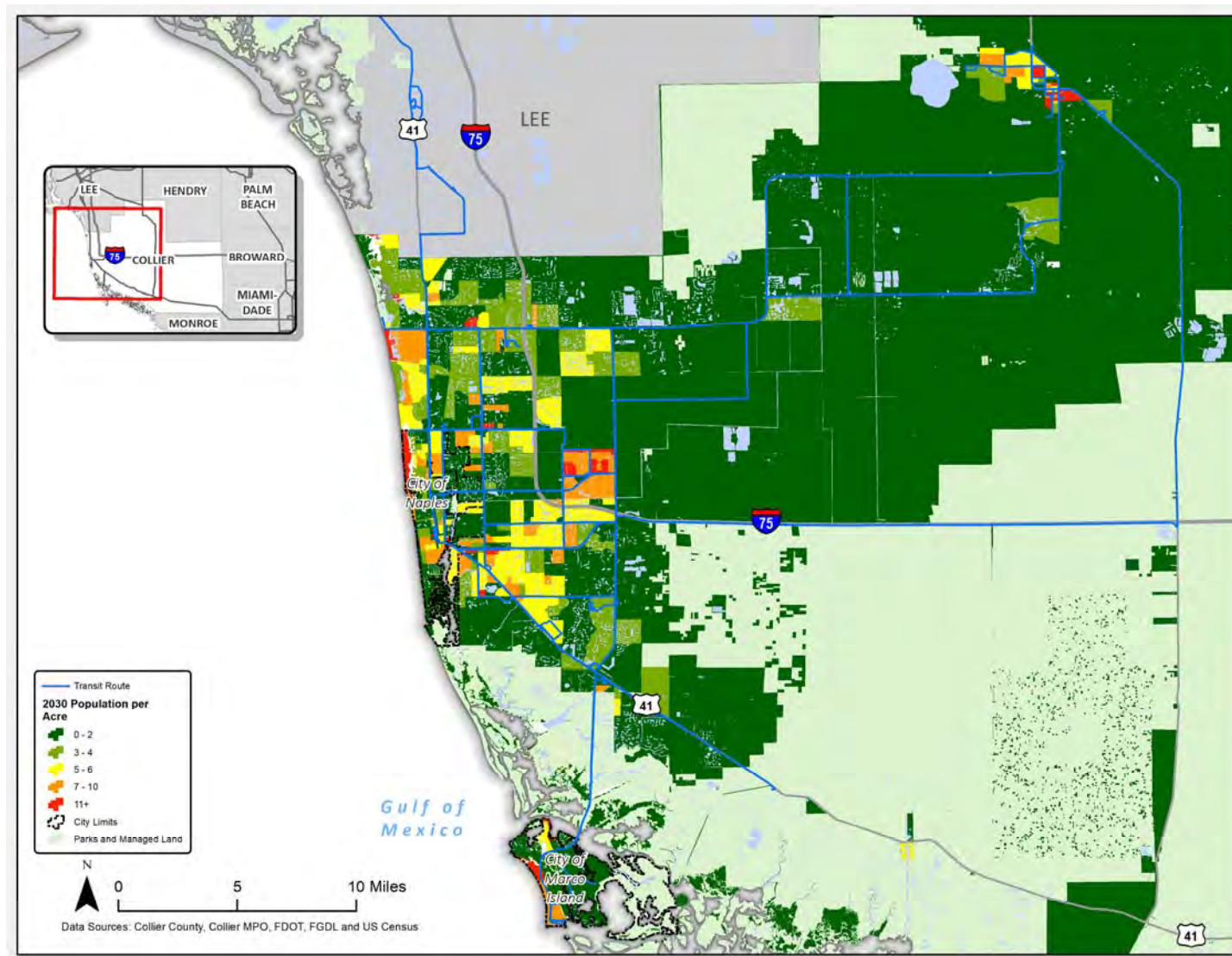
Maps 2-4 and 2-5 graphically display employment densities by TAZ for 2020 and 2030, respectively. Employment data are based on socioeconomic data prepared to support the Collier County 2045 LRTP. Based on the 2020 map, employment in Collier County is densest in the western portion of the county in the Naples area and Marco Island along the coast. In addition, some areas of Marco Island and in Immokalee include medium-range employment densities. Growth in employment is predicted to be highest in existing employment centers and the intersection of I-75/Collier Boulevard in addition to North Naples along the coastline.

Maps 2-5 and 2-6 show the dwelling unit density by TAZ for 2020 and 2030, respectively. The dwelling unit data are based on socioeconomic data prepared to support the Collier County 2045 LRTP. Similar to the population and employment density maps, the current density of dwelling units is concentrated primarily in the Naples area, Marco Island along the Gulf of Mexico, and Immokalee. Projected growth for 2030 is south and east of Naples along Tamiami Trail/US-41 and near the intersection of I-75/Collier Boulevard.

**Map 2-2: Population Density 2020**

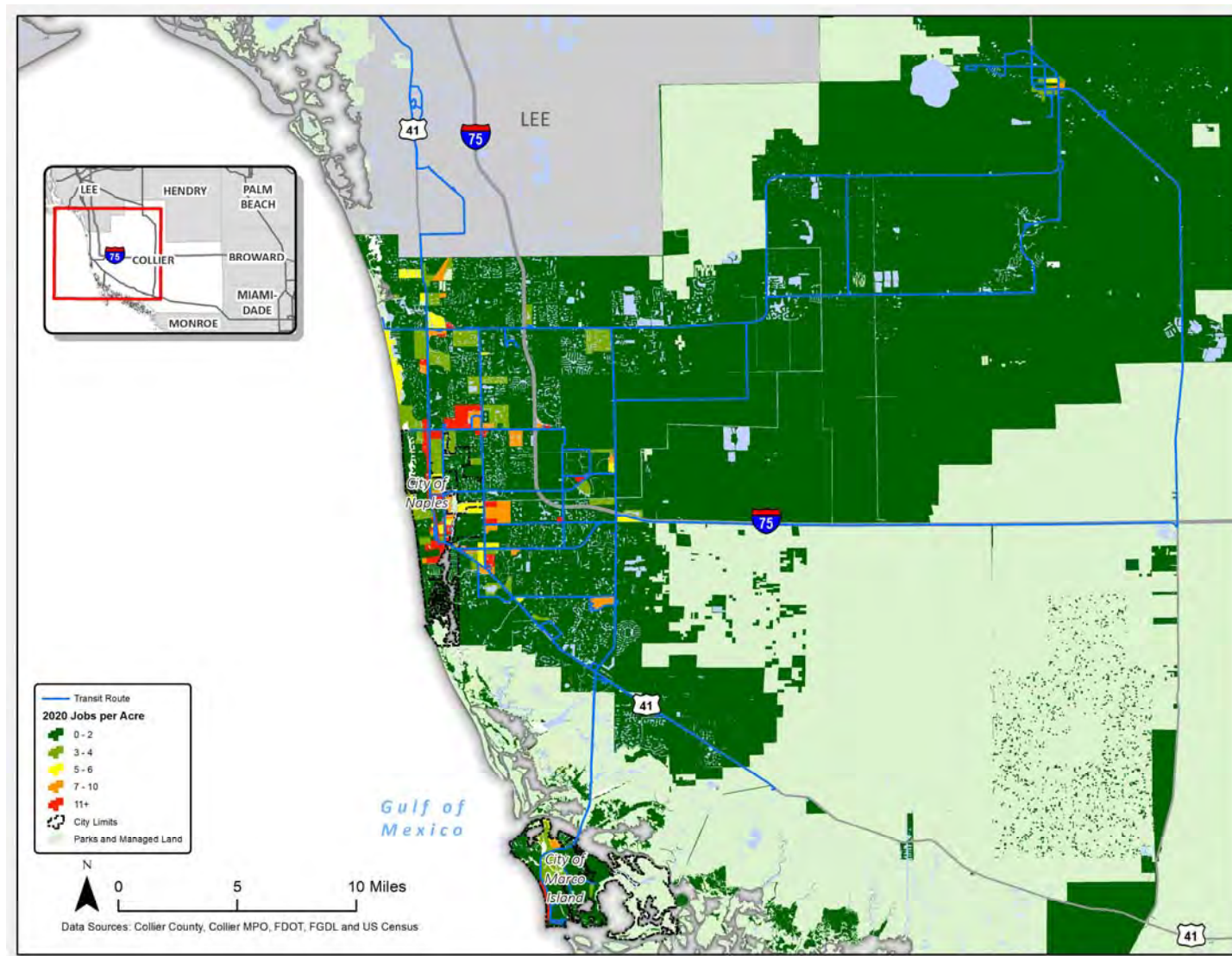


**Map 2-3: Population Density 2030**

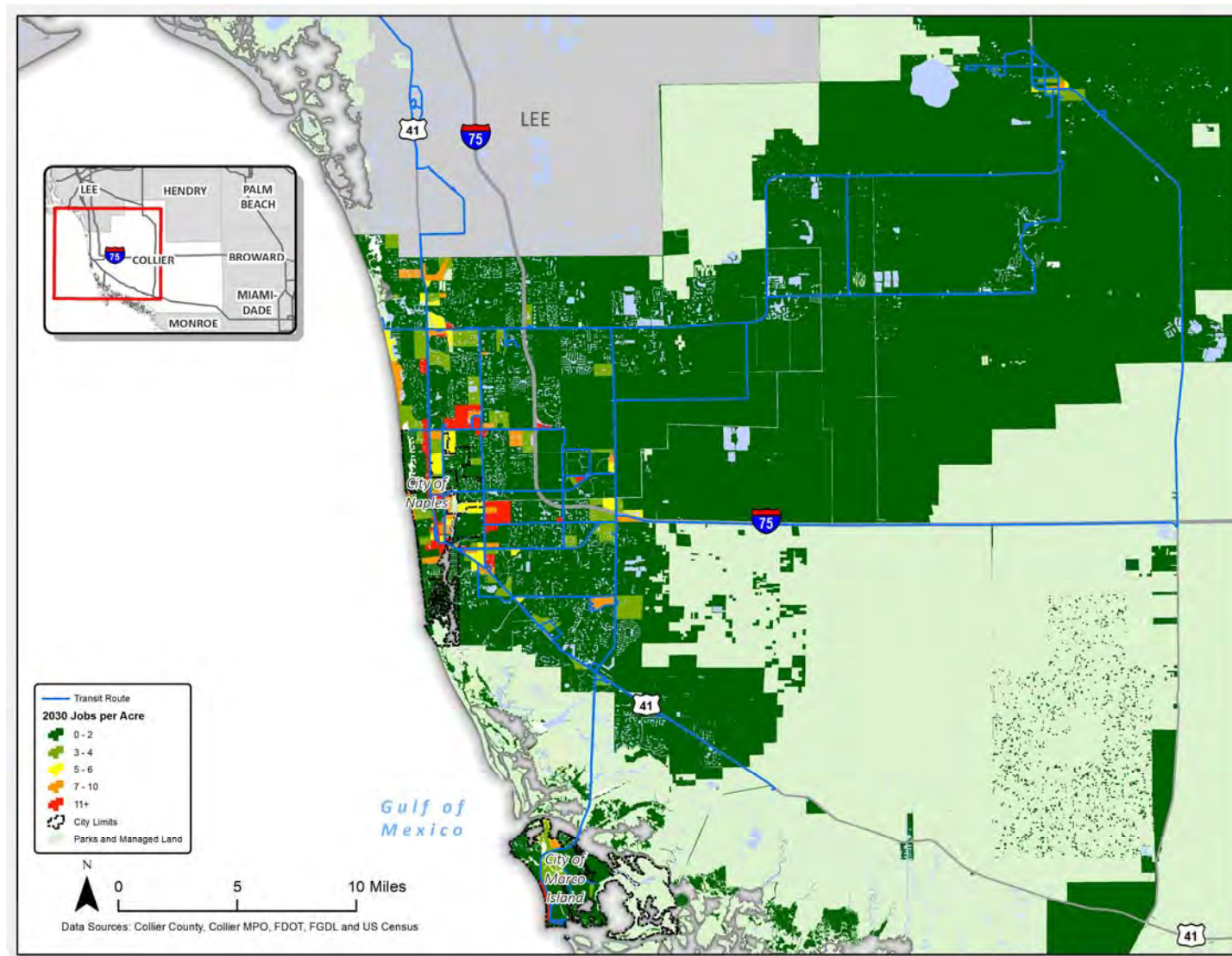




**Map 2-4: Employment Density 2020**

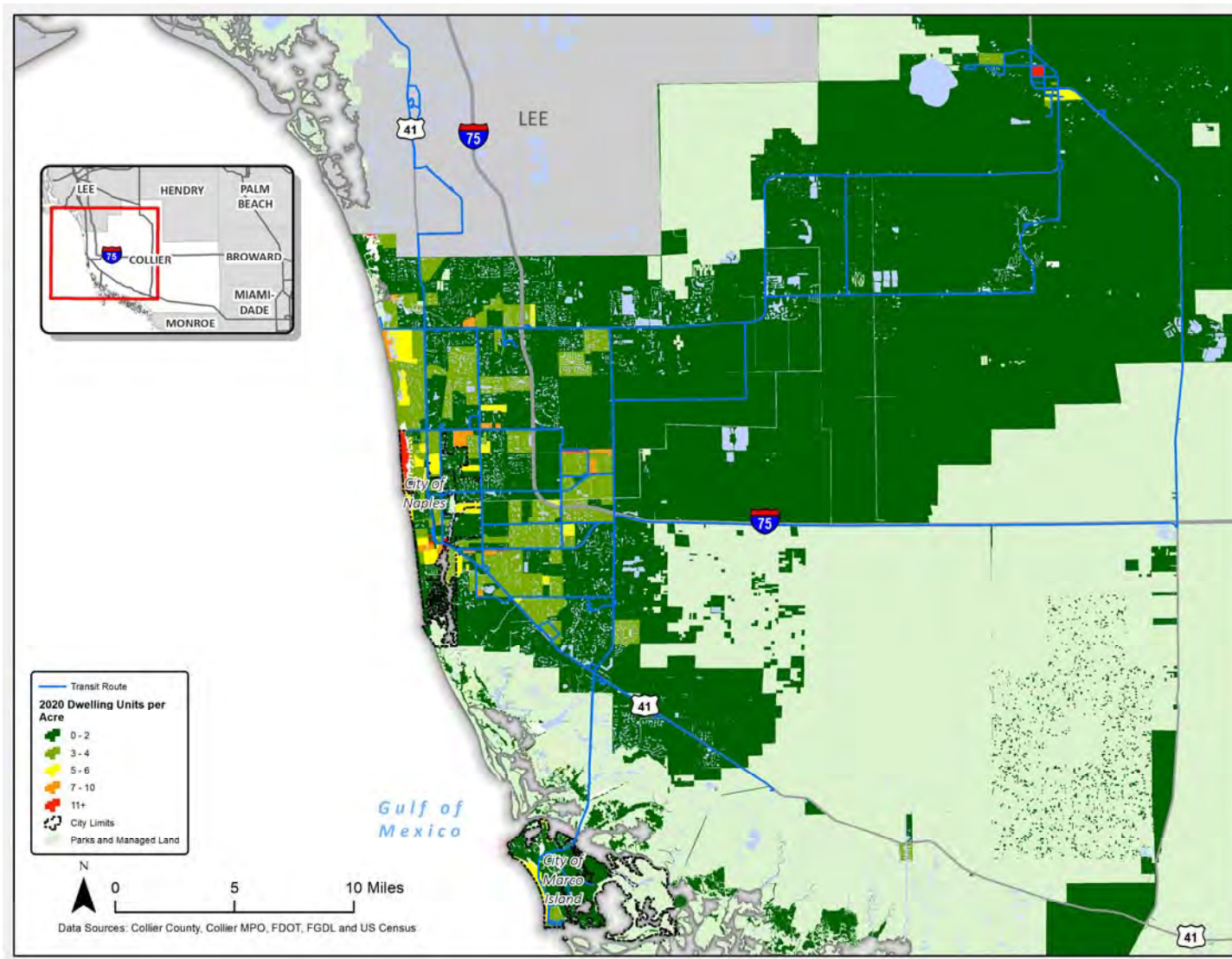


**Map 2-5: Employment Density 2030**

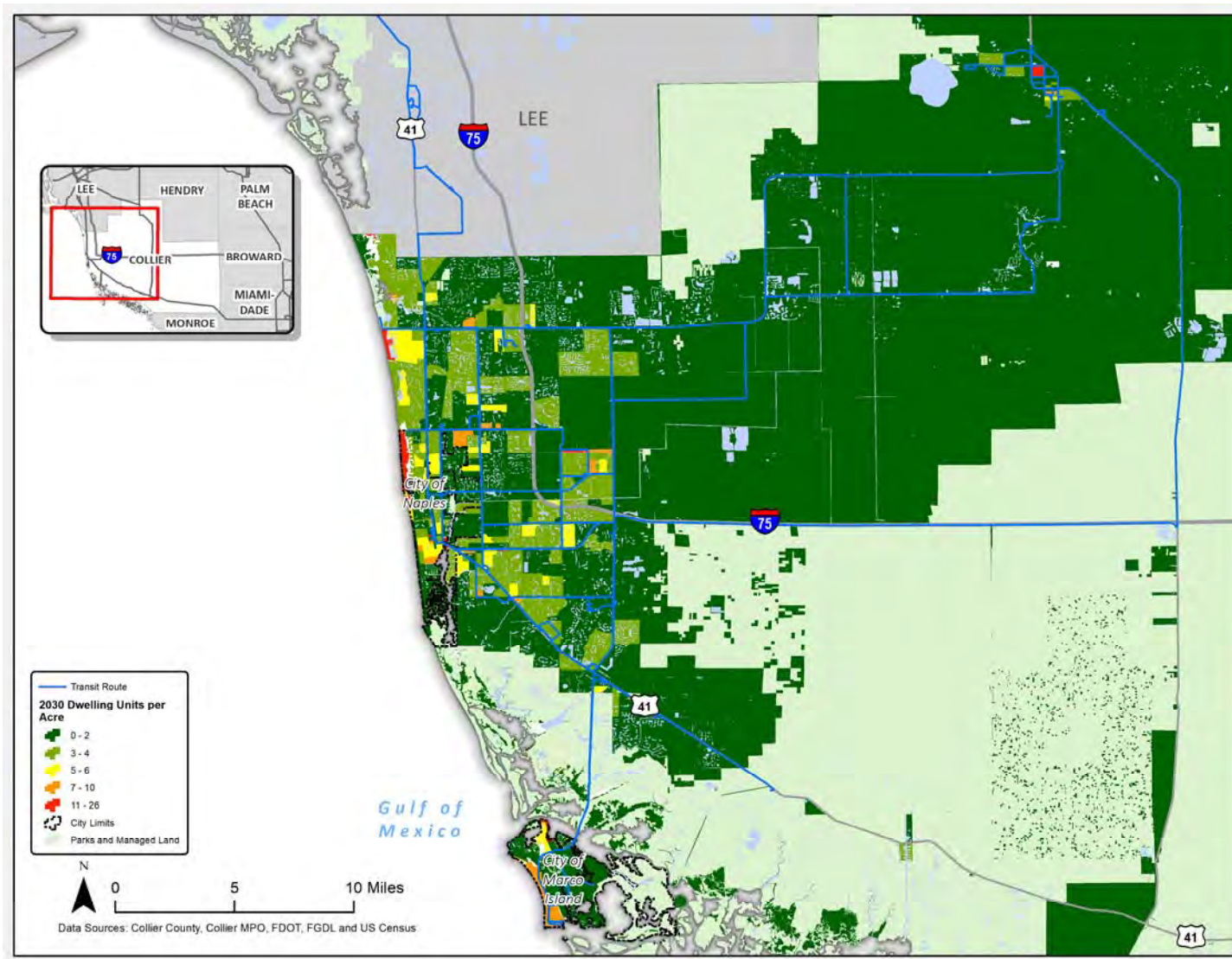




**Map 2-6: Dwelling Unit Density 2020**



**Map 2-7: Dwelling Unit Density 2030**



## 2.3 Transportation Disadvantaged Population

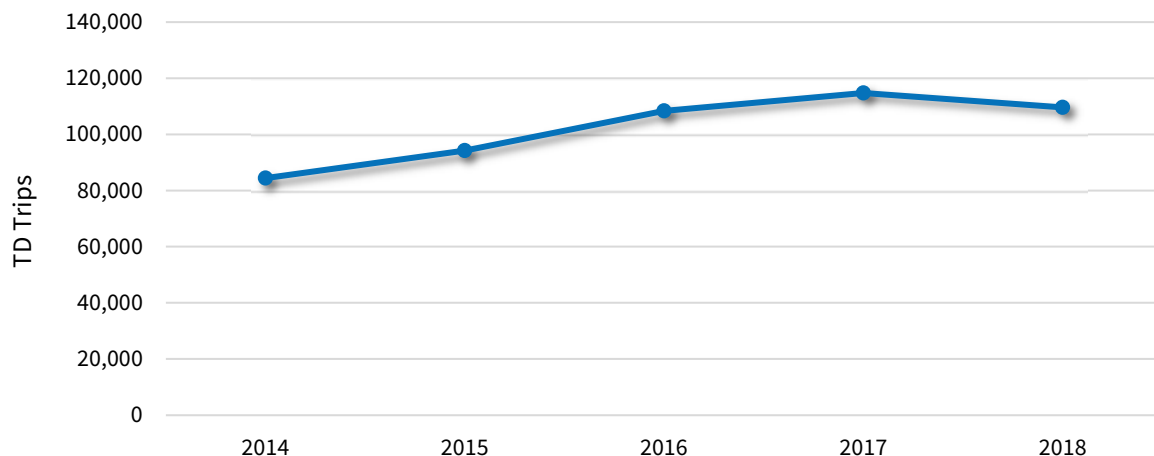
Collier County provides transportation to the transportation disadvantaged (TD) population with service available only to individuals who do not have access to any other means of transportation, including CAT public transportation bus service. Table 2-1 shows the trend in the size of the potential TD population and the number of TD passengers between 2014 and 2018 in Collier County. Potential TD population has risen nearly 18.9%, from 145,829 in 2014 to 173,410 in 2018, and the number of TD trips served through CAT's brokered system, as the Community Transportation Coordinator (CTC) for Collier County, increased 29.8%, from 84,465 in 2014 to 109,623 in 2018. Figure 2-3 shows the number of TD passengers served during the five-year period from 2014 to 2018. As shown, the total number of TD passengers served increased between 2014 and 2018.

**Table 2-1: Collier County Transportation Disadvantaged Population, 2014–2018**

	2014	2015	2016	2017	2018	% Change (2014–2018)
Potential TD Population	145,829	156,251	161,758	167,476	173,410	18.9%
TD Trips Served	84,465	94,248	108,373	114,744	109,623	29.8%

Source: Florida Commission for the Transportation Disadvantaged Annual Operation Reports (AOR)

**Figure 2-3: Collier County Transportation Disadvantaged Trips, 2014–2018**



## 2.4 Demographic Characteristics

Demographic characteristics were compiled for the 10-year transit plan and are shown in Table 2-2. These typically are assumed to have some connection to transit use. The table shows that distribution of male and female ages remained nearly the same from 2000 to 2018, approximately half male and half female, and that the population is aging, with the number of those age 60 and older continuing to increase, which is an important indicator of increased transit and paratransit demand.



**Table 2-2: Collier County Demographic Characteristics**

Characteristic	2000	2010	2018
<b>Gender</b>			
Male	50.1%	49.3%	49.3%
Female	49.9%	50.7%	50.7%
<b>Ethnic Origin</b>			
White	86.1%	83.9%	88.1%
Black or African American	4.5%	6.6%	7.0%
Other	7.2%	7.6%	3.6%
Two or more races	2.2%	1.9%	1.3%
<b>Hispanic Origin</b>			
Not of Hispanic/Latino origin	80.4%	74.1%	72.5%
Hispanic or Latino origin	19.6%	25.9%	27.5%
<b>Age</b>			
<15 years	16.4%	16.0%	14.6%
15–59 years	52.4%	50.4%	47.3%
60+ years	31%	33.7%	38.1%
<b>Household Income</b>			
Under \$10,000	6.0%	6.5%	4.1%
\$10,000–\$49,999	45.7%	41.0%	33.0%
\$50,000 or more	48.4%	52.5%	62.7%
<b>Poverty Status</b>			
Above poverty level	89.7%	83.8%	87.7%
Below poverty level	10.3%	16.2%	12.3%
<b>Vehicle Available in Household</b>			
None	4.9%	5.2%	5.2%
One	42.6%	42.4%	20.9%
Two	41.5%	41.7%	44.7%
Three or more	11.1%	10.7%	29.2%

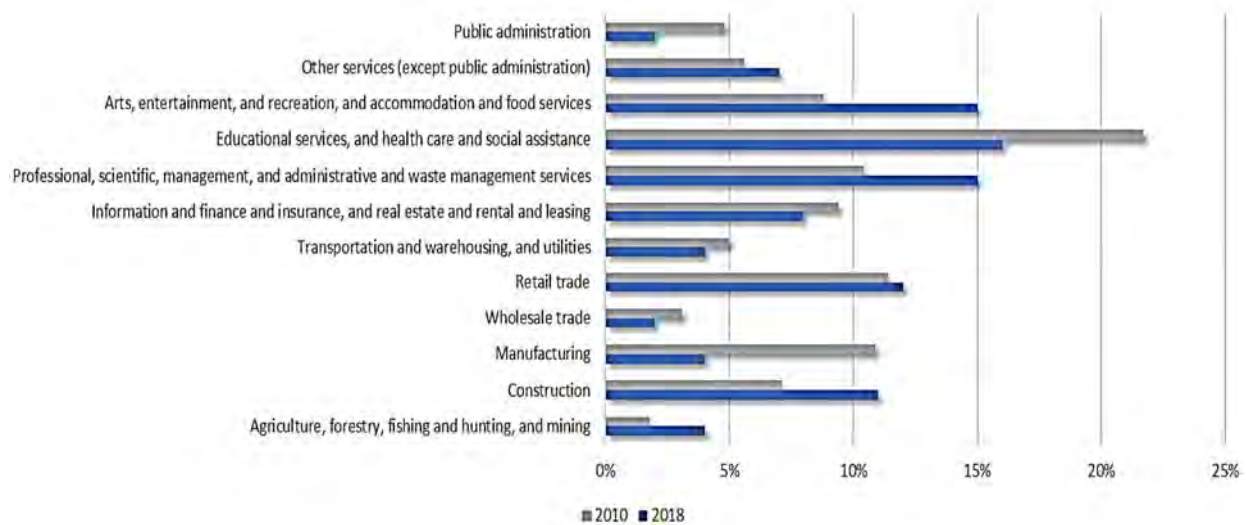
Source: 2000 Census, 2010 Census, 2010 ACS 1-year estimates, 2018 ACS 5-year estimates

Annual household income is also a key demographic indicator for transit use in Florida. Households earning \$50,000 or more increased from 48.4% in 2000 to 62.7% in 2018. The percentage of population below the poverty line decreased 3.9% from 2010 to 2018 but increased 2% when compared to 2000 Census data. The percentage of zero-vehicle households, also a key demographic indicative of transit use, increased slightly, from 4.9% in 2000 to 5.2% in 2018, and the percentage of households with two cars increased from 41.5% in 2000 to 44.7% in 2018.

## 2.5 Labor and Employment Characteristics

Figure 2-4 shows the percentage of population by employment sector in Collier County. The largest service area in the county includes educational services, healthcare, and social assistance, at 16%. The second-highest sectors are professional, scientific, management, administrative and waste management services, and arts, entertainment, recreation, accommodation and food services, at 15%. Retail trade, the fourth-largest sector, makes up 12% of the labor force in Collier County; in 2010, retail trade and manufacturing were the second highest, which is no longer the case.

**Figure 2-4: Collier County Labor Force Distribution by Service Area, 2010 and 2018**

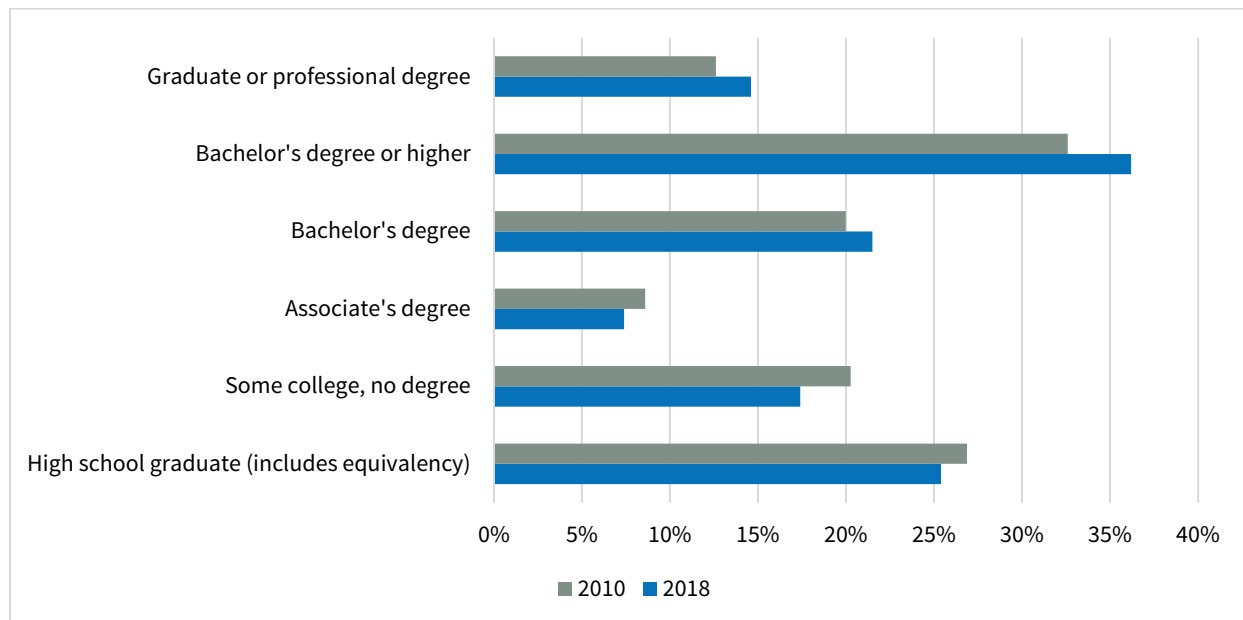


Source: 2010 ACS 5-year estimates, 2018 ACS 5-year estimate

## 2.6 Work Force

Figure 2-5 shows education attainment for population ages 25 and older. As of 2018, 25.4% had a high school degree or the equivalent, 17.4% had some college or no degree, 7.4% had an Associates degree, and 36.1% had a bachelor's degree or higher.

**Figure 2-5: Collier County Education Attainment**

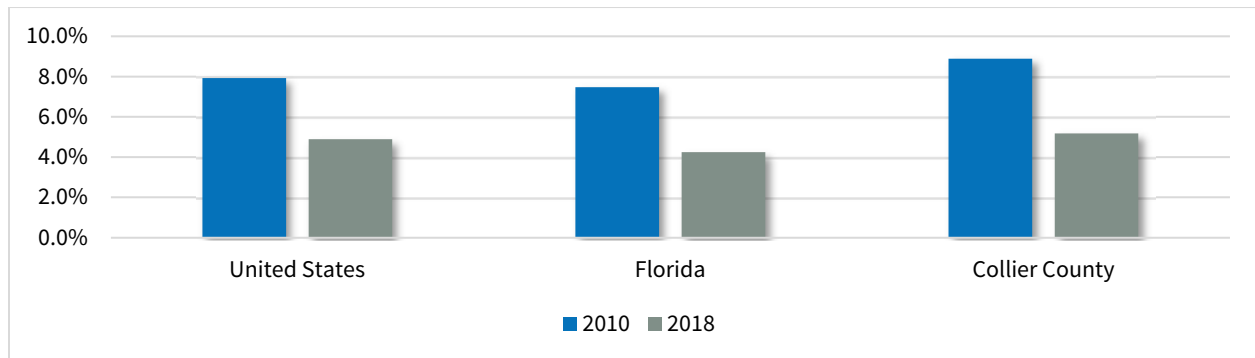


Source: 2010 and 2018 ACS 5-year estimates. Note: Population Ages 25 and older



**Error! Not a valid bookmark self-reference.** shows the relative consistency among trends in the unemployment rate for Collier County, Florida, and the US based in ACS 5-year estimates. Based on the information, unemployment has decreased substantially over the eight-year period from 2010 to 2018.

**Figure 2-6: National, State and County Unemployment**



Source: 2010 and 2018 ACS 5-year estimates

## 2.7 Tourism

Florida's "Paradise Coast" is in southwest Florida on the Gulf of Mexico, and key tourist destinations in Collier County are Naples, Marco Island, Everglades City, Immokalee, and Ave Maria, areas that offer beaches, resorts, shopping, recreation, wetlands, and wildlife areas. Collier County is also an entrance to the Everglades National Park, the third largest national park in the lower 48 states, and consists of 2,400 square miles of canals, ponds, sloughs, and sawgrass marshes.

Tourism is an important business for Naples, Marco Island, and the Everglades. As the leading employer and primary economic engine for the region, tourism is responsible for 38,500 jobs in Collier County. According to the Collier County Tourist Development Council, tourism brought in 2 million visitors in 2018, resulting in an economic impact of more than \$2.1 billion in Collier County. Visitors pay more than \$28 million in tourist development taxes in Collier County and provide \$130 million in sales and gas tax revenue in 2018. These taxes fund beach nourishment projects, museum operations, and special events.



Image source: <https://www.colliercountyfl.gov/>

## 2.8 Major Trip Generators

Major trip generators for Collier County include several large industries, including retail, healthcare, and hospitality. Table 2-3 shows the top 25 employers in Collier County in 2019 according to the Southwest Florida Economic Development Alliance and Collier County Business & Economic Development. Major employers for Collier County included healthcare centers such as Naples Community Hospital, Collier County Schools, and Collier County Government. Although employment in Collier County fluctuates throughout the year due to tourists and seasonal residents, Publix Supermarkets, Arthrex, and Walmart make up the top three private sector employers.

**Table 2-3: Collier County's Top 25 Employers (2019)**

Employer	Number of Employees
NCH Healthcare System	7,017
Collier County School District	5,604
Collier County Local Government	5,119
Publix Super Market	3,083
Arthrex, Inc.	2,500
Walmart	1,480
Ritz Carlton-Naples	1,450
City of Naples	1,169
Physicians Regional	950
Mooring Park	888
Seminole Casino	800
Naples Grande Beach Resort	750
Germain Cars	554
Downing Frye Realty	550
Gulf Bay Group of Companies	500
Bentley Village A Classic	500
Agmart Produce Inc.	500
Home Depot	480
John R Wood Properties	470
McDonald's	441
Walgreens	373
Naples Beach Hotel & Golf Club	350
Naples Lakes Country Club	320
Nordstrom	313
Lowe's Home Improvement	310

Source: Southwest Florida Economic Development Alliance,  
Collier County Business & Economic Development and  
Regional Economic Research Institute

## 2.9 Major Developments

A review of upcoming major development in Collier County was conducted.

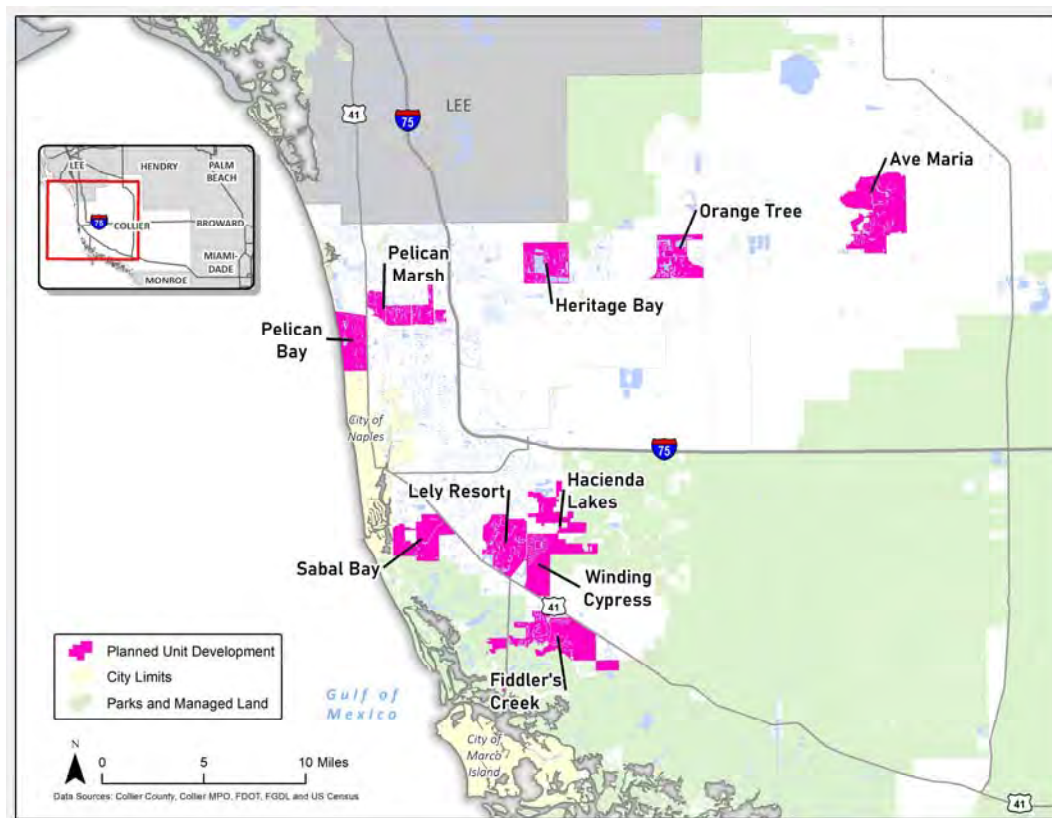
Table 2-4 shows details of Collier Counties the top 10 planned unit developments (PUDs) by acreage, and Map 2-8 shows the Developments of Regional Impact (DRIs) in Collier County. These developments are noted for potential impacts to existing and future travel demand.

**Table 2-4: Collier County Top 10 Planned Unit Developments (2019)**

Planned Unit Development	Acres
Fiddler's Creek	8,135
Ave Maria	5,027
Lely Resort	2,880
Heritage Bay	2,562
Sabal Bay	2,416
Hacienda Lakes	2,264
Pelican Marsh	2,191
Orange Tree	2,131
Pelican Bay	2,114
Winding Cypress	1,960

Source: Collier County GIS Services

**Map 2-8: Planned Unit Developments**



Source: Collier County GIS Services

## 2.10 Existing and Future Land Use

Analysis of 2019 existing land use verifies that an overwhelming majority (68%) of county land is owned by a government entity and used primarily for conservation. Table 2-5 lists the existing land uses and number of acres occupied. Of the other land uses, agricultural uses are the next largest, at 16% countywide, followed by utility/other lands (7%) and single-family residential (5%). Analyzing

only commercial and residential uses reveal that single-family and vacant uses account for nearly all other land uses, at 87%.

Future Land Use designations mirror those of existing uses, in that conservation and agricultural lands make up nearly 80% of all land in Collier County. Various residential and commercial uses are the second most abundant uses, at 16%. Sending and receiving areas in Collier County serve tools to redirect development away from more vulnerable natural environments in the “sending” districts towards more desired “receiving” districts.

**Table 2-5: Collier County Existing Land Use, 2019**

Existing Land Use	Acres	% of Area
Federal	568,934	46%
Agricultural	202,005	16%
State	247,643	20%
Utility/Other	88,914	7%
Single-Family Residential	56,190	5%
Vacant	31,756	3%
County	30,013	2%
Commercial	6,300	1%
Mobile Home	1,962	<1%
Industrial	1,954	<1%
Institutional	1,693	<1%
Multi-Family Residential	1,659	<1%
Municipal	549	<1%
Public Schools	1,836	<1%
Colleges	82	<1%
Forest, Parks and Rec	5	<1%
<b>Total</b>	<b>1,241,494.80</b>	<b>-</b>

Source: Florida Department of Revenue

**Table 2-6: Collier County Future Land Use (2019)**

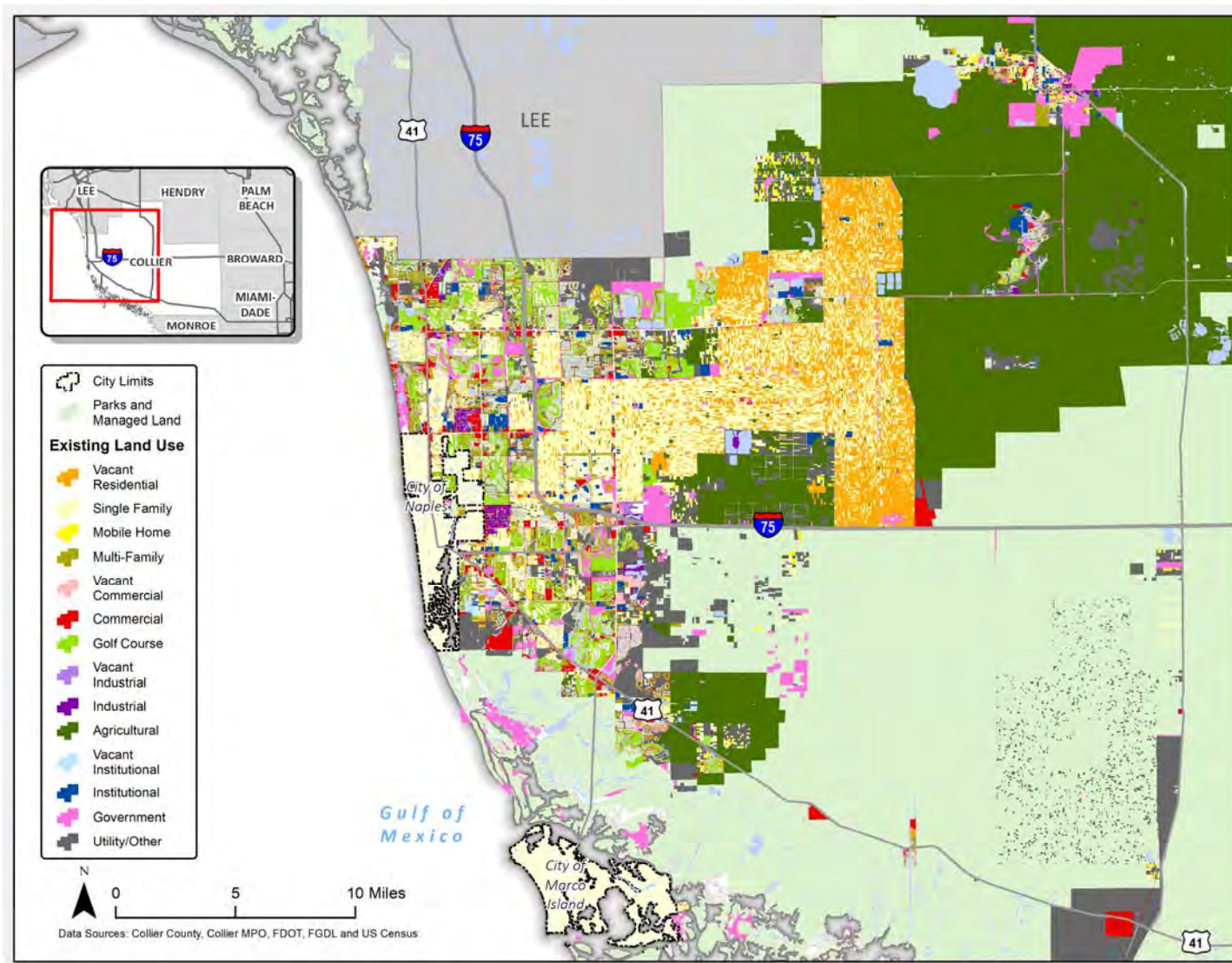
Existing Land Use	Acres	% of Area
Conservation	808,997	58%
Agricultural	266,140	19%
Estates	101,289	7%
Urban Residential	90,299	7%
RF – Sending	42,583	3%
RF – Receiving	23,002	2%
Incorporated Area	17,916	1%
Industrial	1,839	<1%
Urban Coastal Fringe	11,752	1%
RF – Neutral	8,839	1%
Urban Residential Fringe	5,458	<1%
Mixed Use	4,565	<1%
Rural Settlement	2,813	<1%
Rural Industrial	918	<1%
Commercial	380	<1%
<b>Total</b>	<b>1,386,790*</b>	<b>-</b>

\*Acres do not match Existing Land Use due to varying GIS geographies.

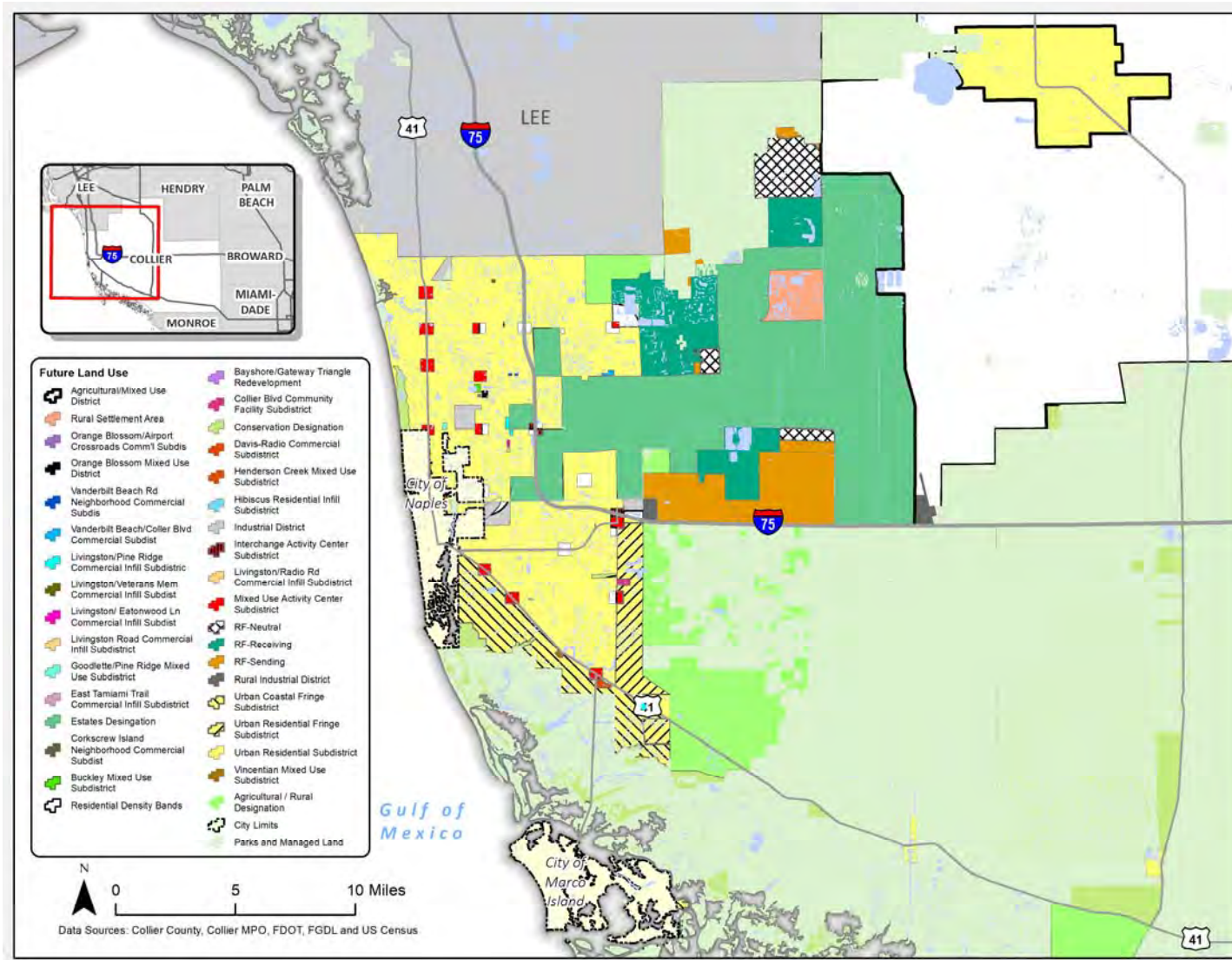
Source: Collier County GIS



**Map 2-9: Existing Land Use**



**Map 2-10: Future Land Use**





## 2.11 Commuter Travel Patterns

Journey-to-work characteristics and commuter flow patterns were compiled for the 10-year TDP. Table 2-7 shows that the use of transit as a mode has increased slightly since 2000. Driving alone decreased slightly between 2010 and 2018 but is consistent with the percentage of the population driving alone in 2000. Carpooling has slightly increased since 2010 but decreased in comparison to 2000 Census data. Working at home has continued to increase over the 18-year period as working from home becomes more commonplace. Travel times have remained consistent, with 78% of people traveling 10–44 minutes to work. Departure times to work have shown a slight change, with fewer people commuting during the 6:00–9:00 AM timeframe and more people commuting at other times.

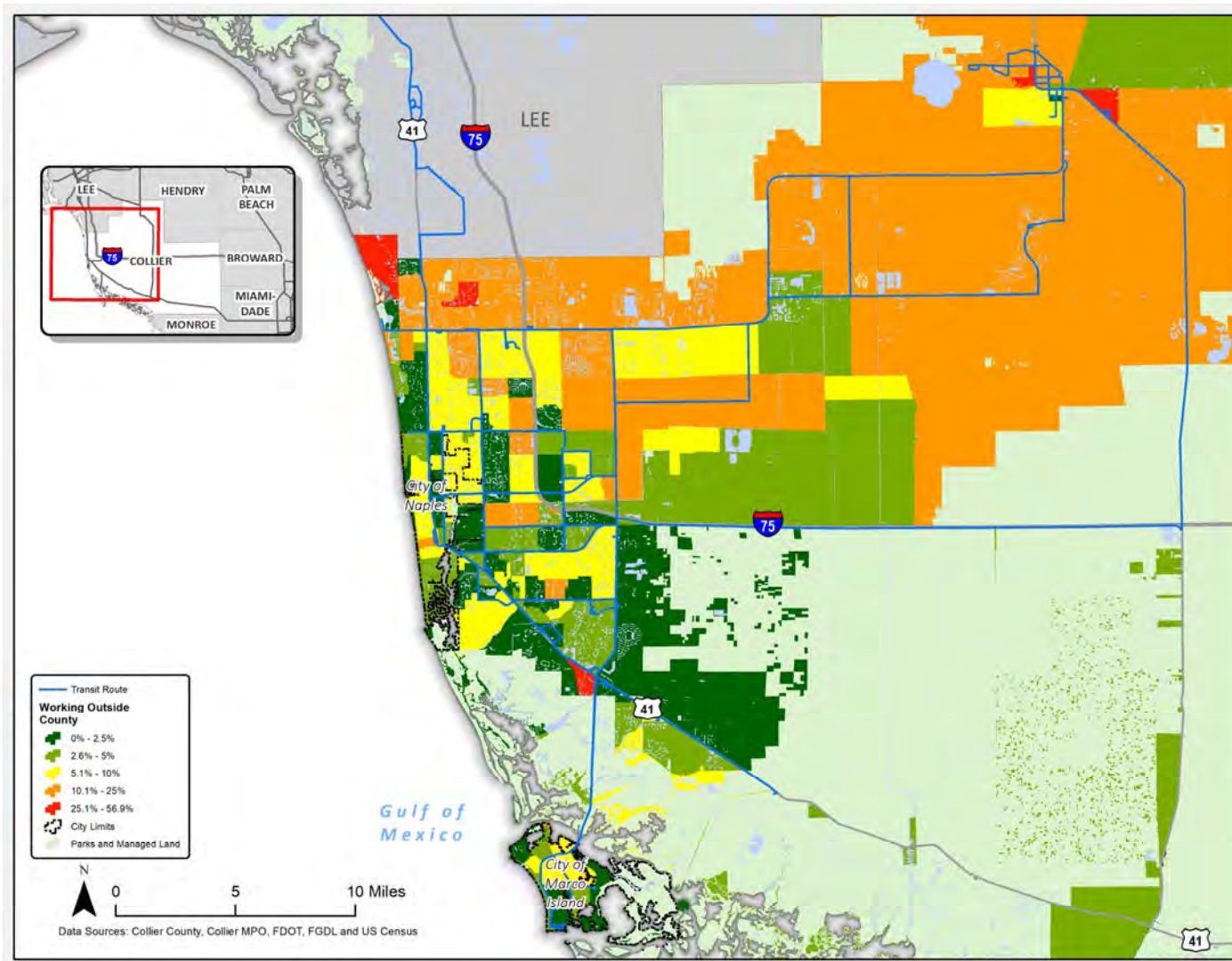
**Table 2-7: Journey-to-Work Characteristics**

Characteristic	2000	2010	2018
<b>Place of Work</b>			
Worked inside county	92.2%	89.3%	89.8%
Worked outside county	7.8%	8.2%	8.3%
<b>Mode to Work</b>			
Drive alone	74.4%	76.3%	74.4%
Carpool	14.9%	10.9%	12.1%
Public transit	1.9%	1.6%	2.2%
Walk	1.8%	1.8%	1.4%
Work at home	4.7%	6.4%	7.4%
Other Means	2.2%	3.0%	2.5%
<b>Travel Time to Work</b>			
<10 minutes	12.7%	9.6%	11.1%
10–19 minutes	31.5%	33.9%	30.9%
20–29 minutes	21.4%	25.5%	25.7%
30–44 minutes	18.7%	19.0%	21.0%
45+ minutes	11.1%	12.0%	11.3%
<b>Departure Time to Work</b>			
6:00–9:00 AM	67.1%	66.0%	65.6%
Other times	28.2%	34.0%	34.4%

Source: 2010 Census, 2010 ACS 5-year estimates, and 2018 ACS 5-year estimates

Map 2-11 illustrates the proportion of workers who commute to work outside of Collier County by census Block Group. According to the ACS 2018 5-Year Estimates, of the 8% of the county’s population that commutes outside the county, the majority live in the northern portion of the county (shown in orange and red). The highest proportion of residents that commute to jobs in other counties are in the northwest area bordering Lee county and the Immokalee area. Variations exist within the remainder of the county, which are driven more by land use and seasonal residency than permanent residency. According to LODES Jobs Count by Places (2017) data, the top work destinations outside the county are Bonita Springs, Fort Myers, and Estero Village, and 37% of workers are employed in Collier County but live outside the county.

**Map 2-11: Proportion of Residents Working Outside Collier County**

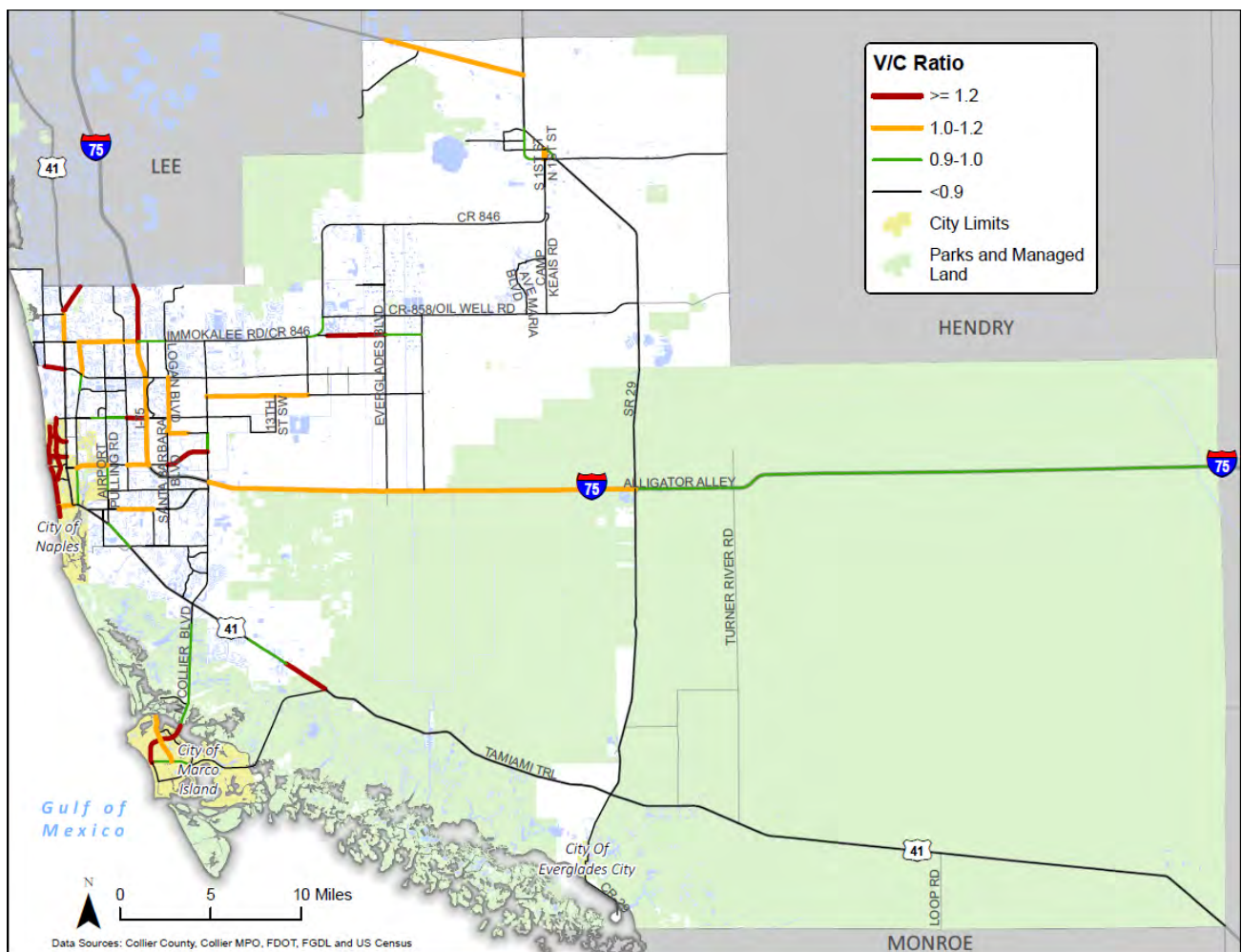


Source: 2013–2018 ACS Census

## 2.12 Roadway Conditions

Existing roadway conditions were reviewed as part of the assessment of baseline conditions to identify roadways that may impact transit running time and on-time performance. Map 2-12 illustrates the anticipated 2023 volume-to-capacity (V/C) ratio of major roadways in Collier County that factors committed roadway improvements on an average weekday during the PM peak hour using a travel demand model to assign future year traffic volumes to the Existing plus Committed network. A V/C ratio equal to or greater than 1.2 is considered heavy congestion, and a V/C ratio of 1.0–1.2 is considered congested.; roadways with V/C ratios of 0.9–1.0 are considered approaching congestion.

**Map 2-12: Existing + Committed Roadway Improvement V/C Ratio (2023)**





## 2.13 Inventory of Other Transportation Service Providers

Private transit service can complement and/or compete with public transportation services. In Collier County, Greyhound and Florida Red Line Shuttle provide transit services with connections to major cities in Florida. Greyhound offers connections to Plantation, Cape Coral, and Tampa, and the Florida Red Line offers connections to Tampa to Miami with stops in Bradenton, Sarasota, Fort Myers, and Fort Lauderdale (FLL Airport and Port Everglades Cruise Port). The Greyhound stop at the Shell station at 3825 Tollgate Boulevard is accessible by CAT routes 19, 25, and 28, as shown in Figure 2-7, and the Florida Red Line stop at 6065 Pine Ridge Road is accessible by CAT routes 20 and 26, also shown in Figure 2-7. CAT staff currently are working on a conditional use amendment for the Radio Road Transfer Facility to facilitate more private/public partnerships with regional bus lines.

**Figure 2-7: Bus Stop Locations of Private Transit Operators**

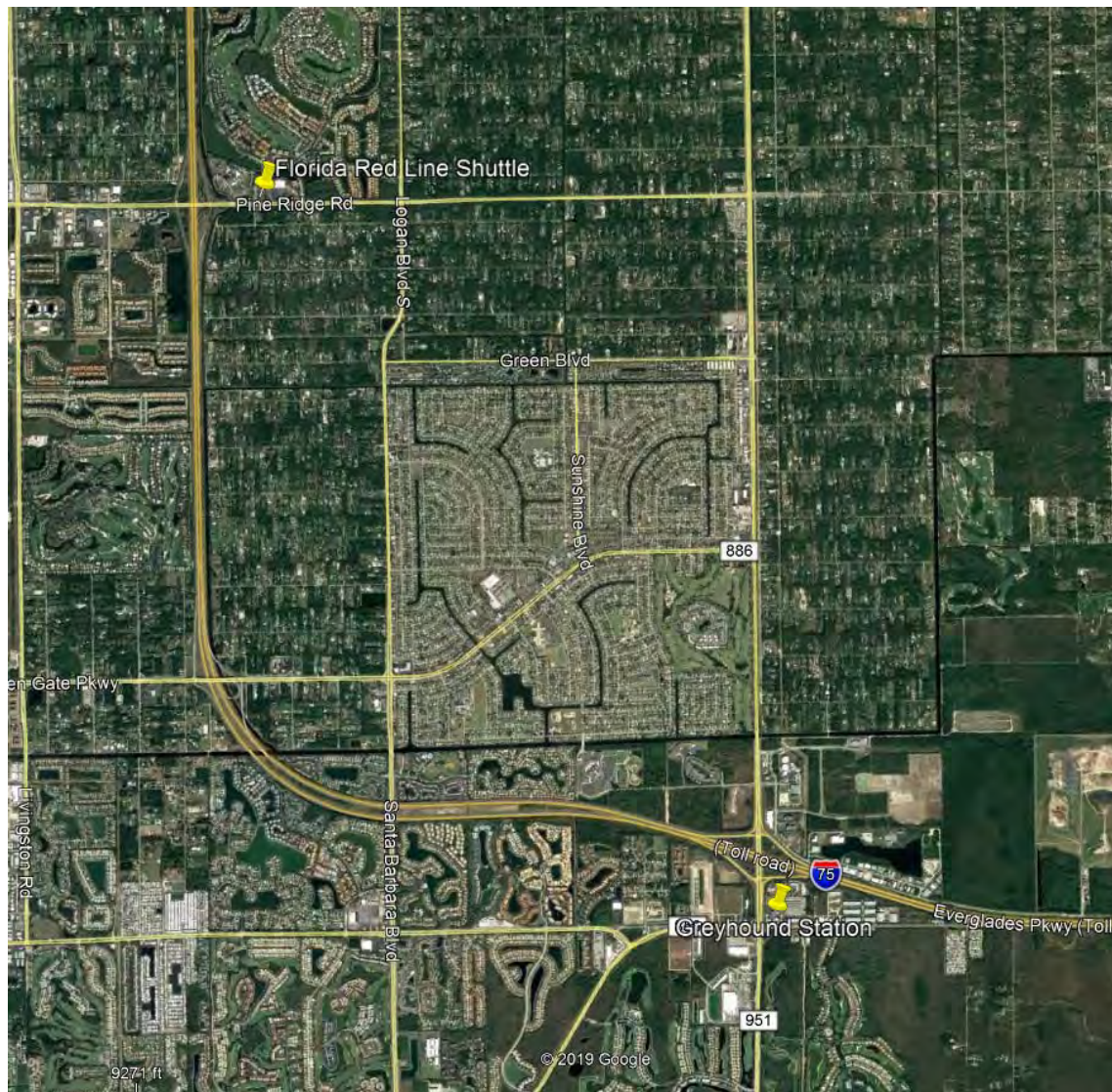


Image source: Google Earth

Uber and Lyft are major ride-hailing services available in the Naples/Fort Myers area. Shared-ride services within these platforms, such as Shared Lyft, UberPool, or Uber Express Pool services, mimic transit services by allowing clients to join other passengers on the same route but are not available within Collier County. However, demand for transit services may exist in areas with a high demand for ride-hailing services. The Uber website indicates the areas of high demand for trip pick-ups in Collier County are the Naples Grande Beach Resort, the Ritz-Carlton in Naples, Vanderbilt Beach, and the LaPlaya Beach and Golf Resort, as shown in Figure 2-8.

**Figure 2-8: Uber-Recommended Hot Spots for Drivers in Naples/Fort Myers Area**

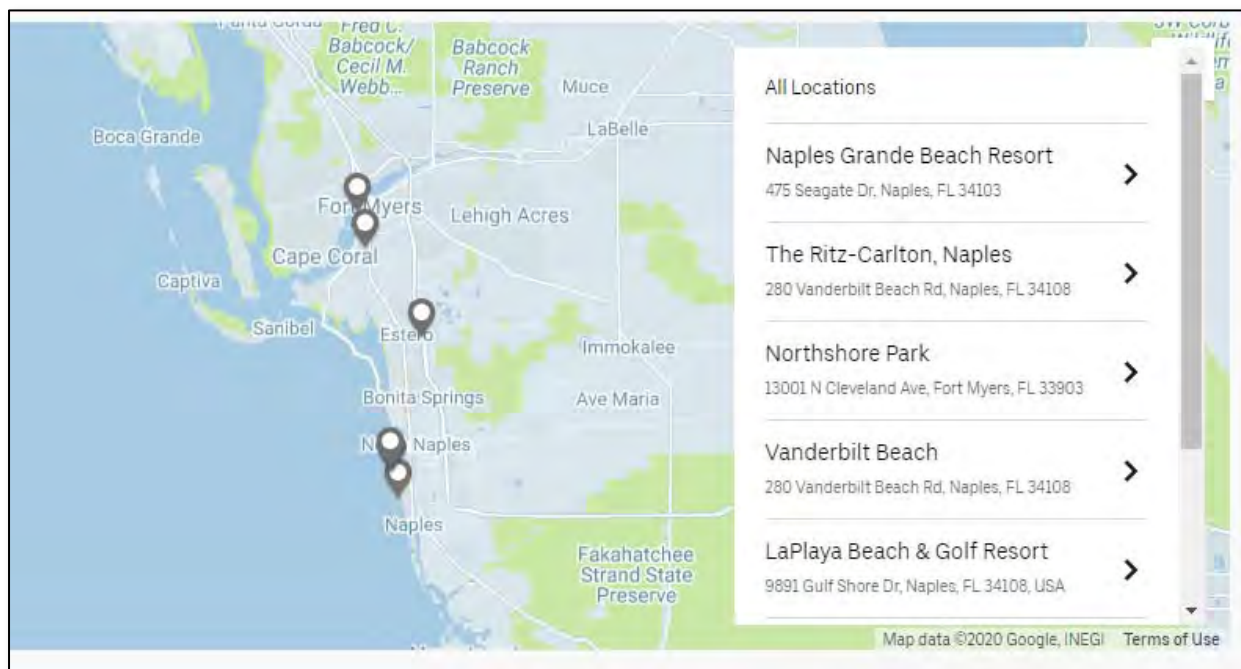


Image source: <https://www.uber.com/drive/fort-myers/where-to-drive/>

**Table 2-8: Other Collier County Transportation Providers**

Name/Company	Address	City	Contact #
Greyhound	3825 Tollgate Blvd	Naples	(800) 231-2222
Florida Red Line Shuttle LLC	McDonald's, 6065 Pine Ridge Rd	Naples	(800) 591-2522
Uber	N/A	Naples/Fort Myers Area	Requires app
Lyft	N/A	Naples/Fort Myers Area	Requires app



### 3.0 Transit Performance Evaluation

This section includes a review of existing transit services in Collier County, a trend analysis, and a peer analysis of various transit performance characteristics. A review of existing transit service offered in Collier County was conducted to identify the extent of the service operating today and any supporting capital equipment/facilities used to provide the service. In addition, other significant providers of transit were reviewed based on available data. A review of performance trends for the public transit service using data for the last five years also was conducted, as was a peer review analysis, including review of peers for CAT service selected based on various criteria typically used for comparing public transit services.

#### 3.1 Existing Transit Services

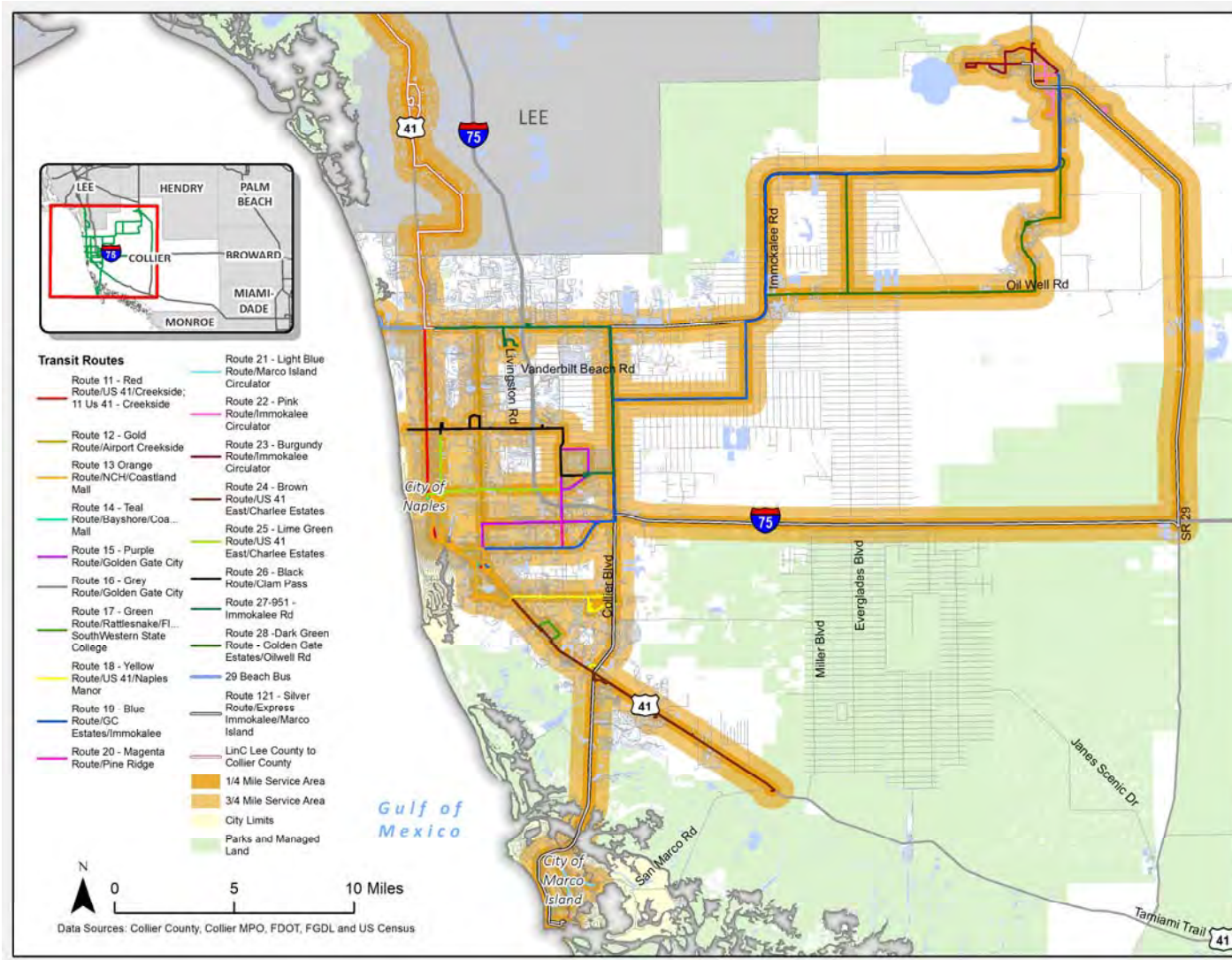
***Transit services in Collier County are provided by CAT and are open to the general public. Since formally launching fixed-route bus service nearly 20 years ago, CAT's fixed-route network has gradually become a more significant component of the multimodal transportation system in Collier County. Today, CAT operates 19 bus routes and has provided an average of nearly 1 million annual trips over the last five years.***

Map 3-1 shows CAT's existing routes and the corresponding  $\frac{3}{4}$ -mile service area, the longest distance a transit rider is willing to walk to a station, as well as  $\frac{1}{4}$ -mile, the distance most transit riders are willing to walk to a stop.

CAT also provides non-fixed-route services, including paratransit service under the CAT Connect program, which includes complementary Americans with Disabilities Act (ADA) service and TD services. Medicaid transportation services are provided through a network of transportation providers overseen by MTM, Inc., the County's Medicaid transportation services broker. Collier County also serves as the CTC under Chapter 427 of Florida Statutes. As the CTC, the Public Transit and Neighborhood Enhancement (PTNE) Division administers the coordination of countywide transportation services for TD individuals.

The fare structure for CAT is presented in Table 3-1. Service is provided 7 days per week from 3:35 AM to 8:48 PM Monday through Sunday (depending on the route). No services are provided on major holidays, including on Thanksgiving Day, Christmas Day, New Year's Day, Memorial Day, Independence Day, and Labor Day.

**Map 3-1: CAT Existing Transit Services**



**Table 3-1: Collier Area Transit Fare Structure**

Fare Category	Fare
Full Fare	\$2.00
Reduced Fare	\$1.00
Children 5 Years and Younger	Free
Marco Express	\$3.00
Marco Express Reduced	\$1.50
Transfers	Free
Day Passes	\$3.00
Day Passes Reduced	\$1.50
<b>Smart Card Passes</b>	
7-Day Pass	\$20.00
7-Day Pass Reduced	\$10.00
30-Day Pass	\$40.00
30-Day Pass Reduced	\$20.00
Marco Express 30-Day Pass	\$70.00
Marco Express 30-Day Pass Reduced	\$35.00
Summer Paw Pass (students)	\$30.00
30-Day Corporate Pass (300+ employees)	\$29.75
<b>Smart Media Fees</b>	
Smart Card	\$2.00
Registration	\$3.00
Replacement with Registration	\$1.00

### 3.1.1 Transit Facilities

CAT currently operates services from a County-owned facility at 8300 Radio Road in Naples, as shown in Figure 3-1. Operations for CAT buses and passenger transfers occur at this location.

**Figure 3-1: CAT Radio Road Transit Facility**



Image source: Google Streetview



The CAT Intermodal Transfer Station at the Government Complex, shown in Figure 3-2, was completed in 2013 and serves as a catalyst for intermodal transfers between pedestrians, bicyclists, and “kiss-and-ride” passengers. Although parking is free, this is currently not an “official” park-and-ride location. The facility includes a busway with a turn-around, six sawtooth-configured bus berths, a passenger platform with benches and trash receptacles, restrooms, an air-conditioned passenger lobby, and a customer service area. CAT also has dedicated parking spaces at the Orange Blossom Library, Golden Gate Parkway Library, Golden Gate Estates Library, Marco Island Library, and Immokalee Library.

**Figure 3-2: CAT Intermodal Transfer Station**



Image source: Google Maps 3D View

### 3.1.2 Vehicle Inventory

Collier County maintains a fleet of 29 fixed-route vehicles that are fully accessible to patrons in wheelchairs. An inventory of vehicles for fixed-route services is provided in Table 3-2.



**Table 3-2: CAT Fixed-Route Vehicle Inventory (2013)**

Number of Vehicles	Purchase Year	Vehicle Make	Length	Source Funded by
1	2006	Gillig	30-ft bus	County
2	2006	Gillig	30-ft bus	Section 5307
3	2007	Gillig	30-ft bus	Section 5307
3	2010	Gillig	35-ft bus	Section 5307
2	2010	Gillig	35-ft hybrid bus	5307 ARRA
3	2011	Gillig	35-ft bus	Section 5307
1	2012	Gillig	35-ft bus	Section 5307/CMS flex funds
1	2012	Gillig	35-ft bus	Section 5307
1	2012	Gillig	35-ft bus	CMS flex funds
2	2013	Gillig	40-ft bus	Section 5307
1	2015	Gillig	40-ft bus	Section 5307
1	2016	Freightliner	30-ft Glaval bus	Section 5307
2	2017	Gillig	35-ft bus	Section 5307
4	2017	Gillig	30-ft bus	Section 5307
1	2018	Gillig	30-ft bus	Section 5307
1	2019	Gillig	30-ft bus	Section 5307

Source: CAT Fixed-Route Vehicle Inventory

### 3.2 Trend and Peer Comparison Analysis

This section presents the results of the trend and peer comparison analyses conducted as part of Collier County's 10-year TDP to examine transit system performance. The evaluations were conducted using data available from the Florida Transit Information System (FTIS), which derives its data from the National Transit Database (NTD). As part of the overall performance review of the system, these analyses assist with assessing the extent to which CAT's service is meeting its goals and objectives. Analyses include statistical tables and graphs that summarize selected performance indicators and effectiveness and efficiency measures to review various trend components, as follows:

- *Performance measures* report absolute data for the selected categories; these tend to be key indicators of overall system performance.
- *Effectiveness measures* refine the data further and indicate the extent to which various service-related goals are being achieved.
- *Efficiency measures* involve reviewing the level of resources required to achieve a given level of output; it is possible to have very efficient service that is not effective or to have highly effective service that is inefficient.

Seven peer systems were selected for the peer analysis and represent transit systems with service areas characteristics and services similar to CAT. The peer selection methodology is described in the Peer Selection Memorandum dated February 21, 2020, shown in Appendix A. The peer systems are:

- City of Montgomery – Montgomery Area Transit System, AL

- Tri-State Transit Authority – Huntington, WV
- The Wave Transit System – Mobile, AL
- ART (Asheville Redefines Transit) – Asheville, NC
- Gwinnett County – Lawrenceville, GA
- Pasco County Public Transportation – Port Richey, FL
- Cape Fear Public Transit Authority – Wilmington, NC

Table 3-3 shows the peer system sizes in terms of the number of routes and route miles compared to CAT. As shown, CAT has the highest number of routes compared to the peer group and falls above the peer average of 14 routes. CAT also has the highest number of route miles of compared to the peer systems and supplies 57.1% more route miles than the peer average of 278 route miles. Table 3-4 shows the measures used in the performance peer and trend analyses.

**Table 3-3: Peer System Characteristics**

System	Location	# of Routes	Route Miles (2018)
CAT	Collier County	19	436
The M	Montgomery, AL	14	305
TTA (Tri-State Transit)	Huntington, WV	14	289
The Wave Transit System	Mobile, AL	12	259
ART	Asheville, NC	18	179
GCT (Gwinnett Transit)	Lawrenceville, GA	11	187
PCPT, (Pasco Transit)	Port Richey, FL	11	371
The Wave (Cape Fear Transit)	Wilmington, NC	14	195

Source: Agency websites for number of routes, 2018 NTD data for route miles

**Table 3-4: CAT Performance Review Measures**

General Measures	Effectiveness Measures	Efficiency Measures
Passenger Trips	Vehicle Miles per Capita	Operating Expense per Capita
Passenger Miles	Passenger Trips per Capita	Operating Expense per Passenger Trip
Vehicle Miles	Passenger Trips per Revenue Hour	Operating Expense per Passenger Mile
Revenue Miles	Passenger Trips per Revenue Mile	Operating Expense per Revenue Mile
Vehicle Hours		Farebox Recovery Ratio
Route Miles		Revenue Miles per Vehicle Mile
Operating Expenses		Revenue Miles per Vehicle
Vehicles Available for Max Svc		Vehicle Miles per Gallon
Fuel Consumption		Average Fare

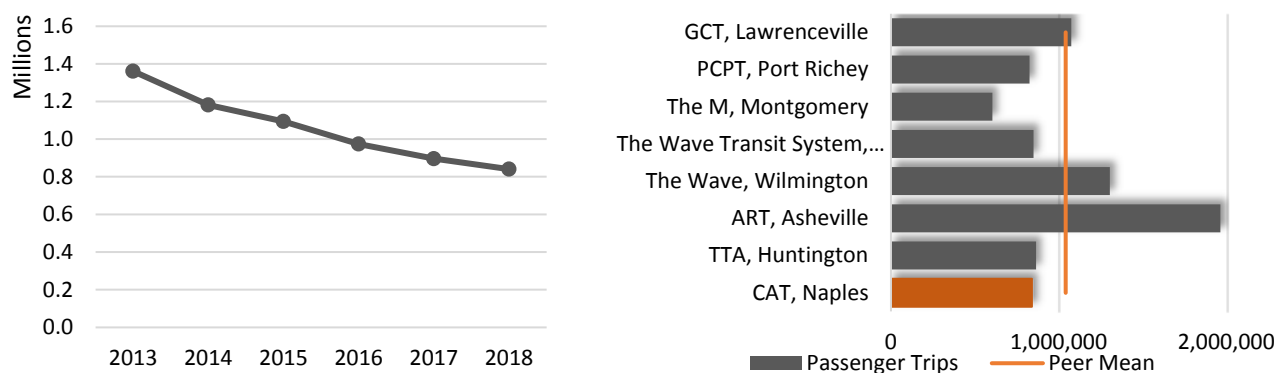
### 3.2.1 General Performance Measures

General performance indicators are used to gauge the overall system operating performance. Figures 3-3 through 3-11 present the performance indicators of CAT from FY 2013 through FY 2018 (trend analysis) and its performance relative to the selected peer systems (peer analysis).

### 3.2.1.1 Passenger Trips

Passenger trips, or passenger boardings, are the number of passengers who board public transit vehicles and are counted each time they board a vehicle, no matter how many vehicles to which they transfer. It is a measure of the market demand for the service; a higher number of passenger trips is a positive metric. The total number of passenger trips in Collier County decreased from approximately 1.3 million in 2013 to 0.84 million in 2018, a 38% decrease. Ridership decline has been consistent in the transit industry since the end of the Great Recession. CAT ridership is 19.3% below the peer mean of about 1.0 million trips.

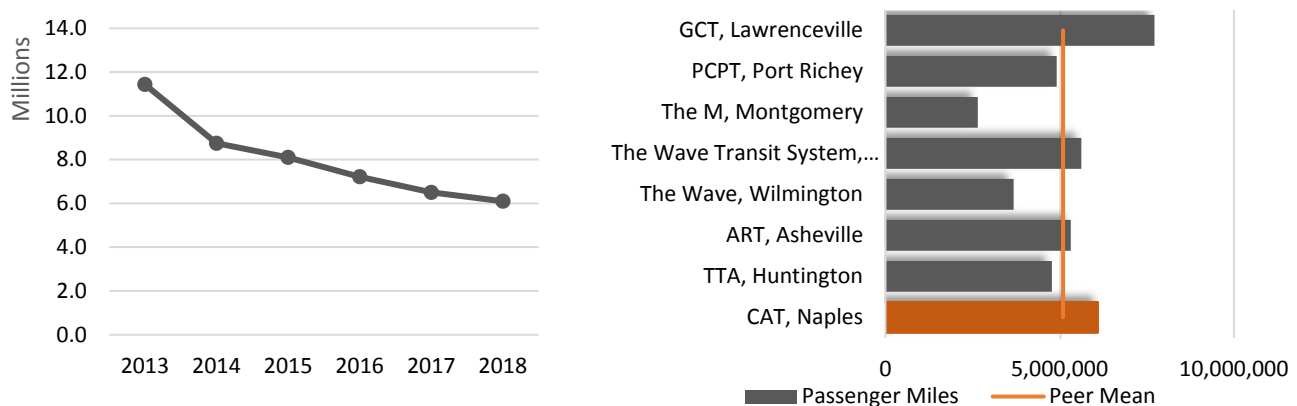
**Figure 3-3: Trend and Peer Comparison for Passenger Trips**



### 3.2.1.2 Passenger Miles

Passenger miles is a measure of passengers served over miles of service operated. Passenger miles are calculated through randomized and statistically-valid survey sampling that counts elapsed miles traveled for each passenger boarding and alighting. Higher passenger miles is a positive metric. For CAT, passenger miles decreased since 2013, from 11.4 million in 2013 to 6.1 million in 2018. Overall, passenger miles decreased by 46.7% from 2013 to 2018. CAT compares favorably to the peer mean, ranking second in the peer group.

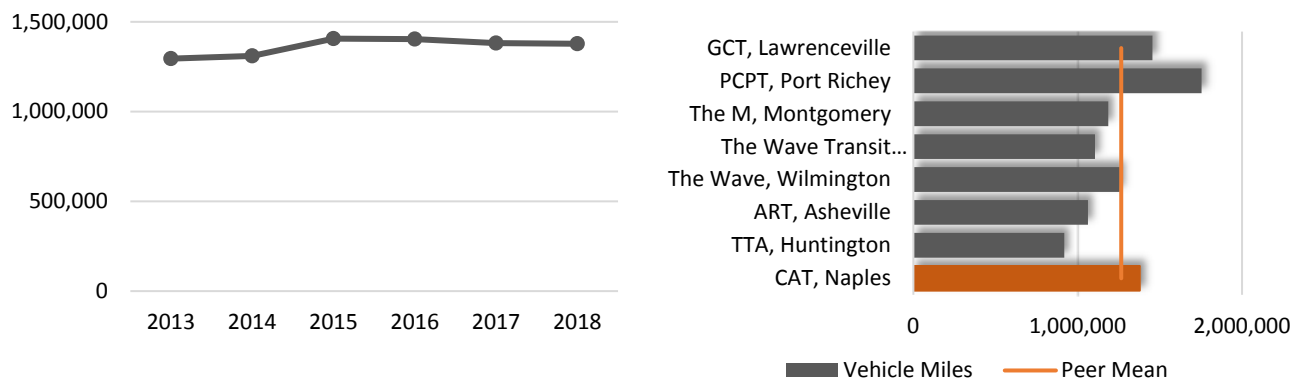
**Figure 3-4: Trend and Peer Comparison for Passenger Miles**



### 3.2.1.3 Vehicle Miles

Vehicle miles are the miles that transit vehicles travel while in revenue service plus deadhead miles. This is a measure of how much service coverage is provided or the supply of service. Vehicle miles as a metric by itself is not positive or negative but should be viewed in relation to productivity and cost-effectiveness measures. CAT's total vehicle miles of service increased 6.4% overall, from 1.3 million in 2013 to 1.4 million in 2018. CAT's vehicle miles are 9% higher than the peer mean.

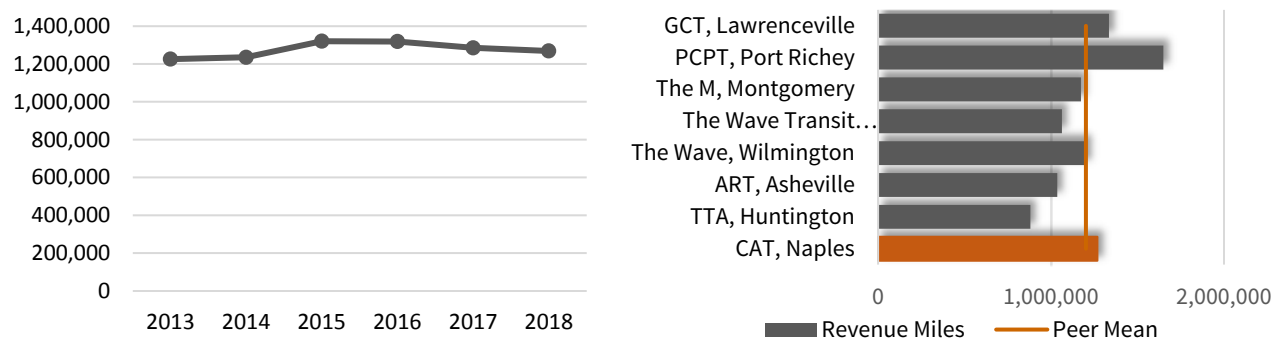
**Figure 3-5: Peer and Trend Comparison for Vehicle Miles**



### 3.2.1.4 Revenue Miles

Revenue miles are the total number of miles for which the public transit service is scheduled or that are operated while in revenue service excluding miles traveled when passengers are not on board (deadhead travel), training operations, and charter services. Revenue miles increasing faster than total vehicle miles generally indicates a positive operational trend and points to a decreasing proportion of deadhead miles over time relative to total miles. Revenue miles as a metric by itself is not positive or negative but should be viewed in relation to productivity and cost-effectiveness measures. Revenue miles is a measure of service provided and should be slightly lower than vehicle miles to reflect efficiency in service. CAT experienced an increase in revenue miles of 3.5% for 2013–2018. CAT's revenue miles were 5.6% higher than the peer mean and ranks third in the peer group.

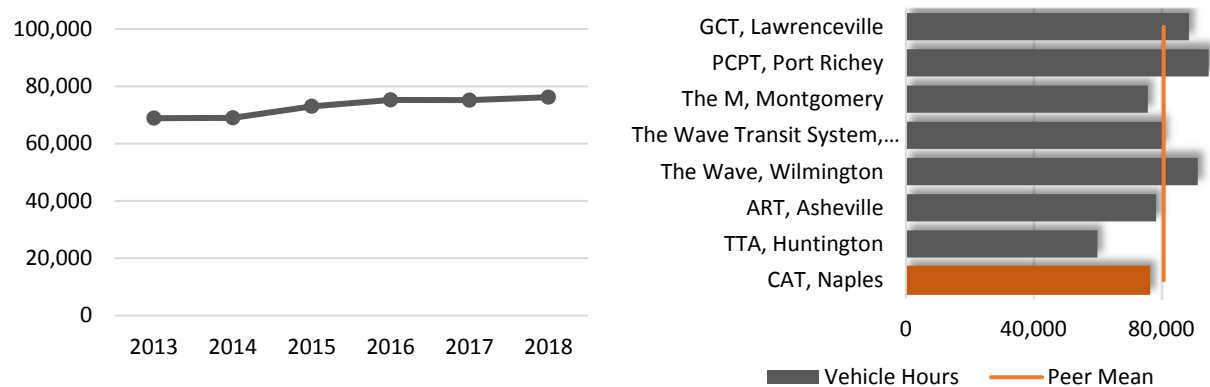
**Figure 3-6: Trend and Peer Comparison for Revenue Miles**



### 3.2.1.5 Vehicle Hours

Vehicle hours are the total hours of travel a transit vehicle is being operated, including both revenue service and deadhead travel, and is a measure of service provided. Vehicle hours as a metric by itself is not positive or negative but should be viewed in relation to productivity and cost-effectiveness measures. CAT had a plateauing increase in vehicle hours, with an overall 10.6% increase in vehicle hours from 2013 to 2018. CAT's vehicle hours metric was 5.6% lower than the peer mean.

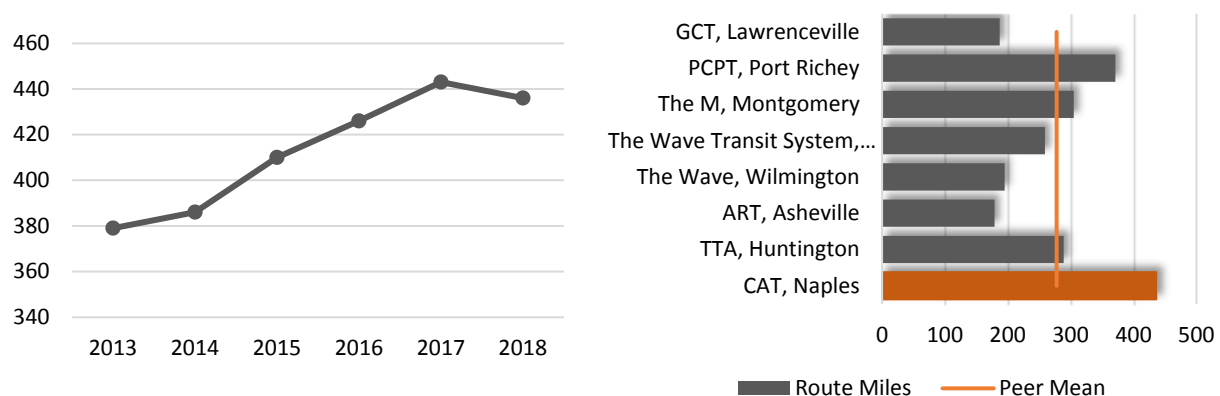
**Figure 3-7: Trend and Peer Comparison for Vehicle Hours**



### 3.2.1.6 Route Miles

Route miles represent the total length of all routes in the network and are a measure of the linear extent of the transit network. Route miles for CAT increased from 279 to 436 miles for 2013–2018, representing a 15% increase overall. CAT ranked the highest in the peer group for route miles.

**Figure 3-8: Trend and Peer Comparison for Route Miles**

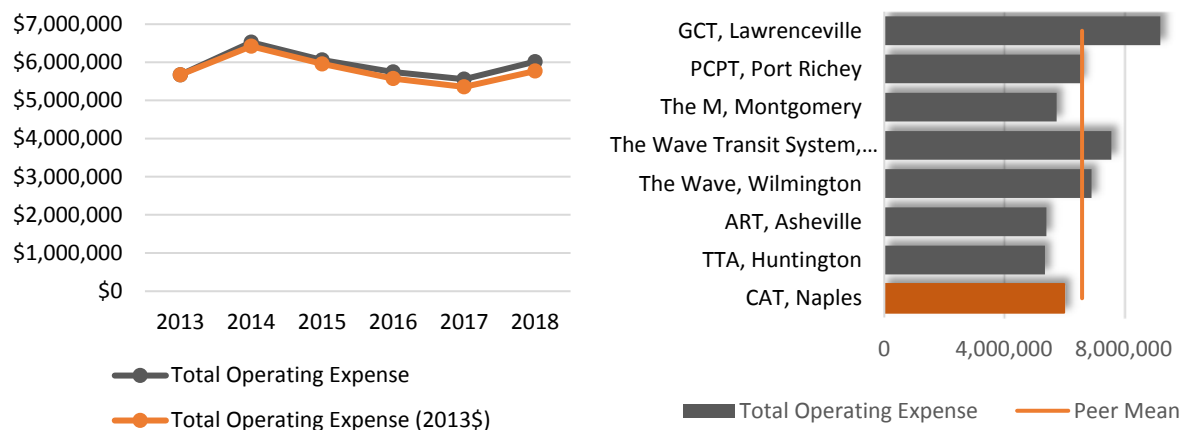




### 3.2.1.7 Operating Expenses

Total operating expense includes all costs associated with operating the transit agency (vehicle operations, maintenance, and administrative costs). CAT's total operating expense increased by 6% from 2013 to 2018; however, when considering the effects of inflation, the actual total operating expense measured in 2013 dollars increased by only 2% in the six-year period, indicating that overall operating expenses increased annually. CAT had the third lowest total operating expense in the peer group, 9% below the peer mean.

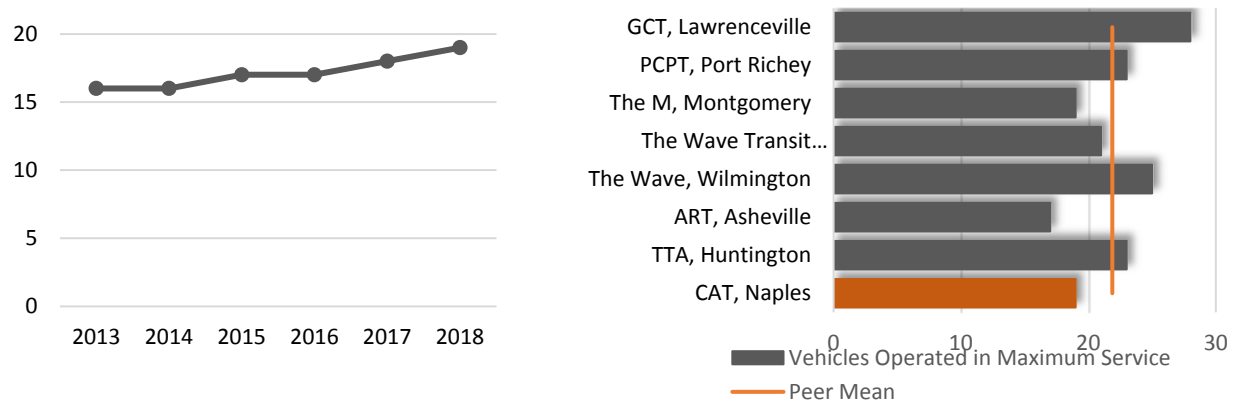
**Figure 3-9: Trend and Peer Comparison for Operating Expenses**



### 3.2.1.8 Vehicles Available for Maximum Service

Vehicles operated in maximum service (VOMS) are a measure of the number of vehicles required to operate at peak full service and are an important metric when assessing fleet size, as it is directly related to the network structure, number of routes, and frequency of service of each transit agency. CAT increased its supply of vehicles operating in maximum service from 23 vehicles in 2013 to 28 in 2018, an approximate 22% increase. CAT is below the group mean of 22 vehicles.

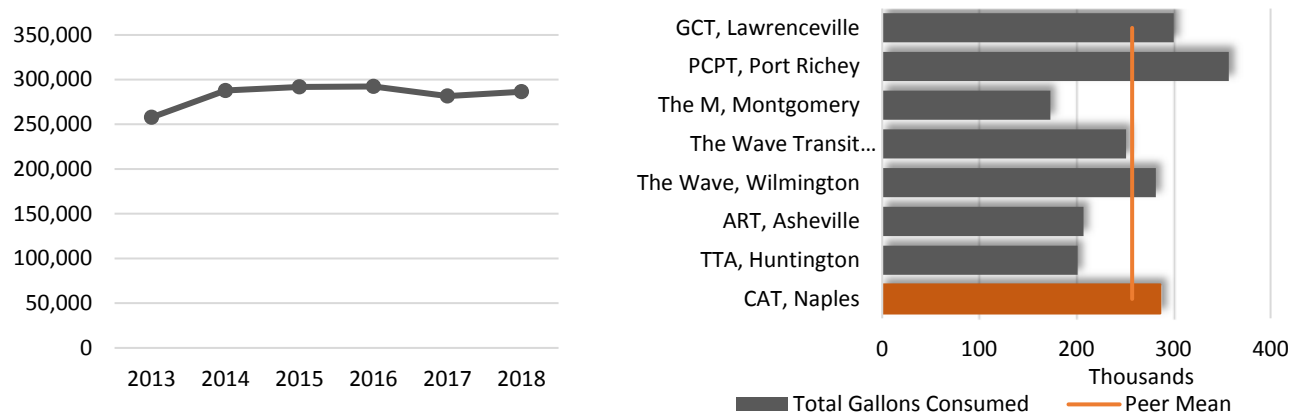
**Figure 3-10: Trend and Peer Comparison for VOMS**



### 3.2.1.9 Fuel Consumption

Generally, fuel consumption is tied to vehicle miles of service and type of vehicle power employed. CAT's gas consumption fluctuated since 2013, but overall decreased by 11% in the six-year period. For this performance measure, CAT is 11.3% above the group mean.

**Figure 3-11: Trend and Peer Comparison for Fuel Consumption**



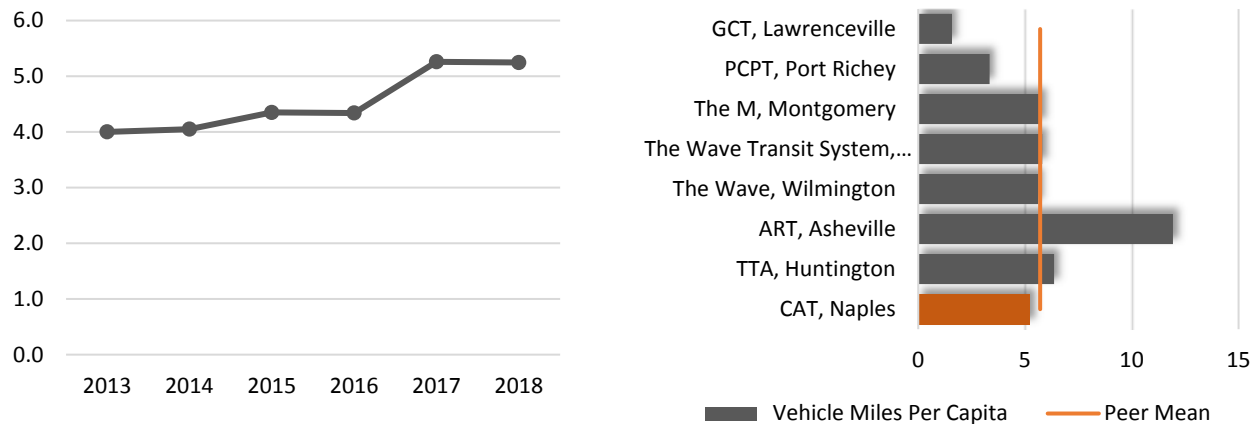
### 3.2.2 Effectiveness Measures

Effectiveness measures indicate the extent to which service-related goals are being met and include service supply, service consumption, and quality of service and are represented by variables such as vehicle miles per capita, passenger trips per revenue hour, and average age of fleet.

#### 3.2.2.1 Vehicle Miles per Capita

Vehicle miles per capita are derived from the total system vehicle miles divided by the service area population within a  $\frac{3}{4}$ -mile distance of service provided and measure the supply of service provided based on the population of the service area. For CAT, vehicle miles per capita experienced an increase from a low of 4.0 miles in 2013 to per capita 5.2 in 2018, a growth of 31%. Vehicle miles per capita for CAT are close to the peer group mean of 5.7, an indication that the supply of service is similar to what is typically experienced by peer agencies.

**Figure 3-12: Trend and Peer Comparison for Vehicle Miles per Capita**

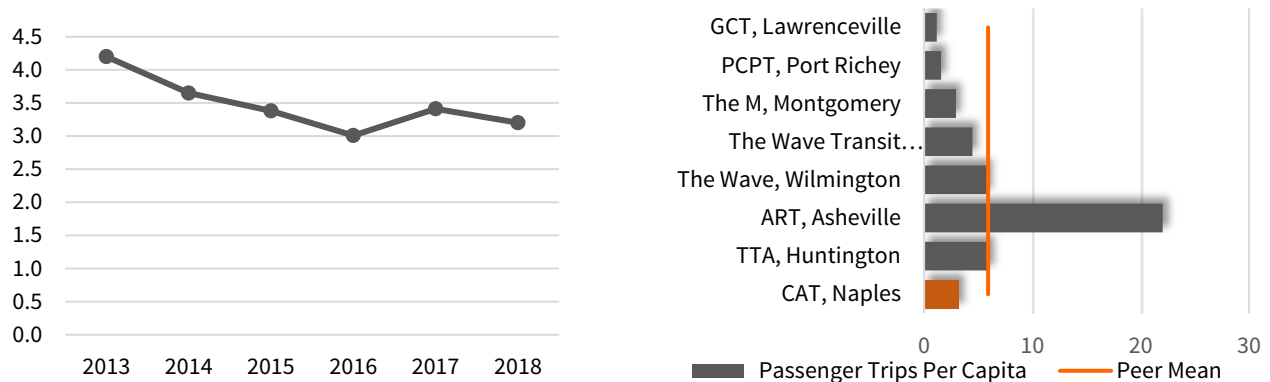


Note: 2017 and 2018 updated using service area population manually calculated using TBEST 2019 Land Use Model.

### 3.2.2.2 Passenger Trips per Capita

Passenger trips per capita are calculated by dividing the total transit boardings by service area population and quantifies transit utilization in the service area. It is desirable that trips per capita are high, meaning greater utilization of the service. Passenger trips per capita in Collier County experienced a 24% decrease between 2013 and 2018. CAT ranks sixth in the peer group, 46% below the peer mean. Compared to the peers, CAT ridership as a percentage of the population is less than the peer mean.

**Figure 3-13: Trend and Peer Comparison for Passenger Trips per Capita**

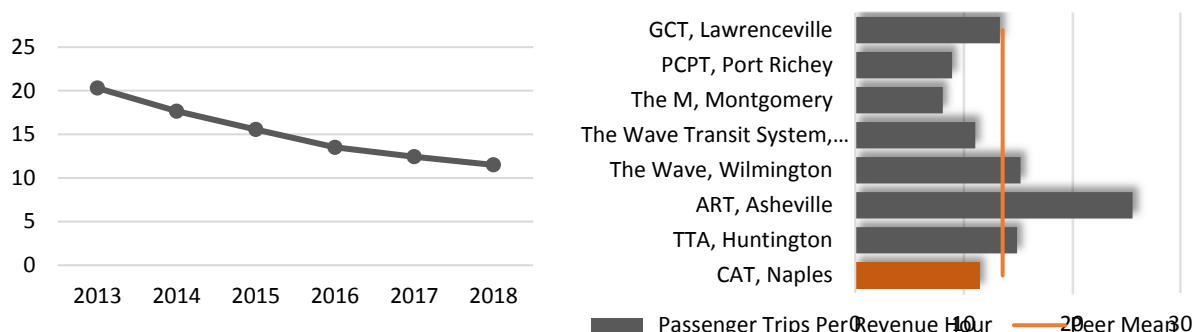


Note: 2017 and 2018 updated using service area population manually calculated using TBEST 2019 Land Use Model.

### 3.2.2.3 Passenger Trips per Revenue Hour

Passenger trips per revenue hour are a measure used to quantify productivity and service consumption and can help evaluate the amount of resources consumed in providing service. It is desirable for this metric to be high, reflecting greater utilization of the service per unit of service provided. From 2013 to 2018, CAT's passenger trips per revenue hour decreased by 43%. The decline in passenger trips per revenue hours is consistent with the increase in revenue miles and hours of service and the decrease in ridership. CAT is 15% below the peer mean for this metric.

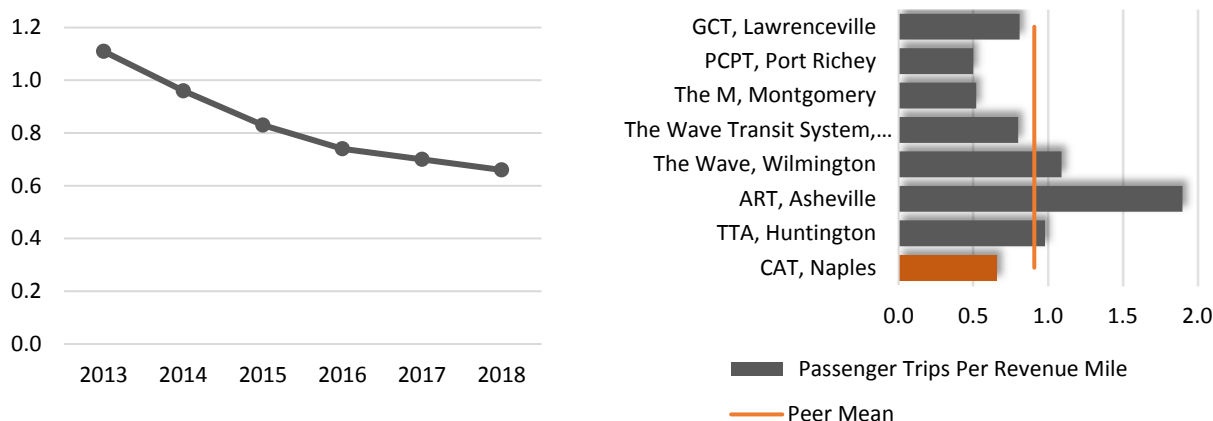
**Figure 3-14: Trend and Peer Comparison for Passenger Trips per Revenue Hour**



### 3.2.2.4 Passenger Trips per Revenue Mile

Passenger trips per revenue mile are calculated by dividing transit boardings by revenue miles and are a measure of the productivity of the revenue service provided. It is desirable for this metric to be high, meaning greater utilization of the service per unit of service supplied. In Collier County, passenger trips per revenue mile experienced a decrease of 41% during the six-year period, indicating that the agency experienced lessening ridership productivity during the time period. The decreasing trend is driven by the decrease in ridership during that time period. CAT is 27% below the peer mean for this metric, indicating a need for improvement in service consumption.

**Figure 3-15: Trend and Peer Comparison for Passenger Trips per Revenue Mile**





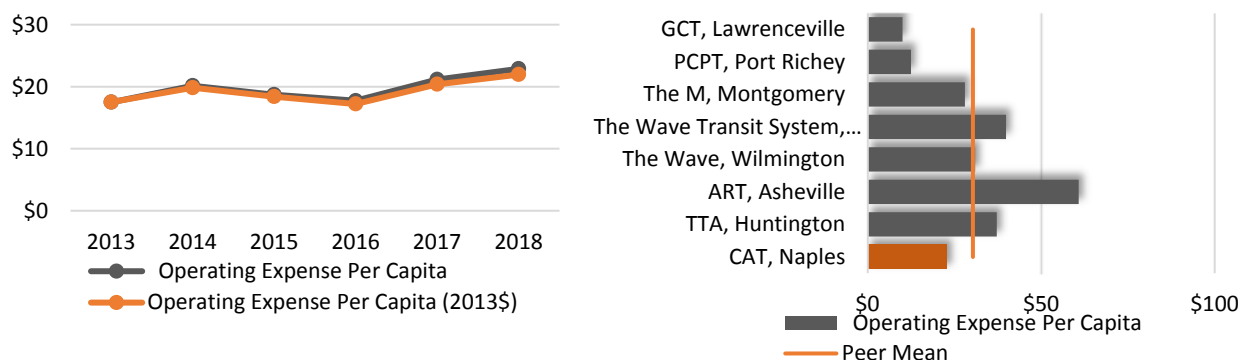
### 3.2.3 Efficiency Measures

Efficiency measures focus on costs and other measures of efficiency. Figure 3-16 through Figure 3-24 present the efficiency measures for CAT's peer review and trend analysis. Similarities between CAT and the peers in this category may be related to the peer selection process, which is largely based on transit service characteristics. The following section summarizes the trend and peer analysis by efficiency measure type.

#### 3.2.3.1 Operating Expense per Capita

Operating expense per passenger trip measures the investment in providing public transport relative to the population within the service area. This metric is more complex, in that although a higher cost reflects a greater investment in transit, it must be viewed in context of direct costs per unit of service relative to peers. When excluding inflation, the operating expense per capita for Collier County increased from \$17.51 in 2013 to \$22.89 in 2018, an increase of 31%. CAT is 25% below the peer group mean, suggesting that it is achieving a greater cost efficiency compared to its peer group.

**Figure 3-16: Trend and Peer Comparison for Operating Expense per Capita**

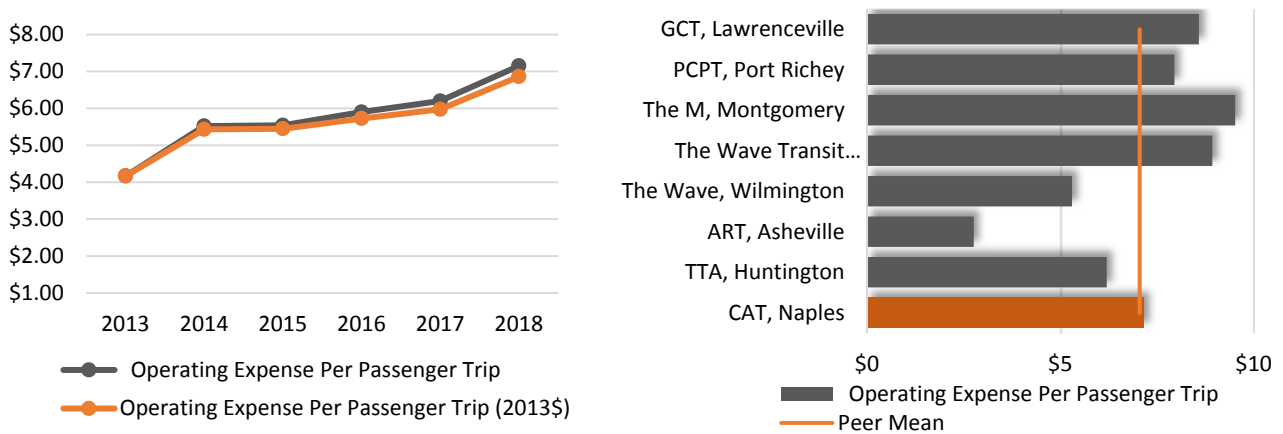


Note: 2017 and 2018 updated using service area population manually calculated using TBEST 2019 Land Use Model.

#### 3.2.3.2 Operating Expense per Passenger Trip

Operating expense per passenger trip measures the efficiency of transporting riders and the cost of operations relative to the resulting ridership and reflects on how service is delivered and the market demand for the service. The goal is to minimize cost per passenger trip. Operating expense per passenger trip is shown in 2018 values and is also deflated to 2013 values to show how cost has changed when inflation is removed. The operating expense per passenger trip in Collier County increased from \$4.17 in 2013 to \$6.86 (2013\$) in 2018, an increase of 65% overall. The decline in this metric is driven primarily by the declining trend in passenger trips during that time period. CAT is performing just above the peer mean of \$7.01 (2019\$).

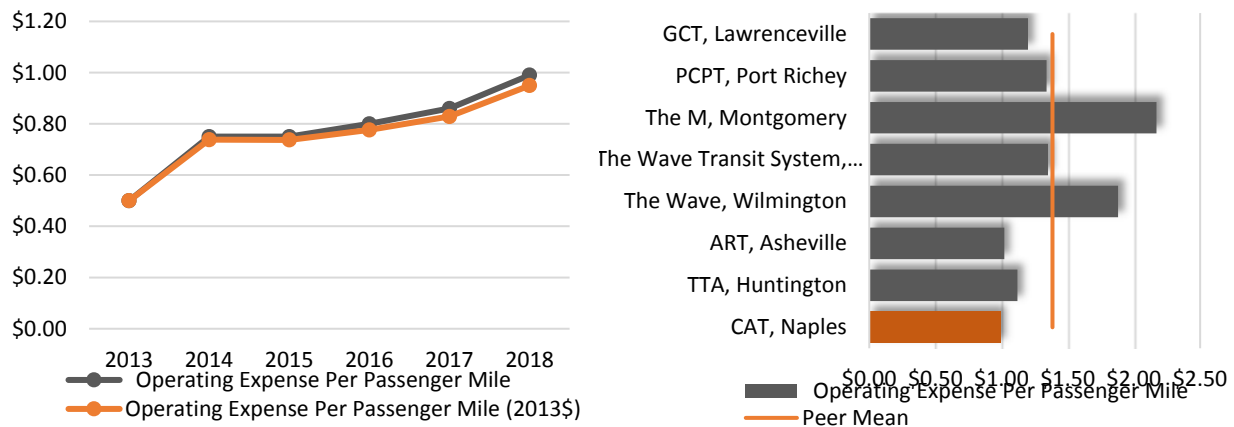
**Figure 3-17: Trend and Peer Comparison for Operating Expense per Passenger Trip**



### 3.2.3.3 Operating Expense per Passenger Mile

Operating expense per passenger mile measures the impact of ridership, average trip length, and operating cost. The goal is to minimize cost per passenger miles. CAT's operating expense per passenger mile nearly doubled between 2013 and 2018. Despite this trend, CAT is 28% below the peer mean for this measure and is performing more efficiently than the peer group.

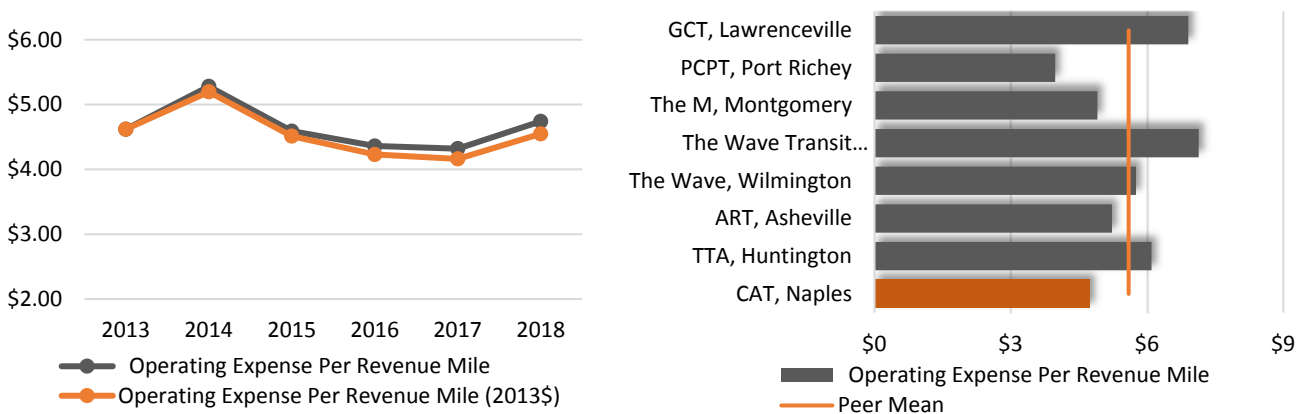
**Figure 3-18: Trend and Peer Comparison for Operating Expense per Passenger Mile**



### 3.2.3.4 Operating Expense per Revenue Mile

Operating expense per revenue mile indicates how efficiently a transit service is delivered. The goal is to minimize cost per revenue mile. Overall, the metric has remained stable, with an overall increase of 3%. CAT is 15% below the peer mean, indicating more efficient transit service delivery than its peers for this measure.

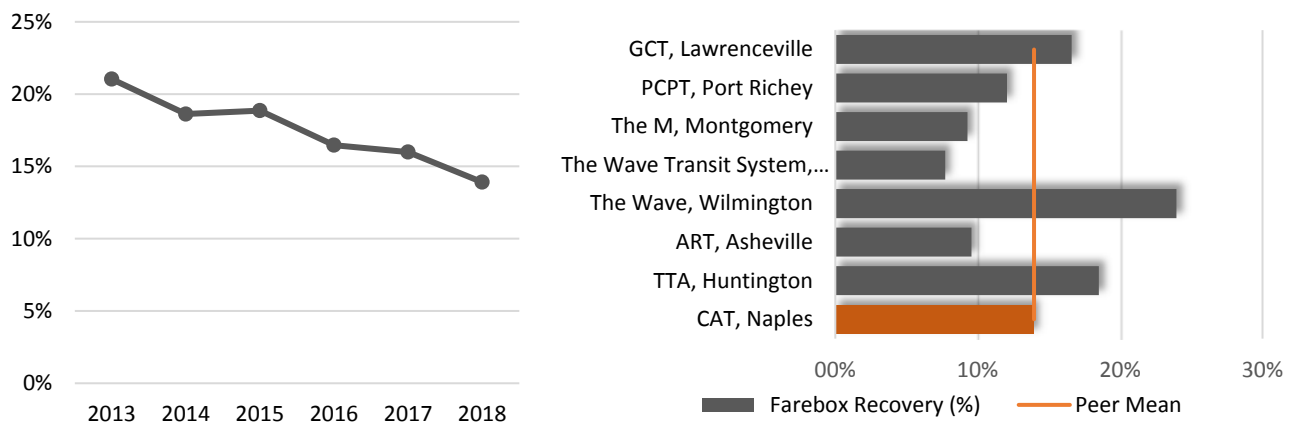
**Figure 3-19: Trend and Peer Comparison for Operating Expense per Revenue Mile**



### 3.2.3.5 Farebox Recovery Ratio

The farebox recovery ratio is a measure of the percentage of the transit system's total operating expenses that are funded with fares paid by passengers and is calculated by dividing the total fare revenue collected by the total operating expenses. The goal is to increase farebox recovery, meaning more of the costs are absorbed by users. CAT's farebox recovery declined from 21% in 2013 to 13.9% in 2018, at 34% overall. The farebox recovery ratio for CAT is at the peer group mean.

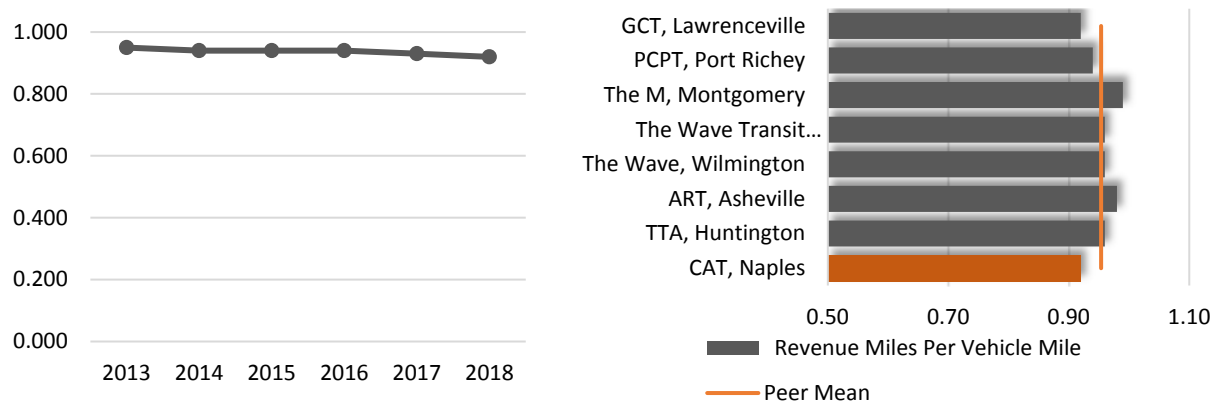
**Figure 3-20: Trend and Peer Comparison for Farebox Recovery Ratio**



### 3.2.3.6 Revenue Miles per Vehicle Mile

Revenue miles per vehicle mile are a measure of vehicle utilization. A higher ratio of revenue miles traveled to total vehicle mile generally indicates higher system productivity; the goal is to maximize the ratio of operations in revenue service to total operations. For CAT, revenue miles per vehicle mile remained stable, with a slight decrease of 3% over the six-year period. This measure for CAT is 3.5% below the peer group mean, indicating a near-average use of fixed-route bus vehicles within the peer group mean.

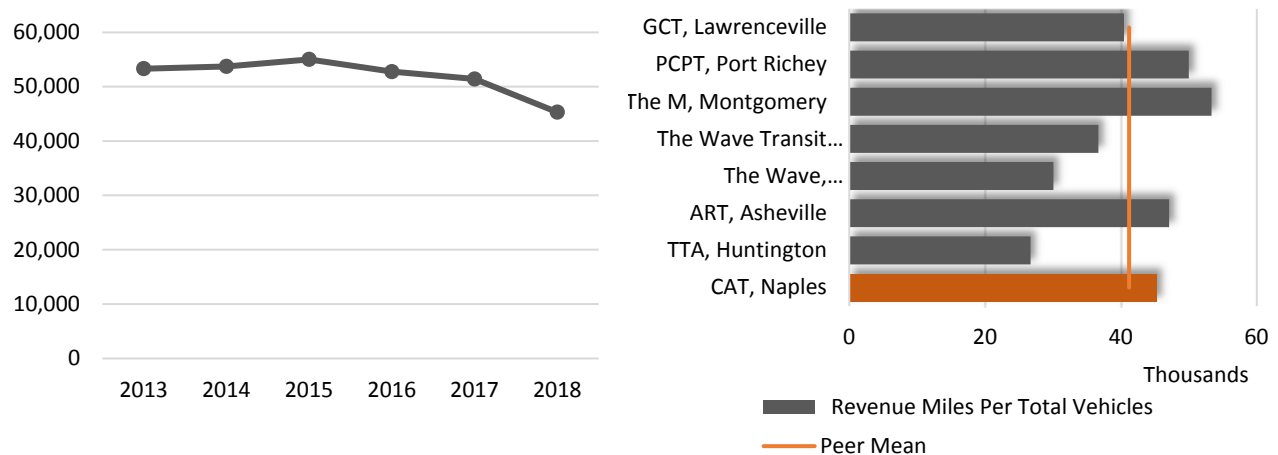
**Figure 3-21: Trend and Peer Comparison for Revenue Miles per Vehicle Mile**



### 3.2.3.7 Revenue Miles per Total Vehicles

Revenue miles per total vehicles also is a measure of vehicle utilization. Interpretation of this metric is complex and must be taken in context of fleet size, revenue miles, and age of the fleet. CAT experienced an overall decrease of approximately 15% over the six-year period and ranks 9% above the peer mean of 41,207 revenue miles per total vehicles.

**Figure 3-22: Trend and Peer Comparison for Revenue Miles per Total Vehicle**

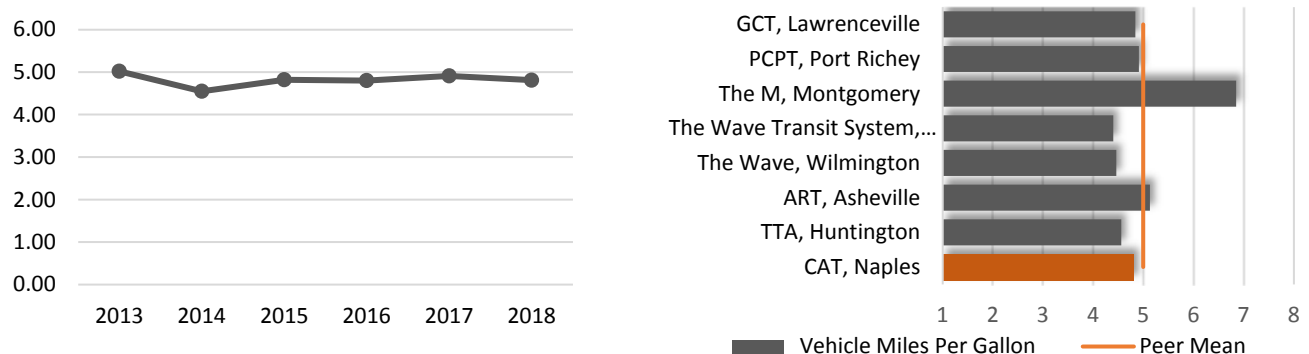


### 3.2.3.8 Vehicle Miles per Gallon

Vehicle miles per gallon, the ratio between fuel consumed and distance traveled, are an indication of fuel efficiency and apply only to diesel- and gasoline-powered vehicles. It is desirable to maintain a higher fuel economy, i.e., more miles per gallon. For CAT, vehicle miles per gallon (or fuel efficiency) remained relatively constant, from 5.02 in 2013 to 4.8 in 2018, a decrease of 4% overall. CAT is 4% below the peer mean.



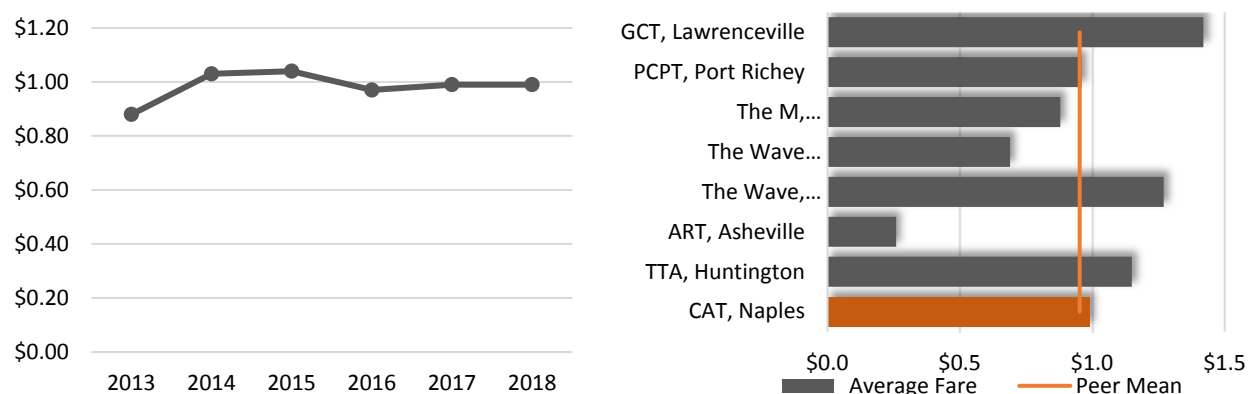
**Figure 3-23: Trend and Peer Comparison for Vehicle Miles per Gallon**



### 3.2.3.9 Average Fare

Average fare is calculated by dividing total passenger fare revenue collected by ridership. The average can be lowered by systems that offer free transfers or discounted/free rides. CATS's average fare increased from \$0.88 in 2013 to \$0.99 in 2018, at 12% overall. The mean average fare for the peer systems is \$0.95. This means that, on average, CAT riders pay close to the mean fare of the peers.

**Figure 3-24: Trend and Peer Comparison for Average Fare**



## 3.2.4 Key Findings of Trend and Peer Analyses

The trend analysis is only one aspect of transit performance evaluation. When combined with the peer review analysis (summarized later in this section), the results provide a starting point for understanding the transit system's operating environment over time when compared to other systems with similar characteristics. Key trends observed for the CAT system from 2013 to 2018 are summarized as follows:

- The amount of service has increased with respect to total vehicle miles, revenue miles, vehicle hours and route miles, and vehicle miles per capita. CAT placed above average for passenger miles, vehicle miles, revenue miles, and route miles.

- Passenger trips and passenger miles have declined over the six-year period, which mirrors the national trend in transit ridership decline. CAT performed 19.3% below the peer mean for passenger trips and 19.6% above the peer mean for passenger miles.
- Total operating expenses have increased moderately by 6% over the six-year period. Operating expense per passenger trip and operating expense per passenger mile have seen dramatic increases that were driven largely by decreasing passenger trips and passenger miles, suggesting a decline in efficiency. CAT performed better than the peer mean with respect to total operating expenses, operating expense per passenger mile, and operating expense per revenue mile, suggesting that CAT has a better cost efficiency compared to its peer group. Operating expense per revenue mile fluctuated between 2013 and 2018, but only with a slight increase of 2.6% overall.
- Passenger trips per capita, passenger trips per revenue mile, and passenger trips per revenue hour have decreased over the six-year period, indicating a negative trend in service consumption. CAT performed below the peer group mean for these measures.
- The farebox recovery ratio decreased 34% but, compared to the peer group, CAT is performing near the peer mean.

Table 3-5 summarizes the trend and peer analyses and shows the positive and negative trends identified in the analysis. The desired trend indicates the whether a positive or negative trend is needed to show improvements for CAT.

**Table 3-5: CAT Trend and Peer Analysis Summary, 2013–2018**

	Indicators	Trend Change	Desired Trend	Trend Status	Percent from Mean
General	Service Area Population *	-18.9%			-18.0%
	Service Area Size (sq. mi) *	-84.5%			18.4%
	Passenger Trips	-38.2%			-19.3%
	Passenger Miles	-46.7%			19.6%
	Vehicle Miles	6.4%			9.0%
	Revenue Miles	3.5%			5.6%
	Vehicle Hours	10.6%			-5.6%
	Route Miles	15.0%			57.0%
	Total Operating Expense	6.1%			-9.0%
	Vehicles Available for Maximum Service	21.7%			-6.7%
	Total Gallons Consumed	11.1%			11.3%
Effectiveness	Vehicle Miles Per Capita*	31.1%	↗	Improving	-8.1%
	Passenger Trips Per Capita	-23.8%	↘	Not Improving	-45.8%
	Passenger Trips Per Revenue Mile	-40.5%	↘	Not Improving	-27.3%
	Passenger Trips Per Revenue Hour	-43.3%	↘	Not Improving	-15.3%
	Number of Vehicle System Failures	181.5%	↘	Not Improving	-18.0%
	Revenue Miles Between Failures	-63.2%	↘	Not Improving	-54.6%
Efficiency	Operating Expense Per Capita*	30.7%	↘	Not Improving	-24.4%
	Operating Expense Per Passenger Trip	71.5%	↘	Not Improving	1.4%
	Operating Expense Per Passenger Mile	98.0%	↘	Not Improving	-28.5%
	Operating Expense Per Revenue Mile	2.6%	↘	Not Improving	-15.3%
	Farebox Recovery (%)	-33.9%	↘	Not Improving	-0.3%
	Revenue Miles Per Total Vehicles	-15.0%	↘	Not Improving	10.0%
	Vehicle Miles Per Gallon	-4.2%	↘	Not Improving	-3.7%
	Average Fare	12.5%	↗	Improving	3.9%

\*2017-2018 service area population calculated using TBEST

Source: FTIS



## 4.0 Public Outreach

This section summarizes public outreach activities conducted as part of the TDP. Activities completed include an on-board survey, an online survey, stakeholder interviews, discuss group workshops, and public meetings. The public outreach described in this section was completed in compliance with the CAT Public Involvement Program (PIP) presented as **Appendix B**, along with FDOT correspondence related to the identified process.

### 4.1 On-board Survey

The on-board survey for the CAT TDP was completed by January 19, 2020, with weekday surveying on January 15 and 16 and weekend surveying occurring on February 18 and 19. The on-board survey was administered on every fixed-route and targeted 50% coverage of CAT's fixed-route service. Surveyors were deployed from CAT's main bus facilities at Collier Area Transit at 8300 Radio Road and from the Government Center Transfer Center at 3301 Tamiami Trail E in Naples and were stationed on buses to distribute surveys to passengers. Surveys were provided in Spanish, and Haitian Creole, in addition to English.

Results of the on-board survey help to understand the attitudes, gaps in transit service, preferences, and habits of current riders for market research purposes. To that end, the survey was not specifically designed for model input or validation. This section discusses key results from the on-board survey effort. Copies of the on-board survey instruments in each language are provided in Appendix C.

#### 4.1.1 Survey Characteristics

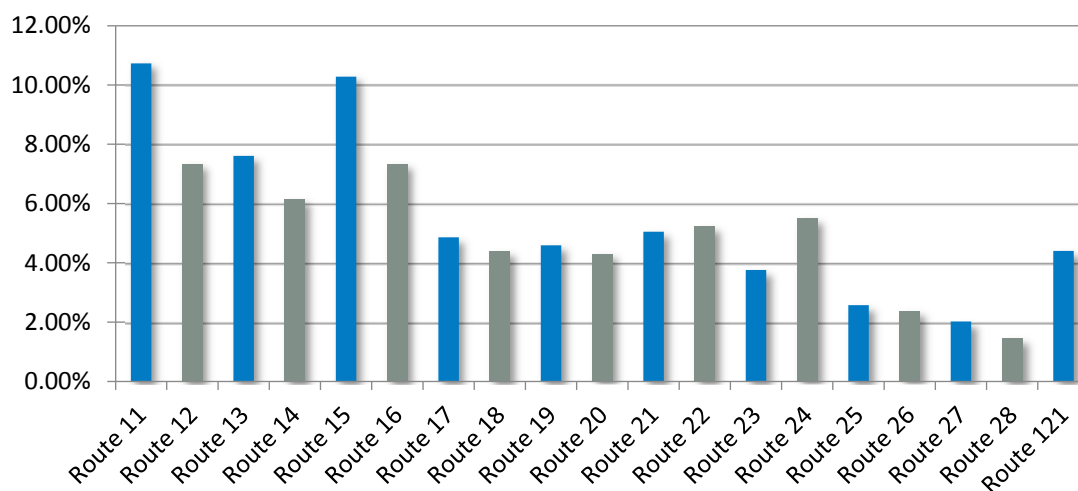
The survey consisted of questions to identify passenger socio-demographics, travel characteristics, and rider satisfaction:

- Socioeconomics and demographics:
  - Age
  - Gender
  - Ethnic origin
  - Household motor vehicle ownership
  - Household income
  - Language used at home
- Travel characteristics:
  - Bus route used for this trip
  - Trip purpose
  - Method for reaching the bus for this trip
  - Trip origin for this trip
  - Trip destination for this trip
  - Fare type used

- Number of transfers on this trip
- Number of days CAT is used in a week
- Mode of travel if not bus
- Length of time using CAT services
- Improvement priorities and rider satisfaction:
  - Service feature improvement rankings
  - Express service
  - New service routes
  - New on-demand service
  - Greater frequency
  - Later service
  - Other suggested improvements

In total, 1,090 CAT passengers responded to the survey. Figure 4-1 shows a breakdown of the routes used by respondents at the time of the survey.

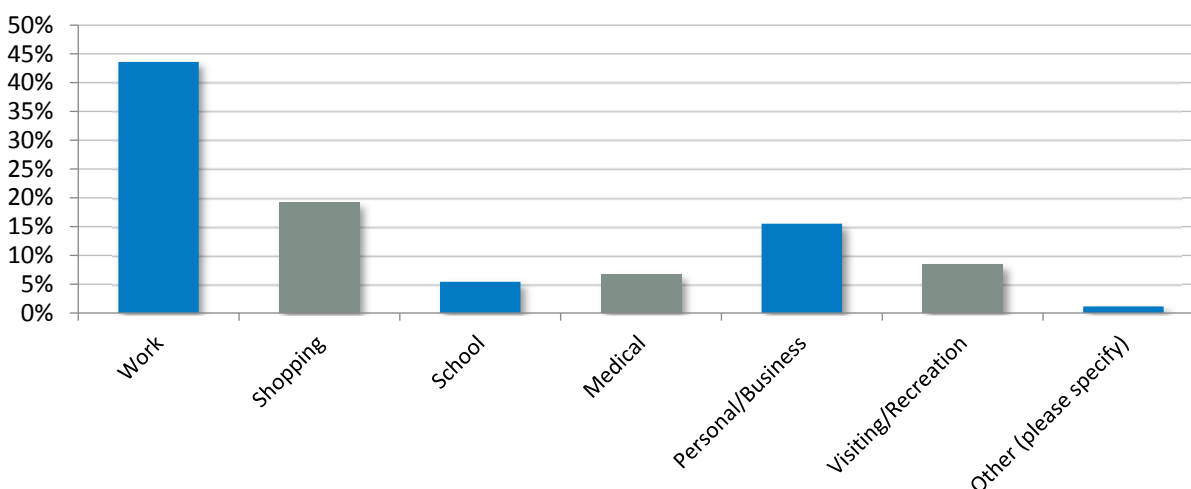
**Figure 4-1: Please identify your current route.**



#### 4.1.2 Trip Purpose

Passengers were asked to identify the main purpose of their current trip to understand where people were coming from or going to while using CAT service, as shown in Figure 4-2. For the overall system, 467 passengers (43.60%) said they were going to work, 206 (19.23%) were shopping, and 166 (15.50%) were making personal/business trips. Travel for recreational purposes was noted by 90 passengers (8.40%), medical was noted by 72 passengers (6.72%), and school was noted by 58 passengers (5.42%); 7 respondents said they were going to church (0.7%).

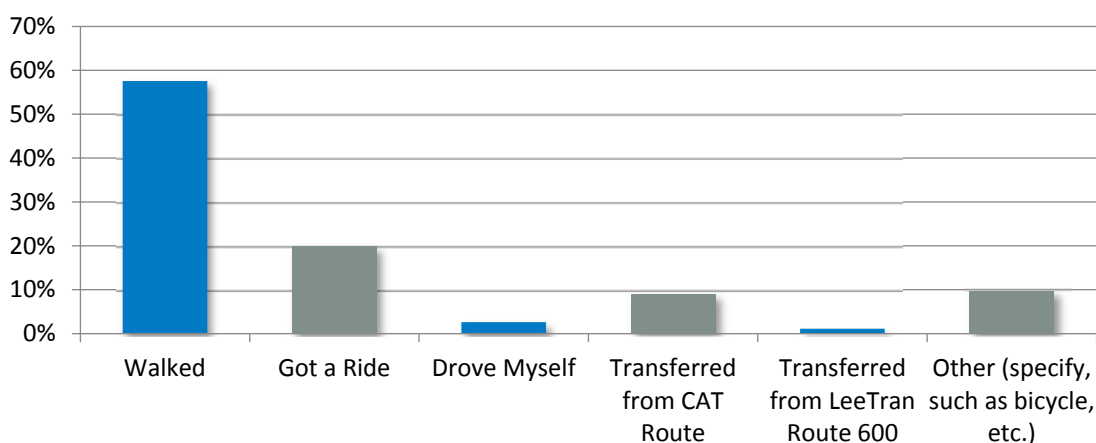
**Figure 4-2: What is the main purpose of your trip today?**



### 4.1.3 Passenger Travel Characteristics

Passengers were asked to identify how they arrived at the bus stop for their current trip (Figure 4-3). In total, 618 passengers (57.54%) said they walked to reach the stop, 214 (19.93%) got a ride, and 98 (9.12%) transferred from a different CAT bus; 12 passengers (1.11%) transferred from LeeTran Route 600, and 28 (2.60%) drove themselves to the stop and parked nearby. More than 100 passengers (9.68%) selected “Other,” with most riding a bicycle to the stop or using a scooter or skateboard; some indicated using a wheelchair to access the stop.

**Figure 4-3: How did you get to the bus stop where you got on this bus?**

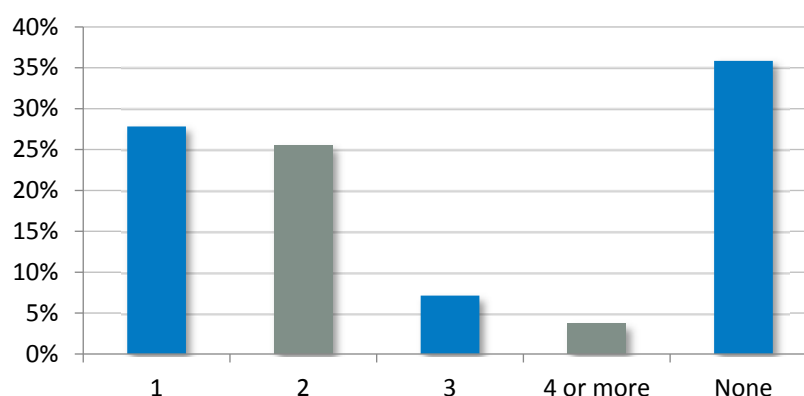


As part of this question, passengers who walked were asked how far they traveled to reach the stop to board the bus. In total, 92 (14.89%) traveled 1 block, 123 (19.90%) traveled 2 blocks, 87 (14.08%) traveled 3 blocks, and 58 (9.39%) traveled 4 blocks. In addition, 251 (40.61%) walked more than 4 blocks to reach the stop.

#### 4.1.4 Transfers

Of the passengers who transferred from a different route, 10 (16.67%) came from routes 11, 12, or 19, 5 (8.33%) came from Route 23, and 4 (6.67%) came from routes 13 or 15. The remaining 17 passengers (28.33%) originated from an unspecified route. Passengers were asked how many transfers were required to complete their trip (Figure 4-4). Of the 1,024 passengers who responded, 367 (35.84%) did not have to transfer; of those who planned to transfer, 285 (27.83%) required one transfer and 261 (25.49%) required two transfers.

**Figure 4-4: How many transfers will you make on this one-way trip?**



#### 4.1.5 Origin and Destination Characteristics

Passenger were asked to indicate the ZIP code from which they were coming on this trip. In total, 542 responded; 64 originated in the 34112 area (18 specifically from the Government Center), and 56 came from the 33142 area (26 specifically from the Health Department in Immokalee); 65 passengers started their trip in the 33116 area. These areas represented 42.25% of all starting locations. Many of the remaining trip starting points were from areas surrounding Naples or were listed as various retail locations such as Walmart, Seminole Casino, airport, and surrounding malls.

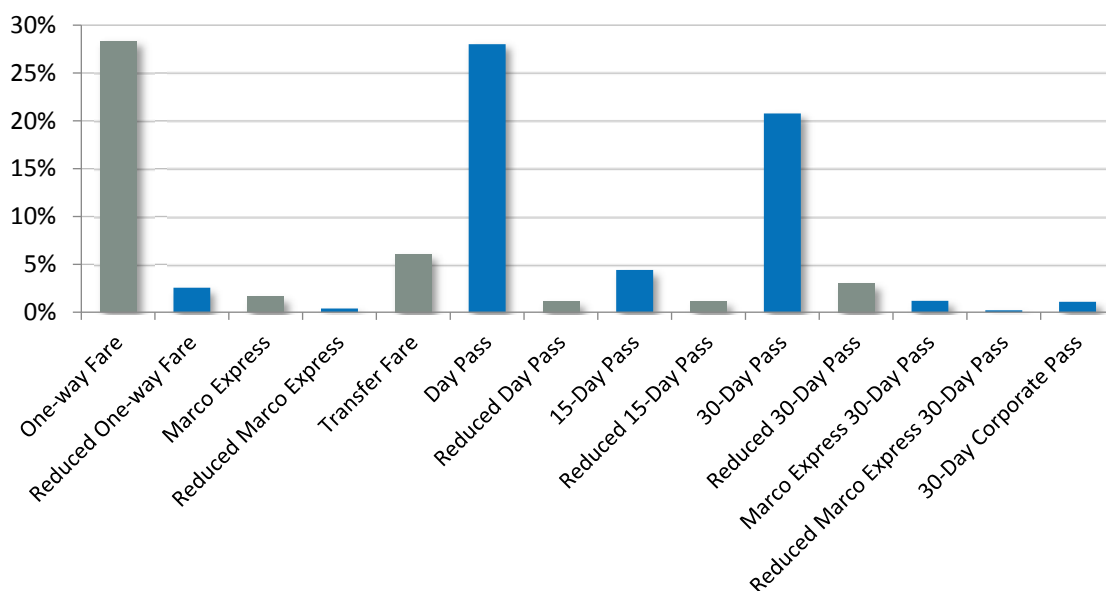
Passengers also were asked to indicate the ZIP code to which they were going. In total, 526 responses were provided for trip destinations. Ending points were more dispersed than starting points, but concentrations were in Naples (58 trips), the 34112 area (47) and Government Center (24), the 34142 area (33) and the Health Department (30), and various retail locations, including 22 at a Walmart and 20 at surrounding malls.

#### 4.1.6 Fare Information

Passenger were asked to indicate what fare they used to board the bus. Of 1,021 passenger responses (Figure 4-5), 289 (28.31%) paid a one-way fare, 286 (28.01%) used a day pass, and 212 (20.76%) used a 30-day pass.



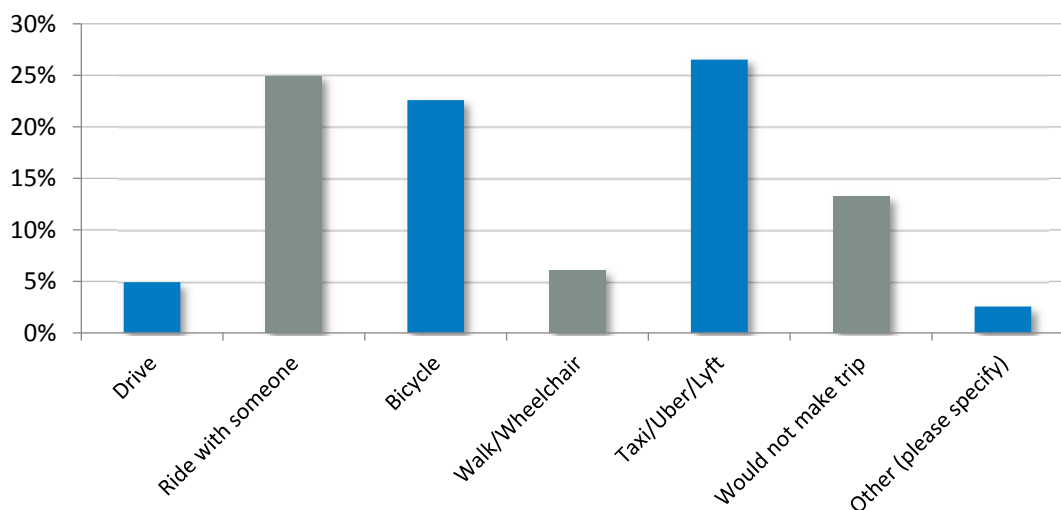
**Figure 4-5: How did you pay for your fare on this bus?**



#### 4.1.7 Transit Dependency

Passengers were asked how they would make their trip if the bus was not available (see Figure 4-6). Across service types, most indicated they would use rideshare (26.52%), catch a ride with someone (24.95%), or ride a bike (22.59%); 13% said they would not make the trip if their bus was not available.

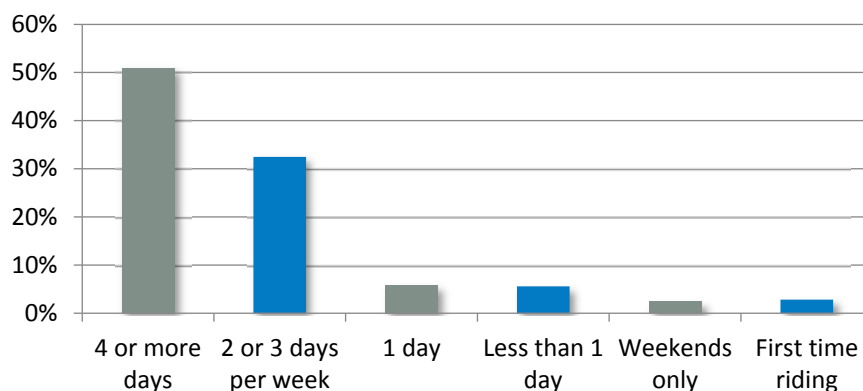
**Figure 4-6: How would you make this trip if the bus were not available?**



#### 4.1.8 Ridership Frequency

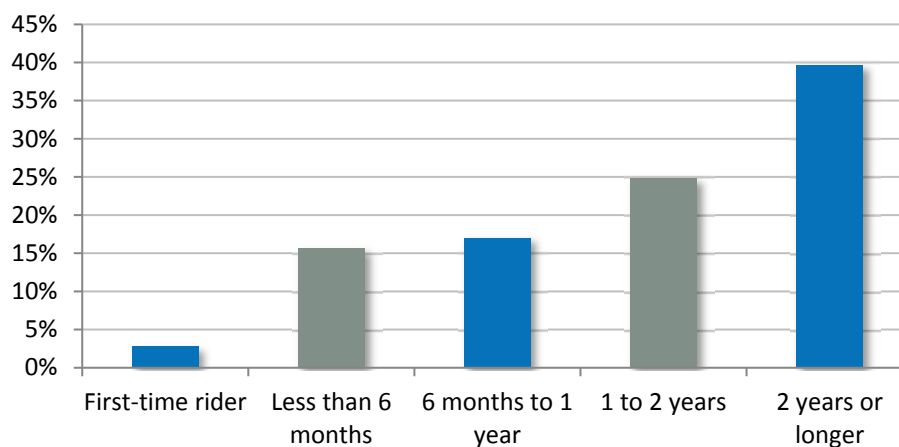
When asked about the frequency with which they use CAT services, approximately 51% said they used CAT four or more days per week across all service types, as shown in Figure 4-7. Another 332 (32.45%) said they rode the bus two or three days of the week, and approximately 3% said this was their first-time riding CAT services; only 2% said they used CAT only on weekends.

**Figure 4-7: How many days per week do you ride CAT?**



Passengers were also asked how long they have been using CAT services. Of the 1,039 responses, the majority indicated using CAT for more than two years (Figure 4-8).

**Figure 4-8: How long have you been riding CAT?**

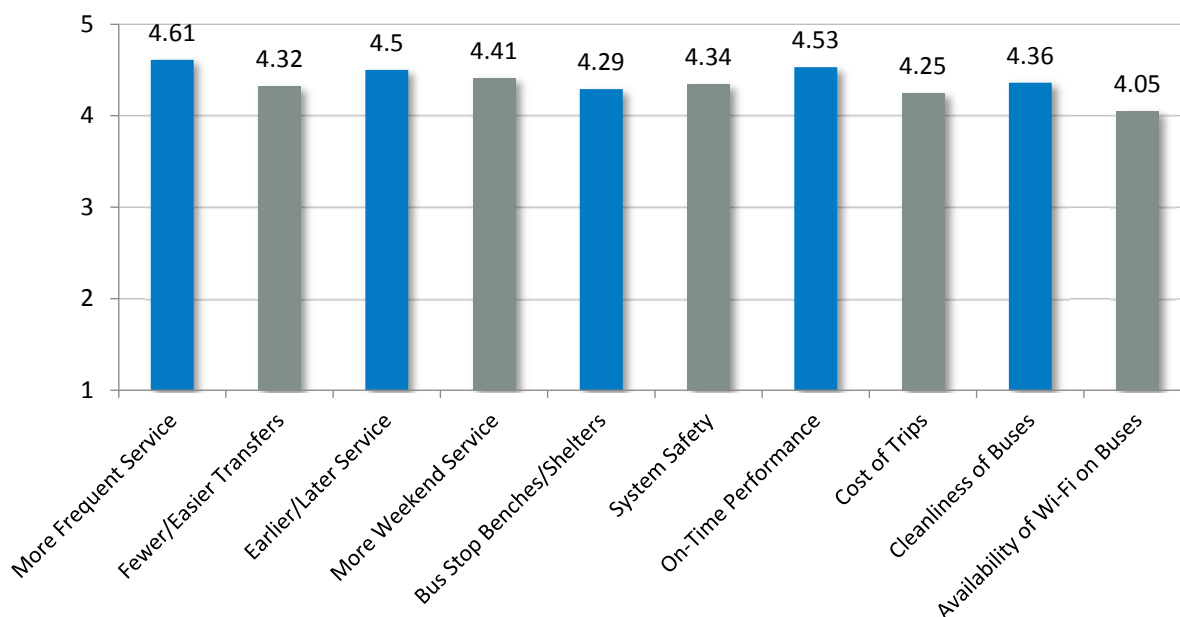


#### 4.1.9 System Improvements

Passengers were given the opportunity to rank various system improvements and amenities according to the perceived importance of a particular feature (Figure 4-9). Using a scale from 1 to 5, with 5 being the most important, respondents rated 10 transit services and amenities. A desire for more frequent service had the highest weighted score, at 4.61 out of 5, followed closely by on-time performance (4.53) and earlier/later service (4.5). Availability of Wi-Fi on board buses was ranked

lowest by a relatively significant margin, at 4.05. In total, 411 respondents wanted to see more express buses, with some more common route suggestions from Naples to Miami and from Immokalee to Naples. Approximately 354 passengers expressed a desire for additional bus routes that included a Naples to Miami route and routes to surrounding counties, area beaches, and Marco Island. A total of 322 passengers called for new on-demand service; the most common areas were in downtown Naples and Immokalee. Of the passengers who expressed the need for more service frequency, the most cited transit routes in CAT service were Route 11 (33), Route 24, (19), and Route 19 (16). Passengers who expressed a need for later service also had a high approval rate. Of the 588 responses, passengers listed Route 11 (31 responses), Route 19 (24 responses), Route 24 (23 responses), and Route 17 (22 responses).

**Figure 4-9: Please indicate how important each of the following features are to your enjoyment of CAT services.**



#### 4.1.10 Passenger Demographic Information

As a part of the on-board survey, passengers were asked to provide information about the following categories to help understand the demographic profile of an average CAT rider:

- Age
- Gender
- Ethnicity
- Number of automobiles available in their household
- Household Income
- Language

As indicated in Figure 4-10, most CAT passengers were between ages 35–44 (23.59%), followed by 25–34 (21.89%), and 45–54 (15.83%). Approximately 3% were under age 18, and nearly 5% were age 65+.

**Figure 4-10: Age of Transit Passenger**

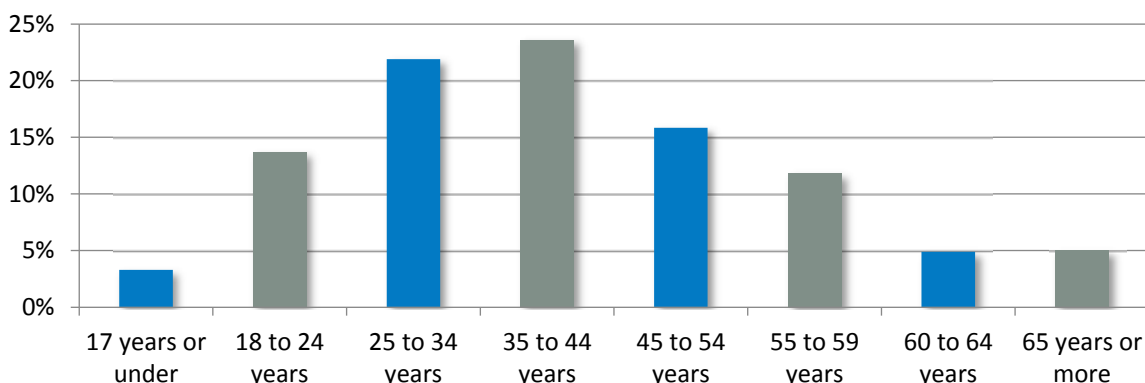
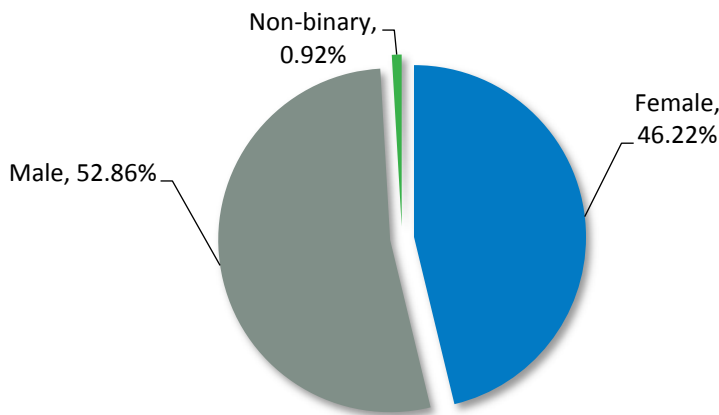


Figure 4-11 shows the gender of passengers who took the survey. Of the 517 who responded to the survey, nearly 53% indicated male, 46% indicated female, and nearly 1% indicated non-binary.

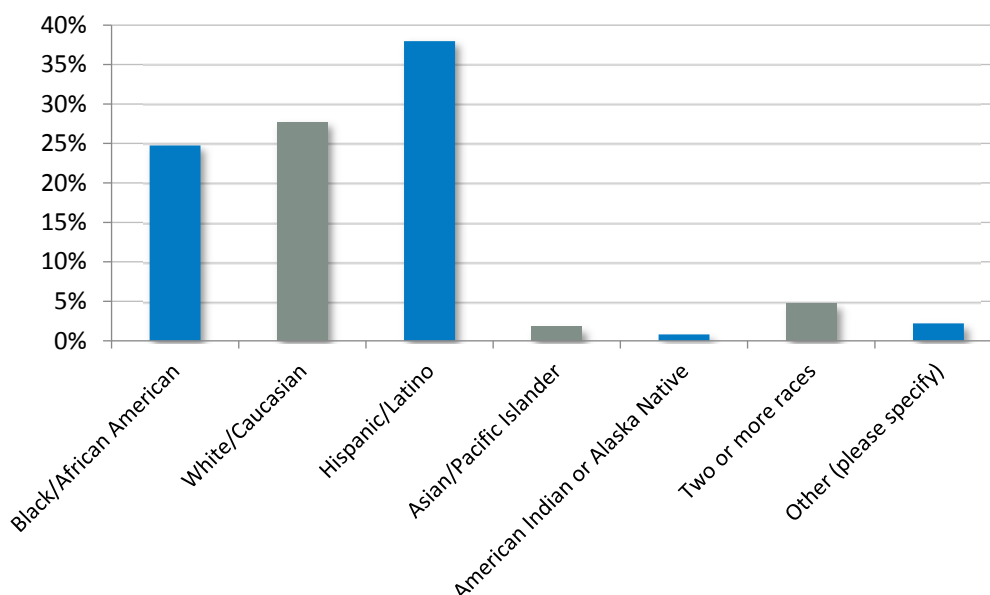
**Figure 4-11: Gender of Transit Passenger**



As shown in Figure 4-12, riders were asked about their ethnic origin. A total of 382 (37.97%) were Hispanic/Latino, 279 (27.73%) were White/Caucasian, and 249 (24.75%) were Black/African American. Of the 22 who selected “Other,” most wrote in Haitian.

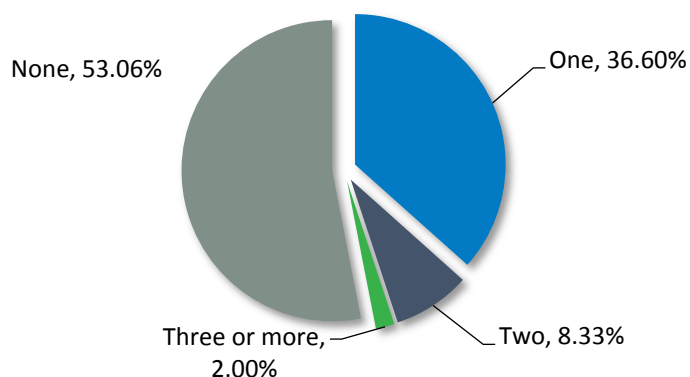


**Figure 4-12: Ethnic Origin of Transit Passenger**



Transit passengers were asked how many working motor vehicles were available in their household (Figure 4-13). Most responses, 503 (53.06%), answered that they had no vehicles in the household. Another 347 (36.60%) had one vehicle, 79 (8.33%) had two vehicles, and 19 (2.00%) had three or more vehicles available.

**Figure 4-13: Motor Vehicles Available to Transit Passenger**



Passengers were asked to provide their annual household income. As shown in Figure 4-14, approximately, 131 riders (19.38%) had an annual household income of \$15,000–\$19,999, 116 (17.16%) said \$20,000–\$24,999, and 101 (14.94%) said less than \$10,000 per year; 64 passengers (9.47%) said they had an annual household income of \$40,000 or more.

**Figure 4-14: Annual Income by Household of Transit Passenger**

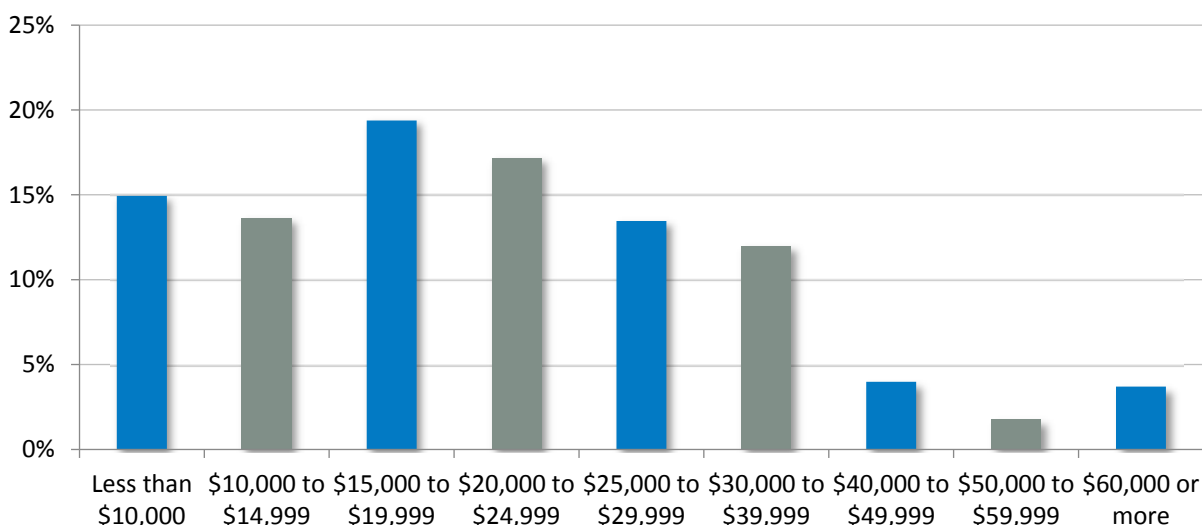
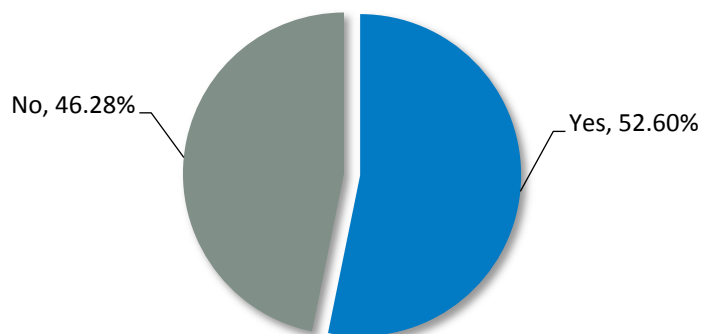


Figure 4-15 shows the number of people who spoke another language at home other than English. The survey was translated in Spanish and Creole for non-English speaking passengers. In total, 454 (46.28%) said they did not speak a different language at home, and 516 (52.60%) said they did. Of these 516, 282 said they spoke Spanish, 93 said Haitian Creole, 10 said French, and 5 said German.

**Figure 4-15: Language Used at Home by Transit Customer**



#### 4.1.11 On-board Survey Findings Summary

Findings of the survey were used to better understand the needs, transit service gaps, experiences, and priorities of existing CAT riders. This information will be useful in targeting riders in the future as CAT makes service improvements and can be used to program and prioritize mobility improvements. A copy of the on-board survey can be found in **Appendix C**.

## 4.2 Online Surveys

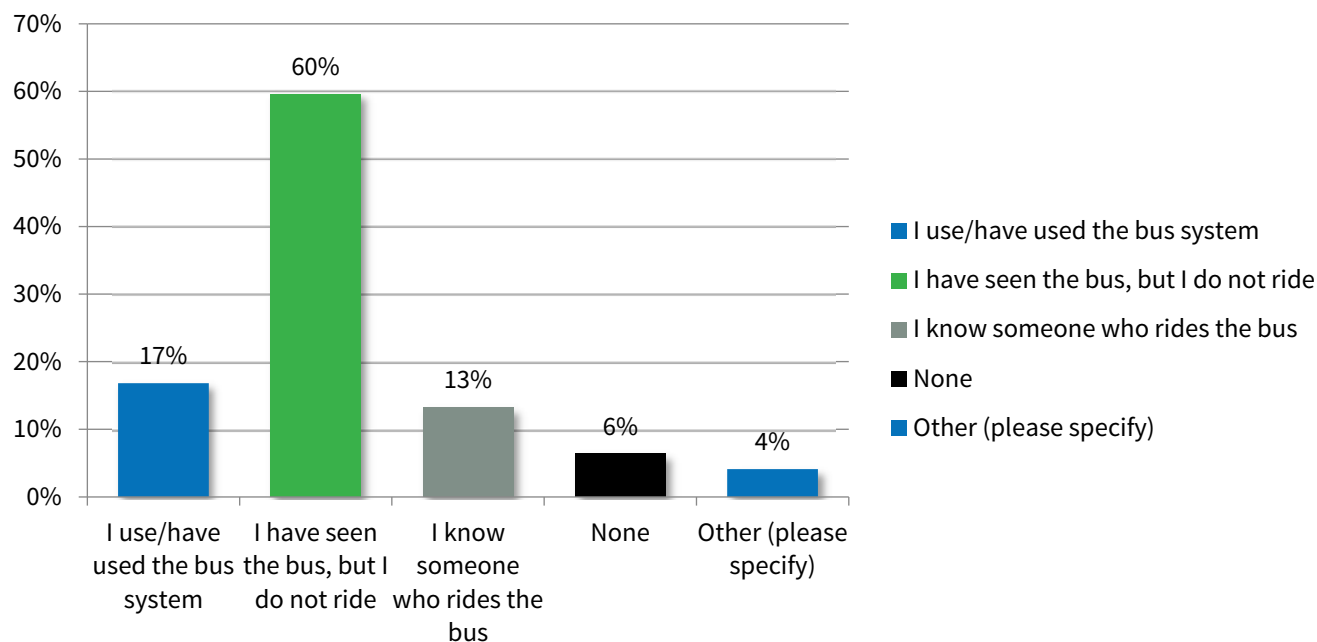
To better understand the needs and concerns of persons who use and do not currently use the CAT services, CAT and MPO staff and the consulting team developed two online surveys to elicit responses useful to CAT/MPO staff to better understand how services are perceived and what mobility services are in demand. The surveys were posted on the Collier County, CAT, and Collier MPO websites and were distributed via a set of email lists (940 contacts) and social media outlets in two phases during the TDP. The first survey focused on the perception of existing transit services and mobility needs in Collier County and was live from mid-February to March 15, 2020.

### 4.2.1 Phase I Public Input Survey

In total, 17 questions were asked to gather opinions about mobility needs, current services, and willingness to use public transit and to gauge public awareness on transit and gather sociodemographic information about survey respondents. The first online survey had a total of 220 responses and are summarized below.

Respondents were asked about their experience with Collier County's public transportation and related mobility services. The majority (60%) responded that they had seen the bus but did not ride it.

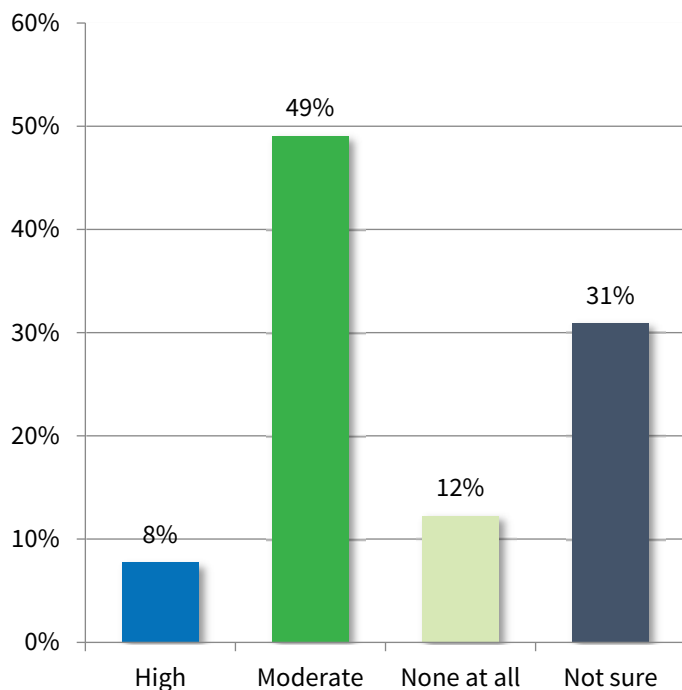
**Figure 4-16: What is your understanding of and experience with Collier County's existing public transportation service (CAT)?**



Although 49% of respondents indicated they were only moderately aware of public transit services (Figure 4-17), 71% said that it must be provided, as illustrated in Figure 4-18. Respondents were asked about their perception of transit's role in Collier County. Figure 4-19 shows that most agreed that transit serves persons who do not have access to a vehicle (95%) and that transit provides service to

workers and commuters (84%). About half agreed that transit serves tourists/visitors (52%) and helps to relieve parking and congestion (55%).

**Figure 4-17: How much awareness is there in Collier County about transit/public transportation?**

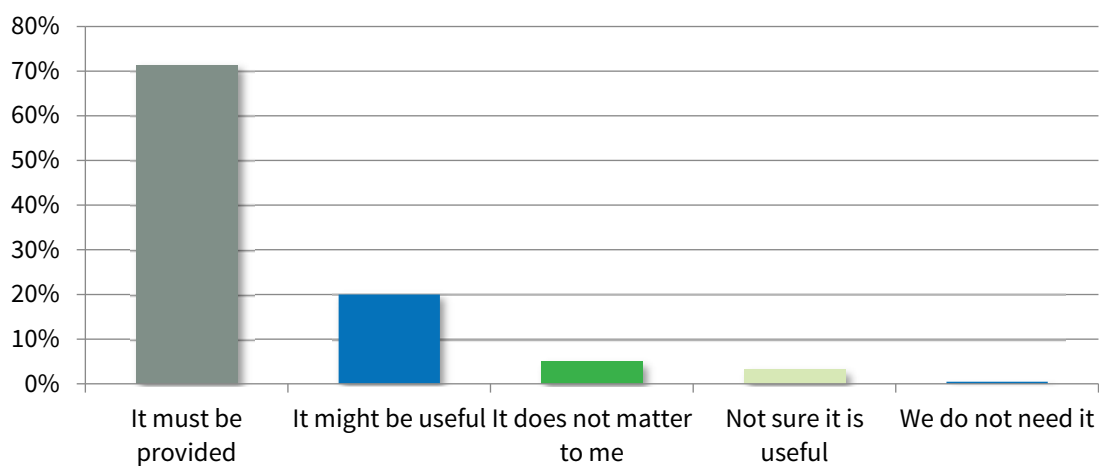


*"I have employees that don't have cars and getting to work is a big issue with no reliable public transportation"*

*"My business depends on it."*

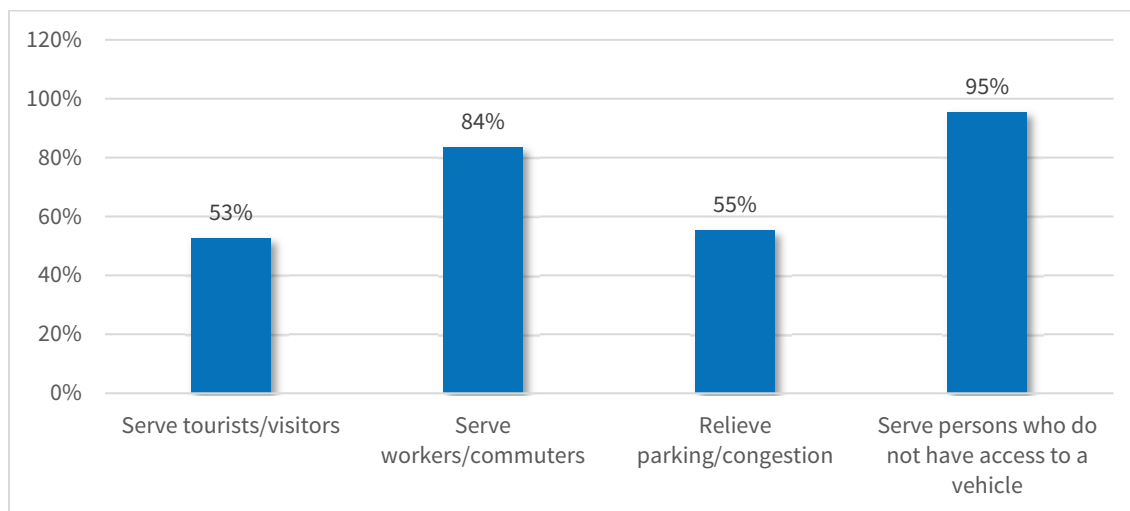
*"I was considering buying the monthly pass; however, I sometimes start work at 6 am, and sometimes leave work at 7:30 pm. The bus system does not work for my work schedule...."*

**Figure 4-18: What is your opinion of transit services in Collier County?**



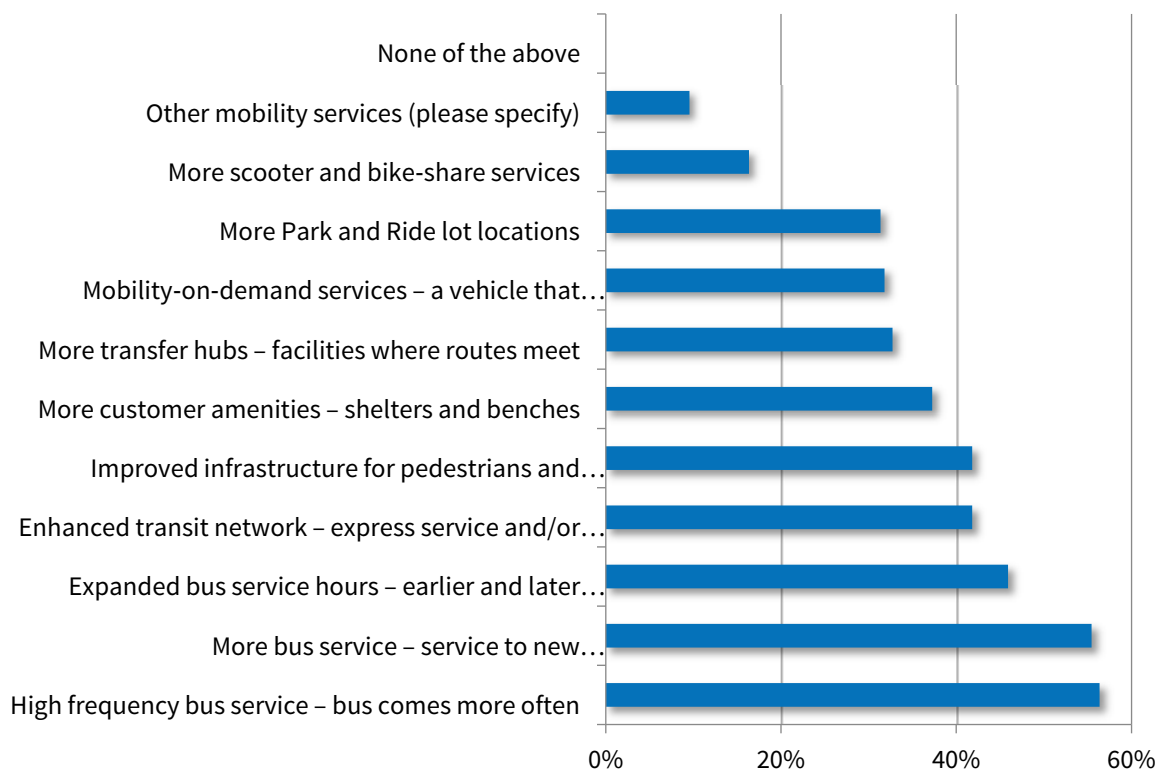


**Figure 4-19: What is your perception of transit’s role in Collier County? Check all that apply.**



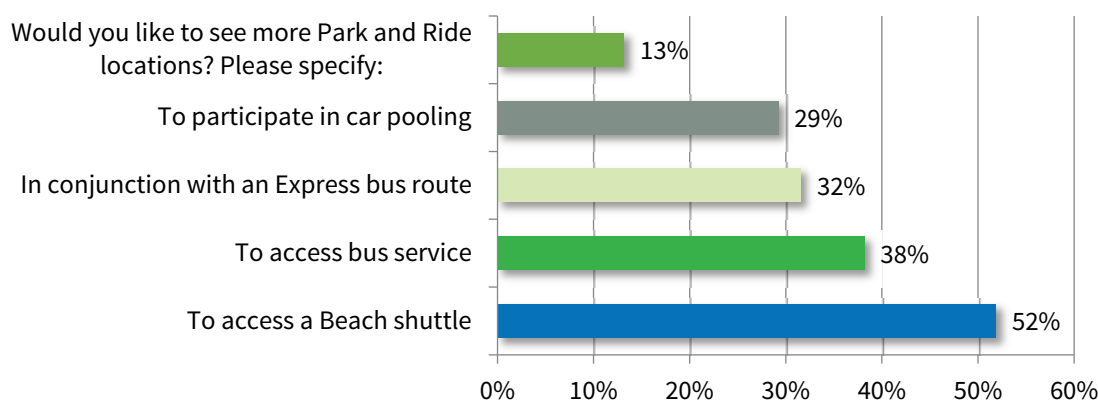
Respondents were asked to indicate what transit improvements they would like to see in Collier County (Figure 4-20). The top three responses were higher-frequency bus service, more bus service to new areas, and expanded bus service hours. Comments included the need for bus pullouts, more services for older adults, increased maintenance of stops, light rail on major arterials, service outside the community for festivals, and community shuttle services.

**Figure 4-20: What mobility improvements would you prefer to see in Collier County?**



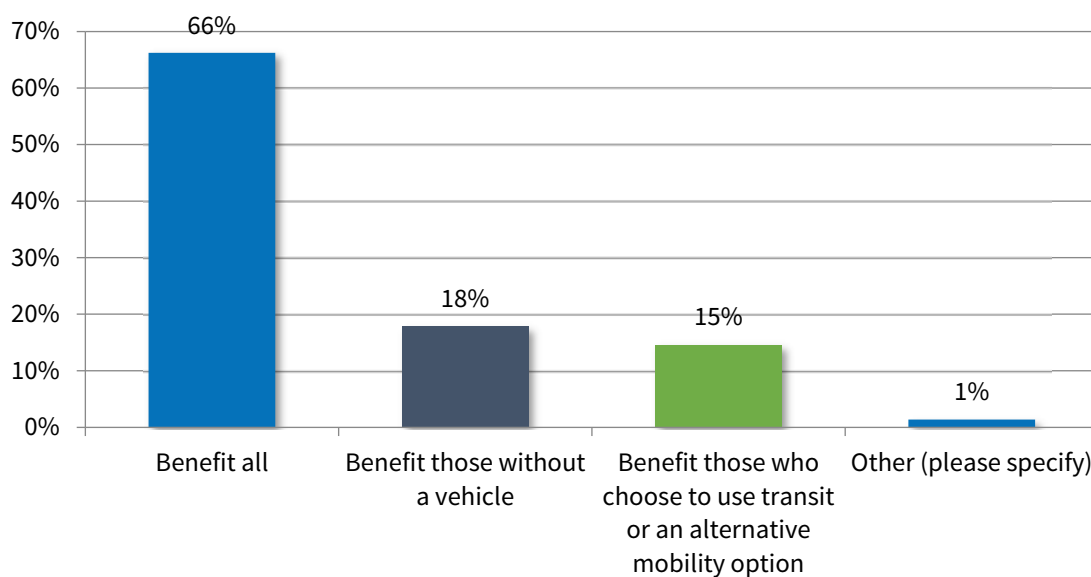
Respondents were asked for which of the following they would use a park-and-ride lot. Figure 4-21 shows that almost half of the respondents said they would use it to access a beach shuttle, and 38% said they would use it to access bus service. Suggested locations for park-and-ride lots included the Golden Gate area, East Naples for use with Marco Island Express service, the Estates, Publix on Pine Ridge Road/Collier Boulevard, the Orange Tree area, Eagle Lakes, apartment buildings in South Collier County, and at I-75 access points.

**Figure 4-21: For which of the following would you use a park-and-ride lot?**



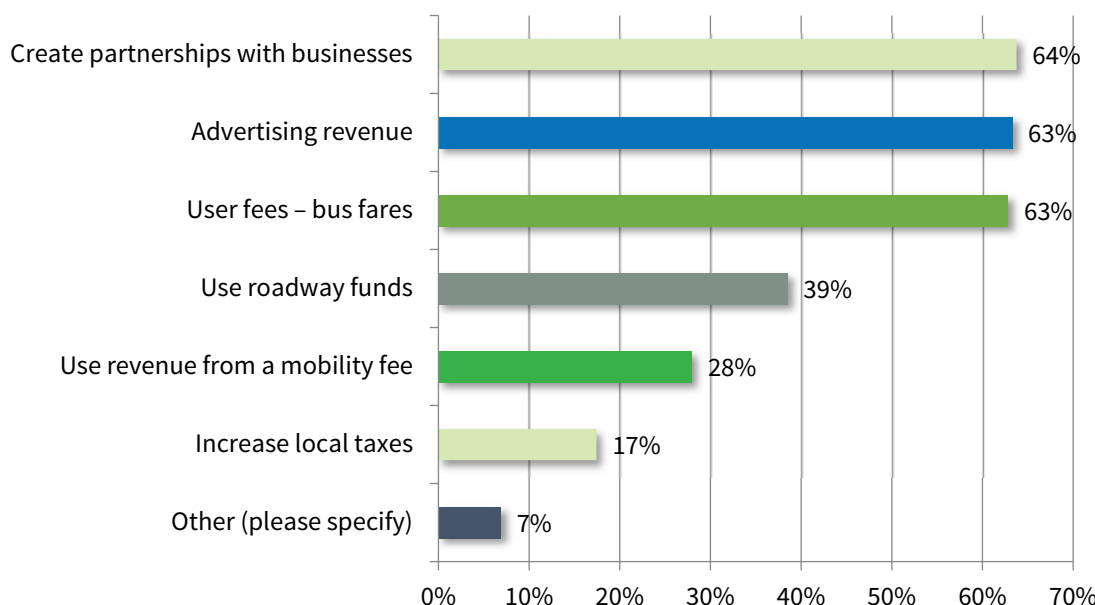
Respondents were asked who should benefit from mobility improvements. Figure 4-22 shows that 66% of respondents believe that all should benefit, 18% said that it should benefit those without a vehicle, and 15% said those who choose to use transit or an alternate mobility.

**Figure 4-22: Who should benefit from mobility improvements?**



To understand the public’s perception of how transit should be funded, respondents were asked how expanded mobility service should be paid for and could select all that apply. The top three responses, tied at 63%, were creation of partnerships with businesses, advertising revenue, and user fees, followed by roadway funds (38%) and revenue from a mobility fee (27%). One respondent commented that a sales tax, similar to HART’s in Tampa, should be used, another suggested developer funded via impact fees, and a third suggested a tourism tax. One respondent suggested that special event sponsors should be assessed a fee and required to provide services; all three respondents suggested grants.

**Figure 4-23: How should we pay for expanded mobility service?**



To gauge additional insight on the public’s perception of CAT services, respondents were how much they agree or disagree with six statements regarding CAT services. The statements with the highest percent of disagreement were:

- “Existing CAT service covers the areas I need to travel to regularly” (18%).
- “CAT services are effective, convenient and easy to use” (9%).
- “CAT is effective at making the public aware of existing transit and mobility service” (6%).

The statements with the highest percent of agreement were:

- “Collier County needs more service and/or more service options” (59%).
- “Additional public transit service will improve economic opportunities in Collier County” (54%).
- “Collier County should invest more into expanding mobility services and options” (48%).

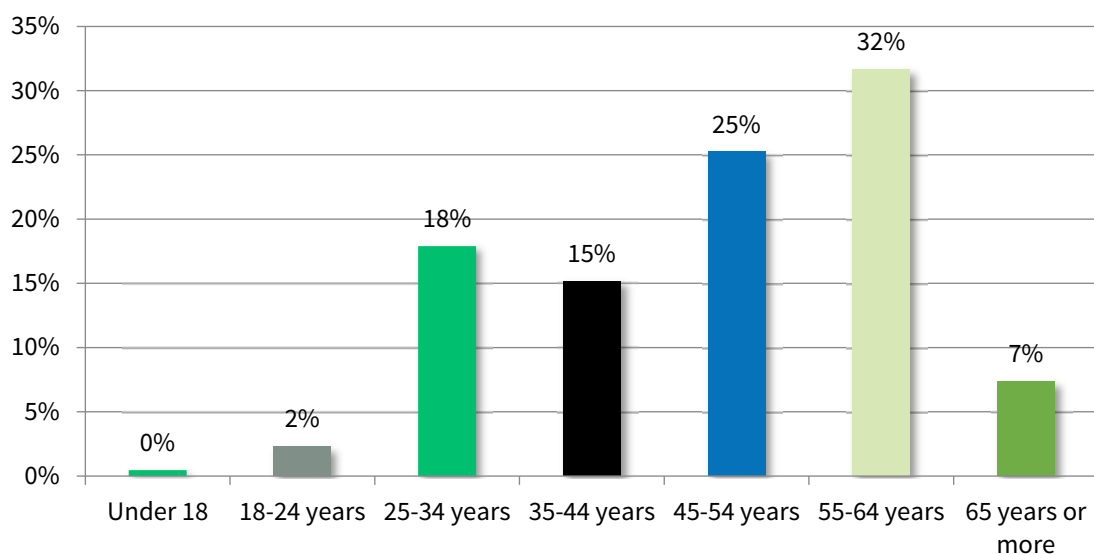
Table 4-1 shows the responses to each statement by their level of agreement.

**Table 4-1: Please specify whether you agree or disagree with the statements below.**

	Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree
CAT services are effective, convenient, and easy to use.	17.51%	19.82%	42.40%	11.52%	8.76%
Collier County needs more service and/or more service options.	59.63%	23.85%	12.84%	1.38%	2.29%
Existing CAT service covers the areas I need to travel to regularly.	8.80%	13.89%	43.06%	16.20%	18.06%
Collier County should invest more into expanding mobility services and options.	48.62%	27.52%	19.72%	1.83%	2.29%
Additional public transit service will improve economic opportunities in Collier County.	53.67%	25.69%	15.14%	3.21%	2.29%
CAT is effective at making the public aware of existing transit and mobility services.	11.57%	23.61%	36.11%	22.69%	6.02%

The remaining questions collected socio-demographic information on the respondents. When asked about their age, more than half indicated they were ages 45–64, approximately 18% said they were 25–34, and 15% said 35–44. One respondent indicated being under age 18, and five indicated they were age 18–24.

**Figure 4-24: Your age is ...**



As shown in Figure 4-25, 64% of respondents identified themselves as female and 36% were mail.



**Figure 4-25: You are ...**

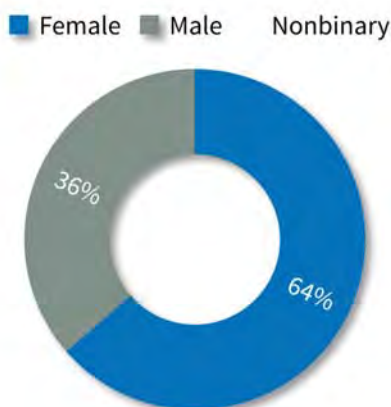
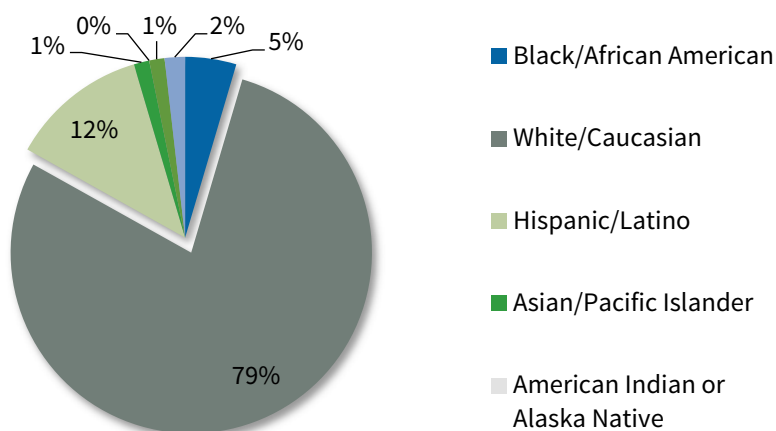


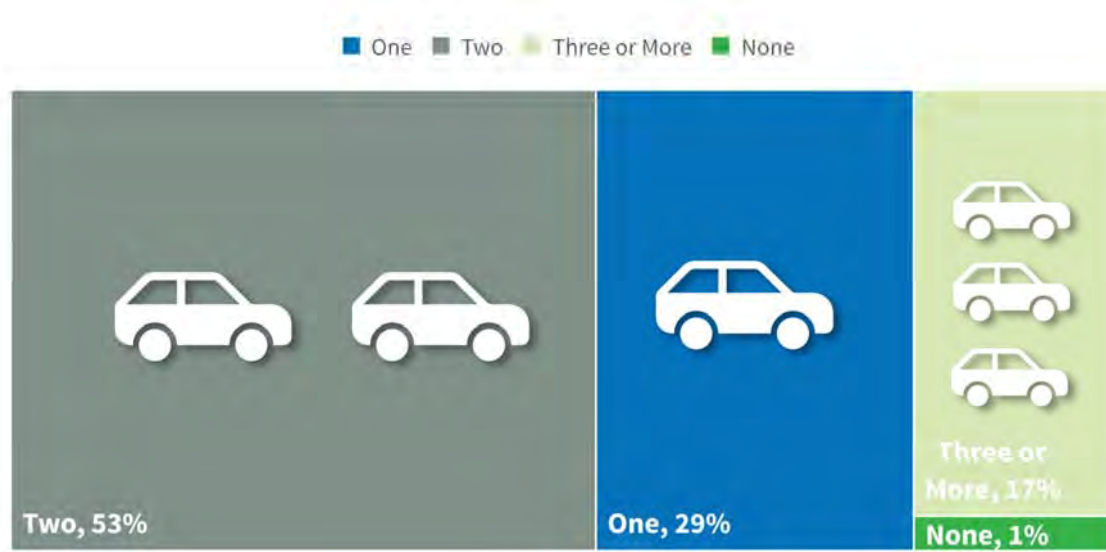
Figure 4-26 shows the ethnic origins the respondents reported. The majority indicated they were White/Caucasian (79%), followed by Hispanic/Latino (12%) and Black/African American (5%).

**Figure 4-26: Your ethnic origin is ...**



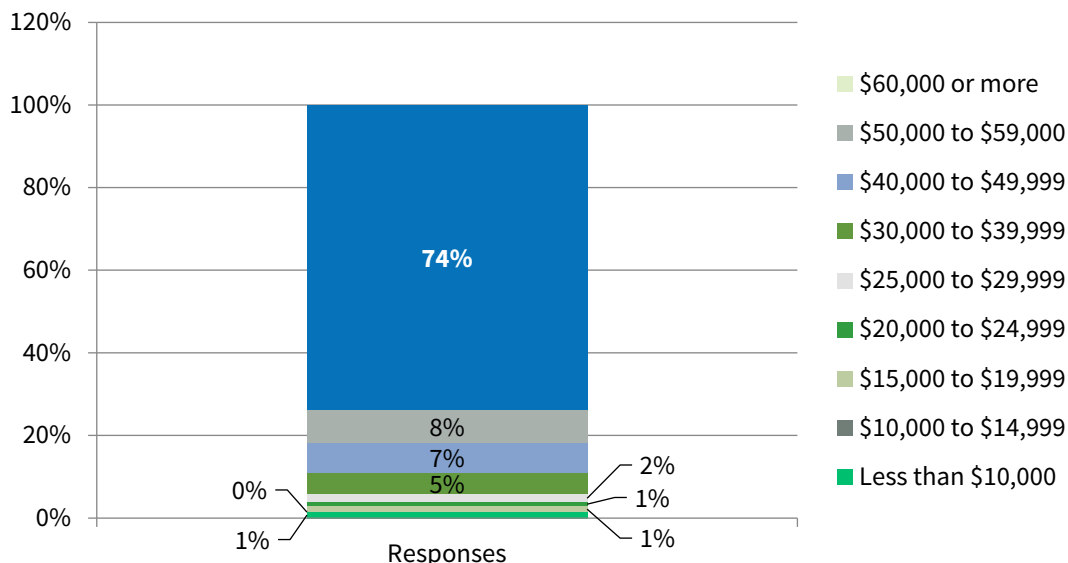
Additionally, respondents were asked about access to a vehicle in their household. Most respondents (53%) reported having two vehicles, followed by one vehicle (29%) and three or more (17%). One percent of respondents (3 total) reported having none, as shown in Figure 4-27.

**Figure 4-27: How many motor vehicles in your household are available for your use?**



As shown in Figure 4-28, approximately 73% of respondents indicated their household income was \$60,000 or more, followed by \$50,000–\$59,000 (8%), \$40,000–\$49,000 (7%), and \$30,000–\$39,999 (5%). A total of 6% indicated their household income was less than \$29,000.

**Figure 4-28: What was the range of your total household income for 2019?**



Respondents were asked if they speak a language other than English at home; 23% indicated that they did and 77% did not. As shown in Figure 4-29, respondents selected the ZIP code of their residence. Most respondents indicated that they lived in ZIP codes 34104 (east of Naples), 34120 (Orangetree), 34117 (east of Golden Gate area). Some respondents lived in Lee and Hendry counties.



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*Consider smaller electric vehicles like the paratransit vans and run service more frequently on some routes.*

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*I encourage more coverage and more frequent routes. As a restaurant manager, many of my staff rely on CAT service and it takes them hours to get to and from work.*

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*Cut the ride time in half. The 12 and 11 routes should come every 45 mins instead of one hour and a half. More buses route to Walmart on 951. More time bus until 8 p.m. I'm forgetting what's night life is like at Naples because the last bus is at 6:30. Each business should advertise bus route schedule booklet. Or advertise a bus stop on the map with a business name. Or make bus schedule booklet a collector item for tourists.*

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#### 4.2.2 Phase II Public Input Survey

The second online survey was available from July 15 to August 15, 2020 and focused on educating the public on the proposed transit improvements and receiving their input on how to prioritize the improvements. A copy of the online surveys can be found in **Appendix C**. The second online survey had a total of 48 responses, which are summarized below.

Respondents were asked for their home zip code. Most of the responses reported their home zip code was 34112, and 34142, and 34116. The most responses for work or school zip code was 34142 and 34104. Table 4-2 summarizes the responses

**Table 4-2: Home and Work/School Zip Code Responses**

Zip Code	Home Responses	Work/School Responses
34112	23%	8%
34142	20%	27%
34116	10%	0%
34110	8%	4%
34119	8%	0%
34109	5%	8%
34113	5%	8%
34105	5%	0%
34108	5%	0%
34103	3%	8%
33967	3%	0%
33993	3%	0%
34117	3%	0%
34120	3%	0%
34104	0%	27%
33901	0%	4%
34143 and 34102	0%	4%
34145	0%	4%
<b>Total Responses</b>	<b>40</b>	<b>26</b>

Respondents were asked about their typical travel needs within Collier County. Respondents were asked to select the best option when they travel for work/school, shopping, medical services, and other reasons: 1-3 days/weeks, 4+ days/week, or not applicable. Over half of respondents travel 4+ day per week for work (58%), and most travel for other reasons 1-3 days per week. (55%). Most of respondents travel for shopping 1-3 days/week and 41% of travel for medical services 1-3 days per week. Table 4-3 lists the responses by trip purpose.

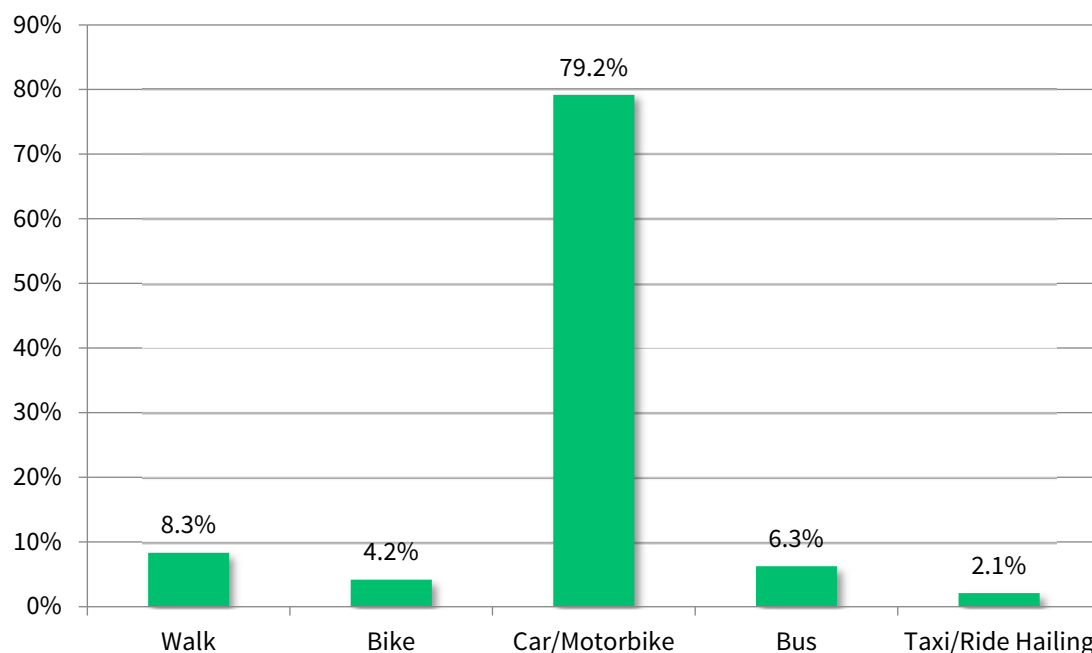


**Table 4-3: Tell us about your typical travel needs within Collier County.**

	N/A		1-3 days/week		4+ days/week		Total
<b>I travel for work or school:</b>	<b>29.0%</b>	<b>11</b>	<b>13.2%</b>	<b>5</b>	<b>57.9%</b>	<b>22</b>	<b>38</b>
<b>I travel for other reasons:</b>	<b>15.8%</b>	<b>6</b>	<b>55.3%</b>	<b>21</b>	<b>29.0%</b>	<b>11</b>	<b>38</b>
<b>I travel for shopping:</b>	<b>7.7%</b>	<b>3</b>	<b>82.1%</b>	<b>32</b>	<b>10.3%</b>	<b>4</b>	<b>39</b>
<b>I travel for medical services:</b>	<b>53.9%</b>	<b>21</b>	<b>41.0%</b>	<b>16</b>	<b>5.1%</b>	<b>2</b>	<b>39</b>

Respondents were asked about their usual mode of transportation. Most respondents (79%) reported that they usually travel by car/motorbike, followed by walking (8.3%), bus (6.3%) and bike (4.2%), as shown in Figure 4-30.

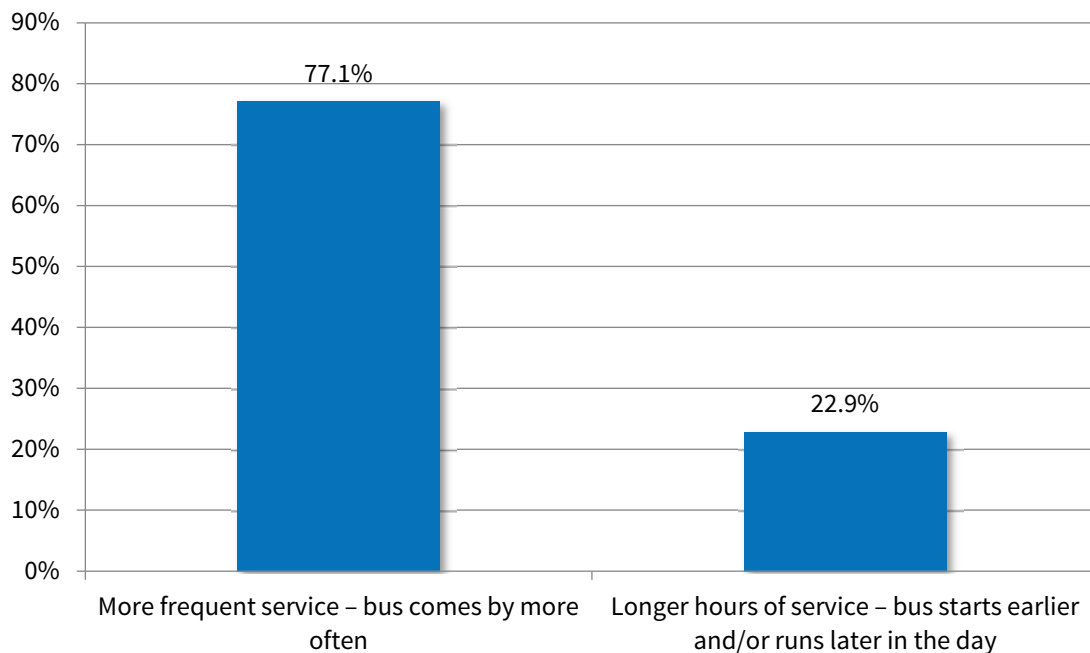
**Figure 4-30: I usually travel by...**



Of the respondents who usually travel by bus, the most frequent routes they reported riding were: routes 15 (2 responses), 16 (2 responses), followed by routes 12, 17, 18, 24 with one response each, as shown in Figure 4-30.

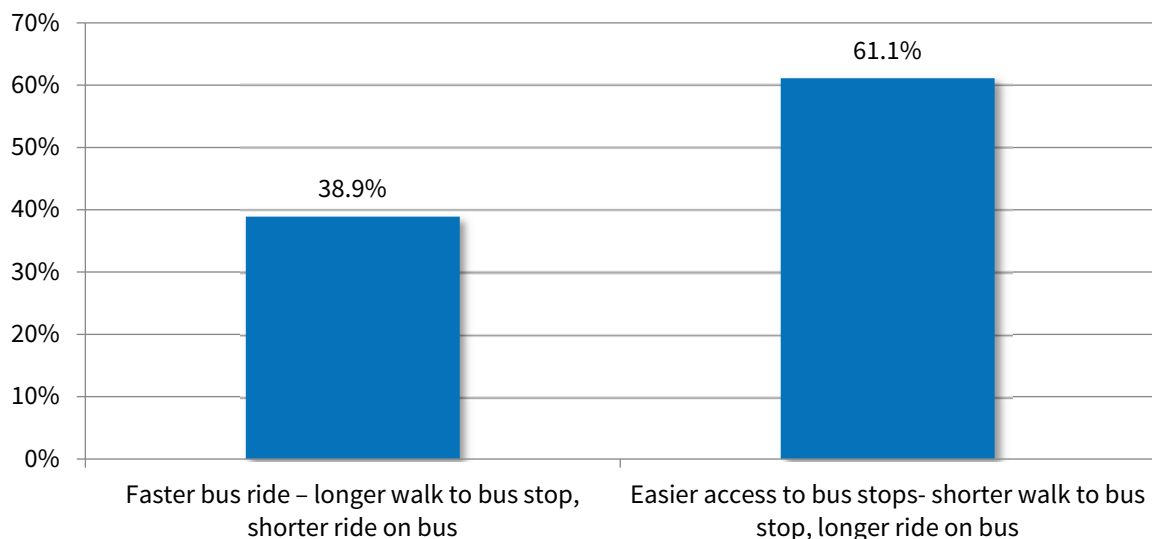
In order to understand what type of service improvements the community would prefer; respondents were asked to choose between more frequent service and longer hours of service. The majority (77%) selected more frequent service, as shown in Figure 4-31.

**Figure 4-31: If I had a choice between more frequent service and longer hours of service, I would choose...**



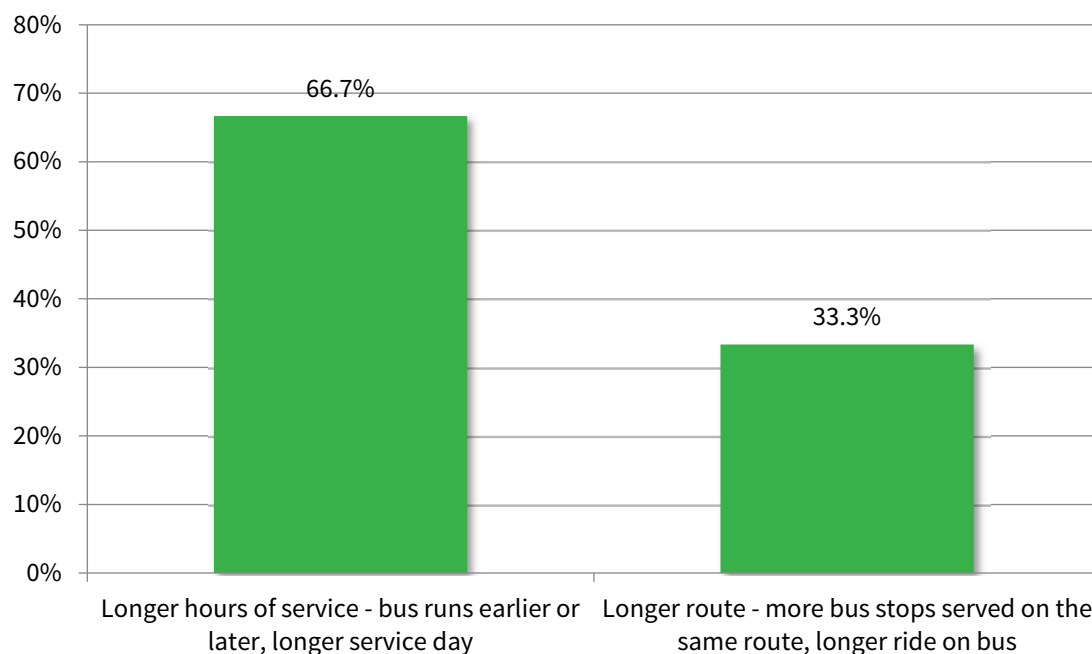
Respondents were asked to choose between a faster bus ride (fewer bus stops on the street) or easier access to bus stops (more bus stops and buses turning into shopping centers and apartment complexes to stop). Most respondents (61%) chose easier access to bus stops, as shown in Figure 4-32.

**Figure 4-32: If I had a choice between a faster bus ride or easier access to bus stops, I would choose...**



Respondents were asked to choose between longer hours of service and a longer route serving more destinations. Most respondents (67%) selected longer hours of service, as shown in Figure 4-33.

**Figure 4-33: If I had a choice between longer hours of service and a longer route serving more destinations, I would choose...**



A description of mobility on demand services was provided in the survey before asking respondents how likely they would use this type of service. Over one-third of respondents selected very likely to use this type of service, while 22% selected not likely, as shown in Figure 4-34. Respondents were permitted to leave comments about MOD service. Many were in favor of this type of mobility because it is flexible. Some noted there is a need for this service along Livingston Road, Vanderbilt Road, and in Ave Maria and Immokalee.

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*I think this service is essential for the community of Immokalee. Especially for those needing to go to Ave Maria and Naples for medical treatments.*

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*I believe folks without a vehicle would use it.*

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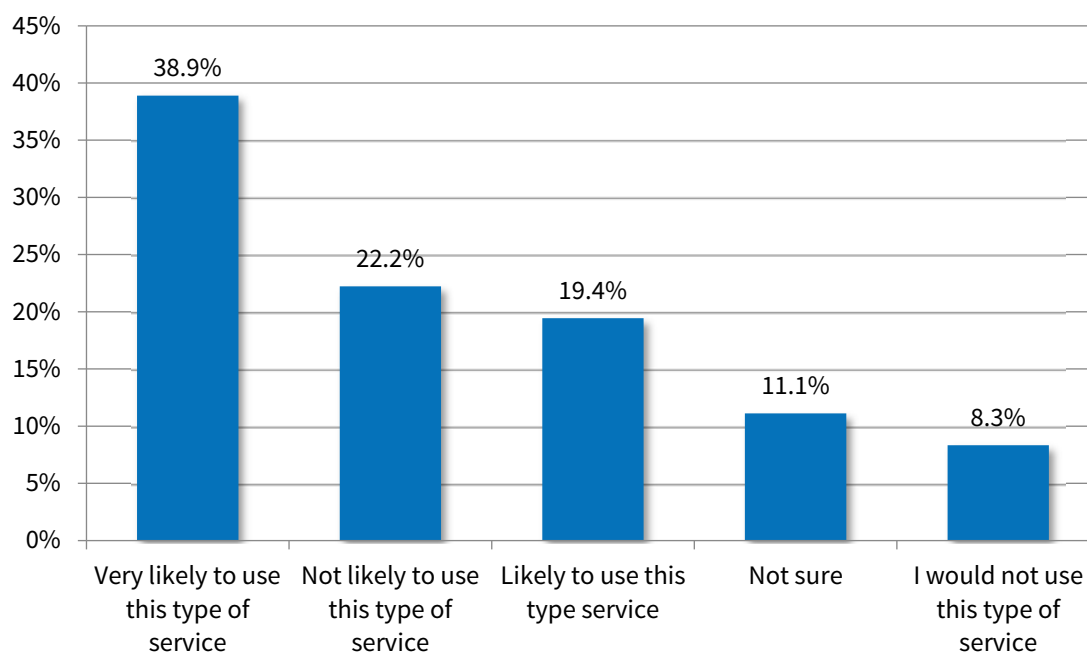


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*Sounds like a great idea!*

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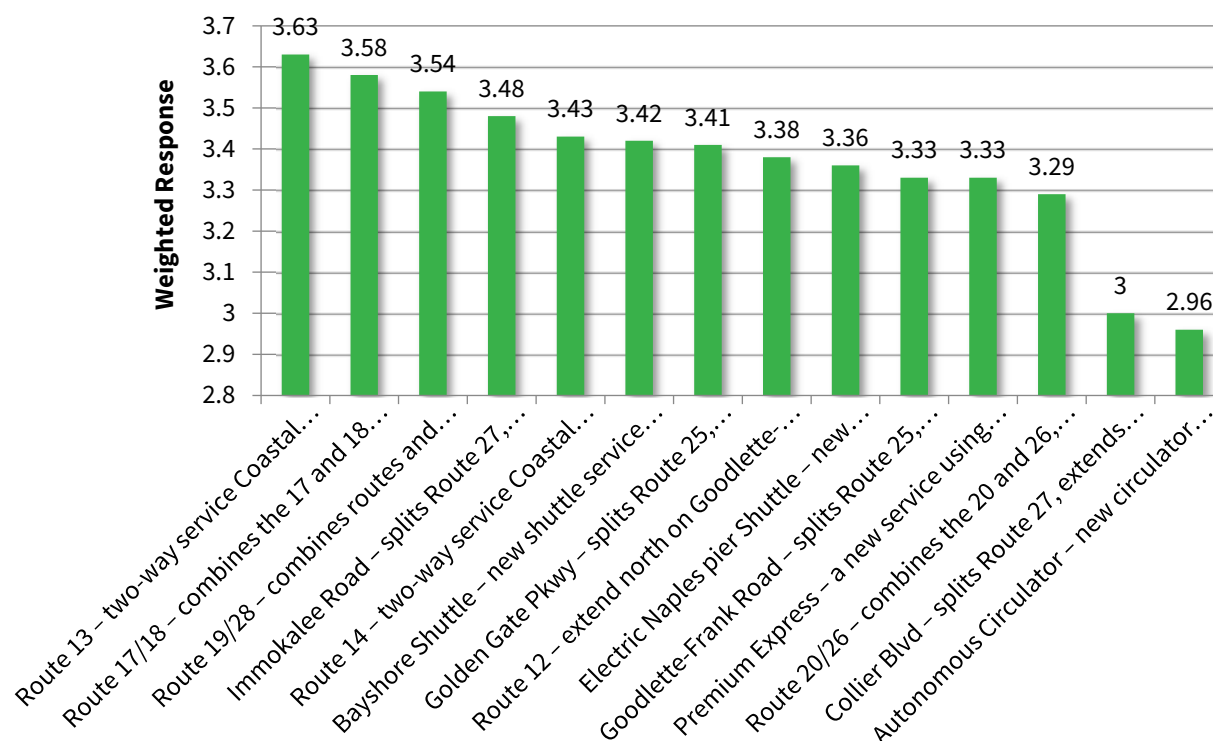
**Figure 4-34: Based on the description of mobility on demand services, how likely would you be to use this type of service?**



Respondents were asked to rate the importance of providing MOD service in North Naples, Naples, and Golden Gate Estates. Naples received the most responses for having a higher priority, followed by North Naples and Golden Gate Estates. Respondents could provide comments on the proposed MOD zones. Some respondents indicated that the zones would not service their area and one respondent emphasized the need for this service in Immokalee.

The survey provided a map with service improvements including route realignments and new service in the Naples area. Respondents were asked how important each improvement was. The responses ranged from Higher Priority to Not a Priority and were weighed. Higher Priority responses received a weight of “5” and Not a Priority received a weight of “0”. The proposed realignments to routes 13, 17/18 and 19/28 ranked highest in weighted response. Proposed improvements receiving the least priority include Route 12 extension, Naples Pier Electric Shuttle, Goodlette-Frank Road, Premium Express, combining Route 20/26, Collier Boulevard, and the autonomous circulator. The remaining responses and their weighted response rate are illustrated in Figure 4-35.

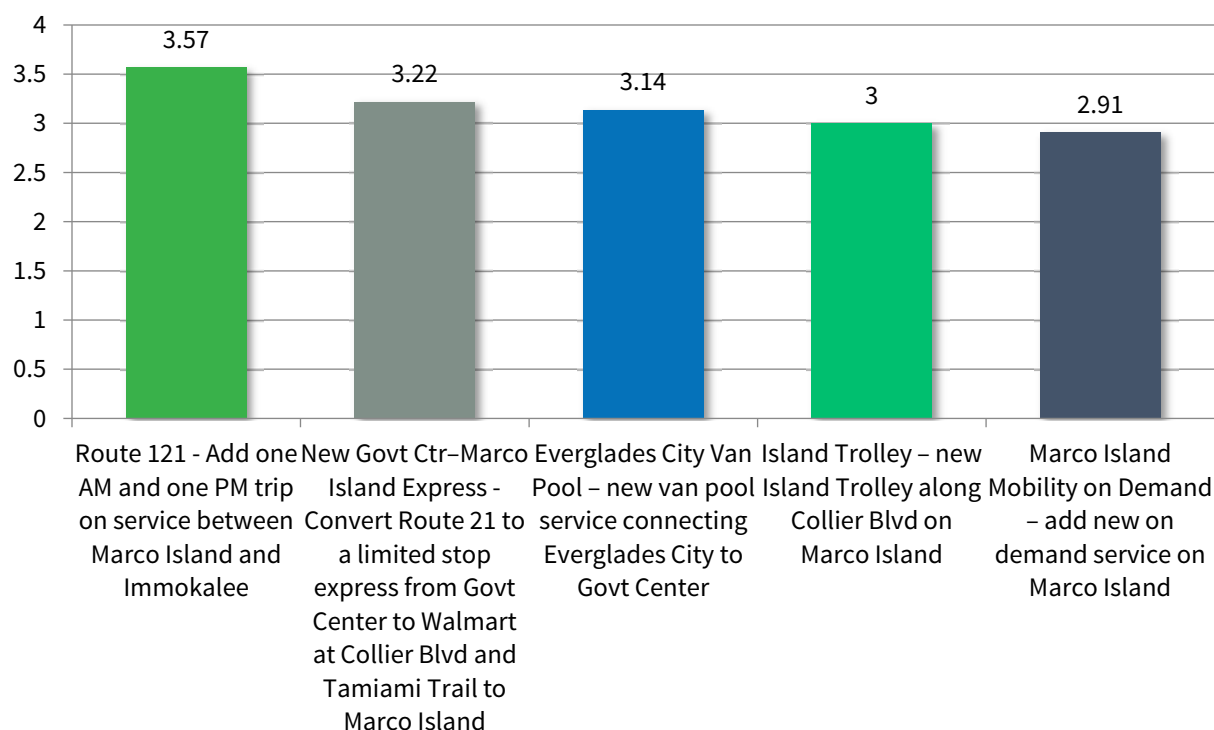
**Figure 4-35: Naples Area - Looking at the map of proposed service changes and new services, please tell us how important each is to you**



The survey provided a map featuring service improvements in Marco Island and were asked to rate the importance of each service improvement. Adding trips to Route 121 received the highest priority, followed by the New Government Center-Marco Island Express, and Everglades City Van Pool. The Island Trolley and the Marco Island MOD service received the highest number of “Not a Priority” responses. Respondents could provide comments on the Marco Island area improvements. One respondent indicated that more trips for Route 121 are needed and another indicated that many residents in Immokalee travel to Marco Island for work. Another respondent indicated that all the improvements are very important while two indicated they get around by private automobile. The weighted average responses are illustrated in Figure 4-36.

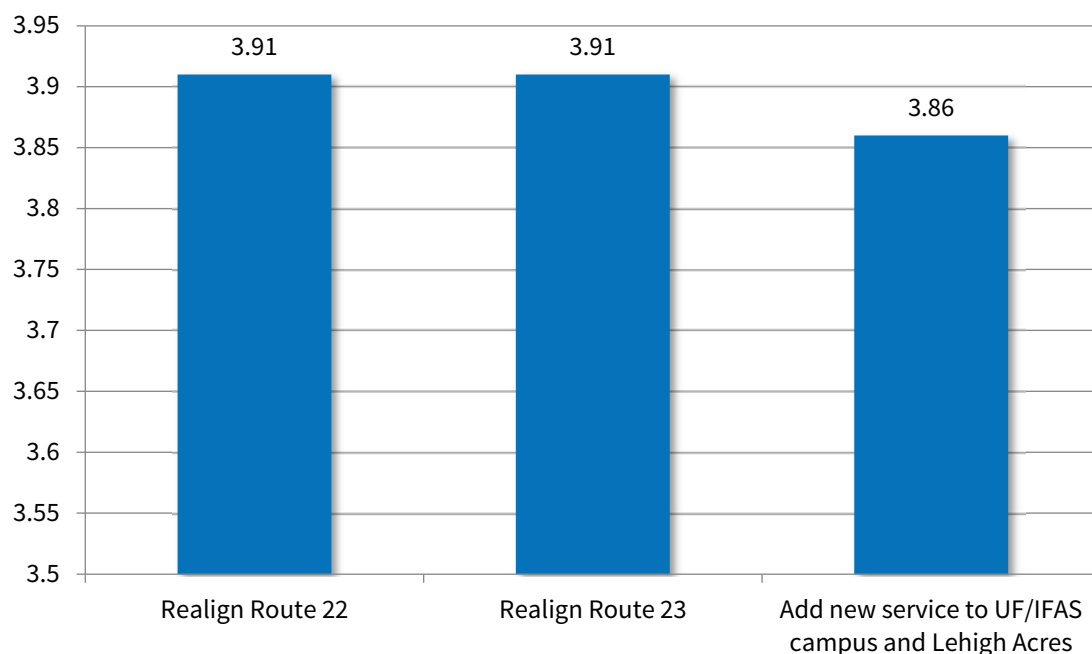


**Figure 4-36: Marco Island Area - Looking at the map of proposed service changes and new services, please tell us how important each is to you**



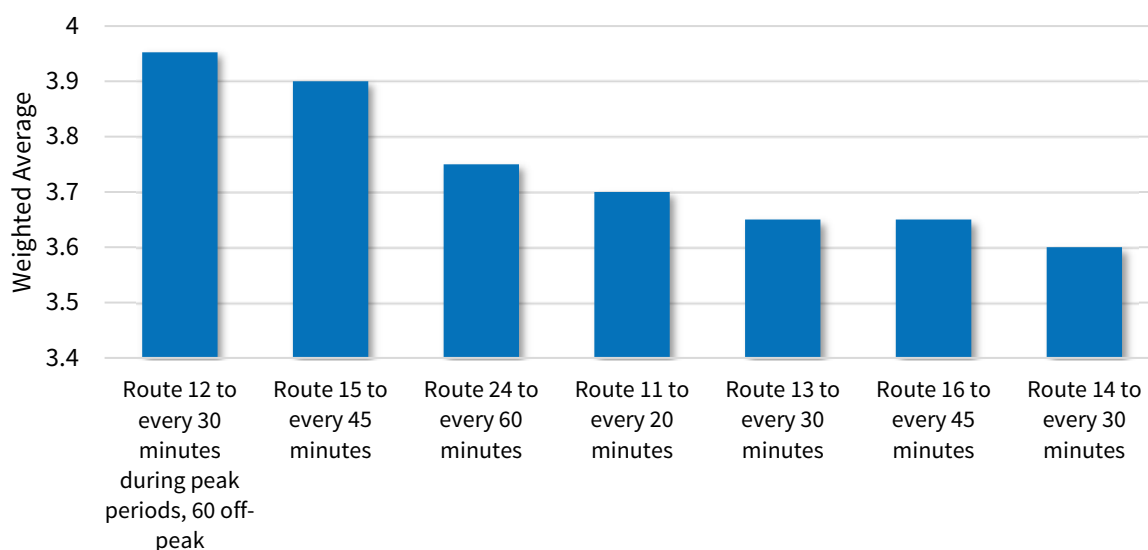
Respondents were provided a map of proposed service changes in Immokalee and were asked to rate each in terms of importance. The three responses received similar levels high priority support, with 50% of responses rating each improvement as a “Higher Priority”. The weighted responses are shown in Figure 4-37. Respondents could provide comments on the proposed changes. Several indicated there is a need to connect Immokalee to Lee County. One respondent suggested modifying Route 23 to go to Esperanza Plaza and then to McDonalds on Immokalee Drive and Mainstreet. Another suggested one route travel to the Shelly Stater Shelter instead of having both routes 22 and 23 travel along Lake Trafford Road.

**Figure 4-37: Immokalee - Looking at the map of proposed service changes and new services, please tell us how important each is to you.**



Thinking about how often the bus comes by, respondents were asked to tell us how important the following frequency improvements are to them. All the improvements had similar response rates, with Route 12 frequency improvements having a slight lead in its weighted average due to having the highest number of “Higher Priority” responses, as shown in Figure 4-38.

**Figure 4-38: Tell us how important the following frequency improvements are to you**



The final question in the survey asked respondents to rate how important span improvements (until 10 PM) for routes 11, 13, 14, 17, 19/28, and 24 are to them. All the routes had responses that gave them all higher priority, however routes 19/28, 11 and 13 scored the highest in priority overall. Figure 4-39 shows the weighted average response by route.

**Figure 4-39: Thinking about how late the bus runs, please tell us how important the following changes are to you.**



### 4.3 Stakeholder Interviews

Understanding local conditions are an important part of the TDP and should include knowledge of the perceptions and attitudes of community decision-makers and leaders towards transit and its role in the community. To obtain this information, a total of 12 stakeholders also were invited to be a part of this public involvement process. The interviews were held throughout April 2020.

All interviews followed a similar format using an interview guide that was developed with a list of questions and discussion topics to steer the discussions. Stakeholders were advised that CAT is in the process of updating its TDP, a 10-year planning document that serves to guide investments, provide direction on future initiatives, and respond to community needs. Respondents were thanked for their participation and advised that, as CAT prepares to update its guidance documents, their participation would be critical to helping develop insights and identify trends. Each respondent was asked to provide their perspective and insights as a stakeholder from their individual vantage point. Respondents were advised that the interview would ask for their perception of transit, how much awareness there is in Collier County about public transportation, which mobility improvements they would prefer to see in Collier County, who should benefit from mobility improvements, and how it should be funded.

Table 4-4 provides a list of stakeholders contacted and/or interviewed as part of this outreach effort.

**Table 4-4: CAT TDP Stakeholders Contacted/Interviewed**

Stakeholder	Organization	Title
Terry Hutchinson	City of Naples	Vice Mayor
Gary Price	Naples City	Council Member
Erik Brechnitz	Marco Island City	Council Member
Charlette Roman	Marco Island City	Council Member
Andy Solis	Collier County	Commissioner 1
Burt Saunders	Collier County	Commissioner 2
Leo Ochs	Collier County	Manager
Charles Chapman	City of Naples	City Manager
Michael McNees	City of Marco Island	Manager
Michael Dalby	Naples Chamber of Commerce	President
Danny Gonzalez	Immokalee Chamber of Commerce	President
Michelle McLeod	City of Naples	Council Member

Major themes were identified from the feedback. The following key themes were gathered from the interviews:

- Awareness of transit services in Collier County was viewed as low to moderate, with most stakeholders feeling that the public knows the CAT bus system exists but are not familiar with how to use it or where it operates.
- The role of transit was viewed primarily as a service for workers to access jobs and to serve persons without access to a vehicle. Secondly, it was viewed as a service to help relieve parking and roadway congestion and in certain locations as a service for visitors.
- The highest priorities for making improvements to the transit system were increasing the span of service, increasing service frequency, adding shelters, introducing mobility-on-demand services, and connecting service with sidewalks and bicycle/multimodal improvements.
- In terms of who should benefit from transit improvements, stakeholders expressed consensus that persons without access to a vehicle should be the primary beneficiaries, with additional benefits accruing to the community, the environment, businesses, and tourism.
- For how to pay for transit improvements, views were largely ordered as follows—user fees, including improvements through new developments, partnerships with major employers, businesses, institutions, and increased advertising.
- All stakeholders overwhelmingly expressed a positive recognition that more transit service and service options were needed in Collier County and overwhelmingly shared the sentiment that improving transit services and adding more mobility options would be good for the community and the local economy.

## 4.4 Discussion Group Workshops

Two invitation-based discussion group workshops with a small group of participants (8–12 persons) were held to serve as a subject matter roundtable in which all participants took part in assessing existing services and determining future transit needs using questions to motivate and inspire conversation about the transit development process. The first discussion group workshop represented the business workforce while the second represented community resources. The workshops were conducted virtually.

At the start of each workshop, the project team explained that the purpose of the TDP is to develop a 10-year strategic plan for transit that would evaluate existing conditions, determine future needs, and outline phased service and implementation plans. The project team reviewed the requirements and best practices for the TDP, explaining how the Federal Transit Administration (FTA) encourages transit agencies to conduct plan updates to the TDP every three to five years. In Florida, the requirement is a funded mandate called the State Block Program. As part of this process, FDOT wants the inclusion of a vision plan as a part of the TDP, an important component of the plan that will include a financial strategy but also identify future needs for the transit system.

The project team presented a baseline data review of baseline condition findings, exploring both the existing and projected socioeconomic, demographic, population, and employment conditions to take into consideration the changing dynamics of the county. Existing and potential land use, development and major activity centers, travel flows journey-to-work, and job accessibility via transit were presented. The project team facilitated a discussion with participants on a wide range of questions, which is discussed in more detail in the following summary information.

### 4.4.1 Discussion Group #1 – Business Workforce

The Business Workforce discussion group was held on March 31, 2020, from 10:00 AM to 12:00 PM. Participants were from Anthrex, the Collier County Economic Development Department, the Collier County Tourism Department, Career Source of Southwest Florida, the Florida Restaurant and Lodging Association, the Greater Naples Chamber of Commerce, the Immokalee Chamber of Commerce, and Enterprise Holdings (Commuter Services).

#### 4.4.1.1 Mobility Perspectives

Workshop participants felt that awareness of CAT's services could be improved. Many in the community do not know how the system works how to access the routes. One participant stated that the service is useful for those who cannot afford to live in the more dense and expensive areas but who need to work there (service industry); it is also useful for areas with shopping and entertainment so people can access them without driving. Another participant commented that public transit is particularly useful for international visitors, which comprise 20% of visitors who expect transit to be available but are surprised that there is none. In addition, the Beach Shuttle is not available during the time that international visitors tend to come. When asked if certain areas need more service, one participant said that the Golden Gate Estates area has a welfare-dependent population that needs



service for work and school, including the adult education centers, Florida Southwestern State College, and Lorenzo Walker Technical College.

Participants agreed that Mobility-on-Demand could be applicable to Collier County, noting that Pinellas County has used it to provide greater connection to fixed-route service and has increased ridership. Leveraging partnerships with the private sector would be beneficial. The need for park-and-ride lots should depend on density and need. A collection point near residential areas and/or near a major road would be a suitable place. CAT staff noted that there is an ongoing park-and-ride study.

#### ***4.4.1.2 Mobility Needs***

Participants were asked to comment about their role and interest in the community as it related to the mobility needs and improvement strategies. Participants believed that employers should be more aware of CAT services that are offered to their employees. The group agreed that the Golden Gate community, Immokalee and East Naples are likely focal points for increased frequency and service for service workers and lower income individuals. The tourism and beach areas may need a separately branded solution.

#### ***4.4.1.3 Funding Support***

The group was asked about support for funding via the community and/or business sector sharing the associated costs to benefit their employees and customers. A participant agreed that funding is important and suggested that the business community is at a point where funding options should be discussed in detail. Employers may be willing to subsidize in some way but it's really a public service and it's time to have a conversation to push more funding to public transit.

#### ***4.4.1.4 Other Mobility Needs***

When asked about other mobility needs in the community, participants agreed that the youth population needs better transportation options, as it is difficult for them to get around the county for work, school, and extracurricular activities. Transportation was cited as the biggest impediment to connect high-school-age youth to internships and for students at Lorenzo Walker Technical College and Florida Southwestern State College.

### **4.4.2 Discussion Group #2 – Community Resources**

The Community Resources discussion group was held on March 31, 2020, from 2:00–4:00 PM. Participants from the Collier County Sheriff's Office, Lighthouse of Collier, Youth Haven Homeless Shelter, Hodges University, Blue Zones, Commute Van Pool Naples, Collier County CRA, Golden Gates Civic Association, and Collier County contributed to the discussion. Input from the workshop was categorized and summarized as follows.

#### ***4.4.2.1 Mobility Perspectives***

Participants were asked about their understanding of and experience with CAT mobility services. Participants indicated that paratransit services were popular and were essential. Several knew of riders who use transit, including teens in disadvantaged locations and those who use it for medical

trips, and a few indicated that they use it themselves. A participant indicated that the bus schedule does not meet the needs of workshop schedules and that their organization would fail without paratransit. A participant inquired about the level of ridership needed to get more frequent services and whether smaller buses with more frequent service could achieve higher ridership. Another participant inquired if there was a trip planning app for youth, and the CAT team indicated that there was and that CAT was working to improve coordinating with other mobility types.

#### ***4.4.2.2 Mobility Needs***

Participants were asked what mobility improvements they would prefer to see provided in the county. A participant indicated that shelters at bus stops should be a priority, as there are usually 3-4 days of thunderstorms per week during the summer season. Frequency of service was a major concern, but it was noted that it would be costly to run all routes at one-hour headways. Several participants indicated that Collier County is not a walkable community, as there is a lack of sidewalks near many bus stops; there was consensus that the community needs more and wider sidewalks. Several participants indicated that the span of service needed to be increased, particularly for workers at the mall and those who reside in Immokalee. A participant indicated that peak-hour travel demand should prioritize transit, especially along I-75. A need for more bus stops near the homeless shelter was also mentioned in the discussion. Another participant indicated that gated communities should be opened, as local roadways to facilitate transportation for older adults.

#### ***4.4.2.3 Transit's Role***

Participants expressed that everyone should benefit from transit services, including workers, commuters, and transit-dependent populations. There was an agreement that transit increases economic development opportunities.

#### ***4.4.2.4 Other Mobility Needs***

Participants felt that more awareness of transit services could mean more ridership, but the service is inconvenient, which could stifle ridership. A participant expressed a need to invest more in a range of mobility options to improve overall system. Park-and-ride locations were suggested to be established near Livingston Road and Immokalee Road, Ave Maria, Immokalee, near Lee County, in eastern Collier County, and near areas with a large concentration of students and transportation disadvantaged populations.

#### ***4.4.2.5 Mobility Strategies Discussion***

Given participants' roles and interest in the community, they were asked about other mobility needs and the improvements that would most benefit the community. Participants expressed there was a need for more shelters, more frequent service, connecting sidewalks, and transit-only lanes and a more pedestrian- and bicycle-friendly environment, as well as a need to get workers to Marco Island, especially with the parking shortage in the island. Another participant suggested a focus on vanpool service, as bus drivers are the largest share of the cost of operating transit services. Participants suggested a special districts and tax increment financing to generate more revenue for mobility improvements.

## 4.5 Public Transit Advisory Committee (PTAC)

A presentation to the PTAC was held July 21, 2020, with representatives from FDOT, Career Source of SWF, LeeTran, Collier Transportation Planning, Collier Transportation Engineering, Marco Island Growth Management, Collier Housing, a transportation industry expert, Collier County Attorney, Collier MPO, and CAT staff. The presentation updated the committee on the status of the TDP, reviewed the proposed network, changes and requirements, followed by a summary planned outreach events. Several topics and suggestions were discussed during the meeting including

- **Commuting** – The number of people without vehicles and the number of people using transit are different measures.
- **Visitors** – Are tourists making trips on transit? There is an expectation from international travelers to better serve tourists in the area to alleviate congestion and parking concerns. CAT staff, however, do not receive information regarding visitors, but they are aware the European visitors during the summer months in the beach area. A priority to serve commuters may be beneficial since Collier County may experience fewer international visitors in the coming years.
- **Vision and goals** – The vision statement seems very broad; statements should be updated to show more emphasis on economic benefit and development. The Mission Statement should consider on-time performance, minimizing transfers, and more convenient service. For Goal #1, it was suggested to focus on workforce and convenience. For Goal #2, it was suggested to consider rising tides or climate change in relation to Collier County. For Goal #3, a participant suggested adjusting the goal to focus on education and public awareness, as well as hotel infrastructure and tourism. Another participant suggested that Goal #4 consider including additional mobility options (i.e., scooters, rider share, etc.).
- **Mobility strategies** - There was a discussion that safety needs to be considered to promote better and safe choices for transportation. Designated mass transit lanes and sidewalks can help promote safer transportation opportunities.
- **Needs** – A need for more transit services in Immokalee was expressed. It was suggested to increase the amount of transportation service from this area. There is also a need for park-and-ride services from residential areas to commercial areas, primarily on the east side of the county to the west side of the county—more specifically, east Collier Boulevard to the urban core. A representative from Collier County Community Planning noted that the County is adding policy requirements for transit stations and park-and-rides in new towns and villages.

## 4.6 TDP Working Group Meetings

The TDP Working Group meeting included representatives from FDOT, Career Source of Southwest Florida, LeeTran, Collier County Transportation Planning, Collier County Traffic Operations, City of Naples, Marco Island Transportation/Growth Management Department, Collier County Housing, Collier County Community Planning, a member PTAC, and Collier County Attorney's office. Participants were selected based on their subject matter expertise and knowledge in relevant

technical, policy, and community considerations to provide technical and contextual review and advice for the TDP update.

Three working group meetings were held virtually. The first addressed findings related to existing and future conditions and mobility needs, services, and service gaps. The second reviewed results from public outreach, the mobility vision, the initial program of improvements, and initial priorities. The third reviewed the final recommendations prior to Board and MPO approval. The group provided recommendations related to public outreach and feedback, which is required to inform the recommended prioritized program of mobility improvements.

### ***Working Group Meeting #1***

The first Working Group meeting was held April 1, 2020, from 10:00 AM to 12:00 PM. The purpose and overview of the TDP were presented, followed by the project schedule, PIP, existing conditions of service area (market), existing services, highlights from the peer and trend analysis, results from the on-board survey, mobility perspectives, and CAT mission and goals. Thereafter, a guided discussion on CAT mobility strategies was held, including questions such as “What is your perspective on transit’s role in Collier County” and “Who should benefit from mobility improvements?”

Participants were asked how much they agreed or disagreed with a series of statements. There was a general recognition that CAT services could be more effective, convenient, and easy-to-use and that there is a gap between knowing the services exist and knowing enough to use the service. Overall, there was strong agreement that the county needs more service and more mobility service options and that the County should invest more to expand mobility services. Participants also agreed that more transit will improve economic opportunities. Participants had varied views about whether CAT service covers all areas that need service and whether CAT is effective at making the public aware of existing transit services.

Working Group participants also discussed key mobility needs within the community (access to work, education, services) and ease of access to existing transit services (awareness of the service, routes, span), especially for areas with a high transit propensity.

### ***Working Group Meeting #2***

The second Working Group meeting was held May 13, 2020 from 10:00 am–12:00 pm. The meeting provided an update on the status of the TDP, presented findings from the onboard and online surveys, summarized the stakeholder interviews, presented the service gap analysis, and presented initial recommendations for service alternatives.

### ***Working Group Meeting #3***

The third Working Group meeting #3 was held July 22, 2020, from 10:00 AM to 12:00 PM. The meeting provided an update on the status of the TDP followed by an in-depth explanation of the guiding principles for the proposed network. The existing and new networks were presented, with a detailed

discussion of the route realignments, frequency and span improvements, new services, operating requirements, and an unconstrained phasing plan.

One participant expressed the need to provide more service to connect workers in Immokalee to employment in other locations within Collier and Lee counties. Another indicated that he liked the variety of options being offered. One noted that innovations are good because they provide flexibility and choice in mobility options. Some innovations are a few years out, but the planning is good because transit is evolving. The commuter van proposal was viewed with interest as a way to serve mobility needs in remote and lower-density parts of the county. A discussion focused on the need for coordinating transit improvements with the regional Long Range Transportation Plan to include innovations such as transit signal priority, policies requiring bus stop infrastructure with new developments, and how transit can be incorporated into the travel demand model. Overall, there was strong support for the proposed changes, particularly for new services such as the Bayshore Shuttle, Marco Island Trolley, and the downtown circulators.

#### 4.7 TDP Presentations

Presentations on the proposed improvements were made to Naples (August 10) and to the City or Marco Island (August 17) and included an overview of the TDP, the purpose of the TDP and process, followed by review of the proposed network, including service changes within their respective municipalities, anticipated impacts, and project phasing. The presentations were followed by a review of next steps in the review and endorsement process.

Questions were addressed following both presentations and these focused on how the Cities would like to work with CAT staff to review and define specific projects and services. Both the City of Naples and the City of Marco Island endorsed the draft TDP as presented.

Table 4-5 lists the remaining meetings that are scheduled for the TDP review; each will be conducted as a virtual meeting.

**Table 4-5: Remaining TDP Meetings**

Meeting	Date	Meeting Start Time
TAC	Monday, August 31, 2020	9:30 am
CAC	Monday, August 31, 2020	2:00 pm
Collier MPO Board	Friday, September 11, 2020	9:00 am
Collier Board of County Commissioners	Tuesday October 13, 2020	9:00 am

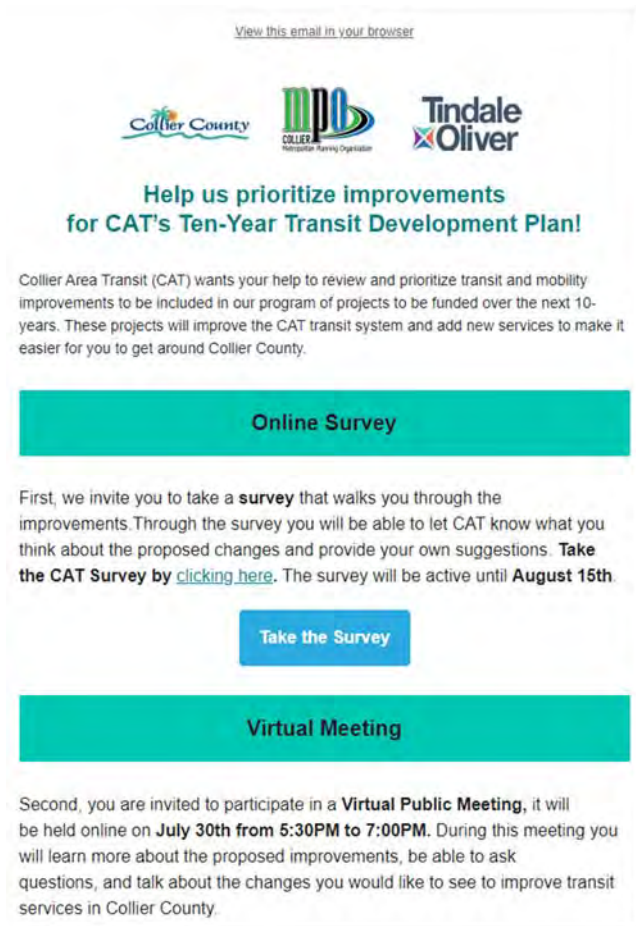


## 4.8 Public Workshops

Two public workshops were conducted in the second phase of the TDP. The workshops were promoted using email blasts (1,426 email contacts), social media, agency websites, and flyers on buses. The first workshop was held July 30 from 5:30–7:00 PM and presented the proposed network changes to gather feedback from the public on the proposed changes. The second workshop was held August 12 from 5:30–7:00 PM and presented the recommended transit improvements and projects included in the TDP. Due to the COVID-19 pandemic that began in March 2020, the workshops were conducted virtually using the GoToMeeting (webex) platform. The workshops were recorded and posted to both the CAT website and the Collier MPO website.

Sixteen participants attended the first public workshop. The transit network changes, expected service impacts, and new services such as Mobility on Demand, frequency increases, and span of service improvements were explained. Participants were urged to complete the online survey and were encouraged to ask questions (visible only to panelists) during the presentation. Several questions were asked and answered by the panelists, consisting of Collier MPO staff, CAT staff, and the consulting team. The remaining comments and suggestions were used to help prioritize the proposed improvements. A summary of the questions and their responses is as follows:

- A participant asked if more covered bus shelters and benches would be included with these improved routes, and a similar question asked about the criteria for bus shelters. CAT staff explained the prioritization process for shelters and recent construction of stop shelters.
- A participant asked if the autonomous circulator service around the Naples Pier could be explained in more detail. CAT staff explained the mobility needs in the area and that the circulator would be autonomous.
- A participant asked if the plan included proposed revisions to the Land Development Code to encourage, transit stops/pullover for the CAT vehicles. The team noted that that policies were being proposed in conjunction with the ongoing Transit Impact Study.



*Email Blast used for survey and public workshop*

- A question was asked about funding sources used for transit; a response was provided on farebox revenue, federal and State grants, and local funding sources. A similar question was asked about statutes or rules corresponding to transit operational improvements and needs.
- A participant asked if Mobility on Demand services would pick him up and take him where he wanted to go in the zone or whether it could him anywhere. It was explained that MOD will take passengers to where they want to go in a zone and that it can be used to take them to connect to a bus stop.
- A question was asked about how the COVID-19 pandemic is changing transit and if it was anticipated that it would transit in perpetuity, i.e., reduce ridership due to fear of being in close confined spaces.
- A participant asked if there is any technology that could indicate space on a bus for a bicycle? It was noted that a study on technology needs was recently conducted for CAT that did not include that technology; however, it is possible and could be added as needed, as that would improve rider experiences for reliability.
- A participant asked if the extra trip for Route 121 would stagger trips earlier or later in the day and inquired about how times for trips are determined. CAT staff responded that they coordinate with major employers on Marco Island to determine the best times to run Route 121.

Several suggestions were provided by participants:

- Consider a mid-day bus trip trop from Naples to Immokalee.
- Run Route 22 or 23 service to Immokalee Drive past Esperanza Place.
- Provide later service in Golden Gate City (two suggestions).
- Both routes 23 and 22 travel on Lake Trafford; perhaps one could travel south on Immokalee Drive.
- Improvements are needed for the bus stop on CR-951 in Golden Gate City across from the Shell station; the stop has 15–30 people standing up against a guard rail from 4:30–5:00 pm.

**Figure 4-40: Virtual Public Workshop #1**



Seven participants attended the second public workshop. Like the first public workshop, the transit network changes, expected service impacts, and new services such as Mobility on Demand, frequency increases, and span of service improvements were explained. The proposed implementation plan was presented as set a funded and unfunded improvements. Participants were urged to complete the online survey and were encouraged to ask questions (visible only to panelists) during the presentation. Several questions were asked and answered by the panelists, consisting of Collier MPO staff, CAT staff, and the consulting team. A summary of the questions and their responses is as follows:

- A participant asked if the webinar would be available for viewing later and the organizer responded that it would be posted to the CAT website.
- A participant asked if the bus replacements are powered by gas or electric power. CAT staff responded that the bus vehicles are powered by diesel
- A participant asked about the useful life of CAT vehicles and whether service modifications would reduce the mileage on the vehicle. CAT staff explained that per FTA guidelines, the useful life of a motor bus is 12 years and a replacement schedule is mandated by FTA. Staff commented that shortened routes would reduce the mileage on the vehicles. Some route modifications would require additional buses to improve frequency and other modifications.
- A participant asked why extended service to Golden Gate City which is a relatively dense area (4 square miles), is not being provided. CAT staff and the consulting team responded that frequency improvements are being proposed in the area.
- An in-depth explanation on the difference between transportation networking companies and the proposed mobility on demand service was provided as well as a description of how the service could potentially look like from a user's perspective.

## 5.0 Transit Demand Analysis

As a part of the CAT TDP, a vital step is comparing existing service to the discretionary market and the transit orientation index (TOI), the two predominant rider markets for transit service. Analytical tools for conducting each market analysis include a density threshold assessment (DTA) for the discretionary market, a TOI for the traditional market, and a ridership projection using T-BEST. These tools can determine if existing transit routes are serving appropriate areas that include locations with transit-supportive characteristics consistent with a robust transit market. This section documents the analytical tools that helped to identify gaps in the current service area that ultimately will be addressed with new service and/or modifications to existing service.

### 5.1 Discretionary Market Assessment

The discretionary market refers to potential riders living in higher-density areas of the service area who may choose to use transit as a commute or transportation alternative but who have other options with which to meet their mobility needs. Whereas discretionary markets may not represent a typical CAT rider, it is important to identify areas with higher density that may capture other markets such as choice riders. A demand assessment of traditional transit market follows this section.

The DTA conducted for CAT used industry-standard thresholds to identify areas within the CAT service area that experience transit-supportive residential and employee density levels. Three density thresholds were developed to indicate if an area has sufficient density to sustain a level of fixed-route transit operations. The analysis assesses an areas ability to support Minimum, High, or Very High transit service level investments:

- **Minimum Investment** – reflects minimum dwelling unit or employment densities to consider basic fixed-route transit services (i.e., local fixed-route bus service).
- **High Investment** – reflects increased dwelling unit or employment densities that may be able to support higher levels of transit investment (i.e., increased frequencies, express bus) than areas meeting only the minimum density threshold.
- **Very High Investment** – reflects very high dwelling unit or employment densities that may be able to support higher levels of transit investment (i.e., premium transit services) than areas meeting the minimum or high-density thresholds.

**Table 5-1: Transit Service Density Thresholds**

Level of Transit Investment	Dwelling Unit Density Threshold <sup>1</sup>	Employment Density Threshold <sup>2</sup>
Minimum Investment	4.5–5 dwelling units/acre	4 employees/acre
High Investment	6–7 dwelling units/acre	5–6 employees/acre
Very High Investment	≥8 dwelling units/acre	≥7 employees/acre

<sup>1</sup> Transportation Research Board National Research Council, TCRP Report 16, Volume 1 (1996), “Transit and Land Use Form,” November 2002, Metropolitan Transportation Commission Resolution 3434, Transit Oriented Development Policy for Regional Transit Expansion Projects.

<sup>2</sup> Based on review of research on relationship between transit technology and employment densities.



Collier County dwelling unit density largely falls below 4.5–5 dwelling units per acre and, therefore, will have fewer areas that are traditionally considered to be transit-supportive. Despite industry-held standards, Collier County’s ridership is higher in some locations, as reflected in the Automatic Passenger Count (APC) data reviewed in Section 6.

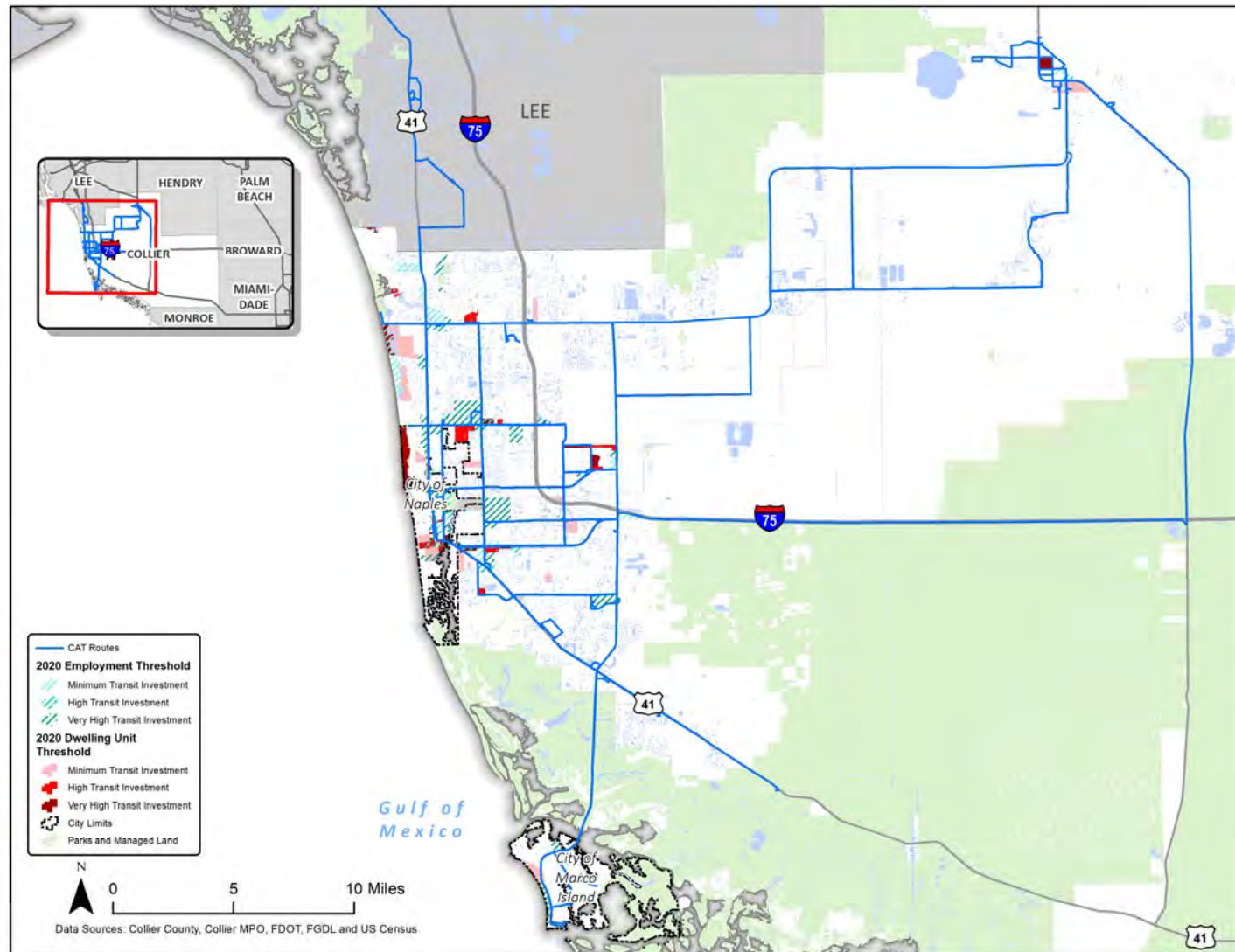
Map 5-1 illustrates the results of the 2020 DTA analysis and identifies areas that support different levels of transit investment based on existing household and employment densities. The analysis indicates that the employment-based discretionary transit market is concentrated in areas throughout the CAT service area. Major concentrations of employment-related transit investments are located east of Naples Airport and north of Pine Ridge Road; other areas of “High” to “Very High” employment-related transit investments are located along Tamiami Trail.

Household unit-based discretionary areas with transit investment opportunities are fewer but follow the same densities as employment-based discretionary areas. The areas that meet or surpass the “High” threshold are located along Naples Beach, south of Pine Ridge Road, and in Immokalee east of Sunshine Boulevard.

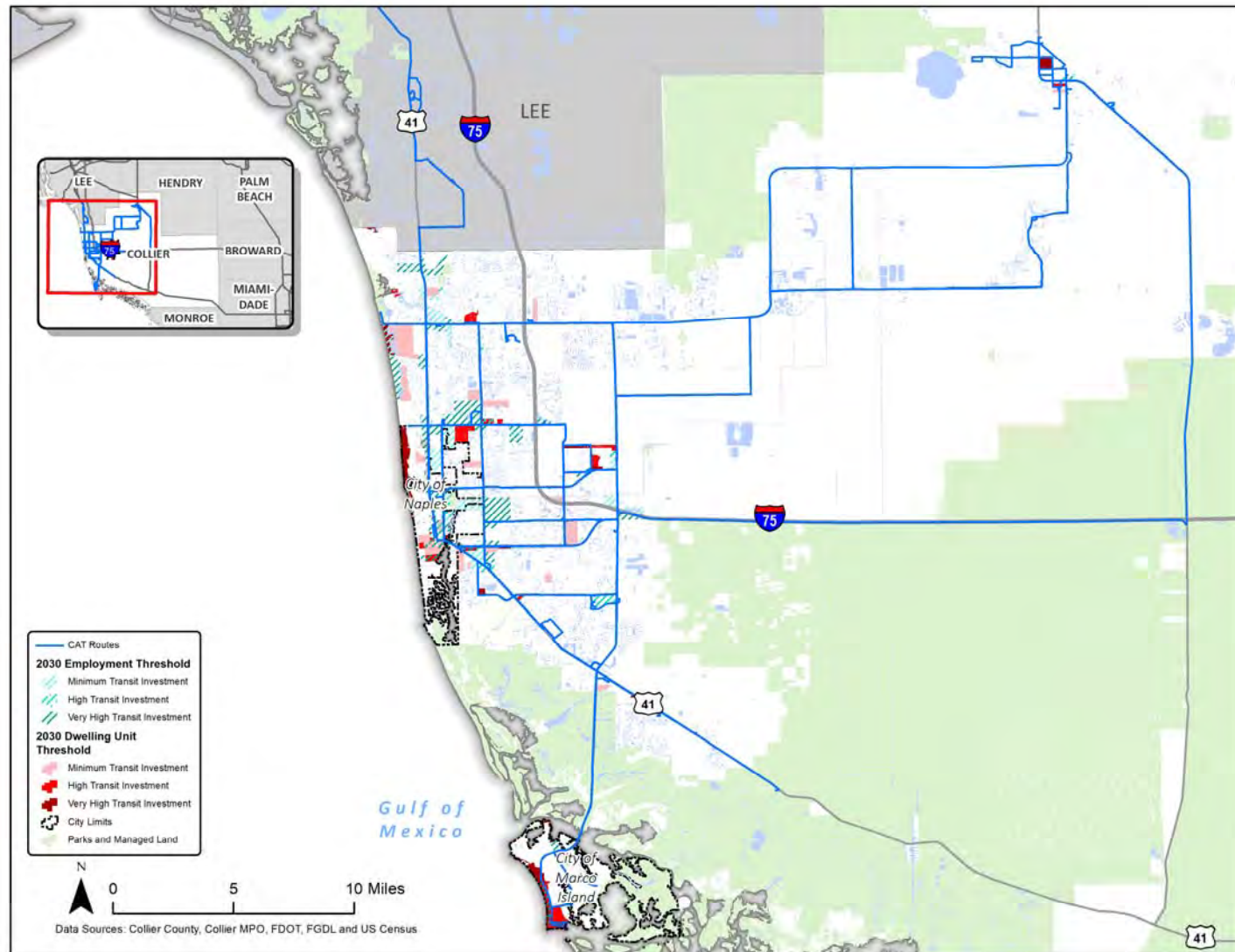
Map 5-2 illustrates the results of the 2030 DTA, which are similar to the 2020 discretionary transit markets; however, there is projected growth surrounding the Golden Gate Community Center area, in Immokalee and areas of Marco Island, and adjacent to areas already meeting a minimum transit investment threshold. Areas with a “High” to “Very High” employment -based discretionary transit market are concentrated in areas around the airport, Davis Boulevard, Pine Ridge Road, along Goodlette-Frank Road, along Tamiami Trail in Naples, the coastal area in North Naples, and Collier Boulevard near I-75.



**Map 5-1: 2020 Density Threshold Assessment**



**Map 5-2: 2030 Density Threshold Assessment**



## 5.2 Traditional Market Assessment

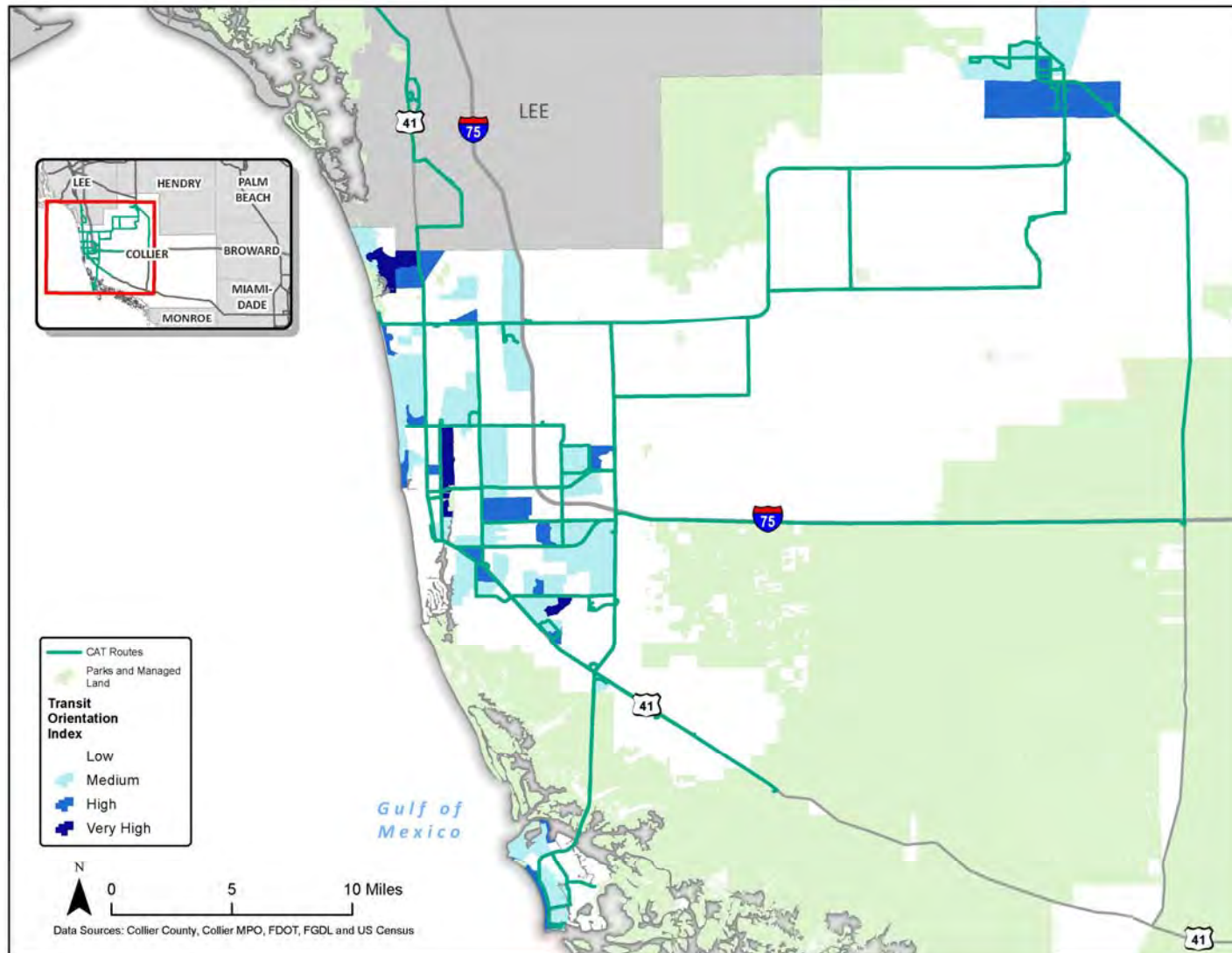
As a part of the transit market assessment, four socioeconomic and demographic characteristics traditionally associated with the propensity to use transit were used to develop the TOI. American Community Survey (ACS) data layers were overlaid to develop a composite ranking for each Census Block Group of “Very High,” “High,” “Medium,” and “Low” with respect to the level of transit orientation. The areas that ranked “Very High” reflect a very high transit orientation, i.e., a high proportion of transit-dependent populations, and those ranked “Low” indicate much lower proportions of transit-dependent populations. Map 5-3 illustrates the TOI, reflecting areas throughout the CAT service area with varying traditional market potential. Also shown is the existing transit route network to exhibit how well CAT routes currently cover those areas.

The CAT service area includes Census Block Groups with significant transit-dependent populations. Areas north of downtown Naples and near Lee County show “High” and “Very High” TOI scores due to higher concentrations of older adults, youths, younger adults, and households in poverty. In addition, Block Groups in Immokalee also show “High” to “Very High” TOI scores, with data indicating high concentrations of zero-vehicle households, older adults, youths, and younger adult populations.

As noted above for older adult, youth, and younger adult populations, the areas with a high TOI score, especially suburban and lower-density settings, tend to trigger the “Very High” TOI thresholds that do not necessarily indicate a higher need for traditional fixed-route transit service. These areas may be better suited for mobility-on-demand services rather than traditional fixed-route bus service. These areas include suburban settings around Immokalee. Ultimately, the strategic use of the TOI is beneficial to filling in service gaps, as discussed in the following section.



**Map 5-3: Transit Orientation Index**



### 5.3 Ridership Projections using T-BEST

The ability to forecast demand is necessary to support transit development planning. Rule 14-73.001, F.A.C., specifically mentions ridership forecasting to estimate current and potential future ridership demand using FDOT-approved tools or an FDOT-approved transit demand estimation technique with supporting demographic, land use, transportation, and transit data. The result of the transit demand estimation process must be a 10-year annual projection of transit ridership.

Projected ridership demand for existing fixed-route transit services over the next 10 years were analyzed with the following scenarios:

- “2021 – No Improvements” – projects ridership to 2021 with the current transit system
- “2030 – No Improvements” – projects ridership to 2030 with the current transit system

The projections were prepared using T-BEST (Transit Boardings Estimation and Simulation Tool) Version 4.6, the FDOT-approved ridership estimation software. T-BEST is a comprehensive transit analysis and ridership-forecasting model that can simulate travel demand at the individual route level. The software was designed to provide near- and mid-term forecasts of transit ridership consistent with the needs of transit operational planning and TDP development. In producing model outputs, T-BEST also considers the following:

- *Transit network connectivity* – the level of connectivity between routes within a bus network—the greater the connectivity between bus routes, the more efficient the bus service becomes.
- *Spatial and temporal accessibility* – service frequency and distance between stops—the larger the physical distance between potential bus riders and bus stops, the lower the level of service utilization; similarly, less frequent service is perceived as less reliable and, in turn, utilization decreases.
- *Time-of-day variations* – peak-period travel patterns are accommodated by rewarding peak service periods with greater service utilization forecasts.
- *Route competition and route complementarities* – competition between routes is considered; routes connecting to the same destinations or anchor points or that travel on common corridors experience decreases in service utilization; conversely, routes that are synchronized and support each other in terms of service to major destinations or transfer locations and schedule benefit from that complementary relationship.

The following section outlines the model input and assumptions, describes the T-BEST scenario performed using the model, and summarizes the ridership forecasts produced by T-BEST.

#### 5.3.1 Model Inputs / Assumptions and Limitations

T-BEST uses various demographic and transit network data as model inputs. The inputs and the assumptions made in modeling the regionally significant routes in T-BEST are presented below. The regional model used the recently released T-BEST Land Use Model structure (T-BEST Land Use Model



2019), which is supported by parcel-level data developed from the Florida Department of Revenue (DOR) statewide tax database.

It should be noted that the model is not interactive with roadway network conditions. Therefore, ridership forecasts will not show direct sensitivity to changes in roadway traffic conditions, speeds, or roadway connectivity.

#### **5.3.1.1 Transit Network**

The transit route network for regionally significant routes was created to reflect 2019 conditions, the validation year for the model. General Transit Feed Specification (GTFS) data created by CAT staff were used to create the base transit system and include:

- Route alignments
- Route patterns
- Bus stop locations
- Service spans
- Existing headways during peak and off-peak periods (frequency at which a bus arrives at a stop—e.g., one bus every 60 minutes)

The GTFS data were verified to ensure the most recent bus service spans and headways, and edits were made as needed. Interlined routes and transfer locations were manually coded in the network properties.

#### **5.3.1.2 Socioeconomic Data**

The socioeconomic data used as the base input for the T-BEST model were derived from ACS 5-Year Estimates (2013–2017), the Bureau of Labor Statistics, the Bureau of Economic Analysis, 2015 InfoUSA employment data, and 2018 parcel-level land use data from the Florida DOR. Using the data inputs listed above, the model captures market demand (population, demographics, employment, and land use characteristics) within ¼-mile of each stop.

T-BEST uses a socioeconomic data growth function to project population and employment data. Using 2045 socioeconomic forecasts from the Collier Metropolitan Planning Organization (MPO), population and employment growth rates were applied at a Traffic Analysis Zone (TAZ) level. Population and employment data are hard coded into the model and cannot be modified by end-users. As applied, the growth rates do not reflect fluctuating economic conditions as experienced in real time.

#### **5.3.1.3 T-BEST Model Limitations**

It has long been a desire of FDOT to have a modeling tool for transit demand that could be standardized across the state, similar to the Florida Standard Urban Transportation Model Structure (FSUTMS) model used by MPOs in developing long range transportation plans (LRTPs). However, although T-BEST is an important tool for evaluating improvements to existing and future transit

services, model outputs do not account for latent demand for transit that could yield significantly higher ridership. In addition, T-BEST cannot display sensitivities to external factors such as an improved marketing and advertising program, changes in fare service for customers, fuel prices, parking supply, walkability and other local conditions. Correspondingly, model outputs may over-estimate demand in isolated cases.

Although T-BEST provides ridership projections at the route and bus stop levels, its strength lies more in its ability to facilitate relative comparisons of ridership productivity. As a result, model outputs are not absolute ridership projections but, rather, are comparative for evaluation in actual service implementation decisions. T-BEST has generated interest from departments of transportation in other states and continues to be a work in progress that will become more useful as its capabilities are enhanced in future updates to the model. Consequently, it is important to integrate sound planning judgment and experience when interpreting T-BEST results.

### 5.3.2 Ridership Forecast

Using these inputs, assumptions, and February/March 2019 route level ridership data, the T-BEST model was validated. Using the validation model as the base model, T-BEST ridership forecasts for this TDP Major Update planning start year (2021) and horizon year (2030) were developed. The generated annual ridership forecasts reflect the estimated level of service utilization if no changes were to be made to any of the fixed-route services, as required by F.A.C. Rule 14-73.001. Table 5-2 shows the projected number of annual riders by route in 2021 and 2030 and ridership growth rates for 2021–2030 derived from T-BEST.

**Table 5-2: Ridership and Growth Rates with No Improvements, 2021–2030\***

Route	2021 Average Annual Ridership	2030 Average Annual Ridership	2021–2030 Absolute Change	2021–2030 Average Growth Rate
11	108,083	123,855	15,772	14.6%
12	82,923	96,211	13,288	16.0%
13	73,580	91,681	18,101	24.6%
14	55,388	65,657	10,269	18.5%
15	103,042	107,980	4,938	4.8%
16	50,253	52,259	2,006	4.0%
17	39,922	44,056	4,134	10.4%
18	27,661	31,555	3,894	14.1%
19	66,732	77,813	11,081	16.6%
20	9,091	9,180	89	1.0%
21	12,812	21,449	8,637	67.4%
22	54,895	64,340	9,445	17.2%
23	27,698	33,854	6,156	22.2%
24	51,055	58,822	7,767	15.2%
25	17,308	20,897	3,589	20.7%
26	6,044	6,547	503	8.3%
27	33,319	47,517	14,198	42.6%
28	26,719	34,023	7,304	27.3%
121	25,280	35,710	10,430	41.3%
Totals	871,805	1,023,406	151,601	17.4%

\* Based on T-BEST model

### 5.3.3 Forecast Ridership Analysis

Based on the T-BEST model results shown in Table 5-2, maintaining the status quo may result in a moderate increase in transit ridership for all routes over time, particularly for routes 21, 27, and 121. According to the projections, overall average annual ridership is expected to increase by 17.4% by 2030, an annual growth rate of about 1.7%. The model results show that the most significant absolute change in ridership growth in the regional network will occur within the next 10 years on routes 11, 12, 13, and 27.

For Collier County to increase its market share for transit, a combination of service efficiency and expansion will need to strategically occur in growing areas. The service improvements identified in this plan, in other transit planning efforts, and from the public feedback received combined will provide better transit services for the service area.

## 5.4 Gap Analysis Overview

This subsection presents the gap analysis, an evaluation process that compares existing service coverage to potential need using the TOI analysis results for the CAT service area. This approach is becoming increasingly common as a component of assessing the performance of public transit in meeting the needs of the transit-disadvantaged populations in a service area.

The gap analysis aims to identify geographical gaps in public transit where travel needs are high but services are non-existent (unserved) or insufficient (underserved). This is a twofold process that uses socioeconomic data and ArcGIS.

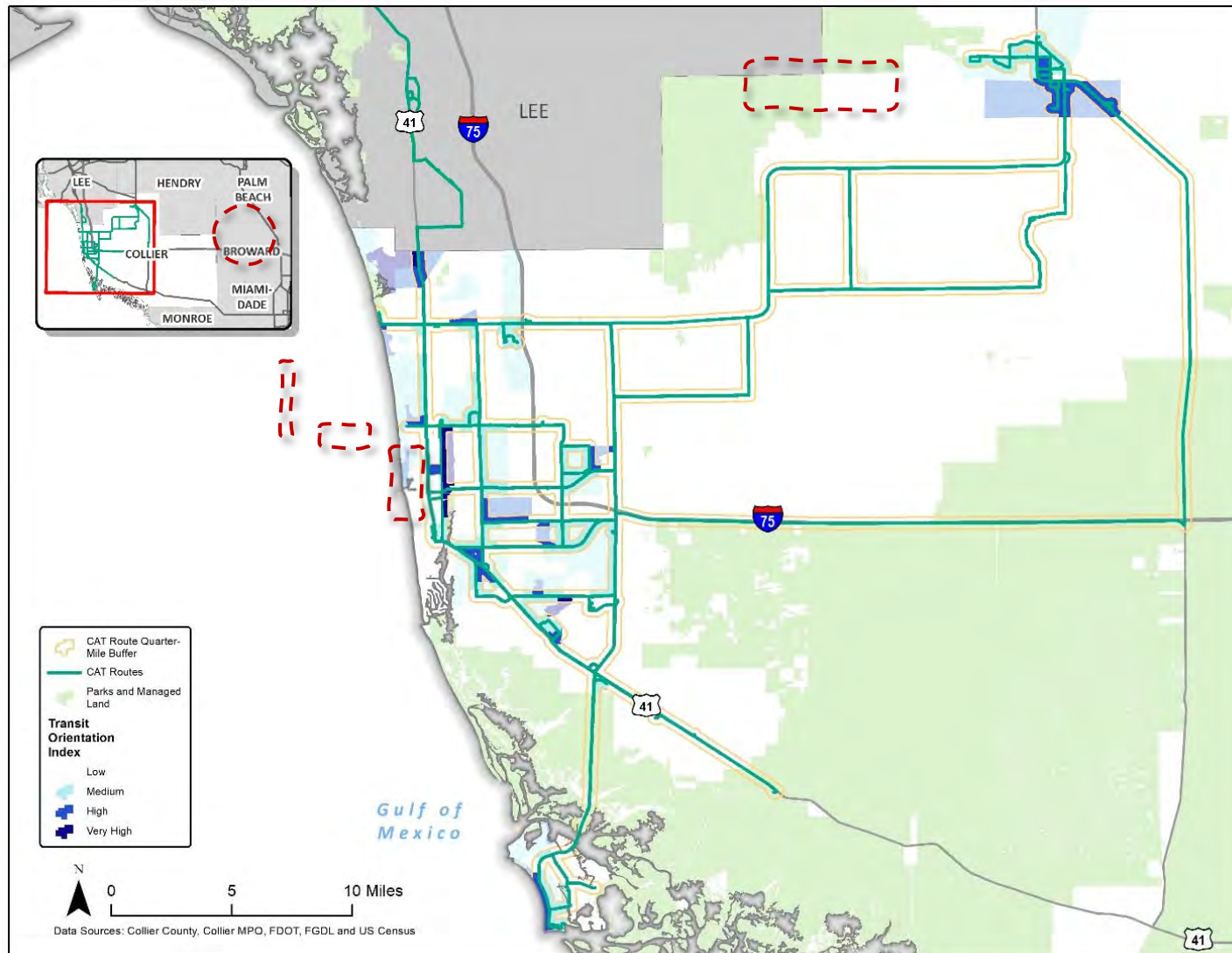
The first step involves determining transit service subareas with high transit TOI scores using factors such as youth and younger adult populations, older adult populations, households in poverty, and zero-vehicle households. The TOI score is then mapped to the CAT service area, as previously shown on Map 2-3.

The second step uses geographic analyses to determine the extent of each route's service reach by using ArcGIS buffer and erase tools. Ultimately, the two outputs are overlaid with one another to identify general gaps in the CAT transit service and, more specifically, high priority TOI areas that are served, unserved, or underserved. Note that areas beyond the route catchment area (buffered area along a route) are considered to be unserved.

As shown in Map 5-4, areas that noticeably may have the potential for being underserved are located west and east of US-41 but south of Bonita Beach Road. Other major areas that are underserved include North Naples, Immokalee, Collier Boulevard between Rattlesnake Hammock Road and Radio Road and areas east of Goodlette-Frank Road.

Once the gap analysis is prepared, service planning is applied to develop strategies to mitigate the gaps in service, especially in areas that resonate high in terms of TOI score. CAT has several options for serving targeted services gaps, including modifications to existing routes—adjusting route alignments, service spans, service frequencies, and application of MOD strategies.

**Map 5-4: CAT Gap Analysis**





## 6.0 Existing Transit Assessment

CAT operates 19 fixed-routes and provides non-fixed-route transit service, such as CAT Connect service. This section documents existing ridership for CAT's services and any additional performance statistics that will help identify determine transit needs.

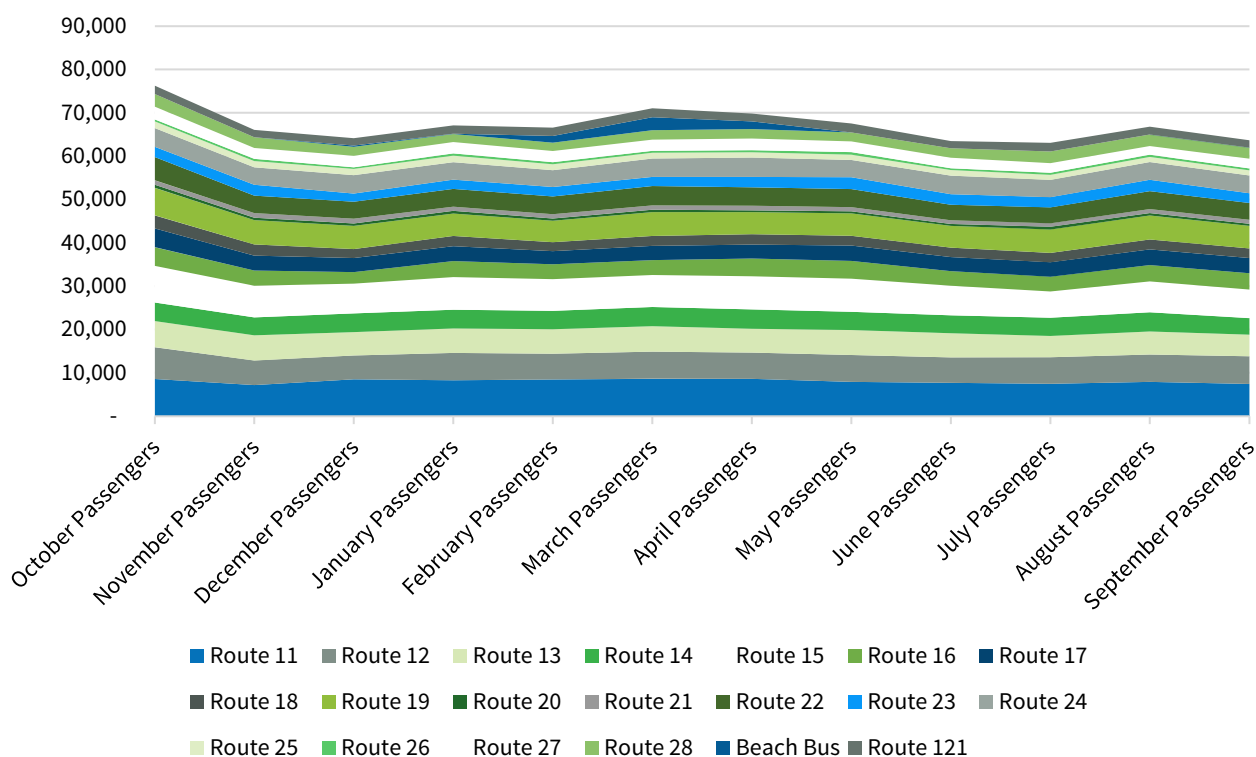
### 6.1 Route Level Ridership by Month

Route-level ridership in the study area by month is shown in Figure 6-1; Figures 6-2 through 6-5 show a more detailed representation of ridership by month by route:

- Ridership increases on most routes from February to May, as shown in Figures 6-2, 6-3, and 6-4.
- Routes 11 and 15 show the highest ridership in CAT service for FY 2019.

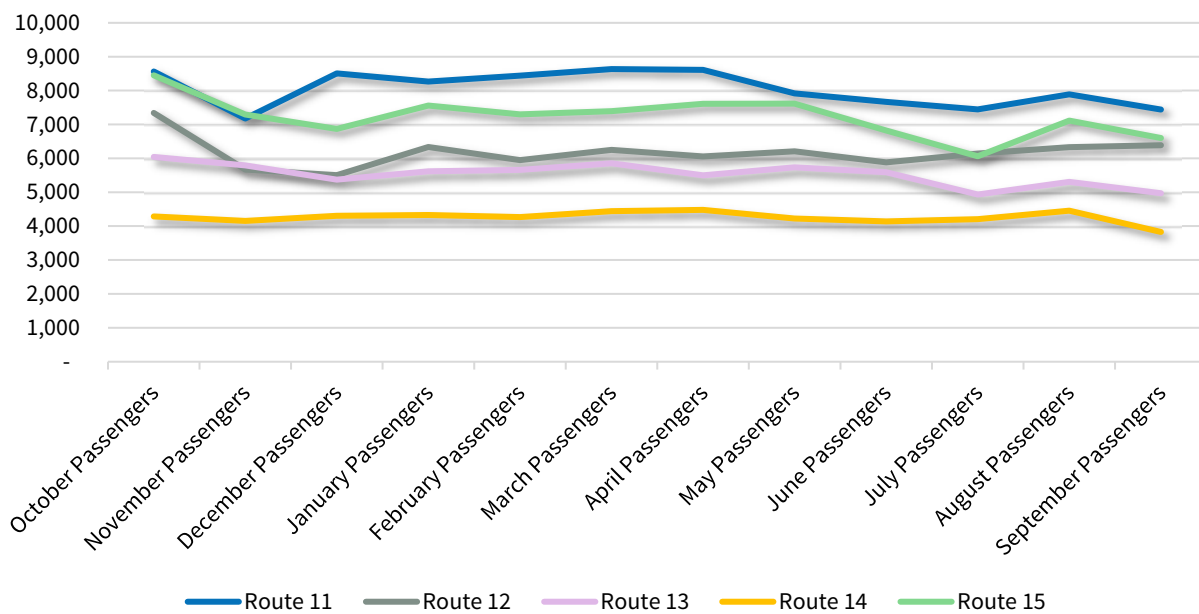
Figure 6-5 shows the months that Beach Bus has the highest ridership (late November through April); other times of the year the Beach Bus is not in operation.

**Figure 6-1: CAT Systemwide Ridership, 2019**

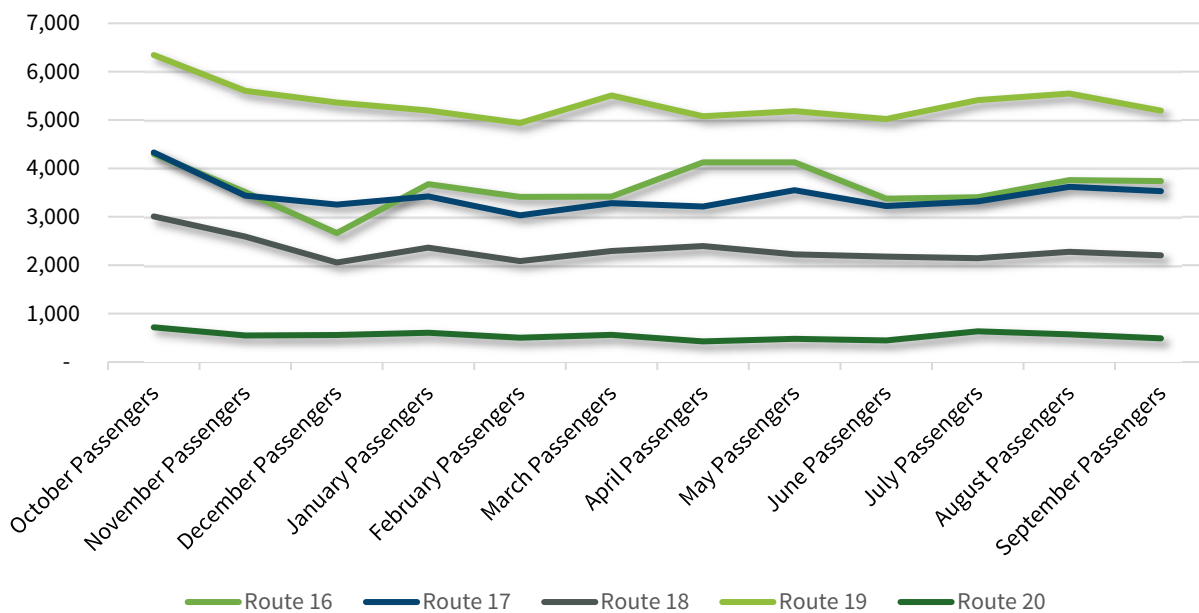




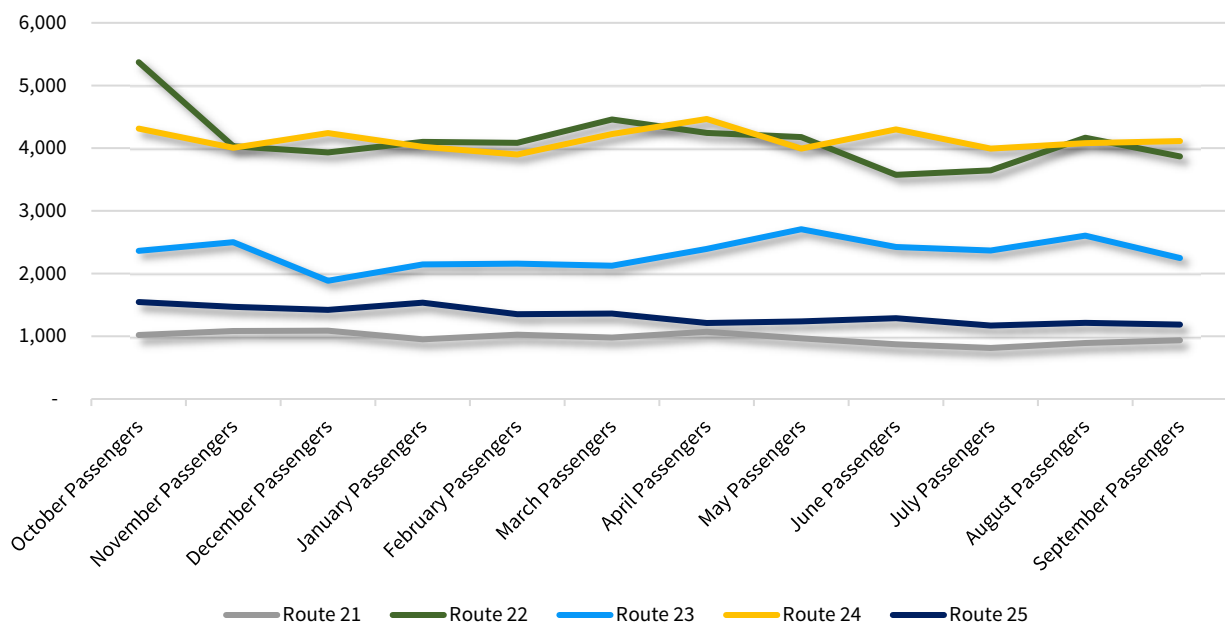
**Figure 6-2: Monthly Ridership by Route, Routes 11-15**



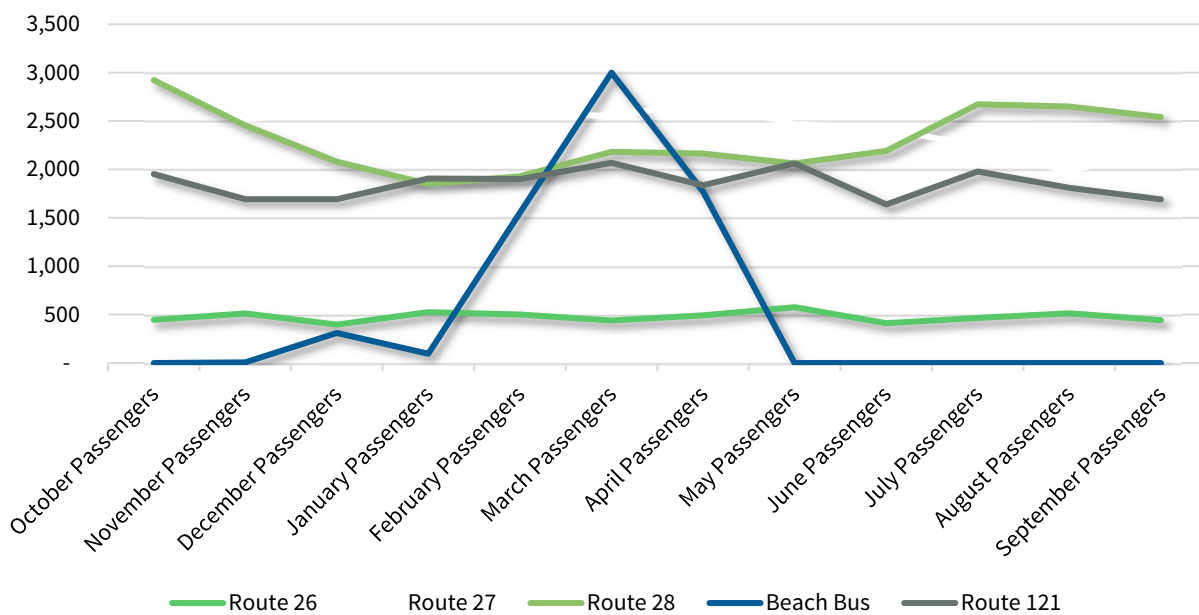
**Figure 6-3: Monthly Ridership by Route, Routes 16-20**



**Figure 6-4: Monthly Ridership by Route, Routes 21–25**



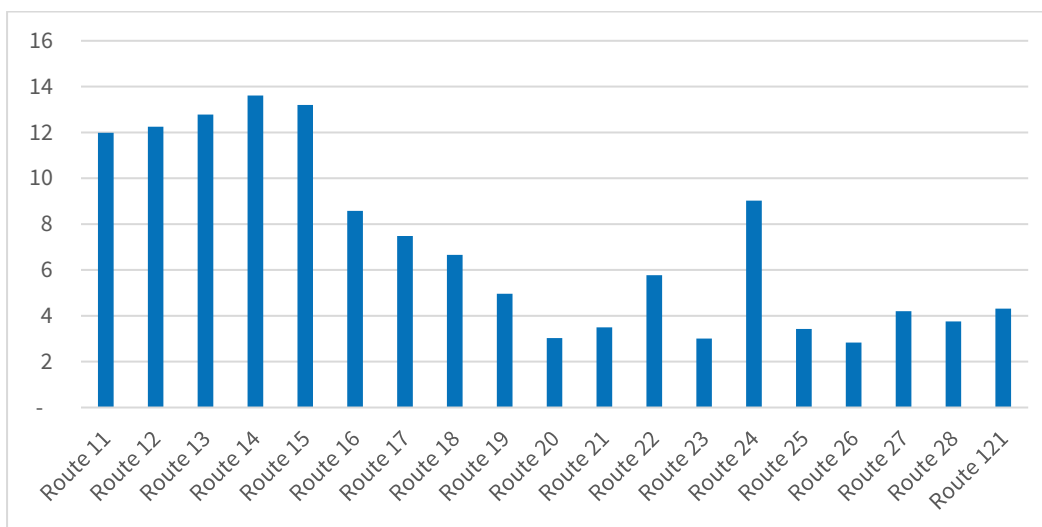
**Figure 6-5: Monthly Ridership by Route, Routes 26–121**



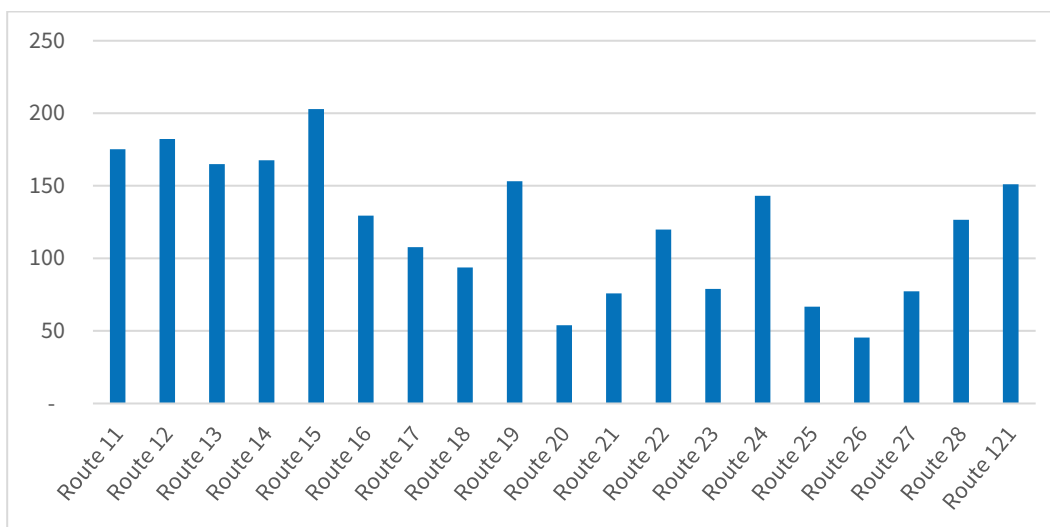
## 6.2 Route Productivity

Figures 6-6 and 6-7 show route productivity based on revenue mile and revenue hour for FY 2019. Figure 6-6 shows passengers per mile by route; overall, routes 21, 23, and 24 show the lowest productivity based on passengers per mile, and the highest passengers per mile by route are on routes 13, 15, and 14. Figure 6-7 shows the passengers per hour by route for 2019. As shown, the lowest recorded passengers per hour are on routes 20 and 26, and the highest recorded passengers per hour are on Route 15.

**Figure 6-6: Passengers per Mile by Route, FY 2019**



**Figure 6-7: Passengers per Hour by Route, FY 2019**

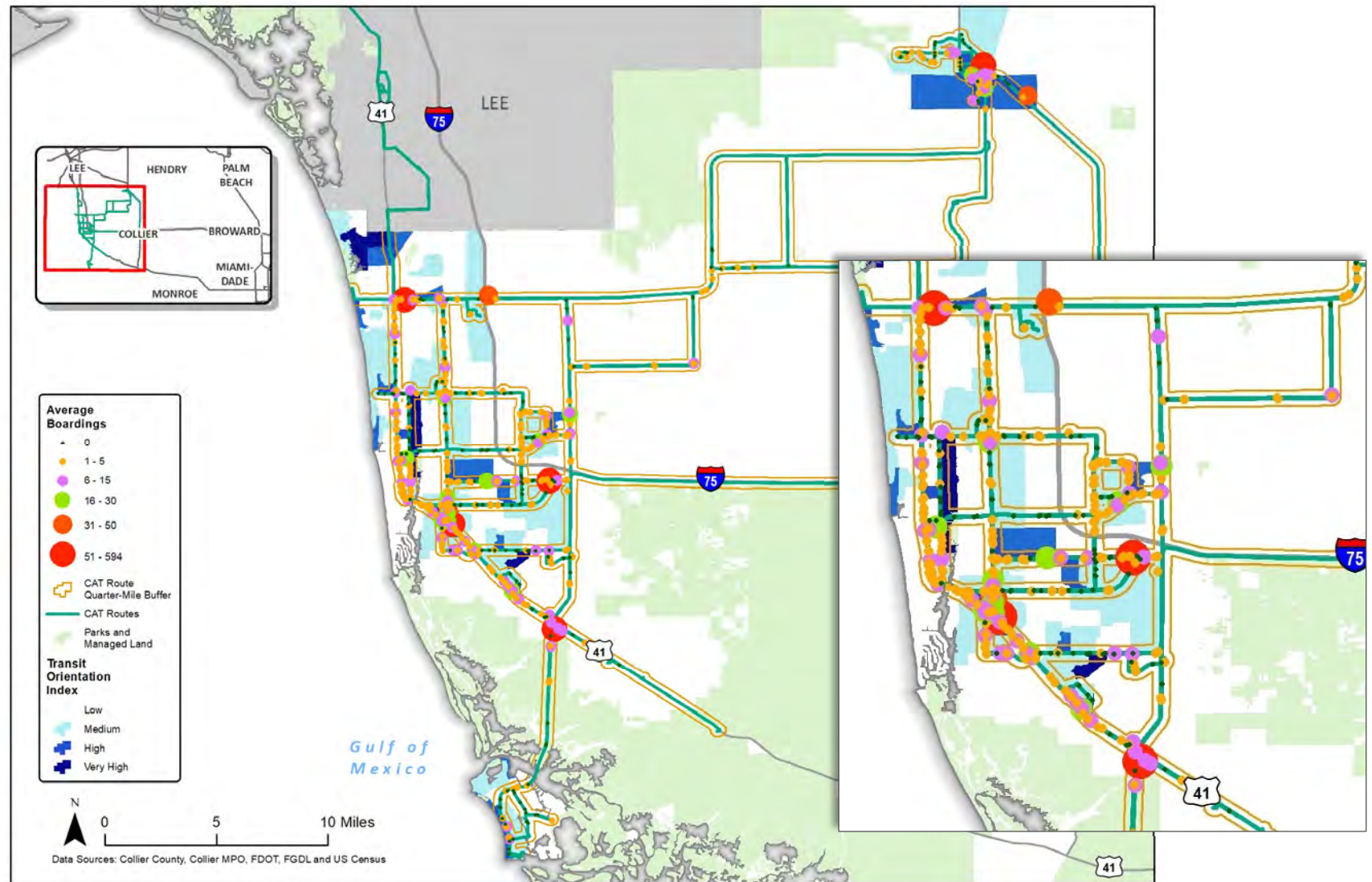


### 6.3 Automatic Passenger Count (APC) Data

APC data for 2019 was obtained to view average daily stop level boardings compared to system gaps, as shown previously in Map 6-1. APC data also were used to view route and stop level performance and to enhance or improve transit systems during the alternatives analysis stage. Based on the APC data provided by CAT, the areas with the highest average boardings include Collier County Government Center, CAT Operations, and Creekside Transfer Center, as shown in Map 6-1. Other areas of CAT service that have high average boardings are the Immokalee Health Department, Northbrooke Plaza Drive, and Walmart near Collier Boulevard/Tamiami Trail.

Roadway sections with zero average boardings by stop vary, but stops with zero boardings are most noticeable along Santa Barbara Boulevard between Radio Road and Davis Boulevard, Davis Boulevard between Airport Pulling Road and Santa Barbara, Golden Gate Parkway between I-75 west and Goodlette-Frank Road, Pine Ridge Road, and Airport-Pulling Road between Golden Gate Boulevard and Pine Ridge Road. Marco Island also has several stops that show zero average daily boardings. It should also be noted that Route 24 has fewer than six boardings per day past Collier Boulevard.

**Map 6-1: Systemwide APC Data**





## 7.0 Situation Appraisal

A major component of the TDP update is the review and assessment of relevant local, State, and federal plans, studies, and policies. The results of this effort provide an understanding of transit planning issues in Collier County and the region as a part of the Situation Appraisal, which is an assessment of the operating environment of the transit system.

### 7.1 Plans Review

At the local and regional levels, several agencies/organizations conduct studies to produce plans and policies for addressing local and regional transportation issues and intermodal transportation that may impact CAT services. Various Federal and State plans and regulations also may impact the provision of transit services. This plans and policy review aids in understanding the support and pursuit of existing goals while pursuing its own goal of creating a viable and accessible transit system in Collier County.

Relevant transportation planning and programming documents are summarized with an emphasis on issues having implications for CAT. Additionally, selected plans produced for the City of Naples, City of Marco Island, Golden Gate, Immokalee, and Collier County related to land use were reviewed to call attention to community goals, objectives, and policies that may have implications for current and future transit services. The following local, regional, State, and Federal plans and studies were reviewed to understand current transit policies and plans with potential implications for CAT service:

- Local Plans
  - City of Naples Comprehensive Plan
  - City of Marco Island Comprehensive Plan
  - Collier County Comprehensive Plan
  - CAT 2016–2025 TDP Major Update
  - Collier MPO Bicycle and Pedestrian Master Plan
  - CAT TDP 2018 Annual Progress Report
  - Collier County Transportation Disadvantaged Service Plan (TDSP)
  - Collier County Transit Impact Analysis Draft Report & Recommendations
- Regional Plans
  - Collier County 2040 Long Range Transportation Plan (LRTP)
- State and Federal Plans
  - Florida Transportation Plan: Horizon 2060
  - State of Florida Transportation Disadvantaged Five-Year/Twenty-Year Plan
  - Florida's Strategic Intermodal System Strategic Plan
  - FAST ACT
  - Implications to Public Transportation of Emerging Technologies

The transportation planning and programming documents reviewed are summarized in Tables 5-1 and 5-2 by their geographic applicability, type of plan, responsible agency, overview of the plan/program, and key considerations for the situation appraisal.

**Table 7-7-1: Local Plans, Policies and Programs**

Plan Title	Geographic Applicability	Most Recent Update	Type of Plan	Responsible Agency	Plan/Program Overview	Key Considerations/Implications for TDP
City of Naples Comprehensive Plan	City of Naples	2019	CP	City of Naples	Addresses land use, transportation, capital projects, public facilities, recreation, government coordination, conservation, and development goals, among others, for city.	<ul style="list-style-type: none"> <li>Provides goals for ensuring a safe, efficient, and quality transportation system. Plan expresses support for expanding transit service to help reduce headway, traffic congestion, parking problems. In addition to supporting County in its efforts to provide and improve public transportation services (i.e., providing bus stops, constructing connections to transit routes, increasing public awareness), policies are set to support objective of strengthening entire multimodal network:</li> <li>Development regulations (compact, mixed-use development in prioritized corridors) and design standards for parking (maximum parking requirements or elimination thereof, park-and-ride lots, and on-street parking), circulation systems, and access points will ensure adequate transit, bicycle, and pedestrian site access to promote these modes in place of single-occupant vehicles.</li> <li>Bicycle and pedestrian connections from residential areas will be provided.</li> <li>Site plan review and traffic circulation system will encourage transit-friendly design features along roadways.</li> </ul>
City of Marco Island Comprehensive Plan	City of Marco Island	2009	CP	City of Marco Island	Addresses land use, transportation, capital projects, public facilities, recreation, government coordination, conservation, and development goals, among others, for city.	According to the plan, City will continue to support CAT to promote continuation and expansion of public transportation for Island residents and visitors; however, there are limited policies that support public transportation.
Collier County Comprehensive Plan	Collier County	2018	CP	Collier County	Addresses land use, transportation, capital projects, public facilities, and economic development goals, among others, for county.	Discusses intention to invest in upgrading several existing transit shelters and building more where necessary. Prescribes transit-supportive goals, objectives, and policies, such as need to develop regulations that require new developments to become more mass transit-oriented, encourage maximum use of right-of-way, improve connections with pedestrian and bicycle networks, promote expansion of aviation through individual master plans, and coordinate with other transit agencies to meet regional mobility needs.
CAT 2015–2024 TDP Major Update	Collier County	2015	TDP	Collier Area Transit	Emphasizes transit improvements and additions during peak hours; outlines cost feasibility plan, focuses on limiting traffic congestion.	Emphasizes improvement of an efficient, quality and safe public transportation system which enhances the County’s economic vitality. Supports green initiatives to reduce environmental impacts and continue to build partnerships which enhance economic and social well-being. Maximizing funding and continuing to interact with local, regional and state planning initiatives are also major goals.
Collier County Bicycle and Pedestrian Master Plan	Collier County	2018	MP	Collier County MPO	Addresses city’s current transportation networks and emphasizes need for alternative transportation options.	Discusses alternative transportation options and implementation explored including: <ul style="list-style-type: none"> <li>Off-street path connections, bike boulevards, bike boxes, pedestrian networks, and neighborhood traffic circles designed around transit stops</li> <li>Establishing multi-modal transfer center at airport</li> <li>Integrating pedestrian travel and bicycle use with transit</li> <li>Using technology to encourage multimodal transportation coordination</li> </ul>
CAT TDP Annual Progress Report	Collier County	2018	APR	Collier Area Transit	Annual update that outlines past year’s accomplishments, revisions for coming year, revised financial plan, revised goals and objectives.	Provides updates on variety of capital, facility, and service projects: <ul style="list-style-type: none"> <li>Route changes to Route 6 (Elimination), Route 23 (future changes dependent on public meetings), Route 24 (future changes dependent on public meetings), and Route 29 (new route).</li> <li>Continued construction of ADA and sheltered bus stops</li> <li>Continuation of replacement within the fleet to operate a fleet with an average age of less than 5 years.</li> </ul>
Collier County TDSP	Collier County	2014	TDSP	Collier County	Major TDSP update, emphasizes transit improvements and additions that serve needs of TD population in efficient and cost-effective manner.	Supports overall goal of assuring availability of efficient, cost-effective, and quality transportation services for TD people. Developing short- and long-term goals to enhance local TD efforts to supply demand for all trips. Priorities include: <ul style="list-style-type: none"> <li>Create more awareness of Collier County TD Program through marketing</li> <li>Pursue additional funding to help with service as demand surpasses revenue</li> <li>Improve referral systems with transportation providers to help meet demand of users</li> </ul>

**Table 7-1: Local Plans, Policies and Programs (cont'd)**

Plan Title	Geographic Applicability	Most Recent Update	Type of Plan	Responsible Agency	Plan/Program Overview	Key Considerations/Implications for TDP
Collier County Transit Impact Analysis Draft Report & Recommendations	Collier County	Revised Draft for Review November 2019	Transit Impact Analysis	Collier MPO	Identifies and evaluates opportunities for supporting and advancing transit revenue and development review solutions in Collier County.	<p>Several policy recommendations provided, including:</p> <ul style="list-style-type: none"> <li>• Site access requirements for transit when development situated along active transit routes but may also apply when development located along transit routes identified as needs in CAT’s 10-year TDP or the Collier MPO’s LRTP.</li> <li>• Reconfigure Transportation Concurrency Exemption Areas and Transportation Concurrency Management Areas.</li> <li>• Implementation of transportation impact fees or fair-share mitigation for TOD infill and redevelopment.</li> <li>• Update of codified TDM options to require certain TDM-supportive infrastructure improvements such as transit site-access improvements, covered bicycle racks, parking policies, etc.</li> <li>• Two new TDM strategies proposed including shared parking and providing shower and changing rooms.</li> <li>• Evaluate mixed-use corridor and activity center density allowances.</li> <li>• Proposes that Collier County Property Appraiser reevaluate surface parking lots, which are undervalued in comparison to the accompanying building value to generate additional property tax.</li> </ul>
Collier County 2040 Long Range Transportation Plan	Collier County	2014	LRTP	Collier County	Addresses transportation, capital projects, improvement of existing bus, light rail, monorail systems.	Update of major goals and objectives in Collier County that include expanding and enhancing regional service to accommodate growing population in Collier County. Encourages growth of connectivity in Southwest Florida area, citing several future development areas and connections into Lee County.

**Table 7-7-2: State and Federal Plans, Policies, and Programs**

Plan Title	Geographic Applicability	Most Recent Update	Type of Plan	Responsible Agency	Plan/Program Overview	Key Considerations/Implications for TDP
State of Florida Transportation Disadvantaged 5-Year/20-Year Plan	Florida	2007	State	Florida Commission for the Transportation Disadvantaged (FCTD)	Developed to accomplish cost-effective, efficient, unduplicated, cohesive TD services in service area.	Develop and field-test model community transportation system for persons who are transportation disadvantaged; create strategy for FCTD to support development of universal transportation system.
FDOT Complete Streets Implementation Update: Handbook and Design Manual	Florida	2018	State	FDOT	Developed to create alternative transportation systems to facilitate “Complete Streets” focused design.	Plan includes: <ul style="list-style-type: none"> <li>• Revising guidance, standards, manuals, policies, other documents</li> <li>• Updating how decision making processed</li> <li>• Modifying evaluation of performance</li> <li>• Managing communication between agencies</li> <li>• Update training and education in agencies</li> </ul>
Florida Transportation Plan: Horizon 2060 (FTP)	Florida	2005	State Transportation Plan	FDOT	Requires, as part of Florida Statutes, pursuit to make Florida’s economy more competitive and communities more livable. Looks at 50-year transportation planning horizon and calls for fundamental change in how and where State investments in transportation are made.	Supports development of State, regional, and local transit services through series of related goals and objectives, emphasizing new and innovative approaches by all modes to meet needs today and in future.
FAST Act	National	2015	Federal Transportation legislation	114th US Congress	Enacts five years of funding for US surface transportation infrastructure, including transit systems and rail transportation network. Provides long-term certainty and more flexibility for states and local governments, streamlines project approval processes, maintains strong commitment to safety.	<ul style="list-style-type: none"> <li>• Increases dedicated bus funding by 89% over life of bill.</li> <li>• Provides stable formula funding and competitive grant program to address bus and bus facility needs.</li> <li>• Reforms public transportation procurement to make Federal investment more cost effective and competitive.</li> <li>• Consolidates and refocuses transit research activities to increase efficiency and accountability.</li> <li>• Establishes pilot program for communities to expand transit through use of public-private partnerships.</li> <li>• Provides flexibility for recipients to use federal funds to meet their state of good repair needs.</li> <li>• Provides for coordination of public transportation services with other federally assisted transportation services to aid in mobility of older adults and individuals with disabilities.</li> </ul>
“Implications to Public Transportation of Emerging Technologies”	National	2016	Research Report	National Center for Transit Research	Explores possible consequences for public transportation as a result of introduction of new technologies such as autonomous vehicles, connected vehicles, other innovations that impact efficiency, cost-effectiveness, overall demand for transportation.	Identifies key factors expected to influence public transportation system and current and potential users. Outlines potential impacts on travel behavior and travel decision-making; outlines areas that may be impacted by changes in travel costs for various existing and emerging modes; identifies potential implications on traveler safety along with traveler perceptions of emerging travel modes. Identifies current transit services as testbed for new technology deployment. Key areas of opportunity and savings include automated buses, enhancing quality of service via automation, and demand-response services. Key policy issues and potential hurdles are identified with recommendations for overcoming them.



## 7.2 Situation Appraisal

The TDP Rule requires that TDP Major Updates include a situation appraisal of the environment in which the transit agency operates. Using information obtained through public outreach efforts, a review of CAT trends, and other technical analyses, this appraisal documents factors that will help CAT better understand its local environment and the critical issues that could impact programs and services over the TDP planning period. The situation appraisal has been organized in the context of the following elements:

- Socioeconomic trends
- Travel behavior
- Community feedback
- Land use policy and trends
- Service and operational trends
- Organizational attributes and funding
- Technology

### 7.2.1 Socioeconomic Trends

When assessing the impact of the growth in population on public transportation needs, it is important to understand the trends and markets that could be affected or may benefit from public transportation services. The following key trends were identified:

- Peak seasonal demand adds significant strain to the Collier County transportation system, particularly in the coastal areas. Peak season population in the county is expected to increase from 459,799 persons in 2020 to 535,451 persons in 2030.
- Currently, the majority (approximately 77%) of the county's population lies west of CR-951 (Collier Blvd) in the more urbanized coastal area. In addition to growth within the urbanized area primarily due to redevelopment, future growth is projected around Orangetree, Ave Maria, east/southeast of Naples, and, to some degree, in Immokalee. Slightly more growth in these areas is expected through 2045.
- Employment in Collier County is densest in the western portion of the county in the Naples area and on Marco Island along the coast. In addition, some areas of Marco Island and within Immokalee include medium-range employment densities. Projected growth in employment will be highest in existing employment centers along with the intersection of I-75 and Collier Blvd in addition to North Naples along the coastline.
- The potential TD population increased dramatically, by 18.9% from 2014 to 2018.
- Collier County's population over age 60 is approximately 38%, and the population segment of age 15–59, a population within the workforce age group, represents approximately 47.3% of the total population in the county.

**Implications** – Transit service levels may need optimization according to the seasonal demand experienced in Collier County. Existing CAT service generally covers the existing areas with higher densities and the areas that are projected to increase in density over the 10-year planning period. With a growing number of persons over age 60, there may be an increased need for additional transportation services over the next 10 years, both fixed-route and paratransit. Promoting a more cost-effective fixed-route or general public mobility-on-demand service for these populations will help offset the high cost and demand of paratransit service. In the future, premium services that offer amenities for choice riders may alter opinions regarding use for choice riders and provide transit-dependent users with enhanced travel. Improving the existing service and adding coverage to developing areas will help to meet the current and future transportation.

### 7.2.2 Travel Behavior

As transit service has grown, the demand on existing revenue sources to support the current system and its potential future growth has grown. Based on the large geographic area and distance between the municipalities and unincorporated areas, access to regional jobs and services has been identified as an issue. A need for direct connects to out-of-county work destinations for Bonita Springs, Fort Myers, and Estero Village exists. The majority of existing fixed routes are in the Naples area with connections to Immokalee and Marco Island, with one route to Lee County.

According to the 2013–2018 ACS, a small proportion of residents living in the county work outside the county. Private regional bus service providers such as Greyhound and Florida Red Line currently complement public transit services by closing gaps in regional travel to destinations such as Miami and Tampa. The Greyhound station near routes 19, 25, and 28 supports the use of transit use. Ride-hailing services such as Uber and Lyft have the potential to negatively impact transit performance.

**Implications** – The need for a direction connection to Lee County would eliminate the need for the residents of Immokalee to first travel east to Naples before accessing transit service to Lee County. Other regional connections between north Collier County and Lee County have the potential to provide job access between to the two counties. A seamless fare system between LeeTran and CAT would facilitate travel between the two counties. However, based on current funding levels, the implementation of future transit services that support the community and future private development within the 10-year planning period may require funding through public-private partnerships.

CAT should consider developing and adding general public mobility-on-demand services in hard-to-serve locations where traditional transit underperforms and/or locations where latent demand exists, but service is not provided.

### 7.2.3 Community Feedback

As a part of the on-board survey for this study, passengers were asked to identify service improvements they believed would make CAT better for their use. Noted were more frequent service (68%) and later service (70%). Those noting express service connections to other areas (48%) noted downtown Naples, Immokalee, and Marco Island most frequently. Areas needing new routes included

Immokalee, the beaches, connections to adjacent counties and major destinations throughout Collier County, and potential connections to Miami, to name a few.

Passengers were asked to indicate which routes needed frequency changes; the majority of passenger indicated that all routes require frequency changes. The second highest was Route 11, followed by routes 19, 13, 24, and 17. Additionally, passengers were asked which routes needed later service; most passengers said the entire network warranted later service hours, as well as routes 11 and 19. Other routes included 13, 15, 17, and 28.

Public outreach is currently ongoing in the development of this TDP; therefore, additional information will be included following the end of the outreach period and in the final TDP. A review of the Public Participation Plan provides the strategy and schedule for public outreach and engaging community perspectives on mobility needs, existing services, and proposed mobility improvements and priorities. A Public Participation report will accompany the TDP and include documentation of outreach efforts and community comments.

**Implications** – *As funding becomes available, in addition to providing more frequent and later service, CAT will need to prioritize improvements to areas in Naples, Immokalee, and Marco Island. CAT will likely need to expand service options to more cost-effectively address growing paratransit demand.*

#### 7.2.4 Land Use Policies and Trends

In addition to agriculture and conservation, land use in Collier County is single-family residential and vacant single-family residential, particularly on the eastern side of the county. Multi-family uses are spread throughout the western side of the county, but not in particular areas or corridors. Several key commercial areas include dispersed areas along Pine Ridge Rd and US-41, Naples Blvd, the intersection of I-75 and Immokalee Rd, and the intersection of Collier Blvd and Immokalee Blvd. Major developments expected to impact the transportation system include Fiddler’s Creek and Ave Maria. Future land use indicates mixed-use development around major intersections, including seven located along US-41. Most future use is designated as Urban Residential Subdistrict and Estates Designation.

**Implications** – *Collier County’s land development patterns present challenges in providing efficient and effective public transportation services. Future route alignments to better service Planned Unit Developments such as Fiddler’s Creek and Ave Maria will need to be considered. As there are limited mixed-use and other transit-supportive uses indicated in Collier County’s Future Land Use map, future land use may continue to negatively impact the provision of transit services.*

#### 7.2.5 Service and Operational Trends

Key service and operational trends observed in the peer and trend analysis include the following:

- An increase in service supply with respect to total vehicle miles, revenue miles, vehicle hours and route miles, and vehicle miles per capita. CAT placed above average for passenger miles, vehicle miles, revenue miles, and route miles compared to its peer group.

- A decrease in productivity with respect to passenger trips; however, transit agencies throughout the US are experiencing similar declines in this trend. CAT performed 19.3% below the peer mean for passenger trips.
- An overall declining trend in efficiency between 2013 and 2018. Total operating expenses increased moderately by 6% over the six-year period. Operating expense per passenger trip and operating expense per passenger mile had dramatic increases that were driven largely by decreasing passenger trips and passenger miles. CAT, however, performed better than the peer mean with respect to total operating expenses, operating expense per passenger mile, and operating expense per revenue mile, suggesting that CAT has better cost efficiency compared to its peer group. Operating expense per revenue mile fluctuated between 2013 and 2018, but only with a slight increase of 2.6% overall.
- A declining trend in effectiveness measures overall. Passenger trips per capita, passenger trips per revenue mile, and passenger trips per revenue hour decreased over the six-year period, indicating a negative trend in service consumption. CAT performed below the peer group mean for these measures. The farebox recovery ratio has decreased 34% but, compared to the peer group, CAT is performing near the peer mean.

**Implications** – CAT experienced an overall decline in efficiency and effectiveness, a trend that is being experienced by various transit agencies across the US. The decline in ridership is due to many factors, including an improved economy, increasing automobile ownership, and the increased use of ride-hailing services. However, CAT may consider operating general public mobility-on-demand services as a way of serving hard-to-reach areas within the county and offer a more cost-effective alternative to the public.

## 7.2.6 Organizational Attributes and Funding

Collier County's Public Transit & Neighborhood Enhancement Division (PTNE) administers CAT services and partners with Lee County Transit (LeeTran) to provide the LinC express route between the two counties. In addition to fixed-route services, CAT provides non-fixed-route services including paratransit service under the CAT Connect program that includes complementary ADA and TD services. Medicaid transportation services are provided through a network of transportation providers overseen by MTM, Inc., the County's Medicaid transportation services broker. Collier County also serves as the CTC under Chapter 427 of the Florida Statutes. As CTC, the PTNE Division administers the coordination of countywide transportation services for TD individuals.

The development review process is a key link to the impacts resulting from provision of transit service. According to the Transit Impact Analysis study, although CAT staff participate in informal meetings with various County departmental staff concerning development review applications, there is no formal procedure for determining the potential impacts of a development project on the transit system – need for service, accommodation of service, impacts to operations.

A challenge with integrating transit into the development review process is establishing a rational nexus between the development and transit service needs. Based on discussions with County staff, it



is common for developers to dismiss transit-related mitigation requests if no existing transit service is provided in proximity to the development. No binding commitments require a developer to support transit or mitigate adverse transit impacts as part of the development review process. The County's Comprehensive Plan and Land Development Code would need to be updated to strengthen how review of transit needs and impacts associated with development is established and to better define the corresponding transit support and adverse impact mitigation requirements. One such approach is to adopt level-of-service (LOS) standards for transit services. However, monitoring CAT's performance would need to be integrated into the County's AUIR process consistent with other public facilities

Ideally, transit should be considered early in the planning process. Historically, CAT has played a limited and more reactive role in Collier County's development process. Currently, when a new development or redevelopment project is proposed, a traffic impact study is required to analyze the impacts on the roadway network; impacts on the transit system as a component of the overall transportation network are not formally considered. Without consideration for transit as an alternative mode during the development approval process, CAT must accommodate the demand the development project places on the transit system after the fact without the necessary resources.

Funding constraints present challenges to providing more transit services. Collier County's policy continues to prohibit the sale of advertising space on the outside of CAT buses and on shelters. CAT vehicles are currently wrapped to appear as trolley buses. CAT completed a fare study in 2018, and the fixed-route fare structure was modified with one-way fares increasing by \$0.50 on October 1 of that year. It is unlikely that fares will be reviewed for potential modification for several more years, as CAT's policy is to review its fare structure approximately every five years.

**Implications** – *The current development review process does not support provision of transit in Collier County. For change in the development process to occur, it is necessary to understand both the added ridership demand and the impacts of increased traffic congestion that are associated with a new development as it relates to the community transit network and how consideration for transit can be integrated into the development review and approval process. There are also policies in the County's Comprehensive Plan pertaining to specific areas of the county where traditional concurrency does not apply, and opportunities exist to make policy changes to better align the development review and approval process and the transit planning process in these urbanized areas.*

*Current funding constraints will require CAT to continue explore new funding options. Advertising on the inside and/or outside of the CAT buses and on shelters is a potential revenue source that should be explored but would require approval by the Collier County BCC.*

### 7.2.7 Technology Trends

CAT offers real-time fixed-route bus information on the CAT website and in the MyStop app. Passengers can board CAT buses using reloadable smart cards. The public can use the online trip planner on the Google Maps platform to find transit solutions. CAT has had a technology consultant assess needs and these findings will be incorporated into this TDP.



**Implications** – CAT should continue to monitor use of its website and mobile applications by the public and identify opportunities to improve its use of technology to better inform the public about transit and mobility services and connect the public to these services. CAT should explore opportunities within Software as a Service and Mobility as a Service platforms to enhance, expand, and more cost-effectively provide mobility services to customers, especially in areas where lower density of demand results in low performance of the fixed-route services .

## 8.0 Mission Goals and Objectives

This section provides the transit vision, mission, goals, objectives, and initiatives for the CAT TDP. These reflect the existing Vision, Mission, goals, and objectives from the previous TDP with edits. The goals and objectives presented were prepared based on the review and assessment of existing conditions and will be reviewed through the public involvement process including the TDP Working Group and review of local transportation planning documents. These goals and objectives should be consistent with the policies of the department responsible for carrying them out, Collier County Public Transit & Neighborhood Enhancement.

### 8.1 CAT Fixed-Route Public Transit Vision

To be an integral part of Collier County's multimodal transportation network providing effective and efficient services to meet the mobility needs of workers, residents, visitors, to support economic, environmental, and community benefits.

### 8.2 CAT Fixed-Route Public Transit Mission

To provide safe, accessible, reliable, convenient, and courteous mobility services to our customers.

### 8.3 CAT Fixed-Route Public Transit Goals and Objectives

***Goal 1: Operate reliable, convenient, and cost-effective mobility services that safely and efficiently meet the mobility needs of Collier County's workers, residents and visitors.***

**Objective 1.1: Improve efficiency, service quality, and level of service to adequately serve workers, residents and visitors while contributing to the economic vitality of the county.**

Initiative 1.1.1: Operate east/west corridor service to provide access to jobs, education, healthcare and community services, and recreation.

Initiative 1.1.2: Operate north/south corridor service to provide alternative access to jobs, education, healthcare and community services, and recreation.

Initiative 1.1.3: Improve peak weekday service frequency to 45 minutes or better on CAT routes.

Initiative 1.1.4: Evaluate the feasibility of premium transit services, such as bus rapid transit (BRT) within relevant corridors.

**Objective 1.2: Provide adequate bus stop amenities at all stops according to bus stop threshold and accessibility guidelines within available fiscal capacity.**

Initiative 1.2.1: Pursue funding to maintain and improve existing bus stops.

Initiative 1.2.2: Install and maintain bus stop amenities according to an ADA compliant Passenger Amenities Program and Bus Stop Amenities Guidelines.

Initiative 1.2.3: Install a minimum of ten ADA-compliant, accessible bus stop shelters per year.

Initiative 1.2.4: Coordinate with the Collier County and local governments to include sidewalks and bus stop shelters in design and construction of roadway projects and new developments.

Initiative 1.2.5: Monitor and implement the recommendations from the CAT Bus Stop ADA Assessment report.

**Objective 1.3: Structure transit service with a focus on providing job access for workforce and access to mobility for persons with no or limited access to a private automobile.**

Initiative 1.3.1: Improve transit service for areas with high mobility needs per the transit orientation index identified in the latest TDP Major Update.

Initiative 1.3.2: Provide efficient transit and mobility access to major employment centers, development corridors, and other significant activity centers as funding allows.

Initiative 1.3.3: Focus transit and mobility services in areas with high employment and dwelling unit densities and connect targeted jobs-housing locations to serve the workforce, including Golden Gate Estates and areas located in the eastern portion of the county.

Initiative 1.3.4: Focus improved service frequency on transit routes that serve high mobility needs communities; target service frequency of hourly or better where demand and fiscal capacity allow; apply mobility on demand solutions for areas with lower population densities and where fixed-route service is not productive and cost-effective.

**Objective 1.4: Create an optimized interconnected multimodal mobility network designed to fit the range of needs and conditions for the service market.**

Initiative 1.4.1: Focus improved service frequency on transit routes that serve high mobility needs communities; target service frequency of hourly or better where demand and fiscal capacity allow; apply mobility on demand solutions for areas with lower population densities and where fixed-route service is not productive and cost-effective.

Initiative 1.4.2: Coordinate with FDOT Commuter Services to enhance and expand carpool and vanpool strategies and services to connect workforce communities with employment locations within the service area; identify properties for park-and-ride lots in areas with high mobility demand as funding is available. Implement recommendations from the current park-and-ride study.

Initiative 1.4.3: Coordinate with the CAT Connect paratransit program to identify and target areas with high TD ridership and lower density of demand and develop programs to shift TD riders to a mobility on demand for all solution with connections to the fixed-route network.

Initiative 1.4.4: Require local governments and FDOT to provide accessible sidewalks, bus stops, and other bus stop improvements within roadway projects and all new developments.

Initiative 1.4.5: Coordinate with community improvement organizations that support investments in enhanced mobility such as: the Immokalee CRA, Bayshore Gateway Triangle CRA, Naples CRA,

Opportunity Naples, Golden Gate Estates Civic, Immokalee Chamber of Commerce, and the Greater Naples Chamber of Commerce to affect improvements in mobility through increased funding, roadway and sidewalk improvements, new developments, to assure transit and mobility services are integral to economic development planning and decision-making.

Initiative 1.4.6: Make transit and mobility reviews a part of the development and redevelopment review and approval process within the county and cities. Require the development community, as part of the development review and approval process, to follow guidelines on bus stop siting and design, land use, and roadway design factors that affect transit design; and to coordinate with CAT for transit services during the development process.

**Objective 1.5: Provide coordinated transportation services between Collier and adjacent counties to support workforce commutes to major employment centers and facilitate connections to both transit networks in support of regional economic and community benefits.**

Initiative 1.5.1: Identify high travel volumes between Collier and adjacent counties; develop regional services for travel markets that have high transit propensity and support regional community and economic benefits, including Immokalee and East Naples communities.

Initiative 1.5.2: Coordinate with LeeTran and FDOT to identify funding for expanded cross county public transportation services.

**Objective 1.6: Enhance transit services targeted at tourists, seasonal residents, and the workforce that supports this market.**

Initiative 1.6.1: Broadcast CAT television commercials, radio advertisements, digital advertisements, and social media advertising, monitor ridership vis-a-vis marketing and advertising efforts to determine ridership increases attributable to marketing efforts.

Initiative 1.6.2: Develop CAT branded services and amenities within the coastal markets to better attract ridership by visitors, seasonal residents, and workers.

**Objective 1.7: Enhance awareness of CAT services and accessibility to service information for riders, workers, residents, and visitors.**

Initiative 1.7.1: Use unique bus stop numbers and technology applications to allow persons to easily located find their nearest bus stop and see the services available at that stop.

Initiative 1.7.2: Enhance trip planning, real-time bus location information, and access to route maps and schedules though CAT website and widely available mobile applications.

Initiative 1.7.3: Add route map and schedule information at CAT bus stops.

Initiative 1.7.4: Partner with the Chamber of Commerce to develop and disseminate a route map that depicts the locations of major destinations, including employment centers, apartments, and attractions and include travel options and travel time information.

Initiative 1.7.5: Provide travel training for persons interested in using the CAT system.

Initiative 1.7.6: Conduct outreach activities at community events, schools, and other organizations to teach students and the public how to use CAT and the benefits of CAT services.

Initiative 1.7.7: Garner relationships with local media and news outlets to keep the community aware and involved.

**Goal 2: Increase the resiliency of Collier County, protecting our man-made and natural resources, by providing attractive and convenient mobility alternatives that will reduce adverse carbon and environmental impacts within our communities.**

***Objective 2.1: Provide services and programs to reduce vehicle miles traveled within Collier County.***

Initiative 2.1.1: Coordinate with FDOT Commuter Services to enhance and expand carpool and vanpool strategies and services to connect workforce communities with employment locations within the service area; implement recommendations from current park-and-ride study as funding is available.

Initiative 2.1.2: Coordinate with the Naples Pathway Coalition, the MPO Pathways Advisory Committee, and local non-profit and/or for-profit groups to expand the use of bicycles as a commute and mobility option, including bicycle share programs.

Initiative 2.1.3: Coordinate with Collier County Driver License and Motor Vehicle Service Centers to promote CAT fixed-route services to persons unable to obtain a driver's license or with an unsafe and/or inoperable vehicle.

Initiative 2.1.4: Broadcast CAT television commercials, radio advertisements, digital advertisements, and social media advertising, monitor ridership vis-a-vis marketing and advertising efforts to determine ridership increases attributable to marketing efforts.

Initiative 2.1.5: Develop partnerships with employers and major activity centers (educational, government, healthcare, retail, residential, commercial) to provide education and awareness of CAT services and benefits, and incentives to use CAT services rather than drive.

***Objective 2.2: Design mobility services to reduce environmental impacts.***

Initiative 2.2.1: Transition fleet to alternative fuels vehicles.

Initiative 2.2.2: Transition to smaller cleaner vehicles and match service delivery to demand by time of day using a mobility on demand strategy where and when service area and demand characteristics warrant; this may include converting low productivity fixed-route service to mobility on demand and/or transitioning fixed-route to mobility on demand at certain times of the day.

***Objective 2.3: Improve resiliency for extreme weather events and changing environment.***

Initiative 2.3.1: Use electric vehicles as back-up power for emergency facilities.



Initiative 2.3.1: Explore solar powered canopies to energize the maintenance building and buses and provide shade.

**Goal 3: Build meaningful partnerships that increase awareness and education of and about mobility options and increase the viability of mobility services to promote livability and enhance economic and social well-being.**

***Objective 3.1: Develop marketing strategies to increase awareness of CAT services and to increase ridership.***

Initiative 3.1.1: Participate in local job fairs and outreach/partnerships with employers to increase knowledge about the transit system and to encourage use.

Initiative 3.1.2: Develop marketing materials and programs to demonstrate the value and role of transit as a mobility option, including benefits accruing to personal finances, access to opportunities, and reduction of regional carbon emissions.

Initiative 3.1.3: Distribute transit service information and user-friendly brochures to at least 25% of businesses within ¼-mile of existing transit routes prior to initiating the next TDP Major Update.

Initiative 3.1.4: Continue the CAT public relations campaign, including television, radio, and social media advertisements, designed to promote transit ridership and sustainability.

Initiative 3.1.5: Facilitate social media tools and campaigns to promote CAT awareness, services, and benefits for individuals, businesses, organizations.

Initiative 3.1.6: Conduct an on-going program of outreach and education targeted at governments, employers, community organizations, community services, healthcare services to build and foster partnerships to provide, fund, and support mobility services.

***Objective 3.2: Focus intergovernmental relationships to improve and expand regional mobility.***

Initiative 3.2.1: Continue to coordinate and partner with LeeTran to improve and expand cross-county mobility services to support workforce travel demand with a focus on commuter express routes, connecting workers to employment, and provide connections strategically to the transit networks in Lee and Collier counties to facilitate access to key activity centers.

Initiative 3.2.2: Coordinate with FDOT Commuter Services to enhance and expand carpool and vanpool strategies and services to connect workforce communities with employment locations within the region; identify properties for park-and-ride lots in areas with high mobility demand as funding is available.

**Goal 4: Coordinate the development and provision of mobility services with local, regional, state planning efforts and through public and private partnerships.**

***Objective 4.1: Coordinate integrated land use and transportation planning efforts to incorporate transit needs into the development review and approval process.***

Initiative 4.1.1: Work with Collier County to implement recommendations listed in the Collier County Transit Impact Analysis.

Initiative 4.1.2: Participate in planning and development review meetings to ensure that county and city policies support transit services and funding needs.

Initiative 4.1.3: Require local governments and FDOT to provide accessible sidewalks, bus stops, and other bus stop improvements within roadway projects and for all new developments.

Initiative 4.1.4: Make transit and mobility reviews a part of the development and redevelopment review and approval process within the county and cities. Require the development community, as part of the development review and approval process, to follow guidelines on bus stop siting and design, land use, and roadway design factors that affect transit design; and to coordinate with CAT for transit services during the development process.

Initiative 4.1.5: Meet quarterly with staff from the Collier County Transportation Engineering and Planning departments to identify upcoming utilities, roadway, and /or stormwater projects, planning studies, and site developments that will affect the provision of transit services.

**Goal 5: Use technologies and innovations in service delivery to improve productivity, efficiency, reliability, and cost-effectiveness of mobility services and operations.**

***Objective 5.1: Explore, monitor, test, and deploy technology applications to enhance mobility services, increase awareness of CAT services, and ease of access to CAT services.***

Initiative 5.1.1: Improve customer information systems, including website and through directly curated and through available mobile applications, to enhance availability of and access to CAT service information and trip planning, to support increased ridership.

Initiative 5.1.2: Explore and acquire cloud-based Software as a Service (SaaS) and/or Mobility as a Service (MaaS) functionalities to support mobility on demand services, directly operated and/or operated through contract or partnership, to serve general public and augment or replace ADA paratransit services where and when warranted based on costs, productivity, and service quality.

Initiative 5.1.4: Explore use of account based payment systems to reload smart cards and other fare media as part of a SaaS or MaaS platform and to facilitate compatible fare policy and fare technology with LeeTran.

Initiative 5.1.5: Explore technology to allow merchants and employers to reduce fares for patrons and employees using smart cards and/or mobile pay applications.

**Goal 6: Monitor and improve mobility service quality and service standards.**

***Objective 6.1: Develop ongoing processes to measure and monitor service quality.***

Initiative 6.1.1: Use a Route Monitoring System to examine fixed-route services on an annual basis and make revisions to low-performing services as needed, including transitioning to mobility on demand solutions where and when warranted.

Initiative 6.1.2: Conduct a survey at least every two years to obtain passenger information including user demographics, travel behavior characteristics, transfer activity, and user satisfaction.

Initiative 6.1.3: Maintain an ongoing public involvement process to solicit and assess input through online reviews, calls/comments cards, discussion groups, surveys, and CAT booths at community events.

Initiative 6.1.4: Maintain an on-going process for operators to communicate transit service comments and suggestions to identify passenger needs and improve services and service performance; comments to be reviewed monthly by service planning and operations.

Initiative 6.1.5: Manage the CAT fleet of fixed-route vehicles to maintain an average fleet age of less than seven years as funding permits.

Initiative 6.1.6: Maintain an on-going process for operators to communicate potential vehicle maintenance problems to be logged with the preventative maintenance program to identify and investigate problems early.

**Goal 7: Maximize the use of all funding sources available, including through partnerships with businesses, employers, and other institutions to increase and improve access to mobility services and mobility for workers, residents, visitors.**

***Objective 7.1: Increase and expand revenue sources.***

Initiative 7.1.1: Explore opportunities for generating advertising revenue on and inside the buses.

Initiative 7.1.2: Educate the general public and local decision-makers on the importance of public transportation and the need for financial support.

Initiative 7.1.3: Submit grant applications available through Federal, State, local, and private sources.

Initiative 7.1.4: Annually seek to identify and obtain available alternative revenue sources for the provision of new and improved transit services.

Initiative 7.1.5: Serve on and coordinate with the Collier County Tourist Development Council (TDC) and to explore the potential for using tourist development tax revenue to expand and improve transit service for Collier County's tourists and visitors, help enhance awareness of CAT services, develop private-public partnerships to design and fund transit services that serve visitors and employees.

Initiative 7.1.6: Use a 501(c)(3) that allows persons to donate funds to CAT for the purpose of "adopting a shelter" or "adopting a rider."

## 9.0 Alternatives Development and Evaluation

This section identifies potential transit improvements, also known as transit alternatives, for CAT's 10-year TDP. The proposed improvements represent the transit needs for the next 10 years and they were developed without consideration of funding constraints.

The identified service improvements were prioritized using an evaluation process that considers input from the community and various technical analyses that identified transit gaps. The resulting prioritized list of improvements will be used to develop the 10-year implementation and financial plans, which will be presented in the full 2021–2030 TDP draft. As Collier County and the communities within the county continue to grow, these prioritized transit needs will assist CAT in selecting and implementing service improvements as funding becomes available.

### 9.1 Development of Alternatives

The CAT 2021–2030 TDP transit alternatives consist of improvements that optimize existing CAT services and expand transit service to new areas. The alternatives reflect the transit needs of the community and were developed based on information gathered through the following methods:

- **Public outreach** – Multiple techniques were used to obtain substantive public input on transit needs throughout the CAT TDP planning process. An on-board rider survey, two online general public surveys, key person/stakeholder interviews, two well-attended mobility discussion group workshops, two public meetings, and a series of three Review Committee meetings were or will be conducted to gather input from the public, stakeholders, elected officials, and the community regarding alternatives to be considered for the next ten years.
- **Transit demand assessment** – As presented herein, an assessment of transit demand and needs was conducted for Collier County that included the use of various GIS-based analysis tools. These technical analyses, together with the baseline conditions assessment and transit performance reviews previously conducted, were used to help identify areas with potential transit demand and transit-supportive characteristics when developing the list of needs-based transit alternatives.
- **Situation appraisal** – The CAT 10-year TDP is required by State law to include a Situation Appraisal of the environment in which the transit agency operates. This holistic analysis helps to develop an understanding of CAT's operating environment in the context of key elements specified in the TDP Rule. The implications from the Situation Appraisal findings were considered in identifying potential transit alternatives.

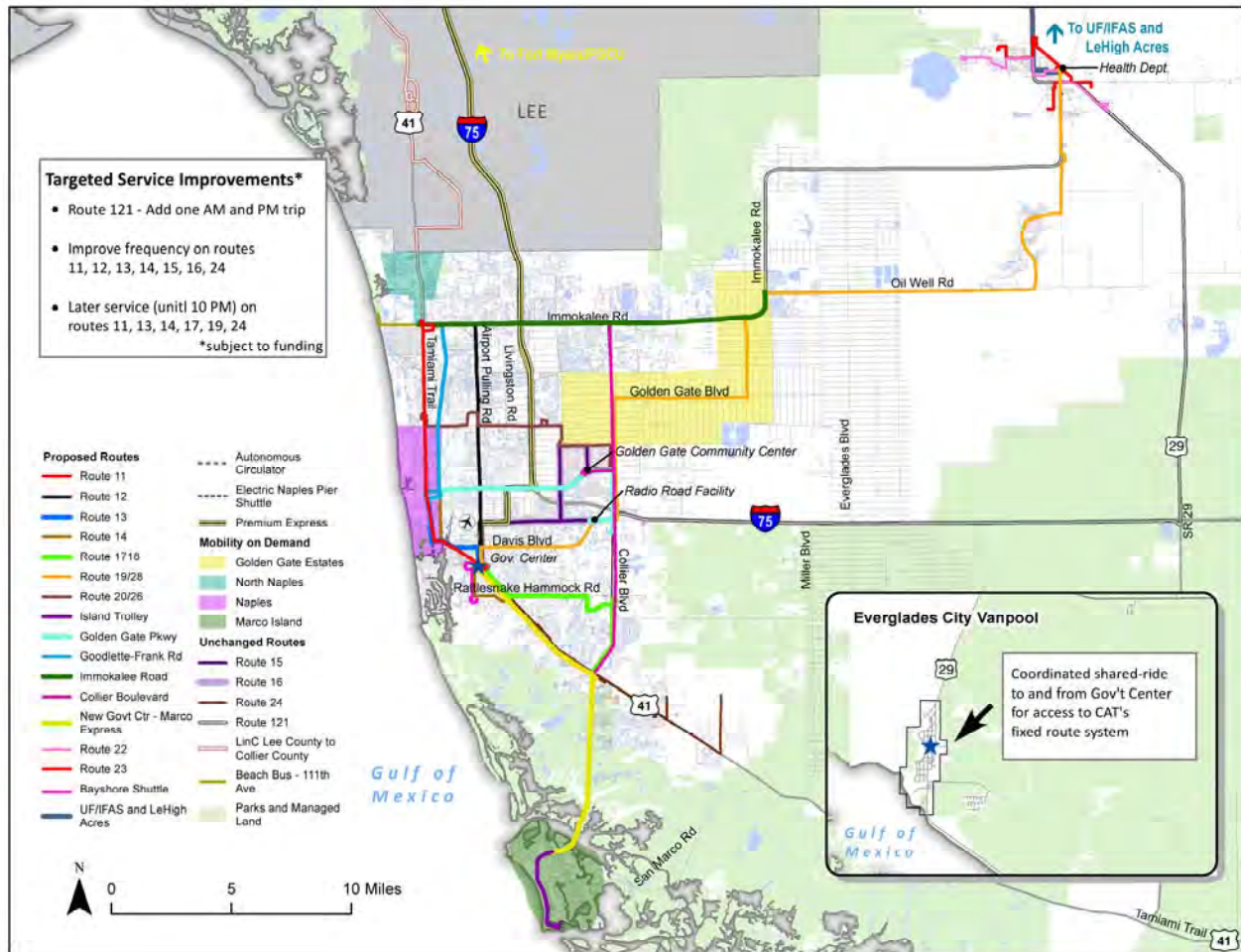
Based on these methods, alternatives were identified and grouped into three categories:

- Service Improvements
- Capital/Infrastructure
- Policy/Other



Specific improvements identified in each category are summarized. Map 9-1 illustrates the proposed network that includes several realignments of existing routes and new service improvements.

**Map 9-1: Alternatives in Proposed Transit Network**



## 9.2 Service Improvements

Service improvements include enhancements to existing routes related to route and system network design, frequency, extended service hours, and/or additional days of service. This category also includes service expansion, including new routes/modes for operating in areas not currently served CAT.

### 9.2.1 Improvements to Existing Routes

Expanding hours and increasing frequencies of existing bus routes are significant needs identified through the public outreach efforts. Needed improvements and increased efficiencies to the existing fixed-route network include the following.



### 9.2.1.1 *Improve Frequency on Selected Routes*

It is recommended that enhanced frequencies be applied to routes with the highest ridership and/or serve as key connectors where transit level of service does not meet demand. The following frequency improvements are proposed for CAT:

- **Add trips to Route 121** – This route currently has only one AM and one PM trip but has the highest productivity, with a seating capacity that is regularly exceeded despite its two-hour travel time. Recommend adding two morning and two evening trips during peak periods and coordinating these trips with employee shift times at major employment locations such as the Marriott and several restaurants.
- **Improve frequency on selected routes** – According to FY 2019 performance data, the highest performing routes include routes 11, 12, 13, 14, 15, 19, and 24. Based on on-board survey and route performance, the following headways are proposed:
  - Route 11 – currently has 30-minute headway; recommend 20-minute peak headway
  - Route 12 -currently has headways of 25–90 minutes; recommend 30-minute peak headway and 60-min off-peak headway
  - Route 13 – currently has 60-minute headway throughout day; recommend 30-minute headway
  - Route 14 – currently has 60-minute headway throughout day; recommend 30-minute headway
  - Route 15/16 – currently has 90-minute headway; recommend 60-minute headway
  - Route 19/28 – currently has 165-minute headway; recommend 60-minute headway
  - Route 24 – currently has 85-minute headway; recommend 60- minute headway

### 9.2.1.2 *Later Service*

Based on results from the on-board survey, a need for adding later service was identified as a priority. It is proposed to extend service later on routes 11, 13, 14, 17, 19, and 24. The end times for the service span of these routes currently ranges from 6:25 PM to 8:52 PM; it is recommended to extend service to 10:00 PM as a target as funding and service demand allow.

### 9.2.1.3 *Realign Routes*

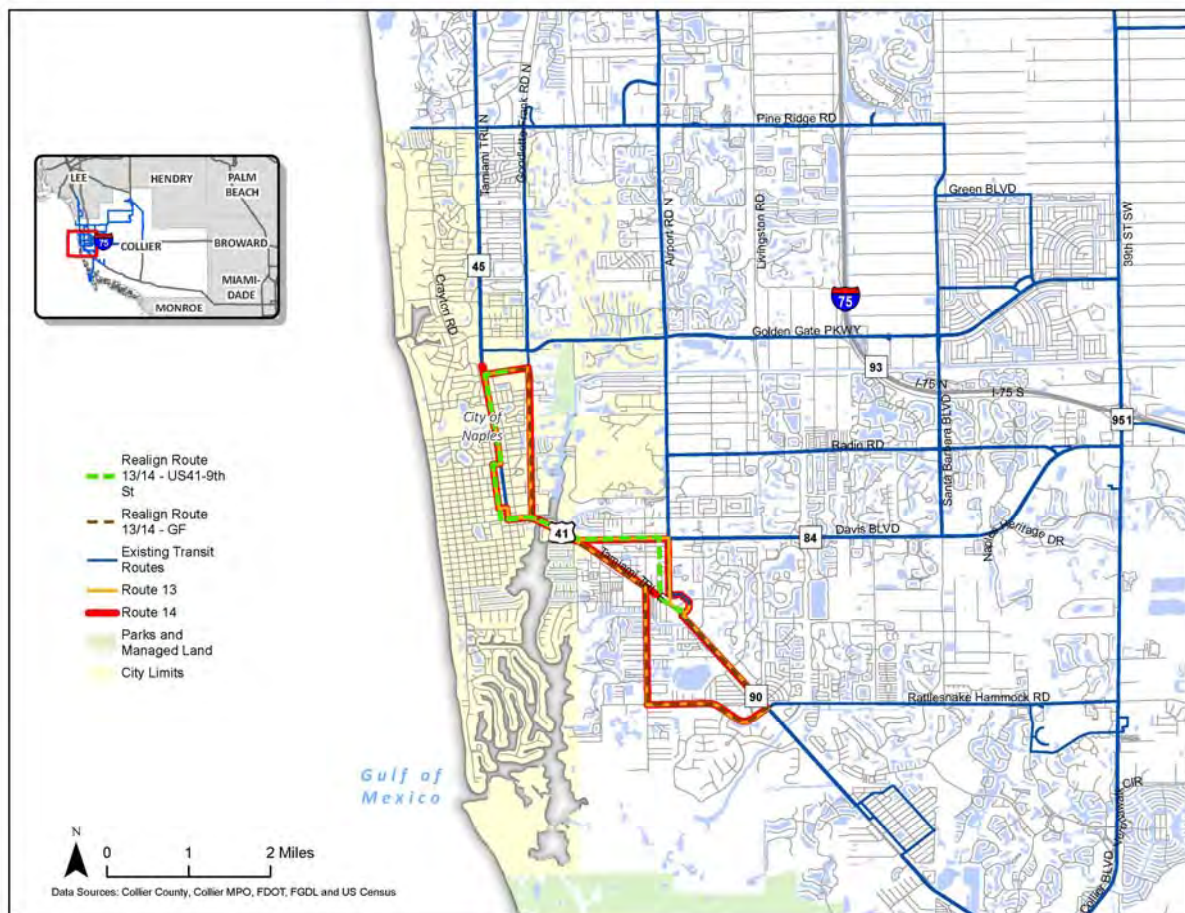
To improve directness of service, eliminate large loops, thereby reducing network redundancy, improving travel times, providing more direct connections, and simplifying route information for riders, the following route and network improvements are proposed. The objective of these recommendations is to streamline the route and network structure. The route extensions and realignments work in tandem with other route improvements, and several route pairs proposed below combine separate one-directional routes to serve as single bidirectional routes:

- **Extend Route 11** – Establish a minor extension of the north endpoint, travel time permitting, to travel along Creekside Boulevard, north on Arthrex Boulevard, and then west on Immokalee Road to provide service to the Walmart on Tamiami Trail and Immokalee Road,

pending agreements with the property owner. This extension will enhance connectivity to other improved routes such 12, 25, and 27. Other considerations include, connecting to the LinC at Walmart on Tamiami Trail and Immokalee Road rather than the existing location at Creekside and Immokalee Road.

- **Extend Route 12** – The western portion of Route 12 ends on Immokalee Road and Creekside Way. The proposed improvement would extend service into Walmart and other shopping plazas at the intersection of Tamiami Trail and Immokalee Road.
- **Realign Routes 13 and 14** – Routes 13 and 14 operate as a one-way pair; combining them would make the routes easier to understand from the rider perspective and save service hours. The proposed alignments straighten and simplify the routes into two bidirectional routes operating between Coastal Mall and the Government Center; one would operate along 9<sup>th</sup> Street/Tamiami Trail, the other along Goodlette-Frank Road. The proposed realignment will shorten Route 13 making its headway 40 minutes while the Route 14 would operate at a headway of 60 minutes. Map 9-2 illustrates the proposed alignments for routes 13 and 14.

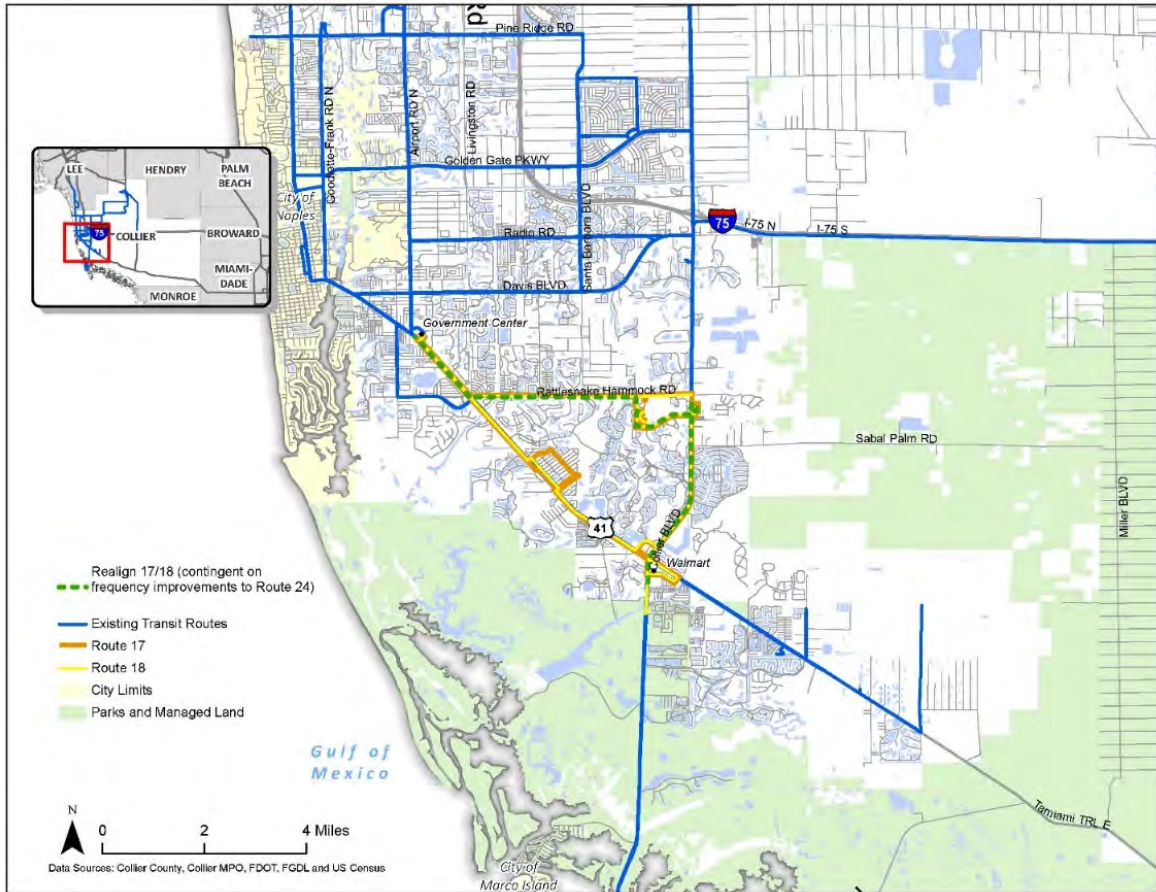
**Map 9-2: Proposed Route 13/14 Realignment**



- **Realign Routes 17 and 18** - Routes 17 and 18 comprise two one-way loops operating in opposite directions. The existing routing follows from the Government Center along Tamiami Trail to Rattlesnake Hammock Road to Collier Blvd to the Super Walmart at Tamiami Trail and then along Tamiami Trail back to the Government Center. To provide improved service levels and better ease of use, these routes will be combined along the portion from the Government Center along Tamiami Trail to Rattlesnake Hammock Road to Collier Blvd to the Super Walmart at Tamiami Trail. The portion of the Route along Tamiami Trail to Rattlesnake Hammock road will be served by increasing the frequency of Route 24 which runs from The Government Center along Tamiami Trail southeast towards Everglades City. See Map 9-3.
- **Realign Routes 17 and 18** – Routes 17 and 18 operate as a one-way pair to provide service between the Government Center along Rattlesnake Hammock Road, Collier Boulevard, and Tamiami Trail, with destinations such as Walmart Supercenter on Collier Boulevard. To provide a more grid-like network, simplify the routes, and reduce redundancy, the proposed improvement would no longer provide service along Tamiami Trail. This improvement is contingent on frequency improvements to Route 24 to ensure no loss of transit service to the Naples Manors area and Tamiami Trail between Collier Boulevard and Rattlesnake Hammock Road. Map 9-4 illustrates the proposed alignments for routes 17 and 18, which eliminates service along Tamiami Trail between Rattlesnake Hammock and Collier Boulevard but would provide bidirectional service from the Government Center to Rattlesnake Hammock to Collier Boulevard before deviating to Florida Southwestern State College and Physician’s Medical Center on Collier Boulevard and finally to Freedom Square Plaza and the Walmart Supercenter on Collier Boulevard.

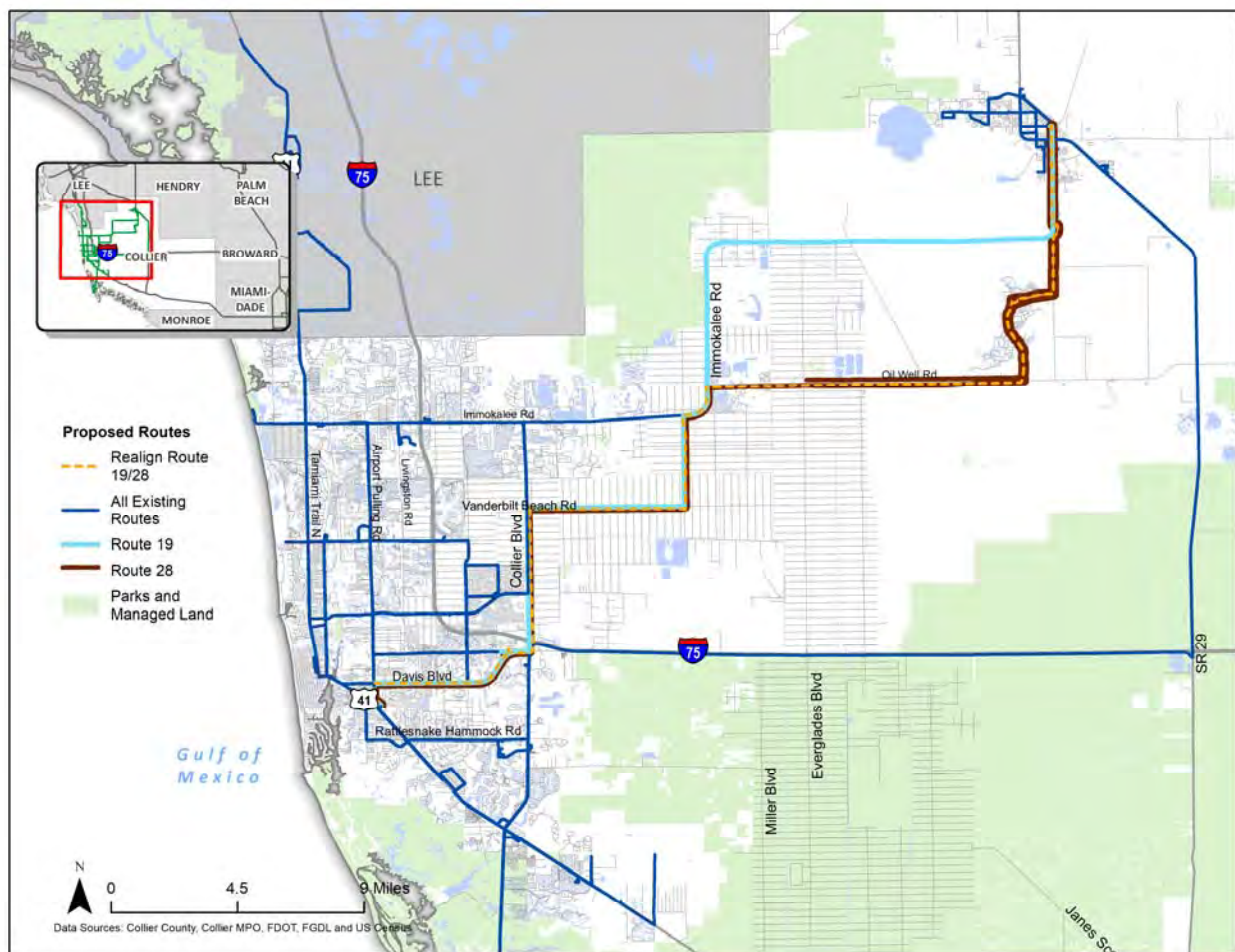


**Map 9-3: Proposed Route 17/18 Realignment**



- Realign Routes 19 and 28** – Routes 19 and 28 provide service from the Health Department in Immokalee to the Government Center using the same path, except Route 19 currently serves Immokalee Road instead of Ave Maria and Oil Well Road. To simplify the route, eliminate redundancy, and eliminate unproductive route segments, it is proposed to eliminate Route 19 and combine the service hours into Route 28 with increased frequency. Combining the routes would eliminate service along the large bend on Immokalee Road at which a major development is anticipated in the future. As development grows in this area, CAT should consider realigning the route to serve this area as demand manifests. Map 9-4 illustrates the proposed alignment for the Route 19/28 combination.

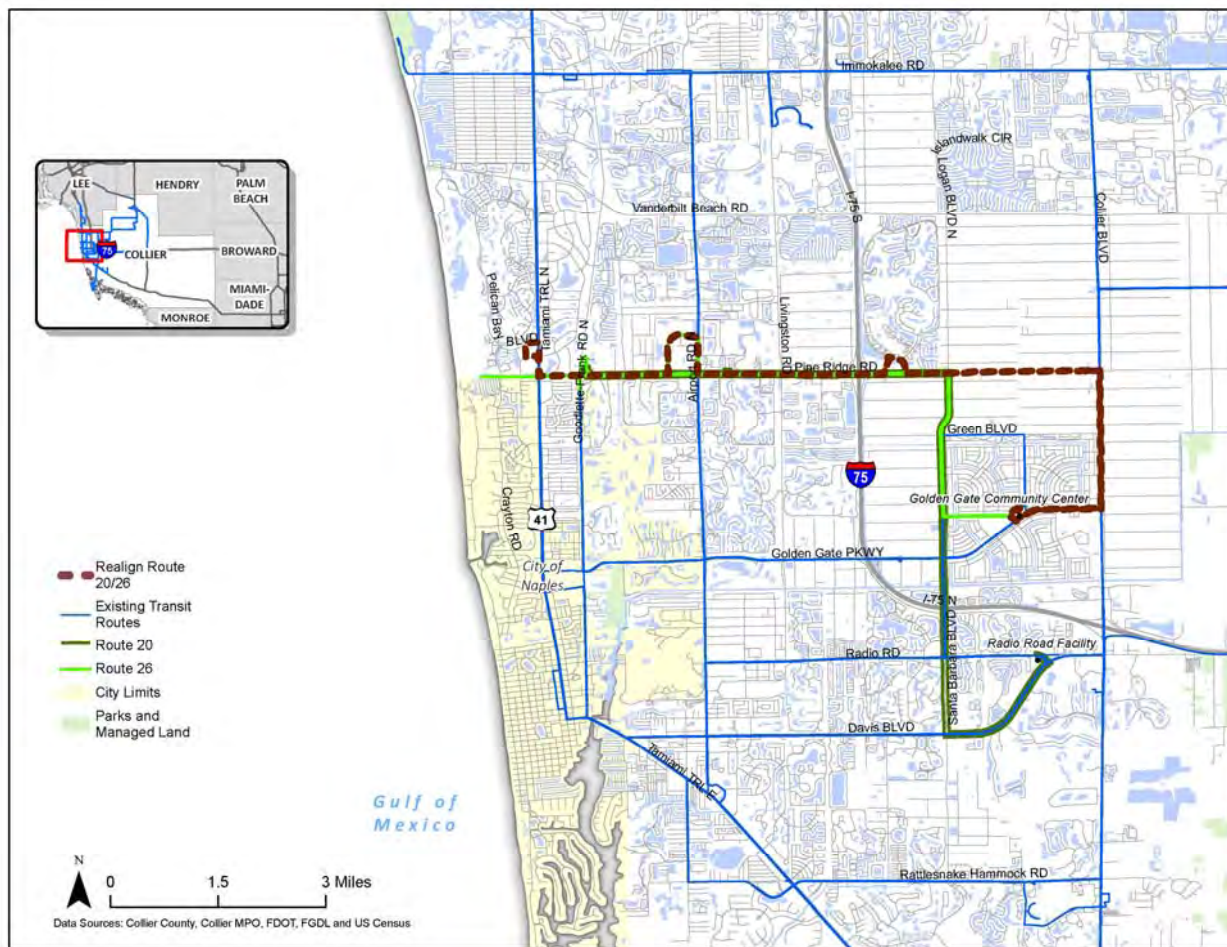
**Map 9-4: Proposed Route 19/28 Realignment**





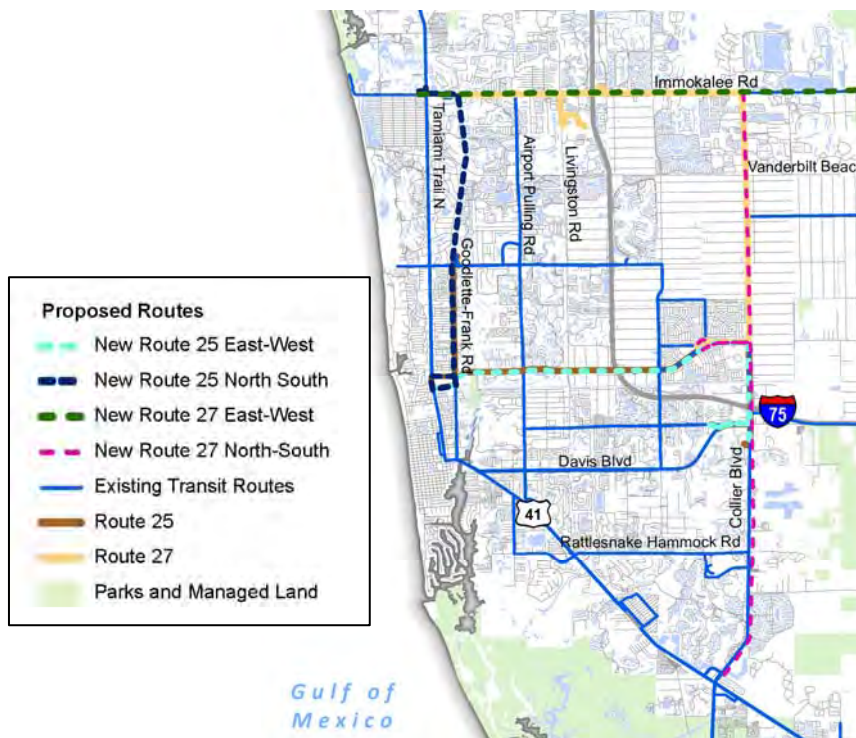
- Realign Routes 20/26** – Routes 20 and 26 are redundant along Pine Ridge Road and Santa Barbara Boulevard, and each provides three roundtrips per day. Combining the routes would improve frequency and streamline service. The proposed route eliminates service to Clam Pass Park, instead beginning at the Philharmonic Center for the Arts and Waterside Shops, then continuing east on Pine Ridge Road before deviating to Shirley Street, an industrial area with a notably high-density threshold in employment. The route would then pass through Boulevard Shoppes on Naples Boulevard, head south on Airport Pulling Road, and then east on Pine Ridge Road, and service the Physicians Regional Medical Center–Pine Ridge before stopping at the Golden Gate Community Center. The route would finish at the CAT Radio Road Facility via Golden Gate Parkway, Santa Barbara Boulevard, and Davis Boulevard, as shown in Map 9-6.

**Map 9-5: Proposed Route 20/26 Realignment**



- **Marco Island Government Center Express (Route 21)** – This route would provide express service from Marco Island to the Walmart Supercenter on Collier Boulevard and potentially to the Government Center. Riders could access the express route using the proposed Marco Island MOD service and the Island Trolley, as discussed in the following section.
- **Split and extend Routes 25 and 27** – Routes 25 and 27 provide service in both the north-south and east-west directions. To create a more grid-like network, close gaps in transit service, and make the service easier to comprehend for riders, it is proposed that the routes be split where they change directions and extend them to provide more connectivity to destinations and other routes.
- The new Route 25 North-South alignment (Goodlette-Frank Road) would provide service along Goodlette-Frank Road from Immokalee Road to the Coastland Center Mall. The East-West alignment (Golden Gate Parkway) would connect Coastland Center Mall to the Golden Gate Community via Golden Gate Parkway before turning south on Collier Boulevard, where it would service Walmart and the CAT Radio Facility.
- Route 27 North-South (Collier Boulevard) would provide service along Collier Boulevard from Immokalee Road to Tamiami Trail with a deviation to the Golden Gate Community Center on Golden Gate Parkway. Route 27 East-West (Immokalee Road) would provide service along Immokalee Road from Walmart on Tamiami Trail to the Publix shopping center at Immokalee Road and Oil Well Road. Map 9-7 illustrates the proposed alignments for Routes 25 and 27.

**Map 9-6: Proposed Alignments for Routes 25 and 27**

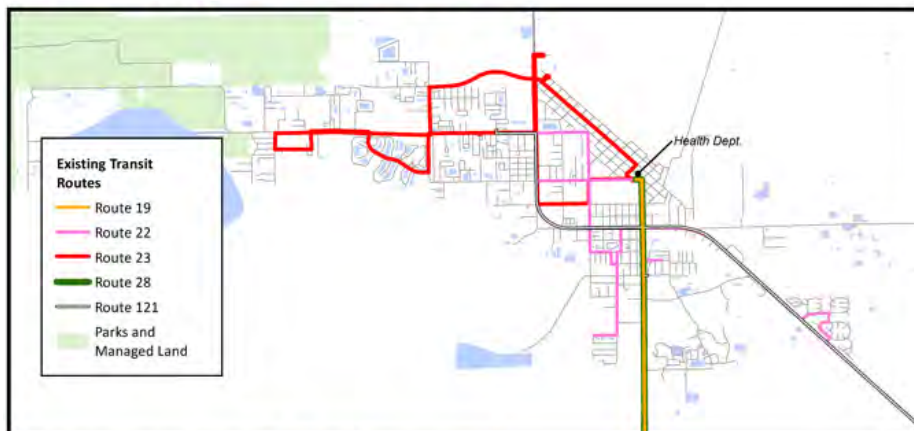




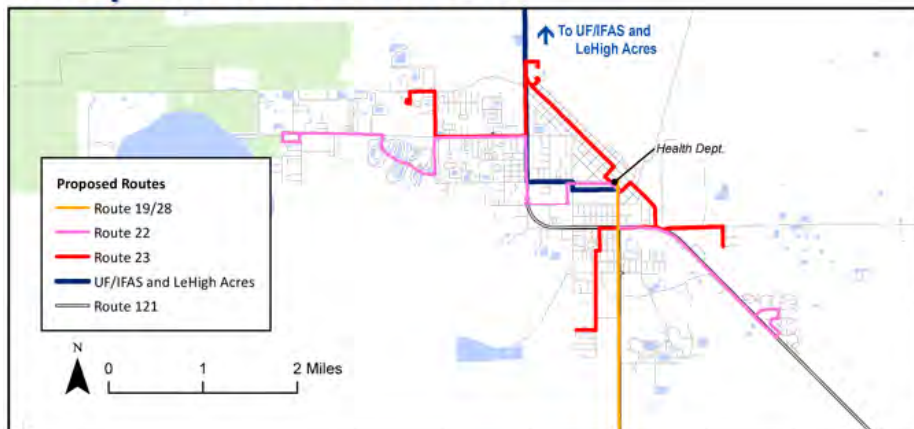
- **Route 22** – This proposed route would realign Route 22 to streamline circulation in Immokalee, reduce duplication with Route 23, reduce the need for transfers between routes 22 and 23, and extend service east along Main Street and to the various packing houses that employ approximately 20,000 employees. Other destinations include Immokalee State Farmer’s Market, Marion Fether Medical Center, the County Health Department, and Career Source. Map 9-8 illustrates the proposed New Market Road Route alignment.
- **Route 23** – This proposed route would realign Route 23 to provide direct connections between residential areas to several destinations while expanding the service area. The route would connect the westernmost residential cluster on Lake Trafford Road to the County Health Department, several packing houses along New Harvest Road, and finally to the easternmost residential cluster on Farm Workers Way. A deviation to provide service to the Roberts Center should be considered as an alternative alignment. Map 9-8 illustrates the proposed New Main Street Route alignment.

**Map 9-7: Existing and Proposed Network in Immokalee**

## Existing Network



## Proposed Network



### 9.2.2 New Service

- **Island Trolley** – This fixed-route would travel along Collier Boulevard on Marco Island and connect to the realigned Route 21 Marco Island – Government Center Express route. It is envisioned that two vehicles are needed for 30-minute headways and that service would be a hop-on/hop-off type fare free service.
- **New UF/IFAS and Lehigh Acres Route** – A need to connect Immokalee to the University of Florida/IFAS satellite campus and Lehigh Acres was identified during public outreach. However, roadway constraints do not allow for transit vehicles to enter and exit the UF/IFAS campus. Further study is recommended for the final alignment and endpoint of this route and to determine the demand and costs. This service should be explored jointly by CAT and LeeTran based on mutual considerations and consensus.
- **I-75 Premium Express** – It is envisioned that this route would be a premium service such as an express commuter service that would begin service at the Government Center, head north on Airport Pulling Road, turn east on Radio Road, north on Livingston Road, east on Golden Gate Parkway and go north on I-75 before ending at the Florida Gulf Coast Town Center. The northern terminus and operating plan requires coordination with LeeTran. The route would require one vehicle to provide 90-minute headway service from 6 AM to 8 PM. Further study is recommended for the final alignment and endpoint of this route and to determine the demand and costs.
- **Bayshore Drive Electric Shuttle** – The Bayshore Community Redevelopment Agency (CRA) has requested that CAT help mitigate parking needs by operating two shuttles within the Bayshore CRA. This route is envisioned as a fixed-route electric shuttle that would operate as a free hop-on/hop-off service, similar to the Beach bus, along Bayshore Drive, an area that has a growing vibrant nightlife and leisure culture. A survey was conducted by the Bayshore CRA to introduce the proposed service and vehicle, gauge community support, and identify the most visited destinations in the Bayshore Area. The route would require one vehicle to provide 15-minute headway service from Weeks Avenue to the Naples Botanical Garden from 11:00 AM to 9:00 PM.

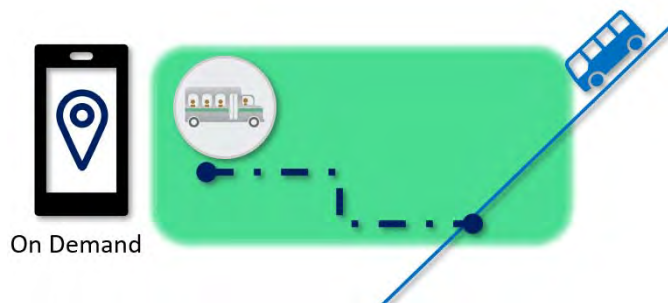


- **Downtown Autonomous Circulator** – The downtown autonomous circulator concept was developed as part of an effort to create a conceptual roadmap for CAT’s sustainable future and to address the parking shortage in Downtown. The circulator would begin on S 4<sup>th</sup> Avenue on S 9<sup>th</sup> St to S 3<sup>rd</sup> Street and go south along S 3<sup>rd</sup> Avenue to S 13<sup>th</sup> Avenue.
- **Electric Naples Pier Shuttle** – The electric shuttle concept was developed as part of an effort to create a conceptual roadmap for CAT’s sustainable future and to alleviate the demand for parking in Downtown. The circulator would begin at the Naples Pier and run along Broad Avenue with a stop at Crayton Cove, before going north along S 8<sup>th</sup> Street to S 6<sup>th</sup> Avenue.



### 9.2.3 Mobility-on-Demand (MOD)

MOD uses on-demand information, real-time data, and predictive analytics to provide travelers with transportation choices that best serve their needs and circumstances. MOD service can be requested via a mobile app or website or by calling CAT. MOD service is designed to localize mobility (e.g., home to grocery store) and to provide connections to the fixed-route transit network for longer trips (e.g., home to bus stop to catch bus downtown). MOD is designed to work well in areas in which fixed-route service may not be nearby, where customers have limited mobility access to bus stops, or where the necessary infrastructure is not available for safe or convenient access to bus stops. MOD service is designed to operate as a point-to-point service in response to customer requests (immediate or scheduled for a future time).



When considering MOD service, input from public involvement, demographic characteristics, and the nature of the existing route network were considered. Many neighborhoods in proposed MOD zones have dead-ends and non-uniform street grids, thereby diminishing connectivity and walkability to bus stops. MOD zones are intended fulfill unmet needs in these areas. In addition, MOD service is intended to be accessible by all, including the general public and ADA-eligible persons. It, therefore, can be used to meet growing demand for ADA service and may serve as a replacement for traditional ADA service. Travel may be accommodated within a zone and may overlap into adjacent zones to complete short trips that cannot be served conveniently by fixed-route service. It can also be considered to supplement transit service in areas where transit services are being reduced due to decreased demand.

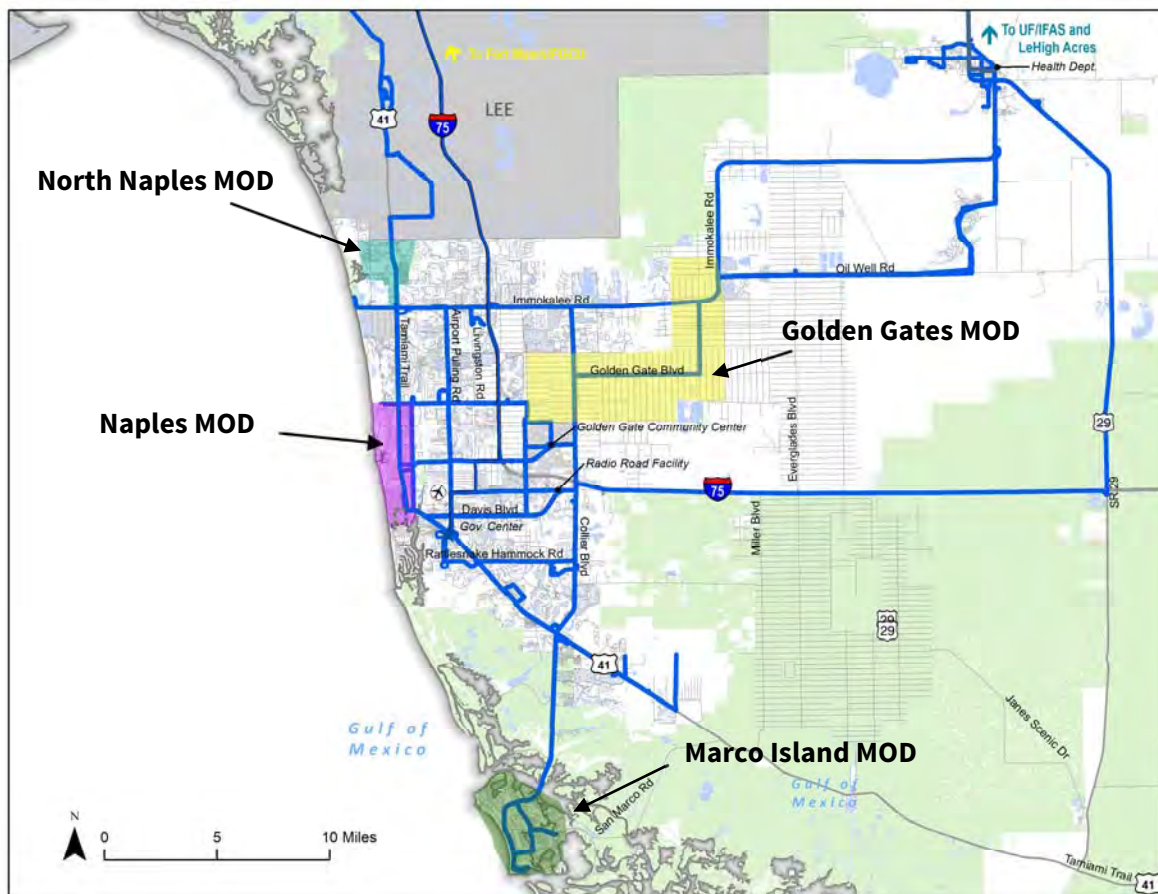


It is recommended to obtain a Software-as-a-Service (SaaS) cloud-based platform and operate MOD service as an additional CAT Connect service. CAT may also elect to assess options to contract MOD operations as a Mobility-as-a-Service (MaaS) through a contract with a third party. However, this will reduce potential for CAT to leverage MOD as a way to supplement or shift TD/ADA demand from CAT Connect to MOD.

The following potential MOD zones were identified and are illustrated in Map 9-9:

- **Golden Gate Zone** – This large MOD zone would include areas of Golden Gate Estates, a large development east of I-75. This zone currently has a high demand for paratransit service and would provide transit service to areas currently underserved by fixed-route transit; most are low-density and may require three vehicles in the peak and two during the off-peak to operate due to poor roadway connectivity.
- **North Naples Zone** – This MOD zone was identified in the gap analysis as an area currently underserved by transit. This zone would cover the northeast quadrant of Collier County, which includes areas with high and very high TOI. The zone borders Bonita Beach Road and extends as far south as Immokalee Road and would serve areas east and west of US-41 as well as areas east and west of Old US- 41 Road.
- **Naples Zone** – This MOD zone would cover areas associated with high employment densities and areas with high and very high TOI as well as areas that are often difficult to navigate with regular fixed-route vehicles. Zone 5 spans the beach from Broad Avenue to Pine Ridge Road as far east as Goodlette-Frank Road.
- **Marco Island Microtransit** – This microtransit service would serve Marco Island and provide transfer opportunities to the proposed Island Trolley route. This service would likely require more than one vehicle, as it would continue to provide connections to other routes in the CAT network. Marco Island is also another area in CAT service that has medium to high TOI.

**Map 9-9: Proposed Mobility on Demand Zones**



## 9.2.4 Vanpooling

Vanpooling was suggested by a representative of Collier County, and FDOT District 1 indicated that it would work with the County to establish a districtwide vanpool program sometime in the first quarter of the next fiscal year. Vanpooling may be possible for rural communities such as Everglades City. The proposed program could connect commuters from Everglades City to the Government Center.

## 9.3 Capital/Infrastructure

### 9.3.1 Park-and-Ride Lots

A CAT park-and-ride study conducted by Jacobs is currently underway to identify and develop a standardized methodology for locating, operating, and maintaining park-and-ride sites in Collier County. The study will consider each site's proximity to:

- Existing and planned transit routes
- Major employment locations
- Educational facilities
- Tourist destinations

Recommendations from the study should be added to future TDP updates.

### 9.3.2 Technology

The existing systems used by CAT are providing route and vehicle information in real-time via an interface to passengers, dispatchers, and supervisory personnel, and CAT has already deployed technology on both fixed-route and paratransit service. The agency is currently evaluating the feasibility of upgrading and possibly consolidating and implementing new intelligent transportation systems (ITS) technologies to improve the overall quality of transit service. Schweiger Consulting is conducting this study using a systems engineering analysis (SEA) approach. The study will summarize the results of a business and technical needs assessment, identify technologies that should be upgraded, and identify new technologies that may address CAT's goals, objectives, and needs. Needs related to technical enhancements noted in the study include the following:

- Implement fixed-route scheduling software.
- Replace or upgrade paratransit scheduling and dispatching software.
- Replace or upgrade computer-aided dispatch (CAD)/Automatic Vehicle Location (AVL) for fixed-route with supervisor remote laptop access.
- Install an Automatic Passenger Counter (APC) system for fixed-route vehicles.
- Install an Automatic Vehicle Announcement (AVA) system for fixed-route vehicles.
- Implement a transit signal priority (TSP) system.
- Update or replace the fare logistics fare collection system.
- Make on-board surveillance system enhancements.
- Establish a paratransit fare payment system.
- Install an Interactive Voice Response (IVR) system.
- Implement an on-board information media system.

According to the study, if CAT decides to replace the Avail CAD/AVL system, there will be an opportunity to replace most of the current RTIS components, including:

- **Next Arrival Prediction Software** – uses the latest location and route/schedule adherence data to periodically establish updated predictions for fixed-route vehicle arrival times at stops throughout the system
- **Dynamic Message Signs (DMS)** – provides current next arrival predictions directly to customers at selected stops using electronic displays
- **Web Access** – provides current fixed-route next arrival predictions directly to customers for all stops throughout the system via a website that allows customers to select a specific route, direction, and stop
- **Smartphone Access** – provides current fixed-route next-arrival predictions directly to customers for all stops throughout the system via smartphone apps that allow customers to select a specific route, direction, and stop; the app also can use the phone's built-in GPS to locate the closest stop to the user's current location

- **Interactive Voice Response (IVR) Phone Access** – provides current fixed-route next-arrival predictions directly to customers for all stops throughout the system via a telephone system that allows customers to select a specific route, direction, and stop; also allows for automated reminders, confirmations, and cancellations of paratransit trips

During the Phase II outreach, a need for a system that enables riders to know bicycle rack availability with bicycle sensors was expressed. Such information would enhance reliability for users. This type of sensor could also be used to show availability of wheelchair areas in real time using a smartphone application.

## 9.4 Policy/Other

Policy recommendations and other improvements for CAT's transit service include:

- Pursuit of public-private partnerships with Marriott and other hotels in Marco Island to support Route 21 and pilot MOD service.
- A more detailed review of the existing CAT routes and network, particularly in Immokalee and potential connections to the UF IFAS satellite campus and Lehigh Acres is needed. Potential service along I-75 and Santa Barbara Boulevard also require further study. A study that explores the Everglades City vanpooling program as well as a transit hub along Immokalee Road is also recommended.
- A fare study is recommended
- An MOD study is recommended
- Brand buses on the beach and associated with proposed MOD services.
- Create a transfer station along the urbanized area of Immokalee Road to facilitate passenger transfers and provide a place for vehicle staging and for driver relief.

## 9.5 Evaluation of Alternatives

The remainder of this section summarizes the evaluation process for service alternatives developed for the CAT TDP. Because many alternatives are identified, ranging from expansion of existing routes to implementation of new routes, it is important for CAT to prioritize these improvements to effectively plan and implement them within the next 10 years using existing and/or new funding sources.

### 9.5.1 Alternatives Evaluation Methodology

A quantitative-qualitative methodology was developed to evaluate and prioritize the transit alternatives presented in the previous section. To prioritize and program these service improvements, it was important to weigh the benefits of each service improvement against the others. By conducting an alternatives evaluation, CAT can better prioritize projects and allocate funding using an objective prioritization process. The remainder of this section identifies and defines the evaluation criteria used to prioritize the service improvements.



Three evaluation categories are identified for determining criteria for the evaluation:

- Public Outreach
- Transit Markets
- Productivity and Efficiency

Table 9-1 lists these evaluation categories and their corresponding criteria, the associated measure of effectiveness, and the assigned weighting for each criterion. A description of the elements in the table follows.

**Table 9-1: Alternatives Evaluation Measures**

Category	Criteria	Measure of Effectiveness	Relative Weighting	Overall Category Weight
Public Outreach	Public Input	Level of interest in specific alternatives (Very High, High, Moderate, Low)	40%	40%
Transit Markets	Traditional Market	Percent serving poverty	15%	30%
	Proximity to Employment Market	Percent of countywide employment market served	15%	
Productivity and Efficiency	Productivity	Trips per hour (T-BEST-generated trips and revenue hours of service)	15%	30%
	Cost Efficiency	Cost per trip (including new trips)	15%	
Total			100%	100%

### Public Outreach

Due to the COVID-19 pandemic that began in March 2020, the public outreach process conducted for the CAT TDP 10-year planning effort was modified to be a virtual process. The outreach resulted in numerous opinions and suggestions on transit services from workshop discussion groups involving transit users and nonusers, local governments, business and social organizations and an online survey. In addition, the public outreach process included three working group discussions with policy leaders to gauge their views on transit services and provide technical advice. Based on an in-depth review of input from this public outreach effort, interest in a particular route or type of service was categorized as “None,” “Moderate,” or “High” in the alternative evaluation process.

### Transit Markets

For the evaluation of alternatives, two transit markets were identified—the traditional market and the employment market.

- **Traditional Market** – Existing population segments that historically have a higher potential to use transit and/or are dependent on public transit for their transportation needs include those that fall under the federal poverty level. For the alternatives evaluation, the percent serving poverty was calculated as the percent of poverty serviced by each route using Remix using ACS 2018 5-Year Estimates.

- **Proximity to Employment Market** – The total number of private jobs countywide served by each potential service option, based on information produced through Remix using LODS 2017 data.

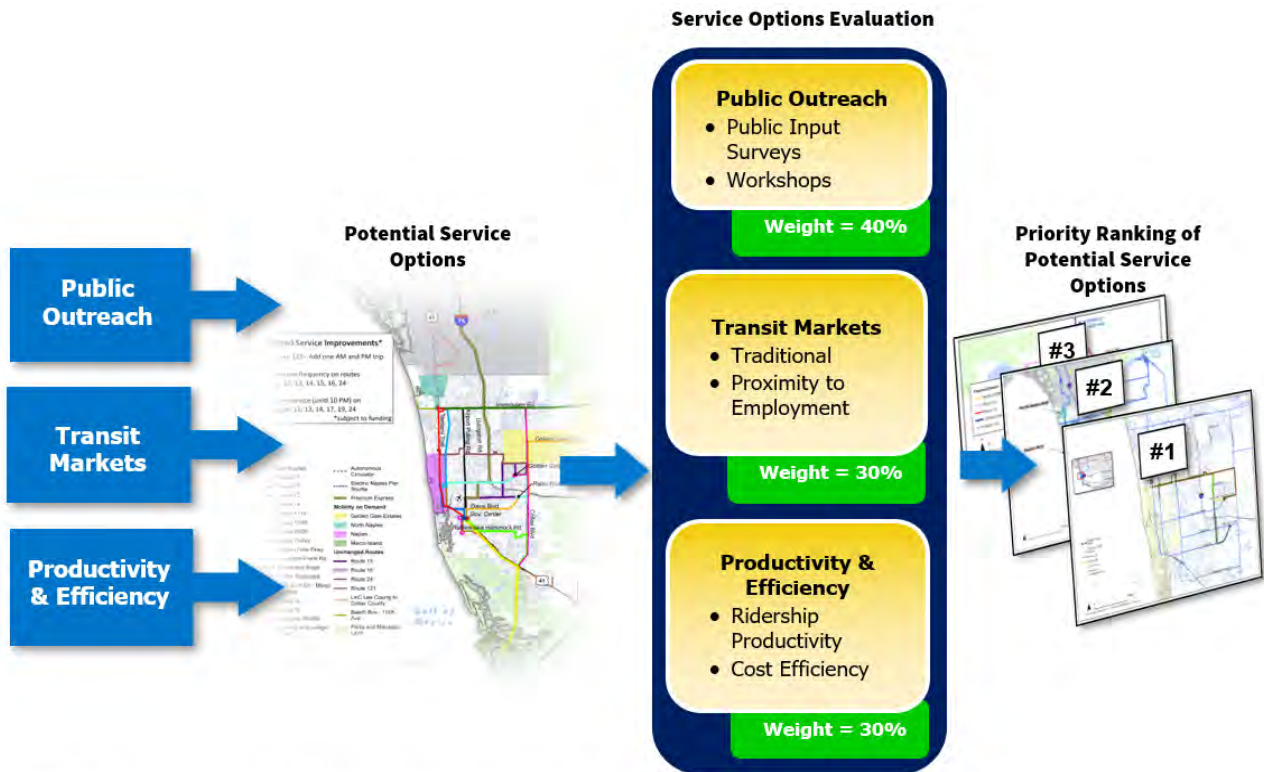
### Productivity and Efficiency

Productivity is generally measured in terms of ridership. Service efficiency is used by transit agencies to gauge how well they are using their existing resources. Each measure is critical to the success of the agency, and services performing well in terms of their productivity and efficiency should receive a higher priority. Forecast ridership, revenue hours, and operating cost figures for each individual alternative are used in this measure.

- **Ridership productivity** is measured in terms of annual passenger trips per revenue hour of service. To provide for an equal comparison between alternatives, passenger trips and revenue hours of service were generated using output from T-BEST 2030 ridership projection data.
- **Cost efficiency** is evaluated for each alternative using a standard transit industry efficiency measure, operating cost per passenger trip. Operating costs used are calculated using operating cost per trip based on CAT performance data and T-BEST 2030 ridership projection data.

Figure 9-10 shows the 10-year transit service alternatives evaluation process, including criteria, measures, and weights used for each category. A summary of various criteria and measures used in each tier, as well as the alternatives scoring thresholds, are presented in the remainder of this section.

**Figure 9-10: Alternatives Evaluation Measures**



<sup>1</sup> For illustration purposes only. See list of alternatives summarized previously.

### Alternative Scoring Thresholds

As noted, each criterion is assigned a weight. Weighting the criteria affords the opportunity to measure the relative importance of each among the group of criteria to be applied. For each transit alternative, a score was determined either through the computation of the selected measure of effectiveness or through the educated judgment of the analyst. Potential scores were assigned depending on the relative comparison of a given transit alternative with other transit alternatives as it relates to a given criterion. A higher score is consistent with a higher ranking for a given alternative for the criterion being evaluated.

The thresholds for computation-based criteria were determined using the average of the entire data set and one standard deviation above or below the average. Table 10-2 shows the thresholds and scoring for each criterion used in the alternatives evaluation.

**Table 9-2: Alternatives Evaluation – Scoring Thresholds**

Criteria	Range	Score
Public Input (Interest in Improvement)	None	1
	Moderate	3
	High	5
	Very High	7
Traditional Market Potential (% Serving poverty)	Less than (Average – 1 STDEV)	1
	Between (Average – 1 STDEV) to Average	3
	More than Average to (Average + 1 STDEV)	5
	More than (Average + 1 STDEV)	7
Proximity to Employment (Total Number of Private Jobs)	Less than (Average – 1 STDEV)	1
	Between (Average – 1 STDEV) to Average	3
	More than Average to (Average + 1 STDEV)	5
	More than (Average + 1 STDEV)	7
Productivity (Trips per Hour)	Less than (Average – 1 STDEV)	1
	Between (Average – 1 STDEV) to Average	3
	More than Average to (Average + 1 STDEV)	5
	More than (Average + 1 STDEV)	7
Cost Efficiency (Operating Cost per Trip)	More than (Average + 1 STDEV)	1
	More than Average to (Average + 1 STDEV)	3
	Between (Average – 1 STDEV) to Average	5
	Less than (Average – 1 STDEV)	7

Note: STDEV = statistical standard deviation.

### 9.5.2 Alternative Evaluation Results Summary

Each alternative was evaluated using the process summarized above, and the detailed results of the evaluation are presented in Table 9-3. From this process, each alternative received a score. The alternatives were then separated by improvement type (i.e., route network/new service, frequency improvements and span improvements), and ranked based on their respective score. Table 9-4 presents the prioritized list of improvements based on this process.

Note that improvements like MOD, Naples Pier Electric Shuttle, and the Autonomous Circulator were not included in the technical analysis due to the limitations in the ridership estimation model.



**Table 9-3: Alternatives Evaluation**

Evaluation Criteria		Route 11 Extension	Route 12 Extension	Route 13 Realign	Route 14 Realign	Route 17/18 Realign	Route 19/28 Realign	Realign 20/26	Route 21 New Gov Center-Marco Express	Route 22 and 23 Realign	New Route 28 EW	New Route 23 NS	New Route 21 EW	New Route 21 NS	New Island Trolley	New I-75 Premium Express	New Bayshore Shuttle
Public Involvement	Level of Support	Moderate	Moderate	High	High	High	High	Moderate	Moderate	Very High	Moderate	High	High	Moderate	Moderate	Moderate	Moderate
	Score	3	3	5	5	5	5	3	3	7	3	5	5	3	3	3	3
	Weight	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
Traditional Market	% Poverty	11.484%	11.320%	14.407%	15.494%	10.857%	16.509%	13.729%	13.872%	42.585%	14.477%	8.612%	7.819%	15.268%	7.127%	16.461%	22.86%
	Score	3	3	3	5	3	5	3	3	7	3	1	1	5	1	5	7
	Weight	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Employment Market	Private Jobs	41595	33646	21406	24889	8470	12606	24163	9924	4086	12700	15449	8563	5514	4117	15022	3328
	Score	7	7	5	5	3	3	5	3	1	3	3	3	1	1	3	1
	Weight	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Boardings per Hour	Trip/Hour	17.20	12.60	15.90	15.80	33.30	7.20	10.60	12.80	20.40	5.20	6.80	1.80	2.80	16.00	5.70	2.10
	Score	5	5	5	5	7	3	3	5	7	3	3	1	1	5	3	1
	Weight	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Operating Cost per New Trip	Cost /Trip	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$3.76	\$0.00	\$6.77	\$6.77	\$40.47	\$40.47	\$3.76	\$16.11	\$27.09
	Score	7	7	7	7	7	7	7	5	7	5	5	1	1	5	3	3
	Weight	15%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total Score		4.50	3.45	3.95	4.25	3.95	3.65	2.85	2.85	5.05	2.55	3.05	2.75	2.25	2.25	2.85	2.55

Evaluation Criteria		Route 121 Add one AM and one PM	Route 11 to 20 min	Route 12 to 30-min peak 60-off peak	Route 13 to 30 min	Route 14 to 30 min	Route 15 to 45 min	Route 16 to 45 min	Route 24 to 60-min	Route 11 (until 10 PM)	Route 13 (until 10 PM)	Route 14 (until 10 PM)	Route 17 (until 10 PM)	Route 19 (until 10 PM)	Route 24 (until 10 PM)
Public Involvement	Level of Support	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High	Very High
	Score	7	7	7	7	7	7	7	7	7	7	7	7	7	7
	Weight	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
Traditional Market	% Poverty	22.50%	11.48%	11.36%	13.92%	13.92%	17.14%	17.14%	15.26%	11.48%	13.92%	13.93%	13.28%	17.09%	15.26%
	Score	7	3	3	3	3	5	5	5	3	3	3	3	5	5
	Weight	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Employment Market	Private Jobs	8467	41597	33164	26604	26558	19189	19238	8068	41597	26604	26558	9653	12074	8068
	Score	3	7	7	5	5	5	5	3	7	5	5	3	3	3
	Weight	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Boardings per Hour	Trip/Hour	19.73	14.70	11.70	6.80	6.50	14.70	8.60	7.30	7.20	11.20	14.50	1.60	5.50	5.30
	Score	7	5	5	3	3	5	3	3	3	5	5	1	3	3
	Weight	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Operating Cost per New Trip	Cost /Trip	\$11.87	\$14.00	\$6.12	\$8.04	\$9.62	\$5.42	\$10.45	\$15.17	\$24.05	\$11.85	\$8.00	\$115.25	\$40.19	\$30.87
	Score	5	5	5	5	5	5	5	5	3	5	5	1	1	3
	Weight	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total Score		5.35	5.05	5.05	4.45	4.45	5.05	4.75	4.45	4.75	4.75	4.75	3.85	4.45	4.45

**Table 9-4: Alternatives Ranking**

Proposed Improvement	Score	Rank
<b>Route Network and New Service</b>		
Route 22 and 23 realigned	5.1	1
Route 11 extension	4.5	2
Route 14 realign	4.3	3
Route 13 realign	4.0	4
Route 17/18 realign	4.0	4
Route 19/28 realign	3.7	6
Route 12 Extension	3.5	7
New Route 25 NS	3.1	8
Realign 20/26	2.9	9
New I-75 Premium Express	2.9	9
Route 21 New Gov Center - Marco Express	2.9	11
New Route 27 EW	2.8	12
New Route 25 EW	2.6	13
New Bayshore Shuttle	2.6	13
New Route 27 NS	2.3	15
New Island Trolley	2.3	15
<b>Frequency Improvements</b>		
Route 121 - add one AM and one PM	5.4	1
Route 15 to 45 min	5.1	2
Route 11 to 20 mins	5.1	3
Route 12 to 30-min peak, 60-off peak	5.1	3
Route 16 to 45 min	4.8	5
Route 13 to 30 min	4.5	6
Route 14 to 30 min	4.5	6
Route 24 to 60-min	4.5	6
<b>Later Service</b>		
Route 11 (until 10 PM)	4.8	1
Route 13 (until 10 PM)	4.8	1
Route 14 (until 10 PM)	4.8	1
Route 19 (until 10 PM)	4.5	4
Route 24 (until 10 PM)	4.5	4
Route 17/18 (until 10 PM)	3.9	6

## 10.0 Ten-Year Transit Plan

This section presents the recommended 10-year transit plan, including financial and implementation plans. First, the transit service, capital/infrastructure, technology, and policy improvements are summarized as unconstrained and constrained. Thereafter, a summary of the assumptions for capital and operating costs and revenues used in developing the TDP are presented, followed by the financial plan for the 10-year period. Next, the 10-year implementation program is presented for the CAT TDP.

### 10.1 Ten-Year Plan

The recommended improvements included in the 10-year TDP are the result of an extensive public outreach program and data review/evaluation process. The improvements identified fall into the categories of Service Improvements, Capital/Infrastructure Improvements, Technology, and Policy. These improvements are described in detail below.

#### 10.1.1 Vision Plan

Table 10-1 lists the Vision Plan proposed service improvements by phase; the plan represents a 10-year fiscally unconstrained plan. The first phase, FY 2020–2025, includes route network changes and frequency and span improvements that are to be prioritized in the 10-Year Implementation Plan. The second phase, FY 2026–2030, represents improvements that are lower in priority.

**Table 10-1: Vision Plan (Unconstrained)**

Improvement	FY 2020–2025	FY 2026–2030
Route Network	<ul style="list-style-type: none"> <li>Route 11 Extended</li> <li>Route 12 Extended</li> <li>Route 13 - Realigned, 60 to 40 headway</li> <li>Route 14 – Shorter</li> <li>Route 17/18 – combined</li> <li>Route 19/28 - combined, add trips</li> <li>Gov Ctr – Marco Express (Route 21)</li> </ul>	<ul style="list-style-type: none"> <li>Route 22 Realigned - Extended</li> <li>Route 23 Realigned, 60 to 40 headway</li> <li>Route 25 (EW and NS)</li> <li>Route 27 (EW and NS)</li> </ul>
Frequency	<ul style="list-style-type: none"> <li>Route 15 – 90 to 45-headway</li> <li>Route 16 – 90 to 45-headway</li> <li>Route 24 – 85 to 60-headway</li> <li>Route 121 – add AM and PM trip</li> </ul>	<ul style="list-style-type: none"> <li>Route 11 – every 30 to 20 minutes</li> <li>Route 12 – 90 to 45 minutes</li> <li>Route 13 – every 60 to 30 minutes</li> <li>Route 17/18 – 90 to 45 minutes</li> </ul>
Span Improvements (extend service to 10 pm)	<ul style="list-style-type: none"> <li>Route 11; Route 13</li> <li>Route 14; Route 17/18</li> </ul>	<ul style="list-style-type: none"> <li>Route 19/28</li> </ul>
New Service/Other	<ul style="list-style-type: none"> <li>Island Trolley</li> </ul>	<ul style="list-style-type: none"> <li>New I-75 Premium Express</li> <li>New Bayshore Shuttle</li> <li>Autonomous Circulator</li> <li>Naples Pier Electric Shuttle</li> <li>MOD (includes Marco Island)</li> <li>Vanpooling (Everglades City)</li> </ul>
Financial Estimates	<ul style="list-style-type: none"> <li>\$6,200,000 service plus inflation</li> <li>\$25,200,000 capital</li> </ul>	<ul style="list-style-type: none"> <li>\$63,100,000 service plus inflation</li> <li>\$28,000,000 capital</li> </ul>

### 10.1.2 Capital Infrastructure Improvements

- **Expand and improve bus stop infrastructure** – Improved infrastructure at bus stops, including benches, shelters, bicycle storage facilities, and other infrastructure, is included in the Cost Feasible Plan to enhance the rider experience while waiting for a bus and potentially attract new riders.
- **Improve bus stop safety and ADA accessibility** – Ensuring the safety all riders while accessing bus stops and waiting for a bus and guaranteeing that ADA requirements are fulfilled for all transit facilities are important to the overall safety and accessibility of the transit system.
- **Replace/add new vehicles** – Continued replacement of the existing vehicle fleet and the addition of new vehicles to serve the proposed service improvements and new routes are included in the Cost Feasible Plan.
- **Technology** – As noted in the Situation Appraisal, Schweiger Consulting is conducting a study regarding CAT’s technology needs. Needs related to technical enhancements noted in the study include the following:
  - Implement fixed-route scheduling software.
  - Replace or upgrade paratransit scheduling and dispatching software.
  - Replace or upgrade computer-aided dispatch (CAD)/Automatic Vehicle Location (AVL) for fixed-route with supervisor remote laptop access.
  - Install an Automatic Passenger Counter (APC) system for fixed-route vehicles.
  - Install an Automatic Vehicle Announcement (AVA) system for fixed-route vehicles.
  - Implement a transit signal priority (TSP) system.
  - Update or replace the fare logistics fare collection system.
  - Make on-board surveillance system enhancements.
  - Establish a paratransit fare payment system.
  - Install an Interactive Voice Response (IVR) system.
  - Implement an on-board information media system.

Schweiger Consulting will work with CAT to determine the relative priority and identify a phasing schedule for the following 10 years and a schedule of activities (e.g., specifications, request for proposals, development, procurement, and deployment).

- **Park-and-Ride Lots** – A CAT park-and-ride study conducted by Jacobs is currently underway to identify and develop a standardized methodology for locating, operating, and maintaining park-and-ride sites in Collier County. Study recommendations should be reviewed and implemented as applicable.

### 10.1.3 Policy

- Pursuit of public-private partnerships with Marriott and other hotels in Marco Island to support Route 21, the proposed Island Trolley and pilot MOD service.



- Brand buses on the beach and those associated with proposed MOD services.
- Conduct a Comprehensive Operations Analysis (COA) for a more detailed review of the existing CAT routes and network. Additional study is needed to review Immokalee, along Santa Barbara Boulevard, potential connections to the UF IFAS satellite campus and Lehigh Acres, express service on I-75 managed lanes and Everglades City Vanpool.
- Create a transfer hub along the urbanized area of Immokalee Road to facilitate passenger transfers provide a place for vehicle staging and for driver relief.
- Establish a coordinating committee with Planning Departments of the local municipalities to review transportation needs of new developments and to ensure there are provisions for transit.
- Adopt transit LOS policies to adopt in Collier County's land development regulations.
- Modify the Land Development Code and Development Review processes to include recommendations from the transit impact study by coordinating with Collier County and local municipalities.
- Begin coordination with LeeTran to explore a seamless fare system between LeeTran and CAT to facilitate travel between the two counties

## 10.2 10-Year Financial Plan

A financial plan was developed to help facilitate the implementation of CAT TDP improvements. Cost, revenue, and policy assumptions used to develop the financial plan are presented below, followed by a summary of cost and revenue projections for CAT. The summary includes annual costs for the service and technology/capital improvements that are programmed for implementation within the next 10 years together with supporting revenues that are reasonably expected to be available.

### 10.2.1 Operating Cost Assumptions

Numerous cost assumptions were made to forecast transit costs for 2021 through 2030. These assumptions are based on a variety of factors, including service performance data from CAT and information from other recent Florida TDPs. These assumptions are summarized as follows:

- Annual operating costs for fixed-route and paratransit services are based on the most recent validated NTD data.
- An annual inflation rate of 1.8% was used for all operating cost projections, based on the average Consumer Price Index (CPI) historical data from 2009–2019.
- Annual operating costs for future service enhancements are based on the projected annual service hours and cost per revenue hour of \$82.32 for fixed-route service and \$63.91 for paratransit service (both in 2018\$). The cost per hour was derived using historical and current cost per revenue hour data for existing services. The operating cost per hours figures are inflated annually using a 1.8% factor.

- Implementing the new route alignments represents increased levels of service in improvements such as Route 14, 19/28 and Route 23 with no additional costs.
- As ADA paratransit service is not required for express routes or MOD, it is assumed that any express, and MOD would not require complementary ADA paratransit services if implemented.

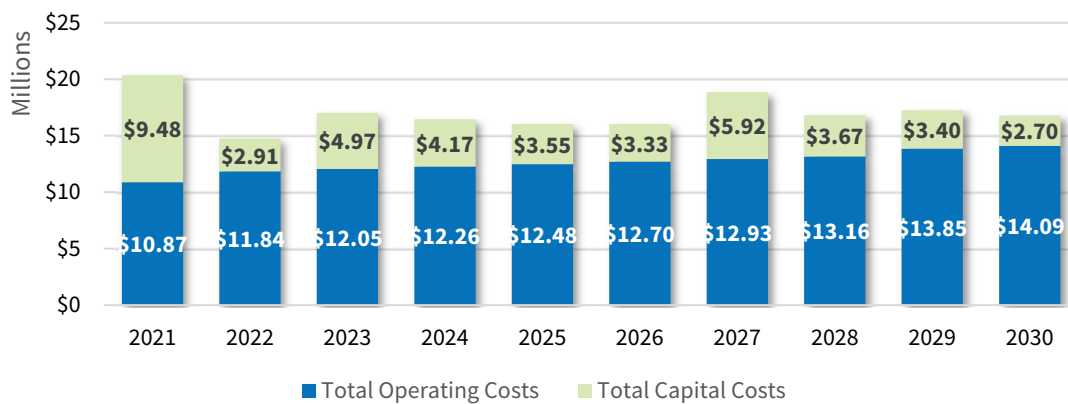
### 10.2.2 Capital Cost Assumptions

Several assumptions were developed to project the costs for capital needs identified previously and are summarized as follows:

- New vehicles planned to be purchased include those necessary to replace vehicles within the existing fleet that have reached the end of their useful life and vehicles to implement the new service.
- Vehicles are assumed to cost \$495,000 for fixed-route bus and \$71,217 for paratransit cutaway vehicles, based on information provided by the CAT. Twenty-one fixed-route vehicles and 58 paratransit vehicles will need to be purchased between 2020 and 2030.
- An annual growth rate of 1.8% was used for capital cost projections, based on average CPI historical data from 2009 to 2019.
- A 20% spare ratio was factored into the vehicle replacement and expansion schedule.
- A useful life for bus vehicle replacement is assumed to be 12 years. A useful life for paratransit vehicle replacement is assumed to be 7 years.
- The CAT FY 20/21 budget estimates 1% Enhancement Shelter Rehab to be \$28,829. Bus shelter expenses were assumed to be the same funding levels obtained from the FY 2021 Collier County Government Requested Budget with an annual inflation rate of 1.8%
- Technology costs for Avail replacement, APCs, annunciators, onboard information media and farebox replace were obtained from the draft budget, “FY20 5307 and 5307 Cares POP Draft.”

Figure 10-1 illustrates the operating and capital costs included in the 10-year TDP.

**Figure 10-1: Annual Operating and Capital Costs**



### 10.2.3 Revenue Assumptions

Revenue assumptions for fixed-route service are based on information from several State and local agencies. Assumptions for different revenue sources, including annual operating revenues from existing federal, State, and local sources, are based on the FDOT Adopted Five-Year Work Program (FY 2021–2025), the CAT FY 2018 TDP Annual Progress Report, and the Collier County Government FY 2021 Requested Budget . The distribution of 10-year operating revenues included in the 10-year Cost Feasible Plan are shown in Figure 10-2.

**Figure 10-2: 10-Year Operating Revenues**

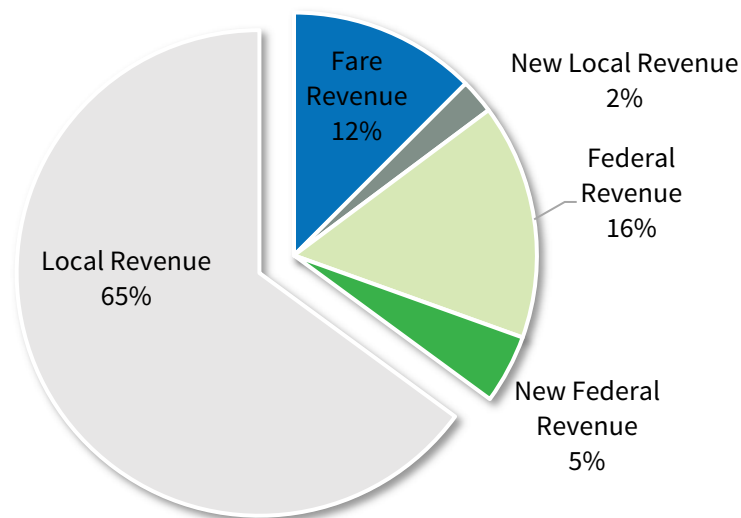
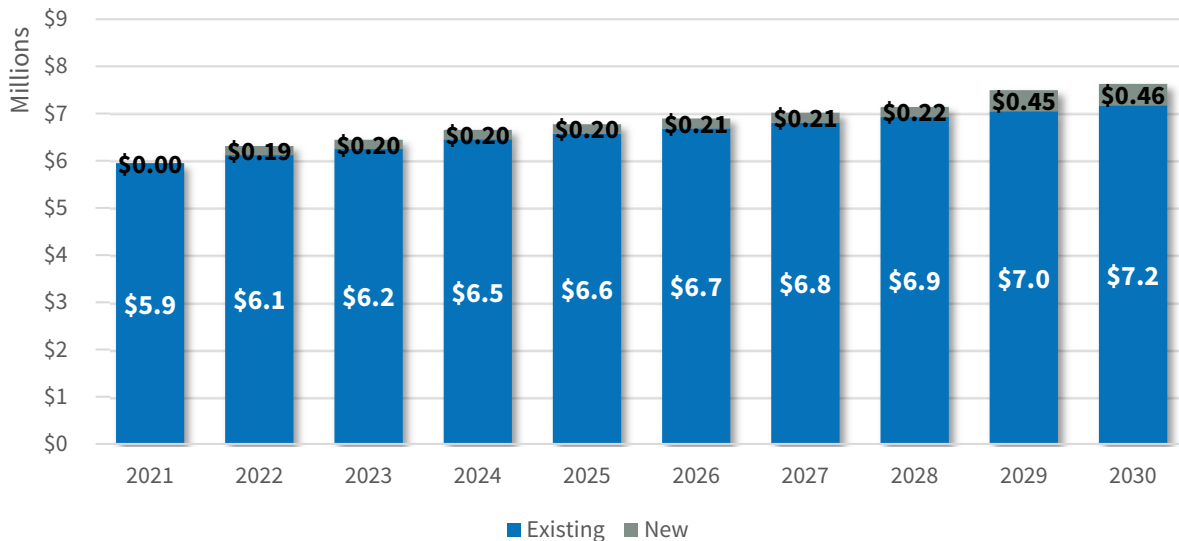


Figure 10-3 illustrates the total local revenue included in the 10-year Cost Feasible Plan. Local revenues for CAT are anticipated to increase at a moderate rate of 1.8% annually starting in 2023. Under this plan, new local revenue sources are expected to total \$2.3 million in the 10-year period.

**Figure 10-3: Local Operating Revenues for 10-Year TDP (millions)**



- Federal Grants 5307 and 5311 for operating assistance from FY 2021–FY 2025 was based on the FDOT Adopted Work Program FY 2021–2015 for Collier County. An annual growth rate of 1.8% was applied after FY 2021, which represents the 10-year average CPI to increase the revenue source.
- Federal and State grant 5305 funds for planning were based on the FDOT Adopted Work Program FY 2021–2015 for Collier County.
- Projected FDOT Block Grants revenues for 2021–2025 were obtained from the FDOT Adopted Work Program FY 2021–2015 for Collier County. A conservative annual growth rate of 1.8% was used to increase these revenues and thereafter were based on 10-year average CPI.
- Projected fare revenues for existing services are based on FY 2019 YTD Route Statistics data provided by CAT, with a conservative 1.8% annual growth rate applied.
- Projected local contributions were obtained from the FDOT Adopted Work Program FY 2021–2015 for Collier County. A conservative annual growth rate of 1.8% was used to increase revenues and thereafter was based on 10-year average CPI.
- Based on vehicle information provided by CAT staff, a total of \$11.2 million in capital funds was assumed in the 10-year plan to fund the existing fixed-route vehicle program.

The detailed 10-year Cost Feasible Finance Plan is presented in Table 10-2.



**Table 10-2: 10-Year Costs and Revenues Summary**

Cost/Revenue			2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	10-Year Total
<b>Operating Cost</b>													
Maintain Existing Service - Fixed Route	Existing		\$6,339,199	\$6,451,530	\$6,565,851	\$6,682,198	\$6,800,607	\$6,921,113	\$7,043,755	\$7,168,571	\$7,295,598	\$7,424,876	\$68,693,299
Maintain Existing Service - Paratransit	Existing		\$4,533,375	\$4,613,706	\$4,695,461	\$4,778,665	\$4,863,343	\$4,949,521	\$5,037,227	\$5,126,486	\$5,217,328	\$5,309,779	\$49,124,892
Route 22 Realigned - no cost	Route Realignment		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Route 23 Realigned plus freq 60 to 40	Route Realignment		\$0	\$393,782	\$400,760	\$407,861	\$415,089	\$422,444	\$429,930	\$437,548	\$445,302	\$453,192	\$3,805,909
Route 121 - Add one AM and one PM	Increase Frequency		\$0	\$168,896	\$171,889	\$174,935	\$178,035	\$181,190	\$184,400	\$187,668	\$190,993	\$194,378	\$1,632,384
Route 24 from 85 to 60-min	Increase Frequency		\$0	\$211,683	\$215,434	\$219,252	\$223,137	\$227,091	\$231,115	\$235,210	\$239,378	\$243,620	\$2,045,921
Route 11 (until 10 PM)	Increase Hours of Service		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$127,329	\$129,585	\$256,914
Route 13 (until 10 PM)	Increase Hours of Service		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$86,584	\$88,118	\$174,702
Route 14 (until 10 PM)	Increase Hours of Service		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$86,584	\$88,118	\$174,702
Route 17/18 (until 10 PM)	Increase Hours of Service		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$156,869	\$159,649	\$316,518
<b>Total Operating Costs</b>			<b>\$10,872,575</b>	<b>\$11,839,598</b>	<b>\$12,049,396</b>	<b>\$12,262,911</b>	<b>\$12,480,210</b>	<b>\$12,701,359</b>	<b>\$12,926,427</b>	<b>\$13,155,484</b>	<b>\$13,845,964</b>	<b>\$14,091,315</b>	<b>\$126,225,240</b>
<b>Operating Revenues</b>													
Federal Grant 5311	Existing	Federal	\$364,222	\$404,525	\$379,787	\$484,276	\$492,857	\$501,591	\$510,479	\$519,525	\$528,731	\$538,100	\$4,724,092
Local Match (5311)	Existing	Local	\$364,222	\$404,525	\$379,787	\$484,276	\$492,857	\$501,591	\$510,479	\$519,525	\$528,731	\$538,100	\$4,724,092
Federal Grant 5307 Operating Assistance	Existing	Federal	\$1,020,014	\$1,035,014	\$1,066,064	\$1,098,046	\$1,117,503	\$1,137,306	\$1,157,459	\$1,177,969	\$1,198,842	\$1,220,086	\$11,228,302
Local Match (5307)	Existing	Local	\$1,020,014	\$1,035,014	\$1,066,064	\$1,098,046	\$1,117,503	\$1,137,306	\$1,157,459	\$1,177,969	\$1,198,842	\$1,220,086	\$11,228,302
Federal Grant 5307 - CARES Act (ADA, Fleet Mai	Existing	Federal	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
FDOT Transit Block Grant Operating Assistance	Existing	State	\$1,110,951	\$1,166,499	\$1,224,824	\$1,234,010	\$1,255,877	\$1,278,131	\$1,300,779	\$1,323,829	\$1,347,287	\$1,371,161	\$12,613,348
TD Funding	Existing	State	\$907,976	\$935,216	\$963,272	\$992,170	\$1,009,751	\$1,027,644	\$1,045,854	\$1,064,386	\$1,083,247	\$1,102,442	
Local Match for FDOT Transit Block Grant	Existing	Local	\$1,110,951	\$1,166,499	\$1,224,824	\$1,234,010	\$1,255,877	\$1,278,131	\$1,300,779	\$1,323,829	\$1,347,287	\$1,371,161	\$12,613,348
Collier County CAT Enhancements	Existing	Local	\$3,452,500	\$3,513,678	\$3,575,941	\$3,639,306	\$3,703,795	\$3,769,426	\$3,836,220	\$3,904,198	\$3,973,381	\$4,043,789	\$37,412,234
Federal Grant 5307	New	Federal	\$0	\$387,181	\$394,042	\$401,024	\$408,130	\$415,362	\$422,723	\$430,213	\$895,202	\$911,065	\$4,664,942
FDOT Match for Federal 5307 and 5310 - New	New	State	\$0	\$193,590	\$197,021	\$200,512	\$204,065	\$207,681	\$211,361	\$215,107	\$447,601	\$455,532	\$2,332,471
Local Match for Federal 5307 and 5310 - New	New	Local	\$0	\$193,590	\$197,021	\$200,512	\$204,065	\$207,681	\$211,361	\$215,107	\$447,601	\$455,532	\$2,332,471
Existing Paratransit Fare Revenue	Existing	Fare	\$254,776	\$259,290	\$263,885	\$268,561	\$273,320	\$278,163	\$283,092	\$288,109	\$293,214	\$298,410	\$2,760,819
Fare Revenue from Existing Services	Existing	Fare	\$916,887	\$933,134	\$949,669	\$966,497	\$983,624	\$1,001,053	\$1,018,792	\$1,036,845	\$1,055,218	\$1,073,916	\$9,935,635
<b>Total Operating Revenue</b>			<b>\$10,522,512</b>	<b>\$11,223,231</b>	<b>\$11,502,413</b>	<b>\$11,816,971</b>	<b>\$12,026,368</b>	<b>\$12,239,475</b>	<b>\$12,456,358</b>	<b>\$12,677,085</b>	<b>\$13,816,454</b>	<b>\$14,061,281</b>	<b>\$122,342,148</b>
<b>Annual Revenues Minus Costs</b>			<b>(\$350,062)</b>	<b>(\$616,367)</b>	<b>(\$546,983)</b>	<b>(\$445,940)</b>	<b>(\$453,842)</b>	<b>(\$461,885)</b>	<b>(\$470,069)</b>	<b>(\$478,399)</b>	<b>(\$29,511)</b>	<b>(\$30,034)</b>	<b>(\$3,883,092)</b>
Rollover from Previous Year			\$5,156,142	\$4,806,080	\$4,189,713	\$3,642,730	\$3,196,790	\$2,742,947	\$2,281,063	\$1,810,994	\$1,332,595	\$1,303,084	
<b>Operating Surplus/Shortfall (Cumulative)</b>			<b>\$4,806,080</b>	<b>\$4,189,713</b>	<b>\$3,642,730</b>	<b>\$3,196,790</b>	<b>\$2,742,947</b>	<b>\$2,281,063</b>	<b>\$1,810,994</b>	<b>\$1,332,595</b>	<b>\$1,303,084</b>	<b>\$1,273,050</b>	<b>(\$3,883,092)</b>

**Table 10-2: 10-Year Costs and Revenues Summary (continued)**

Capital Costs													
Vehicles			\$4,342,781	\$590,104	\$2,612,623	\$1,822,289	\$1,158,632	\$891,322	\$3,443,082	\$1,143,409	\$830,016	\$84,892	\$16,919,149
Replacement Fixed Route Buses - Maintain Existing Service			\$2,518,857	\$0	\$2,087,133	\$1,593,088	\$1,080,878	\$0	\$2,798,810	\$569,681	\$579,776	\$0	\$11,228,222
Replacement Vans - Maintain Existing Paratransit Services			\$724,786	\$590,104	\$525,490	\$229,201	\$77,754	\$791,319	\$644,273	\$573,728	\$250,241	\$84,892	\$4,491,787
Replacement of Support Vehicles			\$91,595	\$0	\$0	\$0	\$0	\$100,003	\$0	\$0	\$0	\$0	\$191,598
Increase Frequency on Select Routes			\$1,007,543	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,007,543
Other Capital/Infrastructure			\$5,134,629	\$2,321,347	\$2,361,596	\$2,352,557	\$2,394,245	\$2,436,671	\$2,479,848	\$2,523,791	\$2,568,513	\$2,614,027	\$27,187,224
Shelter Rehab			\$28,829	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$28,829
Bus Shelters			\$2,231,800	\$2,271,347	\$2,311,596	\$2,352,557	\$2,394,245	\$2,436,671	\$2,479,848	\$2,523,791	\$2,568,513	\$2,614,027	\$24,184,395
Security - Driver Protection Barriers			\$153,080	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$153,080
Technology			\$2,720,920										\$2,720,920
Study Santa Barbara Corridor			\$0	\$25,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$25,000
Study UF/IFAS Lehigh Acres Service			\$0	\$0	\$25,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$25,000
Study I-75 Premium Express			\$0	\$25,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$25,000
Study Everglades City Vanpool			\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Study UF/IFAS Lehigh Acres Service			\$0	\$0	\$25,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$25,000
<b>Total Capital Costs</b>			<b>\$9,477,410</b>	<b>\$2,911,451</b>	<b>\$4,974,219</b>	<b>\$4,174,846</b>	<b>\$3,552,877</b>	<b>\$3,327,992</b>	<b>\$5,922,931</b>	<b>\$3,667,200</b>	<b>\$3,398,529</b>	<b>\$2,698,919</b>	<b>\$44,106,374</b>
Capital Revenues													
FTA Grant 5305 Transit Planning (DPTO + DU)	Existing	Federal/State	\$88,887	\$88,887	\$88,887	\$102,693	\$104,513	\$106,365	\$108,249	\$110,168	\$112,120	\$114,107	\$1,024,875
Local Match - Planning	Existing	Local	\$9,877	\$9,877	\$9,877	\$11,410	\$11,612	\$11,818	\$12,027	\$12,240	\$12,457	\$12,678	\$113,875
Federal Grant 5307 Capital Assistance	Existing	Federal	\$1,998,517	\$2,098,443	\$2,203,365	\$2,313,533	\$2,354,529	\$2,396,251	\$2,438,713	\$2,481,927	\$2,525,906	\$2,570,665	\$23,381,849
Local Match (5307)	Existing	Local	\$499,630	\$524,611	\$550,842	\$578,384	\$588,633	\$599,064	\$609,679	\$620,482	\$631,477	\$642,667	\$5,845,470
Federal Grant 5339 Capital Assistance	Existing	Federal	\$410,959	\$431,507	\$453,082	\$475,737	\$484,167	\$492,746	\$501,478	\$510,364	\$519,408	\$528,612	\$4,808,060
Local Match (5339)	Existing	Local	\$102,740	\$107,877	\$113,271	\$118,934	\$121,042	\$123,186	\$125,369	\$127,591	\$129,852	\$132,153	\$1,202,014
Federal (FTAT + SU) for ADA Improvements	Existing	Federal	\$508,860	\$517,877	\$527,054	\$536,393	\$545,898	\$555,571	\$565,416	\$575,435	\$585,632	\$596,009	\$5,514,146
CARES (Security, 1 bus, Avail, Farebox replacement)	Existing	Federal	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total Capital Revenues</b>			<b>\$3,619,470</b>	<b>\$3,779,079</b>	<b>\$3,946,378</b>	<b>\$4,137,084</b>	<b>\$4,210,393</b>	<b>\$4,285,001</b>	<b>\$4,360,932</b>	<b>\$4,438,207</b>	<b>\$4,516,852</b>	<b>\$4,596,891</b>	<b>\$41,890,288</b>
Annual Revenues Minus Costs			<b>(\$5,857,940)</b>	<b>\$867,628</b>	<b>(\$1,027,841)</b>	<b>(\$37,762)</b>	<b>\$657,517</b>	<b>\$957,009</b>	<b>(\$1,561,999)</b>	<b>\$771,007</b>	<b>\$1,118,323</b>	<b>\$1,897,973</b>	<b>\$4,458,745</b>
Rollover from Previous Year			\$6,674,830	\$816,890	\$1,684,518	\$656,677	\$618,916	\$1,276,432	\$2,233,441	\$671,442	\$1,442,449	\$2,560,773	
<b>Capital Surplus/Shortfall (Cumulative)</b>			<b>\$816,890</b>	<b>\$1,684,518</b>	<b>\$656,677</b>	<b>\$618,916</b>	<b>\$1,276,432</b>	<b>\$2,233,441</b>	<b>\$671,442</b>	<b>\$1,442,449</b>	<b>\$2,560,773</b>	<b>\$4,458,745</b>	<b>\$4,458,745</b>

### 10.3 10-Year TDP Implementation Plan and Unfunded Needs

The implementation plan in Table 10-3 outlines service improvements that are included funded and unfunded. Table 10-3 also shows implementation years, operating and capital costs associated with each service and capital improvement, and if existing or new revenues are anticipated to fund the improvement.

It is important to emphasize that the schedule shown in Table 10-3 does not preclude the opportunity to delay or advance any projects. As priorities change, funding assumptions do not materialize, or more funding becomes available, this project implementation schedule will be adjusted.



**Table 10-3: CAT TDP 2021–2030 Cost Feasible Implementation Plan**

Service Improvements	Implementatio n Year	10-Year Operating Cost	10-Year Capital Cost	Existing or New Revenues
		YOE	YOE	
Maintain Existing Service				
Maintain Existing Fixed-Route Service	2021-2030	\$6,228,825	\$11,591,669	Existing
Maintain Existing Paratransit Service	2021-2030	\$4,454,442	\$4,491,787	Existing
Replacement of Support Vehicles	2021-2030	\$0	\$191,598	Existing
Funded				
Route 13 realign (60 to 40 min)	2021	\$0	\$0	Existing
Route 12 realign	2021	\$0	\$0	Existing
Route 14 realign	2021	\$0	\$0	Existing
Route 17/18 realign	2021	\$0	\$0	Existing
Route 19/28 realign	2021	\$0	\$0	Existing
Route 20/26 realign	2021	\$0	\$0	Existing
Technology improvements*	2021	\$0	\$2,720,920	Existing
Security - driver protection barriers	2021	\$0	\$153,080	Existing
Route 121 - add one AM, one PM	2022	\$1,632,384	\$503,771	New 5307, 5339, FDOT and Local Match
Realign routes 22 and 23	2022	\$3,805,909	\$503,771	New 5307, 5339, FDOT and Local Match
Route 24 from 85 to 60 min	2022	\$2,045,921	\$503,771	New 5307, 5339, FDOT and Local Match
Study: I-75 Managed Lanes Express	2022	\$0	\$25,000	Existing
Study: Santa Barbara Corridor Service	2022	\$0	\$25,000	Existing
Route 17/18 (until 10 PM)	2023	\$316,518	\$0	New 5307, FDOT and Local
Study Everglades City Vanpool	2023	\$0	\$25,000	Existing
Study: Immokalee/UF/Lehigh Acres Service	2023	\$0	\$25,000	Existing
Route 11 (until 10 PM)	2029	\$256,914	\$0	New 5307, FDOT and Local
Route 13 (until 10 PM)	2029	\$174,702	\$0	New 5307, FDOT and Local
Route 14 (until 10 PM)	2029	\$174,702	\$0	New 5307, FDOT and Local

\*Avail Replacement, APC, Annunciators, Onboard Information Media, Farebox Replacement



**Table 10-4: CAT TDP 2021–2030 Unfunded Improvements Plan**

Service Improvements	Implementation Year	Annual Operating Cost	Total Capital Cost	Existing or New Revenues
		(2020\$)	(2020\$)	
<b>Unfunded</b>				
Increase frequency on route 11, 12, 13, 14, 15, 16, 17/18	Unfunded	\$1,588,045	\$2,623,500	N/A
Realign Route 21 New Gov Center–Marco Island Express	Unfunded	\$695,748	\$820,000	N/A
New Island Trolley	Unfunded			
Later service on routes 19/28 (to 10 PM)	Unfunded	\$63,052	\$0	N/A
Golden Gate Pkwy (Route 25 EW)	Unfunded	\$395,707	\$495,000	N/A
Goodlette Frank Road (Route 25 NS)	Unfunded			
Immokalee Road (Route 27 EW)	Unfunded	\$817,589	\$990,000	N/A
Collier Blvd (Route 27 NS)	Unfunded			
New Bayshore Shuttle	Unfunded	\$293,519	\$495,000	N/A
New Autonomous Circulator	Unfunded	\$221,770	\$495,000	N/A
New Naples Pier Electric Shuttle	Unfunded	\$347,874	\$495,000	N/A
MOD – Golden Gate Estates	Unfunded	\$691,606	\$213,650	N/A
MOD – North Naples	Unfunded	\$345,803	\$71,217	N/A
MOD – Naples	Unfunded	\$820,421	\$213,650	N/A
MOD – Marco Island	Unfunded	\$460,850	\$142,433	N/A
<b>Other Improvements</b>				
Technology improvements*	Unfunded	TBD		N/A
Study: Everglades City Vanpooling	Unfunded	TBD		N/A
Study: Immokalee Road Transfer Hub Study	Unfunded	TBD		N/A
Park and ride lots (pending study)	Unfunded	TBD		N/A

\*fixed-route scheduling software, paratransit scheduling software, TSP, on-board surveillance, paratransit fare payment, IVR

## Appendix A: Peer Selection Methodology

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## PEER SELECTION MEMORANDUM

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**Date:** April 2, 2020

**To:** Josephine Medina, Collier County MPO; Omar De Leon, Collier County; Zachary Karto, Collier County; Brandy Otero, Collier MPO

**From:** Jessica Mackey, Tindale Oliver; Randall Farwell, Tindale Oliver

**RE:** CAT TDP 2020 Update – Peer Selection Update

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### Introduction

This is an update to the original peer selection memorandum. Based on the initial selection, three of the selected peers, after generating the peer analysis reports, were found not to have complete data and were subsequently eliminated.

This memorandum presents peer selection analysis for the CAT 2020 Transit Development Plan (TDP) Major Update. A preliminary set of peers were selected using input from the following:

- Tindale Oliver’s 8-Variable Method
- Prior Peers from 2016-2025 TDP Major Update
- Peer review request by Collier County MPO staff

Best practice typically dictates that a peer group is comprised of six to eight peers but may include more. Peer comparisons using selected performance indicators, effectiveness measures, and efficiency measures are used to illustrate the performance of the CAT fixed-route system relative to the peer group. The peer identification methodology and the identified peers are described below.

### Tindale Oliver Eight-Variable Method

#### *Overview of Method*

A set of potential peers was developed applying a peer selection methodology developed by Tindale Oliver using validated 2017 National Transit Database (NTD) data from the Florida Transit Information System (FTIS) database. The peer selection was conducted before 2018 NTD was released in FTIS. The universe of potential peers were drawn from transit agencies in southeastern United States. Transit systems were analyzed based on eight indicators, six operating characteristics, two exogenous variables.

- Operating Characteristics Indicators:
  - Average speed
  - Passenger trips
  - Revenue miles
  - Revenue hours

- Vehicles operated in maximum service
- Total operating expense
- Exogenous Variables Indicators:
  - Service area population
  - Service area population density

To select the systems most comparable with CAT, each indicator value for CAT was used as a base number. From this, 80%, 90%, 110%, and 120% of CAT values were calculated for each indicator for the universe of potential peers. Potential peers were then assigned a score for each indicator based on the following criteria:

- Peers falling between 90% and 110% of the CAT value were awarded 1.0 point.
- Peers falling between 80% and 90% of the CAT value or between 110% and 120% were awarded 0.5 points.
- Peers falling below 80% or above 120% of the CAT value were awarded 0.0 points.

Further, because Collier County is large with dispersed population centers, the population density was recognized as a key factor for selecting like peers. To this end, population density was awarded a score of 2.0 points. The total score, the sum of the indicator scores for each potential peer, were calculated and the universe of potential peers was then ranked based on total score. Transit agencies with one or more indicators that were significant outliers compared to CAT and the other peers, were eliminated.

## Results

An initial set of 20 potential peers was identified for CAT (see Table 1). The top 10 peers with the highest likeness score to CAT were identified and selected as the CAT peer group. The top 10 selected peer systems are:

- City of Montgomery-Montgomery Area Transit System, AL
- The Tri-State Transit Authority – Huntington, WV
- The Wave Transit System – Mobile, AL
- Clarksville Transit System, TN
- Macon-Bibb County Transit Authority, GA
- ART (Asheville Redefines Transit) - Asheville, NC
- Metra Transit System - Columbus, GA
- Gwinnett County – Lawrenceville, GA
- Pasco County Public Transportation – Port Richey, FL
- Cape Fear Public Transit Authority – Wilmington, NC

Two of the selected peers were peers from the previous TDP: Pasco County and Cape Fear.

Subsequently, based on the generation of the peer and trend analysis, three of the top 10 peers were found to have incomplete NTD data: Macon, GA; Columbus, GA; and Clarksville, TN. These systems were eliminated from the peer group. The seven final selected peers include:



- City of Montgomery-Montgomery Area Transit System, AL
- The Tri-State Transit Authority – Huntington, WV
- The Wave Transit System – Mobile, AL
- ART (Asheville Redefines Transit) - Asheville, NC
- Gwinnett County – Lawrenceville, GA
- Pasco County Public Transportation – Port Richey, FL
- Cape Fear Public Transit Authority – Wilmington, NC

### Characteristics of Peer Systems

The following are brief descriptions of the CAT peer group for comparative purposes. Data were obtained from the 2018 NTD. The peer and trend analysis were conducted with this set of CAT peers.

**Name:** Collier Area Transit (CAT)



**Services provided:** CAT, a unit of Collier County government, provides transit services in Collier County, FL, including Naples and other communities. CAT operates a network of public bus service consisting of 19 fixed-routes as well as non-fixed-route services, including paratransit service under the CAT Connect program that includes complementary Americans with Disabilities Act (ADA) service and transportation disadvantaged (TD) services.

**Service area population (2018):** 262,699\*

**Service area population density (2018):** 847 persons per sq. mi.\*

**Annual revenue hours (2018):** 73,056 annual revenue hours of service

**Annual ridership (2018):** 840,961 passenger boardings

**Operating costs (2018):** \$6,013,801

**Fleet (2018):** 19 vehicles in maximum service

\*Calculated using 2019 TBEST Land Use Model

**Name:** City of Montgomery-Montgomery Area Transit System (The M)



**Services provided:** Owned by the City of Montgomery, AL, the M provides transit services within the municipality, operates a network of public bus service consisting of 14 fixed-routes, and provides ADA complementary paratransit services within a ¾-mile corridor of fixed-routes.

**Service area population (2018):** 205,764

**Service area population density (2018):** 1,524 persons per sq. mi.

**Annual revenue hours (2018):** 74,909

**Annual ridership (2018):** 605,572 passenger boardings

**Operating costs (2018):** \$5,763,964

**Fleet (2018):** 19 vehicles in maximum service

**Name:** Tri-State Transit Authority, Huntington, WV

**Services provided:** TTA, an independent transit authority, provides fixed-route and complimentary ADA paratransit services in the greater Huntington urbanized area. TTA operates a network of public bus service consisting of 9 fixed-routes, 2 shuttles, and 3 night routes that operate in the evening/night only.



**Service area population (2018):** 144,339.

**Service area population density (2018):** 1,568 persons per sq. mi.

**Annual revenue hours (2018):** 57,986

**Annual ridership (2018):** 865,683 passenger boardings

**Operating costs (2018):** \$5,370,586

**Fleet (2018):** 22 vehicles in maximum service.

**Name:** The Wave Transit System, Mobile, AL



**MOBILE, ALABAMA  
TRANSIT SYSTEM**

**Services provided:** The Wave, a unit of the City of Mobile, provides fixed-route and paratransit services in Mobile, operating a network of public bus service consisting of 12 fixed routes and 1 downtown circulator.

**Service area population (2018):** 190,265.

**Service area population density (2018):** 1475 persons per sq. mi.

**Annual revenue hours (2018):** 76,679

**Annual ridership (2018):** 850,596 passenger boardings

**Operating costs (2018):** \$7,591,657

**Fleet (2018):** 21 vehicles in maximum service

**Name:** ART (Asheville Redefines Transit), Asheville, NC



**Services provided:** ART, a unit of the City of Asheville Transit Division, provides fixed-route services in Asheville and adjacent portions of Buncombe County, operating a network of public bus service consisting of 18 fixed-routes; paratransit service is provided by Buncombe County as Mountain Mobility.

**Service area population (2018):** 89,121

**Service area population density (2018):** 1,980 persons per sq. mi.

**Annual revenue hours (2018):** 76,679 annual revenue hours of service

**Annual ridership (2018):** 1,964,651 passenger boardings

**Operating costs (2018):** \$5,370,586

**Fleet (2018):** 17 vehicles in maximum service.

**Name:** GCT, Gwinnett County, Lawrenceville, GA

**Services provided:** GCT, a unit of the Gwinnett County Transportation Department, provides commuter express bus, local bus, and paratransit service in Gwinnett County and to Downtown Atlanta, operating a network of public bus service consisting of 7 fixed-routes and 5 express routes.



**Service area population (2018):** 920,260

**Service area population density (2018):** 2,106 persons per sq. mi.

**Annual revenue hours (2018):** 80,617

**Annual ridership (2018):** 1,075,995 passenger boardings

**Operating costs (2018):** \$9,229,461

**Fleet (2018):** 28 vehicles in maximum service

**Name:** Pasco County Public Transportation, Port Richey, FL

**Services provided:** PCPT is a service of Pasco County, providing fixed-route local bus and paratransit service. A total of 11 fixed-route bus routes serve the urbanized areas of West Pasco, Zephyrhills, and Dade City, including connections between Dade City and Zephyrhills. Route 54, the Cross County Connector on SR-54/56, operates from US-19 to Zephyrhills and Route 41 in Land O'Lakes. Paratransit services are provided countywide.



**Service area population (2018):** 525,643

**Service area population density (2018):** 704 persons per sq. mi.

**Annual revenue hours (2018):** 92,485

**Annual ridership(2018):** 823,811 passenger boardings

**Operating costs (2018):** \$6,569,486

**Fleet (2018):** 23 vehicles in maximum service

**Name:** Wave Transit, Cape Fear Public Transit Authority, Wilmington, NC

**Services provided:** Wave Transit, an independent transit authority, provides fixed-route bus, shuttle, and paratransit service in the Wilmington metro area, operating a network of 14 fixed-route bus routes, 8 shuttles for University of North Carolina–Wilmington students and employees, 1 downtown circulator, and paratransit within ¼-mile of any fixed bus route.



**Service area population (2018):** 223,483

**Service area population density (2018):** 1117 persons per sq. mi.

**Annual revenue hours (2018):** 85,615

**Annual ridership (2018):** 1,306,099 passenger boardings

**Operating costs (2018):** \$6,926,980

**Fleet (2018):** 25 vehicles in maximum service

**Table C-1: Selected and Potential Peers**

<b>CAT Fixed Route Peer Systems (Southeastern United States)</b>										
NTD Name	City	State	Average Speed (RM/RH)	Passenger Trips	Revenue Miles	Service Area Population	Service Area Population Density	Total Operating Expense	VOMS	Revenue Hours
City of Montgomery-Montgomery Area Transit System	Montgomery	AL	16.19	654,474	1,144,411	205,764	1,524	5,946,414	19	70,683
The Tri-State Transit Authority	Huntington	WV	16.25	866,021	1,031,977	144,339	1,569	5,637,564	27	63,524
The Wave Transit System	Mobile	AL	15.37	858,616	1,189,763	177,929	1,834	7,021,009	21	77,396
ART (Asheville Redefines Transit)	Asheville	NC	14.95	2,125,214	1,017,879	88,512	1,967	5,148,844	17	68,107
Gwinnett County Board of Commissioners	Lawrenceville	GA	17.71	1,035,561	1,236,630	920,260	2,106	9,143,524	26	69,829
Pasco County Public Transportation	Port Richey	FL	20.75	815,283	1,724,047	488,310	654	6,057,711	23	83,070
Cape Fear Public Transportation Authority	Wilmington	NC	14.04	1,359,911	1,201,922	216,479	1,082	6,516,506	25	85,636
MS Coast Transportation Authority	Gulfport	MS	13.13	740,636	891,905	117,629	1,238	4,496,399	20	67,930
Greenville Transit Authority	Greenville	SC	15.27	905,580	855,527	188,991	1,948	4,775,771	15	56,014
Williamsburg Area Transit Authority	Williamsburg	VA	14.58	2,465,072	1,301,626	153,600	1,067	6,492,296	31	89,252
Athens Transit System	Athens	GA	11.43	1,553,282	826,286	119,980	2,727	5,563,824	22	72,314
City of Monroe Transit System	Monroe	LA	15.28	1,053,444	729,985	49,601	1,600	5,062,181	13	47,785
Lafayette Transit System	Lafayette	LA	14.66	1,546,244	758,350	221,578	4,522	5,023,582	13	51,712
Brazos Transit District	Bryan	TX	16.98	407,223	816,601	132,500	1,791	5,199,782	27	48,097
Mid-Ohio Valley Transit Authority	Parkersburg	WV	14.50	497,403	661,550	39,587	2,828	3,134,071	18	45,632
Fayetteville Area System of Transit	Fayetteville	NC	13.21	1,460,633	1,221,278	150,131	1,580	6,413,301	24	92,472
Transit Authority of Northern Kentucky	Northern Kentucky	KY	14.51	3,202,515	3,263,063	278,653	1,044	19,557,731	97	224,901
Clarksville Transit System	Clarksville	TN	17.73	683,107	1,176,050	135,471	1,290	4,512,306	16	66,321
Macon-Bibb County Transit Authority	Macon	GA	16.29	816,194	1,019,938	153,691	2,196	6,143,421	19	62,603
Metra Transit System (Columbus, GA)	Columbus	GA	14.28	1,164,199	1,183,555	230,208	1,744	4,218,374	20	82,854
<b>Collier Area Transit</b>	<b>Naples</b>	<b>FL</b>	<b>17.85</b>	<b>896,201</b>	<b>1,285,354</b>	<b>262,699</b>	<b>847</b>	<b>5,557,686</b>	<b>18</b>	<b>72,018</b>
<b>Selected Peers Mean</b>			<b>16.47</b>	<b>1,102,154</b>	<b>1,220,947</b>	<b>320,228</b>	<b>1,534</b>	<b>6,495,939</b>	<b>23</b>	<b>74,035</b>

Source: 2017 NTD Data

## Appendix B: Public Involvement Program





*Florida Department of Transportation*

RON DESANTIS  
GOVERNOR

801 N. Broadway Avenue  
Bartow, FL 33830

KEVIN J. THIBAUT, P.E.  
SECRETARY

March 19, 2020

Collier Metropolitan Planning Organization  
Ms. Anne McLaughlin, Executive Director  
2885 South Horseshoe Drive  
Naples, FL 34104

RE: 2020 Transit Development Plan / Public Participation Plan

Dear Ms. McLaughlin:

This letter pertains to the Department's review of Collier Metropolitan Planning Organization 2020 Public Participation Plan (PPP) of the Transit Development Plan (TDP) for Collier Area Transit. District One Department staff received the PPP on Thursday, January 30, 2020.

The Department completed its review of the document based on Rule Chapter 14-73.001(3)(a), F.A.C. pertinent to the requirements for the TDP on Wednesday, March 18, 2020. The Department finds Collier Metropolitan Planning Organization 2020 PPP for the TDP to be in compliance with the Chapter 14-73, F.A.C. Please provide a copy of this compliance letter as an attachment within the final TDP Major Update.

The Department appreciates the efforts of the Collier Metropolitan Planning Organization staff to develop the 2020 PPP for the Transit Development Plan in compliance with Chapter 14-73, F.A.C.

If you have any questions, please contact Dale Hanson via email at [Dale.Hanson@dot.state.fl.us](mailto:Dale.Hanson@dot.state.fl.us) or at (863) 519-2321.

Sincerely,

Dale Hanson  
Transit Projects Coordinator

Cc: Brandy Otero, Collier MPO  
Josephine Medina, Collier MPO  
Randall Farwell, Tindale Oliver  
Michelle Arnold, Collier Area Transit  
Omar Deleon, Collier Area Transit  
Michelle S. Peronto, FDOT



**Collier Area Transit  
Transit Development Plan**

# **Public Participation Plan**

Final Revised

March 17, 2020

*Prepared by*



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## 1.0 Introduction

A simple, yet key ingredient, of any good public outreach effort is the effectiveness of listening and how that information is incorporated into the study process. The most effective plans include activities and methods oriented specifically to the project study area and an understanding of the local and regional character. Collier Metropolitan Planning Organization (MPO), Collier Area Transit (CAT), and the Consultant Team recognize the importance of public engagement and have developed strategies to engage the public, stakeholders and agencies involved in the development of the Transit Development Plan (TDP). The Public Participation Plan (PPP) for this project includes proven outreach efforts that go beyond “the minimum requirements”. Our team has identified a menu of opportunities to provide the public information, listen to their concerns and suggestions, and find ways to incorporate solutions into the TDP.

Rule 14-73.001 requires that the TDP preparation include the following activities:

- A PIP approved by the Florida Department of Transportation (FDOT) or the local MPO’s PPP, approved by both the Federal Transit Administration (FTA) and the Federal Highway Administration (FHWA).
- Description of the process used, and the public involvement activities undertaken.
- Solicitation of comments from FDOT, the MPO, and the regional Workforce Development Board on the mission, goals, objectives, alternatives, and 10-year implementation program.
- Notification of all public meetings at which the TDP is presented to or discussed with FDOT, the MPO, and the regional Workforce Development Board.

To ensure that CAT meets these requirements, the PPP will facilitate a public involvement process for the TDP effort that will encompass a range of activities that provide ample opportunity for participation by the required, and other interested, entities.

In addition, CAT, as a public transit agency and recipient of Federal and state Funding, is required to adhere to Federal non-discrimination regulations, including those outlined in Title VI of the Federal Civil Rights Act of 1964. CAT has developed a Title VI Program that outlines the policies, procedures, services, and steps that will guide the public involvement activities outlined in this PPP to ensure inclusive and representative participation, including persons with disabilities, limited English proficiency (LEP), and/or other factors that may limit their participation. By reference, this PPP integrates the policies and procedures into the programs, activities, and services of this TDP.

### 1.1 Project Background

The MPO and CAT, selected the Tindale Oliver Team (Team) to update the TDP to establish a refreshed framework for the future growth of transit in the community, as provided by the County’s transit system, CAT, and ensure safe, convenient, and accessible public transportation for all residents, workers, and visitors in Collier County. An integral part of the TDP is the PPP, which acts as a guide for educating, gaining input from and disseminating information to the public and stakeholders.



## 1.2 Project Kick-off Meeting

The TDP project begins with a Kick-off Meeting with staff to review and coordinate on the scope, schedule, deliverables, data request, public outreach strategy, and project management to assure staff and the consultant team share the same expectations. This will help ensure the success of the project once it has begun. The kick-off meeting was held December 19<sup>th</sup> from 2:00-3:30.

A recommendation was made to form a TDP Working Group, comprised of a group of 6-10 technical and policy experts from the MPO, County, FDOT, and Workforce Development to serve as a sounding and advisory board for review of findings, recommendations, and priorities related to the resulting TDP program and priorities. The TDP Working Group will meet on three occasions during the TDP effort. Once after existing conditions and services review has been conducted, once to review the initial TDP improvements recommendations, and once to review the final TDP.

The first TDP Working Group meeting is scheduled to be conducted as a virtual meeting due to health advisory considerations related to Covid-19, the subsequent meetings will be conducted in person and/or as virtual meetings, depending on conditions at the time of the subsequent meetings.

In addition, the core project team will hold bi-weekly calls to review current efforts and coordinate on upcoming decisions and activities.

Based on the Team's prior proposed approach and the MPO's RFP, the PPP recommends the following public engagement activities be completed as part of the TDP process:

- Public Workshops (2)
- On-Board Passenger Survey (1)
- Online Survey (2)
- Stakeholder Interviews (10)
- Discussion Group Workshops (2)
- Draft and Final Presentations (6)
- Ongoing Social Media

## 2.0 Public Engagement Activities

The following content is a TDP-specific PPP that presents the public engagement activities that will be used to collect stakeholder and public input, and to educate and inform the community about the study and, ultimately, its results. Following are summaries of the activities that are envisioned to be included, some of which (as noted) will be completed by CAT/MPO staff, others to be provided by the Team. Public participation activities have been designed to encourage participation throughout the entire TDP process. Our Team has identified methods of communication that best serve the needs of Collier County, but are flexible enough to make changes, if necessary, to ensure maximum feedback. Our goal is to reach and hear from as many people and organizations as possible to ensure that their voices are heard.

## 2.1 Public Workshops

Two public workshops will be held at key milestones in the study process, first early in the process, to educate attendees about the TDP effort and collect input on gaps and unmet needs. The second public workshop will focus on obtaining feedback on the proposed improvements.

With input from the Team and CAT/MPO staff we will plan and schedule each meeting to maximize opportunities for citizen participation by selecting venues in areas that



have bus access and we will piggyback these workshops with other community events to ensure a good turnout. We will hold the meetings at times to best accommodate a variety of work and personal schedules. There will be a comment period open for one week before and one week after each public meeting (7 days) where the public can submit comments, questions, and concerns via email, phone call, social media, and written letters without being required to attend the public workshops. FDOT, Southwest Florida Regional Workforce Development Board and the Metropolitan Planning Organization will be notified at least fourteen (14) days in advance of each public workshop.

After completion of the early assessment of existing conditions and services, the Team will schedule and conduct a public workshop to introduce the TDP purpose, schedule, and to inform the public about existing services and socioeconomic conditions and to solicit ideas from the public concerning transit and mobility needs within the Collier County community. The first public workshop is targeted to be conducted in March or April, coincident with the Discussion Group Workshops. In response to health concerns associated with Covid-19, the first public workshop will be targeted for April or May and be conducted in person and/or via virtual meeting, depending on circumstances at the time.

A second public workshop will be held following completion of the draft TDP. The intent of this meeting is to present the public with our initial findings and recommendations for 5-year and 10-year service and capital improvements for transit and mobility services within the greater Collier County community. This meeting will be designed to facilitate engagement and dialog to hear the attitudes, concerns, and desires of the community regarding the draft TDP. The public will have an opportunity to review the draft TDP prior to the workshop (online and at designated locations) seven days prior to and following the workshop. The second public workshop is targeted to be conducted in June or July, coincident with the draft TDP presentations to the BCC, MPO, and other groups listed in Section 2.7. Depending on circumstances at the time, this second meeting will be conducted in person and/or as a virtual meeting.

### *Logistics/Format*

Depending on the information to be presented, the meetings could be an informal event using a “station” format, where participants come and go at their leisure (if an in person meeting is conducted). Staff would be available for questions. If a more formal event is appropriate, or we are required to conduct a virtual meeting, we would develop a PowerPoint presentation with live explanation followed by a Question & Answer period. We will discuss the best possible format with CAT/MPO staff and the Working Group when the time is appropriate.

## **2.2 On-Board Passenger Survey**

A passenger survey will be conducted of CAT fixed-route bus patrons on-board CAT vehicles to obtain information related to the demographics, attitudes, preferences, and habits of current riders for market research purposes (i.e., the survey will not be specifically geared for model input or validation).

To allow for enough valid survey responses that will support statistical rigor of the results (95% CL,  $\pm 10\%$  MOE), yet accommodate the desired budget goal, it is proposed that the survey effort will cover 50 percent of CAT’s scheduled fixed-route bus trips. The on-board survey methodology and implementation will be coordinated closely with CAT staff to ensure that study objectives are met, and data collection efforts are efficiently integrated with CAT operations. The survey instrument will be developed in conjunction with CAT/MPO staff. Prior to beginning the on-board survey process, our staff will meet with CAT operations staff to ensure a clear understanding of the methodology, process, and timeframe. We also will provide survey notices for CAT to distribute to its bus operators and on board its buses to notify patrons of the upcoming event. The on-board survey, a 25-question survey, was conducted January 15-16 weekday, January 18-19 weekend, with training on the 14<sup>th</sup>. A target of 1,000 completed surveys was established for the on-board survey and 1,090 surveys were completed.

## **2.3 Online Survey**

Our Team will conduct a regional online survey of the general public in Lee and Collier Counties to help better understand their needs and concerns and, especially, persons who do not currently use the CAT services. Development of the online survey will be coordinated closely with CAT/MPO staff and LeeTran staff to ensure that survey objectives are met. We have had a lot of success using Survey Monkey on similar projects, so we would likely use this same tool for the TDP. Because considerable thought will be put into the questions, the online survey will elicit responses useful to CAT/MPO staff and CAT services.

The online survey will be posted on the County website and distributed via any current email/social media outlets and mailing lists available to Collier and Lee Counties, including opportunities to use relevant social media platforms. We will work with CAT/MPO staff and Lee Tran staff to identify social media platforms and email lists.

Our suggestion is to post and push out the online survey at two critical times. The first was posted on websites and accompanied by emails to persons on target mailing lists collected from CAT, the

MPO, and the County. This survey occurs early in the study with a fact sheet about CAT services and a focus on mobility needs, gaps, services. The second posting will include a fact sheet about the proposed improvements to the CAT network and a request for comments and suggestions. The first online survey was released in February and runs through March and the second is scheduled to be live April through May, but may be delayed until May and run through June, depending on circumstances related to Covid-19. We are targeting 500 completed online surveys.

## 2.4 Stakeholder Interviews

Our Team, working with CAT/MPO staff, will identify stakeholders and conduct up to ten stakeholder interviews. The starting point will be to obtain a list of potential stakeholders, mostly elected officials, from CAT/MPO staff. The purpose for the stakeholder interviews is to capture the best understanding of local conditions, knowledge, perceptions and attitudes of the community towards mobility needs and transit services. In person stakeholder interviews will be scheduled during planned trips to Collier County or by phone depending on convenience for each stakeholder. The interviews are targeted to be completed between April and May 2020.

## 2.5 Discussion Group Workshops

CAT/MPO staff and the consultants will conduct two invitation-based discussion group workshops using a set of questions prepared by our Team to educate and elicit dialog with participants about mobility needs and services.

The purpose of the workshops is to obtain additional input into the TDP process by selected groups. Participants will work in smaller groups (10–12 persons) to permit more in-depth and candid discussion about issues and needs. The workshops will be held at accessible venues coinciding with CAT’s existing service area, including Lee County.



The focus will be on mobility needs and interests of the business community, tourists and tourism, health care access, community services, social services, Department of Labor, seniors, and students. Participants will be identified by CAT/MPO staff. CAT/MPO staff will be responsible for securing the sites selected and inviting the participants. The consultant team will lead discussion and CAT/MPO staff will participate in the workshops. The consultant team will summarize the workshops and information gathered. The Discussion Group Workshops are scheduled for March 31<sup>st</sup>. Due to health concerns associated with Covid-19, the workshops are being conducted as virtual meetings.

## 2.6 Draft and Final TDP Presentations

After completion of the draft TDP, our Team will schedule and conduct six (6) presentations at the direction of CAT/MPO staff. Presentations of the Draft TDP will be targeted for June. Presentations of the Final TDP will be targeted for August. For this purpose, we will develop a user-friendly,



graphical presentation to support the communication and adoption of the TDP. The presentation file will be available for use by CAT/MPO staff beyond the adoption of the TDP. The audiences for the presentations include:

- Collier County Board of Commissioners
- MPO Board
- MPO Citizens Advisory Committee
- MPO Technical Advisory Committee
- Public Transit Advisory Committee

Other audiences that will be briefed directly or through the TDP Working Group, are FDOT and the Workforce Development Office.

#### *Methods of Public Notice*

To advertise/notice the meetings, it is suggested that staff prepare and distribute a press release to local media, post the announcement on the County and MPO websites, Twitter and Facebook pages, develop a notice to stakeholders, post notices on buses and at all government buildings and major organizations/institutions in the area. Utilizing the memberships of the business community, civic and community associations, and neighborhood associations would serve as an effective way to announce the meetings. Using the email and postal mail distribution lists of the County and MPO would be an effective way to reach a wide audience. To keep in line with TDP best practices, at least 14 days' notice will be given for public outreach events and 30 days for draft public TDP review and comments. A strategy for outreach will be developed in collaboration with staff and the Working Group. FDOT, the MPO, Southwest Florida Regional Workforce Development Board will be notified at least fourteen days in advance of the Draft and Final TDP Presentations. Additionally, the Southwest Regional Workforce Board shall be provided the draft TDP document for review and comment prior to going to the Board of County Commissioners for adoption.

## **2.7 Ongoing Social Media**

In conjunction with the method of notices described above, leveraging the use of social media is cost-effective and can reach a large segment of population who are younger, trendy, and more prone to becoming involved in an issue that affects their community. Both social media and the County and MPO websites should be used appropriately to raise awareness about the project and to provide opportunities for the public to comment and used as a means to provide information and notice the public meetings and community workshops. Our Team will help prepare project information to be posted and uploaded throughout the study process.

## **2.8 Measures of Effectiveness**

We will work with CAT/MPO staff to develop Measures of Effectiveness (MOE) for the public engagement activities included in this PPP. Quantitative targets will be set for each MOE, and the results of the outreach efforts will be documented in the TDP.

A set of proposed MOEs are presented in **Table 1** for consideration by CAT/MPO staff. The table include a range of targeted strategies and related MOEs designed to improve public awareness,



engagement, and feedback. Results of each public involvement activity will be documented in the TDP and compared with the MOEs established in **Table 1**.

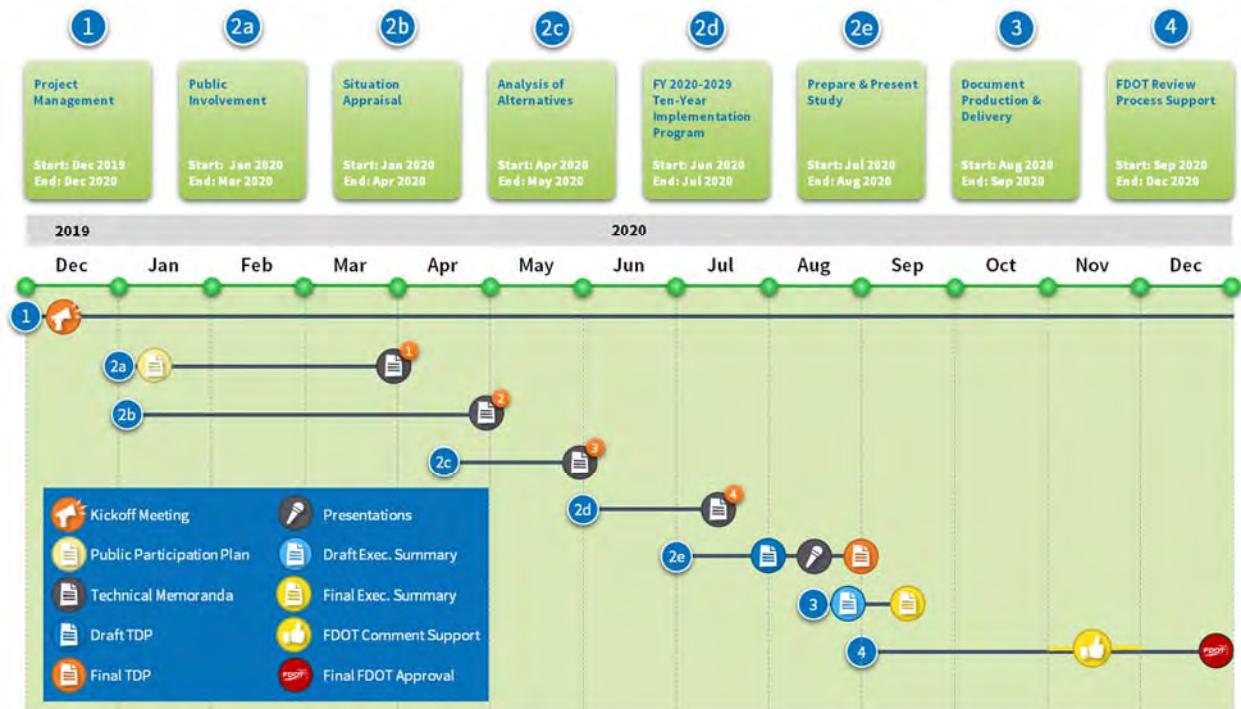
This evaluation process will encourage adaptability and flexibility in the TDP engagement activities. If the MOE targets are not met for certain activities, then a change should be enacted to improve other TDP outreach efforts.

**Table 1: TDP Public Involvement Measures of Effectiveness and Targets**

Outreach Strategy	Measure of Effectiveness	Target
Stakeholder database	Number of persons in database who identify themselves as members of the general public	500
Public outreach efforts	Number of attendees or interactions with interested persons at each event/meeting	25 per event
Public outreach input	Number of returned comment cards, or questionnaires from outreach events	200
Websites and other communications	Number of phone calls, emails, and visitors to County offices or websites regarding TDP update process	200
Accessibility of public meeting locations	Percentage of all public meeting locations served by at least one transit route	100%
Accessibility to meeting locations by Environmental Justice (EJ) communities	Percentage of outreach events held in EJ communities.	50%
Accessibility of LEP persons	Percentage of all TDP information distributed in Spanish/Creole versions	25%
On-board bus rider survey	Number of completed surveys	1000
Online surveys (2)	Number of completed surveys	500
Accessibility to meeting locations by persons with disabilities	Percentage of meeting locations accessible by persons with physical disabilities as outlined by ADA	100%
Accommodation of participant work schedules	Number of outreach events conducted in evenings or on weekends	5

### 3.0 Schedule of Activities

The public engagement activities will be coordinated to fit with the overall project schedule, as shown in the table below.



### 4.0 Public Engagement Documentation

The documentation of public engagement activities creates a summary of outreach activities and commitments made as a result of the outreach activities. Access to the documentation allows the public to see that their input was evaluated and considered. We will include a summary of the public engagement activities in the Final TDP

## Appendix C: Public Outreach Materials



Collier Area Transit (CAT) is developing a ten-year transit plan to guide the future of mobility in the region. Your comments will help to define CAT's vision to promote improvements that enhance mobility over the next decade.

Two online surveys will be distributed during the planning process. The first survey will be used to help understand the mobility needs and to identify gaps in existing services. Your responses to the survey will be used to define proposed mobility enhancements which will be included in the second survey in order to obtain your thoughts about the proposed mobility improvements. Your responses to these surveys will inform the recommendations that are developed and approved.

Thank you for your participation!

**[Click here to take the survey!](#)**

*If you have any questions, please contact:*

**Josephine Medina**

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**Collier MPO**

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[View this email in your browser](#)



## Help us prioritize improvements for CAT's Ten-Year Transit Development Plan!

Collier Area Transit (CAT) wants your help to review and prioritize transit and mobility improvements to be included in our program of projects to be funded over the next 10-years. These projects will improve the CAT transit system and add new services to make it easier for you to get around Collier County.

### Online Survey

First, we invite you to take a **survey** that walks you through the improvements. Through the survey you will be able to let CAT know what you think about the proposed changes and provide your own suggestions. **Take the CAT Survey by [clicking here](#).** The survey will be active until **August 15th**.

[Take the Survey](#)

### Virtual Meeting

Second, you are invited to participate in a **Virtual Public Meeting**, it will be held online on **July 30th from 5:30PM to 7:00PM**. During this meeting you will learn more about the proposed improvements, be able to ask questions, and talk about the changes you would like to see to improve transit services in Collier County.

[View this email in your browser](#)



## Help us prioritize improvements for CAT's Ten-Year Transit Development Plan!

Collier Area Transit (CAT) wants your help to review and prioritize transit and mobility improvements to be included in our program of projects to be funded over the next 10-years. These projects will improve the CAT transit system and add new services to make it easier for you to get around Collier County.

### Virtual Meeting

You are invited to participate in a **Virtual Public Meeting**, it will be held online on **August 12th from 5:30PM to 7:00PM**. During this meeting you will learn more about the proposed improvements, be able to ask questions, and talk about the changes you would like to see to improve transit services in Collier County.

**To attend the Virtual Public Meeting, [click here](#) to register for the meeting.** You will receive a confirmation email and information to join on the day of the meeting. To join by phone, call (562) 247-8422; code: 529-086-769. Once you register, you will receive updates and reminders before the meeting.

So, please help improve your community by helping CAT to make it easier to get around Collier!

[Register for Virtual Meeting](#)

If you are unable to attend one of the virtual workshops, written comments will be accepted

## **CAT Transit Development Plan – Stakeholder Questions**

Collier Area Transit (CAT) is in the process of developing a ten-year transportation plan (TDP) to serve as a guide for the future of mobility in Collier County from 2021 to 2030. It will represent the CAT vision to promote improvements in transit services and enhanced access to mobility over the next decade. The TDP must be completed and filed with the Florida Department of Transportation by September 1, 2020 to fulfil requirements for Collier County to receive state and federal transit funding.

During this 30-minute scheduled call we will review and discuss your responses to the following questions about CAT services and mobility needs in Collier County. The questions are intended to be used to cover a range of issues and to generate thoughts and discussion so that your input can be included in helping to shape the mobility vision and priorities for the community.

Mobility needs in Collier County are increasing and are projected to continue to increase over the next several decades. Some of this increase is due to national trends, such as the aging of the population and a widening income divide due to changes in the economy. Other factors are more localized such as the rapid growth of the permanent and seasonal population, dispersed development patterns over a large county, and high cost of housing near employment and service-based employment activity centers.

How we address existing mobility needs and prepare for the certain growth in mobility demand in Collier County will have an impact on the local economy and quality of life. This discussion is intended to help understand your perspectives and ideas for setting the vision for mobility within Collier.

### **Discussion Questions**

1. How much awareness is there in Collier County about transit/public transportation?
  - a. High
  - b. Moderate
  - c. None at all
  - d. Not sure
2. What is your perception of transit's role in Collier County?
  - a. It serves tourists/visitors
  - b. It serves workers/commuters
  - c. It helps relieve parking/congestion
  - d. It serves persons who do not have access to a vehicle
  - e. It does not have a defined role
3. Which mobility improvements would you prefer to see in Collier County?
  - a. Expanded bus service to cover new areas/surrounding counties
  - b. Expanded bus service hours – earlier and later service
  - c. Improve the frequency of bus service – bus comes more often

- d. Provide enhanced transit services – express bus service and/or rail-like options
  - e. Improve/expand sidewalks and bike lanes
  - f. Add more bus shelters and benches
  - g. Expand transfer hubs to connect routes
  - h. More park and ride locations – from where to where? \_\_\_\_\_
  - i. Add flexible and/or mobility-on-demand services where fixed route does not work
  - j. Add scooter and/or bike-share services
  - k. None, why? \_\_\_\_\_
  - l. Other mobility services \_\_\_\_\_
4. Who primarily should benefit from mobility improvements?
- a. All should benefit from greater mobility
  - b. Tourists and visitors should benefit from greater mobility
  - c. Persons without a vehicle should benefit from greater mobility
  - d. Our communities, businesses, and environment should benefit from greater mobility
  - e. Other (please specify) \_\_\_\_\_
5. Which sources should be used to pay for expanded mobility service?
- a. User fees – bus fares
  - b. Use revenue from mobility fees
  - c. New developments
  - d. Use roadway funds
  - e. Increase local taxes
  - f. Create partnerships with businesses
  - g. Advertising revenue
  - h. Other (please specify) \_\_\_\_\_
6. Please specify whether you agree or disagree with the statements below.

	Agree	Neutral	Disagree
CAT services are effective, convenient, and easy to use.			
Collier County needs more service and/or more service options.			
Existing CAT service covers the areas I think are most needed to travel to regularly.			
Collier County should invest more into expanding mobility services and options.			
Improved public transit service will improve economic opportunities in Collier County.			
CAT is effective at making the public aware of existing transit and mobility services.			

7. Do you have any other comments or suggestions that would help CAT improve mobility services? Please explain: \_\_\_\_\_





## CAT Mobility Needs Survey

**Collier Area Transit (CAT) is developing a ten-year transit plan to guide the future of mobility in the region. Your comments will help to define CAT's vision to promote improvements that enhance mobility over the next decade.**

**Two online surveys will be distributed during the planning process. The first survey will be used to help understand the mobility needs and to identify gaps in existing services. Your responses to the survey will be used to define proposed mobility enhancements which will be included in the second survey in order to obtain your thoughts about the proposed mobility improvements. Your responses to these surveys will inform the recommendations that are developed and approved.**

**Thank you for your participation!**

1. What is your understanding of and experience with Collier County's existing public transportation (CAT) and related mobility services in the area?

- ☐ I use/have used the bus system
- ☐ I have seen the bus, but I do not ride
- ☐ I know someone who rides the bus
- ☐ None
- ☐ Other (please specify)

2. How much awareness is there in Collier County about transit/public transportation?

- ☐ High
- ☐ Moderate
- ☐ None at all
- ☐ Not sure

3. What is your opinion of transit services in Collier County?

- ☐ It must be provided
- ☐ It might be useful
- ☐ It does not matter to me
- ☐ Not sure it is useful
- ☐ We do not need it

4. What is your perception of transit's role in Collier County? **Check all that apply.**

- ☐ Serve tourists/visitors
- ☐ Serve workers/commuters
- ☐ Relieve parking/congestion
- ☐ Serve persons who do not have access to a vehicle

5. What mobility improvements would you prefer to see in Collier County? **Please choose any that apply.**

- ☐ More bus service – service to new areas/surrounding counties
- ☐ Expanded bus service hours – earlier and later service
- ☐ High frequency bus service – bus comes more often
- ☐ Enhanced transit network – express service and/or rail options
- ☐ Improved infrastructure for pedestrians and bicyclists – sidewalks and bike lanes
- ☐ More customer amenities – shelters and benches
- ☐ More transfer hubs – facilities where routes meet
- ☐ More Park and Ride lot locations
- ☐ Mobility-on-demand services – a vehicle that responds when and where you need it
- ☐ More scooter and bike-share services
- ☐ None of the above
- ☐ Other mobility services (please specify)

6. Which of the following would you utilize a Park and Ride lot for?

- ☐ To access bus service
- ☐ In conjunction with an Express bus route
- ☐ To participate in car pooling
- ☐ To access a Beach shuttle
- ☐ Would you like to see more Park and Ride locations? Please specify:

7. Who should benefit from mobility improvements?

- ☐ Benefit all
- ☐ Benefit those without a vehicle
- ☐ Benefit those who choose to use transit or an alternative mobility option
- ☐ Other (please specify)

8. How should we pay for expanded mobility service? **Check all that apply.**

- ☐ User fees – bus fares
- ☐ Use revenue from a mobility fee
- ☐ Use roadway funds
- ☐ Increase local taxes
- ☐ Create partnerships with businesses
- ☐ Advertising revenue
- ☐ Other (please specify)

9. Please specify whether you agree or disagree with the statements below.

	Agree	Somewhat Agree	Neutral	Somewhat Disagree	Disagree
CAT services are effective, convenient, and easy to use.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collier County needs more service and/or more service options.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Existing CAT service covers the areas I need to travel to regularly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collier County should invest more into expanding mobility services and options.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Additional public transit service will improve economic opportunities in Collier County.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CAT is effective at making the public aware of existing transit and mobility services.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

For statistical purposes, tell us a little about yourself. All replies are confidential.

10. Your age is...

- |                                   |  |
|-----------------------------------|--|
| <input type="radio"/> Under 18    | <input type="radio"/> 45-54 years      |
| <input type="radio"/> 18-24 years | <input type="radio"/> 55-64 years      |
| <input type="radio"/> 25-34 years | <input type="radio"/> 65 years or more |
| <input type="radio"/> 35-44 years |  |

11. You are:

- ☐ Female
- ☐ Male
- ☐ Nonbinary

12. Your ethnic origin is...

- |  |  |
|--|--|
| <input type="radio"/> Black/African American | <input type="radio"/> Asian/Pacific Islander           |
| <input type="radio"/> White/Caucasian        | <input type="radio"/> American Indian or Alaska Native |
| <input type="radio"/> Hispanic/Latino        | <input type="radio"/> Two or More Races                |
| <input type="radio"/> Other (please specify) |  |

13. How many motor vehicles in your household are available for your use?

- ☐ One
- ☐ Two
- ☐ Three or More
- ☐ None

14. What was the range of your total household income for 2019?

- |  |  |
|--|--|
| <input type="radio"/> Less than \$10,000   | <input type="radio"/> \$30,000 to \$39,999 |
| <input type="radio"/> \$10,000 to \$14,999 | <input type="radio"/> \$40,000 to \$49,999 |
| <input type="radio"/> \$15,000 to \$19,999 | <input type="radio"/> \$50,000 to \$59,000 |
| <input type="radio"/> \$20,000 to \$24,999 | <input type="radio"/> \$60,000 or more     |
| <input type="radio"/> \$25,000 to \$29,999 |  |

15. Do you speak a language other than English at home?

- ☐ Yes
- ☐ No

16. Home ZIP code:

17. Do you have any other comments or suggestions that would help CAT improve mobility services? Please explain:





## CAT 2020-2029 Transit Development Plan

Please take 10 minutes to help us prioritize the transit needs in Collier County.

As a part of the proposed improvements, we have streamlined the route network and consolidated several routes to reduce travel times, reduce service duplication, and increase frequencies in some cases. In addition, based on funding availability, we are proposing service to new areas, increased service frequencies, and extended service hours.

1. Tell us about where you typically travel.

My home zip code is:

My work or school zip code  
is: (if applicable)

2. Tell us about your typical travel needs within Collier County. (Check the best option to each statement)

	N/A	1-3 days/week	4+ days/week
I travel for work or school:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I travel for shopping:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I travel for medical services:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I travel for other reasons:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 3. I usually travel by: (select one)

- ☐ Walk
- ☐ Bike
- ☐ Car/Motorbike
- ☐ Bus
- ☐ Taxi/Ride Hailing



## CAT 2020-2029 Transit Development Plan

\* 4. I typically ride the following bus(es):

☐ Route 11

☐ Route 18

☐ Route 26

☐ Route 12

☐ Route 19

☐ Route 27

☐ Route 13

☐ Route 20

☐ Route 28

☐ Route 14

☐ Route 22

☐ Route 29 (Beach Bus)

☐ Route 15

☐ Route 23

☐ Route 121 (Immokalee to Marco Island)

☐ Route 16

☐ Route 24

☐ LinC (to Lee County)

☐ Route 17

☐ Route 25



## CAT 2020-2029 Transit Development Plan

### General Preferences

5. If I had a choice between more frequent service and longer hours of service, I would choose...

- ☐ More frequent service – bus comes by more often
- ☐ Longer hours of service – bus starts earlier and/or runs later in the day

6. If I had a choice between a faster bus ride (fewer bus stops on the street) or easier access to bus stops (more bus stops and buses turning into shopping centers and apartment complexes to stop), I would choose...

- ☐ Faster bus ride – longer walk to bus stop, shorter ride on bus
- ☐ Easier access to bus stops- shorter walk to bus stop, longer ride on bus

7. If I had a choice between longer hours of service and a longer route serving more destinations, I would choose...

- ☐ Longer hours of service - bus runs earlier or later, longer service day
- ☐ Longer route - more bus stops served on the same route, longer ride on bus



## CAT 2020-2029 Transit Development Plan

### Proposed Mobility on Demand Zones

**Mobility on Demand (MOD)** is a shared ride service operated by CAT using small buses or passenger vans and work similar to ridesharing services like Uber and Lyft. Riders request a ride using a phone app or by calling a reservation line. Your ride can be immediate – I want to go now – or scheduled for later. Rides can be point-to-point to locations within your zone (e.g.; home to grocery store). Rides can also be regional by connecting you to a transit hub where you can catch the CAT bus for longer trips (e.g.; home to shopping center where you get the bus to downtown). MOD services are available to everyone (no eligibility required) and provide you with low cost option to getting around.



8. Based on the description of mobility on demand services, how likely would you be to use this type of service?

- ☐ Very likely to use this type of service
- ☐ Likely to use this type service
- ☐ Not likely to use this type of service
- ☐ I would not use this type of service
- ☐ Not sure

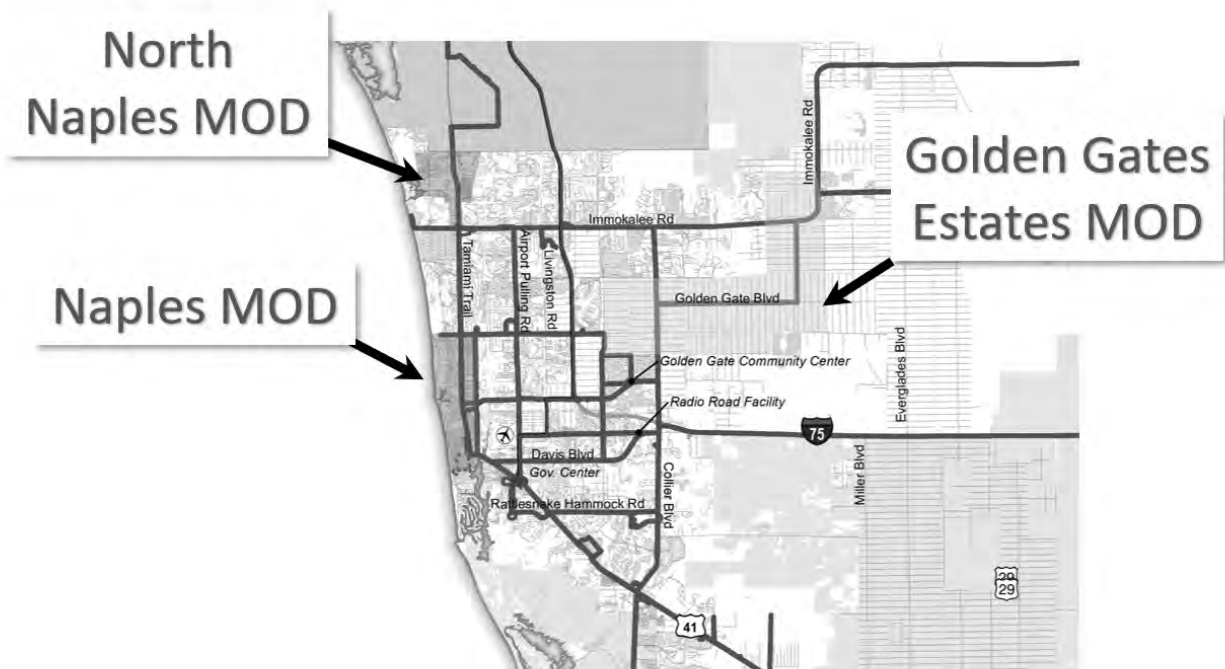
9. Please provide comments about the MOD service:





## CAT 2020-2029 Transit Development Plan

Looking at the map of areas where MOD service is being proposed, please tell us how important each service area is to you. A MOD service is proposed for Marco Island. A question about the Marco Island MOD service is provided later.



10. Please rate the importance of providing MOD service in the proposed service areas:

	Not a Priority		Neutral Priority		Higher Priority	
North Naples	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Naples	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Golden Gate Estates	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. Please provide comments about these MOD changes:





## CAT 2020-2029 Transit Development Plan

### Proposed Improvements for Naples and Golden Gate Area

The following changes are proposed in Naples and in the Golden Gate Area

#### Existing Network



#### Proposed Network



12. Looking at the map of proposed service changes and new services, please tell us how important each is to you.

**Please rate the importance of each service improvement:**

	Not a Priority		Neutral Priority		Higher Priority
Route 12 – extend north on Goodlette-Frank Road to Tamiami Trail/Immokalee Road	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Route 13 – two-way service Coastal Center to Govt Center, improved frequency from every 60 minutes to every 40 minutes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Route 14 – two-way service Coastal Center to Thomasson to Govt Center	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Route 17/18 – combines the 17 and 18 into a two-way route on Collier Blvd and Rattlesnake Hammock, improves frequency from 60 minutes to every 45 minutes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Route 19/28 – combines routes and hours along the Route 28 alignment, add more trips provided per day	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Route 20/26 – combines the 20 and 26, improves service in Golden Gate, adds more trips per day	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Golden Gate Pkwy – splits Route 25, operates current east-west service along Golden Gate Pkwy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Goodlette-Frank Road – splits Route 25, extends north-south service along Goodlette-Frank Road to Walmart at Immokalee Road/Tamiami Trail	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Immokalee Road – splits Route 27, extends the route east on Immokalee Road to Randall Road	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collier Blvd – splits Route 27, extends north-south service from Immokalee Road south to Walmart at Collier Blvd and Tamiami Trail	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Premium Express – a new service using managed lanes on I-75 to link the Government Center to the FGCU area in Lee County	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bayshore Shuttle – new shuttle service on Bayshore between Weeks Ave and Botanical Gardens, operated every 15 minutes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Autonomous Circulator – new circulator in downtown Naples from 8th St N, west along 4th Ave, south on 3rd St S, to 13th Ave S, operates every 15 minutes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Electric Naples pier Shuttle – new electric shuttle connecting Cambier Park along 8th St S to Marina and to Naples Pier via Broad Ave, operates every 15 minutes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. Please provide comments about these changes:

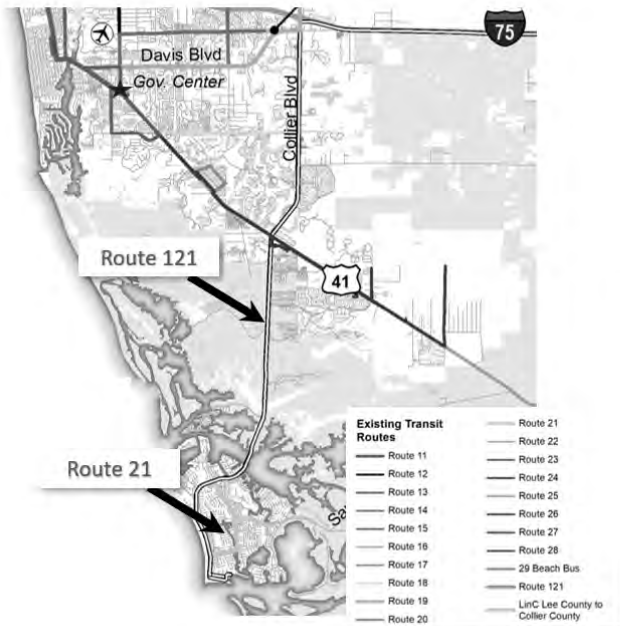


## CAT 2020-2029 Transit Development Plan

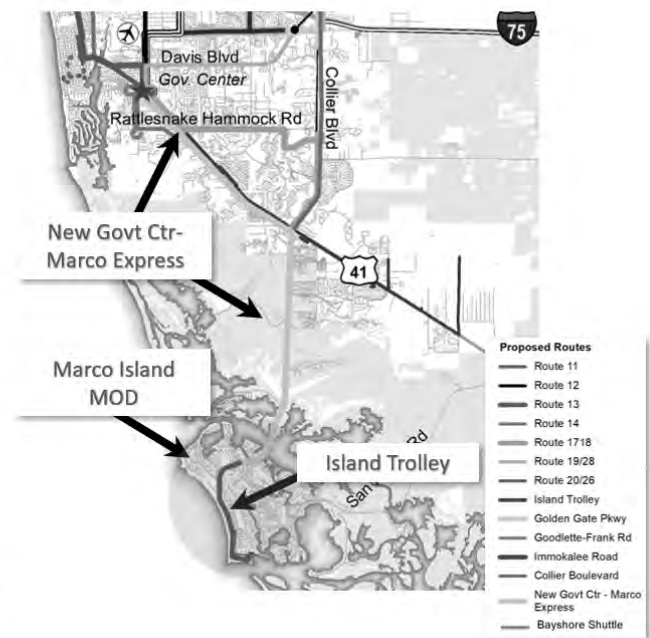
### Proposed Improvements for Marco Island Area

The following changes are proposed for the Marco Island Area

#### Existing Network



#### Proposed Network





14. Looking at the map of proposed service changes and new services, please tell us how important each is to you.

**Please rate the importance of each service improvement:**

	Not a Priority		Neutral Priority		Higher Priority
Island Trolley – new Island Trolley along Collier Blvd on Marco Island	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
New Govt Ctr–Marco Island Express - Convert Route 21 to a limited stop express from Govt Center to Walmart at Collier Blvd and Tamiami Trail to Marco Island	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Marco Island Mobility on Demand – add new on demand service on Marco Island	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Everglades City Van Pool – new van pool service connecting Everglades City to Govt Center	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Route 121 - Add one AM and one PM trip on service between Marco Island and Immokalee	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15. Please provide comments about these changes:

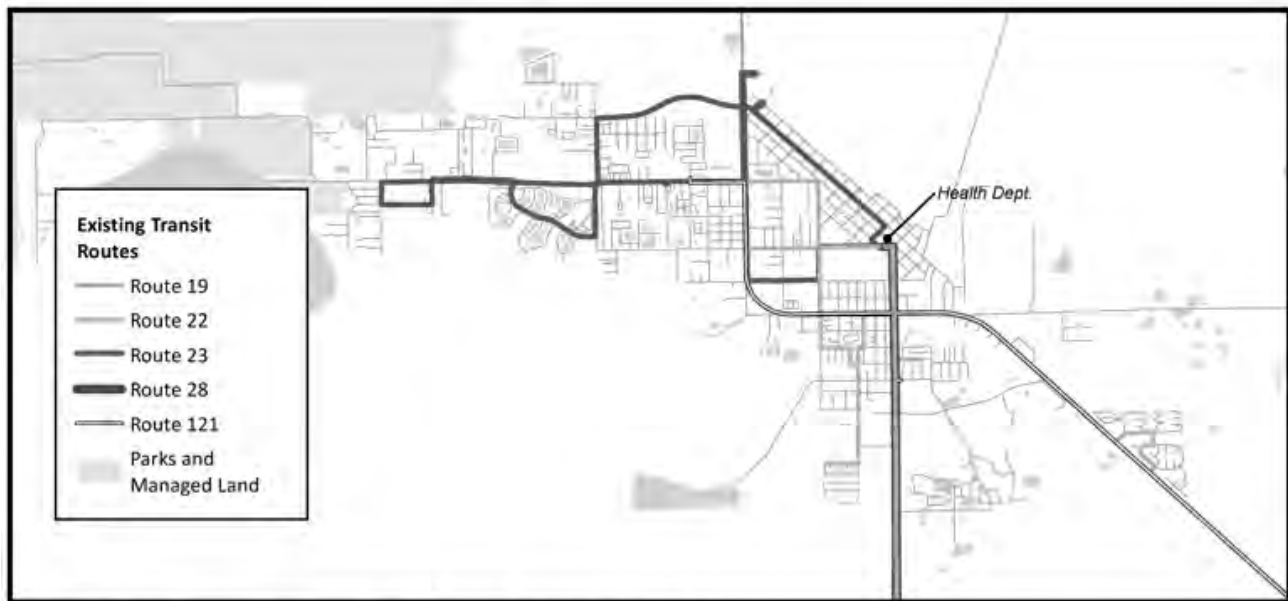


## CAT 2020-2029 Transit Development Plan

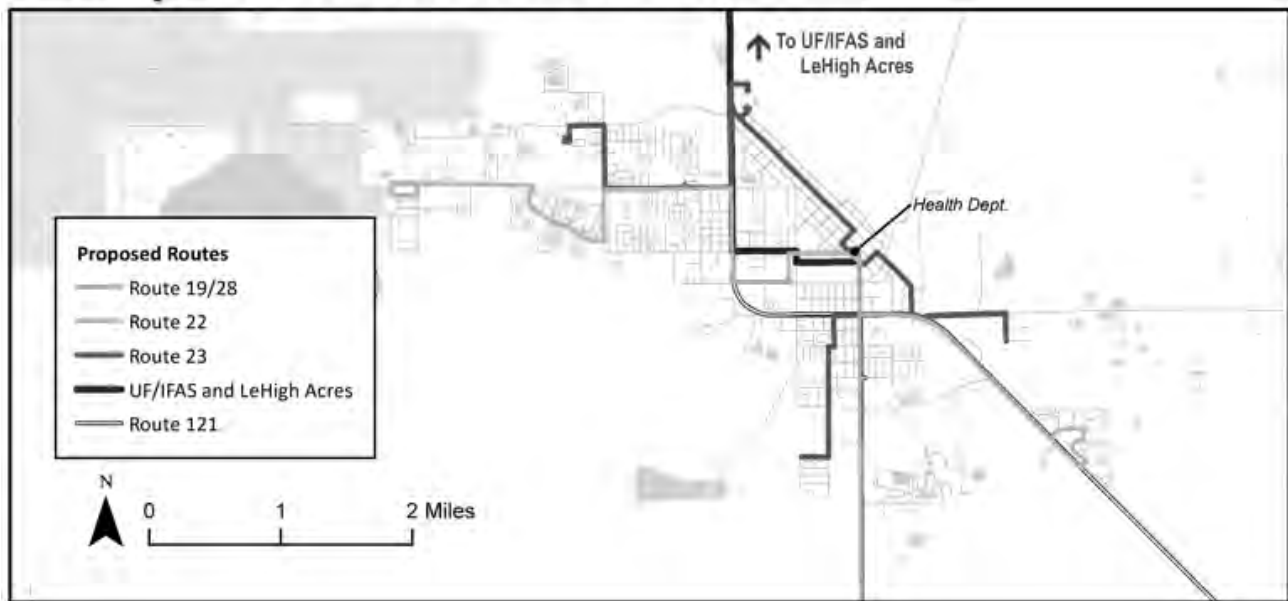
### Proposed Improvements for Immokalee

The following improvements are proposed for Immokalee in order to reduce duplication, streamline the routes, and extend service area covered, and provide more direct routing.

- **Realign Route 22** – The route would connect the westernmost residential cluster on Lake Trafford Road to the County Health Department, several packing houses along New Harvest Road, and finally to the easternmost residential cluster on Farm Workers Way.
- **Realign Route 23** – This would extend service east along Main Street and to the various packing houses that employ. Other destinations include Immokalee State Farmer's Market, Marion Fether Medical Center, the County Health Department, and Career Source.
- **New UF/IFAS to Lehigh Acres Route** – Connecting to the UF Agriculture Center and Lehigh Acres was identified from public outreach.



## Proposed Network



16. Looking at the map of proposed service changes and new services, please tell us how important each is to you.

**Please rate the importance of each service improvement:**

	Not a Priority		Neutral Priority		Higher Priority
Realign Route 22	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Realign Route 23	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Add new service to UF/IFAS campus and Lehigh Acres	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

17. Please provide comments about these changes:

--



## CAT 2020-2029 Transit Development Plan

### Frequency Improvements

18. Thinking about how often the bus comes by, please tell us how important the following frequency improvements are to you.

**Please rate the importance of the proposed improvements:**

	Not a Priority		Neutral Priority		Higher Priority
Route 11 to every 20 minutes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Route 12 to every 30 minutes during peak periods, 60 off-peak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Route 13 to every 30 minutes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Route 14 to every 30 minutes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Route 15 to every 45 minutes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Route 16 to every 45 minutes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Route 24 to every 60 minutes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19. Please provide comments about service frequency changes:





## CAT 2020-2029 Transit Development Plan

### Span Improvements

20. Thinking about how late the bus runs, please tell us how important the following changes are to you.

**Please rate the importance of the proposed improvements:**

	Not a Priority		Neutral Priority		Higher Priority
Route 11 (extend service until 10 PM)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Route 13 (extend service until 10 PM)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Route 14 (extend service until 10 PM)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Route 17 (extend service until 10 PM)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Route 19 (extend service until 10 PM)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Route 24 (extend service until 10 PM)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Thank you for taking our survey!

## Appendix D: Farebox Recovery Ratio Report

## Current Farebox Recovery Ratio

The farebox recovery ratio for CAT, the public transportation provider for Collier County, was 13.9% percent for all fixed-route services in fiscal year (FY) 2018. This number reflects a 34% decrease over the five-year period from FY 2013 to FY 2018.

## Prior Year Fare Studies and Changes

The last CAT's fare change was implemented in 2015 and is listed in Table D-1. As a result, the current full fare on the fixed-route system is \$2.00, and \$1.00 for the reduced fare. The changes implemented in 2015 included establishment of a Summer Paw Pass Program and a Corporate Employee Discount Pass. A fare study was completed FY 2018.

**Table D-1: Fixed-route Fare Structure Modification**

Fare Category	2017		Approved Change	
	Full Fare	Reduced Fare	Full Fare	Reduced Fare
One-way Fare	\$1.50	\$0.75	\$2.00	\$1.00
Children aged 5 and under	Free	Free	Free	Free
Transfer	\$0.75	\$0.35	Free / 90 min.	Free / 90 min.
Day Pass	\$4.00	\$2.00	\$3.00	\$1.50
7-day Pass	\$15.00	\$7.50	N/A	N/A
15-day Pass	N/A	N/A	\$20.00	\$10.00
30-day Pass	\$35.00	\$17.50	\$40.00	\$20.00
Marco Express One-way Fare	\$2.50	\$1.20	\$3.00	\$1.50
Marco Express 30-Day Pass	\$70.00	\$35.00	\$70.00	\$35.00

## Strategies That Will Affect the Farebox Recovery Ratio

The 2021–2030 Transit Development Plan (TDP) Major Update identifies strategies that will be used to maintain or increase the farebox recovery ratio, including the following:

- Continue planned program to replace the existing, outdated farebox equipment on all vehicles so CAT's fare structure can continue to include smartcard technology and mobile fare payment to help enhance the fare collection process, minimize cash handling, and attract new patrons who may be put off by transit because of the fare payment process.
- Monitor key performance measures for individual fixed routes.
- Ensure that transit serves major activity centers, potentially increasing the effectiveness of service.
- Continue to transition Transportation Disadvantaged (TD) and ADA passengers to fixed-route services to increase ridership.
- Increase ridership through enhanced marketing and community relations activities.
- Provide local employers with incentives for transit use.
- Evaluate the fare structure every three years.

- Monitor opportunities to secure additional funding to improve frequencies on existing routes and attract new riders.
- Add additional buses and combine bi-directional routes to improve frequencies and improve the customer experience and attract new riders.
- Minimize costs required to operate and administer transportation services.
- Conduct on-board surveys every five years to gather information on how to make services more convenient and useful to patrons.
- Complete ongoing preventative maintenance activities and replace fareboxes as needed to ensure the fare collection equipment is performing at optimum capacity.

## Appendix E: Recommended Monitoring Program

### Recommended Monitoring Program

Once the recommended transit services are implemented, the following fixed- route and Mobility-on-Demand (MOD) performance indicators and measures should be monitored by CAT on a quarterly basis as part of the recommended performance monitoring program:

- **Passenger Trips** – Annual number of passenger boardings on the transit vehicles.
- **Revenue Miles** – Number of annual miles of vehicle operation while in active service (available to pick up revenue passengers).
- **Revenue Hours** – Total hours of operation by revenue service in active revenue service.
- **Passenger Trips per Revenue Mile** –Ratio of passenger trips to revenue miles of service. This is the key indicator of service effectiveness that is influenced by the levels of demand and the supply of service provided.
- **Passenger Trips per Revenue Hour** –Ratio of passenger trips to revenue hours of operation.

As fixed-route-type services typically take up to three years to become established and productive, the performance data up to that point should be reviewed and interpreted cautiously. Although adjustments/modifications may occur, outright discontinuations based on performance monitoring data alone are discouraged.

### Evaluation Methodology and Process

This process is based on two measures, trips per mile and trips per hour, which are weighted equally to derive an overall route score. A route's score for a particular measure is based on a comparison of the measure as a percentage of the system average for that particular measure. These individual measure scores are added together and divided by 2 to get a final aggregate score. This final composite performance score is an indication of a route's performance for all three measures when compared to the system average for those measures. A higher score represents better overall performance when compared to other routes.

The noted comparative performance evaluation can be beneficial, but care should be taken when using the final scores and rankings, because these figures are comparing routes to one another and may not reflect the specific goals established for a particular route (i.e., geographic coverage vs. ridership performance). The process is particularly useful, however, in highlighting those routes that may have performance-related issues. These routes can then be singled out for closer observation in future years to determine specific changes that may help mitigate any performance issues.

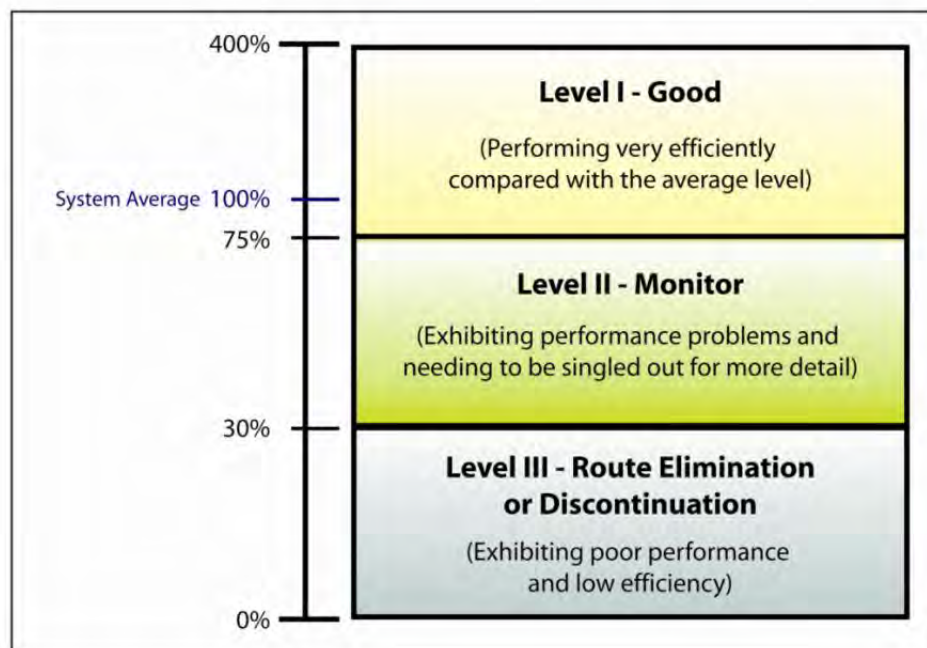
Once a route score is determined, routes can be ranked to show the highest performing and lowest performing routes. The rankings are a useful proxy for determining the comparative performance of any route, as well as highlighting changes in performance over time. To track the performance variation over time, three performance levels have been developed:



- **Level I – Good ( $\geq 75\%$ )** – Transit routes in this category are performing efficiently compared with the average level of all the agency’s routes.
- **Level II – Monitor (30–74%)** – Routes in this category exhibit varying levels of performance problems and need more detailed analysis (e.g., ridechecks, on-board surveys, increased marketing efforts, etc.) to aid in identifying specific changes that can be made to help improve the route’s performance.
- **Level III – Route Modification or Discontinuation ( $\leq 29\%$ )** – Routes in this category exhibit poor performance and low efficiency. Recommendations for these routes may include truncation of the route, reduction in the route’s number of revenue hours, or discontinuation of the route.

Figure E-1 illustrates the three evaluation levels and notes the recommended thresholds for each level.

**Figure E-1: Route Performance Evaluation Levels**



**EXECUTIVE SUMMARY**  
**Committee Action**  
**Item 7B**

**Endorse the Transportation System Performance Report and Action Plan**

---

**OBJECTIVE:** For the committee to endorse the Transportation System Performance Report and Action Plan (TSPR)

**CONSIDERATIONS:** The Congestion Management Process 2017 Update (2017 CMP Update) calls for the preparation of a Biennial Transportation System Performance Report (TSPR). The project consultant, Tindale Oliver, will give a presentation on the TSPR, which includes an analysis of baseline conditions, an action plan and an implementation matrix. The consultant will describe how the TSPR and the MPO's Congestion Management Process (CMP) inter-relate. As part of the Action Plan component, suggested revisions to the 2017 CMP Update include updating the goals, objectives and performances used in the TSPR, an expanded strategy matrix and project evaluation process.

The Congestion Management Committee endorsed the TSPR at its meeting on July 15, 2020. The TSPR is posted on the MPO's website for public review and comment. One comment was received related to an error in a table. The error was corrected in the document presented for review.

**Attachment 1** is the full TSPR report including appendices.

The TSPR will be presented to the MPO Board for approval at their September 11<sup>th</sup> meeting.

**STAFF RECOMMENDATION:** For the committee to endorse the Transportation System Performance Report and Action Plan (TSPR)

Prepared By: Brandy Otero, Collier MPO Principal Planner

Attachment 1: Transportation System Performance Report and Action Plan (large document) can be found at: [https://www.colliermopo.org/wpcontent/uploads/Action-Plan\\_V3-with-Appendices.pdf](https://www.colliermopo.org/wpcontent/uploads/Action-Plan_V3-with-Appendices.pdf)

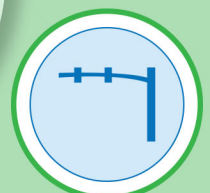


## Transportation System Performance Report & Action Plan

# Action Plan

DRAFT

*Prepared by*



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## 1.0 Introduction

The Collier Metropolitan Planning Organization (MPO) is federally mandated to implement a Congestion Management Process (CMP) as part of its routine planning efforts.

The Congestion Management Process (CMP) is a detailed 8-step process that an urban area follows to improve the performance of its transportation system by reducing the negative impacts of traffic congestion. A CMP is developed to improve traffic flow and safety conditions. It seeks to accomplish this by using an objectives-driven, performance-based approach and provides accurate, up-to-date information on transportation system performance and assesses alternative strategies for congestion management that meet state and local needs.

To carry out these requirements, the MPO has created the Transportation System Performance (TSP) Report and Action plan. The Action Plan covers steps 5 through 8 of the CMP. Steps 2 through 4 are discussed in the Baseline Conditions Report. As the first TSP Report produced by the MPO, this Action Plan includes recommendations for revising the overall CMP report that was last adopted by the MPO Board in 2017. The 2017 CMP provides the overview and direction for completing the Baseline Conditions and Action Plan analysis.

The Baseline Conditions Report and the Action Plan work in tandem to cover each of the 8 steps in detail. The list below shows each step of the CMP and the specific plan and chapter in which it is addressed.

- |   |  |
|---|--|
| <p><b>1. DEVELOP CONGESTION MANAGEMENT OBJECTIVES</b> – Define objectives for congestion management that achieve the desired outcome (<i>Action Plan – Chapter 2</i>)</p>                         | <p><b>5. ANALYZE CONGESTION PROBLEMS AND NEEDS</b> – Identify locations with congestion problems and identify the sources of these problems. (<i>Baseline Conditions Report – Chapter 5 &amp; Action Plan – Chapter 3</i>)</p> |
| <p><b>2. DEFINE CMP NETWORK</b> – Define the transportation system that will be analyzed in the CMP (<i>Baseline Conditions Report – Chapter 2</i>)</p>   | <p><b>6. IDENTIFY AND ASSESS STRATEGIES</b> – Identify and evaluate benefits of appropriate congestion management strategies (<i>Action Plan – Chapter 4</i>)</p>  |
| <p><b>3. DEVELOP MULTIMODAL PERFORMANCE MEASURES</b> – Define measures that will be used to measure congestion (<i>Baseline Conditions Report – Chapter 3</i>)</p>                                | <p><b>7. PROGRAM AND IMPLEMENT STRATEGIES</b> – Identify plan for implementing the CMP as part of the regional transportation planning process (<i>Action Plan – Chapter 5</i>)</p>  |
| <p><b>4. COLLECT DATA/ MONITOR SYSTEM PERFORMANCE</b> – Establish a coordinated program for data collection and system performance monitoring (<i>Baseline Conditions Report – Chapter 4</i>)</p> | <p><b>8. EVALUATE STRATEGY EFFECTIVENESS</b> – Implement a process for regular assessment of the effectiveness of implemented strategies (<i>Action Plan – Chapter 6</i>)</p>  |



## Action Plan

The CMP is a working tool that is integrated into the MPO's project prioritization process, Transportation Improvement Program (TIP), and Long Range Transportation Plan (LRTP). The objectives-driven, performance-based CMP starts with the Baseline Conditions Report which monitored and evaluated the current conditions to identify where congestion exists. Based on the identified goals and objectives and the established performance measures of the CMP, the Action Plan analyzed and evaluated the congested areas to identify potential mitigation strategies, implementation of appropriate strategies, and the development of a monitoring plan.

The outputs of the CMP, such as identified hot spot congested corridors/locations and their recommended mitigation measures, proceed through the CMP process where they are evaluated, and projects or strategies are selected for implementation. The projects or strategies that are identified for implementation through the CMP are then moved into project development and programmed into the TIP for funding and implementation. Once completed, the implemented projects are monitored to evaluate the strategy effectiveness. In Collier County, CMP projects are typically funded using boxed funds identified in the LRTP along with other local revenues. This allows the MPO to review current needs and fund strategies for implementation which best address congestion.

In addition to identifying future congestion reduction strategies, this Action Plan includes suggested revisions to the 2017 CMP Report based on the review of gaps in data availability and revisions resulting from the Baseline Conditions analysis. Further recommendations are identified later in this report associated with the identification and evaluation of strategies implemented through the CMP. These recommendations are outlined in the following section.



## 2.0 Congestion Management Process Revisions

Revisions to four areas of the Congestion Management Process were identified during the TSP Baseline Conditions and Action Plan. These include:

- 1) Updated goals, objectives, and performance measures in the Baseline Condition Report.
- 2) New congestion management strategies added to the Implementation Matrix to address the expanded analysis and definition of congestion in the Baseline Conditions Report.
- 3) Updated Strategy Evaluation Criteria to align with congestion management, goals, strategies, and hot spot congested areas in Collier County.
- 4) Revising the strategy evaluation and monitoring plan to better identify the appropriate performance measures being addressed.

### 2.1 Goals and Objectives

The CMP Goal and Objectives were expanded in the Baseline Conditions Report to guide the process of monitoring congestion and improving the mobility of persons and goods in Collier County. As a part of the TSP recommended enhancements to the CMP process, these revisions were compiled based on a review of CMP goals and objectives used by other MPOs in Florida and nationwide that would complement the Collier MPO's 2017 CMP Objectives.

The CMP goal and objectives are used to guide the selection of performance measures used to measure congestion, identify, and prioritize congestion management strategies.

#### 2.1.1 Goal

Improve Collier County's transportation system performance and reliability through mitigating congestion and improving the safety and mobility of people and goods.

#### 2.1.2 Objectives

**Objective 1:** Promote transportation investments that support the Long Range Transportation Plan's priorities, goals, and objectives.

**Objective 2:** Integrate the Congestion Management Process and its proposed improvements into the Long Range Transportation Plan, the Transit Development Plan (TDP), the Bicycle and Pedestrian Master Plan, and support the integration of transportation and land use.

**Objective 3:** Develop, maintain, expand, and close gaps in pedestrian, bicycle, and shared use path facility networks for efficient and safe movement of people. Connect these pedestrian and bicycle facilities to existing and future transit stops.

**Objective 4:** Reduce vehicle miles traveled (VMT) by encouraging alternative modes of transportation, supporting sustainable land use development, and creating an integrated multi-modal transportation system.

**Objective 5:** Optimize the movement of goods.

**Objective 6:** Improve the safety of the transportation facilities.



## Action Plan

### 2.1.3 Performance Measures

Table 3-2 provides a crosswalk illustrating the alignment between the multimodal performance measures and the objectives that guide the CMP as noted above. Each performance measure was chosen to assess system performance and identify problem areas to achieve the desired outcome stated by the goal and objectives.

**Table 2-1: Performance Measure & Objective Alignment**

Category		Objectives	1	2	3	4	5	6
Travel Demand	Percent of Roadway Miles by Volume to Capacity (V/C) Ratio		✓	✓			✓	
	Percent of Vehicle Miles Traveled by Volume to Capacity (V/C) Ratio		✓	✓			✓	
	Number of signalized intersections connected to ATMS		✓	✓			✓	
Transit Travel	Average bus route service frequency and number of routes		✓	✓		✓		
	Passenger Trips (Annual Ridership)		✓	✓		✓		
	Passenger trips per revenue hour		✓	✓		✓		
	Transit On-Time Performance		✓	✓		✓		
Pedestrian/ Bicycle Facilities	Centerline miles of bicycle lanes		✓		✓	✓		
	Linear miles of connector sidewalks on arterial roadways		✓		✓	✓		
	Linear miles of Shared Use Paths adjacent to roadways		✓	✓	✓	✓		
Goods Movement	Vehicle Miles Traveled (VMT) on designated truck routes with V/C greater than 1.0		✓	✓			✓	
	Number of Crashes Involving Heavy Vehicles / Trucks		✓	✓			✓	✓
Safety	Total Crashes		✓		✓			✓
	Motor vehicle severe injury crashes		✓		✓			✓
	Motor vehicle fatal crashes		✓		✓			✓
	Pedestrian and bicycle severe injury and fatal crashes		✓		✓			✓
TDM	Number of people registered in the FDOT Commute Connector database that have an origin in Collier County.							
			✓	✓		✓		
Accessibility	Share of regional jobs within ¼ mile of transit		✓	✓		✓		
	Share of regional households within ¼ mile of transit		✓	✓		✓		
Incident Duration	Mean time for responders to arrive on-scene after notification		✓					✓
	Mean incident clearance time		✓					✓
	Road Ranger stops		✓					✓
Customer Service	Report on nature of comments/responses and customer satisfaction.		✓	✓				



#### 2.1.4 Implementation Strategies

Based on the expanded definition of congestion causing factors included in the Baseline Conditions Report, appropriate strategies have been suggested and included in the Congestion Management Strategies. These strategies provide the MPO's planning partners with an expanded opportunity to identify future projects which address a range of multimodal considerations. Section 4 of this report provides additional detail on those revisions.

#### 2.1.5 Strategy Evaluation Criteria

As part of this TSP update, a review of the 2017 CMP Report identified certain performance measures were better suited as strategy evaluation criteria. In addition to relocating these performance measures to the strategy evaluation step, a criterion was added to screen project submittals for consistency with the identification of congestion hot spots in the Baseline Conditions Report.

#### 2.1.6 Strategy Effectiveness Matrix

Likewise, the strategy effectiveness used for evaluating implemented strategies was expanded to better connect the CMP performance measures to implemented projects consistent with the congestion reduction strategies identified as part of this Action Plan.





### 3.0 Analysis of Congested Areas and Hotspots

This section of the Action Plan furthers the analysis conducted in the Baseline Conditions Report which identified a tiered list of congestion hotspots. This section provides an analysis of those congested hot spots and identifies mitigation strategies based on the following categories:

- Committed Projects
- Safety
- Schools
- Transit
- Multimodal
- Intersection analysis (ICE)
- “Big Data”

Based on this analysis the list of CMP congestion mitigation strategies can be targeted based on congestion in Collier County.

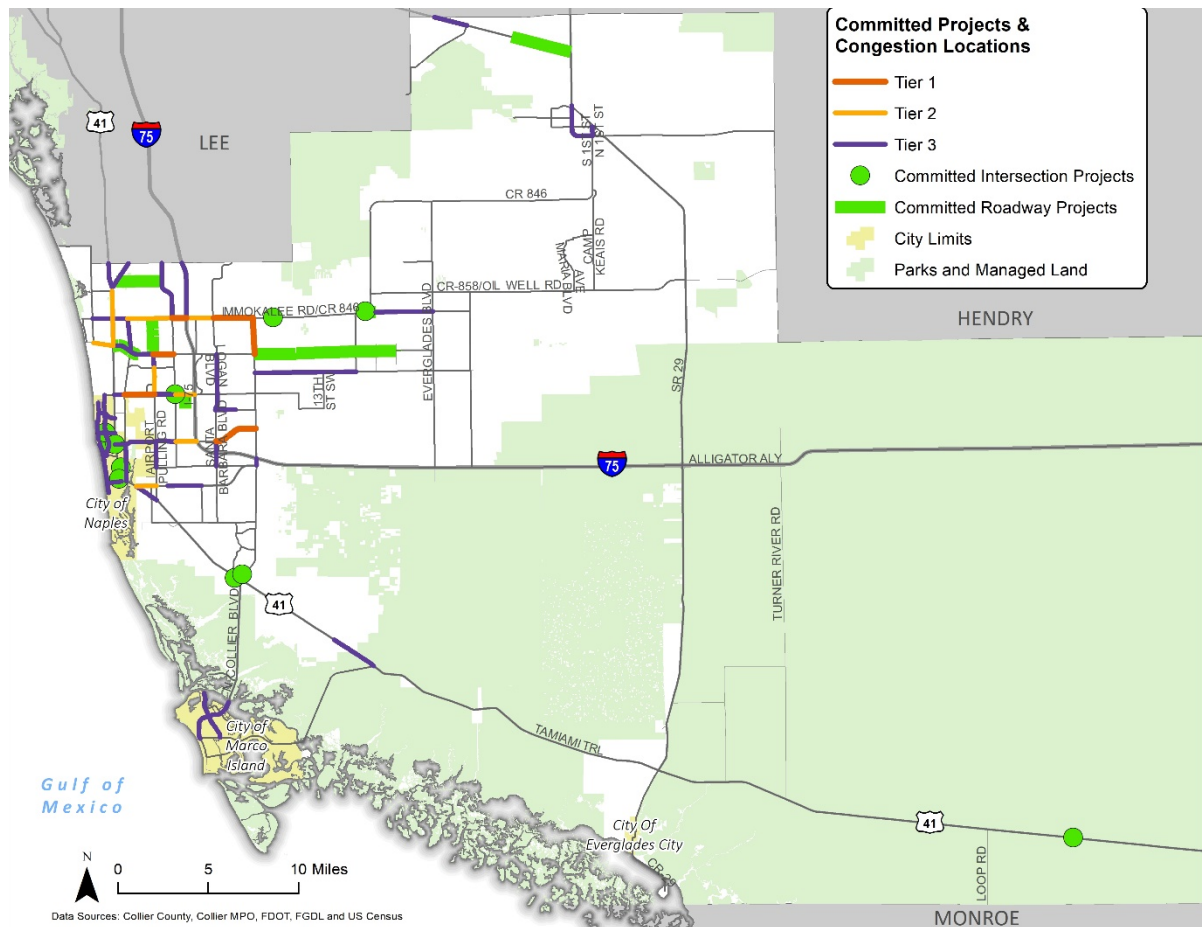
#### 3.1 Committed and Programmed Projects

Figure 3-1, Table 2-1 and Table 2-2 indicate the locations and descriptions of programmed roadway projects in Collier County. While these projects are not necessarily projects originally identified as part of the Congestion Management Projects, they address efficient travel movement, operational improvements, and roadway capacity which all have an influence on existing traffic conditions along the CMP network. These projects are overlaid with the hotspot congestion areas identified in the Baselines Conditions Report, in Figure 3-1, to highlight several of the congested corridors that will be affected by the implementation of these projects including:

- (CR 846) Immokalee Rd,
- Vanderbilt Beach Rd,
- Pine Ridge Rd,
- US 41 in the City of Naples.

Considering the effect of these projects on future levels of congestions is important for conducting the system wide analysis as these projects may alleviate or shift travel patterns leading to congested corridors.





**Figure 3-1: Programmed Roadway Projects in Collier County**

**Table 3-1: Programmed Roadway Segment Projects to be Evaluated**

Project Location	Improvement
16th St Bridge between Golden Gate Blvd and Randall Blvd	New Bridge
Randall Blvd from Immokalee Rd to 8th St	Widen from 2 to 4 lanes
SR 82 from Gator Slough Ln to SR 29	Widen from 2 to 4 lanes
Vanderbilt Beach Rd from Collier Blvd to 16th St	New 2 lane and new 4 lane facility and widen from 2 to 4 lanes
Airport Pulling Rd from Vanderbilt Beach Rd to Immokalee Rd	Widen from 4 to 6 lanes
Vanderbilt Beach Rd from US 41 to East of Goodlette-Frank Rd	Widen from 4 to 6 lanes
Veterans Memorial Blvd from Old US 41 to Livingston Rd	New 4 lane facility
Whippoorwill Ln from Pine Ridge Rd to Stratford Ln	Widen from 2 to 4



**Table 3-2: Programmed Intersection Projects to be Evaluated**

Project Location	Improvement
US 41 at Oasis Visitor Center	Add Left Turn Lane
Immokalee Rd at Woodcrest Dr	Intersection Improvement
Price St at Waterford Dr	Intersection Improvement
Pine Ridge Rd at Livingston Rd	Intersection Improvement
Randall Blvd at Immokalee Rd	Intersection Improvement
Triangle Blvd at Celeste Dr	Roundabout Implementation
10th St at 5th Ave N	Roundabout Implementation
3rd Ave S at 8th St S	Roundabout Implementation
Mooring Line Dr at Crayton Rd	Roundabout Implementation
Crayton Rd at Harbour Dr	Roundabout Implementation
Golden Gate Pkwy at US 41	Intersection Improvement

### 3.2 Safety Analysis

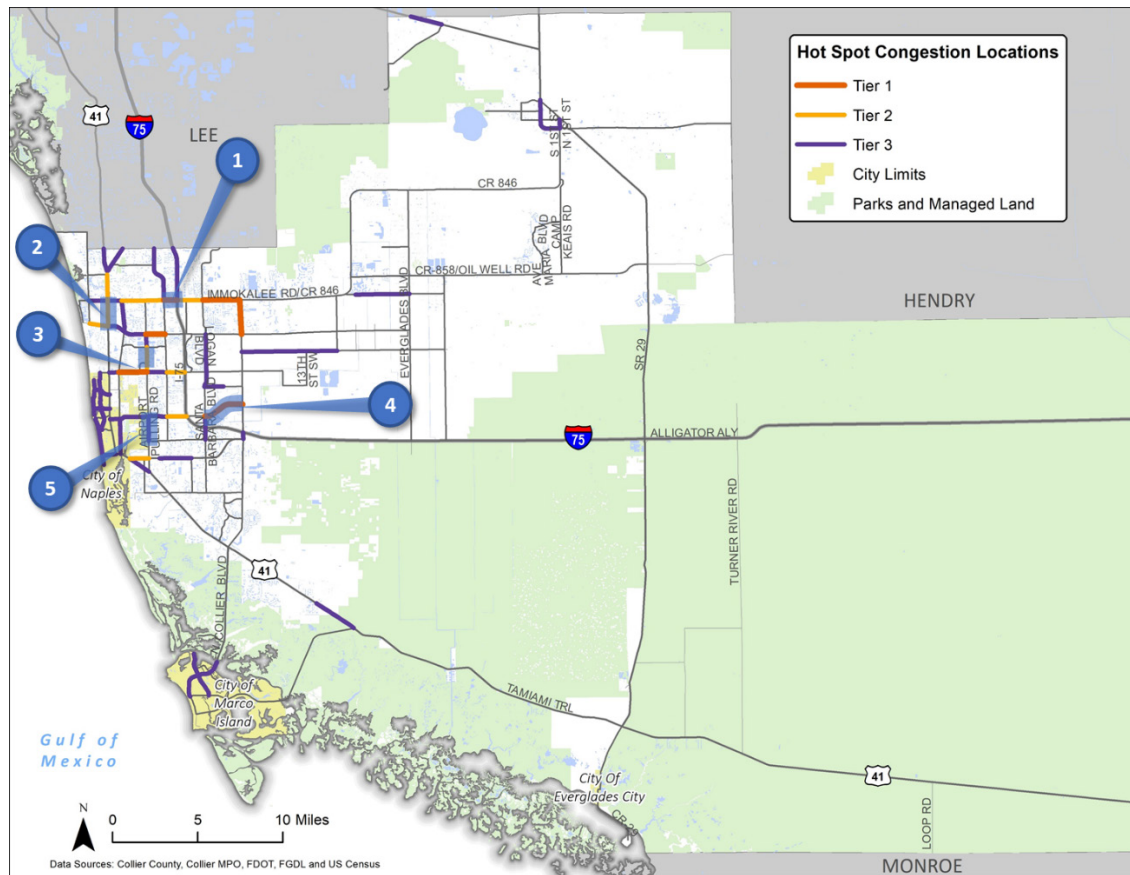
MPOs are required to address the Safety Emphasis Areas of the State Strategic Highway Safety Plan in their planning efforts. To address safety conditions, the Baseline Condition Reports determined the top intersection and roadway segment crash locations based on highest frequency (total) and highest rate (based on traffic volume) of crashes over a five-year analysis period (2014 to 2018). From the top crash locations, five high crash corridors were selected for conducting a safety assessment to identify appropriate countermeasures for improving roadway safety. Figure 3-2 shows the five corridors where the safety assessments were conducted.

The safety assessments included a disaggregation of the crash data by crash type, injury severity, environmental conditions, and road conditions and reported the statistics compared with statewide averages. A detailed desktop review was conducted on crash trends and roadway characteristics and observations to develop corridor specific safety recommendations. The safety assessments for these five locations are included in Appendix C.

Several of the key recommendations that came out the assessments include:

- Signal timing and signal change/clearance intervals studies
- Signage and Pavement Markings (e.g. special emphasis crosswalks, yield/stop for pedestrian signs, advanced street signs)
- Visibility and sightline improvements at intersections
- Traffic control devices (e.g. left turn signals, variable message signs, pedestrian hybrid beacons)
- New and upgrade existing bicycle and pedestrian facilities and crossings





**Figure 3-2: Safety Assessment Corridors**

Map	Safety Assessment Corridors
1	Immokalee Rd from Livingston Rd to I-75
2	US 41 from Vanderbilt Beach Rd to Immokalee Rd
3	Airport-Pulling Rd from Pine Ridge Rd to Orange Blossom Dr
4	Golden Gate Parkway from Santa Barbara Blvd to CR 951 (Collier Blvd)
5	Airport-Pulling Rd from Golden Gate Pkwy to Radio Rd

### 3.3 School Analysis

The Baseline Conditions Report listed top 20 schools with the most traffic congestion concerns and refined the list to 9 schools as top-tier locations. The analysis conducted to identify the top-tier locations of concern included selecting the schools with highest bus eligibility rates. Students that qualify for bus eligibility when they are not in reasonable walking distance from school. Reasonable walking distance is defined by Florida Administrative Code 6A-3.001(3) as any distance not more than 2 miles between the home and school or one and one-half (1 ½) miles between the home and assigned bus stop. Additionally, the School District of Collier County indicated that school bus ridership is very low. Therefore, schools with the highest bus eligibility rates were selected for further analysis and for evaluation against school congestion management



strategies because their student population is the most vehicle dependent therefore generating higher volumes of trips during arrival and pick-up time.

Congestion management tools were evaluated for applicability and effectiveness at each of the 9 schools. These tools were categorized into three types of strategies which included the operation and design of the adjacent roadway network; operation and design of the school site; and transportation modes.

The following provides a summary of the effectiveness of the congestion management strategies that were evaluated at the top-tier congested school locations. A full school by school analysis as well as additional recommendations for future studies and strategies can be found in Appendix D.

- Low to medium effectiveness
  - Traffic calming measures – many of the roadways adjacent to the schools are arterials and collectors, traffic calming techniques would not necessarily be feasible or would create more congestion.
  - Additional sidewalks and bicycle facilities – the installation of new pedestrian and bicycle facilities or upgrading the existing facilities (e.g. constructing wider or separated bike lanes and sidewalks) could increase the attractiveness of walking and cycling. However, some schools are located far away from residential areas or are located along major arterials where it is not safe or feasible to walk or bike due to age of the student and speed and volume of traffic.
- Medium to high effectiveness
  - Traffic signal coordination – tools such as signal coordination, signal optimization at school dismissal times, and pedestrian priority crossing signals were considered effective because of the flexibility of the tools. Additionally, many of the schools are near signals installed along adjacent arterials and collectors.
  - School site management – on-site design and off-site waiting lots, staggering dismissal times, and school dismissal automation software reduce peak volume times and congestion in drop-off and pick-up zones.
- High effectiveness
  - Transportation mode switch – encouragement strategies such as information about school bussing routes, vanpooling, carpooling apps, transit, walking school bus and bike to school days aim to reduce the number of vehicle trips at peak hours drop-off and pick-up times.







**Figure 3-3: Top-Tier Congested Schools**

**Table 3-3: Top Collier County Schools for Congestion Management Evaluation**

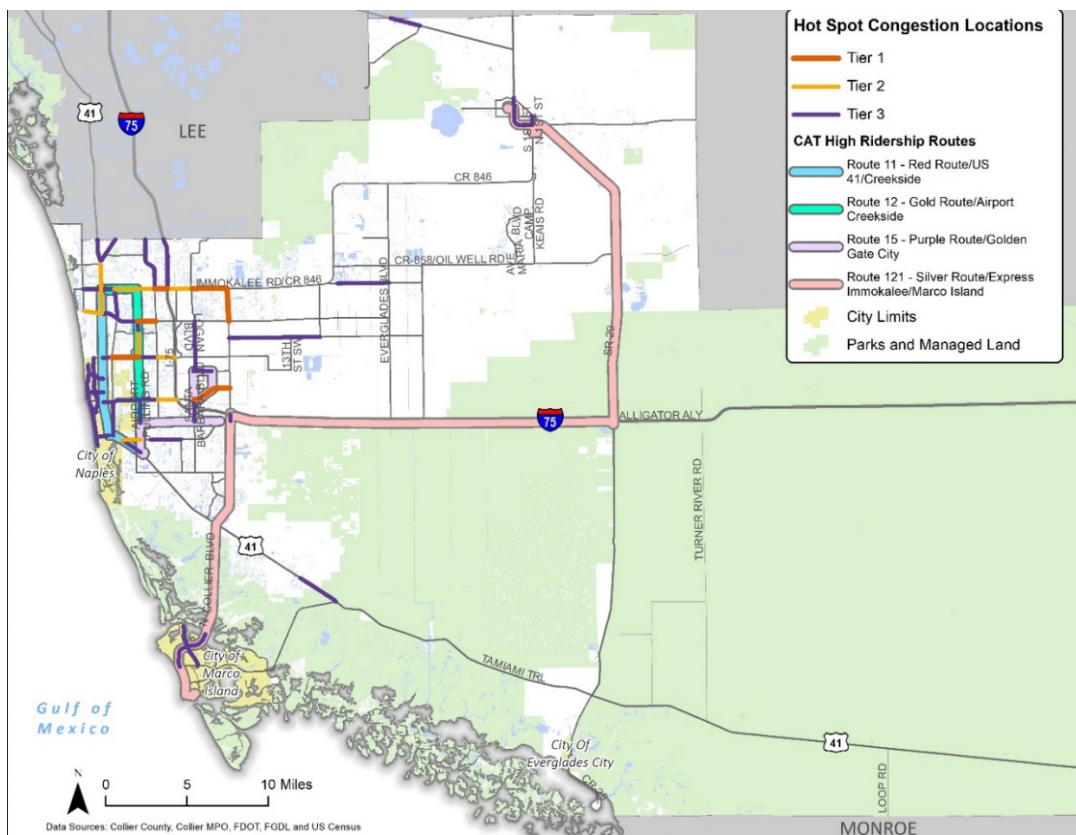
School Name	School Abbreviation
Gulf Coast High	GCH
Laurel Oak Elementary	LOE
Marco Island Academy	MIA
Naples High	NHS
North Naples Middle	NNM
Oakridge Middle School	OMS
Pelican Marsh Elementary	PME
Palmetto Ridge High	PRH
Pine Ridge Middle	PRM



### 3.4 Transit Analysis

Collier Area Transit (CAT) is currently conducting an update to the Transit Development Plan (TDP) that will develop improvements for meeting transit needs in Collier County for the next 10 years. Preliminary recommendations from the TDP were reviewed for strategies that coincide with congestion strategies and congestion hotspots identified in the Baselines Conditions Report. Figure 3-4 shows the transit routes with the highest ridership mapped against the congested hotspots. Routes with the highest ridership will be analyzed in the TDP.

The main recommendations from the TDP that were applicable to congestion hotspots were service improvements and one notable capital/infrastructure improvement. Service improvements include enhancements to existing routes such as improved system network design, increased service frequency, extended service hours, and/or additional days of service. This category also includes mention of service expansion through the addition of new routes or modes for operating transit in areas not currently served by CAT. As a result, a districtwide vanpool program is currently under development through a partnership between FDOT District 1 and Collier County. The notable Capital/Infrastructure improvements in the County involve Park-and-Ride Lots. A study is currently underway to identify and develop a standardized methodology for locating, operating, and maintaining park-and-ride sites in Collier County. The study will consider each site's proximity to existing and planned transit routes, major employment locations, educational facilities, and tourist destinations.



**Figure 3-4: Hot Spot Congestion locations and High Ridership Bus Routes**



### 3.5 Bicycle and Pedestrian Analysis

The 2019 Bicycle and Pedestrian Master Plan (BPMP) conducted an analysis of Collier County's transportation network based on equity, safety, and network connectivity to highlight priority multimodal projects. These priority projects were evaluated against the congestion hotspots identified in the Baseline Conditions Report to identify location where there was overlap between hot spot congestion areas and priority projects recommended in the BPMP.

Table 3-4 shows priority projects identified in the BPMP for Complete Streets/Safety Corridor Studies which make recommendations for multimodal projects that aim to reduce bicycle and pedestrian crashes and improve safety along the transportation network. These areas are high crash corridors that generate non-recurring congestion which have also been identified in the Baseline Conditions Report as having a high number and frequency of crashes, projections to exceed capacity in 2023, proximity to schools, and slows speeds during peak hours.



**Table 3-4: Complete Streets/Safety Corridor Studies**

Road	From	To	Project Description
Airport Rd	Estey Ave	Golden Gate Pkwy	Corridor Study
US 41	Commercial Dr/Palm St	10th Ave N	Corridor Study
Davis Blvd	US 41	Airport Rd	Corridor Study
Golden Gate Pkwy*	Santa Barbara Blvd	Collier Blvd	Corridor Study

\*Golden Gate Parkway between Santa Barbara and Collier Boulevards – This section of Golden Gate Parkway overlaps with the designated “Spine Trail Network” which is targeted in the BPMP for enhanced bicycle and pedestrian facilities. Segment is also within newly designated economic development zone Golden Gate City Economic Development Zone and has been identified as needing improved bicycle and pedestrian safety features in the Golden Gate City Walkable Community Study (2019).

Additionally, the BPMP prioritized network gaps on arterials and collector roads by public input. Table 3-5 shows the results of that analysis. These are the facility gaps identified by technical analysis that the public is most interested in addressing at this time.

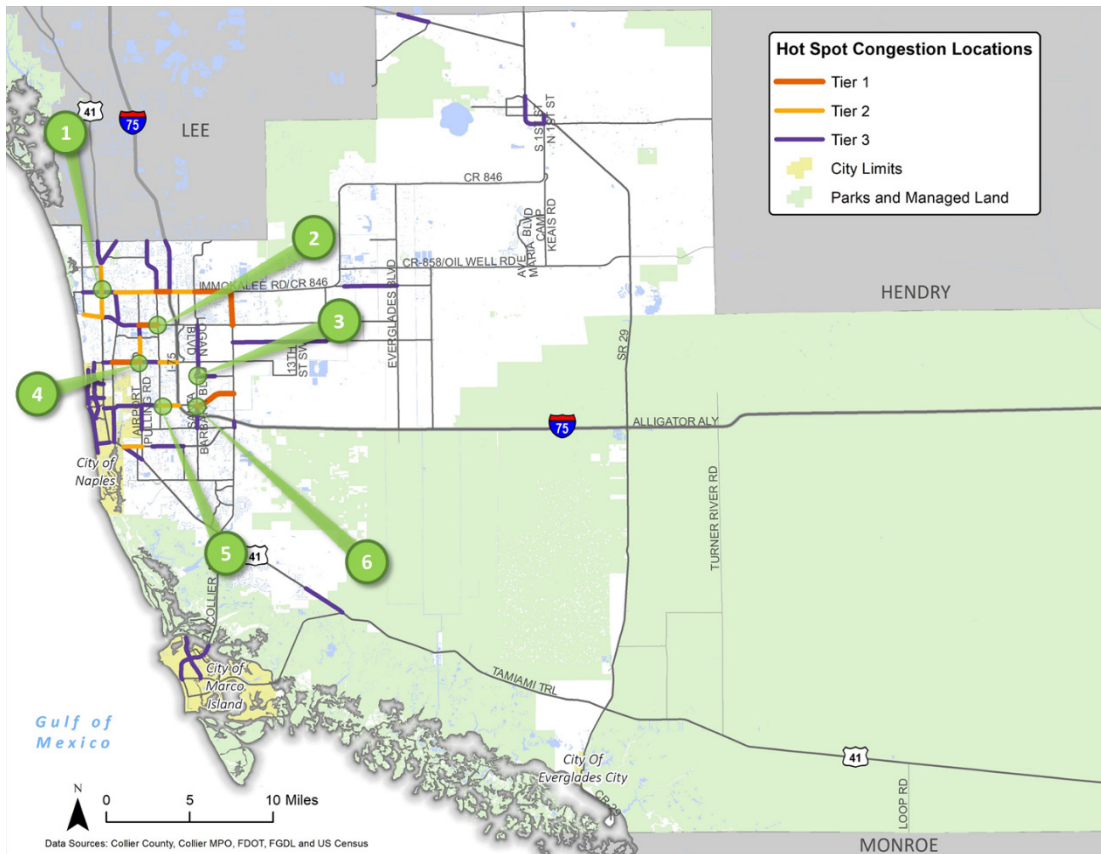
**Table 3-5: Bicycle and Pedestrian Gap Priorities**

Road	From	To	Dist. (Mi)	Agency	Facility
111th Ave N	Vanderbilt Dr	Tamiami TRL N	1.0	Collier Co	Bike Lane/Path
Airport Rd N	Pine Ridge Rd	Immokalee Rd	4.2	Collier Co	Bike Lane/Path
Golden Gate Pkwy	9th St N	Estuary Blvd	1.6	Naples	Bike Lane/Path
Immokalee Rd	Tamiami Trl	Northbrooke Dr	4.0	Collier Co	Bike Lane/Path
Logan Blvd N	Logan Blvd	Vanderbilt Beach Rd	1.1	Collier Co	Bike Lane/Path
Old US 41 N	Tamiami Trl	Performance Way	1.5	Collier Co	Pathway
Pine Ridge Rd	Tamiami Trl	Logan Blvd S	5.1	Collier Co	Bike Lane/Path
Vanderbilt Beach Rd	Gulfshore Dr	Vanderbilt Dr	0.4	Collier Co	Bike Lane/Path

### 3.6 Intersection Analysis

Intersections can often contribute to the main source of congestion in urban areas. Intersection characteristics such as traffic signals, traffic movement conflicts, and multi-modal interactions are causes of recurring congestion. In Collier County, many of the intersections are at capacity and are built-out with no remaining right-of-way (ROW). To accurately address the intersections located in the hot spot congestion areas identified in the Baseline Conditions Report, this section presents analysis of six critical intersections. Synchro and FDOT’s Cap-X analysis tool were used to evaluate and identify innovative design and alternative concepts to address congestion at critical intersections shown in Figure 3-5 and Table 3-6.





**Figure 3-5: Critical Intersections**

**Table 3-6: Intersections Selected for Operational Analysis**

Map	Intersections
1	US 41 at CR-846 (Immokalee Rd)
2	CR-862 (Vanderbilt Beach Road) at Livingston Road
3	Santa Barbara Blvd/Logan Blvd at Green Blvd
4	Airport-Pulling Rd at Pine Ridge Rd
5	Golden Gate Pkwy at Livingstone Rd
6	Golden Gate Pkwy at Santa Barbara Blvd

The following provides an initial summary of the analysis that was conducted at these six intersections. A detailed analysis of the intersections can be found in Appendix E.

*#1 - US-41 at CR-846 (Immokalee Road)*

US-41 at CR-846 (Immokalee Road) is currently signalized. The traffic signal appears to operate adequately to the year 2025. Cap-X indicated that this intersection operates acceptably through 2025 in the existing configuration. However, based on local knowledge, it is known that this intersection does experience significant delay. Therefore, this intersection was analyzed in Synchro and deficiencies were confirmed, predominantly related to the significant left-turn





volumes on all approaches. Based on left-turning volumes, it is recommended that this location be reviewed for a displaced left-turn configuration or an overpass, Right-of-Way constraints would likely be an issue at this intersection as development exists on each corner.

#### *#2 – CR-862 (Vanderbilt Beach Road) at Livingston Road*

CR-862 (Vanderbilt Beach Road) at Livingston Road is currently signalized. The existing traffic signal will fail in the future year, 2025 scenario, based on the Turning Movement Count in the PM peak. Most alternative intersections analyzed using Cap-X also fail in the 2025 PM peak hour. The exception occurred under Displace Left Turn alternative concept. Based on the Synchro analysis, all travel directions are estimated to operate acceptably. Drawings showing potential impacts of the North/South and East/West alternatives on the adjacent land uses and utilities were prepared and detailed in Appendix E. It is recommended that a detailed review of the acceptability of the ROW impacts is conducted using a more advanced modeling package (i.e. VISSIM) to evaluate this project.

#### *#3 – Santa Barbara Boulevard/Logan Boulevard at Green Boulevard*

Santa Barbara Boulevard/Logan Boulevard at Green Boulevard is currently signalized. In the existing condition and future condition, high delay was observed at the intersection, predominantly related to the high southbound left-turning volume. An analysis in Synchro was conducted to identify potential improvements. Based on this analysis it is recommended that the following alternative concepts be considered:

- Dual southbound left-turn lanes
- If feasible, a separate northbound right-turn lane. The right-turn lane is optional but does provide for an estimated 30% reduction in overall delay during the PM peak. However, even without the right-turn improvement, the dual southbound left-turn lane does provide significantly improved operation.

#### *#4 – Airport-Pulling Rd at Pine Ridge Rd*

Pine Ridge Road and Airport Road is currently signalized. The existing traffic signal will fail in the 2025 scenario due to TMC in PM peak. All other analyzed alternative intersections also fail in 2025 PM peak. It is recommended to evaluate regional origin/destination trip management to understand origin-destination points of existing traffic and reduce traffic through this intersection through alternative routes and access to I-75.

#### *#5 - Golden Gate Parkway and Livingston Road*

Golden Gate Parkway and Livingston Road is currently signalized. The existing traffic signal will fail in the 2025 scenario based on the Turning Movement County in the AM peak. Most alternative intersections also fail in the 2025 AM peak with exception of displaced left-turn, but it almost reaches the failing point with 0.98 V/C. It is recommended that the intersection be evaluated for grade separation as both single-point N/S and diamond N/S alternatives to accommodate 2025 expected volumes.



## Action Plan

### *#6 - Golden Gate Parkway and Santa Barbara Boulevard*

Golden Gate Parkway and Santa Barbara Boulevard is currently signalized. The Existing traffic signal appears to operate adequately to the year 2025. After Cap-X analysis alternative intersections were deemed not necessary. It is recommended that the intersection be evaluated in Synchro for 2025 as a traffic signal to confirm adequate operation.

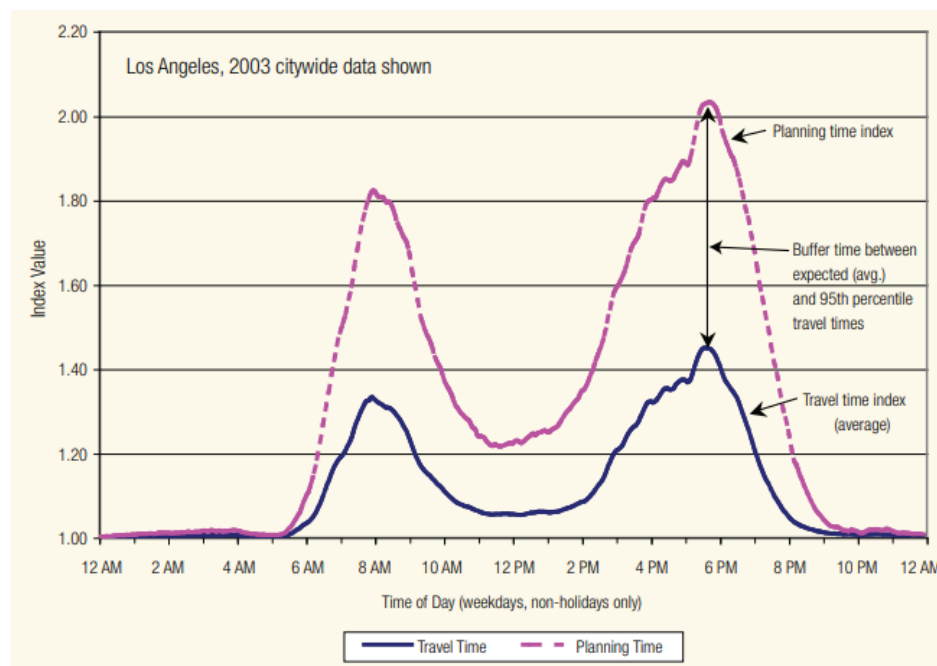


### 3.7 “Big Data” Analysis

Travel time reliability is identified as a best practice system performance reporting measure because it allows for a more robust understanding of congestion along the transportation network and provides opportunities to identify strategies that go beyond capacity-related congestion management strategies to include operations and demand management solutions. In the Baseline Condition Report, travel speed data was used to provide a snapshot of how long trips are taking on certain days during the year. However, this does not factor in the reliability of the transportation system. The Baseline Conditions Report recommended that travel time reliability be considered as a potential system performance reporting measure subject to the MPO’s ability to collect and analyze travel reliability data. This section of the report includes identification and evaluation of travel reliability data resources and monitoring practices to assess the opportunities for obtaining data and incorporating reliability analysis into the MPO’s Congestion Management Process.

Most travel time reliability measures compare high-delay days to those with an average delay. The most effective methods of measuring travel time reliability are:

- *90th or 95th Percentile Travel Times* –the simplest method; estimates how bad delay will be on specific routes during the heaviest traffic days.
- *Buffer Index* - the additional travel time that is necessary to budget when planning for on-time arrival.
- *Planning Time Index* - the total travel time that is necessary, including buffer time.



**Figure 4-6: Reliability Measures Compared to Average Congestion Measures**

Source: Federal Highway Administration. *Travel Time Reliability: Making It There on Time, All the Time*



## Action Plan

Five transportation analysis, monitoring, and data visualization software products were reviewed for applicability and effectiveness in Collier County (Table 3-7). The two recommended data providers for the Collier MPO are INRIX and RITIS as both provide performance measure and travel time reliability data. INRIX provides a host of metrics including volume, performance measures, origin-destination, routes, mode, demographics, and trip attributes however, RITIS is a composite data provider and combines data from several analytic indexes and providers including HERE, INRIX, NPMRDS, and Tom Tom. RITIS access is typically granted to government agencies (including Federal, state DOTs, and MPOs) or consultants who are working on projects for a government partner. RITIS has extensive data for larger and more populated Counties throughout the state however, the data available for Collier County is sufficient for analysis of the Collier County Congestion Management Network (e.g. major collectors, arterials, and freeways). A detailed analysis of all the data sources can be found in Appendix F.

**Table 3-7: Data Source Metrics**

<b>Data Source</b>	<b>INRIX</b>	<b>Streetlight</b>	<b>Google</b>	<b>RITIS</b>	<b>Teralytics</b>
Buffer Time	Yes	Yes	No	Yes	No
<b>Buffer Time Index</b>	Yes	Yes	No	Yes	No
<b>Travel Time</b>	Yes	Yes	Yes	Yes	No
<b>Travel Time Index</b>	Yes	Yes	No	Yes	No
<b>Planning Time</b>	Yes	Yes	No	Yes	No
<b>Planning Time Index</b>	Yes	Yes	No	Yes	No
<b>Traffic Count</b>	N/A	Yes	No	N/A	No
<b>Traffic Volume</b>	Yes	N/A	No	Yes	Yes
<b>Traffic Speed</b>	Yes	Yes	Yes	Yes	No
<b>Area (O&amp;D) Analysis</b>	N/A	Yes	No	Yes	Yes
<b>Congestion Analysis</b>	N/A	Yes	No	Yes	N/A
<b>Cost</b>	\$\$\$	\$\$\$\$	\$	No cost to MPO (*)	Unknown

\* Access to the RITIS database is available to the MPO at no cost through the FDOT contract. Agreeing with terms of the statewide data licensing agreement is required.



## 4.0 Congestion Management Strategies

Federal guidance recommends that identification of congestion management strategies be based on their ability to support regional congestion management objectives, meet local context, and contribute to other regional goals and objectives. Strategies that effectively manage congestion and achieve congestion management goals and objectives established in the CMP process are selected to meet Collier County's specific needs. In the 2020 CMP update process, new CMP strategies were identified and added to the existing strategies list based on the analysis that was conducted in the Baseline Conditions Report which identified causes and locations of congested corridors and the Action Plan which analyzed and identified congestion mitigation strategies for the specific corridors. The main additions include safety strategies and strategies to address school related congestion. Table 4-1 lists the category and respective congestion management strategies identified to mitigate congestion along the CMP network in Collier County.

**Table 4-1: Collier MPO Congestion Management Strategies**

<b>STRATEGIES: Demand Management (Programmatic), Transportation &amp; Land Use Policy</b>	Improved incident management
	Carpool/Vanpool Assistance and Carpool/Vanpool Technology including School Carpooling Apps
	Flexible Work Hours
	Transit Vouchers
	Transit Oriented Development
	Jobs/Housing Regional Balance
	Implement Complete Streets Policy All New Development
	High-Density & Mixed-Use Fixed Route Corridor
	School Dismissal timing (e.g. stagger dismissal times, dismissal automation software)
	Walking, Biking, Transit and School Bus Awareness/Education campaigns
	Safe Routes to School & School Zone Traffic Congestion Study
	Origin-Destination Study
<b>STRATEGIES: Transit</b>	Amenities to Attract New Ridership
	MPO transit service expansion and improvement (e.g. frequency, hours of operation, realign routes)
	Regional Transit system Expansion
	Bus rapid transit corridor
	Park & Ride facilities
	Intermodal Hubs
	Transit ITS and MOD
	Arrival Prediction Technology
	Park-and-Ride lots





## Action Plan

<b>STRATEGIES: ITS &amp; Access Management - Active Roadway Management</b>	Expanded traffic signal timing & coordination - ITS
	Traffic Center Operations Enhancements
	Traffic signal equipment modernization - ITS
	Traveler information devices - ITS
	Communications networks & roadway surveillance - ITS
	Access management
	School Zone Traffic Calming Measures
	School Zone pedestrian and traffic signal optimization
	School off-site waiting lots and curbing and parking zones
<b>STRATEGIES: Physical Roadway Capacity Enhancement</b>	Intersection Improvements
	Replace intersections with round-abouts & other innovative designs
	Deceleration lanes and turn lanes
	New grade-separated intersections
	New travel lanes (general purpose)
	New roadway network connections
<b>STRATEGIES: Bicycle &amp; Pedestrian Facilities</b>	New off-street pedestrian and multi-use facilities to close gaps in the transportation network and make connections to key destinations
	Integrated into TODs, High Density Corridors
	Regional Bike/Ped Facilities
	Complete Streets on New Facilities & Retrofit or new on-street bicycle
	Supporting bicycle infrastructure (e.g. secure and convenient parking, bike repair and pumps)
<b>STRATEGIES: Safety</b>	Signage and Pavement Markings (e.g. special emphasis crosswalks, yield/stop for pedestrian signs, advanced street signs)
	Visibility and Sightline Improvements
	New and upgraded street lighting
	Traffic control devices (e.g. left turn signals, variable message signs, pedestrian hybrid beacons)
	New and Upgrade existing bicycle and pedestrian crossings



## 5.0 Implementation Process and Strategy Selection

This section summarizes the implementation and management of the CMP strategies. This includes the process for selecting strategies/projects for implementation on congested corridors as well as the sources and funds for implementing the proposed projects.

The main tool used to identify strategies for implementation on the congested corridors is the Implementation Matrix. In the 2017 CMP, the Implementation Matrix presented congestion management/ITS projects from the 2040 LRTP Cost Feasible Plan and evaluated projects submitted as CMP congestion management strategies. As a part of the TSP update, the Implementation Matrix has been updated to target the congestion hotspot locations identified in the Baseline Conditions Report. The updated Implementation Matrix lists the congested corridors and identifies the strategies that can be used along the corridors to mitigate congestion. These strategy recommendations are based on the analysis conducted in Section 3 of the Action Plan. The strategies provide the MPO's planning partners with an expanded opportunity to develop future projects which address a range of multimodal and congestion reduction considerations. The updated Implementation Matrix is attached in Appendix A.

### 5.1 Congestion Management Strategy Evaluation Criteria

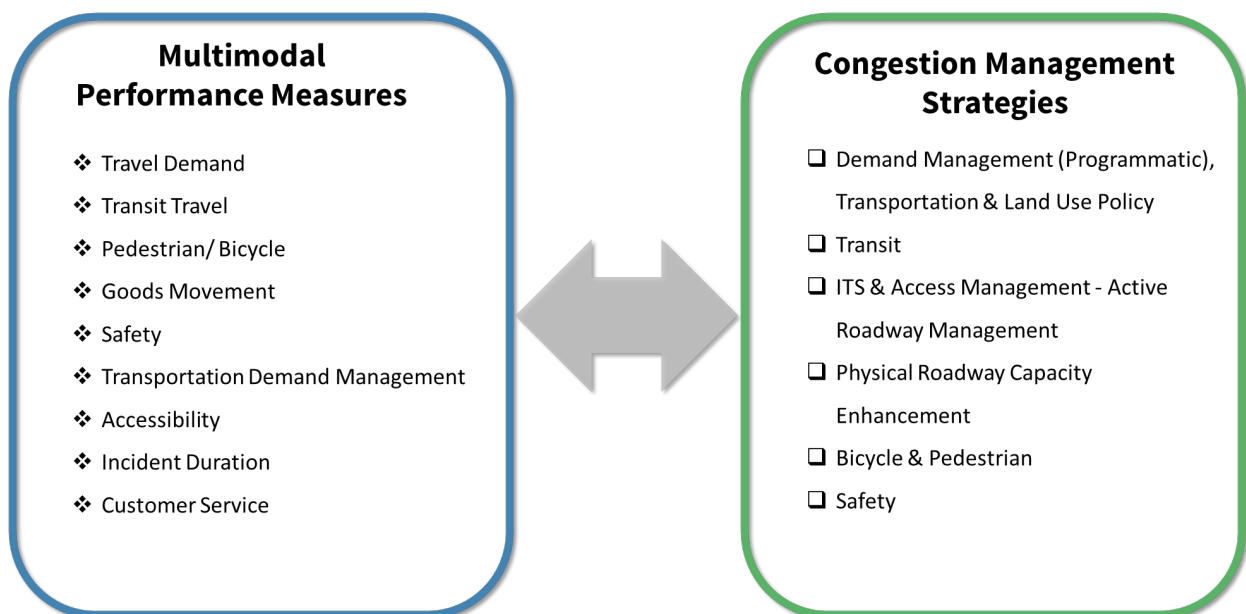
The Congestion Management Committee (CMC) plays an integral role in identifying congestion mitigation strategies with the greatest potential benefit. Once projects consistent with the mitigation strategies identified in the Implementation Matrix are developed and submitted for funding, evaluation and prioritization of these projects is conducted by the CMC using the Strategy Evaluation Criteria. The 2017 Strategy Evaluation Criteria was updated as part of the 2020 TSP Action Plan to incorporate certain performance measures from the 2017 CMP that were better suited as strategy evaluation criteria (Appendix B). The purpose of the Strategy Evaluation Criteria is to screen project submittals for consistency with CMP goals, strategies, and congestion hotspots identified in the Baseline Conditions Report. The CMC uses these criteria as the basis for making CMP project recommendations to the MPO Board as priorities for funding in the 5-year Transportation Improvement Program (TIP) consistent with the LRTP. The CMP projects that are moved into project development and programmed in the TIP are funded using boxed funds identified in the 2040 LRTP along with other local revenues as available. The typical annual funding allotment and the cumulative programmable amounts are outlined in the TIP.



## 6.0 Strategy Evaluation and Effectiveness

This section identifies the methods and the schedule for monitoring performance and tracking the effectiveness of the implemented congestion management strategies. The evaluation of strategies at the system scale and at the project level enables decision makers, the CMC, and the public the opportunity to identify the most effective strategies for future implementation. Monitoring the effectiveness of the strategies will be conducted at a system wide scale using the quantifiable performance measures established for the CMP. The framework for this monitoring process was established in the TSP Baseline Condition Report (Section 4) where the cumulative effects of the congestion management strategies on the County's transportation system can be evaluated using the performance measures. In 2020, the initial baseline was set using 2018-2020 data and this baseline can be compared against the new evaluations conducted with the future updates of the CMP analysis.

Additionally, the performance measures serve as a tool to evaluate project level effectiveness of the implemented congestion management strategies.



The congestion management project application submittal form will require each sponsoring agency to identify:

1. the Congestion Management Strategy Category the project is using;
2. the Performance Measure(s) the project will address; and,
3. the data and criteria that will be used to measure effectiveness of the project.

The sponsoring agency will be responsible for compiling the necessary data, conducting the performance evaluations, and producing a user-friendly performance-based report that demonstrates the link between the results of the project and stated congestion management strategies and performance measure(s). The report will be presented to the CMC within one year



of the project becoming fully operational, consistent with the 2017 CMP requirements. The Transportation System Performance Report will be reviewed periodically and updated as needed. As congestion management projects are implemented, their impacts will be reviewed and accounted for in the MPOs planning process.

Table 6-1 shows the project evaluation and monitoring matrix which includes the Congestion Management Projects funded in the currently adopted TIP. While the congestion management priority projects identified in 2019 were not required to establish strategies and performance measures when previously approved, this model for upcoming projects is anticipated to be used in measuring post-implementation of these projects. The 2019 congestion management priority projects will be transitioned to this evaluation model and should be updated by the sponsoring or implementing agency, in conjunction with the MPO staff, as the projects advance.



**Table 6-1: Strategy Effectiveness Matrix**

ITS Projects (2019 CMP Priorities)	FPN	Funded Amt	TIP/CIP YR	Congestion Management Strategy Per CMP 2020	Performance Measure(s) Per CMP 2020	Evaluation - Benefits Achieved	Prioritization Date(s)
<b>ITS Fiber Optic and FPL Power Infrastructure: 13 locations</b>	4462501	\$ 272,725	CST 2024/25				
<b>Travel Time Data Collection &amp; Performance Measurements</b>	4462511	\$ 700,000	CST 2024/25				
<b>Updated School Flasher System</b>	4462521	\$ 353,250	CST 2020/21				
<b>Vehicle Count Station Update</b>	4462541	\$ 311,562	CST 2024/25				
<b>Bicycle Detection Systems: 4 intersections: US41/Central Ave, US41/3rd Ave S; Park Shore Drive/Crayton Rd: 8th St S/3rd Ave S</b>	4462531	\$ 66,429	CST 2023/24				
<b>Adaptive Traffic Control System: 13 intersections on Santa Barbara &amp; Golden Gate Pkwy</b>	4463421	\$ 893,000	PE 2023/24 CST 2024/25				





## Appendix A: Implementation Matrix





2020 CMP IMPLEMENTATION MATRIX (1/4)				STRATEGIES: Demand Management (Programmatic), Transportation & Land Use Policy											
				Improved incident management	Carpool/Vanpool Assistance and Carpool/Vanpool Technology Including School Carpooling Apps	Flexible Work Hours	Transit Vouchers	Transit Oriented Development	Jobs/Housing Regional Balance	Implement Complete Streets Policy All New Development	High-Density & Mixed-Use Fixed Route Corridor	School Dismissal timing (e.g. stagger dismissal times, dismissal automation software)	Walking, Biking, Transit and School Bus Awareness/Education campaigns	Safe Routes to School & School Zone Traffic Congestion Study	Origin-Destination Study
2020 TSP Update	Tiered Congestion Hot Spots & Key Intersections (referenced in 2020 TSP BASELINE CONDITION REPORT)	ESTIMATED TOTAL PROJECT COSTS	FUNDING SOURCE												
Immokalee Rd from Livingston Rd to I-75*	Tier 1 Congestion Hot Spot & Critical Intersection	TBD	TBD												
Immokalee Rd from Logan Rd to CR 951 (Collier Blvd)*	Tier 1 Congestion Hot Spot	TBD	TBD												
CR 951 (Collier Blvd) from Vanderbilt Beach Rd to Immokalee Rd	Tier 1 Congestion Hot Spot	TBD	TBD												
CR-862 (Vanderbilt Beach Rd) from Airport-Pulling Rd to Livingston Rd	Tier 1 Congestion Hot Spot & Critical Intersection	TBD	TBD												
Pine Ridge from Goodlette Frank Rd to Airport-Pulling Rd	Tier 1 Congestion Hot Spot	TBD	TBD												
Golden Gate Parkway from Santa Barbara Blvd to CR 951 (Collier Blvd)	Tier 1 Congestion Hot Spot	TBD	TBD												
Immokalee Rd from I-75 to Logan Rd*	Tier 2 Congestion Hot Spot	TBD	TBD												
Immokalee Rd from Goodlette Frank Rd to Livingston Rd*	Tier 2 Congestion Hot Spot	TBD	TBD												
US 41 from Vanderbilt Beach Rd to Immokalee Rd	Tier 2 Congestion Hot Spot & Critical Intersection	TBD	TBD												
US 41 from Immokalee Rd to Old US 41	Tier 2 Congestion Hot Spot	TBD	TBD												
CR-862 (Vanderbilt Beach Rd) from Wiggins Pass to US 41	Tier 2 Congestion Hot Spot	TBD	TBD												
Airport-Pulling Rd from Pine Ridge Rd to Orange Blossom	Tier 2 Congestion Hot Spot	TBD	TBD												
Pine Ridge Rd from Livingston Rd to I-75**	Tier 2 Congestion Hot Spot	TBD	TBD												
Golden Gate Pkwy from Livingston Rd to I-75	Tier 2 Congestion Hot Spot & Critical Intersection	TBD	TBD												
Davis Blvd from US 41 to Airport-Pulling Rd	Tier 2 Congestion Hot Spot	TBD	TBD												
Airport-Pulling Rd from Golden Gate Pkwy to Radio Rd	Tier 3 Congestion Hot Spot & Critical Intersection	TBD	TBD												
Santa Barbara Blvd/Logan Blvd at Green Blvd	Critical Intersection	TBD	TBD												
<b>SUBTOTAL</b>		\$ -	\$ -												
<b>2020 TSP UPDATE - NEW STUDIES/COMMITTEES</b>	<b>NEW CMP 2017 PRIORITIES</b>	<b>ESTIMATED PROJECT COSTS</b>	<b>FUNDING SOURCE</b>												
Identify integration opportunities for travel time reliability in future congestion analysis and evaluation	Scope TBD	TBD	TBD												
School Transportation Working Group	Scope TBD	TBD	TBD												
Intersection ROW Study and Modeling	Scope TBD	TBD	TBD												
Origin-Destination Study	Scope TBD	TBD	TBD												

**Notes:**

**\*Immokalee Road** - A Corridor Congestion Study is being conducted along Immokalee Road Corridor between Livingston Road and Logan Boulevard. The study is expected to be completed in the Spring of 2021. Recommendations from this study should be implemented to address congestion along this corridor.

**\*\*Pine Ridge Road** - Study conducted in 2018 to consider innovative intersection design concepts for the intersections along Pine Ridge Road from Livingston Road to Napa Boulevard. Recommendations from this study should be implemented to address congestion along this corridor.

**\*\*\*I-75** - a capacity improvement project involves the potential construction of managed lanes in each direction on Interstate 75 (I-75), from east of Collier Boulevard (SR 951) in Collier County to Bayshore Road (SR 78) in Lee County. (Collier County interchanges effected - Immokalee Rd, Pine Ridge Rd, Golden Gate Pkwy, SR 951 (Collier Blvd))

**LEGEND - SCHEDULE**

	In TIP or UPWP
	In LRTP Needs Plan/Cross-Referenced in Cost Feasible Plan, TD Plan, Bicycle & Pedestrian Master Plan
	In LRTP Unfunded Needs Plan
	Candidate Project

2020 CMP IMPLEMENTATION MATRIX (2/4)				STRATEGIES: TRANSIT								
				Amenities to Attract New Ridership	MPO transit service expansion and improvement (frequency, hours of operation, realign routes)	Regional Transit system Expansion	Bus rapid transit corridor	Park & Ride facilities	Intermodal Hubs	Transit ITS and MOD	Arrival Prediction Technology	Park-and-Ride lots
2020 TSP Update	Tiered Congestion Hot Spots & Key Intersections (referenced in 2020 TSP BASELINE CONDITION REPORT)	ESTIMATED TOTAL PROJECT COSTS	FUNDING SOURCE									
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Immokalee Rd from Logan Rd to CR 951 (Collier Blvd)*	Tier 1 Congestion Hot Spot	TBD	TBD									
CR 951 (Collier Blvd) from Vanderbilt Beach Rd to Immokalee Rd	Tier 1 Congestion Hot Spot	TBD	TBD									
CR-862 (Vanderbilt Beach Rd) from Airport-Pulling Rd to Livingston Rd	Tier 1 Congestion Hot Spot & Critical Intersection	TBD	TBD									
Pine Ridge from Goodlette Frank Rd to Airport-Pulling Rd	Tier 1 Congestion Hot Spot	TBD	TBD									
Golden Gate Parkway from Santa Barbara Blvd to CR 951 (Collier Blvd)	Tier 1 Congestion Hot Spot	TBD	TBD									
Immokalee Rd from I-75 to Logan Rd*	Tier 2 Congestion Hot Spot	TBD	TBD									
Immokalee Rd from Goodlette Frank Rd to Livingston Rd*	Tier 2 Congestion Hot Spot	TBD	TBD									
US 41 from Vanderbilt Beach Rd to Immokalee Rd	Tier 2 Congestion Hot Spot & Critical Intersection	TBD	TBD									
US 41 from Immokalee Rd to Old US 41	Tier 2 Congestion Hot Spot	TBD	TBD									
CR-862 (Vanderbilt Beach Rd) from Wiggins Pass to US 41	Tier 2 Congestion Hot Spot	TBD	TBD									
Airport-Pulling Rd from Pine Ridge Rd to Orange Blossom	Tier 2 Congestion Hot Spot	TBD	TBD									
Pine Ridge Rd from Livingston Rd to I-75**	Tier 2 Congestion Hot Spot	TBD	TBD									
Golden Gate Pkwy from Livingston Rd to I-75	Tier 2 Congestion Hot Spot & Critical Intersection	TBD	TBD									
Davis Blvd from US 41 to Airport-Pulling Rd	Tier 2 Congestion Hot Spot	TBD	TBD									
Airport-Pulling Rd from Golden Gate Pkwy to Radio Rd	Tier 3 Congestion Hot Spot & Critical Intersection	TBD	TBD									
Santa Barbara Blvd/Logan Blvd at Green Blvd	Critical Intersection	TBD	TBD									
<b>SUBTOTAL</b>		<b>\$ -</b>	<b>\$ -</b>									
<b>2020 TSP UPDATE - NEW STUDIES/COMMITTEES</b>	<b>NEW CMP 2017 PRIORITIES</b>	<b>ESTIMATED PROJECT COSTS</b>	<b>FUNDING SOURCE</b>									
Identify integration opportunities for travel time reliability in future congestion analysis and evaluation	Scope TBD	TBD	TBD									
School Transportation Working Group	Scope TBD	TBD	TBD									
Intersection ROW Study and Modeling	Scope TBD	TBD	TBD									
Origin-Destination Study	Scope TBD	TBD	TBD									

**Notes:**

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**LEGEND - SCHEDULE**

	In TIP or UPWP
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	In LRTP Unfunded Needs Plan
	Candidate Project

2020 CMP IMPLEMENTATION MATRIX (3/4)				STRATEGIES: ITS & Access Management - Active Roadway Management								STRATEGIES: Physical Roadway Capacity Enhancement					
				Expanded traffic signal timing & coordination - ITS	Traffic Center Operations Enhancements	Traffic signal equipment modernization - ITS	Traveler information devices - ITS	Communications networks & roadway surveillance - ITS	Access management	School Zone Traffic Calming Measures	School Zone pedestrian and traffic signal optimization	School off-site waiting lots and curbing and parking zones	Intersection Improvements	Replace intersections with roundabouts & other innovative designs	Deceleration lanes and turn lanes	New grade-separated intersections	New travel lanes (general purpose)
2020 TSP Update	Tiered Congestion Hot Spots & Key Intersections (referenced in 2020 TSP BASELINE CONDITION REPORT)	ESTIMATED TOTAL PROJECT COSTS	FUNDING SOURCE														
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CR-862 (Vanderbilt Beach Rd) from Wiggins Pass to US 41	Tier 2 Congestion Hot Spot	TBD	TBD														
Airport-Pulling Rd from Pine Ridge Rd to Orange Blossom	Tier 2 Congestion Hot Spot	TBD	TBD														
Pine Ridge Rd from Livingston Rd to I-75**	Tier 2 Congestion Hot Spot	TBD	TBD														
Golden Gate Pkwy from Livingston Rd to I-75	Tier 2 Congestion Hot Spot & Critical Intersection	TBD	TBD														
Davis Blvd from US 41 to Airport-Pulling Rd	Tier 2 Congestion Hot Spot	TBD	TBD														
Airport-Pulling Rd from Golden Gate Pkwy to Radio Rd	Tier 3 Congestion Hot Spot & Critical Intersection	TBD	TBD														
Santa Barbara Blvd/Logan Blvd at Green Blvd	Critical Intersection	TBD	TBD														
SUBTOTAL		\$ -	\$ -														
2020 TSP UPDATE - NEW STUDIES/COMMITTEES	NEW CMP 2017 PRIORITIES	ESTIMATED PROJECT COSTS	FUNDING SOURCE														
Identify integration opportunities for travel time reliability in future congestion analysis and evaluation	Scope TBD	TBD	TBD														
School Transportation Working Group	Scope TBD	TBD	TBD														
Intersection ROW Study and Modeling	Scope TBD	TBD	TBD														
Origin-Destination Study	Scope TBD	TBD	TBD														

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#### LEGEND - SCHEDULE

 In TIP or UPWP

 In LRTP Needs Plan/Cross-Referenced in Cost Feasible Plan, TD Plan, Bicycle & Pedestrian Master Plan

 In LRTP Unfunded Needs Plan

 Candidate Project



2020 CMP IMPLEMENTATION MATRIX (4/4)				STRATEGIES: Bicycle & Pedestrian Facilities					STRATEGIES: Safety				
				New off-street pedestrian and multi-use facilities to close gaps in the transportation network and make connections to key destinations	Integrated into TODs, High Density Corridors	Regional Bike/Ped Facilities	Complete Streets on New Facilities & Retrofit or new on-street bicycle treatments	Supporting bicycle infrastructure (e.g. secure and convenient parking, bike pumps)	Signage and Pavement Markings (e.g. special emphasis crosswalks, yield/stop for pedestrians signs, advanced street signs)	Visibility and Sightline Improvements	New and upgraded street lighting	Traffic control devices (left turn signals, variable message signs, pedestrian hybrid beacons)	New and Upgrade existing bicycle and pedestrian crossings
2020 TSP Update	Tiered Congestion Hot Spots & Key Intersections (referenced in 2020 TSP BASELINE CONDITION REPORT)	ESTIMATED TOTAL PROJECT COSTS	FUNDING SOURCE										
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Pine Ridge from Goodlette Frank Rd to Airport-Pulling	Tier 1 Congestion Hot Spot	TBD	TBD										
Golden Gate Parkway from Santa Barbara Blvd to CR 951 (Collier Blvd)	Tier 1 Congestion Hot Spot	TBD	TBD										
Immokalee Rd from I-75 to Logan Rd*	Tier 2 Congestion Hot Spot	TBD	TBD										
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US 41 from Immokalee Rd to Old US 41	Tier 2 Congestion Hot Spot	TBD	TBD										
CR-862 (Vanderbilt Beach Rd) from Wiggins Pass to US	Tier 2 Congestion Hot Spot	TBD	TBD										
Airport-Pulling Rd from Pine Ridge Rd to Orange	Tier 2 Congestion Hot Spot	TBD	TBD										
Pine Ridge Rd from Livingston Rd to I-75**	Tier 2 Congestion Hot Spot	TBD	TBD										
Golden Gate Pkwy from Livingston Rd to I-75	Tier 2 Congestion Hot Spot & Critical Intersection	TBD	TBD										
Davis Blvd from US 41 to Airport-Pulling Rd	Tier 2 Congestion Hot Spot	TBD	TBD										
Airport-Pulling Rd from Golden Gate Pkwy to Radio Rd	Tier 3 Congestion Hot Spot & Critical Intersection	TBD	TBD										
Santa Barbara Blvd/Logan Blvd at Green Blvd	Critical Intersection	TBD	TBD										
<b>SUBTOTAL</b>		\$ -	\$ -										
<b>2020 TSP UPDATE - NEW STUDIES/COMMITTEES</b>	<b>NEW CMP 2017 PRIORITIES</b>	<b>ESTIMATED PROJECT COSTS</b>	<b>FUNDING SOURCE</b>										
Identify integration opportunities for travel time reliability in future congestion analysis and evaluation	Scope TBD	TBD	TBD										
School Transportation Working Group	Scope TBD	TBD	TBD										
Intersection ROW Study and Modeling	Scope TBD	TBD	TBD										
Origin-Destination Study	Scope TBD	TBD	TBD										

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#### LEGEND - SCHEDULE

	In TIP or UPWP
	In LRTP Needs Plan/Cross-Referenced in Cost Feasible Plan, TD Plan, Bicycle & Pedestrian Master Plan
	In LRTP Unfunded Needs Plan
	Candidate Project

## Appendix B: CMC Strategy Evaluation Criteria



## **Congestion Management Committee Evaluation Criteria and Scores**

### **A. Pre-Project Evaluation**

Q 1 – Does this project address a congested roadway?

Yes

No

### **B. General Project Evaluation**

Q 4 – Is this application supported by multiple jurisdictions?

Yes – 3 pt.

No (blank) – 0 pt.

Q 7 – Are there specific technical and/or monetary local contributions for this project?

Yes – 3 pt.

No – 0 pt.

Q 9 – Does this project require the acquisition of right-of-way?

Yes – 0 pt.

No – 3 pt.

### **C. Project Specific Evaluation:**

Q1 - Uses TSM Approach?

High – 5 pts. – Incorporates intersection improvements such as turn lanes, signal improvements etc.; or significantly enhances operational response time for emergency vehicles on intersections/facilities which have an existing Level of Service (LOS) “F”

Med – 3 pts. – Incorporates intersection improvements such as turn lanes, signal improvements, etc.; or significantly enhances operational response time for emergency vehicles on intersections/facilities which have an existing LOS “E”

Low – 1 pt.- incorporates intersection improvements such as turn lanes, signal improvements, etc.; or establish and/or improves traffic diversion capability on intersections/facilities (for example signage for alternative routes) which have an existing LOS “D”

Q2 - Uses TDM strategy?

High – 5 pts. – Reduces congestion and increases efficiency of the system by adding a new a transit route or a new park & ride facility or cooperating with regional TDM program

Med – 3 pts. – Reduces congestion and increases system efficiency by increasing existing carpooling, vanpooling, transit or a park & ride facility.

Low – 1 pt. – Reduces congestion and increases system efficiency by adding new bicycle or pedestrian facilities

Q3 - Supports/enhances and effectively integrates with existing ITS and maintains concurrency with FDOT Regional ITS Architecture and technological advances in TOC equipment and operations?

High – 5 pts. – Project affects arterial roadways; or addresses a critical need due to insufficient communication and/or system expansion

Med – 3 pts. – Project affects collector roadways; or addresses a critical need

Low – 1 pt. – Project location is not specific; or project is to address contingency system backup or to purchase miscellaneous equipment

Q4 - Increases Security?

Yes – 3 pt.

No (blank) – 0 pt.

Q5 - Increases Safety?

High – 5 pts. – Addresses a documented safety problem; reduces the total number of vehicle-related crashes or serious injuries; reduces the total number of bicycle-related or pedestrian related crashes; reduce the number of transit related injuries

Med – 3 pts. – Increases bicycle or pedestrian safety at high traffic location; and/or increases/improves safety of emergency responders at incident sites; or to reduce the number of secondary incidents as a result of a primary incident

Q6 - Promote Regional Connectivity?

High – 5 pts. – Enhances the inter-county connectivity of highways or transit

Med – 3 pts. – Enhances the inter-county connectivity of pathways/bikeways/trails

Low – 1 pt. – project is on a facility identified on the regional network

Q7 - Promotes Multi-Modal Solutions?

High – 5 pts. – Improves at least three modes; increases connectivity between motorized and non-motorized modes; advances recommendations from existing MPO Bicycle/Pedestrian Safety Studies, Audits, and Community Walkability Studies

Med – 3 pts. – Enhances at least two modes of transportation

Low – 1 pt. – Improves one mode; increases transit ridership on a specific route; increases transit enhancements such as park and ride lots or bus shelters; and other enhancements for non-motorized facilities etc.

Q8 - Protect Environmental Resources?

High – 5 pts. – Reduces air quality emissions; reduces fuel consumption by reducing corridor congestion

Med – 3 pts. – Reduces fuel consumption by reducing specific intersection delays; improves monitoring and reporting capability

Low – 1 pt. – Supports general congestion avoidance measures

Q9 - Promotes Economic Development or Freight Movement?

High – 5 pts. – Project is located at and directly affects access to airports, major activity centers, or freight activity centers

Med- 3 pts. – Project is located near and affects access to, airports, high employment areas, or freight activity centers

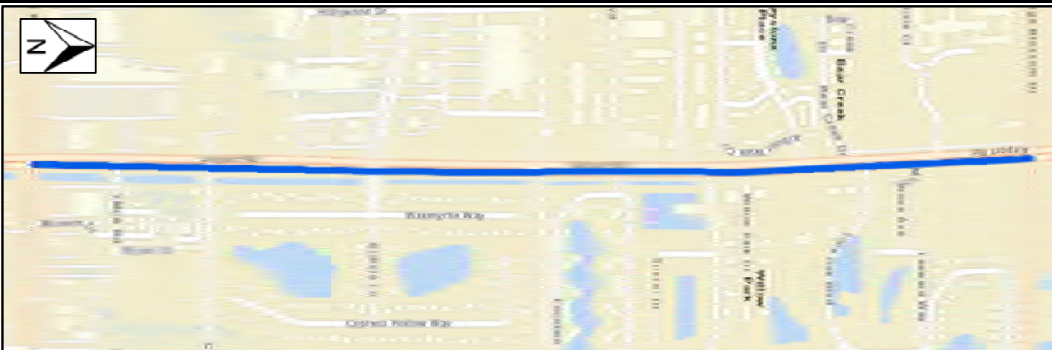
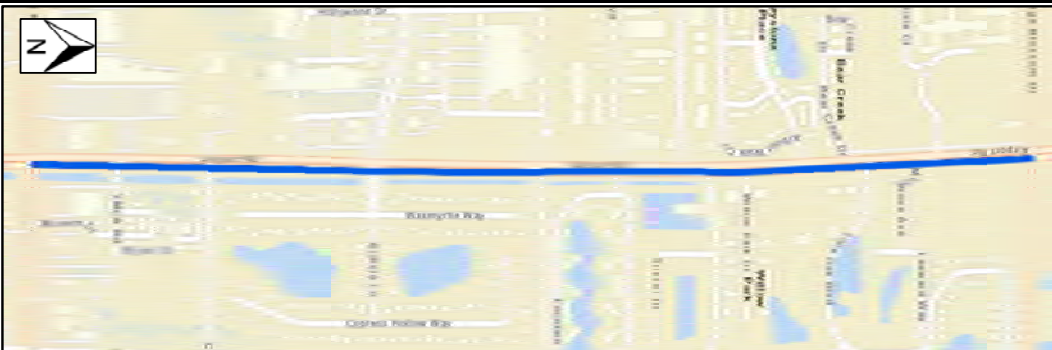
Low – 1 pt. – Project is not located near to airports, or high employment areas but can promote overall economic development of the community



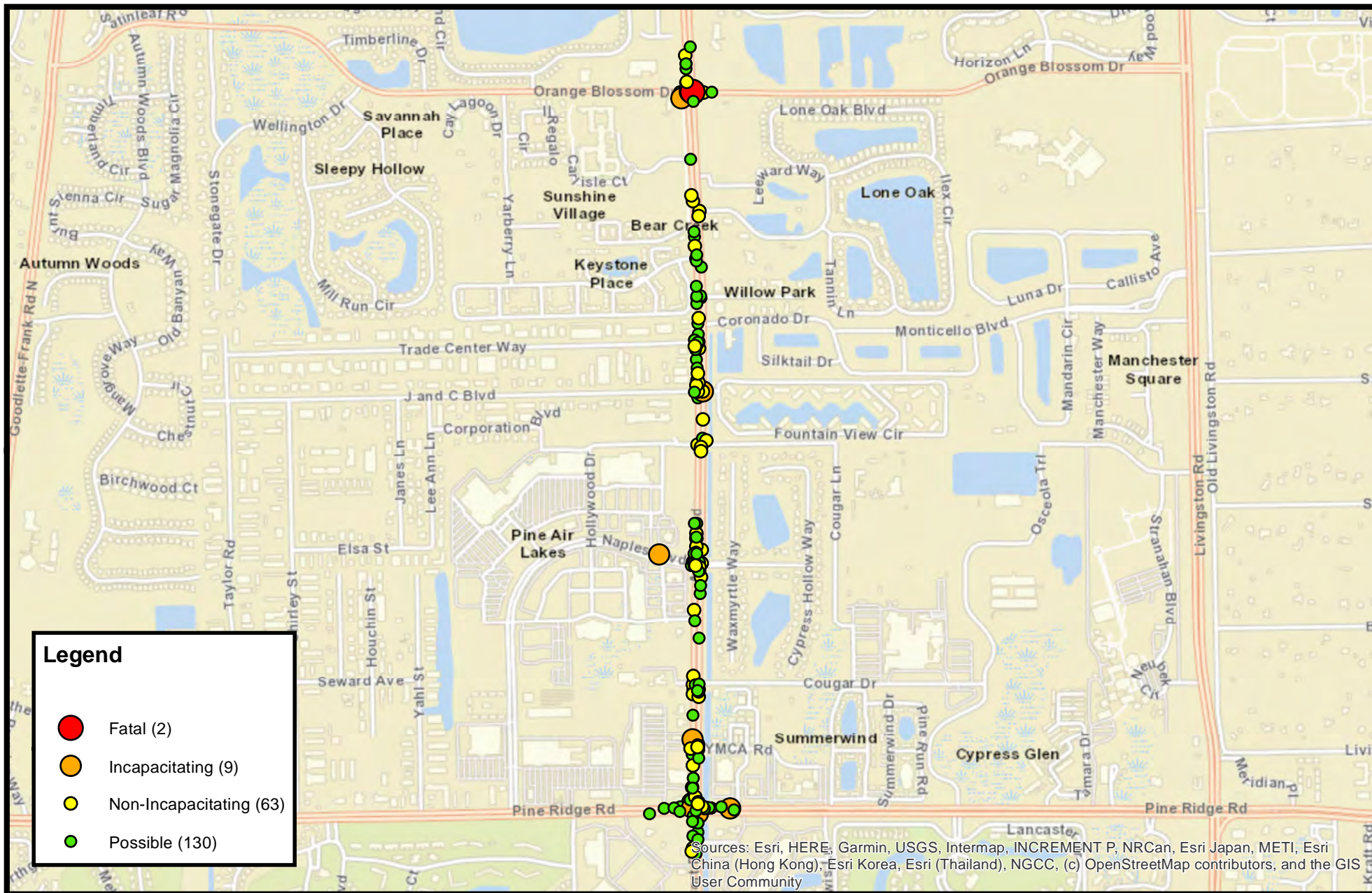
## Appendix C: Safety Analysis



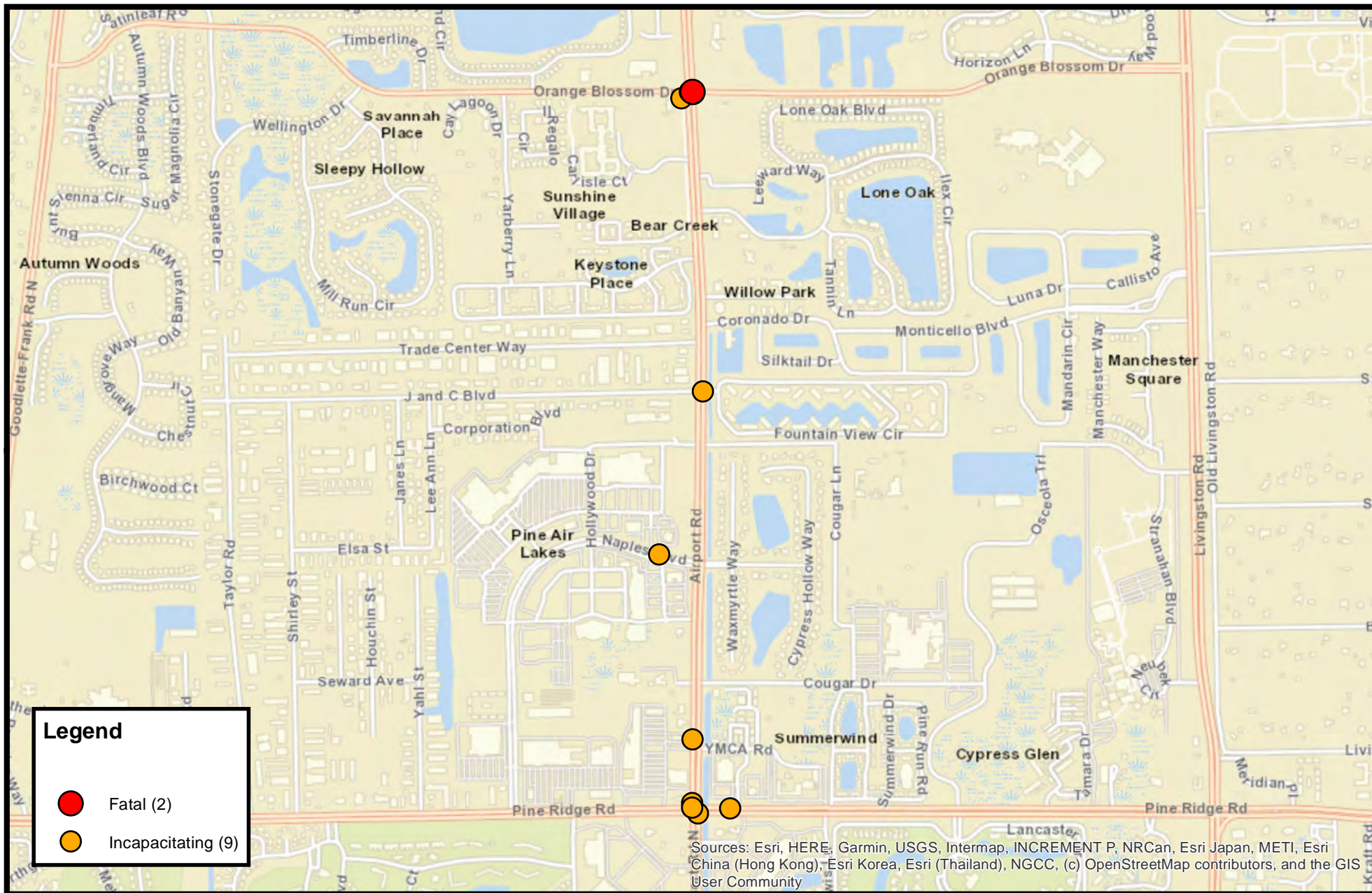
CR-31 (AIRPORT ROAD) FROM CR-896 (PINE RIDGE ROAD) TO ORANGE BLOSSOM DRIVE

Corridor Statistics										Observations & Recommendations							
AADT	34,686									Location Description	Crash Trends/ Google Maps Observations	Recommendation					
Preliminary Crash Rate	4.943	Higher than State Avg. for Urban 6-Lane Divided, Raised: 4.714															
Preliminary Ranking by Crash Frequency	3																
Preliminary Ranking by Crash Rate	6																
Preliminary Ranking of Intersection by Crash Frequency			At Pine Ridge Rd, Rank: 1														
	2014	2015	2016	2017	2018	5-Yr Total	Mean Crashes Per Yr	Serious Injury Crashes	%	Corridor-wide	761 rear-end crashes; all at intersections; 3 incapacitating; 600 (79%) of rear-end crashes at signalized intersections; 154 (20%) of rear-end crashes occurred in wet surface conditions; 82 (11%) of rear-end crashes occurred from dusk-to-dawn; 131 (17%) of rear-end crashes occurred at signalized 4-leg intersection Naples Blvd/Ardisia Ln	Evaluate yellow change and all red-clearance intervals. Rear-end crashes may be due to congestion. Conduct a field review and consider conducting a signal retiming study. After signal retiming is completed, monitor crashes to determine if crashes are reduced; if signal retiming does not help with signal progression, consider conducting ICE analysis as the intersection may be at capacity and additional capacity improvements may be needed.					
Angle	8	2	4	12	5	31	6.2	2	2.6%								
Backing	0	1	1	1	1	4	0.8	0	0.3%		166 sideswipe crashes; 138 (83%) of all sideswipe crashes at signalized intersections; based on preliminary Google Maps observations, no advance street name signs for signalized intersections at Cougar Rd and at J & C Blvd/Fountain View	Install advance street name signs for signalized intersections; advanced street name signs have a Crash Reduction Factor (CRF) of 10% for sideswipe crashes					
Bike	2	2	2	1	3	10	2	0	0.9%								
Head-On	2	1	0	0	1	4	0.8	0	0.3%		57 hit fixed object crashes; 2 incapacitating; 23 (40%) of all hit fixed object crashes occurred from dusk-to-dawn conditions; based on preliminary Google Maps observations, no street lighting is installed along the west shoulder of the corridor; locations with street lighting are high-pressure sodium (HPS) luminaires	Conduct lighting analysis to determine if lighting needs to be installed where lighting is not present and conduct structural analysis of existing utility poles to determine if lighting could be installed on them. Replace existing HPS luminaires with LED as LED provides wide, consistent light pattern versus the HPS and LEDs reduce maintenance cost due to their longer lives.					
Hit Fixed Object	17	17	12	4	7	57	11.4	2	4.9%								
Hit Non-Fixed Object	0	5	1	1	0	7	1.4	0	0.6%		53 right-turn crashes; 17 (32%) at 4-leg signalized intersection of CR-896 (Pine Ridge Rd); Common pattern with right turns at Pine Ridge Rd is vehicles failing to yield at red predominately southbound and westbound vehicles (82%); southbound and westbound rights have 5-section signals and eastbound and northbound rights have protected signals	Consider protected right for southbound and westbound right turns at CR-896 (Pine Ridge Rd).					
Left-turn	9	9	9	11	3	41	8.2	3	3.5%								
Lost Control	0	2	2	0	0	4	0.8	0	0.3%		41 left-turn crashes; 1 fatal and 2 incapacitating; 34 (83%) of all left-turn crashes occurred at signalized intersections; 7 (17%) of all left-turn crashes occurred at non-signalized intersecitons; 19 (46%) of left-turn crashes at Orange Blossom Dr; intersection has 5-section flashing left-turn signals	At Orange Blossom Dr: Consider protected only by direction with highest crash rates or adjust protected by time of day if needed and continue to monitor left-turn crashes if pattern continues.					
Overturn	0	0	0	1	1	2	0.4	0	0.2%								
Pedestrian	2	0	0	1	0	3	0.6	1	0.3%		Based on preliminary review from Google Maps, there are no yellow retroreflective backplates on traffic signals at signalized intersections, except J&C Blvd/Fountain View	Install yellow retroflective backplates on all traffic signals where missing.					
Rear-end	183	176	144	122	136	761	152.2	3	64.8%								
Right-turn	11	17	9	9	7	53	10.6	0	4.5%		Based on preliminary review from Google Maps, there are standard parallel crosswalks at all signalized intersections, except at the east leg of Cougar Dr where a special emphasis crosswalk exists.	Install special emphasis crosswalks on each leg of signalized intersections.					
Run Off-road	1	2	1	0	1	5	1	0	0.4%								
Sideswipe	43	30	27	30	36	166	33.2	0	14.1%		13 bike/pedestrian crashes; 11 (85%) of all bike/pedestrian crashes occurred at or near an intersection; 4 (31%) of all bike/pedestrian crashes occured at an intersection where turning vehicle failed to see bicyclist; based on preliminary review from Google Maps, there are no pedestrian signage at signalized intersections	Provide R10-15a (TURNING VEHICLES STOP TO PEDESTRIANS) signage at all signalized intersections.					
Single Vehicle	2	1	0	0	2	5	1	0	0.4%								
U-Turn	6	10	4	1	1	22	4.4	0	1.9%		Based on preliminary review from Google Maps, there are standard parallel crosswalks at all unsignalized intersections.	Install special emphasis crosswalks on all unsignalized intersections.					
Total	286	275	216	194	204	1,175	235	11	100%								
Fatal	0	1	0	0	1	2	0.4	-	0.2%	Signalized Intersections							
Incapacitating	3	0	2	2	2	9	1.8	-	0.8%								
Non-Incapacitating	15	12	9	8	19	63	12.8	-	5.4%								
Possible	31	30	16	26	27	130	26	-	11.1%								
None	237	232	189	158	155	971	196.8	-	82.6%								
Total	286	275	216	194	204	1,175	235	-	100%								
Daylight	252	236	181	163	175	1,007	204.2	7	85.7%								
Dawn	1	4	5	3	5	18	3.6	0	1.5%								
Dusk	5	2	6	1	3	17	3.4	1	1.4%								
Dark-Lighted	25	32	22	25	20	124	24.8	3	10.6%								
Dark-Not Lighted	3	1	0	1	1	6	1.2	0	0.5%								
Lighting	0	0	2	1	0	3	0.6	0	0.3%								
Total	286	275	216	194	204	1,175	235	11	100%								
Dry Roadway	228	224	178	160	171	961	195	9	81.8%	Unsignalized Intersections							
Wet Roadway	58	51	38	34	33	214	42.8	2	18.2%								
Total	286	275	216	194	204	1,175	237.8	11	100%								
Note: Fatal and incapacitating crash types were only reviewed.										Other Roadway Characteristics/Observations:							
Nighttime Crashes	14%	Lower than Statewide Average of 30%															
Wet Roadway Crashes	18%	Equal to Statewide Average of 18%															









CR-31 (Airport Road) from North of CR-896 (Pine Ridge Road) to South of Orange Blossom Drive  
Severe Injury Crashes (2014 - 2018)

0 0.125 0.25 0.5 Miles

CR-31 (AIRPORT ROAD) FROM CR-856 (RADIO ROAD) TO CR-886 (GOLDEN GATE PARKWAY)

Corridor Statistics									
AADT	44,008								
Preliminary Crash Rate	3.537	Lower than State Avg. for Urban 6-Lane Divided, Raised: 4.714							
Preliminary Ranking by Crash Frequency	5								
Preliminary Ranking by Crash Rate	17								
Preliminary Ranking of Intersection by Crash Frequency							At CR-886 (Golden Gate Pkwy), Rank: 14		
	2014	2015	2016	2017	2018	5-Yr Total	Mean Crashes Per Yr	Serious Injury Crashes	%
Angle	6	10	7	14	9	46	9.2	0	5.6%
Backing	0	0	0	0	1	1	0.2	0	0.1%
Bike	2	3	1	3	3	12	2.4	2	1.5%
Head-On	0	0	2	0	2	4	0.8	0	0.5%
Hit Fixed Object	9	9	5	10	8	41	8.2	1	5.0%
Hit Non-Fixed Object	1	1	0	0	4	6	1.2	0	0.7%
Left-turn	6	4	11	9	7	37	7.4	1	4.5%
Lost Control	1	1	0	1	2	5	1	0	0.6%
Overturn	1	0	0	0	0	1	0.2	0	0.1%
Mechanical	0	1	0	0	0	1	0.2	0	0.1%
Pedestrian	0	1	0	1	0	2	0.4	0	0.2%
Rear-end	119	97	101	86	92	495	99	3	60.0%
Right-turn	5	6	1	5	4	21	4.2	1	2.5%
Run Off-road	4	0	0	0	0	4	0.8	0	0.5%
Sideswipe	29	29	28	29	23	138	27.6	1	16.7%
U-Turn	3	3	2	2	1	11	2.2	0	1.3%
Total	186	165	158	160	156	825	165	9	100%
Fatal	0	0	1	0	0	1	0.2	-	0.1%
Incapacitating	1	0	1	4	2	8	1.6	-	1.0%
Non-Incapacitating	12	8	8	9	11	48	9.6	-	5.8%
Possible	17	22	28	31	17	115	23	-	13.9%
None	156	135	120	116	126	653	130.6	-	79.2%
Total	186	165	158	160	156	825	165	-	100%
Daylight	164	145	141	134	132	716	143.2	5	86.8%
Dawn	0	1	2	3	4	10	2	0	1.2%
Dusk	2	4	4	1	1	12	2.4	1	1.5%
Dark-Lighted	19	14	10	20	19	82	16.4	2	9.9%
Dark-Not Lighted	1	1	1	2	0	5	1	1	0.6%
Total	186	165	158	160	156	825	165	9	100%
Dry Roadway	161	152	139	138	135	725	145	8	87.9%
Wet Roadway	25	13	19	22	21	100	20	1	12.1%
Total	186	165	158	160	156	825	165	9	100%

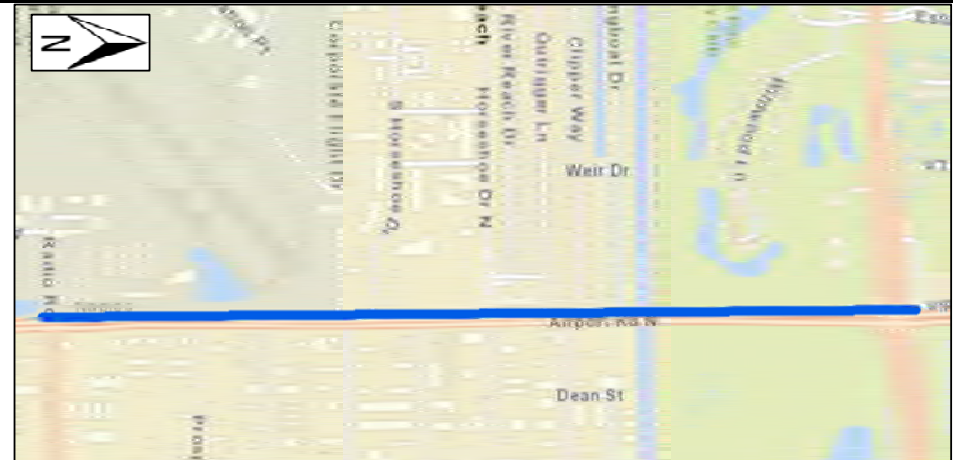
Note: Fatal and incapacitating crash types were only reviewed.

Nighttime Crashes	13%	Lower than Statewide Average of 30%
Wet Roadway Crashes	12%	Lower than Statewide Average of 18%

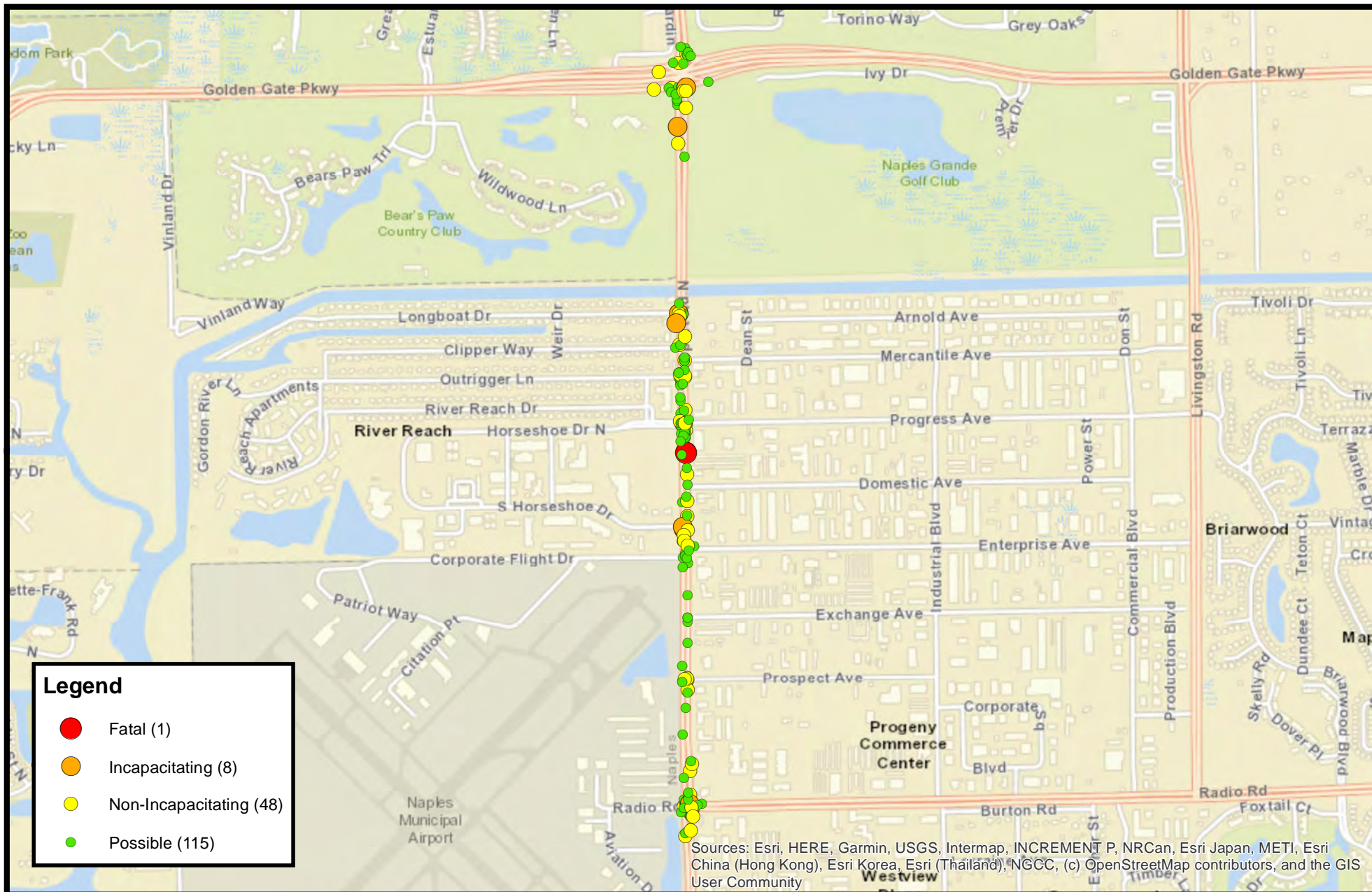
Observations & Recommendations			
Location Description	Crash Trends/ Google Maps Observations	Recommendation	
Corridor-wide	495 rear-end crashes; 1 fatal and 2 incapacitating; 433 (87%) of rear-end crashes at signalized intersections; 63 (13%) of rear-end crashes occurred in wet surface conditions; 48 (10%) of rear-end crashes occurred from dusk-to-dawn; 210 (42%) of rear-end crashes occurred at signalized 4-leg intersection Golden Gate Parkway	Evaluate yellow change and all red-clearance intervals. Rear-end crashes may be due to congestion. Conduct a field review and consider conducting a signal retiming study. After signal retiming is completed, monitor crashes to determine if crashes are reduced; if signal retiming does not help with signal progression, consider conducting ICE analysis as the intersection may be at capacity and additional capacity improvements may be needed.	
	138 sideswipe crashes; 1 incapacitating; 105 (76%) of all sideswipe crashes at signalized intersections; based on preliminary Google Maps observations, no advance street name signs for signalized intersections at Mercantile Ave, Longboat Dr, or Enterprise Ave	Install advance street name signs for signalized intersections; advanced street name signs have a Crash Reduction Factor (CRF) of 10% for sideswipe crashes	
	46 angle crashes; 37 (80%) of all angle crashes occurred at signalized intersections; 14 (30%) occurred at 4-leg signalized intersection Horseshoe Dr N/Progress Ave	Review yellow change and all-red clearance intervals at Horseshoe Dr N/Progress Ave Conduct a field review to determine if red-light running is an issue and consider enforcement.	
	41 hit fixed object crashes; 1 incapacitating; 20 (49%) of all hit fixed object crashes occurred from dusk-to-dawn conditions; based on preliminary Google Maps observations, no street lighting is installed on east side from Radio Rd to Prospect Ave, no lighting from Prospect Ave to Horseshoe Dr N/Progress Ave, no lighting on west side from Horseshoe Dr N/Progress Ave to 0.25 mi south of Golden Gate Pkwy; The street lighting is high-pressure sodium (HPS) luminaires	Conduct lighting analysis to determine if lighting needs to be installed where lighting is not present. Replace existing HPS luminaires with LED as LED provides wide, consistent light pattern versus the HPS and LEDs reduce maintenance cost due to their longer lives.	
	37 left-turn crashes; 1 incapacitating; 33 (89%) of all left-turn crashes occurred at signalized intersections; 12 (46%) of left-turn crashes at Horseshoe Dr N/Progress Ave; intersection has 4-section flashing northbound and southbound and protected eastbound and westbound	At Horseshoe Dr N/Progress Ave Consider protected only by direction with highest crash rates or adjust protected by time of day if needed and continue to monitor left-turn crashes if pattern continues.	
	14 non-motorist crashes; 12 bike and 2 pedestrian; 2 incapacitating bike crashes; 9 of the crashes occurred at unsignalized intersections or non-junction; 10 (71%) of non-motorist crashes occurred due to right-turning vehicles; All crosswalks at intersections, signalized and unsignalized, have parallel painted crosswalks	Install R10-15a signs, TURNING VEHICLE STOP FOR PEDESTRIAN, at all intersections to increase awareness of non-motorists. Install special emphasis crossings at all crossings to increase visibility of crosswalks.	
	All Signalized Intersections	Based on preliminary review from Google Maps, there are no yellow retroreflective backplates on traffic signals at the following signalized intersections: Radio Rd and Longboat Dr	Install yellow retroreflective backplates on all traffic signals where missing, which has a crash reduction factor of 15% for all crash types and severities.
	At CR-586 (Radio Rd)	No pedestrian crossing on south side; Intersection lighting only on northeast corner; Westbound right-turn has a R10-15a sign, TURNING VEHICLE YIELD TO PEDESTRIAN	Determine feasibility of installing pedestrian crossing on south side. See recommendations on lighting. Replace YIELD TO PEDESTRIAN R10-15a sign with STOP FOR PEDESTRIAN R10-15a sign.
	Mercantile Ave	No pedestrian crossing on north side	Determine feasibility of installing pedestrian crossing on north side.
	Longboat Dr	No pedestrian crossing on north side because sidewalk ends to north along east side due to bridge.	No recommendation to add sidewalk due to bridge.

**Other Roadway Characteristics/Observations:**

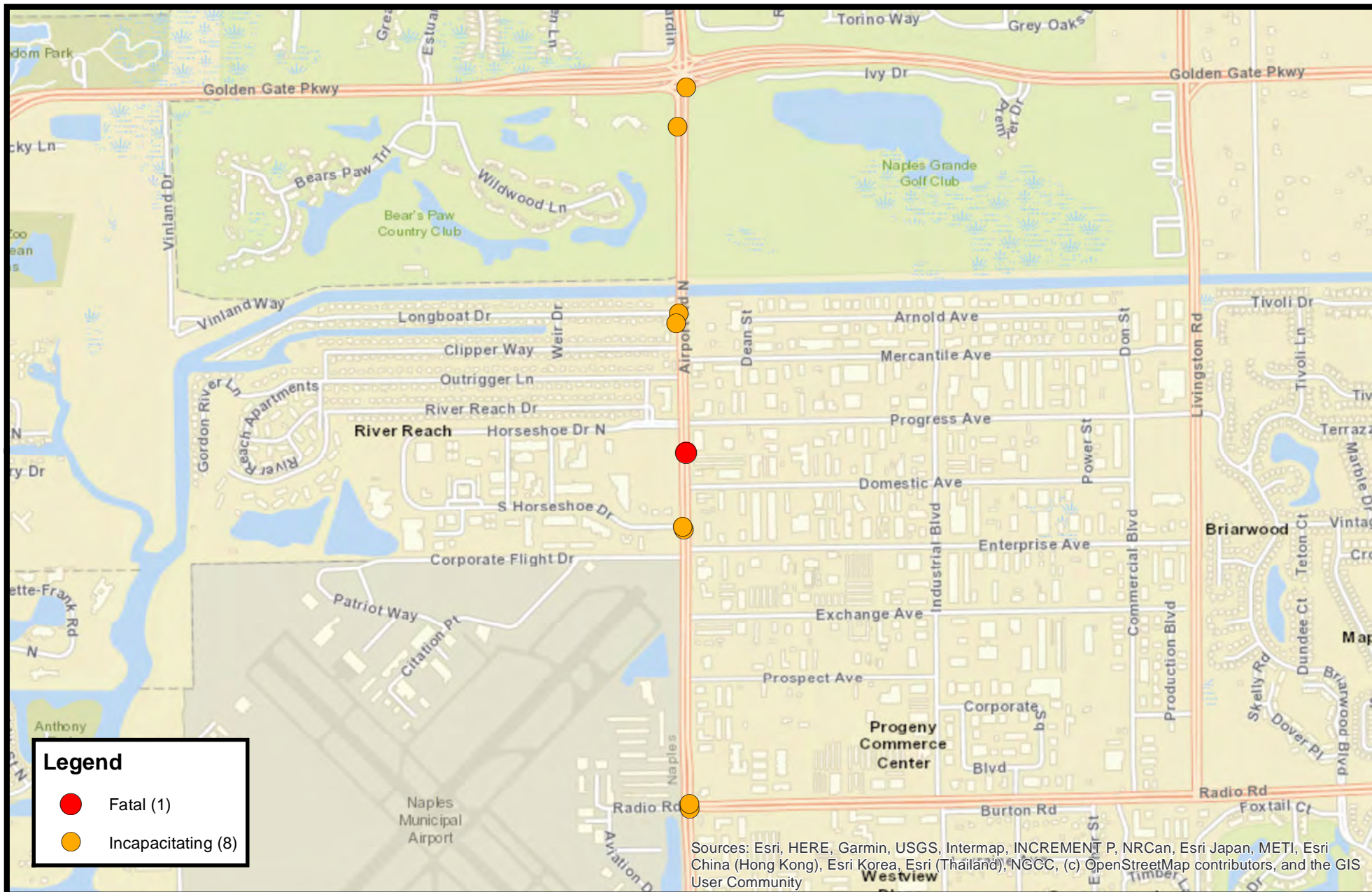
- Segment Functional Classification: Minor Urban Arterial
- 6-Lane divided roadway
- Speed Limit: 45 mph
- Median is curbed and landscaped with trees
- Sidewalk on both sides, except on east side from Longboat Dr to Golden Gate Pkwy
- Street lighting described in observations.
- No bike lanes











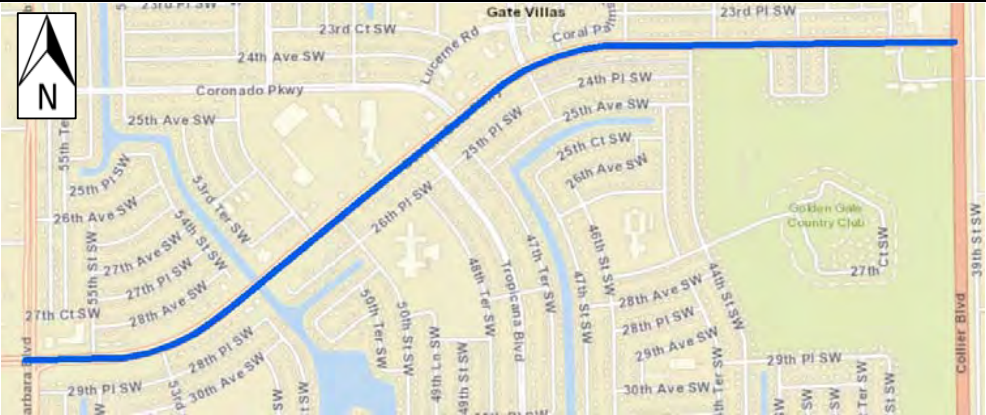
**CR-31 (Airport Road) from CR-856 (Radio Road)  
to CR-886 (Golden Gate Parkway)  
Severe Injury Crashes (2014 - 2018)**

CR-886 (GOLDEN GATE PARKWAY) FROM SANTA BARBARA BOULEVARD TO CR-951 (COLLIER BOULEVARD)

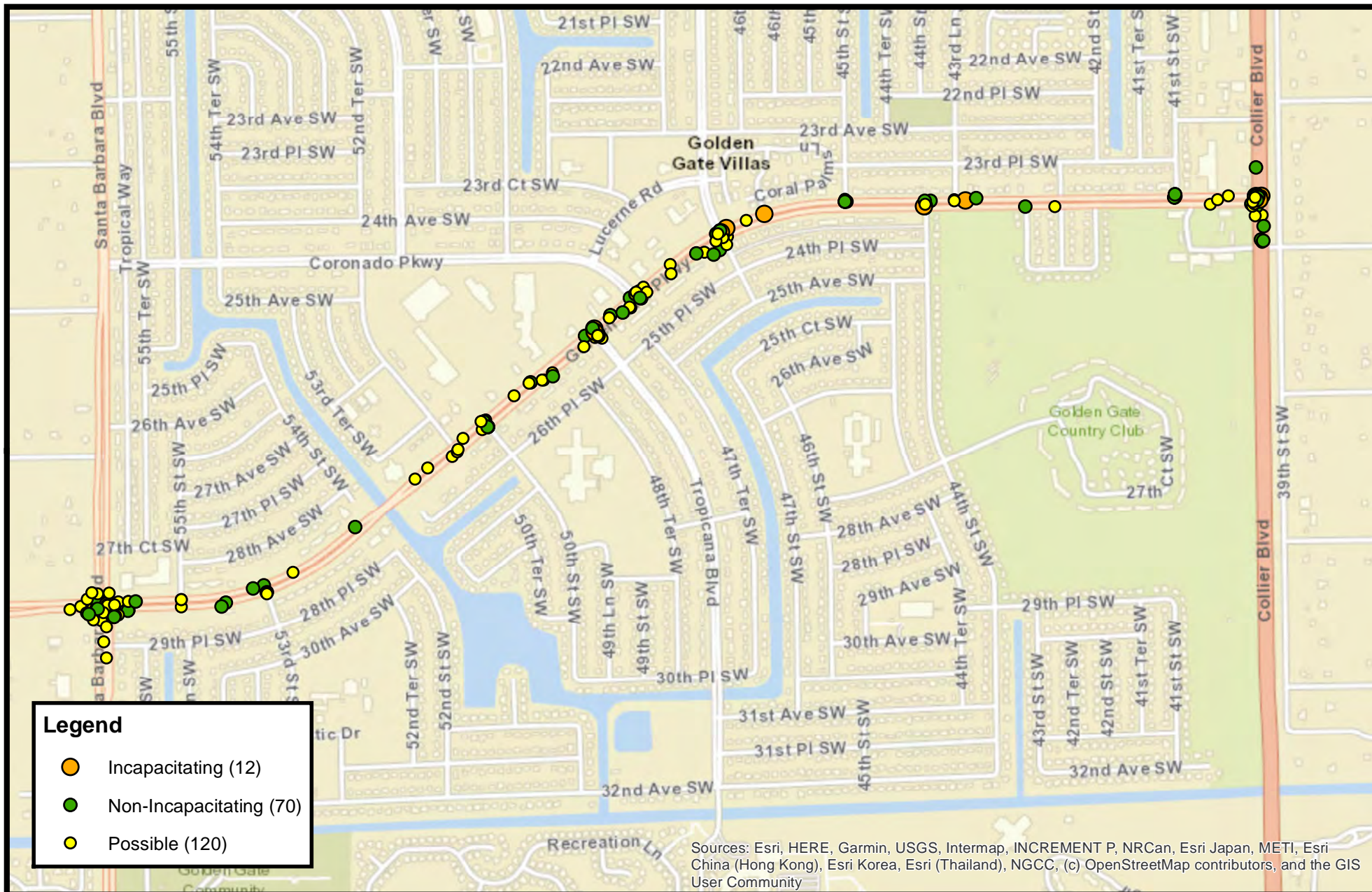
Corridor Statistics										
AADT	27,496									
Preliminary Crash Rate		5.048	Higher than State Avg. Urban 4-Lane Divided, Raised: 3.634							
Preliminary Ranking by Crash Frequency					1					
Preliminary Ranking by Crash Rate					5					
Preliminary Ranking of Intersection by Crash Frequency							At Santa Barbara Blvd, Rank: 6			
Preliminary Ranking of Intersection by Crash Rate							At Collier Blvd, Rank: 7; At Santa Barbara Blvd, Rank: 13			
		2014	2015	2016	2017	2018	5-Yr Total	Mean Crashes Per Yr	Serious Injury Crashes	%
Animal		1	0	0	0	0	1	0.2	0	0.1%
Angle		17	20	36	34	23	130	26	1	12.0%
Bike		2	1	1	1	2	7	1.4	1	0.6%
Head-On		2	2	4	1	1	10	2	0	0.9%
Hit Fixed Object		10	7	8	4	6	35	7	0	3.2%
Hit Non-Fixed Object		1	0	1	0	2	4	0.8	0	0.4%
Left-turn		30	21	26	30	24	131	26.2	7	12.1%
Lost Control		1	0	0	0	1	2	0.4	0	0.2%
Overturn		0	0	0	0	1	1	0.2	0	0.1%
Mechanical		0	1	0	0	0	1	0.2	0	0.1%
Pedestrian		1	1	1	0	0	3	0.6	0	0.3%
Rear-end		95	125	120	119	117	576	115.2	1	53.1%
Right-turn		5	3	6	6	7	27	5.4	1	2.5%
Sideswipe		23	22	37	33	26	141	28.2	0	13.0%
U-Turn		2	1	6	5	2	16	3.2	1	1.5%
Total		190	204	246	233	212	1,085	217	12	100%
Fatal		0	0	0	0	0	0	0	-	0.0%
Incapacitating		1	1	4	3	3	12	2.4	-	1.1%
Non-Incapacitating		14	12	11	16	17	70	14	-	6.5%
Possible		21	20	27	27	25	120	24	-	11.1%
None		154	171	204	187	167	883	176.6	-	81.4%
Total		190	204	246	233	212	1,085	217	-	100%
Daylight		139	149	187	162	150	787	157.4	4	72.5%
Dawn		2	1	5	4	2	14	2.8	0	1.3%
Dusk		4	3	5	2	12	26	5.2	0	2.4%
Dark-Lighted		42	45	43	61	47	238	47.6	7	21.9%
Dark-Not Lighted		2	6	6	4	1	19	3.8	1	1.8%
Lighting		1	0	0	0	0	1	0.2	0	0.1%
Total		190	204	246	233	212	1,085	217	12	100%
Dry Roadway		154	171	209	201	182	917	183.4	11	84.5%
Wet Roadway		35	33	36	32	30	166	33.2	1	15.3%
Unknown		1	0	1	0	0	2	0.4	0	0.2%
Total		190	204	246	233	212	1,085	217	12	100%
Note: Fatal and incapacitating crash types were only reviewed.										
Nighttime Crashes	27.5%		Lower than Statewide Average of 30%							
Wet Roadway Crashes	15.3%		Lower than Statewide Average of 18%							

Observations & Recommendations		
Location Description	Crash Trends/ Google Maps Observations	Recommendation
Corridor-wide	576 rear-end crashes; all at intersections; 534 (83%) of rear-end crashes at signalized intersections; 91 (16%) of rear-end crashes occurred during wet surface conditions; 264 (46%) of rear-end crashes occurred at signalized 4-leg intersection at Santa Barbara Blvd	Evaluate yellow change and all-red clearance intervals at Santa Barbara Blvd. Rear-end crashes may be due to congestion. Conduct a field review and consider conducting a signal retiming study. After signal retiming is completed, monitor crashes to determine if crashes are reduced; if signal retiming does not help with signal progression, consider conducting ICE analysis as the intersection may be at capacity and additional capacity improvements may be needed.
	130 angle crashes; 105 (81%) of all angle crashes occurred at signalized intersections; 29 (22%) of all angle crashes occurred at signalized 4-leg intersection at Sunshine Blvd/47th St SW; 27 (21%) of all angle crashes occurred at signalized 4-leg intersection at Tropicana Blvd	Review yellow change and all-red clearance intervals. Conduct a field review to determine if red-light running is an issue and consider enforcement.
	141 sideswipe crashes; 117 (83%) of all sideswipe crashes occurred at signalized intersections; based on preliminary review from Google Maps, there are no advanced street name signs, except at Santa Barbara Blvd	Install advance street name signs for signalized intersections; advanced street name signs have a Crash Reduction Factor (CRF) of 10% for sideswipe crashes.
	131 left-turn crashes; 101 (77%) occurred at signalized intersections; 30 (23%) occurred at unsignalized intersections; 43 (33%) of left-turn crashes occurred at t-intersection of Collier Blvd (3 incap); Collier Blvd has northbound 5-section left-turn signal and there is average of 9 crashes a year; 14 left-turn crashes occurred at signalized 4-leg intersection at Sunshine Blvd/47th St SW; some left-turn approaches at intersections have 4-section flashing left-turn signals; 11 left-turn crashes occurred at median opening of 41st St SW	Continue to monitor left-turn crashes at signalized intersections; evaluate feasibility of installing 4-section flashing left turn signals at additional problematic approaches. Landscaping along median may cause a sight issue for left turning vehicles; evaluate sight distance and trim or remove landscaping near median openings if obscuring drivers' line of sight.
	Based on preliminary review from Google Maps, there are no yellow retroreflective backplates on traffic signals at signalized intersections except: Tropicana Blvd, 47th St SW, and 44th St SW	Install yellow retroreflective backplates on all traffic signals; has a CRF of 15% for all crash types.
Signalized Intersections	Based on preliminary review from Google Maps, there are R10-15s, TURNING VEHICLE YIELD TO PED signs, at all signalized intersections, except Santa Barbara Blvd and Collier Blvd	Per new FHWA and FDOT guidelines, consider replacing TURNING VEHICLE YIELD TO PEDESTRIAN signs with TURNING VEHICLE STOP FOR PEDESTRIAN R10-15a signs.
School Zone	School zone within study corridor; SCHOOL markings on roadway and S1-1 School zone signs present on median and shoulder; children observed crossing CR-886 within school zone in Google Maps; 10 bike/ped crashes; one incapacitating bike crash; nearest crossings across CR-886 within school zone are approximately 0.46 mile apart	Conduct mid-block crossing analysis within school zone to determine if a mid-block crossing is warranted. Per FHWA MUTCD Section 7B.15, review state and local statute and conduct an engineering study to determine if a school zone is appropriate for Golden Gate Middle School along CR-886.
At 50th St SW, Coronado Pkwy, and 44th St SW	Based on preliminary review from Google Maps, crosswalk legs are missing from the following signalized intersections: - 50th St SW (Southwest leg) - Coronado Pkwy (Northeast leg) - 44th St SW (East leg)	Determine feasibility of installing special emphasis crosswalks on missing legs of the three intersections with pedestrian signals.

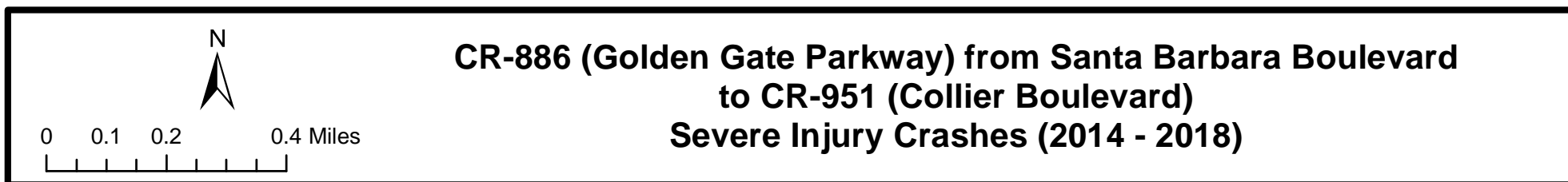
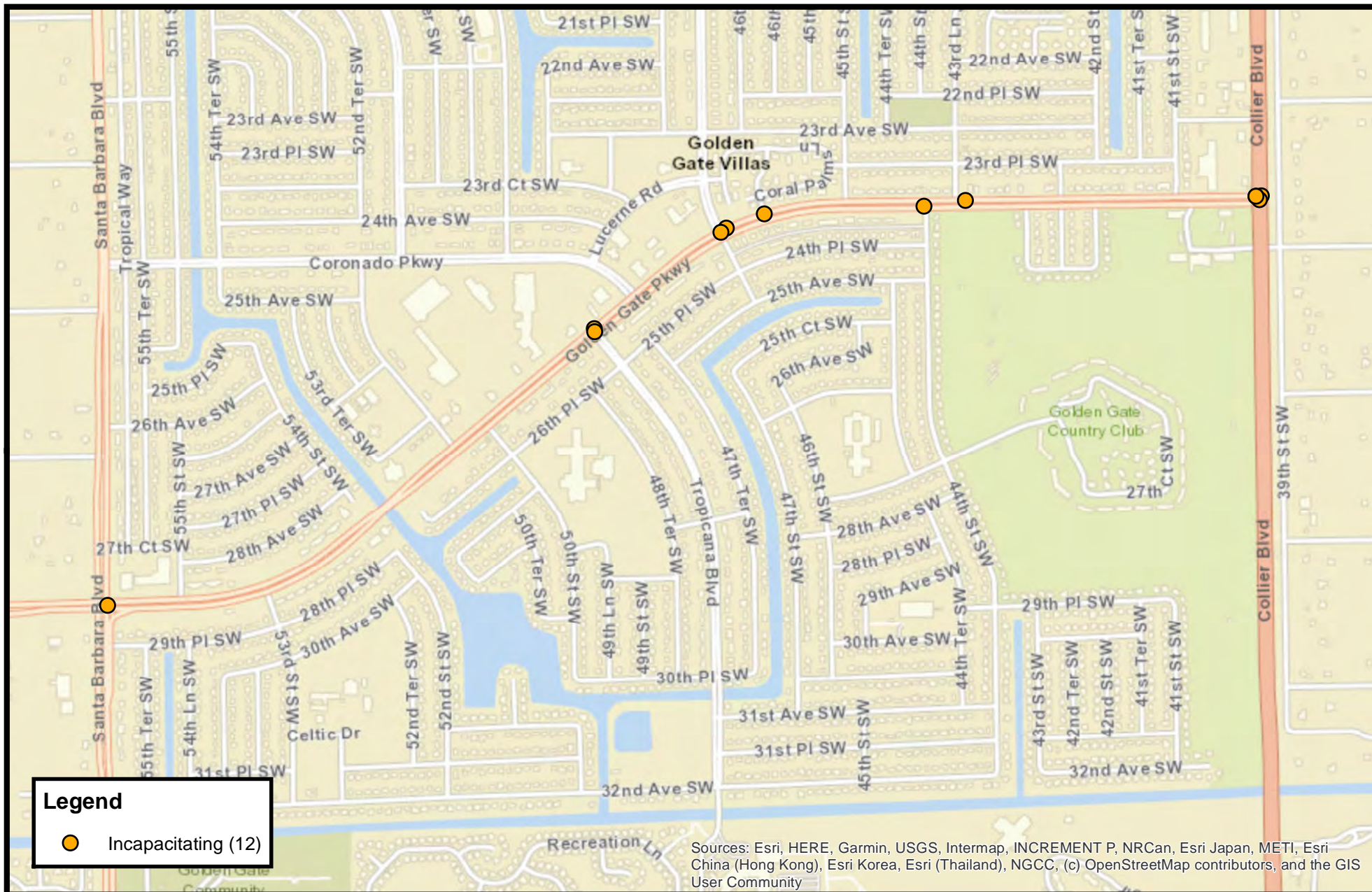
- Other Roadway Characteristics/Observations:
- Segment Funtional Classification: Minor Urban Arterial
  - 4-Lane divided roadway
  - Speed Limit: 35 mph
  - Median is curbed and landscaped with trees
  - Sidewalk and street lighting on both sides
  - No bike lanes












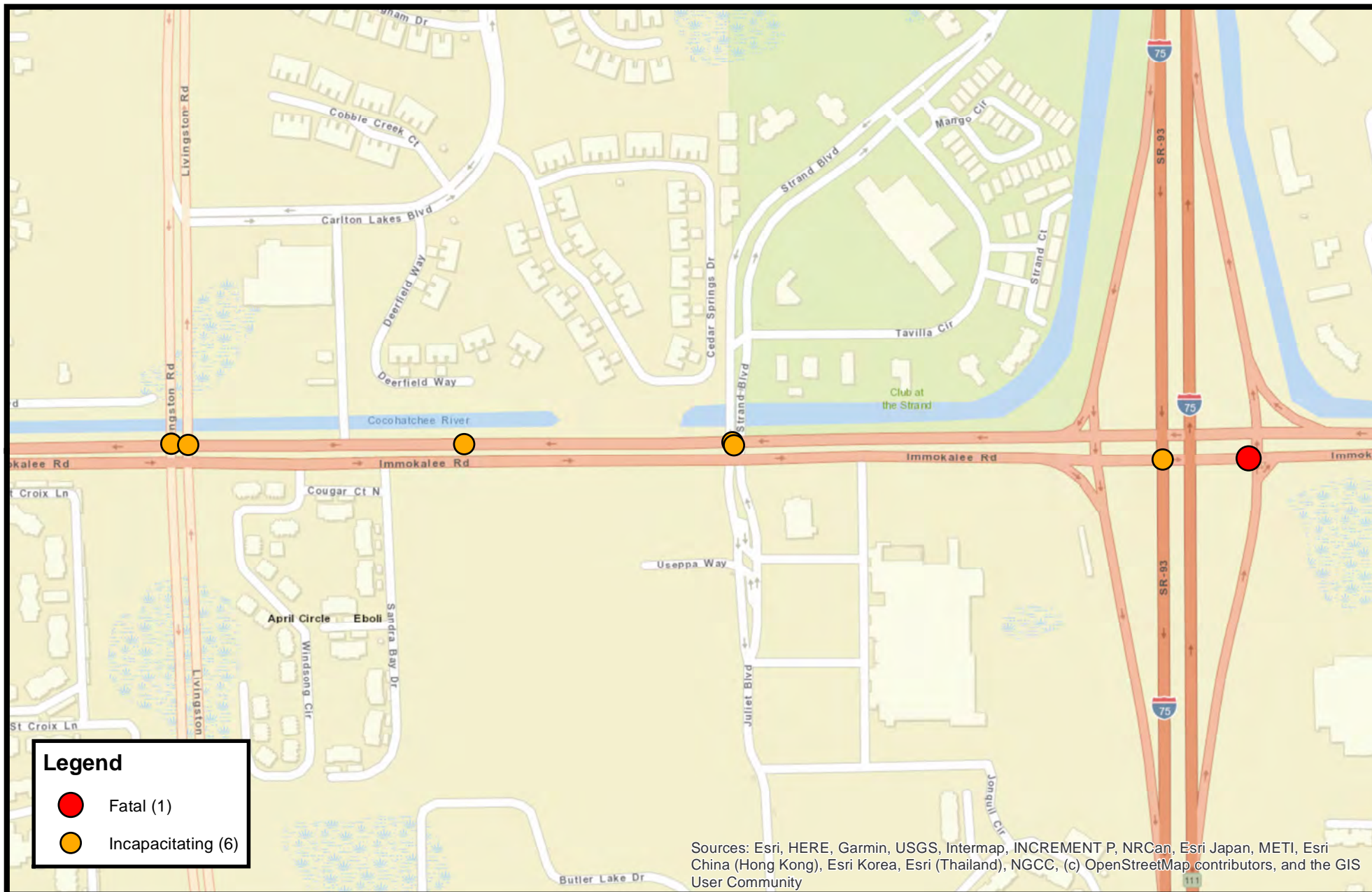


CR-846 (IMMOKALEE ROAD) FROM LIVINGSTON ROAD TO I-75

Corridor Statistics										Observations & Recommendations																																																																																																																																																																																																																																																																																																																								
<table><tr><td>AADT</td><td>46,874</td><td colspan="8"></td></tr><tr><td>Preliminary Crash Rate</td><td>5.886</td><td colspan="8">Higher than State Avg. for Urban 6+ Lane Divided, Raise 4.714</td></tr><tr><td>Preliminary Ranking by Crash Frequency</td><td>10</td><td colspan="8"></td></tr><tr><td>Preliminary Ranking by Crash Rate</td><td>3</td><td colspan="8" rowspan="3"></td></tr><tr><td>Preliminary Ranking of Intersection by Crash Frequency</td><td colspan="9" rowspan="2">At Livingston Rd, Rank: 9</td></tr></table>										AADT	46,874									Preliminary Crash Rate	5.886	Higher than State Avg. for Urban 6+ Lane Divided, Raise 4.714								Preliminary Ranking by Crash Frequency	10									Preliminary Ranking by Crash Rate	3									Preliminary Ranking of Intersection by Crash Frequency	At Livingston Rd, Rank: 9																																																																																																																																																																																																																																																																															
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Object</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>0.2</td><td>0</td><td>0.1%</td></tr><tr><td>Left-turn</td><td>0</td><td>1</td><td>2</td><td>2</td><td>5</td><td>10</td><td>2</td><td>1</td><td>1.1%</td></tr><tr><td>Pedestrian</td><td>1</td><td>1</td><td>0</td><td>1</td><td>0</td><td>3</td><td>0.6</td><td>3</td><td>0.3%</td></tr><tr><td>Rear-end</td><td>136</td><td>163</td><td>148</td><td>142</td><td>120</td><td>709</td><td>141.8</td><td>1</td><td>75.0%</td></tr><tr><td>Right-turn</td><td>1</td><td>1</td><td>4</td><td>8</td><td>7</td><td>21</td><td>4.2</td><td>0</td><td>2.2%</td></tr><tr><td>Run Off-road</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>0.2</td><td>0</td><td>0.1%</td></tr><tr><td>Sideswipe (Same Direction)</td><td>21</td><td>21</td><td>24</td><td>28</td><td>27</td><td>121</td><td>24.2</td><td>0</td><td>12.8%</td></tr><tr><td>U-Turn</td><td>1</td><td>2</td><td>0</td><td>1</td><td>0</td><td>4</td><td>0.8</td><td>0</td><td>0.4%</td></tr><tr><td>Total</td><td>181</td><td>201</td><td>197</td><td>192</td><td>174</td><td>945</td><td>189</td><td>7</td><td>100%</td></tr><tr><td>Fatal</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>0.2</td><td>-</td><td>0.1%</td></tr><tr><td>Incapacitating</td><td>2</td><td>1</td><td>0</td><td>3</td><td>0</td><td>6</td><td>1.2</td><td>-</td><td>0.6%</td></tr><tr><td>Non-Incapacitating</td><td>2</td><td>9</td><td>7</td><td>8</td><td>7</td><td>33</td><td>6.6</td><td>-</td><td>3.5%</td></tr><tr><td>Possible</td><td>25</td><td>20</td><td>19</td><td>20</td><td>16</td><td>100</td><td>20</td><td>-</td><td>10.6%</td></tr><tr><td>None</td><td>151</td><td>171</td><td>171</td><td>161</td><td>151</td><td>805</td><td>161</td><td>-</td><td>85.2%</td></tr><tr><td>Total</td><td>181</td><td>201</td><td>197</td><td>192</td><td>174</td><td>945</td><td>189</td><td>-</td><td>100%</td></tr><tr><td>Daylight</td><td>145</td><td>159</td><td>156</td><td>152</td><td>138</td><td>750</td><td>150</td><td>5</td><td>79.4%</td></tr><tr><td>Dawn</td><td>3</td><td>2</td><td>1</td><td>4</td><td>3</td><td>13</td><td>2.6</td><td>1</td><td>1.4%</td></tr><tr><td>Dusk</td><td>4</td><td>3</td><td>3</td><td>6</td><td>4</td><td>20</td><td>4</td><td>0</td><td>2.1%</td></tr><tr><td>Dark-Lighted</td><td>27</td><td>35</td><td>35</td><td>28</td><td>28</td><td>153</td><td>30.6</td><td>0</td><td>16.2%</td></tr><tr><td>Dark-Not Lighted</td><td>2</td><td>1</td><td>1</td><td>1</td><td>1</td><td>6</td><td>1.2</td><td>1</td><td>0.6%</td></tr><tr><td>Dark-Unknown Lighting</td><td>0</td><td>1</td><td>1</td><td>1</td><td>0</td><td>3</td><td>0.6</td><td>0</td><td>0.3%</td></tr><tr><td>Total</td><td>181</td><td>201</td><td>197</td><td>192</td><td>174</td><td>945</td><td>189</td><td>7</td><td>100%</td></tr><tr><td>Dry Roadway</td><td>149</td><td>168</td><td>164</td><td>163</td><td>143</td><td>787</td><td>157.4</td><td>7</td><td>83.3%</td></tr><tr><td>Wet Roadway</td><td>32</td><td>33</td><td>33</td><td>29</td><td>31</td><td>158</td><td>31.6</td><td>0</td><td>16.7%</td></tr><tr><td>Total</td><td>181</td><td>201</td><td>197</td><td>192</td><td>174</td><td>945</td><td>189</td><td>7</td><td>100%</td></tr></table>											2014	2015	2016	2017	2018	5-Yr Total	Mean Crashes Per Yr	Serious Injury Crashes	%	Angle	11	4	13	7	9	44	8.8	1	4.7%	Backing	1	0	1	0	1	3	0.6	0	0.3%	Bike	1	1	2	1	0	5	1	1	0.5%	Head-On	3	1	0	0	0	4	0.8	0	0.4%	Hit Fixed Object	3	6	3	2	5	19	3.8	0	2.0%	Hit Non-Fixed Object	1	0	0	0	0	1	0.2	0	0.1%	Left-turn	0	1	2	2	5	10	2	1	1.1%	Pedestrian	1	1	0	1	0	3	0.6	3	0.3%	Rear-end	136	163	148	142	120	709	141.8	1	75.0%	Right-turn	1	1	4	8	7	21	4.2	0	2.2%	Run Off-road	1	0	0	0	0	1	0.2	0	0.1%	Sideswipe (Same Direction)	21	21	24	28	27	121	24.2	0	12.8%	U-Turn	1	2	0	1	0	4	0.8	0	0.4%	Total	181	201	197	192	174	945	189	7	100%	Fatal	1	0	0	0	0	1	0.2	-	0.1%	Incapacitating	2	1	0	3	0	6	1.2	-	0.6%	Non-Incapacitating	2	9	7	8	7	33	6.6	-	3.5%	Possible	25	20	19	20	16	100	20	-	10.6%	None	151	171	171	161	151	805	161	-	85.2%	Total	181	201	197	192	174	945	189	-	100%	Daylight	145	159	156	152	138	750	150	5	79.4%	Dawn	3	2	1	4	3	13	2.6	1	1.4%	Dusk	4	3	3	6	4	20	4	0	2.1%	Dark-Lighted	27	35	35	28	28	153	30.6	0	16.2%	Dark-Not Lighted	2	1	1	1	1	6	1.2	1	0.6%	Dark-Unknown Lighting	0	1	1	1	0	3	0.6	0	0.3%	Total	181	201	197	192	174	945	189	7	100%	Dry Roadway	149	168	164	163	143	787	157.4	7	83.3%	Wet Roadway	32	33	33	29	31	158	31.6	0	16.7%	Total	181	201	197	192	174	945	189	7	100%			
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Hit Non-Fixed Object	1	0	0	0	0	1	0.2	0	0.1%																																																																																																																																																																																																																																																																																																																									
Left-turn	0	1	2	2	5	10	2	1	1.1%																																																																																																																																																																																																																																																																																																																									
Pedestrian	1	1	0	1	0	3	0.6	3	0.3%																																																																																																																																																																																																																																																																																																																									
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Run Off-road	1	0	0	0	0	1	0.2	0	0.1%																																																																																																																																																																																																																																																																																																																									
Sideswipe (Same Direction)	21	21	24	28	27	121	24.2	0	12.8%																																																																																																																																																																																																																																																																																																																									
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Fatal	1	0	0	0	0	1	0.2	-	0.1%																																																																																																																																																																																																																																																																																																																									
Incapacitating	2	1	0	3	0	6	1.2	-	0.6%																																																																																																																																																																																																																																																																																																																									
Non-Incapacitating	2	9	7	8	7	33	6.6	-	3.5%																																																																																																																																																																																																																																																																																																																									
Possible	25	20	19	20	16	100	20	-	10.6%																																																																																																																																																																																																																																																																																																																									
None	151	171	171	161	151	805	161	-	85.2%																																																																																																																																																																																																																																																																																																																									
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Daylight	145	159	156	152	138	750	150	5	79.4%																																																																																																																																																																																																																																																																																																																									
Dawn	3	2	1	4	3	13	2.6	1	1.4%																																																																																																																																																																																																																																																																																																																									
Dusk	4	3	3	6	4	20	4	0	2.1%																																																																																																																																																																																																																																																																																																																									
Dark-Lighted	27	35	35	28	28	153	30.6	0	16.2%																																																																																																																																																																																																																																																																																																																									
Dark-Not Lighted	2	1	1	1	1	6	1.2	1	0.6%																																																																																																																																																																																																																																																																																																																									
Dark-Unknown Lighting	0	1	1	1	0	3	0.6	0	0.3%																																																																																																																																																																																																																																																																																																																									
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Wet Roadway	32	33	33	29	31	158	31.6	0	16.7%																																																																																																																																																																																																																																																																																																																									
Total	181	201	197	192	174	945	189	7	100%																																																																																																																																																																																																																																																																																																																									
Note: Fatal and incapacitating crash types were only reviewed.																																																																																																																																																																																																																																																																																																																																		
<table><tr><td>Nighttime Crashes</td><td>21%</td><td colspan="8">Lower than Statewide Average of 30%</td></tr><tr><td>Wet Roadway Crashes</td><td>17%</td><td colspan="8">Lower than Statewide Average of 18%</td></tr></table>										Nighttime Crashes	21%	Lower than Statewide Average of 30%								Wet Roadway Crashes	17%	Lower than Statewide Average of 18%																																																																																																																																																																																																																																																																																																												
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<p><b>Other Roadway Characteristics/Observations:</b></p> <ul style="list-style-type: none"><li>- Segment Functional Classification: Minor Urban Arterial</li><li>- 6-Lane to 8-Lane divided roadway</li><li>- Speed Limit: 45 mph</li><li>- Median is curbed and landscaped with palm trees</li><li>- Street lighting on both sides</li><li>- Sidewalk only along the south side</li><li>- Concrete barrier wall along north side to protect vehicles from Cocohatchee River</li><li>- No bike lanes</li></ul>																																																																																																																																																																																																																																																																																																																																		
																																																																																																																																																																																																																																																																																																																																		







0 0.045 0.09 0.18 Miles



## CR-846 (Immokalee Road) from Livingston Road to I-75 Severe Injury Crashes (2014 - 2018)

US-41/SR-45/TAMIAMI TRAIL N FROM CR-862 (VANDERBILT BEACH ROAD) TO CR-846 (IMMOKALEE ROAD)/111TH AVENUE N

Corridor Statistics									
AADT	35,925								
Preliminary Crash Rate	4.005	Lower than State Avg. for Urban 6-Lane Divided, Raised: 4.714							
Preliminary Ranking by Crash Frequency				7					
Preliminary Ranking by Crash Rate				12					
Preliminary Ranking of Intersection by Crash Frequency					At Immokalee Rd/111th Ave, Rank: 3				
					At Vanderbilt Beach Rd, Rank 15				
Preliminary Ranking of Intersection by Crash Rate					At Immokalee Rd/111th Ave, Rank: 10				
	2014	2015	2016	2017	2018	5-Yr Total	Mean Crashes Per Yr	Serious Injury Crashes	%
Angle	15	14	13	20	17	79	15.8	2	7.8%
Backing	0	1	0	0	0	1	0.2	0	0.1%
Bike	2	4	4	6	4	20	4	1	2.0%
Head-On	0	0	0	0	1	1	0.2	0	0.1%
Hit Fixed Object	12	10	9	8	5	44	8.8	2	4.4%
Hit Non-Fixed Object	2	1	1	1	1	6	1.2	0	0.6%
Left-turn	4	7	8	4	2	25	5	3	2.5%
Lost Control	0	0	0	0	1	1	0.2	1	0.1%
Medical	0	1	0	0	0	1	0.2	0	0.1%
Pedestrian	2	1	1	1	2	7	1.4	1	0.7%
Rear-end	125	138	132	129	96	620	124	1	61.4%
Right-turn	6	6	1	7	4	24	4.8	1	2.4%
Sideswipe	32	33	40	35	24	164	32.8	0	16.2%
Single Vehicle	0	0	1	0	0	1	0.2	0	0.1%
U-Turn	4	0	2	7	3	16	3.2	0	1.6%
Total	204	216	212	218	160	1,010	202	12	100%
Fatal	0	0	1	0	1	2	0.4	-	0.2%
Incapacitating	1	0	2	5	2	10	2	-	1.0%
Non-Incapacitating	15	9	12	9	11	56	11.2	-	5.5%
Possible	21	28	25	35	22	131	26.2	-	13.0%
None	167	179	172	169	124	811	162.2	-	80.3%
Total	204	216	212	218	160	1,010	202	-	100%
Daylight	154	172	164	171	130	791	158.2	8	78.3%
Dawn	1	2	3	3	1	10	2	1	1.0%
Dusk	8	5	8	8	1	30	6	1	3.0%
Dark-Lighted	40	35	33	35	23	166	33.2	2	16.4%
Dark-Not Lighted	1	1	3	0	4	9	1.8	0	0.9%
Dark-Unknown Lighting	0	1	1	1	1	4	0.8	0	0.4%
Total	204	216	212	218	160	1,010	202	12	100%
Dry Roadway	179	190	191	201	146	907	181.4	11	89.8%
Wet Roadway	25	26	21	17	14	103	20.6	1	10.2%
Total	204	216	212	218	160	1,010	202	12	100%

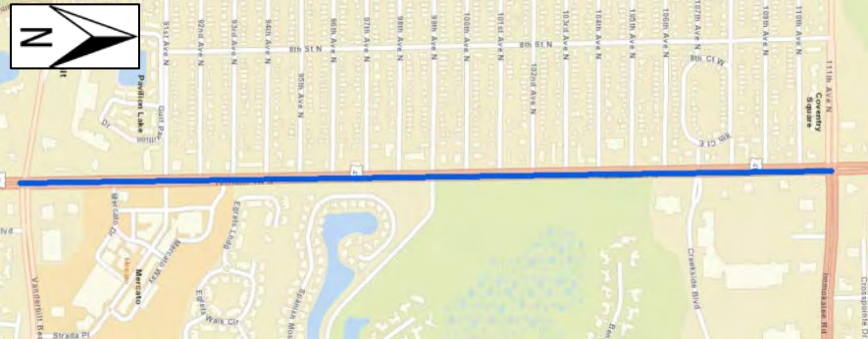
Note: Fatal and incapacitating crash types were only reviewed.

Nighttime Crashes	22%	Lower than Statewide Average of 30%
Wet Roadway Crashes	10%	Lower than Statewide Average of 18%

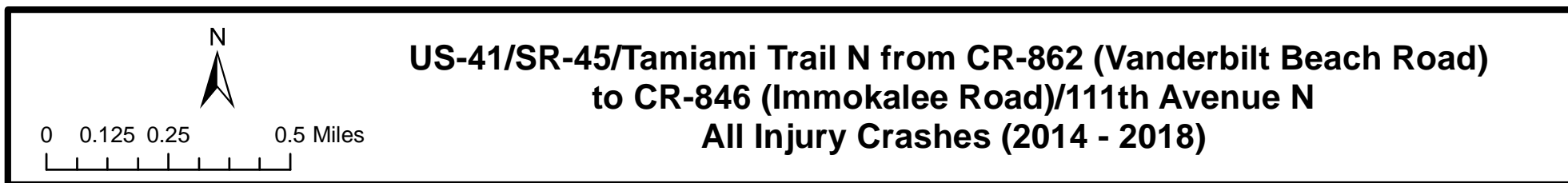
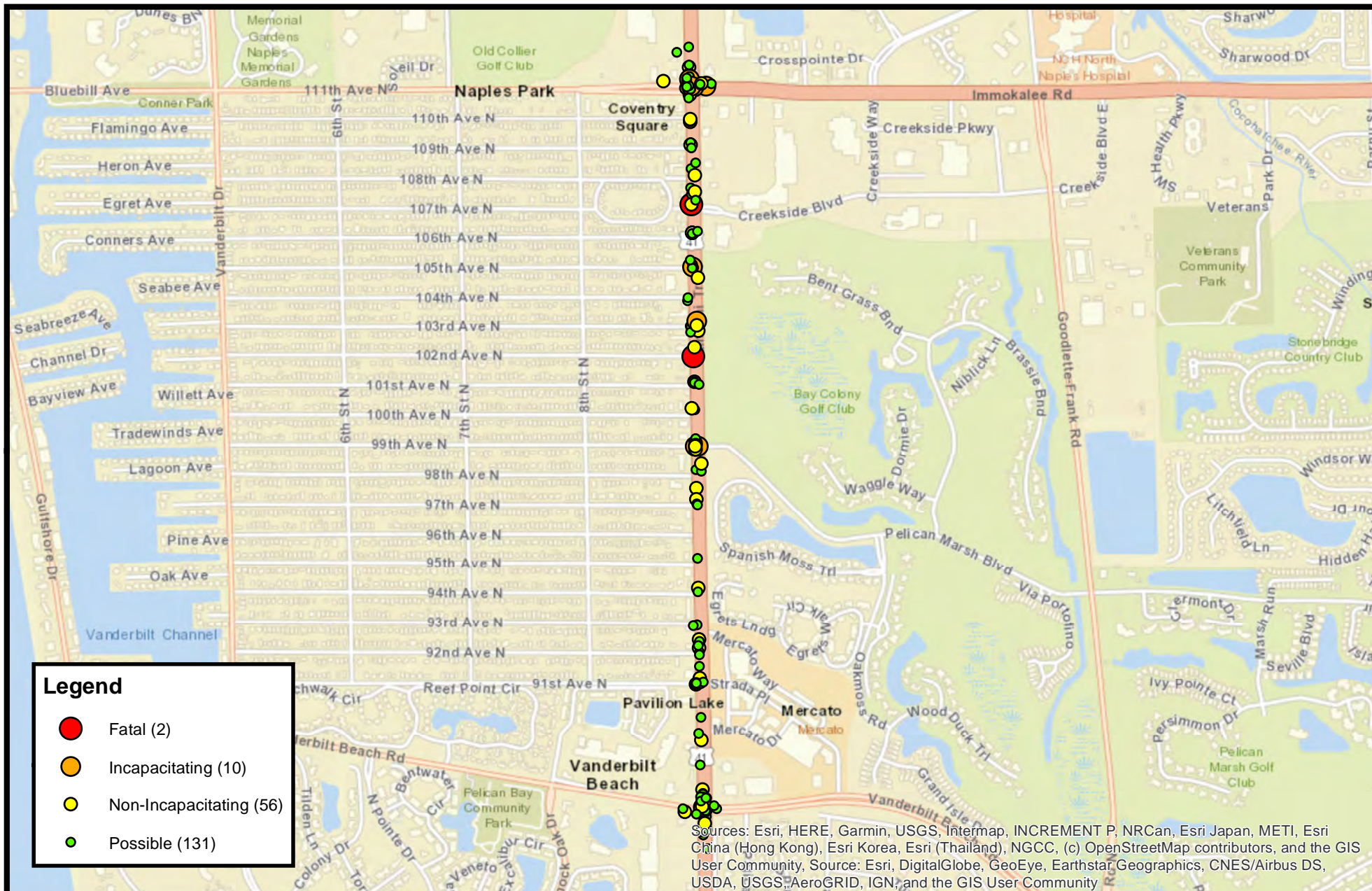
Observations & Recommendations		
Location Description	Crash Trends/ Google Maps Observations	Recommendation
Corridor-wide	620 rear-end crashes; 1 incapacitating; 541 (87%) of rear-end crashes at signalized intersections; 68 (11%) of rear-end crashes occurred in wet surface conditions; 111 (18%) of rear-end crashes occurred from dusk-to-dawn; 226 (36%) of rear-end crashes occurred at signalized 4-leg intersection Immokalee Rd	Evaluate yellow change and all red-clearance intervals. Rear-end crashes may be due to congestion. Conduct a field review and consider conducting a signal retiming study. After signal retiming is completed, monitor crashes to determine if crashes are reduced; if signal retiming does not help with signal progression, consider conducting ICE analysis as the intersection may be at capacity and additional capacity improvements may be needed.
	164 sideswipe crashes; 135 (82%) of all sideswipe crashes at signalized intersections; based on preliminary Google Maps observations, no advance street name signs for signalized intersections at 91st Ave N/Strada Pl and Immokalee Rd/111th Ave N	Install advance street name signs for signalized intersections; advanced street name signs have a Crash Reduction Factor (CRF) of 10% for sideswipe crashes
	79 angle crashes; 2 incapacitating crashes 70 (89%) of all angle crashes occurred at signalized intersections; 37 (47%) occurred at 4-leg signalized intersection CR-846 (Immokalee Rd)/111th Ave N	Review yellow change and all-red clearance intervals at CR-846 (Immokalee Rd)/111th Ave N Conduct a field review to determine if red-light running is an issue and consider enforcement.
	44 hit fixed object crashes; 2 incapacitating; 22 (50%) of all hit fixed object crashes occurred from dusk-to-dawn conditions; based on preliminary Google Maps observations, no street lighting is installed on west side from Vanderbilt Beach Rd to 91st Ave N/Strada Pl; The street lighting is high-pressure sodium (HPS) luminaires	Conduct lighting analysis to determine if lighting needs to be installed where lighting is not present. Replace existing HPS luminaires with LED as LED provides wide, consistent light pattern versus the HPS and LEDs reduce maintenance cost due to their longer lives.
	27 non-motorist crashes occurred along corridor; 20 bike and 7 pedestrian; 1 fatal pedestrian crash and 1 incapacitating bike crash; 21 (78%) of the crashes involved right turning vehicles at intersections, 1 incapacitating; All signalized intersections have parallel marked crossings, except 107th Ave/Creekside Blvd which has special emphasis; All side streets do not have marked crossings	Install R10-15a signs, TURNING VEHICLE STOP FOR PEDESTRIAN, at all intersections to increase awareness of non-motorists. Install special emphasis crossings at all existing crossings at signalized intersections where parallel marked crossing is present to increase visibility of crosswalks. Install special emphasis crossings on all side streets.
	25 left-turn crashes; 1 fatal and 2 incapacitating; 16 (64%) of all left-turn crashes occurred at signalized intersections; Average number of crashes per location is 1 crash per year or less;	Due to low average number of crashes per location per year, there are no recommendations at this time.
	Bike lanes along corridor do not meet current FDOT standards: design speed of 45 mph (posted 40 mph) for bike lanes is standard and posted is 50 mph; Lane widths are 12 ft wide; bike lanes 5 ft wide; average of 5 non-motorist crashes per year	As a long term recommendation, consider a shared use path on one side of corridor; lane widths can be reduced and removal of bike lanes could accommodate for a shared use path; this recommendation is also based on whether non-motorist activity is high (must be confirmed with field review)
	Based on preliminary review from Google Maps, there are no yellow retroreflective backplates on traffic signals at the following signalized intersections: Vanderbilt Beach Rd, 91st Ave/Strada Pl, and missing on some signals at 99th Ave/Pelican Marsh Blvd and 111th Ave/Immokalee Rd	Install yellow retroreflective backplates on all traffic signals where missing, which has a crash reduction factor of 15% for all crash types and severities.
	No intersection lighting at the following intersections: Vanderbilt Beach Rd, 99th Ave/ Pelican Marsh Blvd,	See recommendation on lighting.
	At 91st Ave/Strada Pl Lighting only on northwest and southeast corners	Determine feasibility of installing pedestrian crossing on south leg. See recommendation on lighting.
At 107th Ave/ Creekside Blvd	Lighting only on north side of intersection	See recommendation on lighting.
At 117th Ave/ Immokalee Rd	Lighting only on south side of intersection	See recommendation on lighting.

Other Roadway Characteristics/Observations:

- Segment Functional Classification: Other Principal Urban Arterial
- 6-Lane divided roadway
- Speed Limit: 50 mph
- Median is curbed and landscaped with trees
- Sidewalk on both sides from Vanderbilt Beach Rd to 91st Ave/Strada Pl and only on west side from 91st Ave/Strada Pl to Immokalee Rd
- Street lighting described in observations.
- 5 ft Bike lanes on both sides.

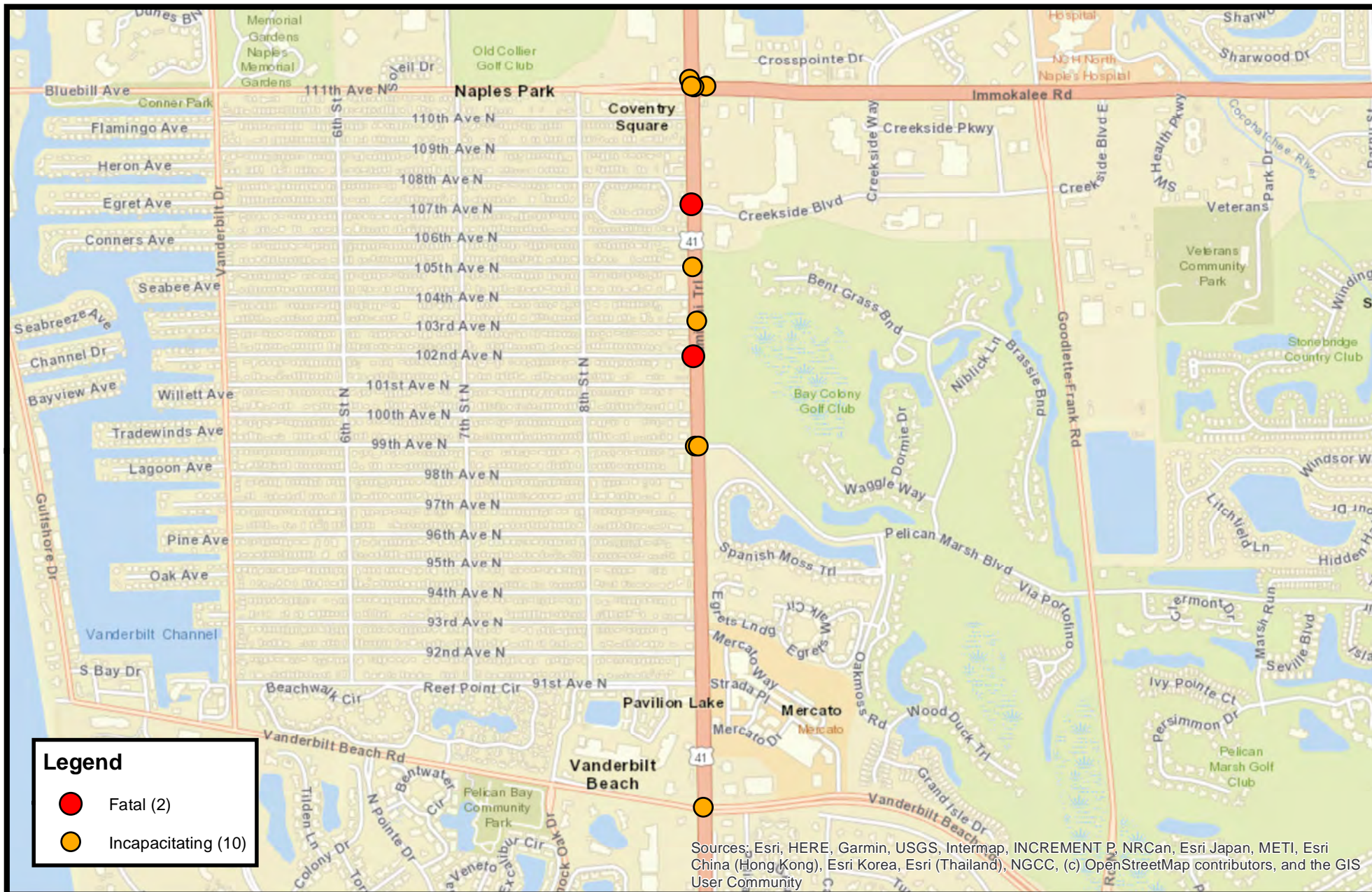






**US-41/SR-45/Tamiami Trail N from CR-862 (Vanderbilt Beach Road)  
to CR-846 (Immokalee Road)/111th Avenue N  
All Injury Crashes (2014 - 2018)**





# **US-41/SR-45/Tamiami Trail N from CR-862 (Vanderbilt Beach Road) to CR-846 (Immokalee Road)/111th Avenue N Severe Injury (2014 - 2018)**

## Appendix D: School Congestion Analysis





# School Congestion Matrix Draft

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## School Congestion Matrix

There are 58 public schools in Collier County, of these, the School District of Collier County has identified 20 schools with the most traffic congestion concerns. School enrollment and school bus eligibility data from the 20 schools with traffic congestion concerns was analyzed to provide a metric for identifying the approximate number of students who are eligible and are enrolled for school bus transportation. Florida Administrative Code (FAC) 6A-3.001 requires school districts to provide transportation to students whose homes are more than a reasonable walking distance from the assigned public school. Reasonable walking distance, as defined by FAC 6A-3.001(3), is any distance not more than 2 miles between the home and school or one and one-half (1 ½) miles between the home and assigned bus stop. Schools that had the highest school bus eligibility rates, 68% or higher, were selected as the top-tier locations of concern for traffic congestion (Appendix B). The following matrix was created to evaluate the top-tier school locations against strategies for reducing congestion. For addressing long-term congestion and site-specific solutions, future studies and recommendations are detailed below.



**Table 1: Potential Effectiveness of Road Network Congestion Management Strategies for Schools in Collier County with High Traffic Congestion**

ROAD NETWORK CONGESTION MANAGEMENT STRATEGIES			
RESULTS		<ul style="list-style-type: none"> <li>• Reduces congestion</li> <li>• Lowers motor vehicle speeds in school zones</li> <li>• Improves pedestrian and bicyclist safety</li> </ul>	
EXAMPLES		<b>Circulation Improvement:</b> <ul style="list-style-type: none"> <li>- Evaluate and optimize traffic signals around school dismissal times</li> <li>- Evaluate pedestrian signal timing (crossing and wait times)</li> <li>- Evaluate the street network to optimize routing to and from school sites</li> </ul>	<b>Infrastructure Tools:</b> <ul style="list-style-type: none"> <li>- Traffic calming measures (curb extensions, chicanes, lateral shifts, roundabouts, etc.)</li> <li>- Traffic control devices (traffic signals, variable message signs, pedestrian hybrid beacons)</li> <li>- Pavement markings and signage (Marked crosswalks, guidance signage, warning signage, speed feedback signage)</li> </ul>
POTENTIAL EFFECTIVENESS OF CONGESTION MANAGEMENT STRATEGIES	Gulf Coast High (GCH)	Medium	Low
	Laurel Oak Elementary (LOE)	Medium	Low
	Marco Island Academy (MIA)	Low	Low
	Naples High (NHS)	High	Medium
	North Naples Middle (NNM)	Medium	Low
	Oakridge Middle School (OMS)	Medium	Medium
	Pelican Marsh Elementary (PME)	Medium	Medium
	Palmetto Ridge High (PRH)	Medium	Low
	Pine Ridge Middle (PRM)	High	Medium

**Table 2: Potential Effectiveness of School Site Congestion Management Strategies for Schools in Collier County with High Traffic Congestion**

SCHOOL SITE CONGESTION MANAGEMENT STRATEGIES			
RESULTS		<ul style="list-style-type: none"> <li>Eliminates peak volume times, reducing congestion</li> <li>Reduces congestion in drop-off and pick-up areas</li> </ul>	
EXAMPLES		<b>Site-Design:</b> <ul style="list-style-type: none"> <li>Establish off-site waiting lots and curbing and parking zones</li> <li>Designate separate entrances and additional entrances for different modes of travel (bus, drop-off/ pick-up, pedestrians/ bicyclists)</li> <li>Establish a priority parking and loading zone for carpool vehicles</li> <li>Provide a pull-through lane to the left side of the on-site drop-off zones to permit passing</li> </ul>	<b>Demand scheduling:</b> <ul style="list-style-type: none"> <li>Stagger dismissal times</li> <li>School Dismissal Automation Software (e.g. PikMyKid, School Pass)</li> </ul>
POTENTIAL EFFECTIVENESS OF CONGESTION MANAGEMENT STRATEGIES	Gulf Coast High (GCH)	Medium	High
	Laurel Oak Elementary (LOE)	High	High
	Marco Island Academy (MIA)	High	Medium
	Naples High (NHS)	Medium	High
	North Naples Middle (NNM)	Medium	Medium
	Oakridge Middle School (OMS)	High	Medium
	Pelican Marsh Elementary (PME)	High	Medium
	Palmetto Ridge High (PRH)	Low	High
	Pine Ridge Middle (PRM)	High	Medium

**Table 3: Potential Effectiveness of Transportation Mode Congestion Management Strategies for Schools in Collier County with High Traffic Congestion**

TRANSPORTATION MODE CONGESTION MANAGEMENT STRATEGIES			
RESULTS		<ul style="list-style-type: none"> <li>Reduces volume of vehicle traffic</li> <li>Improves pedestrian and bicyclist safety</li> </ul>	
EXAMPLES		<b>Encouragement Solutions:</b> <ul style="list-style-type: none"> <li>Awareness campaign about school bus routes among eligible students</li> <li>School Carpooling Apps (e.g GoKid, KiD CarPool, Carpool to School, Carpools-Kids, Zūm, Hop Skip Drive, Sheprd, Kango)</li> <li>Waking/biking school bus</li> <li>Walk/ride to school days</li> </ul>	<b>Infrastructure Solutions:</b> <ul style="list-style-type: none"> <li>Fill gaps in the pedestrian and bicycle network</li> <li>Path and trail connection from school to adjacent properties</li> <li>Secure and convenient bicycle parking</li> </ul>
POTENTIAL EFFECTIVENESS OF CONGESTION MANAGEMENT STRATEGIES	Gulf Coast High (GCH)	High	Medium
	Laurel Oak Elementary (LOE)	High	Low
	Marco Island Academy (MIA)	High	Low
	Naples High (NHS)	High	High
	North Naples Middle (NNM)	High	Low
	Oakridge Middle School (OMS)	High	Medium
	Pelican Marsh Elementary (PME)	High	Medium
	Palmetto Ridge High (PRH)	High	Low
	Pine Ridge Middle (PRM)	High	Low

The Collier County School Board provides school bus transportation for two of the seven charter schools (Marco Island Academy (MIA) and Marco Island Charter Middle (MCM)). As such, most of the student population who attend charter schools in Collier County rely upon vehicular transportation to/from school. While the majority of the top-tier schools identified for evaluation in the matrix are public schools, strategies for reducing traffic congestion are applicable at both public and charter schools. However, strategies that may be the most effective at reducing traffic congestion at charter schools are the strategies that reduce the volume of vehicle traffic such as encouraging switching modes of transportation – carpooling, transit, and walking or biking (if options are available). Site specific studies are recommended to address the unique needs of each charter school. The discussion below provides further options to address traffic congestion at both public and charter schools.

## Future Studies and Strategies

Site-specific studies and stakeholder collaboration are needed to thoroughly understand and address the dynamics of congestion and safety around public and charter schools in Collier County. The following studies and working groups are recommended to improve transportation and safety around schools:

**School Zone Traffic Congestion and Safety Study** – A School Zone Traffic Congestion and Safety Study identifies alternatives for improving transportation operations and design, accessibility, multimodal safety, and traffic flow in areas at and around local public schools. Many of Collier County schools access/egress roadways are arterials and collector roads. During rush hour traffic, routes that are already constrained by normal congestion are further delayed as vehicles slow and/or queue to enter/exit school campuses. This type of study can provide site specific solutions for schools with student populations that rely on vehicular transportation to/from school and school areas with the most congestion.

**Safe Routes to School (SRTS) Study** – A Safe Routes to School Study analyzes existing infrastructure, institutional, and programmatic barriers that hinder students from walking and biking to school and proposes practical education, encouragement, engineering, and enforcement solutions to these problems. This study can provide strategies to increase the walking and biking rate within the 2-mile distance of schools where School District of Collier County does not provide school bus transportation and encourage the use of public transit and carpools where walking or biking is not feasible. This study can also provide a basis for applying for Florida Safe Routes to School Infrastructure Funding from the Florida Department of Transportation (FDOT). Program funds are available to public, private, and charter schools serving Kindergarten through High School.

**School Transportation Working Group** – Successful identification and implementation of school transportation studies and safety measures involve collaboration between multiple local stakeholders. The creation of a specific School Transportation Working Group or a School Transportation Committee under the umbrella of the Collier County Community Traffic Safety Team (CTST) could establish a forum for dialogue and support the identification and resolution of issues related to transportation surrounding schools. Possible stakeholders include: School District (public and charter), Local Governments, FDOT, Metropolitan Planning Organization (MPO), Law Enforcement, Parent Advisory Committees, School District Committees, Public and Community Health Partners, and County Transit Authority.

## Appendices

### Appendix A – Collier County Schools with Congestion

SCHOOL NAME	SCHOOL ABBREVIATION	CONGESTION AM	CONGESTION PM
Eden Park Elementary (EPE)	EPE	X	X
Gulf Coast High	GCH	X	X
Golden Gate Elementary North	GGE (N)	X	X
Golden Gate Elementary North	GGE (S)	X	X
Golden Gate High	GGH	X	X
Golden Gate Middle	GGM	X	X
Golden Terrace Elementary (N)	GTE(N)	X	X
Golden Terrace Elementary (S)	GTE(S)	X	X
Immokalee High	I.H.S	X	X
Immokalee Middle	IMS	X	X
Laurel Oak Elementary	LOE	X	X
Lake Trafford Elementary	LTE	X	X
Marco Island Academy	MIA	X	X
Naples High	NHS	X	X
North Naples Middle	NNM	X	X
Naples Park Elementary	NPE	X	X
Osceola Elementary	OES	X	X
Oakridge Middle School	ORM	X	X
Pelican Marsh Elementary	PME	X	X
Palmetto Ridge High	PRH	X	X
Pine Ridge Middle	PRM	X	X
Parkside Elementary	PSE		X



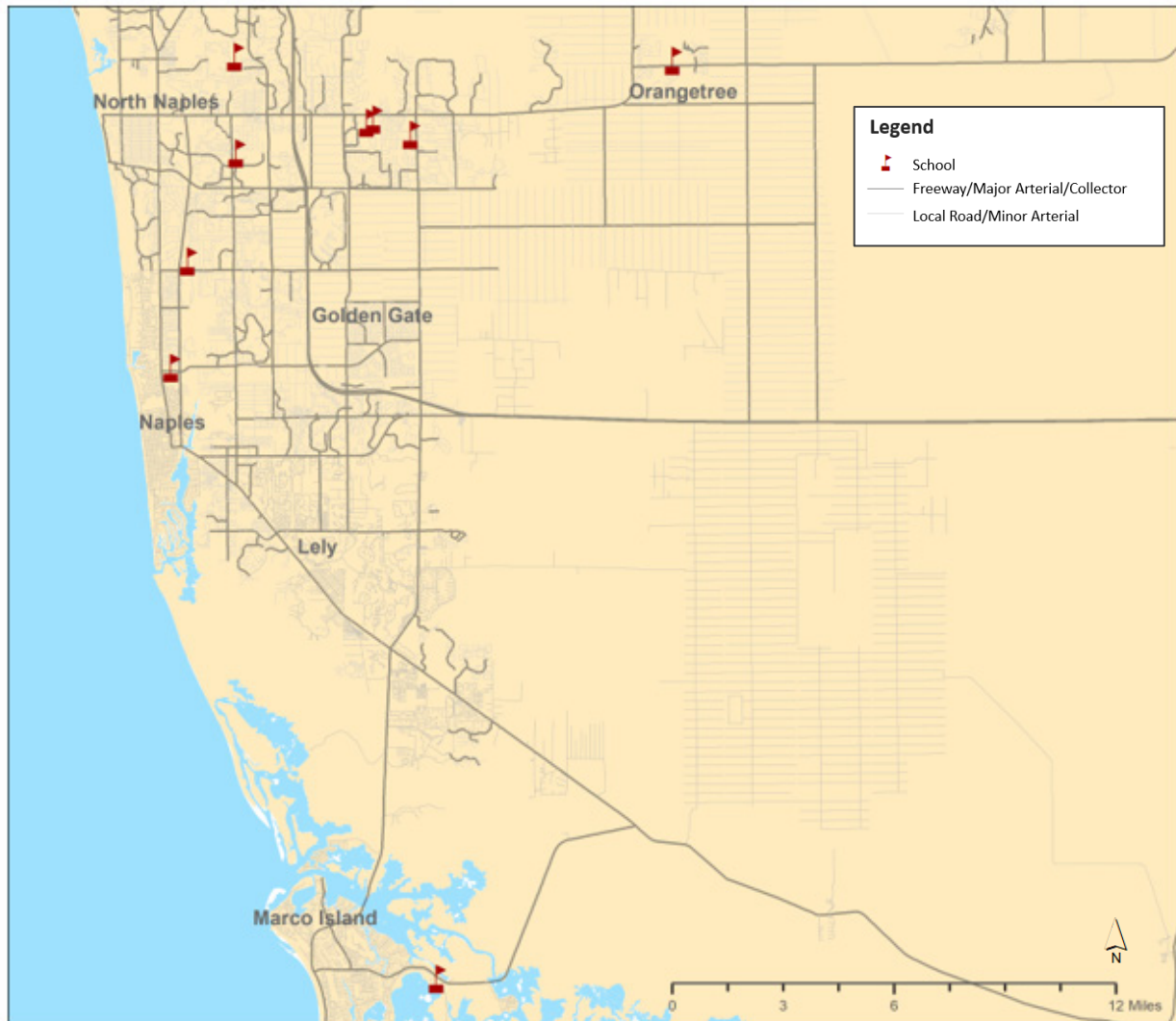
## Appendix B – Collier County School Bus Eligibility and Enrolment

**Schools with > 67% of enrolled students eligible for school bussing**

School	Total Students Enrolled	Eligible Riders	Walkers	Not Eligible	Assigned	Routed	Eligible & Unassigned	% Eligible	% Assigned
LOE - REG P	981	899	36	46	899	899	0	92%	92%
LOE - REG	981	899	36	46	899	899	0	92%	92%
NNM - REG P	912	799	39	74	797	793	3	88%	87%
NNM - REG	913	795	42	76	792	788	3	87%	87%
PRH - REG	1904	1632	246	26	1632	1632	0	86%	86%
PRH - REG P	1903	1629	248	26	1629	1629	0	86%	86%
PRM - REG P	995	807	112	76	806	805	1	81%	81%
PRM - REG	996	807	112	77	806	805	1	81%	81%
OMS - REG	1192	915	233	44	914	912	1	77%	77%
OMS - REG P	1191	914	232	45	913	911	1	77%	77%
GCH - REG	2308	1768	466	74	1768	1768	0	77%	77%
GCH - REG P	2304	1763	465	76	1763	1760	0	77%	77%
MIA - REG P	212	156	16	40	68	68	88	74%	32%
MIA - REG	212	156	16	40	68	68	88	74%	32%
NHS - REG	1690	1157	288	245	1152	1152	5	68%	68%
NHS - REG P	1691	1156	288	247	1151	1150	5	68%	68%
PME - REG	712	484	126	102	484	484	0	68%	68%
PME - REG P	711	483	126	102	483	483	0	68%	68%
OES - REG	715	398	208	109	398	398	0	56%	56%
OES - REG P	714	397	208	109	397	397	0	56%	56%
IHS - REG	1710	818	872	20	818	818	0	48%	48%
IHS - REG P	1704	804	877	23	804	804	0	47%	47%
IMS - REG	1654	662	979	13	661	660	1	40%	40%
IMS - REG P	1653	655	985	13	654	653	1	40%	40%
EPE - REG	633	202	416	15	202	202	0	32%	32%
NPE - REG	369	117	196	56	116	114	1	32%	31%
NPE - REG P	361	109	196	56	108	106	1	30%	30%

School	Total Students Enrolled	Eligible Riders	Walkers	Not Eligible	Assigned	Routed	Eligible & Unassigned	% Eligible	% Assigned
LTE - REG	654	191	432	31	191	191	0	29%	29%
EPE - REG P	673	160	496	17	160	160	0	24%	24%
LTE - REG P	653	138	483	32	138	138	0	21%	21%
GTE - REG P	846	175	646	25	175	175	0	21%	21%
GTE - REG	846	175	646	25	175	175	0	21%	21%
GGM - REG	1078	215	855	8	215	215	0	20%	20%
GGM - REG P	1099	217	873	9	217	217	0	20%	20%
GGE - REG	860	49	803	8	49	49	0	6%	6%
GGE - REG P	855	0	847	8	0	0	0	0%	0%
PSE - REG P	689	0	673	16	0	0	0	0%	0%
PSE - REG	689	0	673	16	0	0	0	0%	0%

## Appendix C – Map of Top-Tier Schools of Concern for Traffic Congestion



Appendix C – Full Matrix of Potential Effectiveness of Congestion Management Strategies for Schools in Collier County with High Traffic Congestion

CONGESTION MANAGEMENT STRATEGY	RESULTS	EXAMPLES	POTENTIAL EFFECTIVENESS OF CONGESTION MANAGEMENT STRATEGIES									
			SCHOOLS									
			Gulf Coast High (GCH)	Laurel Oak Elementary (LOE)	Marco Island Academy (MIA)	Naples High (NHS)	North Naples Middle (NNM)	Oakridge Middle School (OMS)	Pelican Marsh Elementary (PME)	Palmetto Ridge High (PRH)	Pine Ridge Middle (PRM)	
ROAD NETWORK	<ul style="list-style-type: none"><li>Reduces congestion</li><li>Lowers motor vehicle speeds in school zones</li><li>Improves pedestrian and bicyclist safety</li></ul>	<b>Circulation Improvement:</b> - Evaluate and optimize traffic signals around school dismissal times - Evaluate pedestrian signal timing (crossing and wait times) - Evaluate the street network to optimize routing to and from school sites	Medium	Medium	Low	High	Medium	Medium	Medium	Medium	High	
		<b>Infrastructure Tools:</b> - Traffic calming measures (curb extensions, chicanes, lateral shifts, roundabouts, etc.) - Traffic control devices (traffic signals, variable message signs, pedestrian hybrid beacons) - Pavement markings and signage (Marked crosswalks, guidance signage, warning signage, speed feedback signage)	Low	Low	Low	Medium	Low	Medium	Medium	Low	Medium	
SCHOOL SITE	<ul style="list-style-type: none"><li>Eliminates peak volume times, reducing congestion</li><li>Reduces congestion in drop-off and pick-up areas</li></ul>	<b>Site-Design:</b> - Establish off-site waiting lots and curbing and parking zones - Designate separate entrances and additional entrances for different modes of travel (bus, drop-off/ pick-up, pedestrians/ bicyclists) - Establish a priority parking and loading zone for carpool vehicles - Provide a pull-through lane to the left side of the on-site drop-off zones to permit passing	Medium	High	High	Medium	Medium	High	High	Low	High	
		<b>Demand scheduling:</b> - Stagger dismissal times - School Dismissal Automation Software (e.g. PikMyKid, School Pass)	High	High	Medium	High	Medium	Medium	Medium	High	Medium	
	<ul style="list-style-type: none"><li>Reduces volume of vehicle traffic</li><li>Improves pedestrian and bicyclist safety</li></ul>	<b>Encouragement Solutions:</b> - Awareness campaign about school bus routes among eligible students - School Carpooling Apps (e.g GoKid, KiD CarPool, Carpool to School, Carpools-Kids, Zūm, Hop Skip Drive, Sheprd, Kango) - Waking/biking school bus - Walk/ride to school days	High	High	High	High	High	High	High	High	High	
		<b>Infrastructure Solutions:</b> - Fill gaps in the pedestrian and bicycle network - Path and trail connection from school to adjacent properties - Secure and convenient bicycle parking	Medium	Low	Low	High	Low	Medium	Medium	Low	Low	

## Appendix E: Intersection Control Evaluation and Synchro Analysis





Cap X Analysis - US 41 at CR-846 (Immokalee Rd) 2020 AM Peak

TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
Displaced Left Turn	0.45	1	4.8	Fair	Fair	Good
Partial Displaced Left Turn N-S	0.53	2	4.8	Fair	Fair	Good
Traffic Signal	0.65	3	4.8	Fair	Fair	Good
Quadrant Roadway S-E	0.66	4	4.4	Fair	Fair	Fair
Partial Median U-Turn N-S	0.75	5	6.3	Good	Good	Fair
Signalized Restricted Crossing U-Turn N-S	0.83	6	6.3	Good	Good	Fair
Median U-Turn N-S	0.97	7	6.3	Good	Good	Fair
2 X 2	2.68	8	5.6	Fair	Good	Good
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Cap X Analysis - US 41 at CR-846 (Immokalee Rd) 2025 AM Peak

TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
Displaced Left Turn	0.49	1	4.8	Fair	Fair	Good
Partial Displaced Left Turn N-S	0.59	2	4.8	Fair	Fair	Good
Traffic Signal	0.71	3	4.8	Fair	Fair	Good
Quadrant Roadway S-E	0.73	4	4.4	Fair	Fair	Fair
Partial Median U-Turn N-S	0.83	5	6.3	Good	Good	Fair
Signalized Restricted Crossing U-Turn N-S	0.92	6	6.3	Good	Good	Fair
Median U-Turn N-S	1.07	7	6.3	Good	Good	Fair
2 X 2	3.70	8	5.6	Fair	Good	Good
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Cap X Analysis - US 41 at CR-846 (Immokalee Rd) 2020 PM Peak

TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
Displaced Left Turn	0.48	1	4.8	Fair	Fair	Good
Partial Displaced Left Turn N-S	0.50	2	4.8	Fair	Fair	Good
Quadrant Roadway S-E	0.79	3	4.4	Fair	Fair	Fair
Traffic Signal	0.83	4	4.8	Fair	Fair	Good
Signalized Restricted Crossing U-Turn N-S	0.88	5	6.3	Good	Good	Fair
Partial Median U-Turn N-S	0.99	6	6.3	Good	Good	Fair
Median U-Turn N-S	1.12	7	6.3	Good	Good	Fair
2 X 2	3.44	8	5.6	Fair	Good	Good
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






















Cap X Analysis - US 41 at CR-846 (Immokalee Rd) 2025 PM Peak

TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
Displaced Left Turn	0.53	1	4.8	Fair	Fair	Good
Partial Displaced Left Turn N-S	0.55	2	4.8	Fair	Fair	Good
Quadrant Roadway S-E	0.88	3	4.4	Fair	Fair	Fair
Traffic Signal	0.91	4	4.8	Fair	Fair	Good
Signalized Restricted Crossing U-Turn N-S	0.98	5	6.3	Good	Good	Fair
Partial Median U-Turn N-S	1.10	6	6.3	Good	Good	Fair
Median U-Turn N-S	1.23	7	6.3	Good	Good	Fair
2 X 2	4.38	8	5.6	Fair	Good	Good
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# Synchro Analysis - US 41 at CR-846 (Immokalee Rd) 2020 AM Peak

Timings  
3: Immokalee Rd. and US-41

06/29/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	220	441	137	550	483	952	64	418	115	538	1182	126
Future Volume (vph)	220	441	137	550	483	952	64	418	115	538	1182	126
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	1	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	14.8	52.8	52.8	14.0	60.9	15.1	15.1	47.1	47.1	15.1	64.1	64.1
Total Split (s)	24.6	52.8	52.8	34.9	63.1	35.2	15.4	47.1	47.1	35.2	66.9	66.9
Total Split (%)	14.5%	31.1%	31.1%	20.5%	37.1%	20.7%	9.1%	27.7%	27.7%	20.7%	39.4%	39.4%
Yellow Time (s)	4.8	4.8	4.8	4.0	4.0	5.1	5.1	5.1	5.1	5.1	5.1	5.1
All-Red Time (s)	3.0	2.0	2.0	3.0	2.9	3.0	3.0	2.0	2.0	3.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.8	6.8	6.8	7.0	6.9	8.1	8.1	7.1	7.1	8.1	7.1	7.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	None	None	C-Max	None	None	None	Min	Min	None	Min	Min
Act Effect Green (s)	26.8	29.6	29.6	37.9	39.8	87.5	9.0	32.7	32.7	40.8	64.5	64.5
Actuated g/C Ratio	0.16	0.17	0.17	0.22	0.23	0.51	0.05	0.19	0.19	0.24	0.38	0.38
v/c Ratio	0.44	0.78	0.32	0.78	0.63	0.69	0.39	0.47	0.26	0.71	0.67	0.19
Control Delay	70.5	75.8	1.8	69.9	61.7	29.4	83.7	61.6	1.3	65.2	45.5	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.5	75.8	1.8	69.9	61.7	29.4	83.7	61.6	1.3	65.2	45.5	2.3
LOS	E	E	A	E	E	C	F	E	A	E	D	A
Approach Delay		61.7			48.5			52.4			48.3	
Approach LOS		E			D			D			D	

## Intersection Summary

Cycle Length: 170

Actuated Cycle Length: 170

Offset: 0 (0%), Referenced to phase 3:WBL and 7:EBL, Start of Green

Natural Cycle: 155

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 50.9

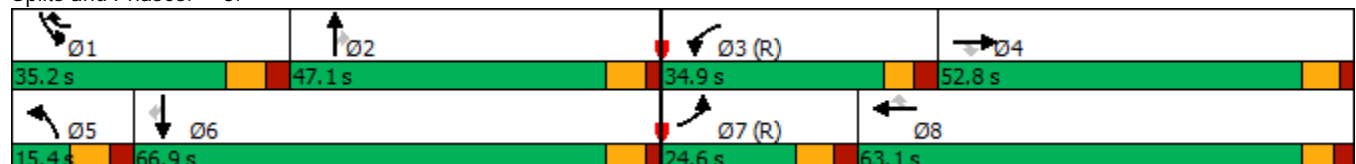
Intersection LOS: D

Intersection Capacity Utilization 84.0%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 3:

















# Phasings

## 3: Immokalee Rd. and US-41

06/29/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8			2			6
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	14.8	52.8	52.8	14.0	60.9	15.1	15.1	47.1	47.1	15.1	64.1	64.1
Total Split (s)	24.6	52.8	52.8	34.9	63.1	35.2	15.4	47.1	47.1	35.2	66.9	66.9
Total Split (%)	14.5%	31.1%	31.1%	20.5%	37.1%	20.7%	9.1%	27.7%	27.7%	20.7%	39.4%	39.4%
Maximum Green (s)	16.8	46.0	46.0	27.9	56.2	27.1	7.3	40.0	40.0	27.1	59.8	59.8
Yellow Time (s)	4.8	4.8	4.8	4.0	4.0	5.1	5.1	5.1	5.1	5.1	5.1	5.1
All-Red Time (s)	3.0	2.0	2.0	3.0	2.9	3.0	3.0	2.0	2.0	3.0	2.0	2.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	None	None	C-Max	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		39.0	39.0		47.0			33.0	33.0		50.0	50.0
Pedestrian Calls (#/hr)		0	0		0			0	0		0	0
90th %ile Green (s)	16.8	37.0	37.0	27.9	47.2	36.1	11.2	40.0	40.0	36.1	64.9	64.9
90th %ile Term Code	Coord	Gap	Gap	Coord	Hold	Max	Gap	Hold	Hold	Max	Max	Max
70th %ile Green (s)	16.8	32.7	32.7	27.9	42.9	40.4	9.8	40.0	40.0	40.4	70.6	70.6
70th %ile Term Code	Coord	Gap	Gap	Coord	Hold	Max	Gap	Hold	Hold	Max	Max	Max
50th %ile Green (s)	23.5	29.3	29.3	34.6	39.5	42.0	8.9	35.1	35.1	42.0	68.2	68.2
50th %ile Term Code	Coord	Gap	Gap	Coord	Hold	Gap	Gap	Hold	Hold	Gap	Gap	Gap
30th %ile Green (s)	33.1	26.8	26.8	44.2	37.0	41.8	7.9	28.2	28.2	41.8	62.1	62.1
30th %ile Term Code	Coord	Gap	Gap	Coord	Hold	Gap	Gap	Hold	Hold	Gap	Gap	Gap
10th %ile Green (s)	43.8	22.3	22.3	54.9	32.5	43.8	7.0	20.0	20.0	43.8	56.8	56.8
10th %ile Term Code	Coord	Gap	Gap	Coord	Hold	Gap	Min	Min	Min	Gap	Hold	Hold

### Intersection Summary

Cycle Length: 170

Actuated Cycle Length: 170

























Offset: 0 (0%), Referenced to phase 3:WBL and 7:EBL, Start of Green

Control Type: Actuated-Coordinated

# HCM 6th Signalized Intersection Summary

## 3: Immokalee Rd. and US-41

06/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	220	441	137	550	483	952	64	418	115	538	1182	126
Future Volume (veh/h)	220	441	137	550	483	952	64	418	115	538	1182	126
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	239	479	149	598	525	1035	70	454	125	585	1285	137
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	466	869	388	765	1160	1355	137	1039	323	551	1650	512
Arrive On Green	0.13	0.24	0.24	0.22	0.33	0.33	0.04	0.20	0.20	0.16	0.32	0.32
Sat Flow, veh/h	3456	3554	1585	3456	3554	2790	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	239	479	149	598	525	1035	70	454	125	585	1285	137
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1395	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	10.9	20.0	13.3	27.7	19.9	51.6	3.4	13.2	11.6	27.1	38.7	10.9
Cycle Q Clear(g_c), s	10.9	20.0	13.3	27.7	19.9	51.6	3.4	13.2	11.6	27.1	38.7	10.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	466	869	388	765	1160	1355	137	1039	323	551	1650	512
V/C Ratio(X)	0.51	0.55	0.38	0.78	0.45	0.76	0.51	0.44	0.39	1.06	0.78	0.27
Avail Cap(c_a), veh/h	466	962	429	765	1175	1367	148	1201	373	551	1796	558
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	68.3	56.1	53.5	62.3	45.3	35.7	80.0	59.2	58.5	71.4	52.0	42.6
Incr Delay (d2), s/veh	1.0	0.5	0.6	5.3	0.3	2.6	2.9	0.6	1.6	55.8	2.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	9.1	5.5	12.8	9.0	18.1	1.6	5.8	4.9	16.3	17.0	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.3	56.6	54.2	67.6	45.5	38.3	82.9	59.8	60.2	127.3	54.6	43.2
LnGrp LOS	E	E	D	E	D	D	F	E	E	F	D	D
Approach Vol, veh/h	867		2158				649		2007			
Approach Delay, s/veh	59.7		48.2				62.4		75.0			
Approach LOS	E		D				E		E			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	35.2	41.7	44.6	48.5	14.8	62.0	30.7	62.4				
Change Period (Y+Rc), s	* 8.1	7.1	7.0	* 6.9	* 8.1	7.1	7.8	6.9				
Max Green Setting (Gmax), s	* 27	40.0	27.9	* 46	* 7.3	59.8	16.8	56.2				
Max Q Clear Time (g_c+I1), s	29.1	15.2	29.7	22.0	5.4	40.7	12.9	53.6				
Green Ext Time (p_c), s	0.0	6.7	0.0	3.8	0.0	14.3	0.3	1.9				
Intersection Summary												
HCM 6th Ctrl Delay			61.0									
HCM 6th LOS			E									
Notes												

























\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# Synchro Analysis - US 41 at CR-846 (Immokalee Rd) 2025 AM Peak

## Timings

3: US-41 & Immokalee Rd.

06/30/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	242	487	151	607	533	1051	71	462	127	594	1305	139
Future Volume (vph)	242	487	151	607	533	1051	71	462	127	594	1305	139
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	1	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	14.8	52.8	52.8	14.0	60.9	15.1	15.1	47.1	47.1	15.1	64.1	64.1
Total Split (s)	24.6	52.8	52.8	34.9	63.1	35.2	15.4	47.1	47.1	35.2	66.9	66.9
Total Split (%)	14.5%	31.1%	31.1%	20.5%	37.1%	20.7%	9.1%	27.7%	27.7%	20.7%	39.4%	39.4%
Yellow Time (s)	4.8	4.8	4.8	4.0	4.0	5.1	5.1	5.1	5.1	5.1	5.1	5.1
All-Red Time (s)	3.0	2.0	2.0	3.0	2.9	3.0	3.0	2.0	2.0	3.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.8	6.8	6.8	7.0	6.9	8.1	8.1	7.1	7.1	8.1	7.1	7.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	None	None	C-Max	None	None	None	Min	Min	None	Min	Min
Act Effect Green (s)	21.8	32.6	32.6	32.9	42.8	90.2	9.3	35.0	35.0	40.5	66.2	66.2
Actuated g/C Ratio	0.13	0.19	0.19	0.19	0.25	0.53	0.05	0.21	0.21	0.24	0.39	0.39
v/c Ratio	0.60	0.78	0.34	0.99	0.65	0.75	0.41	0.48	0.27	0.79	0.72	0.21
Control Delay	77.6	73.3	2.8	99.2	60.0	32.1	84.0	60.3	1.3	68.8	46.6	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.6	73.3	2.8	99.2	60.0	32.1	84.0	60.3	1.3	68.8	46.6	3.5
LOS	E	E	A	F	E	C	F	E	A	E	D	A
Approach Delay		62.4			57.5			51.5			50.1	
Approach LOS		E			E			D			D	

## Intersection Summary

Cycle Length: 170

Actuated Cycle Length: 170

Offset: 0 (0%), Referenced to phase 3:WBL and 7:EBL, Start of Green

Natural Cycle: 155

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 54.9

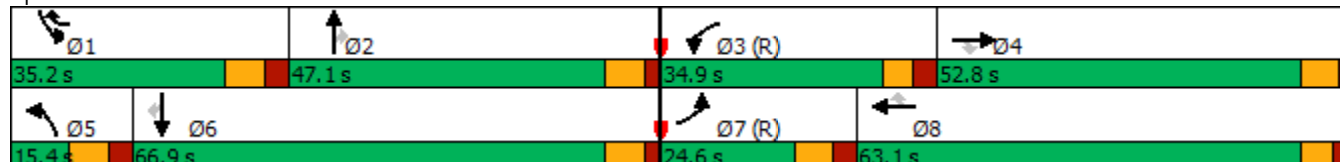
Intersection LOS: D

Intersection Capacity Utilization 88.5%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 3: US-41 & Immokalee Rd.



# Phasings

## 3: US-41 & Immokalee Rd.

06/30/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8			2			6
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	14.8	52.8	52.8	14.0	60.9	15.1	15.1	47.1	47.1	15.1	64.1	64.1
Total Split (s)	24.6	52.8	52.8	34.9	63.1	35.2	15.4	47.1	47.1	35.2	66.9	66.9
Total Split (%)	14.5%	31.1%	31.1%	20.5%	37.1%	20.7%	9.1%	27.7%	27.7%	20.7%	39.4%	39.4%
Maximum Green (s)	16.8	46.0	46.0	27.9	56.2	27.1	7.3	40.0	40.0	27.1	59.8	59.8
Yellow Time (s)	4.8	4.8	4.8	4.0	4.0	5.1	5.1	5.1	5.1	5.1	5.1	5.1
All-Red Time (s)	3.0	2.0	2.0	3.0	2.9	3.0	3.0	2.0	2.0	3.0	2.0	2.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	None	None	C-Max	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		39.0	39.0		47.0			33.0	33.0		50.0	50.0
Pedestrian Calls (#/hr)		0	0		0			0	0		0	0
90th %ile Green (s)	16.8	40.4	40.4	27.9	50.6	32.7	11.7	40.0	40.0	32.7	61.0	61.0
90th %ile Term Code	Coord	Gap	Gap	Coord	Hold	Max	Gap	Hold	Hold	Max	Max	Max
70th %ile Green (s)	16.8	36.0	36.0	27.9	46.2	37.1	10.2	40.0	40.0	37.1	66.9	66.9
70th %ile Term Code	Coord	Gap	Gap	Coord	Hold	Max	Gap	Hold	Hold	Max	Max	Max
50th %ile Green (s)	16.8	32.5	32.5	27.9	42.7	40.6	9.2	40.0	40.0	40.6	71.4	71.4
50th %ile Term Code	Coord	Gap	Gap	Coord	Hold	Max	Gap	Hold	Hold	Max	Max	Max
30th %ile Green (s)	22.1	29.1	29.1	33.2	39.3	44.0	8.2	34.7	34.7	44.0	70.5	70.5
30th %ile Term Code	Coord	Gap	Gap	Coord	Hold	Max	Gap	Hold	Hold	Max	Gap	Gap
10th %ile Green (s)	36.4	25.2	25.2	47.5	35.4	47.9	7.0	20.4	20.4	47.9	61.3	61.3
10th %ile Term Code	Coord	Gap	Gap	Coord	Hold	Max	Min	Gap	Gap	Max	Hold	Hold

### Intersection Summary

Cycle Length: 170

Actuated Cycle Length: 170

























Offset: 0 (0%), Referenced to phase 3:WBL and 7:EBL, Start of Green

Control Type: Actuated-Coordinated

# HCM 6th Signalized Intersection Summary

## 3: US-41 & Immokalee Rd.

06/30/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	242	487	151	607	533	1051	71	462	127	594	1305	139
Future Volume (veh/h)	242	487	151	607	533	1051	71	462	127	594	1305	139
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	263	529	164	660	579	1142	77	502	138	646	1418	151
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	402	913	407	672	1175	1367	139	1112	345	551	1722	534
Arrive On Green	0.12	0.26	0.26	0.19	0.33	0.33	0.04	0.22	0.22	0.16	0.34	0.34
Sat Flow, veh/h	3456	3554	1585	3456	3554	2790	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	263	529	164	660	579	1142	77	502	138	646	1418	151
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1395	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	12.4	22.1	14.6	32.3	22.2	56.2	3.7	14.5	12.7	27.1	43.3	11.9
Cycle Q Clear(g_c), s	12.4	22.1	14.6	32.3	22.2	56.2	3.7	14.5	12.7	27.1	43.3	11.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	402	913	407	672	1175	1367	139	1112	345	551	1722	534
V/C Ratio(X)	0.65	0.58	0.40	0.98	0.49	0.84	0.56	0.45	0.40	1.17	0.82	0.28
Avail Cap(c_a), veh/h	402	962	429	672	1175	1367	148	1201	373	551	1796	558
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	71.9	55.1	52.3	68.2	45.5	37.4	80.1	57.7	57.0	71.4	51.7	41.3
Incr Delay (d2), s/veh	3.8	0.8	0.6	30.1	0.3	4.7	3.9	0.6	1.6	95.7	3.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	10.1	6.0	17.1	10.0	21.4	1.7	6.4	5.3	19.4	19.2	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.7	55.9	53.0	98.2	45.8	42.1	84.0	58.3	58.6	167.2	55.3	41.9
LnGrp LOS	E	E	D	F	D	D	F	E	E	F	E	D
Approach Vol, veh/h		956			2381			717			2215	
Approach Delay, s/veh		60.8			58.6			61.1			87.0	
Approach LOS		E			E			E			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	35.2	44.1	40.1	50.6	14.9	64.4	27.6	63.1				
Change Period (Y+Rc), s	* 8.1	7.1	7.0	* 6.9	* 8.1	7.1	7.8	6.9				
Max Green Setting (Gmax), s	* 27	40.0	27.9	* 46	* 7.3	59.8	16.8	56.2				
Max Q Clear Time (g_c+I1), s	29.1	16.5	34.3	24.1	5.7	45.3	14.4	58.2				
Green Ext Time (p_c), s	0.0	7.3	0.0	4.2	0.0	12.0	0.2	0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			69.3									
HCM 6th LOS			E									
<b>Notes</b>												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												







































# Synchro Analysis - US 41 at CR-846 (Immokalee Rd) 2020 PM Peak

Timings

3: Immokalee Rd. and US-41

06/29/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 	 	 	  		  	  	
Traffic Volume (vph)	324	464	170	383	456	1112	153	1080	178	698	841	53
Future Volume (vph)	324	464	170	383	456	1112	153	1080	178	698	841	53
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	1	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	14.8	52.8	52.8	14.0	60.9	15.1	15.1	47.1	47.1	15.1	64.1	64.1
Total Split (s)	28.1	54.6	54.6	34.4	60.9	50.0	23.3	51.0	51.0	50.0	77.7	77.7
Total Split (%)	14.8%	28.7%	28.7%	18.1%	32.1%	26.3%	12.3%	26.8%	26.8%	26.3%	40.9%	40.9%
Yellow Time (s)	4.8	4.8	4.8	4.0	4.0	5.1	5.1	5.1	5.1	5.1	5.1	5.1
All-Red Time (s)	3.0	2.0	2.0	3.0	2.9	3.0	3.0	2.0	2.0	3.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.8	6.8	6.8	7.0	6.9	8.1	8.1	7.1	7.1	8.1	7.1	7.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	None	None	C-Max	None	None	None	Min	Min	None	Min	Min
Act Effect Green (s)	20.3	34.0	34.0	27.4	40.2	99.3	14.5	47.4	47.4	52.2	85.1	85.1
Actuated g/C Ratio	0.11	0.18	0.18	0.14	0.21	0.52	0.08	0.25	0.25	0.27	0.45	0.45
v/c Ratio	0.96	0.80	0.45	0.84	0.66	0.81	0.64	0.93	0.36	0.80	0.40	0.08
Control Delay	120.6	84.3	15.7	94.7	72.8	40.2	96.0	81.5	8.6	71.6	37.0	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	120.6	84.3	15.7	94.7	72.8	40.2	96.0	81.5	8.6	71.6	37.0	0.2
LOS	F	F	B	F	E	D	F	F	A	E	D	A
Approach Delay		84.4			58.5			73.9			50.9	
Approach LOS		F			E			E			D	

## Intersection Summary

Cycle Length: 190

Actuated Cycle Length: 190

Offset: 0 (0%), Referenced to phase 3:WBL and 7:EBL, Start of Green

Natural Cycle: 155

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 64.3

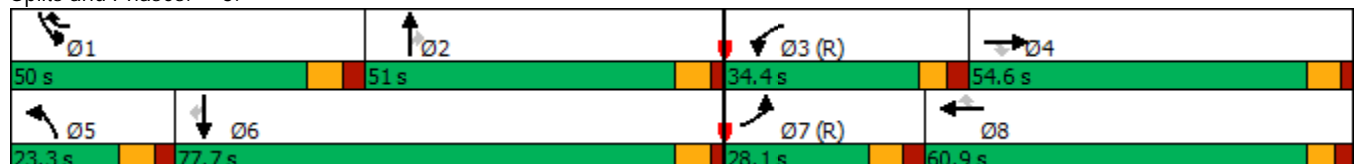
Intersection LOS: E

Intersection Capacity Utilization 88.2%

ICU Level of Service E

Analysis Period (min) 15













Splits and Phases: 3:



# Phasings

## 3: Immokalee Rd. and US-41

06/29/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8			2			6
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	14.8	52.8	52.8	14.0	60.9	15.1	15.1	47.1	47.1	15.1	64.1	64.1
Total Split (s)	28.1	54.6	54.6	34.4	60.9	50.0	23.3	51.0	51.0	50.0	77.7	77.7
Total Split (%)	14.8%	28.7%	28.7%	18.1%	32.1%	26.3%	12.3%	26.8%	26.8%	26.3%	40.9%	40.9%
Maximum Green (s)	20.3	47.8	47.8	27.4	54.0	41.9	15.2	43.9	43.9	41.9	70.6	70.6
Yellow Time (s)	4.8	4.8	4.8	4.0	4.0	5.1	5.1	5.1	5.1	5.1	5.1	5.1
All-Red Time (s)	3.0	2.0	2.0	3.0	2.9	3.0	3.0	2.0	2.0	3.0	2.0	2.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	None	None	C-Max	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		39.0	39.0		47.0			33.0	33.0		50.0	50.0
Pedestrian Calls (#/hr)		0	0		0			0	0		0	0
90th %ile Green (s)	20.3	41.5	41.5	27.4	47.7	48.2	18.4	43.9	43.9	48.2	73.7	73.7
90th %ile Term Code	Coord	Gap	Gap	Coord	Hold	Max	Gap	Max	Max	Max	Hold	Hold
70th %ile Green (s)	20.3	36.9	36.9	27.4	43.1	52.8	16.1	43.9	43.9	52.8	80.6	80.6
70th %ile Term Code	Coord	Gap	Gap	Coord	Hold	Max	Gap	Max	Max	Max	Hold	Hold
50th %ile Green (s)	20.3	34.2	34.2	27.4	40.4	55.5	14.5	43.9	43.9	55.5	84.9	84.9
50th %ile Term Code	Coord	Gap	Gap	Coord	Hold	Max	Gap	Max	Max	Max	Hold	Hold
30th %ile Green (s)	20.3	30.6	30.6	27.4	36.8	53.5	12.9	49.5	49.5	53.5	90.1	90.1
30th %ile Term Code	Coord	Gap	Gap	Coord	Hold	Gap	Gap	Max	Max	Gap	Hold	Hold
10th %ile Green (s)	20.3	26.7	26.7	27.4	32.9	51.0	10.6	55.9	55.9	51.0	96.3	96.3
10th %ile Term Code	Coord	Gap	Gap	Coord	Hold	Gap	Gap	Max	Max	Gap	Hold	Hold

### Intersection Summary

Cycle Length: 190

Actuated Cycle Length: 190

























Offset: 0 (0%), Referenced to phase 3:WBL and 7:EBL, Start of Green

Control Type: Actuated-Coordinated

# HCM 6th Signalized Intersection Summary

## 3: Immokalee Rd. and US-41

06/29/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	324	464	170	383	456	1112	153	1080	178	698	841	53
Future Volume (veh/h)	324	464	170	383	456	1112	153	1080	178	698	841	53
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	352	504	185	416	496	1209	166	1174	193	759	914	58
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	369	936	418	455	1010	1408	204	1180	366	762	2005	622
Arrive On Green	0.11	0.26	0.26	0.13	0.28	0.28	0.06	0.23	0.23	0.22	0.39	0.39
Sat Flow, veh/h	3456	3554	1585	3456	3554	2790	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	352	504	185	416	496	1209	166	1174	193	759	914	58
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1395	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	19.2	23.1	18.5	22.6	22.1	54.0	9.0	43.6	20.3	41.7	25.2	4.4
Cycle Q Clear(g_c), s	19.2	23.1	18.5	22.6	22.1	54.0	9.0	43.6	20.3	41.7	25.2	4.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	369	936	418	455	1010	1408	204	1180	366	762	2005	622
V/C Ratio(X)	0.95	0.54	0.44	0.91	0.49	0.86	0.81	1.00	0.53	1.00	0.46	0.09
Avail Cap(c_a), veh/h	369	936	418	498	1010	1408	276	1180	366	762	2005	622
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	84.4	60.0	58.3	81.4	56.6	41.1	88.4	72.9	64.0	74.0	42.7	36.4
Incr Delay (d2), s/veh	34.8	0.6	0.7	20.3	0.4	5.6	12.6	25.0	2.7	31.5	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.5	10.7	7.6	11.4	10.1	25.9	4.4	21.9	8.6	21.9	10.9	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	119.2	60.7	59.1	101.7	56.9	46.7	101.0	97.9	66.6	105.5	43.0	36.5
LnGrp LOS	F	E	E	F	E	D	F	F	E	F	D	D
Approach Vol, veh/h	1041			2121			1533			1731		
Approach Delay, s/veh	80.2			59.9			94.3			70.2		
Approach LOS	F			E			F			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	50.0	51.0	32.0	57.0	19.3	81.7	28.1	60.9				
Change Period (Y+Rc), s	* 8.1	7.1	7.0	* 6.9	* 8.1	7.1	7.8	6.9				
Max Green Setting (Gmax), s	* 42	43.9	27.4	* 48	* 15	70.6	20.3	54.0				
Max Q Clear Time (g_c+I1), s	43.7	45.6	24.6	25.1	11.0	27.2	21.2	56.0				
Green Ext Time (p_c), s	0.0	0.0	0.5	4.1	0.2	16.2	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay	74.2											
HCM 6th LOS	E											
Notes												

























\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# Synchro Analysis - US 41 at CR-846 (Immokalee Rd) 2025 PM Peak

## Timings

3: US-41 & Immokalee Rd.

06/30/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	358	512	188	423	503	1228	169	1192	197	771	929	59
Future Volume (vph)	358	512	188	423	503	1228	169	1192	197	771	929	59
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	1	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	14.8	52.8	52.8	14.0	60.9	15.1	15.1	47.1	47.1	15.1	64.1	64.1
Total Split (s)	24.9	61.0	61.0	25.9	62.0	35.0	17.0	48.1	48.1	35.0	66.1	66.1
Total Split (%)	14.6%	35.9%	35.9%	15.2%	36.5%	20.6%	10.0%	28.3%	28.3%	20.6%	38.9%	38.9%
Yellow Time (s)	4.8	4.8	4.8	4.0	4.0	5.1	5.1	5.1	5.1	5.1	5.1	5.1
All-Red Time (s)	3.0	2.0	2.0	3.0	2.9	3.0	3.0	2.0	2.0	3.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.8	6.8	6.8	7.0	6.9	8.1	8.1	7.1	7.1	8.1	7.1	7.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	None	None	C-Max	None	None	None	Min	Min	None	Min	Min
Act Effect Green (s)	17.1	34.4	34.4	18.9	35.3	88.9	16.6	41.0	41.0	46.7	71.0	71.0
Actuated g/C Ratio	0.10	0.20	0.20	0.11	0.21	0.52	0.10	0.24	0.24	0.27	0.42	0.42
v/c Ratio	1.13	0.78	0.44	1.21	0.74	0.89	0.55	1.06	0.39	0.89	0.48	0.09
Control Delay	152.9	71.7	12.9	175.5	69.3	43.2	79.5	102.5	8.0	71.1	37.7	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	152.9	71.7	12.9	175.5	69.3	43.2	79.5	102.5	8.0	71.1	37.7	0.2
LOS	F	E	B	F	E	D	E	F	A	E	D	A
Approach Delay		88.8			75.3			88.0			51.1	
Approach LOS		F			E			F			D	

## Intersection Summary

Cycle Length: 170

Actuated Cycle Length: 170

Offset: 0 (0%), Referenced to phase 3:WBL and 7:EBL, Start of Green

Natural Cycle: 155

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.21

Intersection Signal Delay: 74.0

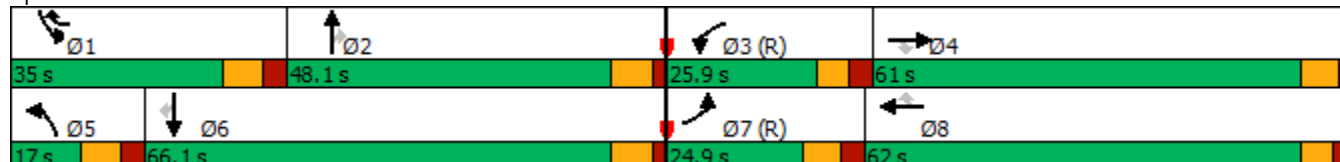
Intersection LOS: E

Intersection Capacity Utilization 95.4%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 3: US-41 & Immokalee Rd.



# Phasings

## 3: US-41 & Immokalee Rd.

06/30/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8			2			6
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	20.0	20.0	7.0	20.0	20.0
Minimum Split (s)	14.8	52.8	52.8	14.0	60.9	15.1	15.1	47.1	47.1	15.1	64.1	64.1
Total Split (s)	24.9	61.0	61.0	25.9	62.0	35.0	17.0	48.1	48.1	35.0	66.1	66.1
Total Split (%)	14.6%	35.9%	35.9%	15.2%	36.5%	20.6%	10.0%	28.3%	28.3%	20.6%	38.9%	38.9%
Maximum Green (s)	17.1	54.2	54.2	18.9	55.1	26.9	8.9	41.0	41.0	26.9	59.0	59.0
Yellow Time (s)	4.8	4.8	4.8	4.0	4.0	5.1	5.1	5.1	5.1	5.1	5.1	5.1
All-Red Time (s)	3.0	2.0	2.0	3.0	2.9	3.0	3.0	2.0	2.0	3.0	2.0	2.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	5.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	C-Max	None	None	C-Max	None	None	None	Min	Min	None	Min	Min
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		39.0	39.0		47.0			33.0	33.0		50.0	50.0
Pedestrian Calls (#/hr)		0	0		0			0	0		0	0
90th %ile Green (s)	17.1	42.3	42.3	18.9	43.2	38.8	18.2	41.0	41.0	38.8	61.6	61.6
90th %ile Term Code	Coord	Gap	Gap	Coord	Hold	Max	Gap	Max	Max	Max	Max	Max
70th %ile Green (s)	17.1	37.7	37.7	18.9	38.6	43.4	17.0	41.0	41.0	43.4	67.4	67.4
70th %ile Term Code	Coord	Gap	Gap	Coord	Hold	Max	Gap	Max	Max	Max	Hold	Hold
50th %ile Green (s)	17.1	34.2	34.2	18.9	35.1	46.9	16.4	41.0	41.0	46.9	71.5	71.5
50th %ile Term Code	Coord	Gap	Gap	Coord	Hold	Max	Gap	Max	Max	Max	Hold	Hold
30th %ile Green (s)	17.1	31.4	31.4	18.9	32.3	49.7	16.0	41.0	41.0	49.7	74.7	74.7
30th %ile Term Code	Coord	Gap	Gap	Coord	Hold	Max	Gap	Max	Max	Max	Hold	Hold
10th %ile Green (s)	17.1	26.6	26.6	18.9	27.5	54.5	15.5	41.0	41.0	54.5	80.0	80.0
10th %ile Term Code	Coord	Gap	Gap	Coord	Hold	Max	Gap	Max	Max	Max	Hold	Hold

### Intersection Summary

Cycle Length: 170

Actuated Cycle Length: 170

Offset: 0 (0%), Referenced to phase 3:WBL and 7:EBL, Start of Green

























Control Type: Actuated-Coordinated



# HCM 6th Signalized Intersection Summary

## 3: US-41 & Immokalee Rd.

06/30/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	358	512	188	423	503	1228	169	1192	197	771	929	59
Future Volume (veh/h)	358	512	188	423	503	1228	169	1192	197	771	929	59
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	389	557	204	460	547	1335	184	1296	214	838	1010	64
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	348	1131	504	384	1152	1346	181	1231	382	547	1772	550
Arrive On Green	0.10	0.32	0.32	0.11	0.32	0.32	0.05	0.24	0.24	0.16	0.35	0.35
Sat Flow, veh/h	3456	3554	1585	3456	3554	2790	3456	5106	1585	3456	5106	1585
Grp Volume(v), veh/h	389	557	204	460	547	1335	184	1296	214	838	1010	64
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1395	1728	1702	1585	1728	1702	1585
Q Serve(g_s), s	17.1	21.5	17.1	18.9	20.9	55.1	8.9	41.0	20.1	26.9	27.4	4.7
Cycle Q Clear(g_c), s	17.1	21.5	17.1	18.9	20.9	55.1	8.9	41.0	20.1	26.9	27.4	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	348	1131	504	384	1152	1346	181	1231	382	547	1772	550
V/C Ratio(X)	1.12	0.49	0.40	1.20	0.47	0.99	1.02	1.05	0.56	1.53	0.57	0.12
Avail Cap(c_a), veh/h	348	1133	505	384	1152	1346	181	1231	382	547	1772	550
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	76.5	46.9	45.3	75.6	45.9	43.7	80.6	64.5	56.6	71.6	45.2	37.8
Incr Delay (d2), s/veh	84.5	0.3	0.5	111.4	0.3	22.6	71.4	40.6	3.1	248.8	0.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.7	9.7	6.9	14.4	9.4	31.8	5.8	22.4	8.5	30.9	11.8	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	160.9	47.2	45.9	187.0	46.2	66.3	152.0	105.1	59.7	320.3	45.9	38.0
LnGrp LOS	F	D	D	F	D	E	F	F	E	F	D	D
Approach Vol, veh/h		1150			2342			1694			1912	
Approach Delay, s/veh		85.4			85.3			104.5			165.9	
Approach LOS		F			F			F			F	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	35.0	48.1	25.9	61.0	17.0	66.1	24.9	62.0				
Change Period (Y+Rc), s	* 8.1	7.1	7.0	* 6.9	* 8.1	7.1	7.8	6.9				
Max Green Setting (Gmax), s	* 27	41.0	18.9	* 54	* 8.9	59.0	17.1	55.1				
Max Q Clear Time (g_c+I1), s	28.9	43.0	20.9	23.5	10.9	29.4	19.1	57.1				
Green Ext Time (p_c), s	0.0	0.0	0.0	4.9	0.0	15.2	0.0	0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			111.6									
HCM 6th LOS			F									
<b>Notes</b>												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

Cap X Analysis - CR-862 (Vanderbilt Beach Road) at Livingston Road 2020 AM Peak

TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
Displaced Left Turn	0.36	1	4.8	Fair	Fair	Good
Partial Displaced Left Turn E-W	0.47	2	4.8	Fair	Fair	Good
Traffic Signal	0.63	3	4.8	Fair	Fair	Good
Partial Median U-Turn E-W	0.63	3	6.3	Good	Good	Fair
Median U-Turn E-W	0.82	5	6.3	Good	Good	Fair
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Cap X Analysis - CR-862 (Vanderbilt Beach Road) at Livingston Road 2025 AM Peak

TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
Displaced Left Turn	0.39	1	4.8	Fair	Fair	Good
Partial Displaced Left Turn E-W	0.52	2	4.8	Fair	Fair	Good
Traffic Signal	0.69	3	4.8	Fair	Fair	Good
Partial Median U-Turn E-W	0.70	4	6.3	Good	Good	Fair
Median U-Turn E-W	0.91	5	6.3	Good	Good	Fair
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Cap X Analysis - CR-862 (Vanderbilt Beach Road) at Livingston Road 2020 PM Peak

TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
Displaced Left Turn	0.67	1	4.8	Fair	Fair	Good
Partial Displaced Left Turn E-W	0.76	2	4.8	Fair	Fair	Good
Partial Median U-Turn E-W	0.90	3	6.3	Good	Good	Fair
Traffic Signal	0.96	4	4.8	Fair	Fair	Good
Median U-Turn E-W	1.02	5	6.3	Good	Good	Fair
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Cap X Analysis - CR-862 (Vanderbilt Beach Road) at Livingston Road 2025 PM Peak

TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
Displaced Left Turn	0.75	1	4.8	Fair	Fair	Good
Partial Displaced Left Turn E-W	0.84	2	4.8	Fair	Fair	Good
Partial Median U-Turn E-W	0.99	3	6.3	Good	Good	Fair
Traffic Signal	1.06	4	4.8	Fair	Fair	Good
Median U-Turn E-W	1.12	5	6.3	Good	Good	Fair
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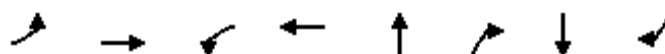


# Synchro Analysis - CR-862 (Vanderbilt Beach Road) at Livingston Road - 2025 AM Peak Partial Displaced Left Turn

Timings

1: Livingston Rd. & Vanderbilt Beach Rd.

06/30/2020



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Configurations	←←	→→→	←←	→→→	→→→	→	→→→	←
Traffic Volume (vph)	244	445	486	1228	487	300	527	340
Future Volume (vph)	244	445	486	1228	487	300	527	340
Turn Type	Prot	NA	Prot	NA	NA	pm+ov	NA	pm+ov
Protected Phases	1	6	5	2	4	5	8	1
Permitted Phases						4		8
Detector Phase	1	6	5	2	4	5	8	1
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	32.5	9.5	32.5	38.5	9.5	38.5	9.5
Total Split (s)	18.4	32.6	27.4	41.6	40.0	27.4	40.0	18.4
Total Split (%)	18.4%	32.6%	27.4%	41.6%	40.0%	27.4%	40.0%	18.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag		Lead		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes
Recall Mode	None	Max	None	Max	C-Max	None	C-Max	None
Act Effect Green (s)	12.3	30.6	20.4	38.7	35.5	60.4	35.5	52.3
Actuated g/C Ratio	0.12	0.31	0.20	0.39	0.36	0.60	0.36	0.52
v/c Ratio	0.63	0.31	0.76	0.68	0.29	0.33	0.32	0.43
Control Delay	48.4	27.8	44.7	27.9	23.8	6.7	24.0	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.4	27.8	44.7	27.9	23.8	6.7	24.0	13.4
LOS	D	C	D	C	C	A	C	B
Approach Delay		35.1		32.7	17.3		19.9	
Approach LOS		D		C	B		B	

## Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 4:NBT and 8:SBT, Start of Green, Master Intersection

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 27.4

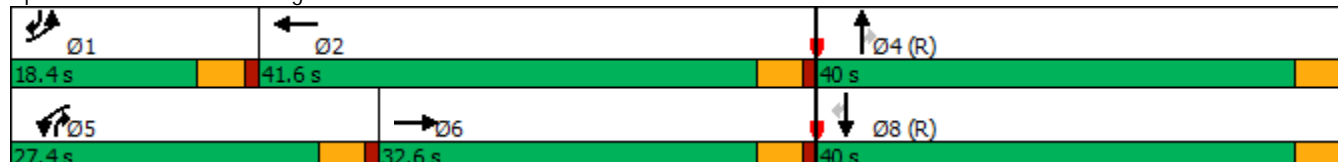
Intersection LOS: C

Intersection Capacity Utilization 52.3%

ICU Level of Service A

Analysis Period (min) 15































Splits and Phases: 1: Livingston Rd. & Vanderbilt Beach Rd.



# HCM Signalized Intersection Capacity Analysis

## 1: Livingston Rd. & Vanderbilt Beach Rd.

06/30/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  			  			  	
Traffic Volume (vph)	244	445	0	486	1228	0	0	487	300	0	527	340
Future Volume (vph)	244	445	0	486	1228	0	0	487	300	0	527	340
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5			4.5	4.5		4.5	4.5
Lane Util. Factor	0.97	0.91		0.97	0.91			0.91	1.00		0.91	1.00
Frt	1.00	1.00		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		1.00	1.00
Satd. Flow (prot)	3433	5085		3433	5085			5085	1583		5085	1583
Flt Permitted	0.95	1.00		0.95	1.00			1.00	1.00		1.00	1.00
Satd. Flow (perm)	3433	5085		3433	5085			5085	1583		5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	265	484	0	528	1335	0	0	529	326	0	573	370
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	49	0	0	34
Lane Group Flow (vph)	265	484	0	528	1335	0	0	529	277	0	573	336
Turn Type	Prot	NA		Prot	NA			NA	pm+ov		NA	pm+ov
Protected Phases	1	6		5	2			4	5		8	1
Permitted Phases									4			8
Actuated Green, G (s)	12.3	30.6		20.4	38.7			35.5	55.9		35.5	47.8
Effective Green, g (s)	12.3	30.6		20.4	38.7			35.5	55.9		35.5	47.8
Actuated g/C Ratio	0.12	0.31		0.20	0.39			0.36	0.56		0.36	0.48
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	422	1556		700	1967			1805	956		1805	827
v/s Ratio Prot	0.08	0.10		c0.15	c0.26			0.10	0.06		0.11	c0.05
v/s Ratio Perm									0.12			0.16
v/c Ratio	0.63	0.31		0.75	0.68			0.29	0.29		0.32	0.41
Uniform Delay, d1	41.7	26.6		37.4	25.5			23.2	11.6		23.4	16.9
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	2.9	0.5		4.6	1.9			0.4	0.2		0.5	0.3
Delay (s)	44.6	27.1		42.1	27.4			23.6	11.8		23.9	17.2
Level of Service	D	C		D	C			C	B		C	B
Approach Delay (s)		33.3			31.5			19.1			21.3	
Approach LOS		C			C			B			C	
Intersection Summary												
HCM 2000 Control Delay	27.2			HCM 2000 Level of Service					C			
HCM 2000 Volume to Capacity ratio	0.61											
Actuated Cycle Length (s)	100.0			Sum of lost time (s)					13.5			
Intersection Capacity Utilization	52.3%			ICU Level of Service					A			
Analysis Period (min)	15											
c Critical Lane Group												

# Timings

## 2: Livingston Rd. & N DLT

06/30/2020

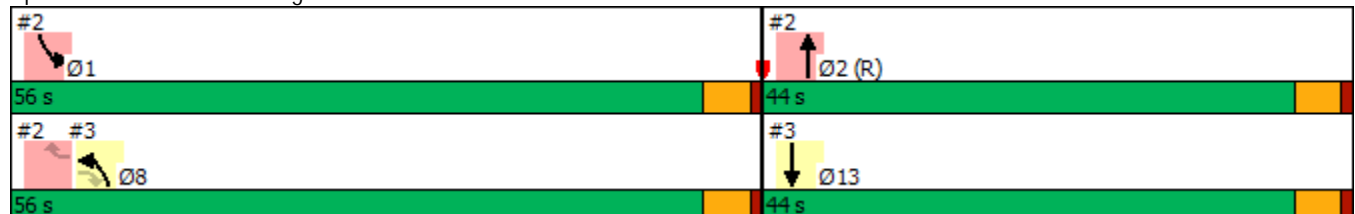


Lane Group	WBR	NBT	SBL	SBT	Ø13
Lane Configurations	↰	↑↑↑	↰	↑↑↑	
Traffic Volume (vph)	247	487	100	867	
Future Volume (vph)	247	487	100	867	
Turn Type	Perm	NA	Prot	NA	
Protected Phases		2	1	Free	13
Permitted Phases	8				
Detector Phase	8	2	1		
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0		5.0
Minimum Split (s)	22.5	22.5	9.5		22.5
Total Split (s)	56.0	44.0	56.0		44.0
Total Split (%)	56.0%	44.0%	56.0%		44%
Yellow Time (s)	3.5	3.5	3.5		3.5
All-Red Time (s)	1.0	1.0	1.0		1.0
Lost Time Adjust (s)	0.0	0.0	0.0		
Total Lost Time (s)	4.5	4.5	4.5		
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	C-Max	None		Max
Act Effect Green (s)	18.9	72.1	18.9	100.0	
Actuated g/C Ratio	0.19	0.72	0.19	1.00	
v/c Ratio	0.59	0.14	0.17	0.19	
Control Delay	16.7	6.4	33.1	0.1	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	16.7	6.4	33.1	0.1	
LOS	B	A	C	A	
Approach Delay		6.4		3.5	
Approach LOS		A		A	

### Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:NBT, Start of Green
Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.64
Intersection Signal Delay: 6.2
Intersection Capacity Utilization 32.2%
Analysis Period (min) 15
Intersection LOS: A
ICU Level of Service A






Splits and Phases: 2: Livingston Rd. & N DLT



# HCM Signalized Intersection Capacity Analysis

## 2: Livingston Rd. & N DLT









06/30/2020

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	247	487	0	100	867
Future Volume (vph)	0	247	487	0	100	867
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5	4.0
Lane Util. Factor		1.00	0.91		0.97	0.91
Frt		0.86	1.00		1.00	1.00
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		1611	5085		3433	5085
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		1611	5085		3433	5085
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	268	529	0	109	942
RTOR Reduction (vph)	0	152	0	0	0	0
Lane Group Flow (vph)	0	116	529	0	109	942
Turn Type		Perm	NA		Prot	NA
Protected Phases			2		1	Free
Permitted Phases		8				
Actuated Green, G (s)		18.9	72.1		18.9	100.0
Effective Green, g (s)		18.9	72.1		18.9	100.0
Actuated g/C Ratio		0.19	0.72		0.19	1.00
Clearance Time (s)		4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		304	3666		648	5085
v/s Ratio Prot			0.10		0.03	0.19
v/s Ratio Perm		c0.07				
v/c Ratio		0.38	0.14		0.17	0.19
Uniform Delay, d1		35.4	4.3		34.0	0.0
Progression Factor		1.00	1.32		1.00	1.00
Incremental Delay, d2		0.8	0.1		0.1	0.1
Delay (s)		36.2	5.8		34.1	0.1
Level of Service		D	A		C	A
Approach Delay (s)	36.2		5.8			3.6
Approach LOS	D		A			A
<b>Intersection Summary</b>						
HCM 2000 Control Delay			9.0		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.23			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	9.0
Intersection Capacity Utilization			32.2%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

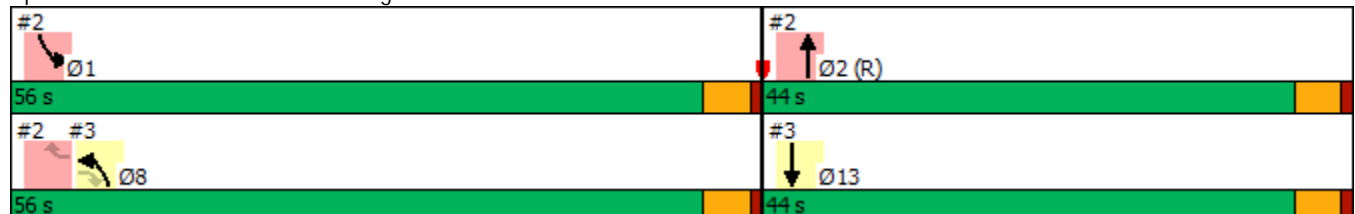
# Timings

## 3: S DLT & Livingston Rd.

06/30/2020

						
Lane Group	EBR	NBL	NBT	SBT	Ø1	Ø2
Lane Configurations						
Traffic Volume (vph)	141	383	787	527		
Future Volume (vph)	141	383	787	527		
Turn Type	Perm	Prot	NA	NA		
Protected Phases		8	Free	13	1	2
Permitted Phases	8					
Detector Phase	8	8		13		
Switch Phase						
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		22.5	9.5	22.5
Total Split (s)	56.0	56.0		44.0	56.0	44.0
Total Split (%)	56.0%	56.0%		44.0%	56%	44%
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0		
Total Lost Time (s)	4.5	4.5		4.5		
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None		Max	None	C-Max
Act Efect Green (s)	18.9	18.9	100.0	72.1		
Actuated g/C Ratio	0.19	0.19	1.00	0.72		
v/c Ratio	0.35	0.64	0.13	0.16		
Control Delay	6.8	41.6	0.0	6.3		
Queue Delay	0.0	0.0	0.0	0.0		
Total Delay	6.8	41.6	0.0	6.3		
LOS	A	D	A	A		
Approach Delay			13.6	6.3		
Approach LOS			B	A		
Intersection Summary						
Cycle Length: 100						
Actuated Cycle Length: 100						
Offset: 0 (0%), Referenced to phase 2:NBT, Start of Green						
Natural Cycle: 45						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.64						
Intersection Signal Delay: 11.0				Intersection LOS: B		
Intersection Capacity Utilization 28.6%				ICU Level of Service A		
Analysis Period (min) 15						

Splits and Phases: 3: S DLT & Livingston Rd.





# HCM Signalized Intersection Capacity Analysis

## 3: S DLT & Livingston Rd.

06/30/2020



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	141	383	787	527	0
Future Volume (vph)	0	141	383	787	527	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.0	4.5	
Lane Util. Factor		1.00	0.97	0.86	0.91	
Frt		0.86	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	3433	6408	5085	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	3433	6408	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	153	416	855	573	0
RTOR Reduction (vph)	0	124	0	0	0	0
Lane Group Flow (vph)	0	29	416	855	573	0
Turn Type		Perm	Prot	NA	NA	
Protected Phases			8	Free	13	
Permitted Phases		8				
Actuated Green, G (s)		18.9	18.9	100.0	72.1	
Effective Green, g (s)		18.9	18.9	100.0	72.1	
Actuated g/C Ratio		0.19	0.19	1.00	0.72	
Clearance Time (s)		4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		304	648	6408	3666	
v/s Ratio Prot			c0.12	0.13	c0.11	
v/s Ratio Perm		0.02				
v/c Ratio		0.10	0.64	0.13	0.16	
Uniform Delay, d1		33.5	37.4	0.0	4.4	
Progression Factor		1.00	1.00	1.00	1.29	
Incremental Delay, d2		0.1	2.2	0.0	0.1	
Delay (s)		33.6	39.6	0.0	5.8	
Level of Service		C	D	A	A	
Approach Delay (s)	33.6			13.0	5.8	
Approach LOS	C			B	A	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			12.5		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.26			
Actuated Cycle Length (s)			100.0		Sum of lost time (s)	9.0
Intersection Capacity Utilization			28.6%		ICU Level of Service	A
Analysis Period (min)			15			

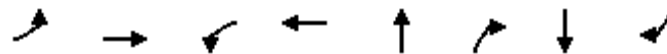
c Critical Lane Group

# Partial Displaced Left Turn

## Timings

1: Livingston Rd. & Vanderbilt Beach Rd.

06/30/2020



Lane Group	EBL	EBT	WBL	WBT	NBT	NBR	SBT	SBR
Lane Configurations	↰↰	↑↑↑	↰↰	↑↑↑	↑↑↑	↰	↑↑↑	↰
Traffic Volume (vph)	348	1835	276	793	1041	700	394	267
Future Volume (vph)	348	1835	276	793	1041	700	394	267
Turn Type	Prot	NA	Prot	NA	NA	pm+ov	NA	pm+ov
Protected Phases	1	6	5	2	4	5	8	1
Permitted Phases						4		8
Detector Phase	1	6	5	2	4	5	8	1
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	32.5	9.5	32.5	38.5	9.5	38.5	9.5
Total Split (s)	22.0	46.4	14.0	38.4	39.6	14.0	39.6	22.0
Total Split (%)	22.0%	46.4%	14.0%	38.4%	39.6%	14.0%	39.6%	22.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lag		Lead		Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes
Recall Mode	None	Max	None	Max	C-Max	None	C-Max	None
Act Effect Green (s)	15.5	41.9	9.5	35.9	35.1	49.1	35.1	55.1
Actuated g/C Ratio	0.16	0.42	0.10	0.36	0.35	0.49	0.35	0.55
v/c Ratio	0.71	0.94	0.92	0.47	0.63	0.94	0.24	0.33
Control Delay	47.8	37.7	79.2	26.2	29.0	42.9	23.4	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	47.8	37.7	79.2	26.2	29.0	43.1	23.4	11.5
LOS	D	D	E	C	C	D	C	B
Approach Delay		39.3		39.8	34.7		18.6	
Approach LOS		D		D	C		B	

## Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 4:NBT and 8:SBT, Start of Green, Master Intersection

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 35.6

Intersection LOS: D

Intersection Capacity Utilization 86.3%

ICU Level of Service E

Analysis Period (min) 15































Splits and Phases: 1: Livingston Rd. & Vanderbilt Beach Rd.



# HCM Signalized Intersection Capacity Analysis

## 1: Livingston Rd. & Vanderbilt Beach Rd.

06/30/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  			  			  	
Traffic Volume (vph)	348	1835	0	276	793	0	0	1041	700	0	394	267
Future Volume (vph)	348	1835	0	276	793	0	0	1041	700	0	394	267
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5			4.5	4.5		4.5	4.5
Lane Util. Factor	0.97	0.91		0.97	0.91			0.91	1.00		0.91	1.00
Frt	1.00	1.00		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		1.00	1.00
Satd. Flow (prot)	3433	5085		3433	5085			5085	1583		5085	1583
Flt Permitted	0.95	1.00		0.95	1.00			1.00	1.00		1.00	1.00
Satd. Flow (perm)	3433	5085		3433	5085			5085	1583		5085	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	378	1995	0	300	862	0	0	1132	761	0	428	290
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	36	0	0	17
Lane Group Flow (vph)	378	1995	0	300	862	0	0	1132	725	0	428	273
Turn Type	Prot	NA		Prot	NA			NA	pm+ov		NA	pm+ov
Protected Phases	1	6		5	2			4	5		8	1
Permitted Phases									4			8
Actuated Green, G (s)	15.5	41.9		9.5	35.9			35.1	44.6		35.1	50.6
Effective Green, g (s)	15.5	41.9		9.5	35.9			35.1	44.6		35.1	50.6
Actuated g/C Ratio	0.16	0.42		0.10	0.36			0.35	0.45		0.35	0.51
Clearance Time (s)	4.5	4.5		4.5	4.5			4.5	4.5		4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	532	2130		326	1825			1784	777		1784	872
v/s Ratio Prot	0.11	c0.39		0.09	0.17			0.22	c0.09		0.08	0.05
v/s Ratio Perm									0.37			0.12
v/c Ratio	0.71	0.94		0.92	0.47			0.63	0.93		0.24	0.31
Uniform Delay, d1	40.1	27.8		44.9	24.7			27.1	26.3		23.0	14.5
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	4.4	9.4		30.2	0.9			1.7	17.6		0.3	0.2
Delay (s)	44.6	37.2		75.1	25.6			28.8	43.9		23.3	14.7
Level of Service	D	D		E	C			C	D		C	B
Approach Delay (s)		38.4			38.4			34.8			19.8	
Approach LOS		D			D			C			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			35.1			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			13.5			
Intersection Capacity Utilization			86.3%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

# Timings

## 2: Livingston Rd. & N DLT

06/30/2020

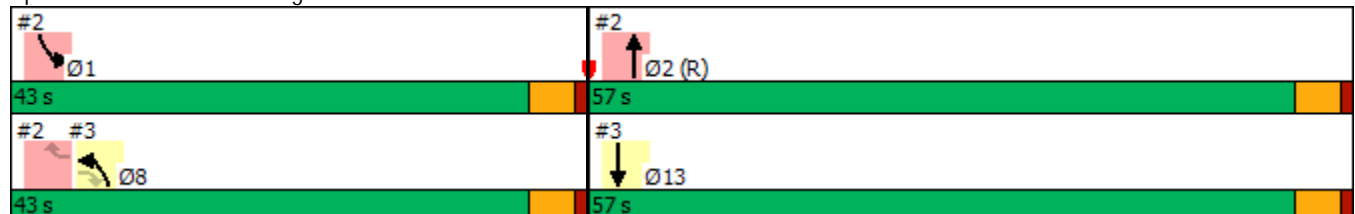


Lane Group	WBR	NBT	SBL	SBT	Ø13
Lane Configurations	↗	↑↑↑	↖	↑↑↑	
Traffic Volume (vph)	177	1041	230	661	
Future Volume (vph)	177	1041	230	661	
Turn Type	Perm	NA	Prot	NA	
Protected Phases		2	1	Free	13
Permitted Phases	8				
Detector Phase	8	2	1		
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0		5.0
Minimum Split (s)	22.5	22.5	9.5		22.5
Total Split (s)	43.0	57.0	43.0		57.0
Total Split (%)	43.0%	57.0%	43.0%		57%
Yellow Time (s)	3.5	3.5	3.5		3.5
All-Red Time (s)	1.0	1.0	1.0		1.0
Lost Time Adjust (s)	0.0	0.0	0.0		
Total Lost Time (s)	4.5	4.5	4.5		
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	C-Max	None		Max
Act Effect Green (s)	17.2	73.8	17.2	100.0	
Actuated g/C Ratio	0.17	0.74	0.17	1.00	
v/c Ratio	0.59	0.30	0.42	0.14	
Control Delay	32.4	0.2	38.3	0.1	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	32.4	0.2	38.3	0.1	
LOS	C	A	D	A	
Approach Delay		0.2		9.9	
Approach LOS		A		A	

### Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 19 (19%), Referenced to phase 2:NBT, Start of Green
Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.62
Intersection Signal Delay: 7.0
Intersection Capacity Utilization 38.6%
Analysis Period (min) 15
Intersection LOS: A
ICU Level of Service A

### Splits and Phases: 2: Livingston Rd. & N DLT



# HCM Signalized Intersection Capacity Analysis

## 2: Livingston Rd. & N DLT

06/30/2020



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗↗		↘↘	↗↗↗
Traffic Volume (vph)	0	177	1041	0	230	661
Future Volume (vph)	0	177	1041	0	230	661
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5	4.0
Lane Util. Factor		1.00	0.91		0.97	0.91
Frt		0.86	1.00		1.00	1.00
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		1611	5085		3433	5085
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		1611	5085		3433	5085
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	192	1132	0	250	718
RTOR Reduction (vph)	0	51	0	0	0	0
Lane Group Flow (vph)	0	141	1132	0	250	718
Turn Type		Perm	NA		Prot	NA
Protected Phases			2		1	Free
Permitted Phases		8				
Actuated Green, G (s)		17.2	73.8		17.2	100.0
Effective Green, g (s)		17.2	73.8		17.2	100.0
Actuated g/C Ratio		0.17	0.74		0.17	1.00
Clearance Time (s)		4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		277	3752		590	5085
v/s Ratio Prot			c0.22		0.07	0.14
v/s Ratio Perm		c0.09				
v/c Ratio		0.51	0.30		0.42	0.14
Uniform Delay, d1		37.6	4.4		37.0	0.0
Progression Factor		1.00	0.00		1.00	1.00
Incremental Delay, d2		1.6	0.2		0.5	0.1
Delay (s)		39.2	0.2		37.5	0.1
Level of Service		D	A		D	A
Approach Delay (s)	39.2		0.2			9.7
Approach LOS	D		A			A

### Intersection Summary

HCM 2000 Control Delay	7.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		









c Critical Lane Group



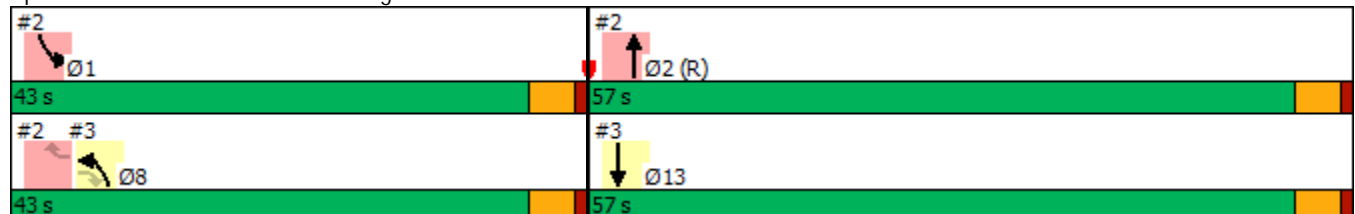
# Timings

## 3: S DLT & Livingston Rd.

06/30/2020

						
Lane Group	EBR	NBL	NBT	SBT	Ø1	Ø2
Lane Configurations						
Traffic Volume (vph)	267	336	1741	394		
Future Volume (vph)	267	336	1741	394		
Turn Type	Perm	Prot	NA	NA		
Protected Phases		8	Free	13	1	2
Permitted Phases	8					
Detector Phase	8	8		13		
Switch Phase						
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		22.5	9.5	22.5
Total Split (s)	43.0	43.0		57.0	43.0	57.0
Total Split (%)	43.0%	43.0%		57.0%	43%	57%
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0		
Total Lost Time (s)	4.5	4.5		4.5		
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None		Max	None	C-Max
Act Effct Green (s)	17.2	17.2	100.0	73.8		
Actuated g/C Ratio	0.17	0.17	1.00	0.74		
v/c Ratio	0.49	0.62	0.30	0.11		
Control Delay	3.7	42.5	0.1	0.1		
Queue Delay	0.0	0.0	0.0	0.0		
Total Delay	3.7	42.5	0.1	0.1		
LOS	A	D	A	A		
Approach Delay			7.0	0.1		
Approach LOS			A	A		
Intersection Summary						
Cycle Length: 100						
Actuated Cycle Length: 100						
Offset: 19 (19%), Referenced to phase 2:NBT, Start of Green						
Natural Cycle: 45						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.62						
Intersection Signal Delay: 5.7				Intersection LOS: A		
Intersection Capacity Utilization 31.6%				ICU Level of Service A		
Analysis Period (min) 15						

Splits and Phases: 3: S DLT & Livingston Rd.



# HCM Signalized Intersection Capacity Analysis

## 3: S DLT & Livingston Rd.

06/30/2020



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	267	336	1741	394	0
Future Volume (vph)	0	267	336	1741	394	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.0	4.5	
Lane Util. Factor		1.00	0.97	0.86	0.91	
Frt		0.86	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		1611	3433	6408	5085	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		1611	3433	6408	5085	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	290	365	1892	428	0
RTOR Reduction (vph)	0	240	0	0	0	0
Lane Group Flow (vph)	0	50	365	1892	428	0
Turn Type		Perm	Prot	NA	NA	
Protected Phases			8	Free	13	
Permitted Phases		8				
Actuated Green, G (s)		17.2	17.2	100.0	73.8	
Effective Green, g (s)		17.2	17.2	100.0	73.8	
Actuated g/C Ratio		0.17	0.17	1.00	0.74	
Clearance Time (s)		4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		277	590	6408	3752	
v/s Ratio Prot			c0.11	0.30	0.08	
v/s Ratio Perm		0.03				
v/c Ratio		0.18	0.62	0.30	0.11	
Uniform Delay, d1		35.4	38.4	0.0	3.7	
Progression Factor		1.00	1.00	1.00	0.00	
Incremental Delay, d2		0.3	1.9	0.1	0.1	
Delay (s)		35.7	40.3	0.1	0.1	
Level of Service		D	D	A	A	
Approach Delay (s)	35.7			6.6	0.1	
Approach LOS	D			A	A	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		8.5		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio		0.37				
Actuated Cycle Length (s)		100.0		Sum of lost time (s)		9.0
Intersection Capacity Utilization		31.6%		ICU Level of Service		A
Analysis Period (min)		15				

c Critical Lane Group





THESE CONCEPTS SHOW POTENTIAL IMPACTS OR NEAR IMPACTS TO ROW IN CERTAIN AREAS. A DETAILED DESIGN WILL BE NEEDED TO CONFIRM/ADJUST. DETAILED ENGINEERING ANALYSIS WOULD BE REQUIRED.

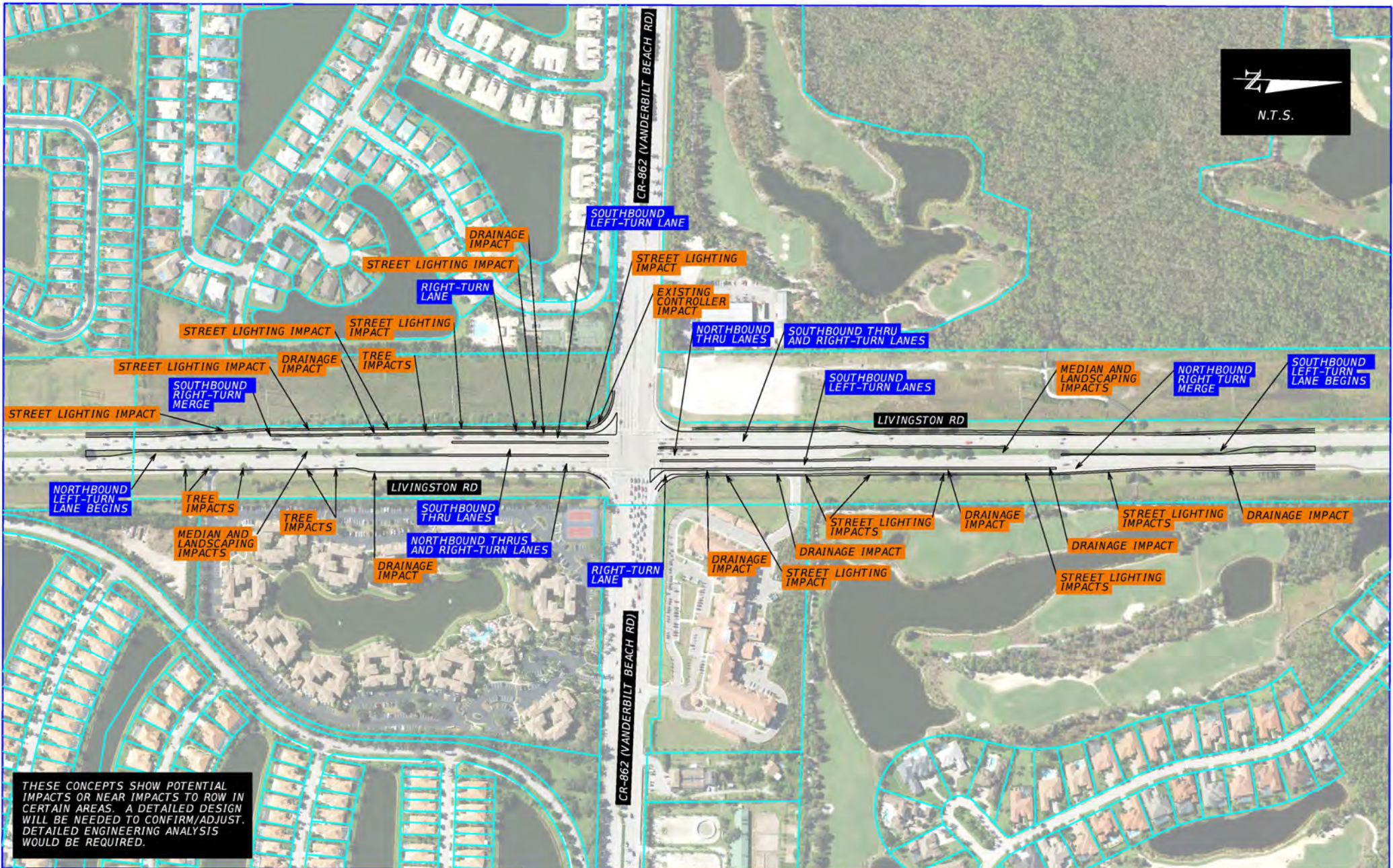
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID

LIVINGSTON RD AT CR-862 (VANDERBILT BEACH RD) EASTBOUND/WESTBOUND DISPLACED LEFT CONCEPT IMPACTS	

SHEET NO.
1





THESE CONCEPTS SHOW POTENTIAL IMPACTS OR NEAR IMPACTS TO ROW IN CERTAIN AREAS. A DETAILED DESIGN WILL BE NEEDED TO CONFIRM/ADJUST. DETAILED ENGINEERING ANALYSIS WOULD BE REQUIRED.

REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			LIVINGSTON RD AT CR-862 (VANDERBILT BEACH RD) NORTHBOUND/SOUTHBOUND DISPLACED LEFT CONCEPT IMPACTS	SHEET NO.  1
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		



Cap X Analysis - Santa Barbara Blvd/Logan Blvd at Green Blvd - 2020 AM Peak

TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
Signalized Restricted Crossing U-Turn N-S	0.54	1	6.3	Good	Good	Fair
Partial Median U-Turn N-S	0.57	2	6.3	Good	Good	Fair
2 X 2	0.58	3	5.6	Fair	Good	Good
Traffic Signal	0.58	4	4.8	Fair	Fair	Good
Median U-Turn N-S	0.79	5	6.3	Good	Good	Fair
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Cap X Analysis - Santa Barbara Blvd/Logan Blvd at Green Blvd - 2025 AM Peak

TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
Traffic Signal	0.60	1	4.8	Fair	Fair	Good
Signalized Restricted Crossing U-Turn N-S	0.60	1	6.3	Good	Good	Fair
Partial Median U-Turn N-S	0.63	3	6.3	Good	Good	Fair
2 X 2	0.66	4	5.6	Fair	Good	Good
Median U-Turn N-S	0.88	5	6.3	Good	Good	Fair
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Cap X Analysis - Santa Barbara Blvd/Logan Blvd at Green Blvd - 2020 PM Peak

TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
Signalized Restricted Crossing U-Turn N-S	0.67	1	6.3	Good	Good	Fair
Partial Median U-Turn N-S	0.78	2	6.3	Good	Good	Fair
Median U-Turn N-S	0.81	3	6.3	Good	Good	Fair
Traffic Signal	0.92	4	4.8	Fair	Fair	Good
2 X 2	0.92	5	5.6	Fair	Good	Good
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Cap X Analysis - Santa Barbara Blvd/Logan Blvd at Green Blvd - 2025 PM Peak

















TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
Signalized Restricted Crossing U-Turn N-S	0.74	1	6.3	Good	Good	Fair
Traffic Signal	0.82	2	4.8	Fair	Fair	Good
Partial Median U-Turn N-S	0.86	3	6.3	Good	Good	Fair
Median U-Turn N-S	0.89	4	6.3	Good	Good	Fair
2 X 2	1.07	5	5.6	Fair	Good	Good
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# Synchro Analysis - Santa Barbara Blvd/Logan Blvd at Green Blvd - 2020 AM Peak

## Timings

3: Sta. Barbara Blvd. & Green Blvd.

06/30/2020

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	12	6	191	3	25	1082	523	1266
Future Volume (vph)	12	6	191	3	25	1082	523	1266
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	16.0	5.0	16.0
Minimum Split (s)	24.8	24.8	24.8	24.8	11.8	24.8	11.8	24.8
Total Split (s)	26.2	26.2	26.2	26.2	11.8	60.8	43.0	92.0
Total Split (%)	20.2%	20.2%	20.2%	20.2%	9.1%	46.8%	33.1%	70.8%
Yellow Time (s)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min	None	Min
Act Effect Green (s)	19.4	19.4	19.4	19.4	59.0	54.0	97.0	89.9
Actuated g/C Ratio	0.15	0.15	0.15	0.15	0.45	0.42	0.75	0.69
v/c Ratio	0.17	0.11	1.01	0.55	0.13	1.04	1.04	0.58
Control Delay	54.5	24.2	121.1	11.5	11.8	70.4	86.9	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.5	24.2	121.1	11.5	11.8	70.4	86.9	12.1
LOS	D	C	F	B	B	E	F	B
Approach Delay		33.8		62.4		69.4		33.6
Approach LOS		C		E		E		C

## Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 130

Natural Cycle: 130

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.04

Intersection Signal Delay: 50.5

Intersection LOS: D

Intersection Capacity Utilization 102.5%

ICU Level of Service G

Analysis Period (min) 15






















Splits and Phases: 3: Sta. Barbara Blvd. & Green Blvd.



# HCM 6th Signalized Intersection Summary

## 3: Sta. Barbara Blvd. & Green Blvd.

06/30/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	6	19	191	3	218	25	1082	293	523	1266	28
Future Volume (veh/h)	12	6	19	191	3	218	25	1082	293	523	1266	28
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	13	7	21	208	3	237	27	1176	318	568	1376	30
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	55	61	184	241	3	234	257	1152	307	551	2382	52
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.02	0.42	0.42	0.28	0.67	0.67
Sat Flow, veh/h	1140	412	1236	1382	20	1568	1781	2774	740	1781	3556	77
Grp Volume(v), veh/h	13	0	28	208	0	240	27	748	746	568	687	719
Grp Sat Flow(s),veh/h/ln	1140	0	1648	1382	0	1588	1781	1777	1737	1781	1777	1856
Q Serve(g_s), s	0.0	0.0	1.9	17.5	0.0	19.4	1.1	54.0	54.0	36.2	27.1	27.1
Cycle Q Clear(g_c), s	19.4	0.0	1.9	19.4	0.0	19.4	1.1	54.0	54.0	36.2	27.1	27.1
Prop In Lane	1.00		0.75	1.00		0.99	1.00		0.43	1.00		0.04
Lane Grp Cap(c), veh/h	55	0	246	241	0	237	257	738	722	551	1190	1244
V/C Ratio(X)	0.23	0.00	0.11	0.86	0.00	1.01	0.11	1.01	1.03	1.03	0.58	0.58
Avail Cap(c_a), veh/h	55	0	246	241	0	237	283	738	722	551	1190	1244
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.0	0.0	47.9	57.2	0.0	55.3	20.7	38.0	38.0	41.3	11.5	11.6
Incr Delay (d2), s/veh	2.1	0.0	0.2	25.8	0.0	61.8	0.1	36.4	42.6	46.3	0.9	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.8	8.6	0.0	11.8	0.5	30.5	31.0	24.7	10.4	10.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.1	0.0	48.1	83.0	0.0	117.1	20.8	74.4	80.6	87.5	12.4	12.4
LnGrp LOS	E	A	D	F	A	F	C	F	F	F	B	B
Approach Vol, veh/h	41			448			1521			1974		
Approach Delay, s/veh	54.1			101.2			76.5			34.0		
Approach LOS	D			F			E			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	43.0	60.8		26.2	9.9	93.9		26.2				
Change Period (Y+Rc), s	6.8	6.8		6.8	6.8	6.8		6.8				
Max Green Setting (Gmax), s	36.2	54.0		19.4	5.0	85.2		19.4				
Max Q Clear Time (g_c+I1), s	38.2	56.0		21.4	3.1	29.1		21.4				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	23.2		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay	58.0											
HCM 6th LOS	E											



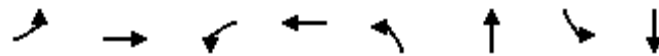
# Synchro Analysis - Santa Barbara Blvd/Logan Blvd at Green Blvd - 2025 AM Peak

## Dual Southbound Left-Turn

### Timings

3: Sta. Barbara Blvd. & Green Blvd.

06/30/2020



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	30	2	346	4	10	672	170	976
Future Volume (vph)	30	2	346	4	10	672	170	976
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	16.0	5.0	16.0
Minimum Split (s)	24.8	24.8	24.8	24.8	11.8	24.8	11.8	24.8
Total Split (s)	39.0	39.0	39.0	39.0	12.0	63.0	28.0	79.0
Total Split (%)	30.0%	30.0%	30.0%	30.0%	9.2%	48.5%	21.5%	60.8%
Yellow Time (s)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min	None	Min
Act Effect Green (s)	32.6	32.6	32.6	32.6	36.9	31.8	45.2	43.8
Actuated g/C Ratio	0.35	0.35	0.35	0.35	0.40	0.34	0.49	0.48
v/c Ratio	0.20	0.06	0.78	0.61	0.05	0.68	0.33	0.64
Control Delay	29.4	10.0	41.9	13.1	11.4	28.0	13.4	20.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	10.0	41.9	13.1	11.4	28.0	13.4	20.5
LOS	C	A	D	B	B	C	B	C
Approach Delay		19.3		25.9		27.7		19.4
Approach LOS		B		C		C		B

### Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 92.2

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 23.5

Intersection LOS: C

Intersection Capacity Utilization 75.5%

ICU Level of Service D

Analysis Period (min) 15






















Splits and Phases: 3: Sta. Barbara Blvd. & Green Blvd.



# HCM 6th Signalized Intersection Summary

## 3: Sta. Barbara Blvd. & Green Blvd.

06/30/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	2	31	346	4	429	10	672	87	170	976	19
Future Volume (veh/h)	30	2	31	346	4	429	10	672	87	170	976	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	33	2	34	376	4	466	11	730	95	185	1061	21
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	133	30	508	521	5	530	197	1204	157	606	1511	30
Arrive On Green	0.34	0.34	0.34	0.34	0.34	0.34	0.01	0.38	0.38	0.06	0.42	0.42
Sat Flow, veh/h	923	89	1510	1372	14	1574	1781	3162	411	3456	3564	71
Grp Volume(v), veh/h	33	0	36	376	0	470	11	410	415	185	529	553
Grp Sat Flow(s),veh/h/ln	923	0	1599	1372	0	1587	1781	1777	1796	1728	1777	1858
Q Serve(g_s), s	3.2	0.0	1.4	23.1	0.0	25.2	0.3	16.8	16.8	2.9	22.0	22.0
Cycle Q Clear(g_c), s	28.3	0.0	1.4	24.5	0.0	25.2	0.3	16.8	16.8	2.9	22.0	22.0
Prop In Lane	1.00		0.94	1.00		0.99	1.00		0.23	1.00		0.04
Lane Grp Cap(c), veh/h	133	0	538	521	0	534	197	677	684	606	753	788
V/C Ratio(X)	0.25	0.00	0.07	0.72	0.00	0.88	0.06	0.61	0.61	0.31	0.70	0.70
Avail Cap(c_a), veh/h	152	0	570	548	0	566	276	1107	1119	1222	1422	1486
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.6	0.0	20.3	28.6	0.0	28.2	18.5	22.5	22.5	16.9	21.3	21.3
Incr Delay (d2), s/veh	1.0	0.0	0.1	4.4	0.0	14.3	0.0	1.3	1.2	0.1	1.7	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.5	8.0	0.0	11.3	0.1	7.0	7.0	1.1	9.1	9.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.5	0.0	20.4	33.0	0.0	42.5	18.6	23.7	23.7	17.0	23.0	23.0
LnGrp LOS	D	A	C	C	A	D	B	C	C	B	C	C
Approach Vol, veh/h	69				846				836			
Approach Delay, s/veh	31.0				38.3				23.7			
Approach LOS	C				D				C			
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.9	41.2		37.2	8.0	45.1		37.2				
Change Period (Y+Rc), s	6.8	6.8		6.8	6.8	6.8		6.8				
Max Green Setting (Gmax), s	21.2	56.2		32.2	5.2	72.2		32.2				
Max Q Clear Time (g_c+I1), s	4.9	18.8		30.3	2.3	24.0		27.2				
Green Ext Time (p_c), s	0.3	9.1		0.0	0.0	14.2		2.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay	27.3											
HCM 6th LOS	C											

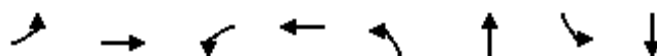
# Synchro Analysis - Santa Barbara Blvd/Logan Blvd at Green Blvd - 2025 PM Peak

## Dual Southbound Left-Turn

Timings

3: Sta. Barbara Blvd. & Green Blvd.

06/30/2020



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	13	7	211	3	28	1195	577	1398
Future Volume (vph)	13	7	211	3	28	1195	577	1398
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	16.0	5.0	16.0
Minimum Split (s)	24.8	24.8	24.8	24.8	11.8	24.8	11.8	24.8
Total Split (s)	30.2	30.2	30.2	30.2	12.0	71.8	28.0	87.8
Total Split (%)	23.2%	23.2%	23.2%	23.2%	9.2%	55.2%	21.5%	67.5%
Yellow Time (s)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min	None	Min
Act Effect Green (s)	22.9	22.9	22.9	22.9	70.1	65.0	92.5	85.4
Actuated g/C Ratio	0.18	0.18	0.18	0.18	0.54	0.50	0.72	0.66
v/c Ratio	0.15	0.10	0.94	0.57	0.16	0.95	0.95	0.67
Control Delay	49.5	21.9	96.7	14.9	9.7	42.1	64.8	15.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.5	21.9	96.7	14.9	9.7	42.1	64.8	15.9
LOS	D	C	F	B	A	D	E	B
Approach Delay		30.5		52.8		41.5		29.9
Approach LOS		C		D		D		C

### Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 129

Natural Cycle: 100

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 36.9

Intersection LOS: D

Intersection Capacity Utilization 95.2%

ICU Level of Service F

Analysis Period (min) 15






















Splits and Phases: 3: Sta. Barbara Blvd. & Green Blvd.

Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8
28 s	71.8 s		30.2 s	12 s	87.8 s		30.2 s

# HCM 6th Signalized Intersection Summary

## 3: Sta. Barbara Blvd. & Green Blvd.

06/30/2020



















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	7	21	211	3	241	28	1195	323	577	1398	31
Future Volume (veh/h)	13	7	21	211	3	241	28	1195	323	577	1398	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	14	8	23	229	3	262	30	1299	351	627	1520	34
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	77	78	223	286	3	286	221	1398	370	678	2249	50
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.03	0.50	0.50	0.16	0.63	0.63
Sat Flow, veh/h	1114	426	1224	1378	18	1570	1781	2780	735	3456	3554	79
Grp Volume(v), veh/h	14	0	31	229	0	265	30	820	830	627	759	795
Grp Sat Flow(s),veh/h/ln	1114	0	1650	1378	0	1588	1781	1777	1738	1728	1777	1856
Q Serve(g_s), s	1.6	0.0	2.0	21.3	0.0	21.0	1.0	54.6	58.3	17.6	35.1	35.3
Cycle Q Clear(g_c), s	22.6	0.0	2.0	23.3	0.0	21.0	1.0	54.6	58.3	17.6	35.1	35.3
Prop In Lane	1.00		0.74	1.00		0.99	1.00		0.42	1.00		0.04
Lane Grp Cap(c), veh/h	77	0	301	286	0	290	221	894	874	678	1124	1175
V/C Ratio(X)	0.18	0.00	0.10	0.80	0.00	0.91	0.14	0.92	0.95	0.93	0.68	0.68
Avail Cap(c_a), veh/h	77	0	301	286	0	290	247	901	881	712	1124	1175
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.5	0.0	43.7	53.4	0.0	51.4	16.0	29.4	30.3	41.7	15.1	15.1
Incr Delay (d2), s/veh	1.1	0.0	0.1	14.9	0.0	31.6	0.1	14.1	19.3	17.0	1.8	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.8	8.5	0.0	10.9	0.4	26.1	28.3	11.5	14.1	14.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.6	0.0	43.8	68.2	0.0	83.0	16.1	43.5	49.6	58.7	16.9	16.9
LnGrp LOS	E	A	D	E	A	F	B	D	D	E	B	B
Approach Vol, veh/h	45			494			1680			2181		
Approach Delay, s/veh	50.0			76.2			46.1			28.9		
Approach LOS	D			E			D			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	26.7	71.3		30.2	10.1	87.9		30.2				
Change Period (Y+Rc), s	6.8	6.8		6.8	6.8	6.8		6.8				
Max Green Setting (Gmax), s	21.2	65.0		23.4	5.2	81.0		23.4				
Max Q Clear Time (g_c+I1), s	19.6	60.3		24.6	3.0	37.3		25.3				
Green Ext Time (p_c), s	0.3	4.2		0.0	0.0	24.5		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay	41.0											
HCM 6th LOS	D											

# Synchro Analysis - Santa Barbara Blvd/Logan Blvd at Green Blvd - 2025 PM Peak Dual Southbound Left-Turn and One Lane Northbound Right-Turn

## Timings

3: Sta. Barbara Blvd. & Green Blvd.

06/30/2020

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	13	7	211	3	28	1195	323	577	1398
Future Volume (vph)	13	7	211	3	28	1195	323	577	1398
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	pm+pt	NA
Protected Phases		4		8	5	2		1	6
Permitted Phases	4		8		2		2	6	
Detector Phase	4	4	8	8	5	2	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	16.0	16.0	5.0	16.0
Minimum Split (s)	24.8	24.8	24.8	24.8	11.8	24.8	24.8	11.8	24.8
Total Split (s)	30.0	30.0	30.0	30.0	11.8	60.0	60.0	40.0	88.2
Total Split (%)	23.1%	23.1%	23.1%	23.1%	9.1%	46.2%	46.2%	30.8%	67.8%
Yellow Time (s)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
Lead/Lag					Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Min	Min	None	Min
Act Effect Green (s)	22.6	22.6	22.6	22.6	58.6	53.6	53.6	81.9	75.2
Actuated g/C Ratio	0.19	0.19	0.19	0.19	0.50	0.45	0.45	0.69	0.64
v/c Ratio	0.12	0.09	0.87	0.52	0.16	0.81	0.41	0.81	0.69
Control Delay	46.5	21.7	79.7	9.5	11.4	33.5	7.3	37.7	16.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.5	21.7	79.7	9.5	11.4	33.5	7.3	37.7	16.7
LOS	D	C	E	A	B	C	A	D	B
Approach Delay		29.4		42.0		27.7			22.8
Approach LOS		C		D		C			C

## Intersection Summary

Cycle Length: 130

Actuated Cycle Length: 118.2

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 26.9

Intersection LOS: C

Intersection Capacity Utilization 84.9%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 3: Sta. Barbara Blvd. & Green Blvd.



























# HCM 6th Signalized Intersection Summary

## 3: Sta. Barbara Blvd. & Green Blvd.

06/30/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	7	21	211	3	241	28	1195	323	577	1398	31
Future Volume (veh/h)	13	7	21	211	3	241	28	1195	323	577	1398	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	14	8	23	229	3	262	30	1299	351	627	1520	34
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	116	86	248	326	4	318	204	1645	734	714	2046	46
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.03	0.46	0.46	0.14	0.58	0.58
Sat Flow, veh/h	1114	426	1224	1378	18	1570	1781	3554	1585	3456	3554	79
Grp Volume(v), veh/h	14	0	31	229	0	265	30	1299	351	627	759	795
Grp Sat Flow(s),veh/h/ln	1114	0	1650	1378	0	1588	1781	1777	1585	1728	1777	1856
Q Serve(g_s), s	1.3	0.0	1.6	17.0	0.0	16.8	0.9	32.6	16.1	11.6	33.3	33.4
Cycle Q Clear(g_c), s	18.1	0.0	1.6	18.6	0.0	16.8	0.9	32.6	16.1	11.6	33.3	33.4
Prop In Lane	1.00		0.74	1.00		0.99	1.00		1.00	1.00		0.04
Lane Grp Cap(c), veh/h	116	0	334	326	0	321	204	1645	734	714	1023	1069
V/C Ratio(X)	0.12	0.00	0.09	0.70	0.00	0.82	0.15	0.79	0.48	0.88	0.74	0.74
Avail Cap(c_a), veh/h	136	0	364	351	0	350	239	1797	802	1318	1375	1436
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.8	0.0	34.1	41.7	0.0	40.2	16.3	23.9	19.5	26.2	16.5	16.5
Incr Delay (d2), s/veh	0.5	0.0	0.1	5.6	0.0	13.8	0.1	2.5	0.7	1.4	1.9	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.7	6.2	0.0	7.7	0.4	13.7	5.9	7.9	13.1	13.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.3	0.0	34.2	47.3	0.0	54.0	16.4	26.4	20.2	27.6	18.4	18.4
LnGrp LOS	D	A	C	D	A	D	B	C	C	C	B	B
Approach Vol, veh/h	45			494			1680			2181		
Approach Delay, s/veh	38.9			50.9			24.9			21.0		
Approach LOS	D			D			C			C		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	21.6	55.5		28.1	9.7	67.4		28.1				
Change Period (Y+Rc), s	6.8	6.8		6.8	6.8	6.8		6.8				
Max Green Setting (Gmax), s	33.2	53.2		23.2	5.0	81.4		23.2				
Max Q Clear Time (g_c+I1), s	13.6	34.6		20.1	2.9	35.4		20.6				
Green Ext Time (p_c), s	1.2	13.4		0.0	0.0	25.2		0.7				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				26.1								
HCM 6th LOS				C								

Cap X Analysis - Airport-Pulling Rd at Pine Ridge Rd - 2020 AM Peak

TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
Quadrant Roadway S-W	0.60	1	4.4	Fair	Fair	Fair
Median U-Turn E-W	0.69	2	6.3	Good	Good	Fair
Traffic Signal	0.70	3	4.8	Fair	Fair	Good
Partial Median U-Turn E-W	0.80	4	6.3	Good	Good	Fair
Signalized Restricted Crossing U-Turn E-W	0.99	5	6.3	Good	Good	Fair
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Cap X Analysis - Airport-Pulling Rd at Pine Ridge Rd - 2025 AM Peak

TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
Quadrant Roadway S-W	0.66	1	4.4	Fair	Fair	Fair
Median U-Turn E-W	0.76	2	6.3	Good	Good	Fair
Traffic Signal	0.78	3	4.8	Fair	Fair	Good
Partial Median U-Turn E-W	0.88	4	6.3	Good	Good	Fair
Signalized Restricted Crossing U-Turn E-W	1.09	5	6.3	Good	Good	Fair
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Cap X Analysis - Airport-Pulling Rd at Pine Ridge Rd - 2020 PM Peak

TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
Quadrant Roadway S-W	0.91	1	4.4	Fair	Fair	Fair
Median U-Turn E-W	0.99	2	6.3	Good	Good	Fair
Traffic Signal	1.06	3	4.8	Fair	Fair	Good
Partial Median U-Turn E-W	1.12	4	6.3	Good	Good	Fair
Signalized Restricted Crossing U-Turn E-W	1.48	5	6.3	Good	Good	Fair
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Cap X Analysis - Airport-Pulling Rd at Pine Ridge Rd - 2025 PM Peak

TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
Quadrant Roadway S-W	1.01	1	4.4	Fair	Fair	Fair
Median U-Turn E-W	1.09	2	6.3	Good	Good	Fair
Traffic Signal	1.17	3	4.8	Fair	Fair	Good
Partial Median U-Turn E-W	1.24	4	6.3	Good	Good	Fair
Signalized Restricted Crossing U-Turn E-W	1.63	5	6.3	Good	Good	Fair
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Cap X Analysis - Golden Gate Pkwy at Livingstone Rd - 2020 AM Peak

TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
Partial Displaced Left Turn E-W	0.93	1	4.8	Fair	Fair	Good
Signalized Restricted Crossing U-Turn E-W	1.12	2	6.3	Good	Good	Fair
Traffic Signal	1.17	3	4.8	Fair	Fair	Good
Partial Median U-Turn E-W	1.19	4	6.3	Good	Good	Fair
Median U-Turn E-W	1.20	5	6.3	Good	Good	Fair
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Cap X Analysis - Golden Gate Pkwy at Livingstone Rd - 2025 AM Peak

TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
Displaced Left Turn	0.98	1	4.8	Fair	Fair	Good
Partial Displaced Left Turn E-W	1.20	2	4.8	Fair	Fair	Good
Signalized Restricted Crossing U-Turn E-W	1.42	3	6.3	Good	Good	Fair
Traffic Signal	1.49	4	4.8	Fair	Fair	Good
Median U-Turn E-W	1.51	5	6.3	Good	Good	Fair
Partial Median U-Turn E-W	1.51	5	6.3	Good	Good	Fair
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Cap X Analysis - Golden Gate Pkwy at Livingstone Rd - 2020 PM Peak

TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
Traffic Signal	0.65	1	4.8	Fair	Fair	Good
Partial Displaced Left Turn E-W	0.69	2	4.8	Fair	Fair	Good
Partial Median U-Turn E-W	0.71	3	6.3	Good	Good	Fair
Median U-Turn E-W	0.83	4	6.3	Good	Good	Fair
Signalized Restricted Crossing U-Turn E-W	1.02	5	6.3	Good	Good	Fair
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Cap X Analysis - Golden Gate Pkwy at Livingstone Rd - 202 PM Peak

TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
Displaced Left Turn	0.71	1	4.8	Fair	Fair	Good
Traffic Signal	0.78	2	4.8	Fair	Fair	Good
Partial Displaced Left Turn E-W	0.84	3	4.8	Fair	Fair	Good
Partial Median U-Turn E-W	0.88	4	6.3	Good	Good	Fair
Median U-Turn E-W	1.02	5	6.3	Good	Good	Fair
Signalized Restricted Crossing U-Turn E-W	1.27	6	6.3	Good	Good	Fair
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Cap X Analysis - Golden Gate Pkwy at Livingstone Rd - Interchange - 2025 ~ M Peak

[illegible]



[illegible]

Cap X Analysis - Golden Gate Pkwy at Santa Barbara Blvd - 2020 AM Peak

TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
Partial Displaced Left Turn E-W	0.58	1	4.8	Fair	Fair	Good
Traffic Signal	0.60	2	4.8	Fair	Fair	Good
Partial Median U-Turn E-W	0.92	3	6.3	Good	Good	Fair
Median U-Turn E-W	1.29	4	6.3	Good	Good	Fair
Signalized Restricted Crossing U-Turn E-W	1.61	5	6.3	Good	Good	Fair
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Cap X Analysis - Golden Gate Pkwy at Santa Barbara Blvd - 2025 AM Peak

TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
Partial Displaced Left Turn E-W	0.66	1	4.8	Fair	Fair	Good
Traffic Signal	0.68	2	4.8	Fair	Fair	Good
Partial Median U-Turn E-W	1.05	3	6.3	Good	Good	Fair
Signalized Restricted Crossing U-Turn E-W	1.07	4	6.3	Good	Good	Fair
Median U-Turn E-W	1.46	5	6.3	Good	Good	Fair
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Cap X Analysis - Golden Gate Pkwy at Santa Barbara Blvd - 2020 PM Peak

TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
Partial Displaced Left Turn E-W	0.47	1	4.8	Fair	Fair	Good
Traffic Signal	0.63	2	4.8	Fair	Fair	Good
Partial Median U-Turn E-W	0.89	3	6.3	Good	Good	Fair
Median U-Turn E-W	1.26	4	6.3	Good	Good	Fair
Signalized Restricted Crossing U-Turn E-W	1.76	5	6.3	Good	Good	Fair
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Cap X Analysis - Golden Gate Pkwy at Santa Barbara Blvd - 2025 PM Peak

TYPE OF INTERSECTION	Overall V/C Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
Partial Displaced Left Turn E-W	0.52	1	4.8	Fair	Fair	Good
Traffic Signal	0.76	2	4.8	Fair	Fair	Good
Partial Median U-Turn E-W	1.03	3	6.3	Good	Good	Fair
Signalized Restricted Crossing U-Turn E-W	1.12	4	6.3	Good	Good	Fair
Median U-Turn E-W	1.52	5	6.3	Good	Good	Fair
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## Appendix F: “Big Data” Analysis



# Collier MPO Transportation System Performance Report and Action Plan



BCC Engineering

04/20/2020

# Biennial Transportation System Performance Report

- The Performance Report will provide a thorough system assessment to identify where priority investments should be made.
- The Performance Report will include an analysis of newly implemented CMS/ITS projects based on the performance measures identified in the CMP as specifically assigned to each funded project.
- The Performance Report will recommend both short- and long-term projects to address congestion.

# BCC Goal and Tasks

## BCC Goal

Incorporate and evaluate Travel Time Reliability for project assessment and prioritization.

## BCC Tasks

### 1. Identify Data Gaps

- a) Evaluate Data Resources and Monitoring Practices
- b) Incorporation of travel time reliability for county arterial and collector roadways using **proper data sources**.

### 2. Develop Action Plans

- a) Identify specific projects or strategies that will help reduce congestion, specifically projects or programs that can be undertaken in the short term for relatively lower costs.
- b) Evaluation of Travel Reliability - **proper data sources**, origin and destination pairs will be used to identify travel times and reliability.
- c) Based on the results of this assessment, recommendations on congested corridors and locations will be identified for development of implementation and intersection geometric recommendations.

### 3. Documentation

- 4. Provide documentation support for the analysis and recommendations resulting from analysis of the reliability performance of the system and evaluation of the **proper data**.

# Travel Time Reliability Measures

- Most measures compare high-delay days to those with an average delay.
- The most effective methods of measuring travel time reliability are
  - **90th or 95th percentile travel times** – perhaps the simplest method; estimates how bad delay will be on specific routes during the heaviest traffic days;
  - **Buffer index** - the additional travel time that is necessary;
  - **Planning time index** - the total travel time that is necessary.

Figure 3. Reliability measures compared to average congestion measures (Source: <http://mobility.tamu.edu/mmp/>)

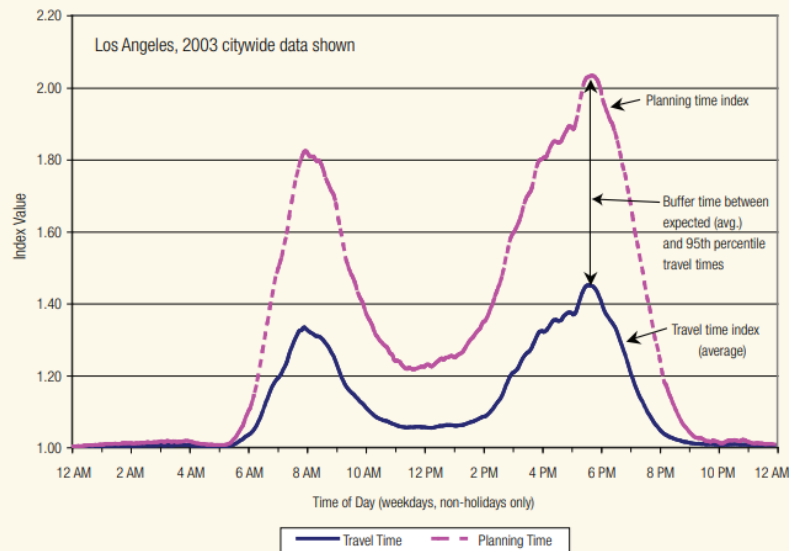


Figure 5. A reliability measure is included in FHWA's Monthly Congestion Dashboard Report

Status: <span style="background-color: #28a745; color: white; padding: 2px;">Green</span> Progress: <span style="background-color: #28a745; color: white; padding: 2px;">Green</span>	NATIONAL CONGESTION INDICATORS								
	Hours of Congested Travel Per Day			Travel Time Index			Planning Time Index		
Current Quarter	4.823			1.284			1.690		
Same Quarter, Previous Year	5.181			1.294			1.707		
Change vs. Previous Year	6.91% <span style="color: green;">↓</span>			0.77% <span style="color: green;">↓</span>			1.00% <span style="color: green;">↓</span>		
National Congestion Pattern	# of Cities DOWN >5%	# of Cities NO CHANGE	# of Cities UP >5%	# of Cities DOWN >5%	# of Cities NO CHANGE	# of Cities UP >5%	# of Cities DOWN >5%	# of Cities NO CHANGE	# of Cities UP >5%
Total Cities: 19	9	4	6	2	17	0	4	13	2

Data source: FHWA Travel Time Reliability Brochure

([https://ops.fhwa.dot.gov/publications/ttr\\_reliability/brochure/ttr\\_brochure.pdf](https://ops.fhwa.dot.gov/publications/ttr_reliability/brochure/ttr_brochure.pdf))



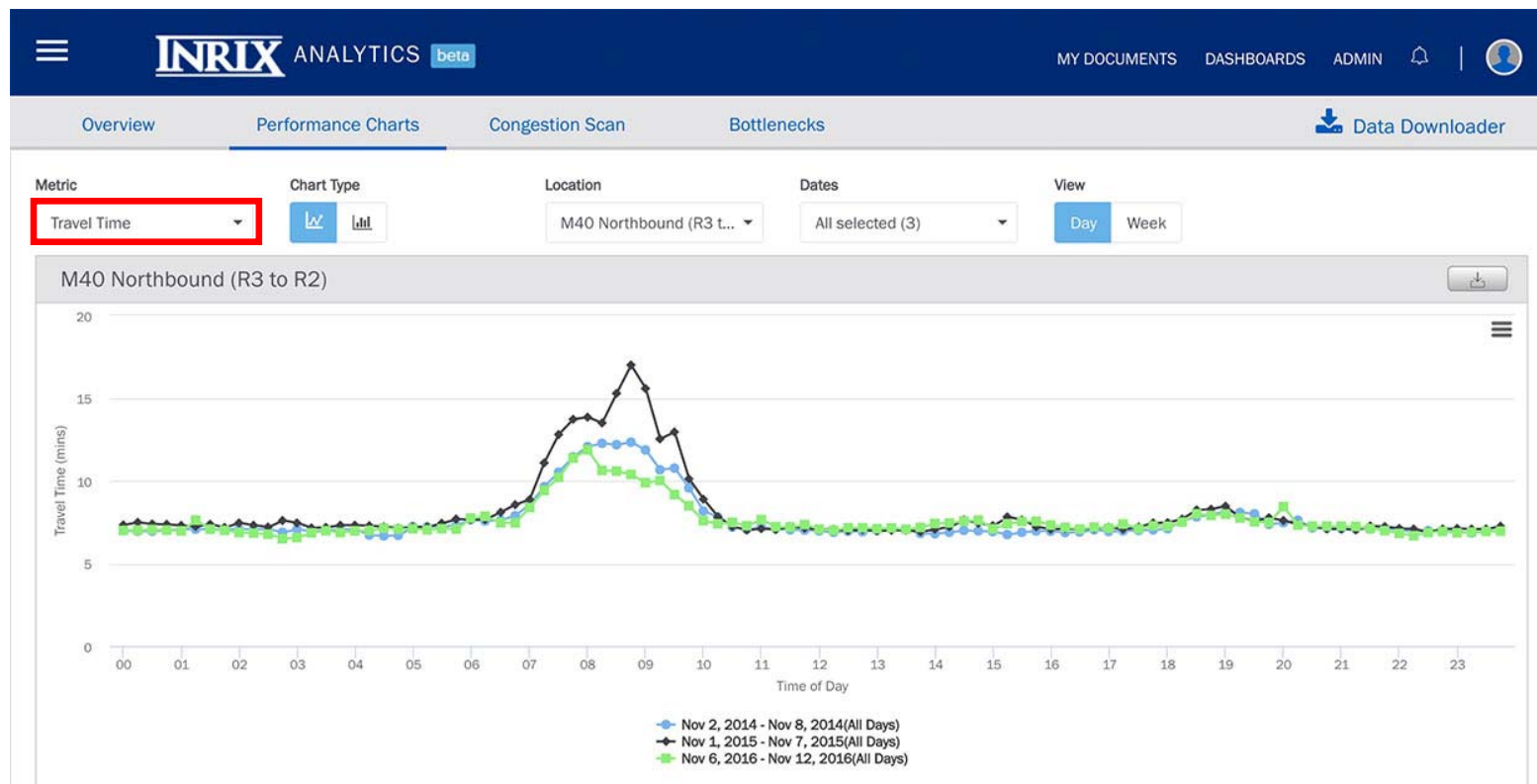
# Potential Data Sources

No.	Data Source	Metrics	Travel Time	Link
1	StreetLight	Traffic Counts / AADT, StreetLight O-D, Select link analysis, Top Routes, Trip Purpose, Demographics, Trip Attributes	Can calculate the reliability and speed of commute time on various routes	<a href="https://www.streetlightdata.com/transportation-metrics/">https://www.streetlightdata.com/transportation-metrics/</a>
2	StreetLytics	Traffic Counts, Volume and Speed, O-D, Routes, Trip Purpose & Mode, Demographics, Trip Attributes	May calculate travel time using distance and speed	<a href="https://www.citilabs.com/software/streetlytics/">https://www.citilabs.com/software/streetlytics/</a>
3	<b>INRIX</b>	Volume, Performance Measures (travel time, buffer time, etc.), O-D, Routes, Mode, Demographics, Trip Attributes	<b>Provide performance measure and travel time reliability related data</b>	<a href="http://inrix.com/products/performance-measures/">http://inrix.com/products/performance-measures/</a>
4	HERE	Real time traveler information, historical travel information	Main have travel time information, but need to contact HERE to verify	<a href="http://here.heresf.acsitefactory.com/products/traffic-solutions/road-traffic-analytics">http://here.heresf.acsitefactory.com/products/traffic-solutions/road-traffic-analytics</a>
5	<b>TomTom</b>	Travel Time Related measurements - for developer	<b>Contains travel time related data</b>	<a href="https://move.tomtom.com/assets/Traffic%20Stats%20Product%20Info%20Sheet.pdf">https://move.tomtom.com/assets/Traffic%20Stats%20Product%20Info%20Sheet.pdf</a>
6	AirSage	Trip Matrix	May not be able to provide	<a href="https://www.airsage.com/solutions/transportation">https://www.airsage.com/solutions/transportation</a>
7	<b>Google Data</b>	Routes, estimated travel times, real-time traffic conditions	<b>May be able to get travel time related data; waiting to receive</b>	<a href="https://cloud.google.com/maps-platform/routes/">https://cloud.google.com/maps-platform/routes/</a>
8	Traffic Counts	Traffic Counts	N/A; waiting to receive	
9	RITIS	Combined data source from HERE, INRIX, NPMRDS, and TomTom	<b>Provide performance measure and travel time reliability related data</b>	<a href="https://www.ritis.org/tools">https://www.ritis.org/tools</a>
10	Teralytics	O-D, Volume, Trip Length, Trip Purpose, Routes, Trip Duration, Trip Frequency	Not able to provide	<a href="https://www.teralytics.net/">https://www.teralytics.net/</a>

Legend  Recommended

# INRIX

- Integrated performance measure and congestion scan application and service
- Available data for Travel Time Reliability evaluation and measurements



Data source: INRIX Website (<http://inrix.com/products/performance-measures/>)

# INRIX



## Region Explorer

An out-of-the box traffic monitoring solutions for understanding system-wide real-time traffic, bottlenecks, incidents and weather conditions along your road network.



## Massive Data Downloader

Complete access to the underlying data for conducting customized analytics beyond those provided within the Performance Measures suite.



## Performance Charts

Generate line and bar graphs for before and after inquiries - including comparison studies - and then easily translate the results into visualizations that communicate your findings.



## Congestion Scan

Designed to pinpoint locations of sub-optimal conditions, Congestion Scan lets you aggregate speed, congestion, travel time, buffer time and other performance data to dynamically study trouble spots.



## Trend Map

This useful tool provides video animation of evolving roadway conditions throughout the course of day, making it easy to share study findings with non-technical audiences.



## Performance Summaries

Consolidated reports of key performance metrics, including buffer time, travel time, and planning time make it easy to quickly assess and quantify the performance of your network.



## Bottleneck Ranking

A tool for identifying the most significant bottleneck locations along your roadways so you can prioritize capital investments and projects.



## User Delay Cost Analysis

Developed in partnership with the Texas A&M Transportation Institute (TTI), this tool estimates the time cost of delay caused by congestion.



## Dashboard

A customizable space that provides at-a-glance speed, travel time and bottleneck information for locations frequently monitored.

Data source: INRIX Website (<http://inrix.com/products/performance-measures/>)

StreetLight InSight

# StreetLight InSight

StreetLight InSight users can access customized analytics like origin-destination, select link, travel time, routing, and more in just a few mouse clicks –without downloading any software.

## StreetLight Insight Features

- The Best Big Data Sources
- On-Demand Processing Software
- Actionable Analytics

## Key processing steps include:

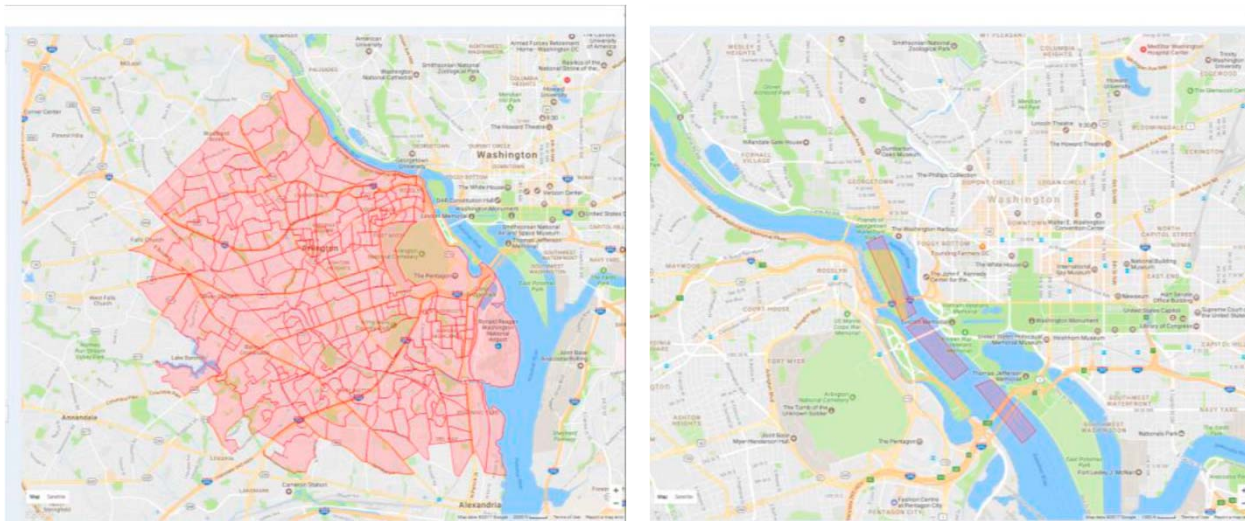
- **Anonymization**: All data is anonymous. All Metrics describe groups, never individuals, to protect privacy.
- **Data Cleaning**: False signals from inbound data are removed.
- **Patternization**: Data is organized into trips and series of activities, including the identification of trip origins and destinations, and the route taken along the road network.
- **Contextualization**: Information like speed limits, road network presence, and census data adds rich, critical insights to Metrics.
- **Metric Creation**: Users specify queries (i.e.: geographic regions, or Zones, time parameters, and more), then StreetLight InSight quickly delivers Metrics as CSVs and visualizations as described below.



# Using *StreetLight InSight*

## *Step 1: Create Zones*

Users can designate “Zones” in *StreetLight InSight* in two ways: By uploading a standard shapefile, or by drawing Zones in our interactive “Add Zone Set” module (see figure below). Zones can be any standard geography (e.g. ZIP postal codes, neighborhood boundaries) or they can be unique, customized shapes.



Above: *StreetLight InSight* screenshots of area Zones and road segment Zones

# Using *StreetLight InSight*

## Step 2: Define a Project

After uploading or drawing Zones in *StreetLight InSight*, users create their projects. This step includes defining Zones as origins or destinations, and setting key parameters such as time periods to study, day part definitions, trip types, and other specifications (see figures below).

The screenshot displays the 'Create Project' interface in StreetLight InSight, divided into two main sections: 'Project Setup' and 'Standard Options'.

**Project Setup:**

- O-D from Washington, DC to northern Virginia:** A text input field for the origin-destination pair.
- Project Description:** A large text area for additional project details.
- Origin:** A dropdown menu with 'Demo - Sample' selected.
- Destination:** A dropdown menu with 'Navigation-GPS' selected.
- O-D Analysis:** A dropdown menu with 'Premium Add On Mexico' selected.
- Preview:** A button to preview the project setup.
- Confirm:** A button to confirm the project setup.
- Available Zone Sets:** A list of zone sets including 'ISS', 'Port of Oakland Mobile Piers (Select Links)', 'California Counties - Demo', 'Port of Oakland - Demo2', 'External Gates into Toronto', 'Neighborhoods in Toronto', 'Charlotte MPO Census Tracts 2', 'Arlington External Gates', 'Waterfront Washington Convention Center', 'Arlington Brook Groups - Destination', 'Washington DC Downtown - Origin', 'Charlotte', 'El Paso NE Corridor Destination', 'El Paso NE Corridor Origin', 'Regional Routes to Port of Oakland', 'Counties in CA', and 'Port of Oakland'.
- Selected Origin Zone Set(s):** A list containing 'Washington DC Downtown - Origin'.
- Selected Destination Zone Set(s):** A list containing 'Arlington Brook Groups - Destination'.
- Selected Trip Filter Zone Set(s):** A list containing 'Arlington External Gates'.
- Selected Calibration Zone Set(s) (BETA):** A list containing 'Arlington External Gates'.
- Project Options:** A section with 'Standard' and 'Premium' tabs. The 'Standard' tab is active, showing 'Data Period' (All Day), 'Day Types' (Average Day: M-Fu, Average Weekend: M-Fu, Average Weekend Day: Sa-Su), and 'Day Parts' (All Day: 12am - 12am, Early AM: 12am - 6am, Peak AM: 6am - 10am, Mid-Day: 10am - 3pm, Peak PM: 3pm - 7pm, Late PM: 7pm - 12am).

**Standard Options:**

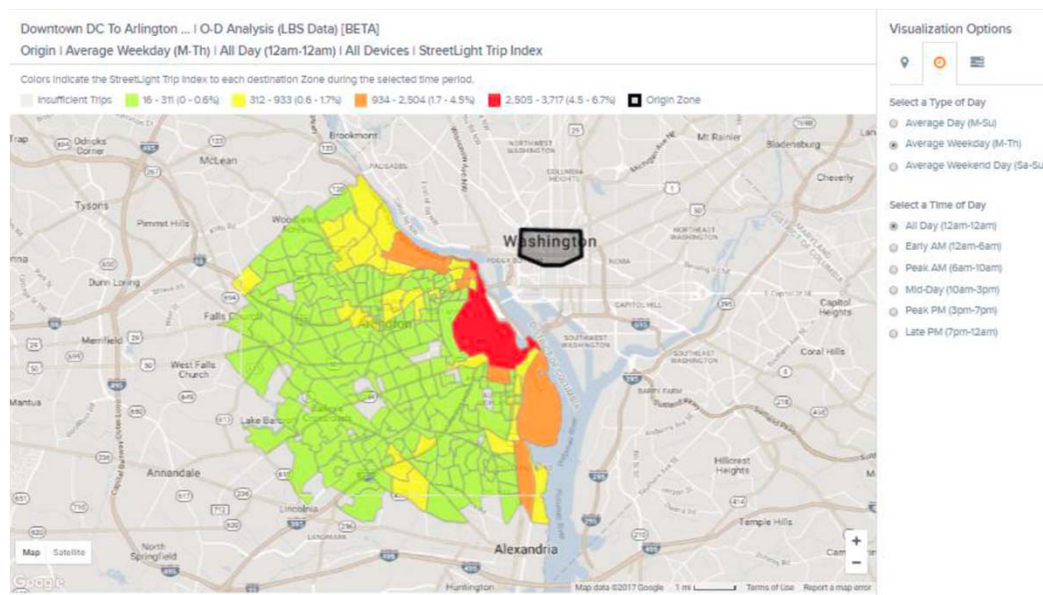
- Day Periods:** A tab for selecting the time period to study.
- Day Types:** A tab for selecting the day types to study.
- Day Parts:** A tab for selecting the day parts to study. The 'Set to Default' button is active. The 'Day Part Name' column lists 'Early AM', 'Peak AM', 'Mid-Day', 'Peak PM', 'Late PM', and 'Sharp Peak AM'. The 'Start Time' and 'End Time' columns show the corresponding time ranges. The 'Sharp Peak AM' row is highlighted, showing a start time of 7am and an end time of 9am.
- Other Options:** A tab for selecting other options.
- Add New Day Part:** A button to add a new day part.
- Save:** A button to save the project setup.
- Cancel:** A button to cancel the project setup.

Above: Setting up an Origin-Destination analysis and customizing day parts in StreetLight InSight

# Using *StreetLight InSight*

## Step 3: Visualize Maps and Charts of the Results

Users can visualize travel patterns within *StreetLight InSight* (see figure below). There are simple toggles so that travel patterns can be visualized as maps or as charts at specific day parts, times of day, and more.



Above: Visualizing Origin-Destination patterns at different times and types of day in StreetLight InSight

# Using StreetLight InSight

## Step 4: Download Results

All StreetLight InSight Metrics can be downloaded for further analysis and manipulation in Microsoft Excel or other analysis tools (see figure below).

Project: Arlington In/Out | Tag: Demo / Sample | Type: O-D Analysis (GPS Data)

**Choose Components**

- ☒ O-D Metrics CSVs
- ☒ Total Zone Metrics CSVs
- ☒ Zone Sets Shapefiles

For Metrics, choose results to download

**Device Types**

- ☒ Personal
- ☒ Commercial

**Day Types**

- ☒ Average Day (M-Su)
- ☒ Average Weekday (M-F)
- ☒ Average Weekend Day (Sa-Su)

**Day Parts**

- ☒ All-Day Only
- ☒ Other Day Parts

[Download](#) [Cancel](#)

Arlington\_In\_Out\_1284\_od\_personal (Read-Only) - Excel

Device Type	Origin Zone Name	Destination Zone Name	Day Type	Day Part	O-D Traffic (Std Index)	Origin Zone Traffic (Std Index)	Destination Zone Traffic (Std Index)	Avg Trip Duration (sec)
Personal	Arlington Memorial Bridge	Walton E Washington Conv0	Average Day (M-Su)	0: All Day (12am-12am)	10	365419	17424	1377
Personal	Arlington Memorial Bridge	Walton E Washington Conv0	Average Day (M-Su)	3: Mid-Day (10am-3pm)	1	39284	3768	1147
Personal	Arlington Memorial Bridge	Walton E Washington Conv0	Average Day (M-Su)	4: Peak PM (3pm-7pm)	7	47887	5617	1400
Personal	Arlington Memorial Bridge	Walton E Washington Conv0	Average Day (M-Su)	5: Late PM (7pm-12am)	2	23311	2622	1396
Personal	Arlington Memorial Bridge	Walton E Washington Conv1	Average Weekday (M-F)	0: All Day (12am-12am)	13	185636	20120	1374
Personal	Arlington Memorial Bridge	Walton E Washington Conv1	Average Weekday (M-F)	3: Mid-Day (10am-3pm)	1	40838	3580	1147
Personal	Arlington Memorial Bridge	Walton E Washington Conv1	Average Weekday (M-F)	4: Peak PM (3pm-7pm)	10	54976	5988	1400
Personal	Arlington Memorial Bridge	Walton E Washington Conv1	Average Weekday (M-F)	5: Late PM (7pm-12am)	1	25254	3293	1385
Personal	Arlington Memorial Bridge	Walton E Washington Conv2	Average Weekend Day (Sa-Su)	0: All Day (12am-12am)	3	101207	10777	1408
Personal	Arlington Memorial Bridge	Walton E Washington Conv2	Average Weekend Day (Sa-Su)	5: Late PM (7pm-12am)	3	18521	965	1408
Personal	Arlington Memorial Bridge	Walton E Washington Conv0	Average Day (M-Su)	0: All Day (12am-12am)	4	161419	3416	1639
Personal	Arlington Memorial Bridge	Walton E Washington Conv0	Average Day (M-Su)	3: Mid-Day (10am-3pm)	1	39284	953	1262
Personal	Arlington Memorial Bridge	Walton E Washington Conv0	Average Day (M-Su)	4: Peak PM (3pm-7pm)	1	47887	1468	1559
Personal	Arlington Memorial Bridge	Walton E Washington Conv0	Average Day (M-Su)	5: Late PM (7pm-12am)	2	23311	558	1367
Personal	Arlington Memorial Bridge	Walton E Washington Conv1	Average Weekday (M-F)	0: All Day (12am-12am)	5	185636	3365	1639
Personal	Arlington Memorial Bridge	Walton E Washington Conv1	Average Weekday (M-F)	3: Mid-Day (10am-3pm)	1	40838	753	1262
Personal	Arlington Memorial Bridge	Walton E Washington Conv1	Average Weekday (M-F)	4: Peak PM (3pm-7pm)	1	54976	1572	1559
Personal	Arlington Memorial Bridge	Walton E Washington Conv1	Average Weekday (M-F)	5: Late PM (7pm-12am)	3	25254	599	1867
Personal	Arlington Memorial Bridge	Walton E Washington Conv0	Average Day (M-Su)	0: All Day (12am-12am)	30	161419	3612	1106
Personal	Arlington Memorial Bridge	Walton E Washington Conv0	Average Day (M-Su)	4: Peak PM (3pm-7pm)	22	47887	1396	1152
Personal	Arlington Memorial Bridge	Walton E Washington Conv0	Average Day (M-Su)	5: Late PM (7pm-12am)	7	23311	688	968
Personal	Arlington Memorial Bridge	Walton E Washington Conv1	Average Weekday (M-F)	0: All Day (12am-12am)	40	185636	3781	1110
Personal	Arlington Memorial Bridge	Walton E Washington Conv1	Average Weekday (M-F)	4: Peak PM (3pm-7pm)	30	54976	1579	1160
Personal	Arlington Memorial Bridge	Walton E Washington Conv1	Average Weekday (M-F)	5: Late PM (7pm-12am)	10	25254	767	968
Personal	Arlington Memorial Bridge	Walton E Washington Conv2	Average Weekend Day (Sa-Su)	0: All Day (12am-12am)	3	101207	3196	961
Personal	Arlington Memorial Bridge	Walton E Washington Conv2	Average Weekend Day (Sa-Su)	4: Peak PM (3pm-7pm)	3	30407	948	961
Personal	Arlington Memorial Bridge	Walton E Washington Conv0	Average Day (M-Su)	0: All Day (12am-12am)	6	365419	4671	1301
Personal	Arlington Memorial Bridge	Walton E Washington Conv0	Average Day (M-Su)	3: Mid-Day (10am-3pm)	1	39284	1397	2188
Personal	Arlington Memorial Bridge	Walton E Washington Conv0	Average Day (M-Su)	4: Peak PM (3pm-7pm)	5	47887	1803	1161
Personal	Arlington Memorial Bridge	Walton E Washington Conv0	Average Day (M-Su)	5: Late PM (7pm-12am)	1	23311	821	1116
Personal	Arlington Memorial Bridge	Walton E Washington Conv1	Average Weekday (M-F)	0: All Day (12am-12am)	8	185636	4767	1425
Personal	Arlington Memorial Bridge	Walton E Washington Conv1	Average Weekday (M-F)	3: Mid-Day (10am-3pm)	1	40838	1179	2188

Above: Selecting Metrics to download and analyzing O-D Metrics in a CSV file using Microsoft Excel

# INRIX Real-Time Traffic & Roadway Analytics



# INRIX Overview

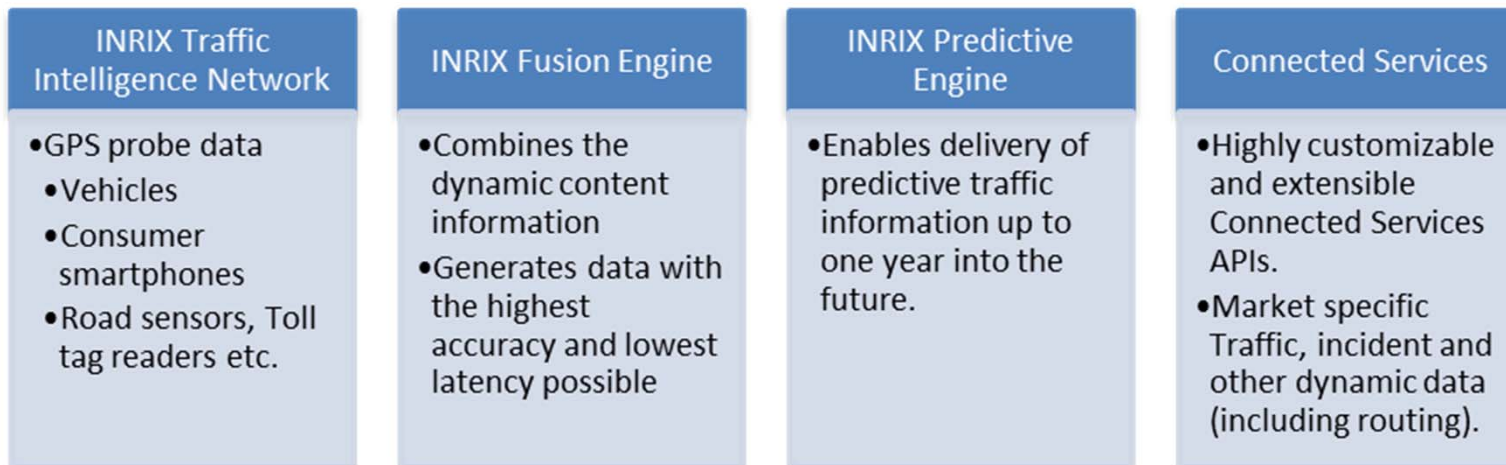
- Founded in 2005
- Leading provider of accurate real-time, near real-time, historical and predictive traffic information.
- Every day, government and business customers use INRIX Data as a Service (DaaS) solutions, which are powered by over 275 million real-time vehicles and devices from hundreds of distinct sources across 50+ countries, to improve the mobility of hundreds of millions of people worldwide.
- INRIX intelligent traffic solutions and services are used by 350+ blue-chip customers worldwide.
  - Leading manufacturers like BMW, Audi, Volkswagen, Daimler, Toyota, Lexus, Ford, Volvo etc.



# INRIX Real-Time Traffic

## *INRIX Processes*

- INRIX's Intelligent Technology Platform (**Traffic Intelligence Network, Fusion Engine, Predictive Engine, and Connected Services**) is a unique approach that evaluates accuracy, coverage, or scalability of the data at each step, as depicted in the diagram below:

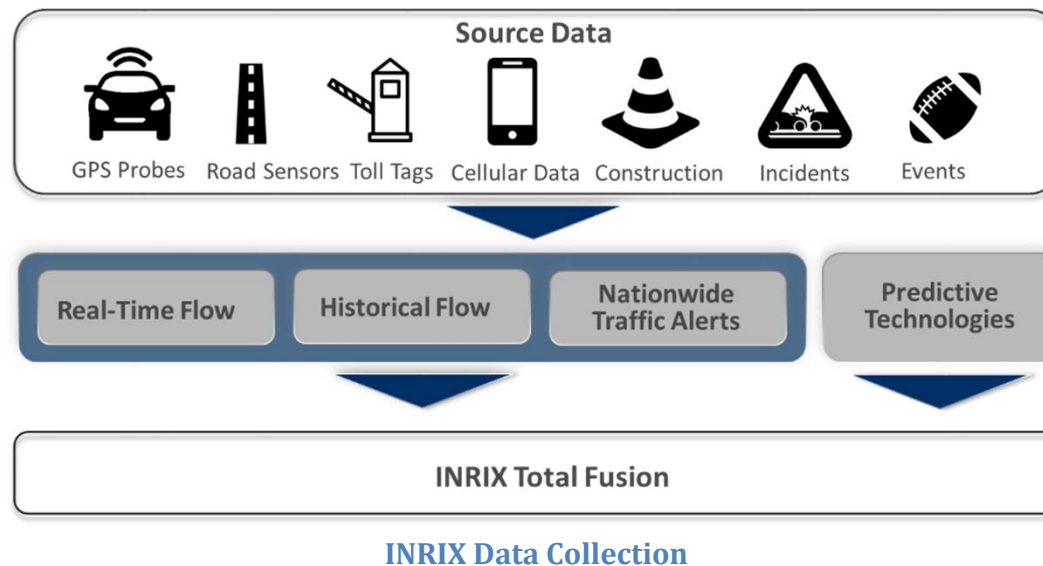


**Intelligent Technology Platform**

# INRIX Real-Time Traffic

## *Data Collection*

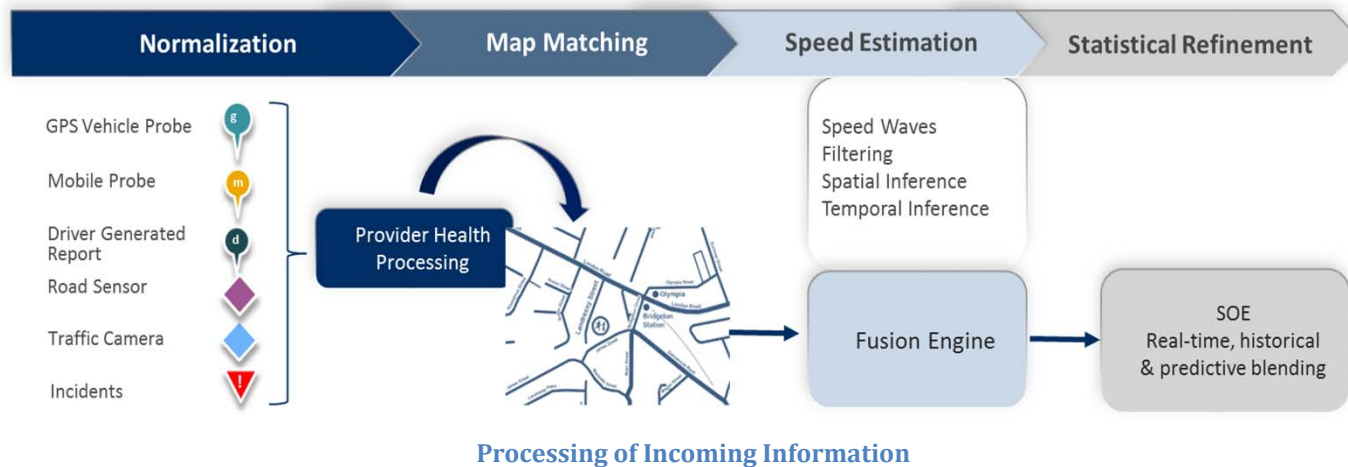
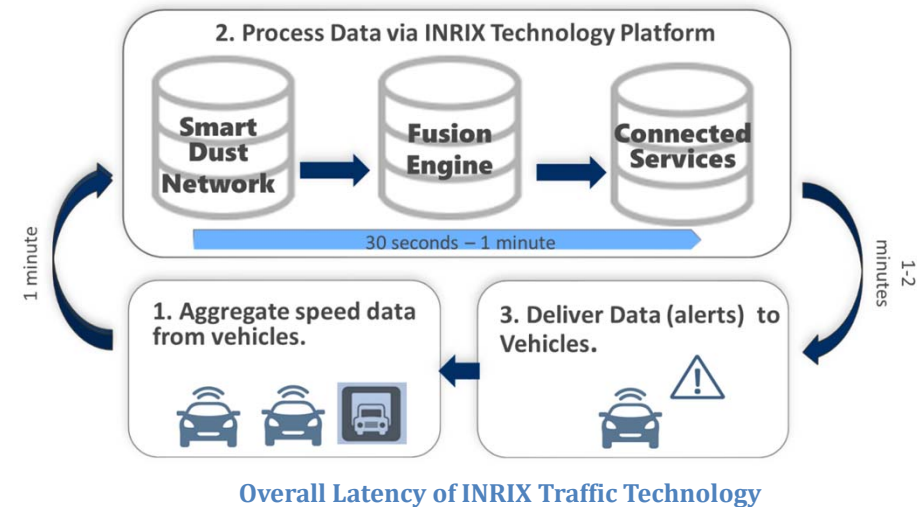
- INRIX is a pioneer of the use of Floating Car Data (FCD) and today has created the single largest, global network of GPS probe data.
- The **INRIX Traffic Intelligence Network** is composed of over 400 distinct sources of probe data from 275+ million real-time vehicles and devices around the world.



# INRIX Real-Time Traffic Data Processing

## INRIX Data Processing Techniques:

- *Geospatial Filtering*
- *Collaborative Filtering and Outlier Detection*
- *Optimization of Spatial Granularity*
- *Statistically Optimized Estimation*
- *Elimination of Low Confidence Data*
- *SpeedWaves™ for Enhanced Granularity*



# INRIX Roadway Analytics

## Key Functionality

- Map-base selection tools designed to easily identify a variety of study locations.
  - Intuitive corridor and zone selection modules enabling use cases including single corridor to region-wide analyses.
- Supports multi-date, multi-time and multi-location selection to enable comparison studies.
- Enhanced workflow enables individual to share study location files, visualization and zone files with others managing analysis.

## Data Source and Coverage

- XD-based roadway segmentation and coverage
- XD-based visualization and analysis
- Data granularity defined by user in 1-, 5-, 15-, or 60-minute increments

## Data Storage and Access Features

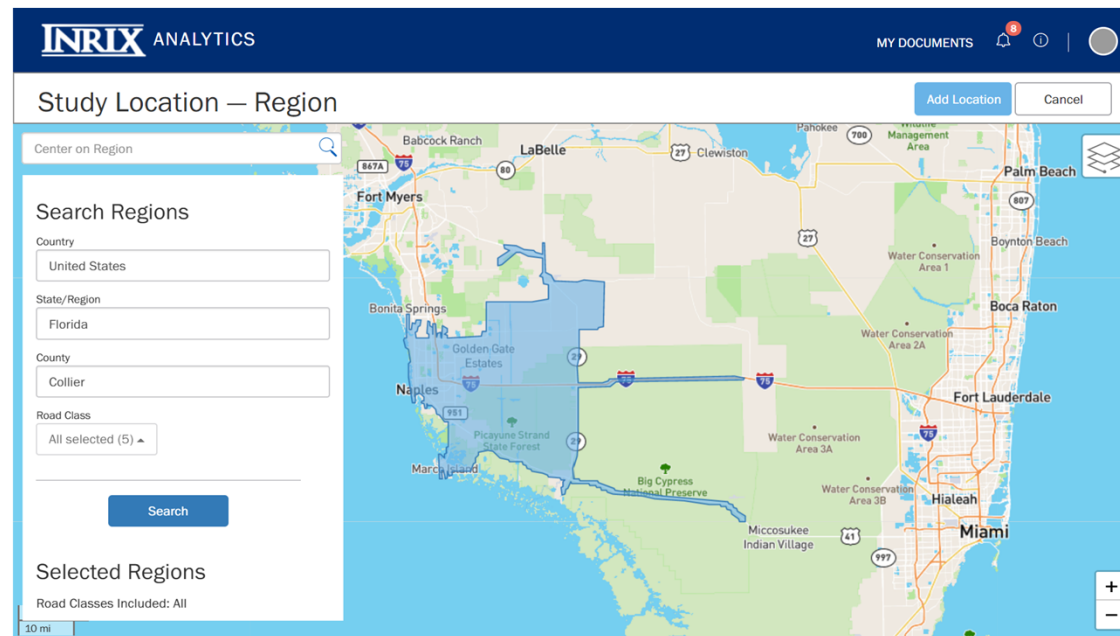
- All data and data artifacts of Roadway Analytics housed in a cloud-based storage solution
- As a cloud-based SAAS, Roadway Analytics is accessible anywhere with internet access
- Supports a multitude of simultaneous users through unique individual accounts



# INRIX Roadway Analytics

## *Key Features - Tools*

- **Congestion Scan** is an analytics and visualization tool that enable users to pinpoint where traffic conditions are suboptimal along a corridor. It provides segment by segment visibility of the roadway condition along the length of a corridor.
- **Performance Charts** and summaries is an analytics and visualization tool that plots, tabulates and summarizes data as a line or bar chart. It enables trending analyses and comparison studies.
- **Bottleneck Ranking** is an on-demand bottleneck reporting tool that identifies, tabulates and visualizes bottlenecks or congested corridors for a specific analysis period within an area. Bottlenecks are ranked by considering the number of occurrences, length and duration.



# INRIX Roadway Analytics

## *Congestion Scan*

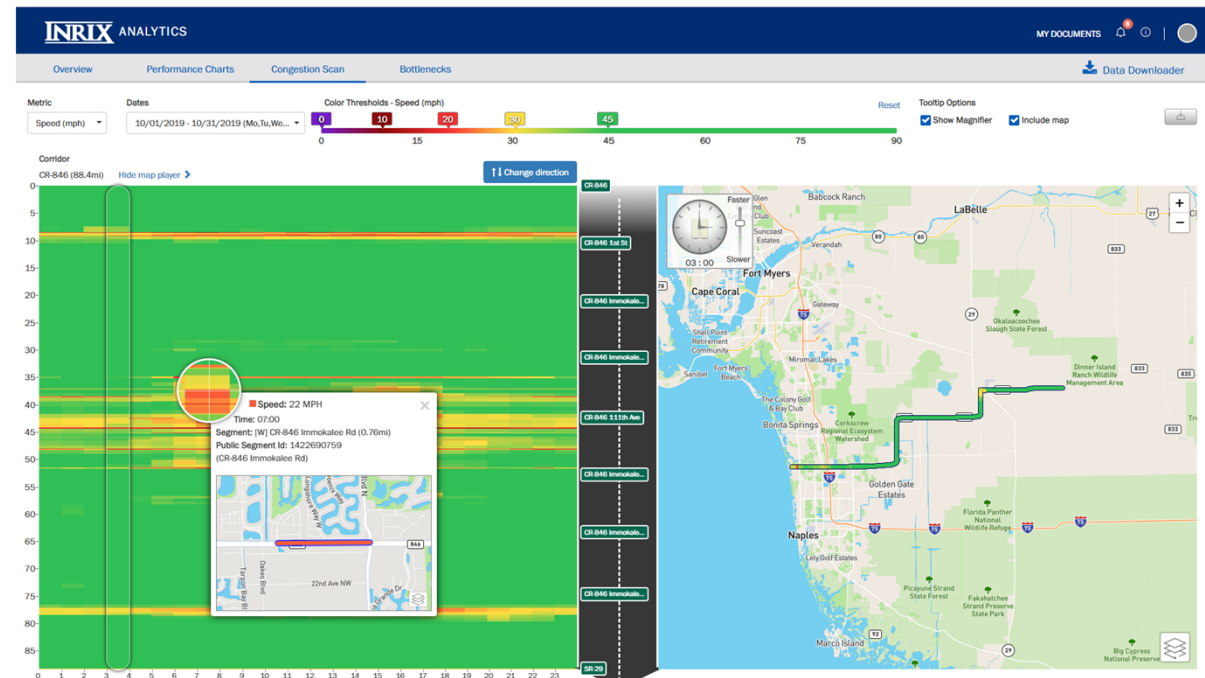
The Congestion Scan enables user to aggregate data in 1-, 5-, 10-, 15-, 30-, and 60-minute bins to for any corridor or set of contiguous roadways to represent speed, congestion, travel time, buffer time and other performance metrics. As the tool correlates temporal and spatial information, it is particularly suited for planning or assessment efforts that require pinpointing locations of sub-optimal conditions. Users can use speed and color sliders to dynamically enhance their visibility into trouble spots while the metric dropdown enable user to view a variety of performance metrics.

### Key features

- Pinpoint areas that are underperforming
- Visualize both time and roadway location impacted
- Supports up to 7 different dates
- Exportable images
- Multiple chart types
- Map Player for easy location referencing of conditions for any time period

### Metric include

- Speed
- Historic average speed
- **Travel time**
- **Travel time index**
- **Buffer time**
- **Buffer time index**
- **Planning time**
- **Planning time index**



Example of Congestion Scan for CR-846

# INRIX Roadway Analytics

## *Performance Charts*

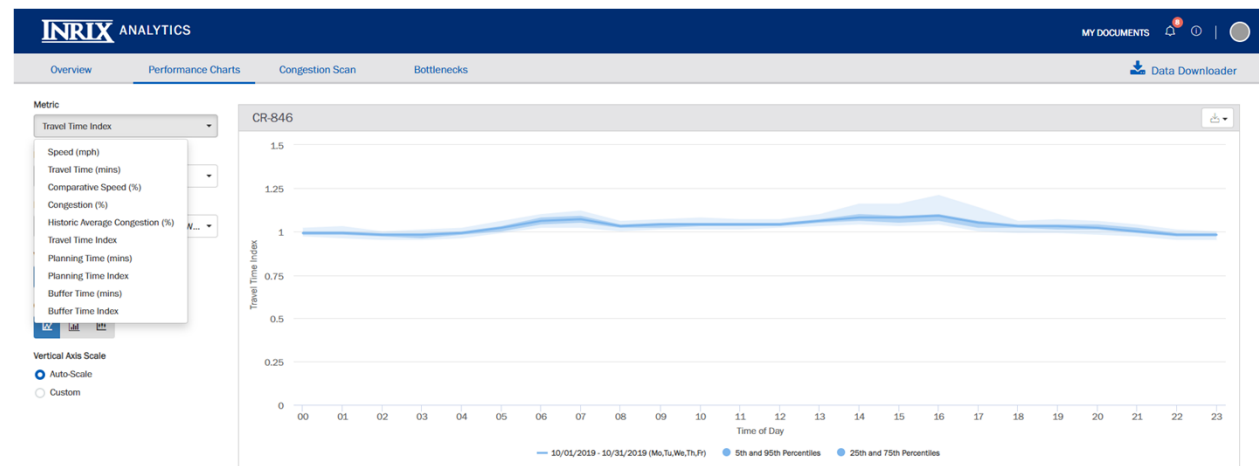
The Performance Charts enable the visualization of data in a graphical layout that is particularly suited for decoding trends, day-by-day or year-over-year. Transportation professional responsible for decipher and leveraging trends to plan the smart cities of tomorrow will turn to this tool for on-demand analytics and a familiar set of visualization readily understood by industry professionals. Charts indicate trends and technical analysis through a variety of chart options including, bar, scatter, line and candle stick view. Fully customizable line colors and selectable metrics enable users to easily compare up to seven analysis periods.

### Key features

- Enables comparison, before & after studies
- Supports up to 7 different dates
- Exportable images
- Multiple chart types

### Metric include

- Speed
- Historic average speed
- **Travel time**
- **Travel time index**
- **Buffer time**
- **Buffer time index**
- **Planning time**
- **Planning time index**



Example of Performance Chart for CR-846

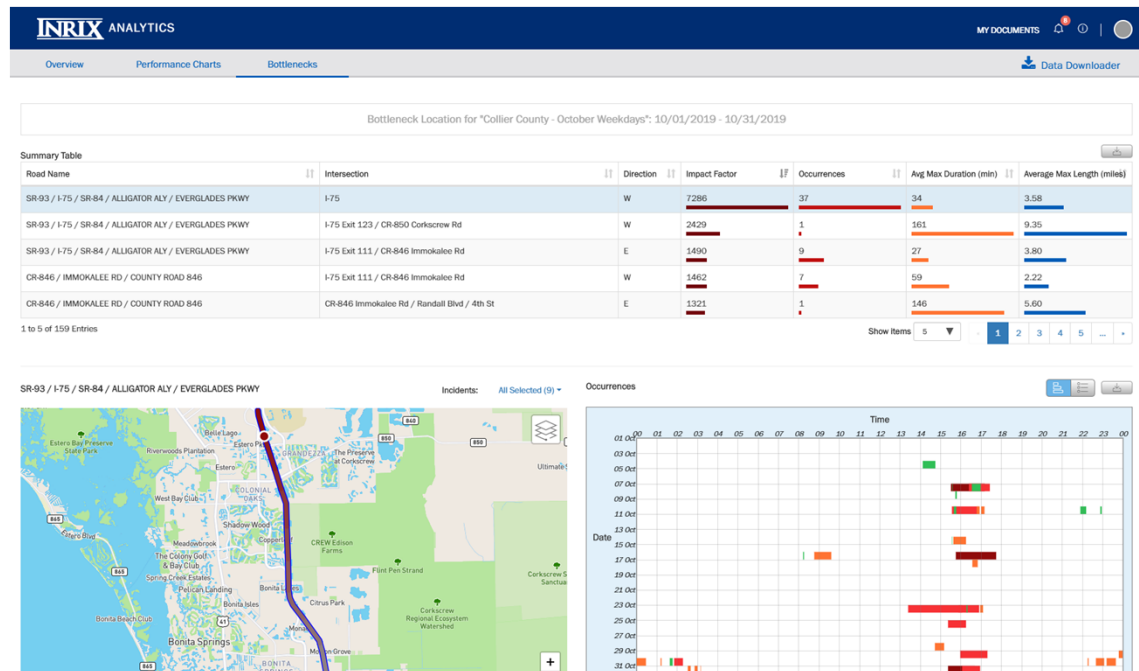
# INRIX Roadway Analytics

## *Bottleneck Ranking*

The Bottleneck Ranking tool is particularly well suited to identify chronically congested locations. By specifying the date range and geographical breadth, users custom query an archive of bottleneck and their associated attributes including bottleneck locations, average duration, average length and the number of occurrences. By considering the impact factor, or the magnitude of the bottleneck attributes, the tool identifies the most impactful bottleneck locations. Those required to report on recurring congestion or that need to identify and prioritize the investment of capital investment turn to this tool for actionable insight. Note, initial dataset for historical bottlenecks is from 2016 and forward.

### Key features

- An archive of bottleneck locations
- Identifies location of recurrent congestion
- Quantifies bottleneck attributes
- Identifies most congested locations
- Enables prioritization of deficiencies



Example of Bottleneck Ranking Tool

# INRIX Summary of Fees

- This is a summary of the fee options for access to the INRIX Roadway Analytics tool that will include data for Collier County. The pricing is for BCC Engineering to have access of the tool and provide study results to the County.

Description	1 Month	3 Months	6 Months	12 Months
Roadway Analytics	NA	\$12,000	\$19,800	\$30,000
Additional Data	\$3,000	\$7,200	\$12,000	\$18,000

Note:

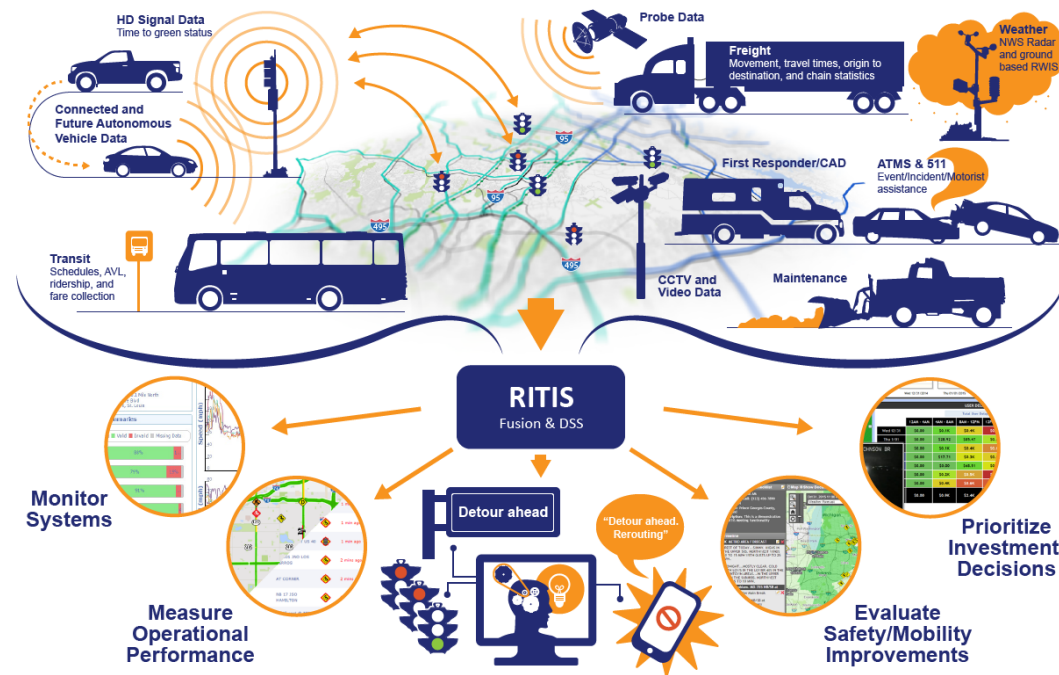
- Annual (12 months) subscription includes access to the data of 1 year before and 1 year after the requested date
- 6 months subscription includes access to the data 6 months before and 6 months after the requested date
- 3 months subscription includes access to the data 3 months before and 3 months after the requested date



# RITIS Overview

# RITIS – Introduction

- Situational awareness, data archiving, and analytics platform.
- A broad portfolio of analytical tools and features with data from transportation and public safety systems, the private sector, and military.



Above: RITIS Data Source

Data source: RITIS Website (<https://www.ritis.org/intro>)

# RITIS – Introduction

- RITIS Data Types Example:

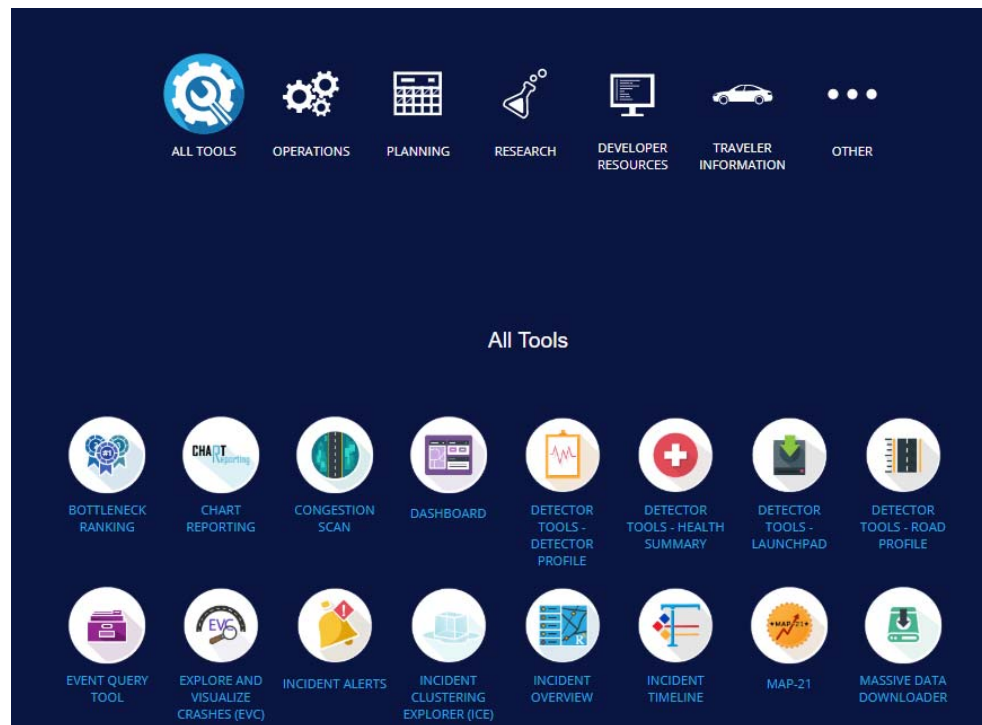
Data Types	Description
Traffic volume, speed, class, and occupancy from sensors (loops, RTMS, Video detection, Sensys pucks, etc.)	<p>Information collected by agencies and third parties from roadway sensors that could include inductive loops, side-fired sensors (acoustic, microwave, etc.), radar, and video.</p> <p>This also includes data from probe-based systems—either agency-owned (Bluetooth) or third-party supplied (HERE Technologies, INRIX, TomTom.)</p>
Travel time	Often a derivative of speed data, travel time data represent the number of minutes it takes a person to travel from one location to another. Travel times are often divided into road segments where the start and end point of the segments are intersections or key features such as bridges or tunnels. Vehicle travel time data can be derived from point sensor speed data. It also can be directly measured by probes, such as license plate recognition, toll tag transponders, Global Positioning Systems, and cell phone tracking. Alternatively, it can be estimated and predicted from other data sources.
Freight movements	Mixture of data related to the origin-destination (O-D) of various shipments or types of shipments, statistics on the type of goods being shipped, the mode by which the goods are shipped, value of the goods, quantity of goods, type of shipping container, and safety records.

Above: *RITIS Data Type*

Data source: RITIS Website (<https://www.ritis.org/intro>)

# RITIS – Overlook of Tools

- RITIS has 40 tools supporting tasks related to operations, planning, research, developer resources, traveler information, and others.



Data source: RITIS Website (<https://www.ritis.org/tools>)

# RITIS – Access

- Organizations are eligible for access to RITIS by means of sponsorship plans funded on their behalf by USDOT, a state DOT, or a local MPO. RITIS access is typically granted to government agencies (including Federal, state and local DOTs, MPOs, law enforcement, public safety, military, etc.) or consultants and researchers who are working on projects for a government partner.
- While some features of RITIS are 100% free, others require funding.



# RITIS – Performance Summaries

- The performance summary is a report on travel time metrics grouped by day of week, weekdays, and weekends. The results can be compiled for every hour of the day or for specific time ranges. The reports are grouped by road direction.

**Performance Summaries**

A performance summary is a report on travel time metrics grouped by day of week, weekdays, and weekends. The results can be compiled for every hour of the day or for specific time ranges. The reports are grouped by road direction. THCs that share the same directionality, regardless of which road they appear on, will be aggregated together in the results.

**1. Select one or more roads.**

Road: Region: List of THC codes: Saved THC Set

INRIX: Search in Pennsylvania... Advanced

Your selected roads: US-1 between I-276/Pennsylvania Tpke and PA-NJ State Border

Directions: ☒ Northbound ☒ Southbound

From: Intersection: I-276/PENNSYLVANIA TPKE To: Intersection: PA-NJ STATE BORDER

26 miles of roadway selected (55 THC codes)

Report a problem with this road... Save as THC set

**2. Select one or more time periods to analyze.**

Month(s): Year: January 2017

☐ Create a single time period for this range  
☐ Create a time period for each month within this range

Duplicate time periods are not allowed Add time period

Your selected time periods: January 2017 Remove all

**3. Data source**

Your results for each data source will be opened in new tabs.

☐ HERE  
☒ INRIX  
☐ NPHRDS (Passenger vehicles)  
☐ NPHRDS (Trucks and passenger vehicles)  
☐ NPHRDS (Trucks)  
☐ TomTom

**4. Select a time range to analyze within each time period.**

12:00 AM 6:00 AM 12:00 PM 6:00 PM 12:00 AM

7:00 AM 9:00 AM

Add another time range Submit

**Performance Summaries - Using INRIX data**

US-1 between I-276/Pennsylvania Tpke and PA--NJ St

January 2017 Southbound January 2017 Northbound

Northbound (12.86 miles) using

Buffer time (minutes)		Buffer index		Planning time (minutes)	
7:00 AM - 9:00 AM		7:00 AM - 9:00 AM		7:00 AM - 9:00 AM	
Monday	24.85	Monday	1.75	Monday	39.08
Tuesday	21.52	Tuesday	1.48	Tuesday	36.09
Wednesday	14.92	Wednesday	0.99	Wednesday	30.05
Thursday	14.71	Thursday	1.04	Thursday	28.83
Friday	2.63	Friday	0.19	Friday	16.47
Saturday	1.54	Saturday	0.12	Saturday	14.55
Sunday	1.39	Sunday	0.11	Sunday	14.19
Weekends	1.38	Weekends	0.11	Weekends	14.28
Weekdays	16.99	Weekdays	1.18	Weekdays	31.37
All Days	15.44	All Days	1.11	All Days	29.39

Planning time index		Speed (mph)		Travel time (minutes)	
7:00 AM - 9:00 AM		7:00 AM - 9:00 AM		7:00 AM - 9:00 AM	
Monday	2.9	Monday	38.95	Monday	19.81
Tuesday	2.67	Tuesday	39.72	Tuesday	19.42
Wednesday	2.23	Wednesday	46.91	Wednesday	16.45
Thursday	2.14	Thursday	48.27	Thursday	15.98
Friday	1.22	Friday	58.21	Friday	13.25
Saturday	1.08	Saturday	60.32	Saturday	12.79
Sunday	1.05	Sunday	60.96	Sunday	12.66
Weekends	1.06	Weekends	60.67	Weekends	12.72
Weekdays	2.32	Weekdays	44.8	Weekdays	17.22
All Days	2.18	All Days	48.48	All Days	15.91

Travel time index	
7:00 AM - 9:00 AM	
Monday	1.47
Tuesday	1.44
Wednesday	1.22
Thursday	1.18
Friday	0.98
Saturday	0.95

Data source: RITIS Website (<https://www.ritis.org/tools>)

# RITIS – Performance Summaries

**Performance Summaries** Open with...

March 02, 2017 through March 10, 2017 Northbound March 02, 2017 through March 10, 2017 Southbound

I-270 Northbound using NPMRDS (Passenger vehicles) data

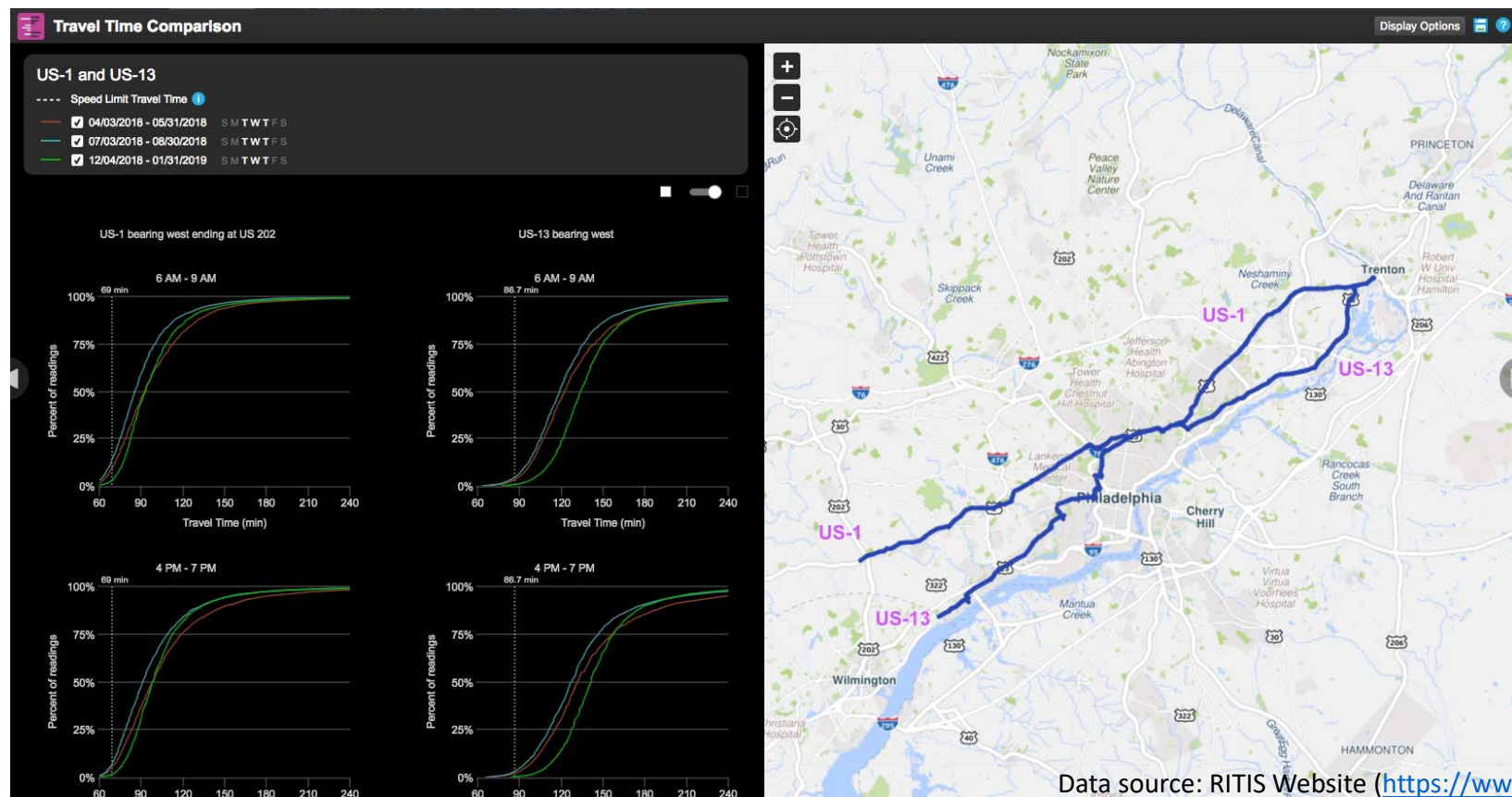
March 02, 2017 through March 10, 2017

	Speed (mph)		Buffer time (minutes)		Buffer index		Planning time (minutes)		Planning time index		Travel time (minutes)		Travel time index		
	3 AM - 11 AM	5 PM - 9 PM	3 AM - 11 AM	5 PM - 9 PM	3 AM - 11 AM	5 PM - 9 PM	3 AM - 11 AM	5 PM - 9 PM	3 AM - 11 AM	5 PM - 9 PM	3 AM - 11 AM	5 PM - 9 PM	3 AM - 11 AM	5 PM - 9 PM	
Mon	61.16	48.18	8.74	24.71	0.27	0.61	40.98	65.48	1.43	2.28	32.06	40.70	1.12	1.42	Mon
Tue	61.37	36.20	4.00	47.63	0.12	1.10	36.91	91.03	1.29	3.18	31.95	54.17	1.11	1.89	Tue
Wed	60.61	36.48	4.36	78.01	0.14	1.80	36.53	121.35	1.27	4.23	32.35	53.74	1.13	1.87	Wed
Thu	60.02	40.33	5.56	57.07	0.17	1.22	37.89	103.87	1.32	3.62	32.67	48.61	1.14	1.70	Thu
Fri	49.10	53.83	37.29	10.41	1.13	0.25	70.28	52.52	2.45	1.83	39.93	36.43	1.39	1.27	Fri
Weekdays	56.74	43.03	29.12	43.59	0.89	1.00	61.69	87.20	2.15	3.04	34.55	45.57	1.21	1.59	Weekdays
Sat	64.41	63.12	4.28	2.83	0.14	0.09	35.72	35.03	1.25	1.22	30.44	31.06	1.06	1.08	Sat
Sun	64.75	64.98	4.09	2.36	0.13	0.07	35.32	34.41	1.23	1.20	30.28	30.17	1.06	1.05	Sun
Weekends	64.55	64.04	3.57	2.64	0.11	0.08	34.91	34.75	1.22	1.21	30.37	30.62	1.06	1.07	Weekends
All Days	57.98	45.91	26.32	38.85	0.81	0.94	58.67	80.27	2.05	2.80	33.81	42.71	1.18	1.49	All Days

Data source: RITIS Website (<https://www.ritis.org/tools>)

# RITIS - Travel Time Comparison

- A comparison of travel times on a selected corridor for specified “before” and “after” date. The tool produces cumulative frequency diagrams (CFDs) of the travel times that illustrate the difference between the before and after conditions.



Teralytics

# Teralytics - Overview

- Teralytics' proprietary machine learning-based approach allows clients to imagine and create transportation services that are based on real, current needs of everyone in your community.
- Customers can plan and run mobility services with confidence, utilizing insight that is based on the most accurate and inclusive indicator of people's mobility – mobile signal.



# Teralytics – Data Source

- Signal data from mobile phones, collected at signal tower
  - Data from one carrier
  - Data location accuracy: ~250m
  - Updated every 24 hours
  - Up to 3 years historical data
  - Aggregated to “Zone to Zone” data
  - Able to capture both regular commuting and occasional trips

# Teralytics - Matrix

- Teralytics Matrix lets you see instantly how people are travelling within your chosen region and understand how this may be changing throughout the day, weekdays to weekends, season to season, year on year.



Make everyone's journeys  
better

Prioritize infrastructure upgrades and improve traffic flows by understanding where people travel to and from.



Run services that meet  
demand

Improve scheduling and deploy your fleet when and where it is needed the most.



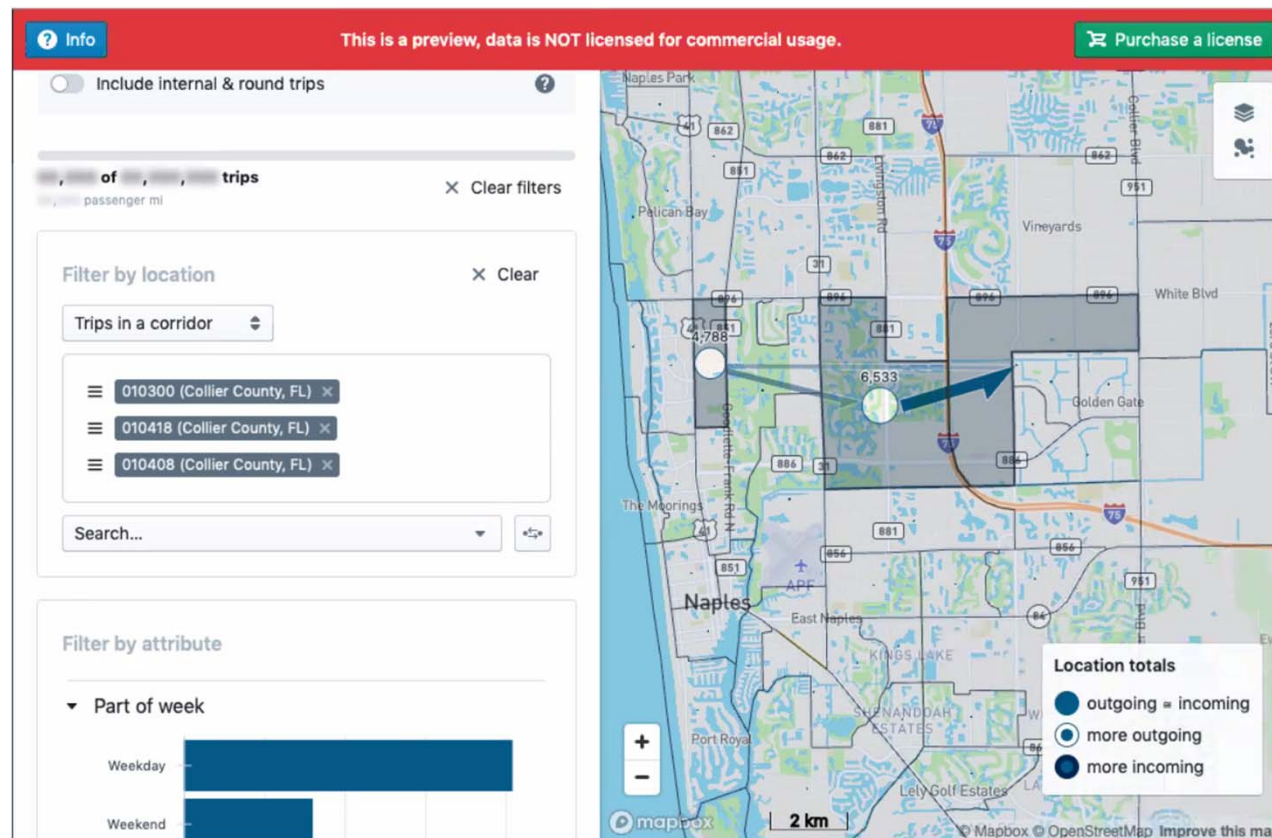
Understand market  
opportunity

Adjust pricing and competitive positioning by understanding where people wish to travel.

# Teralytics - Matrix

- Application
  - Prioritize road maintenance projects
  - Improve traffic flows through signage and signaling
  - Understand how people move within and in and out of the city
  - Evaluate mobility trends over time
- Matrix Custom
  - Users able to set their own parameters – geographic reach and timeframe – and overlay their own data to evaluate the performance.
  - Able to validate long-term impact

# Teralytics – Example in Collier County



# Products Comparison

	Matrix	Matrix Custom
Scope	Within set area	Within / incoming / outgoing / through the study area
Accessibility	Immediate	Upon completing feasibility checks and computation
Time range	Monthly	Custom
Updates	Included	Optional
Traffic volume  comparison 	Hourly (or daily and three hourly), weekday-weekend, monthly	Custom timeframes
Trip length	Included	Included
Most frequent  origin-destination pairs 	Included	Included
Mode of transport	Long distance	Long distance and within city, including mobility-as-a-service (ride-sharing, ride-hailing)
Trip purpose	Included	Included
Other		Routes Trip duration Trip frequency Commercial vs non-commercial traffic Hub analysis (airports, stadiums, venues)



# Teralytics - Pulse

- Teralytics Pulse provides insights into the current passenger distribution across a transportation network, or an area, to help you run your services smoothly and act on any anomalies as they occur.
- Customer
  - Mobility service providers and transport hubs – provide the highest quality of service to their travelers.
  - Public safety agencies – understand how people travel within an area when an incident or a natural disaster occurs

# Data Source Metrics in Details

Data Source	Travel Time Reliability Measures						Traffic Count	Traffic Volumes	Traffic Speed	Area (O&D) Analysis	Congestion Analysis	Cost
	Buffer Time	Buffer Time Index	Travel Time	Travel Time Index	Planning Time	Planning Time Index						
Inrix	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes			\$\$\$
Streetlight	Yes*						Yes		Yes	Yes	Yes	\$\$\$\$
Google	No	No	Yes	No	No	No	No	No	Yes	No	No	\$
RITIS	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Unknown**
Teralytics	No						No	Yes	No	Yes		Unknown

\*Although Streetlight didn't include the 6 measures on the website description, travel time reliability calculation is provided

\*\*RITIS is available in other projects. Need to verify if RITIS can be used for free.

**EXECUTIVE SUMMARY**  
**COMMITTEE ACTION**  
**ITEM 7C**

**Preliminary Review and Comment on 2045 Long Range Transportation Plan (LRTP) – Draft Cost Feasible Plan Roadway Network, Draft Chapter 4 System-wide Needs Assessment and Draft Financial Resources Technical Memorandum**

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**OBJECTIVE:** For the Committee to conduct a preliminary review and comment on the 2045 LRTP Draft Cost Feasible Plan (CFP) Roadway Network, Draft Chapter 4 System-wide Needs Assessment and Draft Financial Resources Technical Memorandum.

**CONSIDERATIONS:** The MPO submitted Alternative 5 roadway network to FDOT on August 19<sup>th</sup>. FDOT is scheduled to submit the Deficiency Plot for Alternate 5 on September 1<sup>st</sup>, after this committee meeting takes place. The Alternative 5 roadway network, shown in **Attachment 1**, provides an essential component of the Draft Cost Feasible Plan (CFP) for the committee to review and comment on. The multi-modal components of the draft CFP are still in development.

Jacobs has submitted a Draft of Chapter 4 – System-wide Needs Assessment (**Attachment 2**), and Draft Financial Resources Technical Memorandum (**Attachment 3**) for the committee to review and comment on. Jacobs will provide an overview of the draft documents at the meeting.

**MPO staff asks that committee members submit any written comments on the draft documents by September 7<sup>th</sup>.**

**STAFF RECOMMENDATION:** That the Committee conducts a preliminary review and comment on the 2045 LRTP Draft Cost Feasible Plan (CFP) Roadway Network, Draft Chapter 4 System-wide Needs Assessment and Draft Financial Resources Technical Memorandum.

Prepared By: Anne McLaughlin, MPO Director

Attachments:

1. Draft Cost Feasible Plan - Alternate 5 Roadway Network
2. Draft Chapter 4 System-wide Needs Assessment
3. Draft Financial Resources Technical Memorandum

COLLIER MPO 2045 LRTP    ALTERNATIVE 5    Submitted: 8/19/2020

MAP ID	FACILITY	FROM	TO	NO. OF EXISTING LANES	# OF PROPOSED LANES	DESCRIPTION	ALTERNATIVE 4	ALTERNATIVE 5 (REMOVE=NOT INCLUDED IN CFP)	Total Project Need Present Day Cost (PDC \$)	2026-2045 Funding Allocated Funding Source: County (YOE \$)	2026-2045 FDOT (Non-SIS, SHS) Funding Source: OA (YOE\$)	2026-2045 FDOT SIS Cost Estimates (YOE\$)	Funding Source	Partially Funded Yes?	Unfunded Phase Cost (2046-2055 YOE\$)
1	Benfield Rd Extension	The Lords Way	City Gate Blvd N	0	2	New 2-Lane Road (Expandable to 4-Lanes)	REMOVE	REMOVE							
2	Benfield Rd	US 41 (SR 90) (Tamiami Trail E)	Rattlesnake-Hammock Extension	0	2	New 2-Lane Road (Expandable to 4-Lanes)	REMOVE	REMOVE							
3	Big Cypress Parkway	North of I-75	Golden Gate Blvd	0	2	New 2-Lane Road (Expandable to 4-Lanes)	REMOVE	REMOVE							
4	Big Cypress Parkway	Golden Gate Blvd	Vanderbilt Beach Road Extension	0	2	New 2-Lane Road (Expandable to 4-Lanes)	REMOVE	REMOVE							
5	Big Cypress Parkway	Vanderbilt Beach Rd Extension	Oil Well Rd	0	2	New 2-Lane Road (Expandable to 4-Lanes)	ALTERNATIVE 4	REMOVE; CST UNFUNDED	\$35,528,784	\$11,080,277			COUNTY	YES	\$ 68,130,401
6	Big Cypress Parkway	Oil Well Rd	Immokalee Rd	0	2	New 2-Lane Road (Expandable to 4-Lanes)	REMOVE	REMOVE							
7	Camp Keais Rd	Pope John Paul Blvd	Oil Well Road	2	4	Widen from 2-Lane to 4 Lanes	REMOVE	REMOVE							
8	Camp Keais Rd	Immokalee Rd	Pope John Paul Blvd	2	4	Widen from 2-Lane to 4-Lanes	REMOVE	REMOVE							
9	Collier Blvd (CR 951)	Golden Gate Main Canal	Green Blvd	4	6	Widen from 4-Lanes to 6 Lanes	ALTERNATIVE 4	COMMITTED FY2023/24 [4464121]							
10	CR 951 Extension	Collier Blvd (CR 951) (northern terminus)	Lee/Collier County Line	0	2	New 2-Lane Road	REMOVE	REMOVE					COUNTY		
11	Everglades Blvd	Randall Blvd	South of Oil Well Road	2	4	Widen from 2-Lanes to 4-Lanes	ALTERNATIVE 4	ALTERNATIVE 5	\$16,293,684	\$25,304,539			COUNTY		
12	Everglades Blvd	Vanderbilt Beach Rd Extension	Randall Blvd	2	4	Widen from 2-Lanes to 4-Lanes	ALTERNATIVE 4	ALTERNATIVE 5	\$32,279,940	\$59,552,879			COUNTY		
13	Everglades Blvd	Golden Gate Blvd	Vanderbilt Beach Rd Extension	2	4	Widen from 2-Lanes to 4-Lanes	REMOVE	REMOVE							
14	Everglades Blvd	I-75 (SR-93)	Golden Gate Blvd	2	4	Widen from 2-Lanes to 4-Lanes	REMOVE	REMOVE							
15	Golden Gate Blvd	Everglades Blvd	Desoto Blvd	2	4	Widen from 2-Lanes to 4-Lanes	REMOVE	REMOVE							
16	Golden Gate Blvd Extension	Desoto Blvd	Big Cypress Parkway	0	4	New 4-Lane Road	REMOVE	REMOVE							
17	Goodlette-Frank Rd	Vanderbilt Beach Rd	Immokalee Rd	2	4	Widen from 2-Lanes to 4-Lanes	ALTERNATIVE 4	COMMITTED FY2023/24 [4463411]							
18	Green Blvd	Santa Barbara/ Logan Blvd	Sunshine Blvd	2	4	Widen from 2-Lane to 4-Lane	ALTERNATIVE 4	REMOVE							
19	Green Boulevard Extension (16th Ave SW)	23rd St SW	Wilson Blvd Extension (Corridor Study)	0	2	New 2-Lane (Future Study Area)	ALTERNATIVE 4	REMOVE							
20	Green Boulevard Extension (16th Ave SW)	CR 951	23rd St SW (Corridor Study)	0	4	New 4-Lane (Future Study Area)	ALTERNATIVE 4	REMOVE							
21	Green Boulevard Extension (16th Ave SW)	Wilson Blvd Ext	Everglades Blvd (Corridor Study)	0	2	New 2-Lane Road	REMOVE	REMOVE							
22	I-75 (SR-93) Interchange	Everglades Blvd				New Full Interchange	NOT CODED	ALTERNATIVE 5 MODEL RUN WITH AND WITHOUT	\$34,500,000		\$62,013,000	not in SIS CFP	OA		
23	I-75 (SR-93) Interchange (modified)	Golden Gate Parkway				Interchange Improvements - In design [SPUI]	NOT CODED	ALTERNATIVE 5	\$3,380,000		\$6,033,750	not in SIS CFP	OA		
24	I-75 (SR-93) Interchange (modified)	Collier Blvd (CR 951)				Interchange Improvements - In design [SPUI]	CODED PER SIS CFP	COMMITTED FY 20-24 [4258432]				\$0	COMMITTED SIS		
25	I-75 (SR-93) Interchange (modified)	Immokalee Rd				Intersection Traffic Signalization (DDI proposed)	NOT CODED	ALTERNATIVE 5	\$3,380,000		\$6,033,750	not in SIS CFP	OA		
26	I-75 (SR-93) Interchange (modified)	Pine Ridge Rd				Intersection Traffic Signalization (DDI proposed)	NOT CODED	COMMITTED [4452962]				not in SIS CFP	SALES TAX		
27	I-75 (SR-93) Interchange (new)	Vanderbilt Beach Rd				New Interchange - Partial (to / from the North)	NOT CODED	REMOVE				not in SIS CFP	NFUNDED NEEDS		
28	I-75 (SR-93)	Collier Blvd (CR 951)	SR 29	4	6	Widen from 4-Lanes to 6-Lanes Freeway	REMOVE	REMOVE							
29	I-75 (SR-93) Managed (Toll) Lanes	Collier Blvd (CR 951)	Collier/Lee County Line	0	4	New 4-Lane Express (Toll) Lanes (with slip-ramp locations connecting to general purpose lanes)	CODED PER SIS CFP	ALTERNATIVE 5 - VERIFY WITH FDOT # LANES (CST NOT CURRENTLY FUNDED IN SIS CFP) [4425192]				\$208,672,000	SIS	YES	CHECK SIS
30	Immokalee Rd (CR 846)	Camp Keais Rd	Carver St	2	4	Widen from 2-Lanes to 4 Lanes	REMOVE								
31	Immokalee Rd (CR 846)	SR 29	Airpark Blvd	2	4	Widen from 2-Lanes to 4 Lanes	REMOVE	ALTERNATIVE 5	\$3,900,000	\$7,190,000			COUNTY	YES	\$ 7,370,000
32	Keane Ave	Inez Rd	Wilson Blvd Extension	0	2	New 2-Lane Road (Future Study Area)	REMOVE	REMOVE							
33	Little League Rd Extension	SR-82	Westclox St	0	2	New 2-Lane Road	ALTERNATIVE 4	REMOVE; CST UNFUNDED	\$40,540,000	\$15,110,000			COUNTY	YES	\$ 75,240,000
34	Logan Blvd	Green Blvd	Pine Ridge Rd	4	6	Widen from 4-Lanes to 6-Lanes	REMOVE	REMOVE							
35	Logan Blvd	Vanderbilt Beach Rd	Immokalee Rd	2	4	Widen from 2-Lanes to 4-Lanes	REMOVE	REMOVE							
36	Logan Blvd	Pine Ridge Rd	Vanderbilt Beach Rd	2	4	Widen from 2-Lanes to 4-Lanes	ALTERNATIVE 4	ALTERNATIVE 5	\$22,130,000	\$34,334,443			COUNTY		
37	Oil Well Road / CR 858	Everglades Blvd	Oil Well Grade Rd	2	6	Widen from 2-Lanes to 6-Lanes	ALTERNATIVE 4	ALTERNATIVE 5	\$36,110,000	\$47,994,900			COUNTY		
38	Oil Well Road / CR 858	Ave Maria Entrance	Camp Keais Rd	2	6	Widen from 2-Lanes to 6-Lanes	ALTERNATIVE 4	REMOVE							
39	Old US 41	US 41 (SR 45)	Lee/Collier County Line	2	4	Widen from 2-Lanes to 4-Lanes	REMOVE	ALTERNATIVE 5	\$22,586,850		\$34,297,132		OA		
40	Orange Blossom Dr	Airport Pulling Rd	Livingston Rd	2	4	Widen from 2-Lanes to 4-Lanes	REMOVE	REMOVE							
41A	Randall Blvd Intersection (Ultimate)	Immokalee Rd		--	--	Ultimate Intersection Improvement: Overpass	REMOVE	ALTERNATIVE 5	\$31,000,000		\$57,505,000		OA		
41B	Randall Blvd	Immokalee Rd	8th St NE	2	6	Widen from 4-Lanes to 6-Lanes	ALTERNATIVE 4	COMMITTED FY2025					SALES TAX		
42	Randall Blvd	8th St NE	Everglades Blvd	2	6	Widen from 2-Lanes to 6-Lanes	ALTERNATIVE 4	ALTERNATIVE 5	\$41,240,000	\$55,298,549			COUNTY		
43	Randall Blvd	Everglades Blvd	Desoto Blvd	2	4	Widen from 2-Lanes to 4-Lanes	REMOVE	REMOVE							
44	Randall Blvd	Desoto Blvd	Big Cypress Parkway	0	4	New 4-Lane Road	REMOVE	REMOVE							
45	Santa Barbara Blvd	Painted Leaf Ln	Green Blvd	4	6	Widen from 4-Lanes to 6-Lanes	REMOVE	REMOVE							
46	SR 29	SR 82	Collier/Hendry Line	2	4	Widen from 2-Lane to 4 Lanes	CODED PER SIS CFP	CODED PER SIS CFP				\$0	SIS		
48	SR 29	I-75 (SR 93)	Oil Well Rd	2	4	Widen from 2-Lane to 4 Lanes	PLEASE NOTE AS FDOT PROJECT NOT MPO	CODED PER SIS CFP; PLEASE NOTE AS FDOT PROJECT NOT MPO ON PLOT				\$4,333,000	SIS		
50	SR 29	New Market Road North	North of SR-82	2	4	Widen from 2-Lane to 4-Lane	CODED PER SIS CFP	CODED PER SIS CFP				\$29,943,000	SIS		
51	SR 29/New Market Rd W - New Road	Immokalee Rd (CR 846)	New Market Rd N	0	4	New 4-Lane Road	CODED PER SIS CFP	CODED PER SIS CFP				\$55,784,000	SIS		

MAP ID	FACILITY	FROM	TO	NO. OF EXISTING LANES	# OF PROPOSED LANES	DESCRIPTION	ALTERNATIVE 4	ALTERNATIVE 5 (REMOVE=NOT INCLUDED IN CFP)	Total Project Need Present Day Cost (PDC \$)	2026-2045 Funding Allocated Funding Source: County (YOE \$)	2026-2045 FDOT (Non-SIS, SHS) Funding Source: OA (YOE\$)	2026-2045 FDOT SIS Cost Estimates (YOE\$)	Funding Source	Partially Funded Yes?	Unfunded Phase Cost (2046-2055 YOE\$)
52	SR 29	Agriculture Way	CR 846 E	2	4	Widen from 2-Lanes to 4-Lanes	CODED PER SIS CFP	CODED PER SIS CFP				\$28,946,000	SIS		
53	SR 29 (SEGMENT D)	Sunniland Nursery Rd	Agriculture Way	2	4	Widen from 2-Lanes to 4-Lanes	CODED PER SIS CFP	CODED PER SIS CFP	\$16,000,000			\$2,378,000			
54	SR 29 (SEGMENT E)	Oil Well Rd	Sunniland Nursery Rd	2	4	Widen from 2-Lanes to 4-Lanes	CODED PER SIS CFP	CODED PER SIS CFP	\$16,000,000			\$4,548,000			
55	SR 84 (Davis Blvd)	Airport Pulling Rd	Santa Barbara Blvd	4	6	Widen from 4-Lanes to 6 Lanes	CODED FROM COUNTY	ALTERNATIVE 5	\$40,250,000		\$73,330,000	Non-SIS	OA		
56	Collier Blvd (SR 951)	South of Manatee Rd	North of Tower Rd	4	6	Widen from 4-Lanes to 6 Lanes	ALTERNATIVE 4	COMMITTED FY 2023/2024 [435111]				Non-SIS			
57	US 41 (SR 90) (Tamiami Trail E) intersection	Goodlette Rd				At-Grade Intersection Improvements	REMOVE	ALTERNATIVE 5	\$3,000,000		\$3,625,000	Non-SIS	OA		
58	US 41 (SR 90) (Tamiami Trail E)	Greenway Rd	6 L Farm Rd	2	4	Widen from 2-Lane to 4 Lanes	REMOVE	ALTERNATIVE 5	\$28,750,000		\$76,652,500	Non-SIS	OA		
59	US 41 (SR 90) (Tamiami Trail E) intersection	Collier Blvd (SR 951)		0	--	Intersection Improvement	REMOVE	ALTERNATIVE 5	\$17,250,000		\$26,840,000	Non-SIS	OA		
60	US 41 (SR 90) (Tamiami Trail E)	Immokalee Rd	Old US 41	6		Corridor Study required	REMOVE	ALTERNATIVE 5	\$17,250,000		\$26,840,000	Non-SIS	OA		
62A	Vanderbilt Beach Rd Extension	16th St	Everglades Blvd	0	2	New 2-Lane Road (Expandable to 4-Lanes)	ALTERNATIVE 4	COMMITTED							
62B	Vanderbilt Beach Rd Extension	Everglades Blvd	Big Cypress Parkway	0	2	New 2-Lane Road (Expandable to 4-Lanes)	ALTERNATIVE 4	REMOVE	\$35,840,000	\$22,952,100			COUNTY	YES	57,680,000
63	Westclox Street Extension	Little League Rd	West of Carson Road	0	2	New 2-Lane Road	REMOVE	ALTERNATIVE 5	\$3,010,000	\$5,580,000			COUNTY	YES	5,590,000
64	Wilson Blvd	Golden Gate Blvd	Immokalee Rd	2	4	Widen from 2-Lanes to 4-Lanes	ALTERNATIVE 4	COMMITTED							
65	Wilson Blvd	Keane Ave	Golden Gate Blvd	2	2	New 2-Lane Road (Expandable to 4-Lanes)	ALTERNATIVE 4	ALTERNATIVE 5	\$33,980,000	\$51,280,000			COUNTY		
66	Immokalee Rd Intersection	Livingston Rd			--	Intersection Improvement	ALTERNATIVE 4	ALTERNATIVE 5	\$33,750,000	\$44,917,500			COUNTY		
67	Veterans Memorial Blvd Extension	Strand Blvd	I-75	0	4	New 4-Lane Road	REMOVE	REMOVE							
68	Big Cypress Parkway Intersection (new)	Oil Well Grade Rd			--	New At-Grade Intersection	REMOVE	REMOVE							
69	Everglades Blvd	Oil Well Rd / CR 858	Immokalee Rd	2	--	Remove Row	REMOVE	REMOVE							
70	Green Blvd Extension	Everglades Blvd	Big Cypress Parkway	0	2	New 2-Lane Road	REMOVE	REMOVE							
71	Golden Gate Blvd	16th	Everglades Blvd	4	4	4 lanes (under construction)	CODE FOR E+C	CST UNDERWAY							
72	Golden Gate Parkway Intersection	Airport Pulling Rd				Existing Overpass (GGP over Airport Bl)	NOT CODED	EXISTING							
73	Immokalee Rd (CR 846) Intersection	Collier Blvd (CR 951)			--	Proposed Overpass (Immokalee over Collier Blvd) [SPUI]	ALTERNATIVE 4	REMOVE							
74	Immokalee Rd (CR 846) Intersection	Wilson Blvd			--	Proposed Overpass (Immokalee over Wilson Blvd) [SPUI]	ALTERNATIVE 4	ALTERNATIVE 5	\$17,260,000		\$31,430,000		OA		
75	I-75 (SR-93) Interchange (new)	Veterans Memorial Blvd		-		New Partial Interchange	NOT CODED	REMOVE				not in SIS CFP			
76	Vanderbilt Dr	Immokalee Rd	Woods Edge Parkway	2	4	Widen from 2-Lanes to 4-Lanes	REMOVE	REMOVE							
77	Pine Ridge Rd Intersection	Livingston Rd			--	Intersection Improvement	ALTERNATIVE 4	COMMITTED							
78	Golden Gate Parkway Intersection	Livingston Rd			--	Intersection Improvement	ALTERNATIVE 4	COMMITTED							
79	Vanderbilt Beach Rd	Gulf Pavilion Dr	US 41 (SR 90) (Tamiami Trail E)	4		Constrained to 4 lanes	CODE FOR E+C	COMMITTED							
80	Vanderbilt Beach Rd	Goodlette-Frank Road	Airport Pulling Rd	4	6	Widen from 4-Lanes to 6-Lanes	CODE FOR E+C	COMMITTED							
81	Bridge @ 47th Ave NE	West of Everglades Boulevard			--	New Bridge over Canal	ALTERNATIVE 4	ALTERNATIVE 5					SALES TAX		
82	Bridge @ Wilson Blvd	South of 33rd Avenue NE			--	New Bridge over Canal	ALTERNATIVE 4	ALTERNATIVE 5					SALES TAX		
83	Bridge @ 18th Ave NE	Between Wilson Blvd N and 8th St NE			--	New Bridge over Canal	ALTERNATIVE 4	ALTERNATIVE 5					SALES TAX		
84	Bridge @ 18th Ave NE	Between 8th St NE and 16th StNE			--	New Bridge over Canal	ALTERNATIVE 4	ALTERNATIVE 5					SALES TAX		
85	Bridge @ 13th St NW	North Terminus at Vanderbilt Beach Rd Extension			--	New Bridge over Canal	ALTERNATIVE 4	ALTERNATIVE 5					SALES TAX		
86	Bridge @ 16th St SE	South Terminus			--	New Bridge over Canal	ALTERNATIVE 4	ALTERNATIVE 5					SALES TAX		
87	Bridge @ Location TBD - Assume 10th Ave S	East of Everglades Blvd			--	New Bridge over Canal	ALTERNATIVE 4	ALTERNATIVE 5					SALES TAX		
88	Bridge @Wilson Blvd S	South Terminus			--	New Bridge over Canal	ALTERNATIVE 4	ALTERNATIVE 5					SALES TAX		
89	Bridge @ 62nd Ave NE	West of 40th St NE			--	New Bridge over Canal	ALTERNATIVE 4	ALTERNATIVE 5					SALES TAX		
90	Pine Ridge Rd	Logan Blvd	Collier Blvd	4	6	Widen from 4-Lanes to 6-Lanes	ALTERNATIVE 4	ALTERNATIVE 5	\$21,640,000	\$33,540,000			COUNTY		
91	SR 82	Gator Slough Lane	SR 29			WIDEN FROM 2-LANES TO 4-LANES IN E+C	CODE FOR E+C	COMMITTED FY 2020 [430849]				\$0			
92	SR 82	Hendry Co.Line	Gator Slough Lane	2	4	Widen from 2-Lanes to 4-Lanes	CODED	COMMITTED FY23/24 [4308481]				\$2,800,000	SIS		
93	Immokalee Rd (CR 846)	43rd Ave NE/Shady Hollow Blvd E	North of 47th Avenue NE/Immokalee	2	4	Widen from 2-Lanes to 4-Lanes	ALTERNATIVE 4	ALTERNATIVE 5		\$17,583,705			COUNTY		
94	Immokalee Road Rural Village Blvd (new)	Immokalee Rd (CR 846)	Immokalee Rd (CR 846)	0	4	New 4-Lane Road	ALTERNATIVE 4	ALTERNATIVE 5		\$57,378,003			COUNTY		
95	Golden Gate Parkway (Intersection)	Goodlette Rd				Intersection Improvements	NOT CODED	ALTERNATIVE 5	\$1,500,000	\$3,000,000			COUNTY		
96	Pine Ridge Road (Intersection)	Airport Pulling Rd				Intersection Improvements	NOT CODED	REMOVE		\$3,000,000					
97	Immokalee Road (Intersection)	Logan Blvd				Intersection Improvements	NOT CODED	ALTERNATIVE 5	\$1,500,000	\$3,000,000			COUNTY		
98	Vanderbilt Beach Road (Intersection)	Livingston Rd				Intersection Improvements	NOT CODED	ALTERNATIVE 5	\$1,500,000	\$3,000,000			COUNTY		
99	Vanderbilt Beach Road (Intersection)	Logan Blvd				Intersection Improvements	NOT CODED	ALTERNATIVE 5	\$1,500,000	\$3,000,000			COUNTY		
100	Collier Boulevard (Intersection)	Pine Ridge Rd				Intersection Improvements	NOT CODED	ALTERNATIVE 5	\$1,500,000	\$3,000,000			COUNTY		
101	Pine Ridge Road (Intersection)	Goodlette Rd				Intersection Improvements	NOT CODED	ALTERNATIVE 5		\$3,000,000					
102	US 41 (SR 90) (Tamiami Trail E) intersection	Vanderbilt Beach Rd				Intersection Improvements	NOT CODED	ALTERNATIVE 5	\$2,500,000		\$3,220,000		OA		
103	US 41 (SR 90) (Tamiami Trail E) intersection	Pine Ridge Rd				Intersection Improvements	NOT CODED	ALTERNATIVE 5	\$2,500,000		\$3,220,000		OA		
104	US 41 (SR 90) (Tamiami Trail E) intersection	Golden Gate Pkwy				Intersection Improvements	NOT CODED	ALTERNATIVE 5	\$2,000,000		\$2,680,000		OA		
105	Santa Barbara Blvd	Green Blvd				Intersection Improvements	NOT CODED	COMMITTED							
106	Immokalee Rd	Northbrook Dr				Intersection Improvements	NOT CODED	REMOVED; UNFUNDED NEEDS							
107	Golden Gate Pkwy	Collier Blvd				Intersection Improvements	NOT CODED	REMOVED; UNFUNDED NEEDS							
108	Vanderbilt Beach Rd	Airport Pulling Rd				Intersection Improvements	NOT CODED	ALTERNATIVE 5	\$1,000,000	\$1,250,000			COUNTY		
109	Immokalee Rd	Goodlette-Frank Rd				Intersection Improvements	NOT CODED	ALTERNATIVE 5	\$1,000,000	\$1,250,000			COUNTY		
110	Immokalee Rd	Airport Pulling Rd				Intersection Improvements	NOT CODED	ALTERNATIVE 5	\$1,000,000	\$1,250,000			COUNTY		

MAP ID	FACILITY	FROM	TO	NO. OF EXISTING LANES	# OF PROPOSED LANES	DESCRIPTION	ALTERNATIVE 4	ALTERNATIVE 5 (REMOVE=NOT INCLUDED IN CFP)	Total Project Need Present Day Cost (PDC \$)	2026-2045 Funding Allocated Funding Source: County (YOE \$)	2026-2045 FDOT (Non-SIS, SHS) Funding Source: OA (YOE\$)	2026-2045 FDOT SIS Cost Estimates (YOE\$)	Funding Source	Partially Funded Yes?	Unfunded Phase Cost (2046-2055 YOE\$)
111	US 41	Immokalee Rd				Intersection Improvements	NOT CODED	ALTERNATIVE 5	\$2,500,000		\$3,130,000		OA		
112	Airport Pulling Rd	Orange Blossom Dr				Intersection Improvements	NOT CODED	ALTERNATIVE 5	\$1,000,000	\$1,250,000			COUNTY		
113	Airport Pulling Rd	Golden Gate Pkwy				Intersection Improvements	NOT CODED	REMOVED; UNFUNDED NEEDS							
114	Airport Pulling Rd	Radio Rd				Intersection Improvements	NOT CODED	ALTERNATIVE 5	\$1,000,000	\$1,250,000			COUNTY		
Totals										\$516,346,894	\$416,850,132	\$337,404,000			
									FUNDING	COUNTY	OA	TOTAL			
									REVENUE	\$541,551,377	\$443,200,000	984,751,377			
									TOTAL CFP:	\$516,346,894	\$416,850,132	933,197,026			
									FUNDS:	\$25,204,483	\$26,349,868	51,554,351			

COUNTY FUNDED
SIS OR OA FUNDED
EXISTING OR COMMITTED



**DRAFT**



# Collier MPO

## 2045 Long Range Transportation Plan

### Chapter 4 – System-wide Needs Assessment

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## Chapter 4 2045 Needs Plan

### 4-1 Needs Plan Overview

The 2045 LRTP Needs Plan identifies the multimodal transportation projects needed to address existing and future transportation network deficiencies within the MPO's jurisdiction without considering funding limitations. Developing the Needs Plan is the starting point for understanding and prioritizing the region's overall transportation needs. However, once the applicable transportation revenues available to the Collier MPO are applied to the Needs Plan, the number of projects that can be constructed to address the needs becomes significantly reduced. Projects in the Needs Plan are evaluated by scoring each project using defined goals and objectives, and the evaluation criteria described in Chapter 3. The projects that rank the highest are focused on when selecting which projects to include in the Cost Feasible Plan. This process is explained further in the Cost Feasible Plan section of this document.

While the projects shown as transportation needs are not fiscally constrained, associated policy and environmental constraints exist. The following policy constraints are noted in the Collier County Growth Management Plan Transportation Element amended June 13, 2017:<sup>1</sup>

- All future roadway capacity improvements shall include provisions for both bicycles and pedestrians.
- County facilities are to be maintained at a level of service (LOS) standard "D" or "E" as measured on a peak hour basis; LOS calculations are to be based on traffic

experienced for 10 months of the year with peak seasonal and tourist months of February and March omitted.

- County roadways are constrained to a maximum of six lanes or when intensive land use development is immediately adjacent to roads. Roadways identified as constrained shall be subject to growth restrictions to not further degrade their LOS.
- The County will provide for the protection and acquisition of existing and future right-of-way (ROW). Sufficient ROW shall be acquired to facilitate arterial and collector roads as appropriate to meet the needs of the LRTP or other adopted transportation studies, plans or programs, appropriate turn lanes, medians, bicycle and pedestrian facilities, drainage canals, a shoulder sufficient for pull offs, and landscaping areas.
- The County is considering the viability of a Thoroughfare Corridor Protection Plan ordinance to preserve ROW for corridors or projects listed in the LRTP. This policy includes adoption of Corridor Preservation Maps and Tables and Critical Intersection Maps and Tables; and limits land uses within the corridors to direct incompatible land uses away from environmentally sensitive resources.
- Reduce vehicle miles traveled (VMT) and greenhouse gas emissions by providing for the safe movement of nonmotorized vehicles in new construction and reconstruction of roadways.
- Establish an integrated and connected road network to provide multiple, viable alternative travel modes or routes for common trips within the Northwest Transportation Concurrency Management Area (TCMA)

<sup>1</sup> <https://www.colliercountyfl.gov/home/showdocument?id=74327>

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and the East Central TCMA. Maintain 85 percent of the roadways within the TCMAs at or above the County LOS standard.

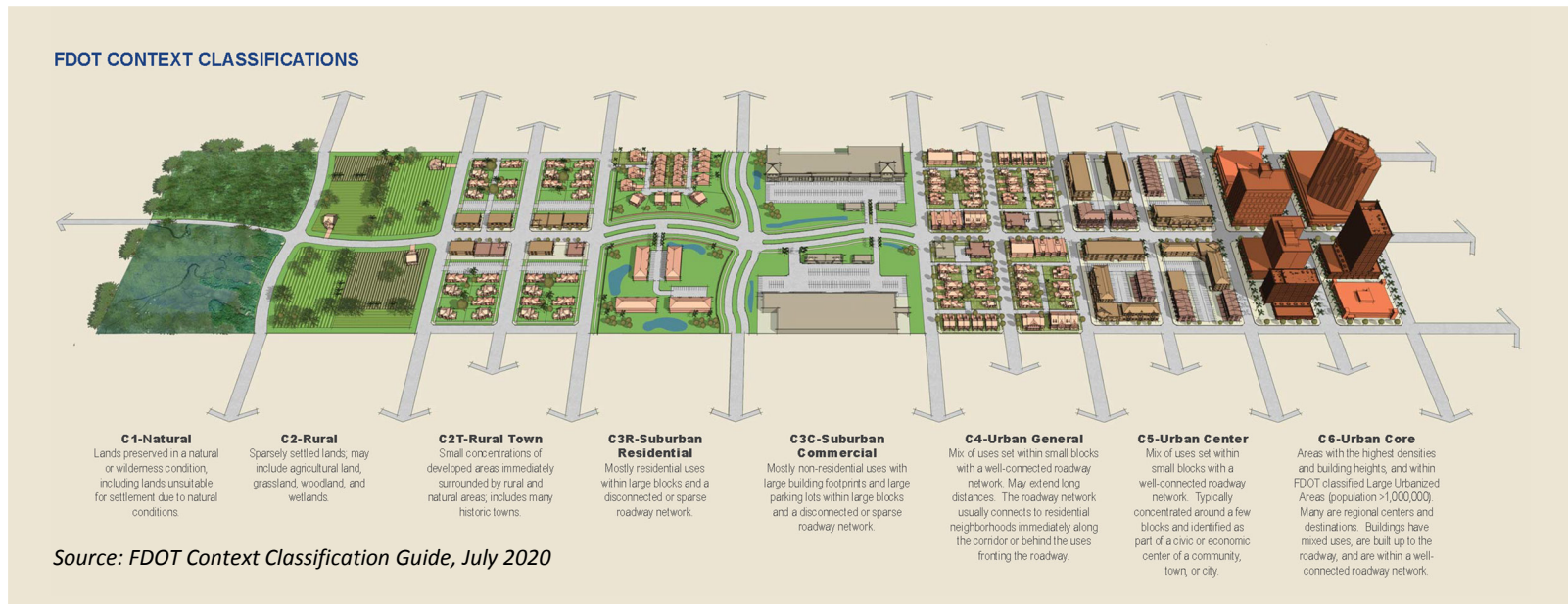
- Transportation projects are to be pursued in a manner consistent with the findings of the County Annual Update and Inventory Report (AUIR).
- Encourage safe and efficient mobility for people traveling in rural areas that is compatible with the character of the County's rural areas. Examine the maintenance and operational needs of the rural roadway system, addressing the mobility needs of rural residents to include availability of roads for rural-to-urban travel, travel within the rural area, and for emergency evacuation purposes.
- Improve transit services for the transportation-disadvantaged in rural areas.
- Encourage the efficient use of transit services now and, in the future, consider intergovernmental efforts to coordinate public transit service between Naples and Bonita Springs in Lee County.

In September 2014, FDOT adopted the Statewide Complete Streets Policy (Topic No. 000-625-017-a). Additionally, the City of Naples and the Collier County Board of County Commission (BCC) approved Complete Streets Resolutions in November 2015 and January 2019, respectively. Complete Streets serve

the transportation needs of users of all ages and abilities, including pedestrians, bicyclists, transit riders, motorists, and freight handlers. A transportation system based on Complete Streets principles can help to promote safety, quality of life, and economic development.

Complete Streets are context-sensitive, and the approach provides transportation system design that considers local land development patterns. Roadways are to be planned and designed to support the safety, comfort, and mobility of all users based on the unique context of each roadway. The FDOT context classification system broadly identifies the various built environments existing in Florida. Identifying the context classification is a preliminary step in planning and design, as different context classifications will have different design criteria.

The context classification of each roadway must be considered, along with its transportation characteristics and the built form to understand who uses or could use it, the regional and local travel demand of the roadway, and the challenges and opportunities of each roadway user. As shown on [Figure 4-1](#), FDOT defined eight context classifications that identify various built environments in Florida.



**Figure 4-1. FDOT Context Classifications**

The following policy constraints are noted in the *City of Naples Comprehensive Plan* Transportation Element amended October 20, 2010:<sup>2</sup>

- Evaluate proposed street improvements in Naples that may potentially increase through traffic volumes to protect residential neighborhoods.
- Maintain LOS C as a goal for the arterials and all major collectors, except for Fifth Avenue South between U.S. 41 and Gulf Shore Boulevard.
- Naples shall not permit construction of vehicle road overpasses or flyovers in favor of feasible alternative planning solutions that will improve the long-term traffic circulation patterns in the City.
- Evaluate programs to modify peak hour travel demand and reduce the number of VMT per capita.
- Assist the Southwest Florida Land Preservation Trust in acquiring necessary easements and funding for the design and construction of a greenway bicycle/pedestrian pathway.
- Maintain or reduce hurricane evacuation times.

<sup>2</sup>[https://www.naplesgov.com/sites/default/files/fileattachments/planning/page/4451/comprehensive\\_plan\\_120613\\_201312060904513380.pdf](https://www.naplesgov.com/sites/default/files/fileattachments/planning/page/4451/comprehensive_plan_120613_201312060904513380.pdf)



- Enhance the safety, connectivity, and mobility of existing and future pedestrian and bicycle pathways.
- Continue to coordinate with the Collier MPO to evaluate the potential for developing an efficient public transportation system and mechanisms to reduce the reliance on private motor vehicles.
- Establish a transportation mobility program to identify and implement strategies to reduce greenhouse gas emissions. Focus on programs, policies, and code adoptions that have a net impact of reduced travel delays, reduced vehicular trips, reduced vehicle trip length, and measures to improve the efficiency of travel.

The following policy constraints are noted in the *City of Marco Island Comprehensive Plan* Transportation Element amended December 7, 2009:<sup>3</sup>

- Maintain designated LOS for arterial, collector, and local roads on Marco Island. Marco Island’s adopted LOS reflect generalized maximum daily volumes as derived from peak hour traffic conditions:
  - Arterials: LOS D (except SR 951 from the Jolley Bridge to CR 92—LOS C)
  - Collectors: LOS D
  - Local Roads: LOS D

Finally, environmental constraints include conservation lands in the northeastern and southeastern parts of the County, wetlands, threatened and endangered species habitat, and primary and secondary canal systems throughout the County.

<sup>3</sup>[https://www.cityofmarcoisland.com/sites/default/files/fileattachments/growth\\_management/page/5551/compplanpart1\\_2009.pdf](https://www.cityofmarcoisland.com/sites/default/files/fileattachments/growth_management/page/5551/compplanpart1_2009.pdf)

The 2045 Needs Plan incorporates all transportation modes, including roadway needs for motorists and freight, transit, bicycle, and walking or using a mobility device. The following sections detail the County needs for projects related to these transportation modes as well as technologies, such as ITS and CAV. This chapter breaks down the 2045 Needs Plan by Roadway Needs, Bicycle and Pedestrian Needs, and Transit Needs.

## 4-2 Roadway Needs

The initial approach to developing the list of roadway project needs included a review of the following plans:

- *Collier MPO 2040 Long Range Transportation Plan*, Amended May 25, 2018, and September 9, 2016
- *Collier MPO Transportation Improvement Program FY 2021 – FY 2025* (Adopted June 12, 2020)
- *Collier MPO Transportation System Performance Report & Action Plan Draft Baseline Report* (2020)
- *Collier MPO Transportation System Performance Report & Action Plan Draft Action Plan* (2020)
- *Collier MPO Congestion Management Process 2017 Update*
- *Collier 2040 LRTP Freight Congestion Considerations Technical Memorandum*
- *Collier MPO 2040 Long Range Transit Element*, November 2015
- *Collier MPO Local Road Safety Plan*, 2020

- *Collier MPO Transit Development Plan Major Update, 2020*
- *Collier Area Transit (CAT) Transit Development Plan FY 2019 Annual Progress Report*
- *Collier MPO Park and Ride Study, 2020*
- *Collier County Annual Update & Inventory Report/Capital Improvement Element Schedule Update on Public Facilities, November 2019*
- *Collier County Community Housing Plan, October 24, 2017*
- *National Oceanic and Atmospheric Administration Sea Level Rise Viewer*
- *Adaptation of Coastal Urban and Natural Ecosystems (ACUNE) (pending)*
- *Collier County Transportation Capital Improvement Program, 2019*
- *Collier County Airport Authority Immokalee Regional Airport, Airport Layout Plan Update, August 2017*
- *City of Naples Airport Authority, Naples Airport Master Plan, February 29, 2020*
- *FDOT Strategic Intermodal System 2029 – 2045 Long Range Cost Feasible Plan*
- *FDOT Strategic Intermodal System Funding Strategy First Five Year Plan Multi-Modal FY 2020/2021 through FY 2024/2025*
- *FDOT Strategic Intermodal System Funding Strategy Second Five Year Plan Multi-Modal FY 2025/2026 through FY 2029/2030*

- *FDOT Freight Mobility and Trade Plan, April 2020*
- *FDOT Guidance for Assessing Planning Impacts and Opportunities of Automated, Connected, Electric and Shared-Use Vehicles, September 2018*
- *University of South Florida Center for Urban Transportation Research (CUTR) Autonomous Vehicle (AV) and Alternative Fuel Vehicle (AFV) Florida Market Penetration Rate and VMT Assessment Study, October 2019.*
- *U.S. Department of Transportation Preparing for the Future of Transportation: Automated Vehicles 3.0, October 2018*

Additional approaches to developing the Needs Plan included collaboration with regional partners including the Lee County MPO, coordination with the Collier County Transportation Traffic and Planning Divisions, scenario planning analysis, travel demand modeling, and soliciting and incorporating public input. Further, several coordination meetings with the TAC and CAC were held during the development of the Needs Plan.

### Existing Plus Committed Projects

As described in Chapter 2, the initial list of project needs was developed by first modeling the E+C travel network. The E+C network includes all new road or capacity projects that have been implemented since 2015 (existing), plus all projects that have construction funded in the 2023 FDOT Five Year Work Program. The E+C characterizes the transportation network expected to be in place by the year 2023 (constructed or funded for construction). **Figure 4-2** and **Table 4-1** present the E+C roadway projects in graphic and tabular formats, respectively.

FDOT modeled the E+C travel network using the D1RPM travel demand model and the 2045 socioeconomic data discussed in Chapter 2. The modeling result helped identify deficiencies in the roadway network and showed which roadway segments were expected to be congested in 2045 if no further improvements were made to the surrounding network.

Congestion was measured using the ratio of the forecasted traffic volume in Average Annual Daily Traffic (AADT) to the capacity of the roadway segment (at LOS D), referred to as the volume to capacity (V/C) ratio. A roadway is considered over capacity if the V/C ratio greater than 1.0.

**Figure 4-3** presents the anticipated roadway congestion in 2045 if no improvements to the network are made beyond the E+C projects. The roadway facilities predicted to experience high ( $V/C = 1.15$  to  $1.5$ ) and significant ( $V/C > 1.5$ ) levels of congestion in 2045 are listed in the following text.

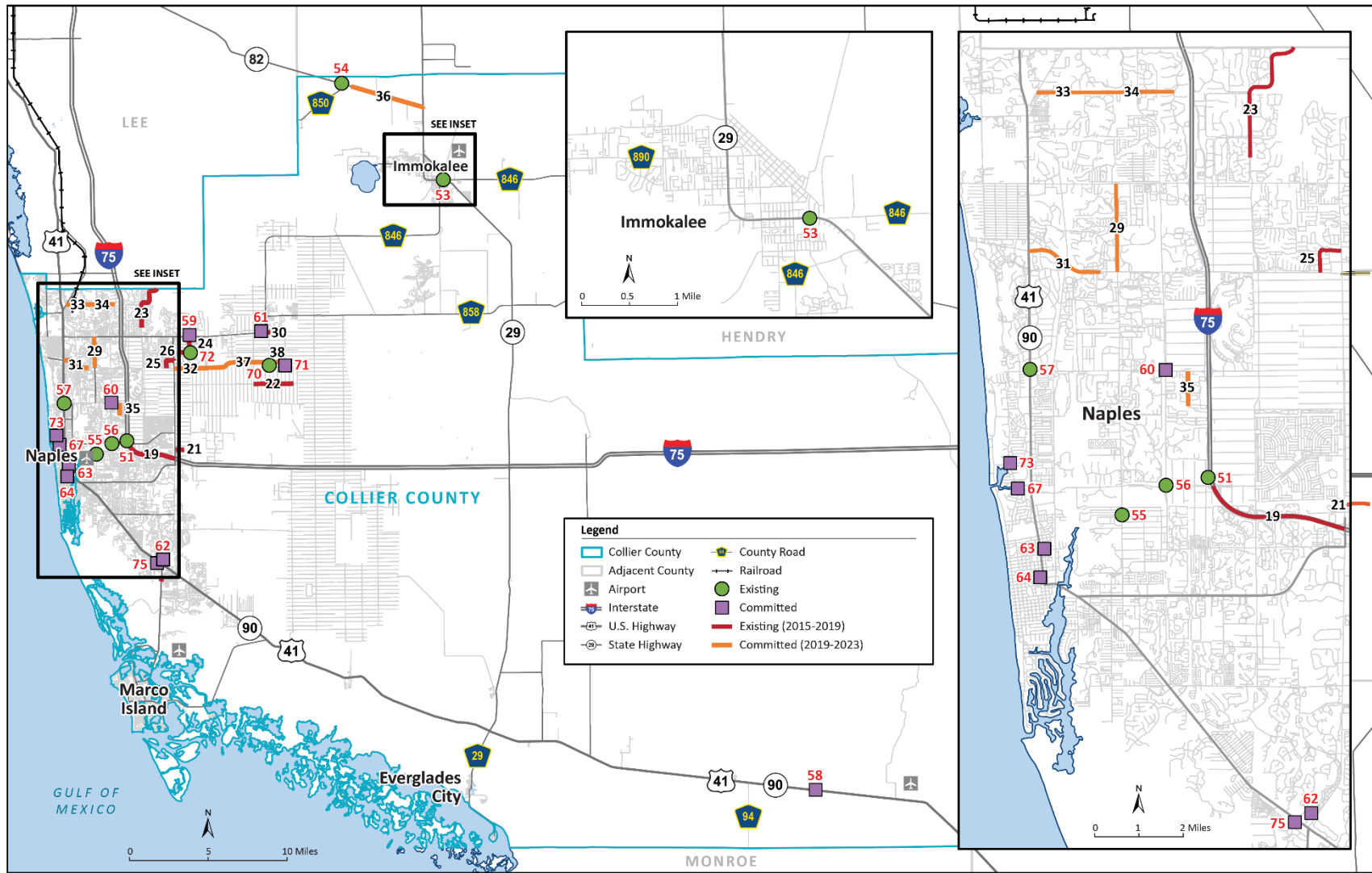
**2045 Facilities with High Degree of Congestion  
( $V/C = 1.15$  to  $1.5$ )**

- US 41 north of Immokalee Road
- Immokalee Road east of Airport Road N
- Immokalee Road east of I-75
- Immokalee Road west of I-75
- Immokalee Road east of Collier Boulevard to Randall Boulevard
- Immokalee Road north of Stockade Road
- Immokalee Road from SR 29 to Camp Keas Road
- Randall Boulevard east of 8th Street NE

- Oil Well Road between Everglades Boulevard and Oil Well Grade Road
- SR 29 north of Westclox Road
- Everglades Boulevard north of Oil Well Road
- Pine Ridge Road east of Livingston Road
- Old 41 Road east of US 41/Tamiami Trail to Lee County
- Vanderbilt Beach Road west of US 41
- Intersection at Collier Boulevard and Golden Gate Parkway
- Collier Boulevard north of Golden Gate Parkway
- Santa Barbara Boulevard north of Rattlesnake Hammock Road
- Park Shore Drive west of Clayton Road
- I-75 north of Immokalee Road
- Intersection at I-75 and Immokalee Road
- Intersection at I-75 and Pine Ridge Road
- Intersection at I-75 and Golden Gate Parkway

**2045 Facilities with a Significant Degree of Congestion  
( $V/C > 1.5$ )**

- Collier Boulevard north of Pine Ridge Road
- Golden Gate Boulevard from east of 16th Street SE to Everglades Boulevard
- SR 29 (N 15th Street) at the intersection of Westclox Road



**Figure 4-2. 2045 Existing Plus Committed (E+C) Project Map**

**Table 4-1. 2045 Existing Plus Committed (E+C) Projects**

Map ID	Roadway	From	To	Improvement	Agency or Municipality	Included in 2019–2023 TIP?
<b>Existing (2015–2019)</b>						
19	I-75	North of SR 951	Golden Gate Pkwy	Widen from Four to Six Lanes	FDOT FPN: 406313-4	N/A
20	SR 951	Manatee Road	North of Tower Rd	Widen from Two to Four Lanes	FDOT FPN: 435111-2	N/A
21	City Gate Blvd. Extension	White Lake Blvd.	East of Brennan Dr	New Four-Lane Facility	Collier County	N/A
22	Golden Gate Blvd.	Wilson Blvd.	20th St.	Widen from Two to Four Lanes	Collier County	N/A
23	Logan Blvd.	North of Immokalee Rd.	Lee County Line	New Two-Lane Facility	Collier County	N/A
24	Massey St./Woodcrest Dr.	Calusa Pines Dr.	Immokalee Rd.	New Two-Lane Facility	Collier County	N/A
25	Pristine Dr.	Wolfe Rd.	Vanderbilt Beach Rd	New Two-Lane Facility	Collier County	N/A
26	Tree Farm Rd.	Davila St	Massey St	New Two-Lane Facility	Collier County	N/A
51	I-75	Golden Gate Parkway SB Off Ramp	-	Interchange Improvements	FDOT FPN: 429907-1	N/A
53	SR 29	Jefferson Avenue	9th Street	Add Turn Lanes	FDOT FPN: 431390-2	N/A
54	SR 82	Corkscrew Road	-	Add Turn Lanes	FDOT FPN: 433175-1	N/A
55	Airport Pulling Rd.	North Horseshoe Dr.	-	Intersection Improvements	Collier County	N/A
56	Golden Gate Pkwy.	Livingston Rd.	-	Intersection Improvements	Collier County	N/A
57	Pine Ridge Rd.	US 41	-	Intersection Improvements	Collier County	N/A
70	8th Street Bridge			New Bridge	Collier County	N/A

**Table 4-1. 2045 Existing Plus Committed (E+C) Projects**

Map ID	Roadway	From	To	Improvement	Agency or Municipality	Included in 2019–2023 TIP?
<b>Committed (2019–2023)</b>						
29	Airport Pulling Rd. <sup>a</sup>	Vanderbilt Beach Rd.	Immokalee Rd.	Widen from Four to Six Lanes	Collier County	Yes
30	Randall Blvd.	Immokalee Rd.	8th St.	Widen from Two to Four Lanes	Collier County	Yes
31	Vanderbilt Beach Rd.	US 41	East. of Goodlette-Frank Rd.	Widen from Four to Six Lanes	Collier County	Yes
32	Vanderbilt Beach Rd. Extension <sup>a</sup>	Collier Blvd.	Curry Canal	Widen from Two to Six Lanes	Collier County	Yes
33	Veterans Memorial Blvd.	Old US 41	Secoya Reserve Cir	New Four-Lane Facility	Collier County	Yes
34	Veterans Memorial Blvd.	Secoya Reserve Cir	Strand Blvd.	Widen from Two to Four Lanes	Collier County	Yes
35	Whippoorwill Lane	Pine Ridge Rd.	Stratford Ln	Widen from Two to Four Lanes	Collier County	Yes
36	SR 82	Gator Slough Lane	SR 29	Widen from Two to Four Lanes	FDOT FPN: 430849-1	Yes
37	Vanderbilt Beach Rd. Extension <sup>a</sup>	Curry Canal	Wilson Blvd.	New Four-Lane Facility	Collier County	Yes
38	Vanderbilt Beach Rd. Extension <sup>a</sup>	Wilson Blvd.	16th St.	New Two-Lane Facility Expandable to Four Lanes	Collier County	Yes
58	US 41	Oasis Visitor Center	-	Add Left-Turn Lane	FDOT FPN: 441975-1	Yes
59	Immokalee Rd.	Woodcrest Dr.	-	Intersection Improvements	Collier County	Yes
60	Pine Ridge Rd. <sup>a</sup>	Livingston Rd.	-	Intersection Improvements	Collier County	Yes
61	Randall Blvd. <sup>a</sup>	Immokalee Rd.	-	Intersection Improvements	Collier County	Yes



**Table 4-1. 2045 Existing Plus Committed (E+C) Projects**

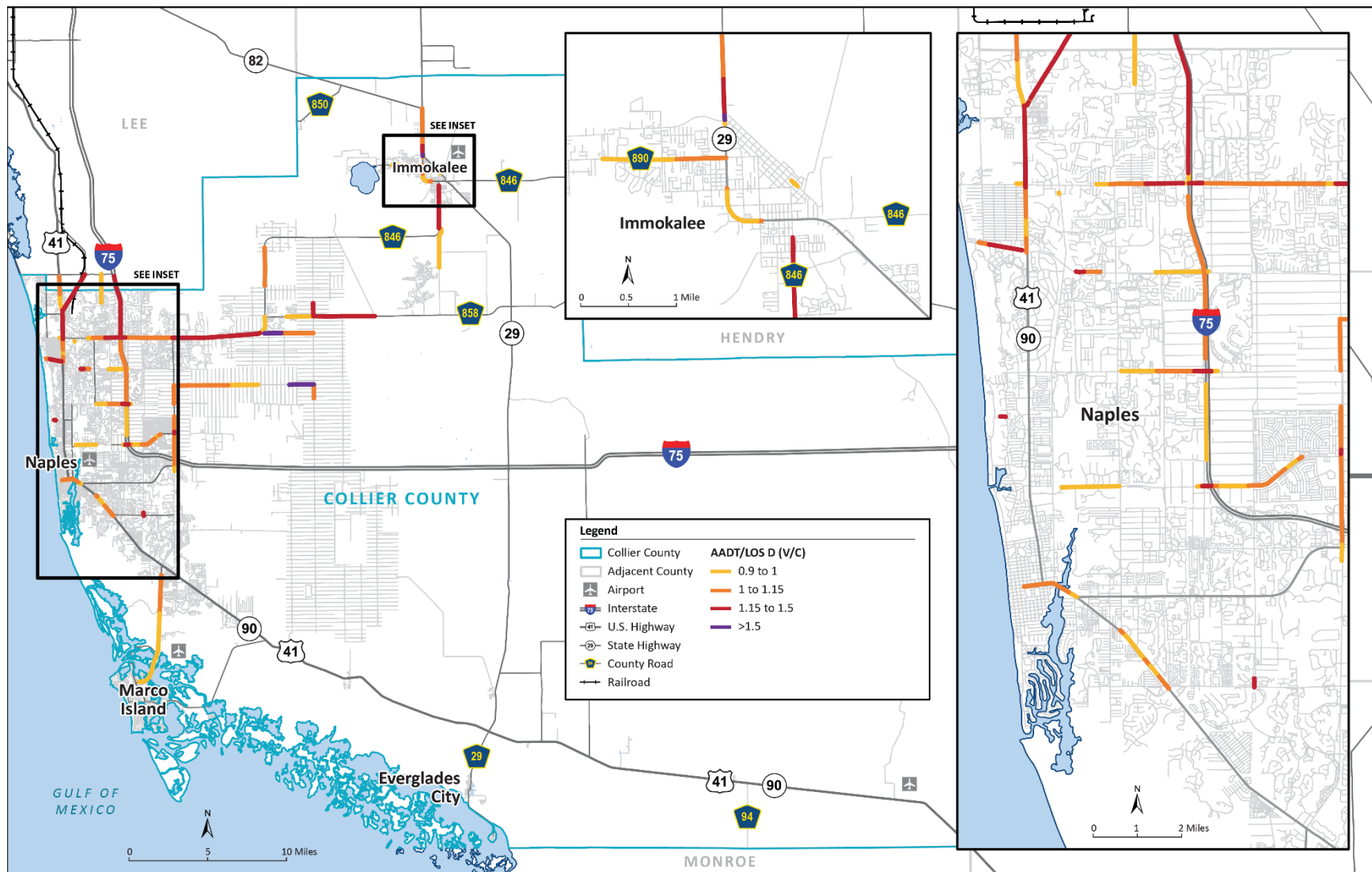
Map ID	Roadway	From	To	Improvement	Agency or Municipality	Included in 2019–2023 TIP?
62	Triangle Blvd. <sup>a</sup>	Celeste Dr.	-	Roundabout Implementation	Collier County	Yes
63	10th St.	5th Ave North	-	Roundabout Implementation	City of Naples	Yes
64	3rd Ave. South	8th St. South	-	Roundabout Implementation	City of Naples	Yes
67	Mooring Line Dr.	Crayton Rd.	-	Roundabout Implementation	City of Naples	Yes
71	16th Street Bridge	16th St.	16th St.	New Bridge	Collier County	Yes
73	Crayton Rd.	Harbour Dr.	-	Roundabout Implementation	City of Naples	Yes
75	Price St. <sup>a</sup>	Waterford Dr.	-	Roundabout Implementation	Collier County	Yes

Sources: FDOT Collier County Five Year Work Program FY 2019-2023, Collier County AUIR Five Year Work Program FY 2019-2023, Collier County One-Cent Sales Surtax Website

<sup>a</sup> Collier One-Cent Sales Surtax Transportation Project

Note:

FPN = Financial Project Number



**Figure 4-3. 2045 E+C Travel Network Congestion Map**

## Other Roadway Needs Considerations

Once the initial list of roadway projects needs was developed based on the E+C roadway deficiency modeling, other roadway-related needs data were evaluated to develop a more comprehensive project needs list. Considerations included review of existing planning studies, freight needs, and congestion management strategies, which included safety issues and Transportation Systems Management and Operations (TSM&O).

### Existing Planning Studies

The MPO reviewed the existing County planning studies described below to identify potential projects eligible for the roadway Needs Plan. These studies were recently completed or are currently underway.

#### *Randall Boulevard/Oil Well Road Study Area*

The County completed a corridor study to evaluate potential roadway network improvements near Randall Boulevard and Oil Well Road. The study evaluated several corridor alternatives to enhance traffic operations and safety conditions based on current and future travel demands. On May 14, 2019, the Collier BCC voted to approve the staff recommendation to expand Randall Boulevard (between 8th Street and Everglades Boulevard) to six lanes, Randall Boulevard (between Everglades Boulevard and Desoto Boulevard) to four lanes, and Everglades Boulevard (between Oil Well Road and Randall Boulevard) to four lanes.

#### *CR 951 Congestion Relief Study*

This study is intended to identify an alternative travel route to the existing County Road (CR) 951 (Collier Boulevard) corridor because of forecasted high congestion levels by 2045. The preliminary study area extends east of CR 951 from City Gate Boulevard North at its northern limit to Benfield Road on its

eastern limit and to US 41 at its southern limits. Potential alternative solutions include multiple travel routes, improvements to CR 951, a no-build option, and evaluation of other alternative planning strategies to alleviate future congestion on CR 951.

#### *Immokalee Road Corridor Congestion Study*

The Immokalee Road (CR 846) Corridor Congestion Study is evaluating the future levels of congestion along the Immokalee Road Corridor between Livingston Road and Logan Boulevard. Potential improvements will be considered at the main intersections along the corridor which include:

- Conventional “At-Grade” Improvements (widening)
- Continuous Flow Intersections
- Jug Handle
- Single Point Urban Interchange
- Restricted Crossing U-Turn
- Diverging Diamond Interchange at I-75

The study is expected to be completed in the spring of 2021.

#### *East of CR 951 Bridge Reevaluation Study*

In August 2008, the County conducted the East of CR 951 Infrastructure and Services Horizon Study to evaluate missing bridge connections based on system-wide infrastructure needs that considered transportation circulation, access management, schools, parks, law enforcement, emergency services, fire, libraries, storm water management, and public utilities. The study’s stakeholders identified 12 preferred canal crossing locations and ranked the bridges based on criteria related to mobility, service efficiency, and emergency response. The new bridges would be strategically located throughout the Golden Gate Estates area to reduce trip lengths and travel demand on already congested collector roadways and to provide the greatest opportunity to reduce

response time for first responders. In 2018, County voters approved a 1-cent infrastructure surtax that included specifically earmarked funding for constructing the new bridges.

In 2019, the County completed construction of a new bridge on 8th Street with funding from FDOT. The County has also programmed construction of a new bridge on 16th Street in the Five Year Work Program with funds from the infrastructure surtax proceeds. The surtax funds will be available to construct the remaining 10 bridges within the next 7 years.

The remaining 10 bridges are the subject of the 2020 East of CR 951 Bridge Reevaluation Study, which is being performed to reconfirm the validity of the remaining 10 recommended bridge locations before moving the remaining bridge projects into production. **Table 4-2** presents the bridge locations.

**Table 4-2. East of CR 951 Bridge Reevaluation Study Bridges**

Map ID <sup>a</sup>	New Bridge Projects
81	47th Ave. NE (between Immokalee Rd. & Everglades Blvd.)
82	Wilson Blvd. N (south of 33rd Ave NE)
83	18th Ave. NE (between Wilson Ave & 8th St. NE)
84	18th Ave. NE (between 8th St. NE & 16th St. NE)
85	North End of 13th St. NW (north of Golden Gate Blvd.)
86	16th St. SE (south of Golden Gate Blvd.)
87	10th Ave. SE (between Everglades Blvd. and Desoto Blvd.)
88	Wilson Blvd. S (south of Golden Gate Blvd.)
89	62nd Ave. NE (between Everglades Blvd. and 40th St. NE)

<sup>4</sup> <https://www.colliermopo.org/wp-content/uploads/2018/11/3-Freight-Considerations-Tech-Memo.pdf>

**Table 4-2. East of CR 951 Bridge Reevaluation Study Bridges**

Map ID <sup>a</sup>	New Bridge Projects
115	23rd St. SW (south of Golden Gate Blvd.)

<sup>a</sup> Refer to Figure 4-9

### Freight

The Collier Freight Network is defined in the Collier MPO 2040 LRTP Freight Congestion Considerations Technical Memorandum<sup>4</sup> as including limited-access facilities, regional freight mobility corridors, and freight distribution routes.

Collier County's freight transportation network system consists of numerous freight mobility corridors and freight distribution routes that support the state and regional economy. Rail access to the County is limited to a 1-mile section of the Seminole Gulf Railway in the far northwest corner of the County. In addition to providing traditional rail freight transportation, the rail line supplies regional trucking and logistical services, as well as warehousing and distribution from its distribution center located in North Fort Myers.

Review of truck traffic volumes in the FDOT Florida Traffic Online site reveals that volumes are greatest along the portion of I-75 north of Immokalee Road where trucks comprise more than 8 percent of total AADT.<sup>5</sup> Truck traffic volumes show that this section has daily truck volumes exceeding 8,500 per day. The portion of I-75 between Pine Ridge Road and north of Immokalee Road has truck volumes exceeding 7,500 per day and trucks make up between 8 to 10 percent of the total AADT. Along SR 29 south of I-75, truck volumes make up 26 percent of the total AADT. However, the total traffic

<sup>5</sup> FDOT Traffic Online (2019 Volumes) <https://tdaappsprod.dot.state.fl.us/fto/>

volumes along this segment are low compared to other areas in the County.

#### *Limited-Access Facilities*

I-75 is the only limited-access facility within the County and is a major element of the Florida SIS. It serves as the primary transportation facility connecting Collier County with its immediate neighboring counties, the rest of Florida, and the National Highway System. It also serves as a major commuter corridor.

#### *Regional Freight Mobility Corridors*

The regional freight mobility corridors function as connectors between limited-access facilities and regional freight activity centers.

Within the County, the regional freight mobility corridors consist of:

- SR 29 (I-75 to Hendry County Line)
- SR 82 (SR 29 to Hendry County Line)
- SR 84/Davis Boulevard (US 41 to I-75)
- US 41 (SR 84/Davis Boulevard to Lee County Line)

#### *Freight Distribution Routes*

Freight distribution routes serve to distribute truck traffic to local delivery areas. These include state roadways and other local roadways designated in local truck route ordinances at the county and municipal levels. The freight distribution routes within the County consist of:

- SR 29 (US 41 to I-75)

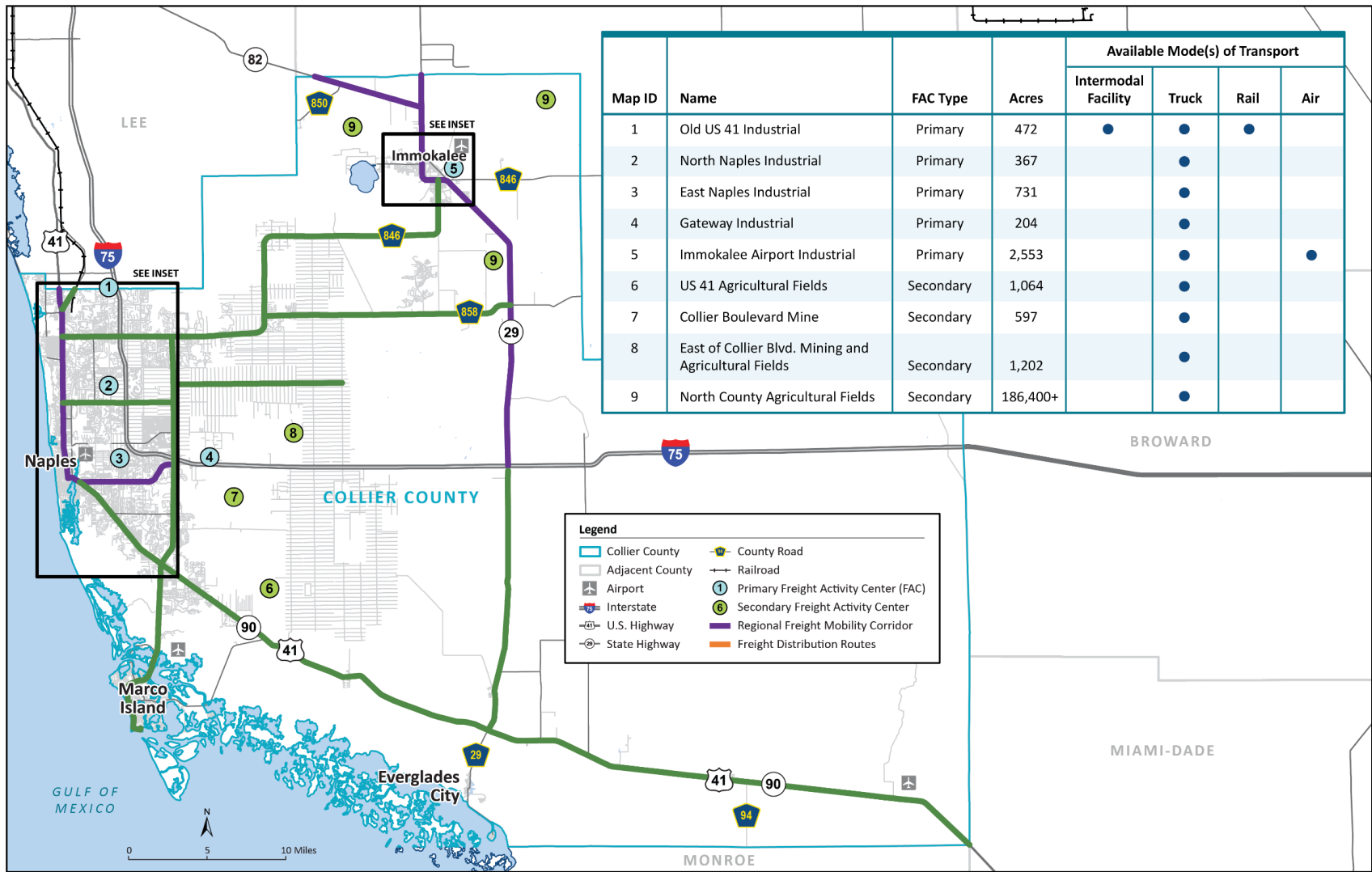
- CR 951/Collier Boulevard (Marco Island to US 41)
- CR 951/Collier Boulevard (US 41 to CR 846/Immokalee Road)
- CR 858/Oil Well Road (CR 846/Immokalee Road to SR 29)
- CR 846/Immokalee Road (US 41 to SR 29)
- Golden Gate Boulevard (CR 951/Collier Boulevard to DeSoto Boulevard)
- CR 896/Pine Ridge Road (US 41 to CR 951/Collier Boulevard)
- US 41 (SR 84/Davis Boulevard to Dade County Line)
- Old US 41 (US 41 to Lee County Line)

#### *Freight Activity Centers*

The northwestern portion of the County has been identified in the FDOT *Freight Mobility and Trade Plan*<sup>6</sup> as a low to medium freight activity hotspot within Florida. These hotspots distribute or attract large amounts of freight activities and have a significant impact on Florida's transportation system and economy. There are two types of freight activity centers (FACs) located in the County: primary and secondary (refer to **Figure 4-4**). Primary FACs are large industrial and manufacturing areas that send or receive freight in large quantities or for further distribution to the consumer market. Secondary FACs include significant mining and agricultural operations, which sometimes have intermittent or seasonal demands. There are five primary and four secondary FACs within the County.

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<sup>6</sup> <https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/rail/fmtp/april-2020/fmtp-tm-vp-april-2020.pdf>



**Figure 4-4. Freight Network and Activity Centers**



While the Old US 41 Industrial area has limited rail service, it is the only FAC in the County with the potential for intermodal rail activities and should be preserved for future freight-related development as economic conditions warrant. Additionally, a 60-acre zone in and around the Immokalee Airport is designated as a Foreign Trade Zone.<sup>7</sup> With convenient access to SIS facilities including SR 29, SR 82, and I-75, the Immokalee Airport is well-suited for existing and future intermodal air-cargo/truck activities.

### Congestion Management

The Collier MPO is federally mandated to implement a Congestion Management Process.<sup>8</sup> A CMP is developed to improve traffic flow and safety conditions. As discussed in Chapter 1, the Collier MPO CMC is responsible for creating and amending the CMP and for prioritizing candidate congestion management projects to be funded with federal and state funding. As presented on [Figure 4-5](#), the CMP is a detailed eight-step process that an urban area follows to improve the performance of its transportation system by reducing the negative impacts of traffic congestion.

The Collier MPO *Transportation System Performance Report (TSPR) and Action Plan Baseline Condition Report*<sup>9</sup> provides an evaluation of existing and future congestion issues in the County. [Figure 4-6](#) presents congestion hot spot locations in the County that were assessed for congestion management strategies in the TSPR. The hot spot locations were sorted into three tiers to identify which of the hot spot locations had the most causes of congestion. Tier 1 represents road segments influenced by three or more congestion causes, Tier 2 represents road segments influenced by two congestion

causes, and Tier 3 in represents road segments influenced by one congestion cause. Sources of congestion included school congestion, safety, V/C ratio, speed, and public comments.

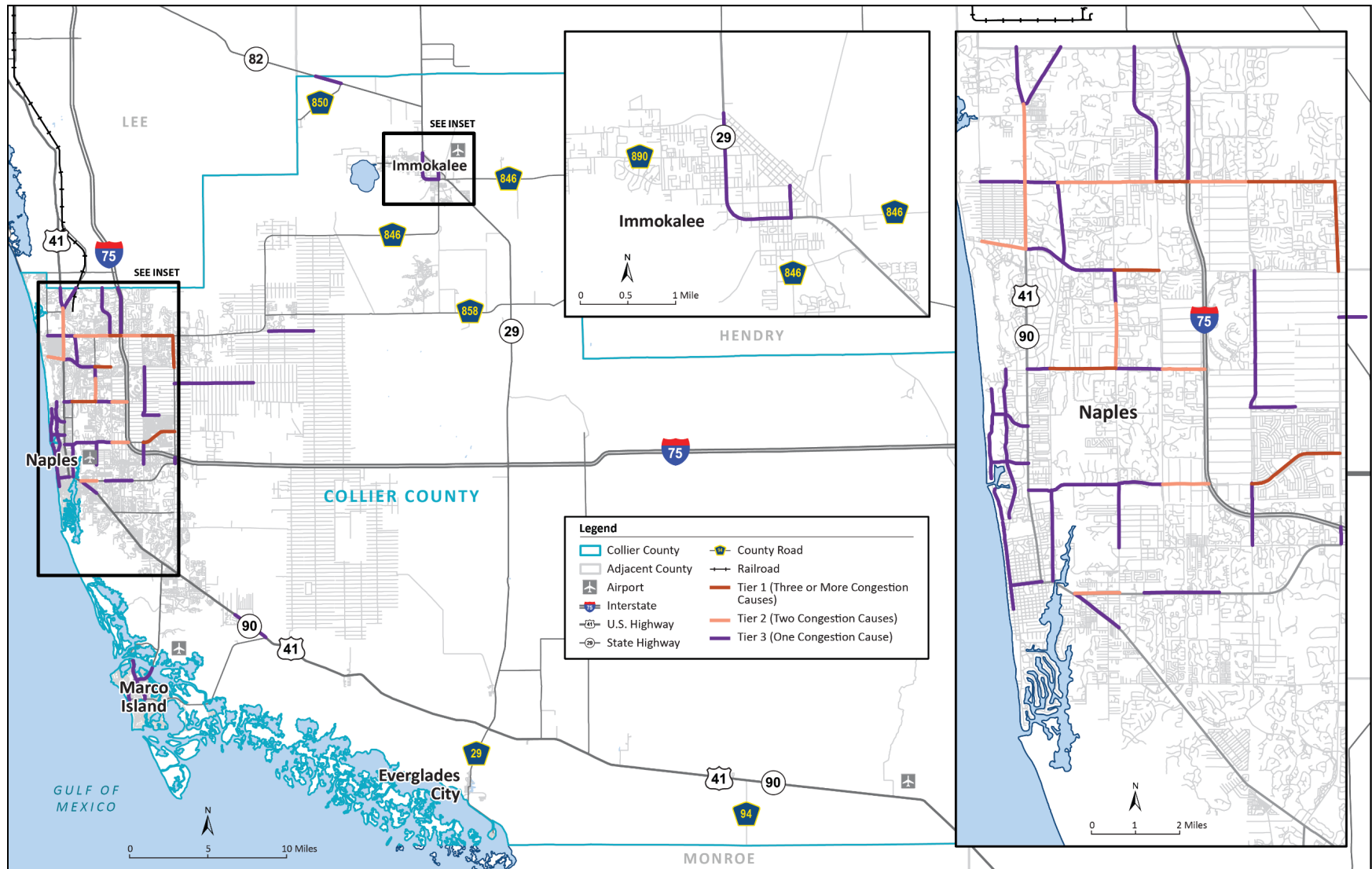


**Figure 4-5.** Congestion Management Process Eight-Step Framework

<sup>7</sup> <https://www.colliercountyfl.gov/your-government/divisions-a-e/airport-authority/immokalee-regional-airport>

<sup>8</sup> [https://ops.fhwa.dot.gov/plan4ops/focus\\_areas/cmp.htm](https://ops.fhwa.dot.gov/plan4ops/focus_areas/cmp.htm)

<sup>9</sup> <https://www.colliermmpo.org/wp-content/uploads/Baseline-Conditions-Report-V5-Combined-1.pdf>



**Figure 4-6. TSPR Congestion Hot Spot Locations**

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### *Safety Issues*

The Collier MPO *TSPR and Action Plan Baseline Condition Report*, along with the Collier MPO Local Road Safety Plan companion study, further identified the top intersection and roadway segment crash locations that were based on an analysis of the top 20 highest frequency and 20 highest rate locations of crashes between 2014 and 2018. **Table 4-3** presents the top roadway segments crash locations. In the 2020 CMP update process, new CMP strategies were identified and added to the existing strategies list based on the analysis conducted in the *TSPR Baseline Condition Report*, which identified causes and locations of congested corridors, and the *TSPR and Action Plan Action Plan*,<sup>10</sup> which analyzed and identified congestion mitigation strategies for the specific corridors. A major addition to these congestion mitigation strategies involved safety strategies that included:

- Signage and pavement markings (e.g., special emphasis crosswalks, yield/stop for pedestrian signs, advanced street signs)

- Visibility and sightline improvements
- New and upgraded street lighting
- Traffic control devices (for example, left-turn signals, variable message signs, pedestrian hybrid beacons)
- New and upgraded existing bicycle and pedestrian crossings

The mapping analysis of crash data from 2014 to 2018 for the LRTP update is presented in **Appendix C**. The maps present total crash locations between 2014 to 2018, as well as crash locations where a fatality by vehicle, including a pedestrian, or bicyclist occurred.

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<sup>10</sup> [https://www.colliermopo.org/wp-content/uploads/Action-Plan\\_V3-with-Appendices.pdf](https://www.colliermopo.org/wp-content/uploads/Action-Plan_V3-with-Appendices.pdf)

**Table 4-3. TSPR Top Road Segment Crash Locations (2014–2018)**

On Street	From Street	To Street	Total Crashes	Length (miles)	AADT	Crash Rate <sup>a</sup>	Top 20 Crash Frequency <sup>b</sup> or Rate Location
Golden Gate Pkwy	Santa Barbara Blvd.	Collier Blvd.	559	2.21	27,496	5.048	Both
I 75	Broward County Line	SR 29	470	29.13	22,000	0.402	Frequency
Airport Rd.	Pine Ridge Rd.	Orange Blossom Dr.	455	1.45	34,686	4.943	Both
Tamiami Trail East	Airport Rd.	Rattlesnake Hammock Rd.	453	1.69	47,814	3.074	Frequency
Airport Rd.	Radio Rd.	Golden Gate Pkwy.	405	1.43	44,008	3.534	Both
Immokalee Rd.	I 75	Logan Blvd.	402	1.37	38,245	4.210	Both
Tamiami Trail North	Immokalee Rd.	Vanderbilt Beach Rd.	396	1.51	35,925	4.005	Both
Golden Gate Blvd.	Collier Blvd.	Wilson Blvd.	381	5.03	25,481	1.630	Frequency
I 75	SR 29	SR 951	366	21.23	24,970	0.378	Frequency
Immokalee Rd.	Livingston Rd.	I 75	355	0.71	46,874	5.886	Both
Pine Ridge Rd.	Livingston Rd.	I 75	351	0.95	52,322	3.869	Both
I 75	Pine Ridge Rd.	Immokalee Rd.	331	4.27	35,295	1.203	Frequency
Immokalee Rd	Logan Blvd.	Collier Blvd.	331	1.94	89,362	1.048	Frequency
Golden Gate Pkwy.	Livingston Rd.	I 75	293	2.05	42,756	1.835	Frequency
Davis Blvd.	Lakewood Blvd.	County Barn Rd.	291	1.68	28,243	3.359	Frequency
Airport Rd	Golden Gate Pkwy.	Pine Ridge Rd.	290	2.59	46,556	1.316	Frequency
Tamiami Trail East	Rattlesnake Hammock Rd.	Treetops Dr.	280	2.45	37,428	1.674	Frequency
I 75	Immokalee Rd.	Lee County Line	278	3.06	99,582	0.501	Frequency

**Table 4-3. TSPR Top Road Segment Crash Locations (2014–2018)**

On Street	From Street	To Street	Total Crashes	Length (miles)	AADT	Crash Rate <sup>a</sup>	Top 20 Crash Frequency <sup>b</sup> or Rate Location
Immokalee Rd.	Collier Blvd.	Wilson Blvd.	271	5.10	29,259	0.995	Frequency
Tamiami Trail North	12th Ave N	Goodlette Rd. S	269	1.66	51,500	1.727	Frequency
Radio Rd.	Livingston Rd.	Santa Barbara Blvd.	250	1.99	18,398	3.742	Rate
Santa Barbara Blvd.	Golden Gate Pwky.	Green Blvd.	215	1.71	20,314	3.391	Rate
Airport Rd.	Davis Blvd.	North Rd.	198	0.52	43,551	4.819	Rate
Collier Blvd.	Golden Gate Pwky.	Green Blvd.	177	1.04	27,271	3.420	Rate
Pine Ridge Rd.	Goodlette-Frank Road	Shirley St.	165	0.67	36,418	3.733	Rate
Immokalee Rd.	Stockade Rd.	SR 29	157	1.52	6,949	8.155	Rate
Lake Trafford Rd.	Carson Rd.	SR 29	93	1.00	8,650	5.874	Rate
Immokalee Drive	N 29th St.	Charlotte St.	91	1.97	6,200	4.074	Rate

<sup>a</sup> Crash rate expressed as the number of crashes per 100 million vehicle miles of travel (AADT x Length) for the 5-year reporting period.

<sup>b</sup> Frequency is defined as the number of crashes occurring within a specific jurisdiction, on a roadway segment, or at an intersection.

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### *Transportation System Management and Operations*

The combination of technology and operational strategies is called TSM&O. These multimodal strategies are designed to maximize the efficiency, safety and use of existing and planned transportation infrastructure. TSM&O include Transportation System Management (TSM) approaches and ITS technologies that are noted in the Collier MPO *Congestion Management Process 2017 Update* (Adopted October 13, 2017)<sup>11</sup> as effective strategies to mitigate congestion. TSM strategies are a low-cost but effective way to reduce congestion particularly for:

- Intersection and signal improvements
- Special events management strategies
- Incident management

ITS projects are effective in maximizing a transportation system's efficiency. Based on the CMP 2017 Update, candidate ITS projects in Collier County include:

- Those which are consistent with FDOT's current ITS Regional Architecture
- Updates to existing equipment and software deployed in the region
- Improved incident management
- Enhancements to City of Naples, Collier County Traffic Operations/Management Centers (TOCs), including studies and implementing their recommendations
- Improved use of social media and public information technologies

Further, the 2017 CMP Update noted the following ITS performance measures:

- Maintaining concurrency with FDOT Regional ITS Architecture and technological advances in TOC equipment and operations
- Increased number of signalized intersections connected to ITS
- Improved Travel Time Reliability

Within Collier MPO's jurisdiction, both the City of Naples and Collier County manage TOCs in close coordination with each other and with FDOT to remain in full compliance with the FDOT Statewide ITS architecture.

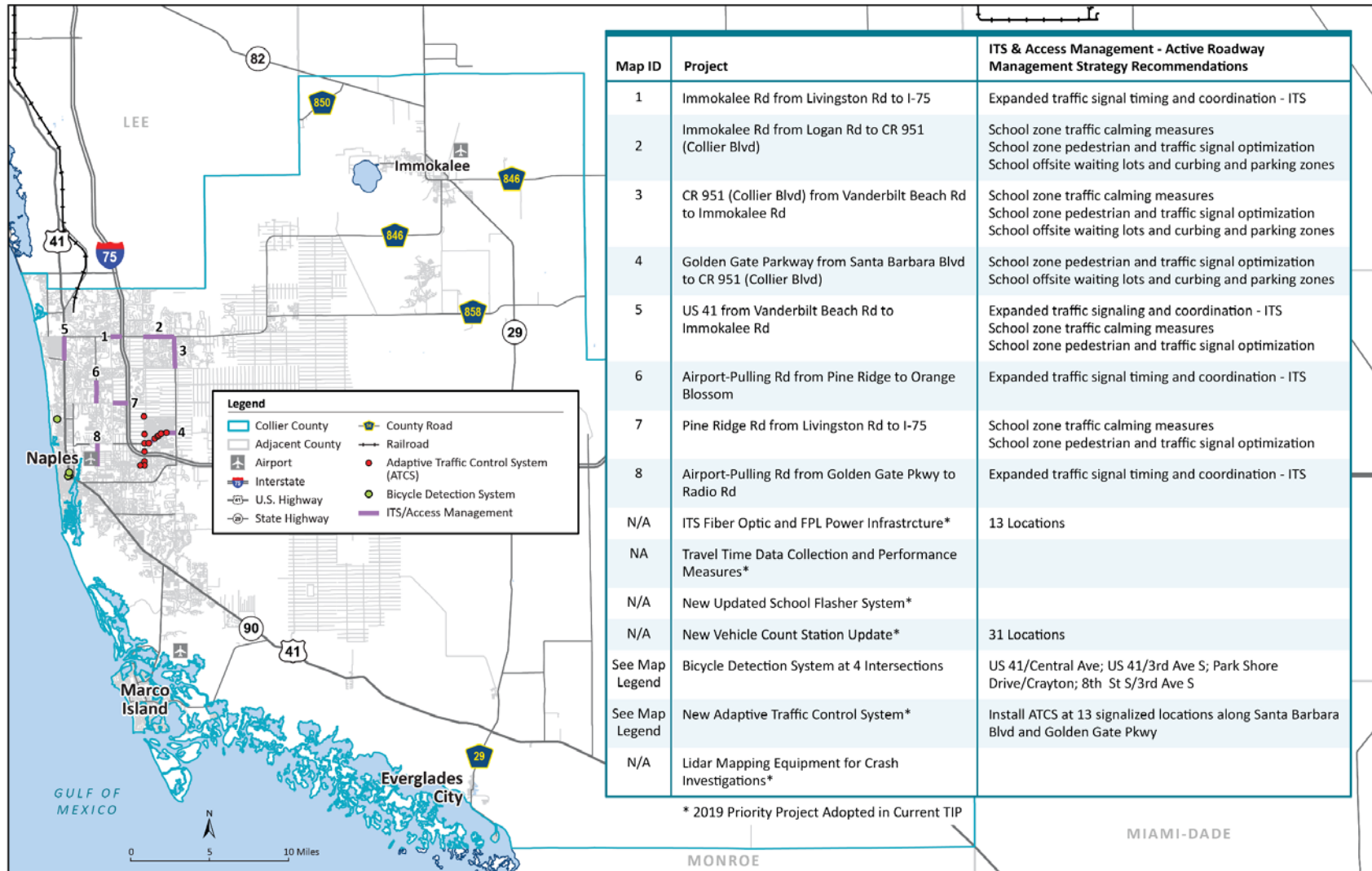
The 2020 CMP update identified several roadway facilities as candidates for ITS and active roadway management strategies. **Figure 4-7** summarizes the projects and associated recommendations along with projects adopted in the current TIP.

While these projects are part of the roadway needs, the LRTP-level modeling software (D1RPM) is not sensitive enough to determine if congestion is relieved through implementation of these strategies. Evaluation and prioritization of these projects is conducted by the MPO CMC using Strategy Evaluation Criteria that are used to screen project submittals for consistency with CMP goals, strategies, and congestion hotspots identified in the TSPR *Baseline Condition Report* (refer to Figure 4-6).

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<sup>11</sup> <https://www.colliermopo.org/wp-content/uploads/2017-CMP.pdf>





**Figure 4-7. 2019 and 2020 CMP ITS/Active Roadway Management Projects**

Both the Congestion Management Process and the bicycle/pedestrian planning process strongly consider crash data as an important component of the project identification and selection process. As improvements are made to these facilities, special attention is placed on identifying solutions that enhance safety for motorists, pedestrians, and bicyclists. Traffic crashes are highly correlated with intersection locations, and consideration of operational and ITS improvements to major and minor intersections will address many of the high crash locations. Input from the LRTP into those continuing processes provides valuable guidance in the identification of safety-related improvements.

### Ranking the Roadway Needs

Once a comprehensive list of the roadway project needs was developed, they were evaluated by scoring each project using defined goals and objectives, and the evaluation criteria described in Chapter 3. The evaluation provided a score for each project that was used to rank the needs projects from highest to lowest. During the process, adjustments were made to the rankings as more testing was done, or as information about projects schedules and commitments became known. Several projects were removed from the needs list and moved to the E+C category based on agency expectations that projects would be completed before the 2023–2045 planning timeframe. Projects were deleted if modeling indicated that they would not be beneficial.

The following subsections provide further details on the evaluation criteria scoring presented in Chapter 3. Additionally, it describes other considerations when evaluating the projects including natural environment impacts and mitigation strategies, risks to the transportation system due to

climate change, and future technology impacts to the transportation system including CAV.

### Environmental Considerations



Transportation projects can significantly impact many aspects of the natural environment including wildlife and their habitats, wetlands, and groundwater resources. Where impacts cannot be completely avoided, impacts minimization, mitigation or conservation efforts are

required. The Collier MPO is committed to principles of environmental stewardship and carefully examines potential impacts and mitigation efforts for each project under consideration. Environmental mitigation for transportation projects in Collier County is completed through a partnership between the Collier MPO, its member jurisdictions, FDOT, state and federal environmental resource and regulatory agencies, and environmental preservation organizations.

Environmental mitigation is the process of addressing damage to the environment caused by transportation projects or programs. The process of mitigation is best accomplished through enhancement, restoration, creation, or preservation projects that help offset unavoidable environmental impacts. These activities are directed through Section 373, F.S., which establishes the requirements for mitigation planning as well as the requirements for permitting, mitigation banking, and mitigation requirements for habitat impacts. Impacts to habitat can be mitigated through a variety of options, which include mitigation banks and mitigation through the Water Management District(s) and the Florida Department of Environmental Protection (FDEP).

**Table 4-4** lists environmental mitigation strategies that are considered when addressing environmental impacts from future projects.

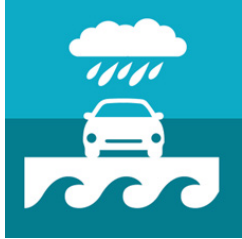
**Table 4-4. Mitigation Strategies**

Resource/Impacts	Potential Mitigation Strategy
Wetlands and Water Resources	<ul style="list-style-type: none"> <li>• Restore degraded wetlands</li> <li>• Create new wetland habitats</li> <li>• Enhance or preserve existing wetlands</li> <li>• Improve stormwater management</li> <li>• Purchase credits from a mitigation bank</li> </ul>
Forested and Natural Areas	<ul style="list-style-type: none"> <li>• Use selective cutting and clearing</li> <li>• Replace or restore forested areas</li> <li>• Preserve existing vegetation</li> </ul>
Habitats	<ul style="list-style-type: none"> <li>• Construct underpasses, such as culverts</li> <li>• Implement other design measures to minimize potential fragmenting of animal habitats</li> </ul>
Streams	<ul style="list-style-type: none"> <li>• Perform stream restoration</li> <li>• Create vegetative buffer zones</li> <li>• Enforce strict erosion and sedimentation control measures</li> </ul>
Threatened or Endangered Species	<ul style="list-style-type: none"> <li>• Preservation</li> <li>• Enhance or restore degraded habitat</li> <li>• Create new habitats</li> <li>• Establish buffer areas around existing habitat</li> </ul>

As part of the ranking process, an evaluation of the potential impacts to wildlife, habitat, and wetlands was conducted for each project in the needs network. The U.S. Fish and Wildlife Service's (USFWS) National Wetlands Inventory database and their panther habitat maps served as a source to estimate the amount of environmental impacts for each project. Impacts to habitat and wetlands were reflected by giving a negative score for each impact, ranging from -1 (least negative impact) to -5 (most negative impact). Projects were scored based on their degree of impact to panther habitat and wetland impacts. The Collier MPO 2045 LRTP Update *Project Cost Development Methodology Technical Memorandum* details how panther habitat and wetland impacts were estimated as well as the costs associated with potential mitigation.

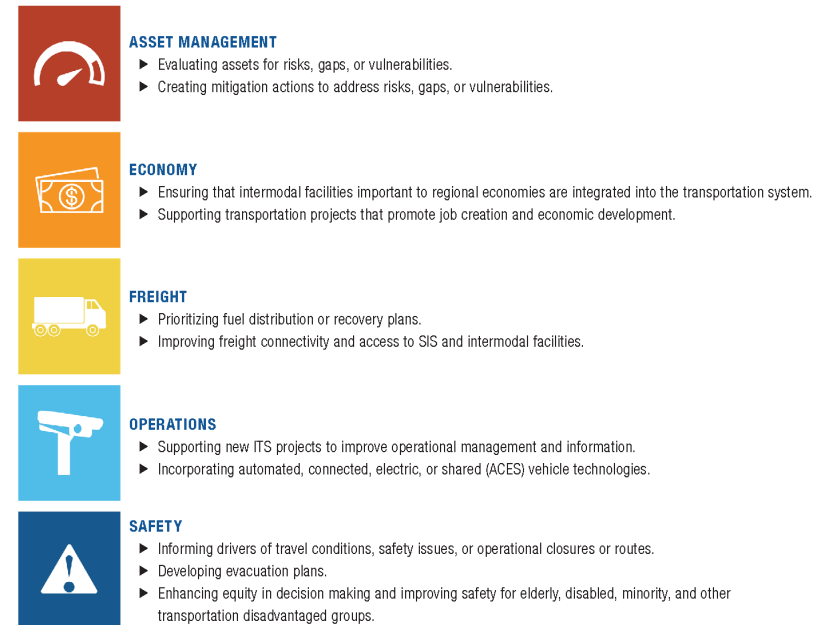
In addition to the process outlined in the Florida Statutes and implemented by the MPO and its partner agencies, the FDOT Efficient Transportation Decision Making (ETDM) process is used to seek input on individual qualifying long-range transportation projects allowing for more specific commentary. This ensures that mitigation opportunities are identified, considered, and available as the LRTP is developed and projects are advanced. The ETDM screening process was applied to all qualifying projects identified in the 2045 LRTP Cost Feasible Plan, which further provided opportunity to engage on any sociocultural impacts as well.

## Climate Change Vulnerability and Risks



Southwest Florida contains the largest area of tidally influenced public lands in the Gulf of Mexico and the fastest growing urban landscape in Florida. Both the human and natural components of the ecosystem are under increasing risk because of the threats of a growing

human population, sea level rise (SLR), and tropical cyclones. While all MPOs in Florida will be challenged with extreme change in weather events, each MPO's challenge is unique. Changing conditions can include increased inland flooding, SLR, increased frequency of severe storms with high winds and greater rainfall, increased duration of droughts and rapidly spreading fires, and economic recessions. These conditions will lead to more rapid degradation and decreased functional operability (or lifespan) of transportation facilities. The Collier MPO along with its partnering agencies are considering the unique challenges they face to better plan for ways to protect and preserve their infrastructure. Federal Regulation 23 CFR 450.306(b)(9) requires MPOs, in cooperation with the state and public transportation operators, to "improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation" in the long-range transportation planning process. Planning for resilience involves considering objectives and strategies in other planning areas, as shown on **Figure 4-8**.



**Figure 4-8. Resiliency Planning Considerations**

*Source: FDOT Resilience Quick Guide: Incorporating Resilience in the MPO Long Range Transportation Plan, January 2020*

To better understand planning needs and potential actions to mitigate SLR, the County, City of Naples, City of Marco Island, and City of Everglades teamed with Florida Gulf Coast University and the University of Florida to sponsor a grant application from the National Centers for Coastal Ocean Science [a subsidiary of National Oceanic and Atmospheric Administration (NOAA)] for a 3-year study and modeling exercise related to the impacts of SLR and storm surge on Collier County. The Board approved a Resolution of Support for the project on September 13, 2016, and the NOAA grant was awarded. The ACUNE project<sup>12</sup> began in June 2017 to

<sup>12</sup> <https://restoreactscienceprogram.noaa.gov/projects/local-coastal-tool>

develop a decision-support tool to aid resource managers, municipalities, and agencies in Collier County with decisions related to the preservation and restoration of mangrove, marsh, and beach habitats; water management; and coastal planning, zoning, and land acquisition. However, the study was delayed because of the COVID-19 pandemic. A future LRTP update will include the results of the study and adjustments to the needs or cost feasible projects will be made accordingly.

During the Collier MPO 2045 LRTP update, the NOAA Sea Level Rise Viewer (version 3.0.0)<sup>13</sup> tool was used to evaluate potential climate impacts to the Collier County transportation network. The viewer provides a preliminary look at SLR and coastal flooding impacts. The tool is for screening-level evaluations and uses best-available, nationally consistent data sets and analyses. The SLR viewer can be used at several scales to help estimate impacts and prioritize actions for different scenarios. While the data and maps provided by the tool illustrate the scale of potential flooding, the exact location of SLR and flooding is an estimate. For the Collier MPO 2045 LRTP update, an intermediate high scenario was used to estimate SLR by 2045. **Appendix C** provides a map of potential SLR and coastal flooding by 2045. Projects that promote transportation infrastructure resiliency in the face of climate change and SLR were given a score of 5 if they were within 0.25 miles of potential 2045 flooding area and a score of 3 if they within 0.5 miles of a potential low lying area.

<sup>13</sup> <https://coast.noaa.gov/slr/#/layer/slr>

The *Collier MPO 2045 LRTP Transportation Network's Vulnerability to Climate Change White Paper* presents further details on climate change vulnerability and risk, estimation of SLR impacts, and possible mitigation strategies.

#### *Future Technology Considerations*



The FDOT *Guidance for Assessing Planning Impacts and Opportunities of Automated, Connected, Electric and Shared-Use (ACES) Vehicles* notes that Florida MPOs are dealing with an unprecedented amount of potential change as they plan for their

transportation needs between now and 2045.<sup>14</sup> Within their next planning horizon, MPOs need to decide how best to address the increasing deployment of ACES vehicles and complementary technologies.

Because emerging technologies have the potential to completely transform conventional transportation practices, it is important to understand the potential benefits and drawbacks of the various technologies. The key benefit to these emerging technologies is the potential to improve safety by reducing injuries and fatalities resulting from human error and distractions. However, ACES technologies also introduce a great deal of unknowns, such as costs, social inequities, and new planning requirements that make navigating policy difficult. **Table 4-5** presents potential positive and negative effects from these emerging technologies as noted in the FDOT ACES Guidance.

<sup>14</sup> [https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/planning/policy/metrosupport/resources/fdot\\_mpoguidebook\\_20181005.pdf?sfvrsn=7d194ed6\\_2](https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/planning/policy/metrosupport/resources/fdot_mpoguidebook_20181005.pdf?sfvrsn=7d194ed6_2)



**Table 4-5. Potential Positive and Negative Effects Resulting from ACES Technologies**

Technology	Potential Negative Effect(s)	Potential Positive Effect(s)
Automated Vehicles	<ul style="list-style-type: none"> <li>• Potential increase in VMT from empty vehicles</li> <li>• Changes in land use or urban form</li> </ul>	<ul style="list-style-type: none"> <li>• Increased mobility for children, elderly or the disabled at potentially lower costs</li> <li>• Reduced parking demand</li> <li>• Changes in land use or urban form</li> </ul>
Connected Vehicles	<ul style="list-style-type: none"> <li>• Potential hacking of a transportation network</li> </ul>	<ul style="list-style-type: none"> <li>• Potential increase in roadway capacities</li> <li>• New safety features</li> <li>• Improved congestion management</li> </ul>
Electric Vehicles	<ul style="list-style-type: none"> <li>• Decrease in transportation funding sources from reduction in motor fuel tax revenues</li> </ul>	<ul style="list-style-type: none"> <li>• Potential reduction in air emissions (depending on energy sources used to generate electricity)</li> </ul>
Shared-Use Vehicles	<ul style="list-style-type: none"> <li>• Complete Street design challenges because of competition for limited curb space in urban areas</li> </ul>	<ul style="list-style-type: none"> <li>• Opportunities for mobility hubs and new funding sources</li> </ul>

The Florida Connected Vehicle Initiative includes multiple planning, design/implementation, and operational connected vehicle projects throughout the state.<sup>15</sup> While there are currently no projects or initiatives in Collier County, there is

<sup>15</sup> <https://www.fdot.gov/traffic/its/projects-deploy/cv/connected-vehicles>

one project in neighboring Lee County: US 41 Florida's Regional Advanced Mobility Elements (FRAME). The project is in the initial phases. The overall goal is to improve efficient operations of the traffic signals along the corridor, thereby improving mobility as well as provide information for connected vehicles. The project covers approximately 30 miles and 71 traffic signals and includes the following initiatives:

- Traffic signal controllers/cabinets upgrades
- Connected Vehicle Road Side Units deployment
- Pedestrian detection using LIDAR<sup>16</sup> detectors
- Deployment of Automated Traffic Signal Performance Measures

Considering that US 41 continues into Collier County, the Collier MPO is considering expansion of the US 41 FRAME project into the County. The project would benefit drivers commuting between Lee and Collier Counties by improving mobility and safety along the US 41 Corridor.

For the Collier MPO 2045 LRTP update, one CAV planning scenario was modeled by FDOT. FDOT coordinated with the University of South Florida's CUTR to determine the capacity adjustments to the model to simulate a CAV fleet. Based on that coordination, a CAV planning scenario assumed 35 percent of the vehicles on the network were CAV. The output resulted in minor capacity improvements to the overall network.

## 2045 Roadway Needs Results

**Figure 4-9** and **Table 4-6** identify the 2045 roadway needs projects which total to more than \$2.4 billion. The evaluation matrix for the ranking of the needs is presented in **Appendix D**.

<sup>16</sup> Light Detection and Ranging



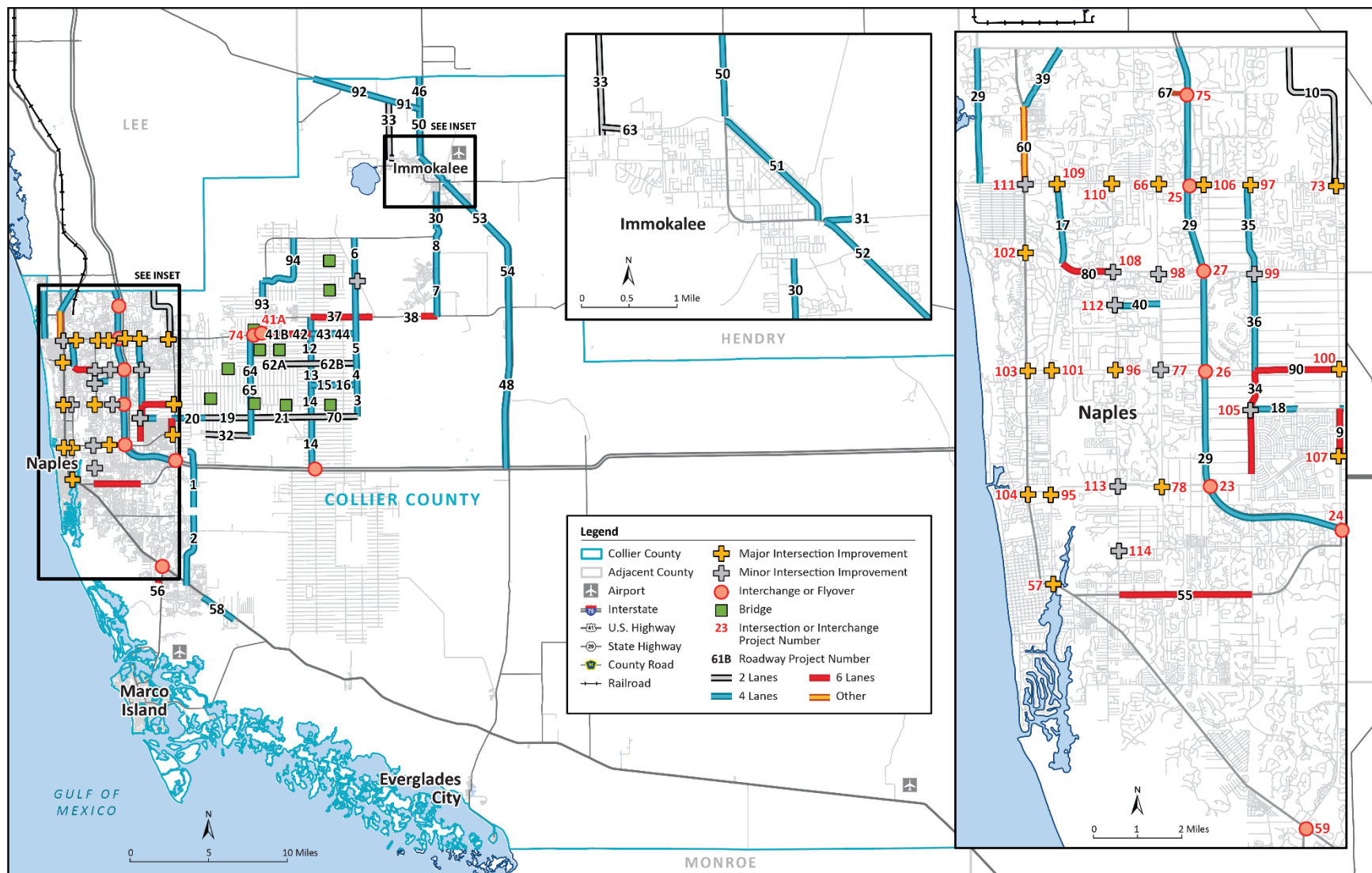


Figure 4-9. 2045 Needs Plan Project Map

**Table 4-6. 2045 Needs Plan List of Projects**

Map ID	Needs Ranking	Project	From	To	Type of Project	Description
1	51	Benfield Rd. Extension	The Lords Way	City Gate Blvd. N	Roadway Capacity	New Two-Lane Road (Expandable to Four Lanes)
2	41	Benfield Rd.	US 41 (SR 90) (Tamiami Trail E)	Rattlesnake Hammock Extension	Roadway Capacity	New Two-Lane Road (Expandable to Four Lanes)
3	72	Big Cypress Pkwy.	Green Blvd.	Golden Gate Blvd.	Roadway Capacity	New Two-Lane Road (Expandable to Four Lanes)
4	70	Big Cypress Pkwy.	Golden Gate Blvd.	Vanderbilt Beach Road Ext.	Roadway Capacity	New Two-Lane Road (Expandable to Four Lanes)
5	71	Big Cypress Pkwy.	Vanderbilt Beach Rd. Extension	Oil Well Rd.	Roadway Capacity	New Two-Lane Road (Expandable to Four Lanes)
6	82	Big Cypress Pkwy.	Oil Well Rd.	Immokalee Rd.	Roadway Capacity	New Two-Lane Road (Expandable to Four Lanes)
7	62	Camp Keais Rd.	Pope John Paul Blvd.	Oil Well Rd.	Roadway Capacity	Widen from Two to Four Lanes
8	80	Camp Keais Rd.	Immokalee Rd.	Pope John Paul Blvd.	Roadway Capacity	Widen from Two to Four Lanes
9	1	Collier Blvd. (CR 951)	Golden Gate Main Canal	Green Blvd.	Roadway Capacity	Widen from Four to Six Lanes
10	21	CR 951 Extension	Collier Blvd. (CR 951) (northern terminus)	Lee/Collier County Line	Roadway Capacity	New 2-Lane Road
11	34	Everglades Blvd.	Randall Blvd.	South of Oil Well Road	Roadway Capacity	Widen from Two to Four Lanes

**Table 4-6. 2045 Needs Plan List of Projects**

Map ID	Needs Ranking	Project	From	To	Type of Project	Description
12	35	Everglades Blvd.	Vanderbilt Beach Rd. Extension	Randall Blvd.	Roadway Capacity	Widen from Two to Four Lanes
13	54	Everglades Blvd.	Golden Gate Blvd.	Vanderbilt Beach Rd. Extension	Roadway Capacity	Widen from Two to Four Lanes
14	63	Everglades Blvd.	I-75 (SR-93)	Golden Gate Blvd.	Roadway Capacity	Widen from Two to Four Lanes
15	37	Golden Gate Blvd.	Everglades Blvd.	Desoto Blvd.	Roadway Capacity	Widen from Two to Four Lanes
16	58	Golden Gate Blvd. Extension	Desoto Blvd.	Big Cypress Pkwy.	Roadway Capacity	New Four-Lane Road
17	31	Goodlette-Frank Rd.	Vanderbilt Beach Rd.	Immokalee Rd.	Roadway Capacity	Widen from Two to Four Lanes
18	66	Green Blvd.	Santa Barbara Blvd./ Logan Blvd.	Sunshine Blvd.	Roadway Capacity	Widen from Two to Four Lanes
19	27	Green Boulevard Extension (16th Ave. SW)	23rd St. SW	Wilson Blvd. Extension	Roadway Capacity	New Two-Lane (Future Study Area)
20	33	Green Boulevard Extension (16th Ave. SW)	Collier Blvd. (CR 951)	23rd St. SW	Roadway Capacity	New Four-Lane (Future Study Area)
21	42	Green Boulevard Extension (16th Ave. SW)	Wilson Blvd. Ext	Everglades Blvd.	Roadway Capacity	New Two-Lane Road
22	60	I-75 (SR-93) Interchange	Everglades Blvd.		Interchange	New Interchange

**Table 4-6. 2045 Needs Plan List of Projects**

Map ID	Needs Ranking	Project	From	To	Type of Project	Description
23	8	I-75 (SR-93) Interchange (modified)	Golden Gate Pkwy.		Interchange	Interchange Improvement
24	2	I-75 (SR-93) Interchange (modified)	Collier Blvd. (CR 951)		Interchange	Interchange Improvement
25	22	I-75 (SR-93) Interchange (modified)	Immokalee Rd.		Interchange	Interchange improvement (DDI proposed)
26	18	I-75 (SR-93) Interchange (modified)	Pine Ridge Rd.		Interchange	Interchange improvement (DDI proposed)
27	40	I-75 (SR-93) Interchange (new)	Vanderbilt Beach Rd.		Interchange	New Interchange - Partial (to/from the north)
29	5	I-75 (SR-93) Managed (Toll) Lanes	Collier Blvd. (CR 951)	Collier/Lee County Line	Roadway Capacity	New Ten-Lane Express (Toll) Lanes
30	7	Immokalee Rd. (CR 846)	Camp Keais Rd.	Carver St.	Roadway Capacity	Widen from Two to Four Lanes
31	23	CR 846 E	SR 29	Airpark Blvd.	Roadway Capacity	Widen from Two to Four Lanes
32	81	Keane Ave.	Inez Rd.	Wilson Blvd. Extension	Roadway Capacity	New Two-Lane Road (Future Study Area)
33	50	Little League Rd. Extension	SR 82	Westclox St.	Roadway Capacity	New Two-Lane Road
34	65	Logan Blvd.	Green Blvd.	Pine Ridge Rd.	Roadway Capacity	Widen from Four to Six Lanes
35	52	Logan Blvd.	Vanderbilt Beach Rd.	Immokalee Rd.	Roadway Capacity	Widen from Two to Four Lanes

**Table 4-6. 2045 Needs Plan List of Projects**

Map ID	Needs Ranking	Project	From	To	Type of Project	Description
36	67	Logan Blvd.	Pine Ridge Rd.	Vanderbilt Beach Rd.	Roadway Capacity	Widen from Two to Four Lanes
37	38	Oil Well Road/CR 858	Everglades Blvd.	Oil Well Grade Rd.	Roadway Capacity	Widen from Two to Six Lanes
38	46	Oil Well Road/CR 858	Ave Maria Entrance	Camp Keais Rd.	Roadway Capacity	Widen from Two to Six Lanes
39	10	Old US 41	US 41 (Tamiami Trail E)	Lee/Collier County Line	Roadway Capacity	Widen from Two to Four Lanes
40	45	Orange Blossom Drive	Airport Pulling Rd.	Livingston Rd.	Roadway Capacity	Widen from Two to Four Lanes
41A	19	Randall Blvd. Intersection (flyover)	Immokalee Rd.		Interchange	Ultimate Intersection Improvement: Overpass
41B	36	Randall Blvd.	Immokalee Rd.	8th St. NE	Roadway Capacity	Widen from Two to Six Lanes
42	39	Randall Blvd.	8th St. NE	Everglades Blvd.	Roadway Capacity	Widen from Two to Six Lanes
43	59	Randall Blvd.	Everglades Blvd.	Desoto Blvd.	Roadway Capacity	Widen from Two to Four Lanes
44	61	Randall Blvd.	Desoto Blvd.	Big Cypress Pkwy.	Roadway Capacity	New Four-Lane Road
45	44	Santa Barbara Blvd.	Painted Leaf Ln.	Green Blvd.	Roadway Capacity	Widen from Four to Six Lanes
46	56	SR 29	SR 82	Collier/Hendry Line	Roadway Capacity	Widen from Two to Four Lanes

**Table 4-6. 2045 Needs Plan List of Projects**

Map ID	Needs Ranking	Project	From	To	Type of Project	Description
48	49	SR 29	I-75 (SR 93)	Oil Well Rd.	Roadway Capacity	Widen from Two to Four Lanes
50	24	SR 29	New Market Road North/Westclox Street	North of SR 82	Roadway Capacity	Widen from Two to Four Lanes
51	13	SR 29/New Market Rd. W (New Road)	CR 846 E	New Market Rd. N	Roadway Capacity	New Four-Lane Road
52	3	SR 29	Agriculture Way	CR 846 E	Roadway Capacity	Widen from Two to Four Lanes
53	15	SR 29	Sunniland Nursery Rd.	Agriculture Way	Roadway Capacity	Widen from Two to Four Lanes
54	16	SR 29	Oil Well Rd.	Sunniland Nursery Rd.	Roadway Capacity	Widen from Two to Four Lanes
55	6	SR 84 (Davis Blvd.)	Airport Pulling Rd.	Santa Barbara Blvd.	Roadway Capacity	Widen from Four to Six Lanes
56	9	Collier Blvd. (SR 951)	South of Manatee Rd.	North of Tower Rd.	Roadway Capacity	Widen from Four to Six Lanes
57	4	US 41 (SR 90) (Tamiami Trail E) intersection	Goodlette Rd.		Major Intersection Improvement	Major Intersection Improvement
58	12	US 41 (SR 90) (Tamiami Trail E)	Greenway Rd.	6 L Farm Rd	Roadway Capacity	Widen from Two to Four Lanes
59	11	US 41 (SR 90) (Tamiami Trail E) intersection	Collier Blvd. (SR 951)		Major Intersection Improvement	Major Intersection Improvement



**Table 4-6. 2045 Needs Plan List of Projects**

Map ID	Needs Ranking	Project	From	To	Type of Project	Description
60	14	US 41 (SR 90) (Tamiami Trail E)	Immokalee Rd.	Old US 41	Corridor Study	Further Study Required
62A	73	Vanderbilt Beach Rd. Extension	16th St.	Everglades Blvd.	Roadway Capacity	New Two-Lane Road (Expandable to Four Lanes)
62B	73	Vanderbilt Beach Rd. Extension	Everglades Blvd.	Big Cypress Pkwy.	Roadway Capacity	New Two-Lane Road (Expandable to Four Lanes)
63	53	Westclox Street Extension	Little League Rd.	West of Carson Rd.	Roadway Capacity	New Two-Lane Road
64	30	Wilson Blvd.	Golden Gate Blvd.	Immokalee Rd.	Roadway Capacity	Widen from Two to Four Lanes
65	32	Wilson Blvd.	Keane Ave.	Golden Gate Blvd.	Roadway Capacity	New Two-Lane Road (Expandable to Four Lanes)
66	17	Immokalee Rd. (Intersection)	Livingston Rd.		Major Intersection Improvement	Major Intersection Improvement
67	57	Veterans Memorial Blvd. Extension	Strand Blvd.	I-75	Roadway Capacity	New Four-Lane Road
68	83	Big Cypress Pkwy. Intersection (new)	Oil Well Grade Rd.		Minor Intersection Improvement	New At-Grade Intersection
70	68	Green Blvd. Extension	Everglades Blvd.	Big Cypress Pkwy.	Roadway Capacity	New Two-Lane Road
73	20	Immokalee Rd. (CR 846) Intersection	Collier Blvd. (CR 951)		Major Intersection Improvement	Major Intersection Improvement

**Table 4-6. 2045 Needs Plan List of Projects**

Map ID	Needs Ranking	Project	From	To	Type of Project	Description
74	28	Immokalee Rd. (CR 846) Intersection	Wilson Blvd.		Major Intersection Improvement	Major Intersection Improvement
75	55	I-75 (SR-93) Interchange (new)	Veterans Memorial Blvd.		Interchange	New Partial Interchange
76	43	Vanderbilt Dr.	Immokalee Rd.	Woods Edge Pkwy.	Roadway Capacity	Widen from Two to Four Lanes
77	25	Pine Ridge Rd. Intersection	Livingston Rd.		Minor Intersection Improvement	Minor intersection improvements
78	29	Golden Gate Pkwy. Intersection	Livingston Rd.		Major Intersection Improvement	Major Intersection Improvement
81	74	Bridge @ 47th Ave NE	West of Everglades Blvd.		New Bridge Project	New Bridge over Canal
82	75	Bridge @ Wilson Blvd.	South of 33rd Avenue NE		New Bridge Project	New Bridge over Canal
83	69	Bridge @ 18th Ave. NE	Between Wilson Blvd. N and 8th St. NE		New Bridge Project	New Bridge over Canal
84	76	Bridge @ 18th Ave NE	Between 8th St. NE and 16th St. NE		New Bridge Project	New Bridge over Canal
85	64	Bridge @ 13th St. NW	North Terminus at Vanderbilt Beach Rd. Extension		New Bridge Project	New Bridge over Canal
86	77	Bridge @ 16th St. SE	South Terminus		New Bridge Project	New Bridge over Canal

**Table 4-6. 2045 Needs Plan List of Projects**

Map ID	Needs Ranking	Project	From	To	Type of Project	Description
87	77	Bridge @ Location TBD - between 10th Ave. SE and 20th Ave. SE	East of Everglades Blvd.		New Bridge Project	New Bridge over Canal
88	48	Bridge @Wilson Blvd. S	South Terminus		New Bridge Project	New Bridge over Canal
89	79	Bridge @ 62nd Ave NE	West of 40th St NE		New Bridge Project	New Bridge over Canal
115	N/A	Bridge @ 23rd St. SW	South of Golden Gate Blvd.		New Bridge Project	New Bridge over Canal
90	26	Pine Ridge Rd.	Logan Blvd.	Collier Blvd.	Roadway Capacity	Widen from Four to Six Lanes
93	N/A	Immokalee Rd.	Shady Hollow Blvd. E	Rural Village Rd. (new)	Roadway Capacity	Widen from Two Four Lanes
94	N/A	Rural Village Rd. (new)	Immokalee Rd.	Immokalee Rd.	Roadway Capacity	New Four-Lane Road
95	N/A	Golden Gate Pkwy. (Intersection)	Goodlette Rd.		Major Intersection Improvement	Major Intersection Improvement
96	N/A	Pine Ridge Rd. (Intersection)	Airport Pulling Rd.		Minor Intersection Improvement	Minor intersection improvements
97	N/A	Immokalee Rd. (Intersection)	Logan Blvd.		Major Intersection Improvement	Major Intersection Improvement

**Table 4-6. 2045 Needs Plan List of Projects**

Map ID	Needs Ranking	Project	From	To	Type of Project	Description
98	N/A	Vanderbilt Beach Rd. (Intersection)	Livingston Rd.		Minor Intersection Improvement	Minor intersection improvements
99	N/A	Vanderbilt Beach Rd. (Intersection)	Logan Blvd.		Minor Intersection Improvement	Minor intersection improvements
100	N/A	Collier Blvd. (Intersection)	Pine Ridge Rd.		Major Intersection Improvement	Major Intersection Improvement
101	N/A	Pine Ridge Rd. (Intersection)	Goodlette Rd.		Minor Intersection Improvement	Minor intersection improvements
102	N/A	US 41 (SR 90) (Tamiami Trail E) intersection	Vanderbilt Beach Rd.		Major Intersection Improvement	Major Intersection Improvement
103	N/A	US 41 (SR 90) (Tamiami Trail E) intersection	Pine Ridge Rd.		Major Intersection Improvement	Major Intersection Improvement
104	N/A	US 41 (SR 90) (Tamiami Trail E) intersection	Golden Gate Pkwy.		Major Intersection Improvement	Major Intersection Improvement
105	N/A	Santa Barbara Blvd.	Green Blvd.		Minor Intersection Improvement	Minor intersection improvements
106	N/A	Immokalee Rd.	Northbrook Dr.		Major Intersection Improvement	Major Intersection Improvement

**Table 4-6. 2045 Needs Plan List of Projects**

Map ID	Needs Ranking	Project	From	To	Type of Project	Description
107	N/A	Golden Gate Pkwy.	Collier Blvd.		Major Intersection Improvement	Major Intersection Improvement
108	N/A	Vanderbilt Beach Rd.	Airport Pulling Rd.		Minor Intersection Improvement	Intersection Innovation/Improvements
109	N/A	Immokalee Rd.	Goodlette-Frank Rd.		Major Intersection Improvement	Intersection Innovation/Improvements
110	N/A	Immokalee Rd.	Airport Pulling Rd.		Major Intersection Improvement	Intersection Innovation/Improvements
111	N/A	US 41	Immokalee Rd.		Minor Intersection Improvement	Intersection Innovation/Improvements
112	N/A	Airport Pulling Rd.	Orange Blossom Dr.		Minor Intersection Improvement	Intersection Innovation/Improvements
113	N/A	Airport Pulling Rd.	Golden Gate Pkwy.		Minor Intersection Improvement	Intersection Innovation/Improvements
114	N/A	Airport Pulling Rd.	Radio Rd.		Minor Intersection Improvement	Intersection Innovation/Improvements

## 4-3 Bicycle and Pedestrian Needs

Pathways that consist of pedestrian and bicycle facilities are an important part of the County's transportation network. They facilitate access to public transportation and provide alternative mobility choices. In 2019, the Collier MPO and BPAC developed a *Bicycle/Pedestrian Master Plan* (BPMP) that addresses pedestrian and bicycle needs.<sup>17</sup> The products of the BPAC are included in the LRTP by reference and are summarized in this subsection.

The BPMP establishes policies for including bicycle and pedestrian facilities along all collector and arterial roads, formalizes the applicability of the Design Guidelines, adopts FDOT's Complete Streets policy, identifies high priority Complete Streets Corridors, and establishes MPO priorities for funding improvements. The policies also commit MPO staff to reporting to the MPO Board on performance measures and targets on an annual basis.

### Vision Goals and Objectives

The BPMP Goals and Strategies were developed by reviewing local, state, and national best practices and goals in similar plans including the Collier MPO 2012 *Comprehensive Pathways Plan*. The 2019 BPMP is similar to the 2012 *Comprehensive Pathways Plan* but places greater emphasis on safety, equity, and community health. The goals became the basis for the development of strategies, policies, and project prioritization criteria and are as follows:

- **Safety.** Increase safety for people who walk and bicycle in the County.

- **Connectivity.** Create a network of efficient, convenient bicycle and pedestrian facilities in the County.
- **Equity/Livability.** Increase transportation choice and community livability through development of an integrated multimodal system.
- **Health.** Increase total miles of bicycle and pedestrian facilities and encourage local governments to incorporate Complete Streets principles in road planning, design, and operations.
- **Economy.** Promote tourism and economic opportunities by developing a safe, connected network of biking and walking facilities.
- **Environment.** Protect the environment by promoting walking and bicycling for transportation to reduce congestion, reduce the need for costly expansion of road and highway systems, and reduce our nation's dependence on foreign energy sources.

To address the issue of equity in terms of providing equal access to bicycle and pedestrian facilities countywide, the MPO's previous identification of Environmental Justice (EJ) communities was updated. The EJ criteria used for the BPMP were minority status, poverty, no access to a vehicle, and limited ability to speak English. EJ community areas were defined as areas where the criteria were 10 percent greater than the County average. **Appendix C** presents the EJ Community Area map.

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<sup>17</sup> <https://www.colliermopo.org/bp-master-plan/>



## Identification of Network Needs

The BPMP developed bicycle and pedestrian priorities by first identifying gaps and needs on collector and arterial roads in the region using the following six-step identification process:

1. **Plans Review** – Review of plans and documents that address bicycle and pedestrian issues and opportunities.
2. **Inventories** – The Collier MPO entered into an agreement with the Naples Pathway Coalition (NPC) during the development of the BPMP to develop a joint bicycle facilities map in partnership with NPC and the City of Naples Community Services Department. Additionally, the Collier MPO's 2017 bicycle and pedestrian facilities inventory maps were reviewed and commented on by local agencies, stakeholders, and the community through an extensive public outreach effort, resulting in multiple revisions of the map. The joint map was completed and published in November 2018. Going forward, NPC agreed to serve as the recipient of comments regarding the joint map's accuracy, and the Collier MPO agreed to maintain and update the associated geographic information system (GIS) files on an as-needed basis.
3. **Public Input** - The Collier MPO posted an interactive map on its website that generated nearly 400 comments. Comments were used to develop an overlay map for project review.
4. **Crash and Environmental Justice Community Data** – An analysis of crash data indicated concentrated bicycle and pedestrian crashes near land uses related to tourism and services or in relation to EJ community areas. The combination of these two factors—bicycle and pedestrian crash clusters and EJ communities—proved to be a useful

marker for the needs of low-income, minority, and immigrant populations.

5. **Network Configuration** - Collier MPO staff worked closely with the MPO advisory committees and agency staff and considered public comment in the process of articulating design and planning policies related to roadways.
6. **Gap and Needs Analysis** - Using GIS data, the needs analysis included overlaying the collected data, public input, and draft policies to identify missing links and segment deficiencies in the bicycle/pedestrian network. Throughout the process, monthly updates on the needs were provided to the advisory committees and stakeholders beginning in the fall 2018, which led to further refinement of the prioritization criteria, and thus the list of needs.

The needs analysis identified 74 miles of roadway lacking any type of bicycle or pedestrian facility and 150 miles of roadway lacking sufficient bicycle facilities. [Table 4-7](#) lists the bicycle and pedestrian network gaps and facility needs. [Appendix C](#) includes a map from the BPMP showing bicycle and pedestrian facility gaps overlapped with public comments.

## Prioritized Bicycle and Pedestrian Facilities

Once the needs were identified, the BPMP's goals and objectives served as the prioritization criteria to develop a list of prioritized bicycle and pedestrian facilities. [Table 4-8](#) presents the list of bicycle and pedestrian priorities. The segments identified totaled 66 miles.

**Table 4-7. Network Gaps/Facility Needs**

Source: Collier MPO BPMP

Type of Gap in Bicycle Network	Mileage of Missing Facilities			
	All Gaps on Collector & Arterial Roadways	Gaps Meeting Equity Criterion <sup>a</sup>	Gaps Meeting Safety Criterion	Gaps Meeting Equity and Safety Criteria
No facility	73.9	22.9	2.4	0.0
Insufficient facility	150.3	44.5	13.1	5.8
Paved shoulder <sup>b</sup>	85.3	26.0	1.7	1.3
Connector sidewalk <sup>b</sup>	65.0	18.5	11.4	4.5
Total miles	224.2	67.4	15.5	5.8

<sup>a</sup> Equity criterion established as block groups receiving a medium, high, or very high ranking from the Composite Equity Analysis.

<sup>b</sup> Paved shoulder/ connector sidewalk are sub-categories of Insufficient Facility total.

**Table 4-7. Prioritized Bicycle and Pedestrian Facilities***Source: Collier MPO BPMP*

Road	From	To	Distance	Agency	Facility Type
111th Ave. N	Vanderbilt Dr.	Tamiami Trl. N	1.0	Collier County	Bike Lane/Path
Airport Rd. N	Pine Ridge Rd.	Immokalee Rd.	4.2	Collier County	Bike Lane/Path
Airport Rd. N	S Horseshoe Dr.	Pinewoods Cir.	2.5	Collier County	Bike Lane/Path
Airport Rd. S	Seagrape Ave.	Davis Blvd.	0.5	Collier County	Bike Lane/Path
Airport Rd. S	Davis Blvd.	Tamiami Trl. E	0.8	Collier County	Safety
Bluebill Ave.	Bluebill Ave.	Vanderbilt Dr.	0.4	Collier County	Bike Lane/Path
Bonita Beach Rd.	Vanderbilt Dr.		1.7	Collier County	Bike Lane/Path
Castaways St.	Saturn Ct.	Amazon Ct.	0.2	Marco Island	Marco Master Plan
Collier Blvd.	17th Ave. SW	City Gate Blvd. N	2.0	Collier County	Bike Lane/Path
Collier Blvd.	N End Jolley Bridge	Fiddlers Creek Pkwy.	3.6	Collier County	Bike Lane/Path
Copeland Ave. S	Broadway	Oyster Bar Ln.	0.7	Everglades City	Pathway
Davis Blvd.	Tamiami Trl.	Airport Rd. S	1.0	Collier County	Bike Lane/Path
Everglades Blvd.	Oil Well Rd.	58TH AVE NE	3.1	Collier County	Sidewalk
Golden Gate Pkwy.	9th St. N	Estuary Blvd.	1.6	Naples	Bike Lane/Path
Greenbrier St.	Manor Ter.	Saturn Ct.	0.2	Marco Island	Marco Master Plan
Immokalee Rd.	Tamiami Trl.	Northbrooke Dr.	4.0	Collier County	Bike Lane/Path
Logan Blvd. N	Logan Blvd.	Vanderbilt Beach Rd.	1.1	Collier County	Bike Lane/Path
Logan Blvd. S	Logan Blvd.	Green Blvd.	2.0	Collier County	Bike Lane/Path
Oil Well Rd.	Everglades Blvd. N	Oil Well Grade Rd.	3.9	Collier County	Bike Lane/Path
Oil Well Rd.	Ave Maria Blvd.	SR 29	5.7	Collier County	Bike Lane/Path
Old US 41 N	Tamiami Trl.	Performance Way	1.5	Collier County	Pathway
Peru St.		Seagrape Dr.	0.1	Marco Island	Marco Master Plan
Pine Ridge Rd.	Tamiami Trl.	Logan Blvd. S	5.1	Collier County	Bike Lane/Path
Randall Blvd.	Randall Blvd.	Approach Blvd.	1.5	Collier County	Bike Lane/Path
Rattlesnake H Rd.	Valley Stream Dr.	Collier Blvd.	3.5	Collier County	Bike Lane/Path
San Marco Rd.	Goodland Dr.	Tamiami Trl. E	6.5	Collier County	Pathway
Santa Barbara Blvd.	Green Blvd.	17th Ave. SW	0.2	Collier County	Bike Lane/Path
Saturn Ct.	Castaways St.	Greenbrier St.	0.1	Marco Island	Marco Master Plan
Seagrape Dr.	Peru St.	Swallow Ave.	0.7	Marco Island	Marco Master Plan
Tamiami Trl. E	Greenway Rd.	Six LS Farm Rd.	2.5	Collier County	Pathway
Vanderbilt Beach Rd.	Gulfshore Dr.	Vanderbilt Dr.	0.4	Collier County	Bike Lane/Path
Wiggins Pass Rd.	Vanderbilt Dr.	Tamiami Trl. N	1.0	Collier County	Bike Lane/Path
Wilson Blvd. N	Golden Gate Blvd	24th Ave. NE	3.0	Collier County	Pathway
<b>Total Miles</b>			<b>66.3</b>		

## Shared-Use Nonmotorized (SUN) Trail Alignments and Spine Pathway Corridors

Managed by the FDEP Office of Greenways and Trails, the SUN Trail program funds non-motorized, paved, shared-use trails that are part of the Florida Greenways and Trails System Priority Trail. **Appendix C** includes the SUN Trail Alignments and Spine Pathway Corridors map, which shows the two SUN Trail alignments and other interconnected spine pathway corridors within Collier County that form an integrated, high-priority pathway network.

The BPMP identified the following as priority projects to complete the SUN Trail network.<sup>18</sup> Further details on each project is provided in the BPMP.

- SUN Trail Alignments
- FPL Easement/Livingston/Rich King Greenway Alignment
- Gordon River Greenway Connections
- Golden Gate Canal Greenway (Proposed)
- Golden Gate Parkway between Santa Barbara and Collier Boulevards
- SR 29 and SR 82

## Existing Plus Proposed Facilities

Additional needs analysis included examining the 2040 LRTP roadway projects, as roadway enhancement projects provide an excellent opportunity to cost-effectively expand the bicycle and pedestrian network. **Appendix C** includes the Existing Plus Proposed Facilities map, which provides a visual summary of

the project priorities for major roadways and the Spine Trail network.

## Local and Residential Roads

Since the 2040 LRTP update, the Collier MPO completed the Golden Gate City Walkable Community Study to develop a prioritized list of sidewalk and pedestrian amenity projects that would promote and enhance walkability, bicycle use, transit use, and social equity throughout the community. Projects were scored based on proximity to crashes, schools, commercial destinations, parks, and transit, and public input. Projects were then ranked in tiers based on their current condition and greatest value to the public:

- Tier 1 Projects were given the highest priority based on their benefit to the community
- Tier 2 Projects are instrumental in completing a continuous sidewalk network throughout the community.
- Tier 3 Projects will enhance overall walkability within the community

The results of the study demonstrated a significant need for sidewalk infrastructure in Golden Gate City.

## Local Agency Priorities on Local Roads

Adopted local agency plans are incorporated into the BPMP by reference. Key priorities are summarized as follows.

### Naples

The *Naples Downtown Circulation and Connectivity Plan* identifies bicycle and pedestrian improvements to the Gordon River Bridge (5th Avenue S) as a priority for the region as it is the hub of the SUN Trail and Spine Corridor Network. The

<sup>18</sup> <https://www.fdot.gov/planning/systems/SUNTrail.shtm>

project design calls for narrowing the existing travel lanes, eliminating the shoulder, and moving the existing barrier to provide a 14-foot-wide shared-use path on each side of the bridge.

### **Everglades City**

Everglades City has identified four sidewalks projects as part of their priority needs along Copeland Avenue, Datura Street, Broadway, and Collier Avenue.

### **Immokalee Urban Area**

The Immokalee Walkable Community Study identified SR 29 and SR 82 as critical components of the Spine Trail Network for Collier County. Additionally, the Immokalee CRA requested to extend bicycle and pedestrian facilities along Lake Trafford Road to the lake as part of the Spine Trail priority.

### **Marco Island**

Top priorities from Marco Island's *Bike Path Master Plan* include:

- Collier Boulevard – alternate bike lanes (Landmark extension)
- Bald Eagle Drive – bike lanes (Collier to San Marco)

## **4-4 Transit Needs**

*Pending completion of the Transit Development Plan*

## **4-5 Air Transportation Needs**

Within the Collier MPO jurisdiction are four publicly owned airports:

- Naples Municipal Airport
- Immokalee Regional Airport
- Marco Island Executive Airport
- Everglades Airpark

The Collier County Airport Authority, which is a branch of the local government overseen by the Collier County BCC, oversees the development and management of the airports in Immokalee, Marco Island, and Everglades City. The City of Naples Airport Authority is charged with the operation, development, and improvements of the Naples Airport. The closest international airport to the Collier County area is the Southwest Florida International Airport, which is located to the north in Fort Myers in Lee County.

### **Naples Airport**

Naples Airport is located in the City of Naples and is bounded by Corporate Flight Drive to the north, North Road to the south, Airport Pulling Road to the east, and the Gordon River to the west. Public access to the airport is at the intersection of Radio Road and Airport Pulling Road. In Fiscal Year 2019, there were 112,800 takeoffs and landings. The airport typically houses 308 aircraft, which significantly increases during the seasonal months.<sup>19</sup> There is no regularly scheduled passenger service at this airport. However, it maintains a Title 14 CFR, Part 139 Airport Operating Certificate to accommodate both scheduled and unscheduled operations. According to the *Naples Airport Master Plan*,<sup>20</sup> in 2017 the airport operated at 56 percent capacity and is forecasted to operate at 84 percent capacity by 2038. The airport master plan includes capital

<sup>19</sup> <https://flynaples.com/about/>

<sup>20</sup> <https://flynaples.com/wp-content/uploads/2020/04/APF-MP-Consolidated-Draft-Report-February-29-2020.pdf>

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improvements through 2039. There are no plans to expand the airport. The roadway project needs include intersection improvements at Airport Pulling Road and Radio Road to accommodate future airport operations.

### **Immokalee Regional Airport**

The Immokalee Regional Airport is situated on 1,333 acres and is bordered by Immokalee Road to the south and Airway Road to the west. Airpark Boulevard provides public access to the airport. As discussed earlier, this airport has been designated for a 60-acre Foreign Trade Zone, which includes portions of the Florida Tradeport Industrial Park. The industrial park covers 400 acres and is accessed by Airpark Boulevard. The airport also includes the Immokalee Regional Raceway (International Hot Rod Association Drag Strip) and is used for aerial firefighting and crop dusting operations. The *Immokalee Regional Airport, Airport Layout Plan Update*, 2017<sup>21</sup> notes that the airport operations are expected to grow through 2037 requiring some airfield improvements. The roadway project needs include widening Immokalee Road from SR 29 to Airpark Boulevard to accommodate future airport operations.

### **Marco Island Executive Airport**

The Marco Island Executive airport is located 12 miles south of downtown Naples and has one runway that measures 5,000 feet. The airport can accommodate smaller general aviation aircraft as well as business jets.

### **Everglades Airpark**

The Everglades Airpark is situated on 29 acres and is located immediately southwest of the Big Cypress National Preserve and is surrounded on three sides by the waters of the Everglades National Park. The Fakahatchee Strand State Preserve and Collier Seminole Park are to the north. The airpark primarily supports recreational flying, environmental patrol, and flight training. It includes one 2,400-foot-long runway and is considered Collier County's Eco-tourism Airport.

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<sup>21</sup> Immokalee Regional Airport, Airport Layout Plan Update



# 2045

LONG RANGE TRANSPORTATION PLAN



Collier MPO

## Financial Resources Technical Memorandum - Draft

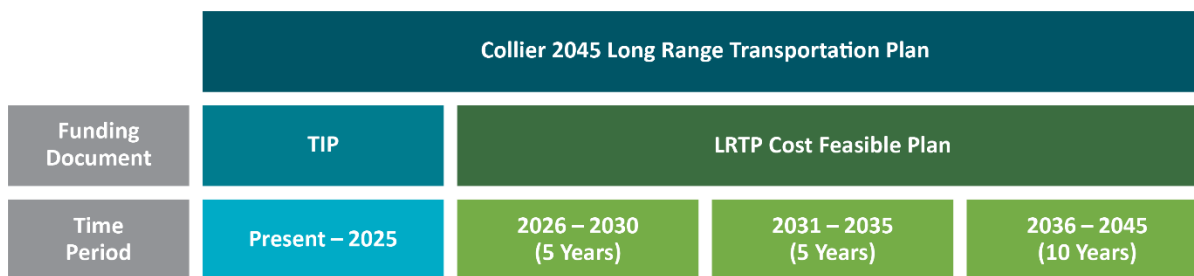
August 19, 2020



# Financial Resources Technical Memorandum

## Background

This Technical Memorandum documents the assumptions used to develop future revenues for the Collier Metropolitan Planning Organization (MPO) 2045 Long Range Transportation Plan (LRTP) update. The assumptions give the Collier MPO a reasonable estimate of future revenues that can be used to fund the multimodal transportation projects included in the Collier MPO 2045 LRTP. Consistent with the requirements of Title 23 of United States Code Section 134 (23 U.S. Code §134), the revenues identified for the 2045 LRTP are reasonably expected to be available during the planning period through 2045. Three multi-year phases used to report available revenues and project costs are shown on Figure 1 and are consistent with the state and federal requirements for LRTPs.



**Figure 1. Revenue Bands**

## Revenue Projections

The Collier MPO 2045 LRTP includes revenue projections from federal, state, and county sources. The following section describes the revenue sources used to develop the 2026–2045 Cost Feasible Plan. Table 1 summarizes the total projected revenues as future Year of Expenditure (YOE) dollars that are anticipated to be available for the LRTP. The statewide estimates for federal and state revenues for use in the metropolitan planning process, and methodology to develop the estimates, were developed in coordination with the Florida Department of Transportation (FDOT) and are provided in Appendix A.

Collier County (hereafter, “the County”) has funded transportation projects using a variety of local sources including fuel taxes, impact fees, and General Fund transfers (ad valorem) in addition to federal and state revenues. For the 2045 LRTP update, it is assumed that the County will continue to use these revenue sources to contribute funding towards the 2026–2045 Cost Feasible Plan. The following sections briefly describe the individual revenue sources used to develop the 2026–2045 Cost Feasible Plan. The sections also include a projection of the total future year dollars that will be used in the LRTP for demonstrating financial feasibility using YOE revenues and costs.

## Federal/State Revenue Sources

Projections of federal and state revenues for use in MPO LRTPs are generated by FDOT. Through enhanced federal, state, and MPO cooperation and guidance provided by the MPO Advisory Council, FDOT has provided a long-range revenue estimate through 2045. At a statewide level, these forecasts are allocated to the seven FDOT districts. FDOT has further subdivided the District 1 revenue forecast by County for use in the Collier MPO 2045 LRTP, titled the 2045 Revenue Forecast for the Collier MPO (hereafter the Supplement to the 2045 Revenue Forecasting Guidebook). Table 2 highlights these revenues for Collier MPO in YOE format as required by MAP-21<sup>1</sup> and is followed by a description of each revenue source and the associated assumptions.

<sup>1</sup> MAP-21 is the Moving Ahead for Progress in the 21st Century Act, which was signed into law on July 6, 2012, by President Obama.

**Table 1. LRTP Revenue Projections Summary**

Jurisdiction	Funding Source	Total 2026–2045 (YOE)
<b>Revenues Dedicated to Transit Projects (TBD - pending input from TDP)</b>		
Fed/State	Transit	\$202,380,000
County	Fuel Tax	\$0
County	Farebox Revenue	\$55,152,000 (TBD)
County	General Fund (Ad Valorem) – Fixed Route	\$40,000,000 (TBD)
County	General Fund (Ad Valorem) - Transportation Disadvantaged ONLY	\$1,000,000 (TBD)
<b>Total for Transit</b>		<b>\$298,532,000 (TBD)</b>
<b>Revenues Dedicated to Operations and Maintenance</b>		
County	General Fund (Ad Valorem)	\$240,000,000
County	Fuel Tax (48% of \$375.53M Net Revenues)	\$180,254,444
<b>Total for Maintenance</b>		<b>\$420,254,444</b>
<b>Revenues Remaining for LRTP Projects</b>		
Federal	Transportation Alternatives Program	\$6,760,000
Federal	Transportation Management Area	\$100,360,000
Federal	Strategic Intermodal System	\$337,404,000
State and Federal	Other Arterial Construction & Right of way (ROW)	\$443,200,000
County	Transportation Impact Fees	\$346,275,729
County	Fuel Tax (52% of \$375.53M Net Revenues)	\$195,275,648
County	General Fund (Ad Valorem)	\$0
County	Sales Tax Referendum	\$0
<b>Total for LRTP projects</b>		<b>\$1,429,275,377</b>

**Table 2. Federal and State Revenue Projections (YOE)**

Jurisdiction	Funding Source	2026–2030	2031–2035	2036–2045	Total 2026–2045
Federal	Transportation Alternatives (Urban Area)	\$1,690,000	\$1,690,000	\$3,380,000	\$6,760,000
Federal	Transportation Management Area (TMA)	\$25,090,000	\$25,090,000	\$50,180,000	\$100,360,000
State and Federal	Other Arterial (OA)/ Construction & ROW	\$100,620,000	\$110,540,000	\$232,040,000	\$443,200,000
State	Transportation Regional Incentive Program (TRIP)	\$3,924,000	\$4,368,000	\$8,952,000	\$17,244,000
State and Federal	Transit	\$46,240,000	\$50,640,000	\$105,500,000	\$202,380,000
<b>Total Revenues</b>		\$177,564,000	\$192,328,000	\$400,052,000	\$769,944,000
Jurisdiction	Funding Source	2026–2030	2030–2045	Total 2026–2045	
Federal	Strategic Intermodal System	\$38,622,000	\$298,782,000	\$337,404,000	

### *Transportation Management Area*

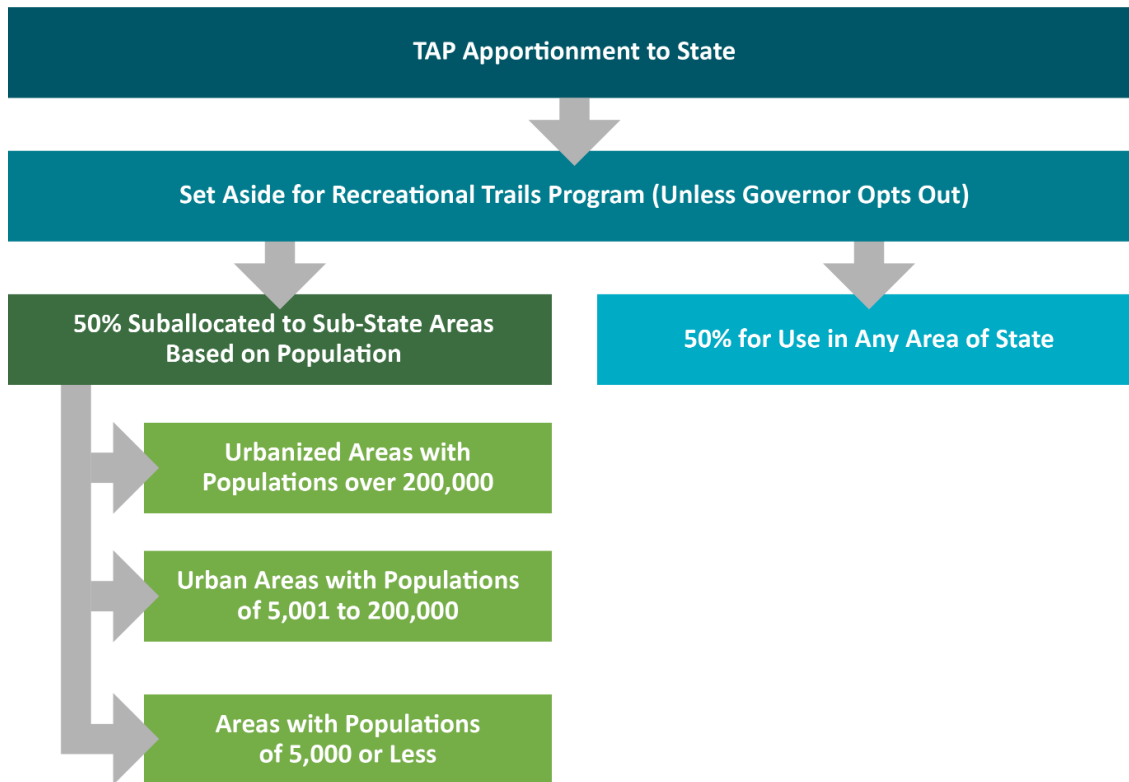
Additional federal funds are distributed to an urban area that has a population greater than 200,000 (known as a TMA), as designated by the U.S. Census Bureau following the 2010 Census. These revenues are listed as the Surface Transportation Program Urban Attributable (XU) funds in the FDOT *Five-Year Work Program*.<sup>2</sup> Pursuant to the Supplement to the 2045 *Revenue Forecasting Guidebook*,<sup>3</sup> approximately **\$100.36 million** in future revenues will be available from 2026–2045 for the County.

### *Transportation Alternatives Program*

Created as a new funding program under current federal transportation legislation (MAP-21), the Transportation Alternatives Program (TAP) combines three previous programs—Transportation Enhancements, Safe Routes to School, and Recreational Trails Program. Revenue estimates for the TAP are developed into categories based on population. Designed solely to fund projects that are non-auto-based, nine eligible project types can be funded by these revenues, as outlined in 23 USC Section 213(b) and 101(a)(29). The one revenue category of the TAP that is available to the County is the Transportation Alternatives–Urban Area funds, which are available to urbanized areas designated as a TMA (greater than 200,000 population). Figure 2 illustrates how the TAP revenues are distributed throughout the state. Approximately **\$6.76 million** in future TAP revenues are estimated to be available to the Collier MPO from 2026–2045.

<sup>2</sup> Florida Department of Transportation. 2020. *Five-Year Work Program*. August 13.

<sup>3</sup> Florida Department of Transportation. 2018. *Revenue Forecasting Guidebook*. July 3.



**Figure 2. Distribution of Transportation Alternatives Program Revenues**

### *Strategic Intermodal System*

The Strategic Intermodal System (SIS) capacity program provides funds for construction, improvements, and associated right-of-way (ROW) acquisition on the State Highway System (SHS) roadways that are designated as part of SIS. SIS planning, led by FDOT, includes a First Five-Year Plan (FY 2019/2020 – FY 2023/2024),<sup>4</sup> a Second Five-Year Plan (FY 2024/2025–FY2028/2029),<sup>5</sup> and the SIS Long Range Cost Feasible Plan (FY 2029–2045).<sup>6</sup> Using the Second Five-Year and the Long Range Cost Feasible SIS plans, approximately **\$337.404 million** in improvements have been identified for 2026–2045 within the County.

### *Other Arterial Construction/Right-of-Way*

This capacity program provides funds for construction, improvements, and associated ROW acquisition on SHS roadways that are not designated as part of the SIS. OA revenue includes additional funding for the Economic Development Program and the County Incentive Grant Program. The Economic Development Program is a sub-program of the OA program that may provide funds for access roads and highway improvements for new and existing businesses and manufacturing enterprises that meet certain criteria. Pursuant to the Supplement to the FDOT 2045 *Revenue Forecasting Guidebook*,<sup>7</sup> approximately **\$443.2 million** in future revenues will be available to the Collier MPO for roadway infrastructure projects for the 2026–2045 timeframe.

### *Transportation Regional Incentive Program*

TRIP was established as part of the state’s major growth management legislation enacted with Senate Bill 360. The program is intended to encourage regional planning by providing matching funds for improvements to

<sup>4</sup> Florida Department of Transportation. 2019. *First Five-Year Plan (FY 2019/2020 – FY 2023/2024)*. July 1.

<sup>5</sup> Florida Department of Transportation. 2019. *Second Five-Year Plan (FY 2024/2025 – FY2028/2029)*. July 1.

<sup>6</sup> Florida Department of Transportation. 2018. *SIS Long Range Cost Feasible Plan FY 2029–2045*. July.

<sup>7</sup> Florida Department of Transportation. 2018. *2045 Revenue Forecast Collier MPO*. July 13.

regionally significant transportation facilities identified and prioritized by regional partners. The Collier MPO has partnered with the Lee County MPO to develop a regional roadway network that identifies regional facilities that could be eligible for TRIP funding. For long-range planning purposes, it is assumed that this FDOT-district-allocated revenue could be divided among the counties of FDOT District 1 based on population. FDOT District 1 revenues are projected to be \$143.7 million (2014 dollars) for the 2026–2045 timeframe. A population-based distribution of the TRIP funds within District 1 results in approximately **\$17.2 million** in future revenues during the 2026–2045 planning horizon that could be available for the County. However, because this revenue source is not directly allocated to Collier County, it was not assumed as a revenue source in developing the 2045 Cost Feasible Plan.

### *Federal/State Transit Revenues*

Estimates of federal and state transit revenues are based on information provided in the FDOT 2045 *Revenue Forecasting Guidebook*. Collier Area Transit recently updated their 10-Year Transit Development Plan (TDP)<sup>8</sup> through the year 2030 for both capital and operating expenses. Revenue assumptions in the TDP and the Collier MPO 2045 LRTP will be coordinated as both plans develop. The total federal and state transit revenues assumed for the 2026–2045 planning timeframe in future year dollars for capacity projects are **\$202.38 million**. The development of the TDP may result in additional revenues available for future transit service improvements.

## Local Revenue Sources

### *Transportation Impact Fees*

Transportation impact fees (TIFs) provide revenue for financing the addition and expansion of roadway facilities needed to accommodate specific new growth and development. If growth rates are high, the County will have more impact fee revenues to fund growth-related infrastructure sooner, rather than later. If growth slows down, less revenue will be generated and the timing and need for future infrastructure will be realized later, rather than sooner.

To project TIF revenues through 2045, historical TIF collections, historical permitting, and population growth projections were considered.

1. Future population was projected using 2045 medium-level population projections provided by the Bureau of Economic and Business Research (BEBR) at the University of Florida.<sup>9</sup>
2. Total housing units (broken down by single family and multi-family units) was obtained using TAZ-level data from the Collier Interactive Growth Model (CIGM) and in-house long-range demographic modeling. Additional existing housing unit data (for mobile homes and retirement communities) was inferred by drawing from historical permitting data.
3. Projected growth in housing units between 2026-2045 was calculated using the above data. Total projected housing units in 2045 was obtained by using average occupants per household data and medium-level 2045 population projections from BEBR. Growth was allocated among various housing types (single family, multi-family, mobile homes, and retirement communities).
4. Projected units were then multiplied by the current adopted impact fee rates in Collier County. It was assumed that these rates will remain constant and that the County will continue to collect TIFs through 2045. After residential TIF revenues were projected, non-residential TIF revenues were determined using a ratio analysis based on the County's historical impact fee collection. Approximately 75 percent of all impact fee revenues are estimated to come from residential development with the remaining 25 percent coming from non-residential development.

<sup>8</sup> Tindale-Oliver & Associates, Inc. 2020. *Collier Area Transit Development Plan (TDP)*.

<sup>9</sup> Bureau of Economic and Business Research. 2020. *Projections of Florida Population by County, 2020-2045*. <https://www.bebr.ufl.edu/population>.



Additionally, the revenue projections for earlier years were adjusted to account for the impact fee pre-payment requirements in Collier County. The County requires that 33 percent of the estimated TIF be paid prior to approval of a Site Development Plan or Residential Plat and issuance of a Certificate of Adequate Public Facilities (COA) for transportation concurrency. As of August 2020, the County has a COA balance of approximately \$44.5 million, which indicates that there is a large number of future permits for which impact fees have already been collected. It was assumed that roughly 20 percent of this total would remain by 2026, and the remaining funds would be exhausted during the 2026-2030 timeframe. For the Collier MTP 2045 LRTP, **\$346.3 million** in future-year revenues are anticipated to be available from 2026 to 2045 (refer to Table 3).

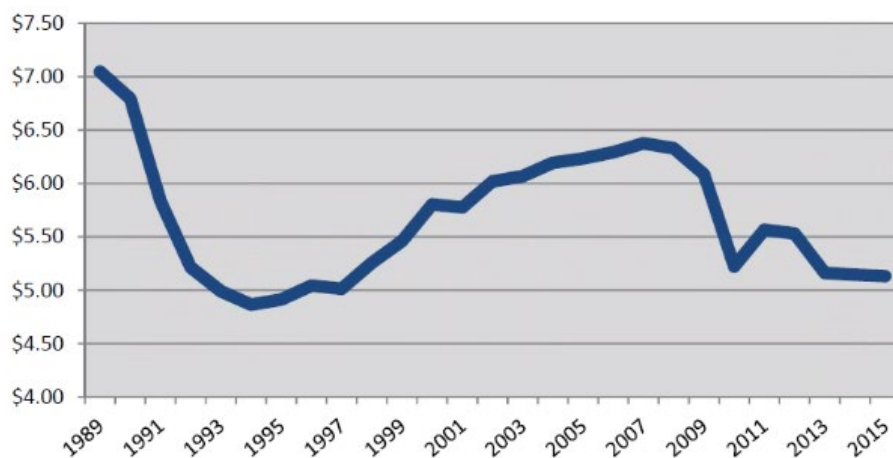
**Table 3. Transportation Impact Fee Revenue Projections (YOE)**

Transportation Impact Fee	2026–2030	2031–2035	2036–2045	Total 2026–2045
Total (Residential + Non-Residential)	\$117,117,446	\$86,601,470	\$142,556,813	\$346,275,729

### Fuel Taxes

Fuel taxes represent a major portion of Collier County’s local transportation revenues. The County currently charges 12 cents of local option fuel tax in addition to the 3 cents of state fuel tax for local use. Fuel tax revenue is dedicated to both transportation capacity expansion and maintenance and operations. This section provides a brief outline of adopted and available fuel taxes as well as historical trends and projected future revenues for all fuel tax options in the County.

Figure 3 illustrates the trend in historical fuel tax revenue per capita for the County fuel tax (1 cent). As shown, the fuel tax revenue per capita has decreased by an annual average of 1.21 percent since 1989. Throughout Florida, the fuel tax per capita has decreased by 0.28 percent during this same time.



**Figure 3. Collier County Fuel Tax (1 Cent) Per-Capita Trend**

Source: Tindale-Oliver & Associates, Inc. 2015. Collier MPO Financial Resources Technical Memorandum. November.

Local fuel tax revenues are based on a set pennies-per-gallon charge, not a percentage of the sale. Therefore, fuel taxes do not increase as gas prices increase or with the effects of inflation. Since 1980, fuel efficiency has increased by approximately 0.50 percent each year. Because of recent changes in fuel efficiency standards for

new vehicles, the fleet-wide fuel efficiency is expected to increase by more than 5 percent annually through 2025, which will reduce fuel tax revenues. Moreover, as electric vehicle market share continues to increase, motor vehicle demand for fuel will decrease even if overall vehicle miles travelled remains the same (or even increases). Therefore, based on the combination of ongoing fuel efficiency improvements and the continued market share increase for electric vehicles, it was assumed that fuel tax revenue levels will decrease by approximately 1.5 percent annually through 2045.

Table 4 provides projected fuel tax revenues for the County through 2045. Fuel taxes collected by the cities within the County have not been considered during the LRTP. Future decisions to include city fuel tax revenues can be determined based on project funding needs. These projections assume that all locally adopted fuel taxes will continue to be implemented as they are currently and at their current rates through 2045. Current obligations that are fulfilled through fuel tax revenues, as shown in the Collier County Budget, are shown in Table 4. The result is **\$375.5 million** of future year net revenues between 2026 and 2045 for the LRTP.

**Table 4. Fuel Tax Revenue Projections for Collier County (YOE)**

Jurisdiction	Funding Source	2026–2030	2031–2035	2036–2045	Total 2026–2045
County	Constitutional Fuel Tax	\$20,972,071	\$19,445,650	\$34,748,345	\$75,166,066
County	County Fuel Tax	\$9,226,138	\$8,554,628	\$15,286,666	\$33,067,432
County	9-Cent Fuel Tax	\$8,020,836	\$7,437,051	\$13,289,616	\$28,747,503
County	6-Cent 1st Local Option Fuel Tax	\$45,011,202	\$41,735,129	\$74,578,461	\$161,324,792
County	5-Cent 2nd Local Option Fuel Tax	\$34,214,541	\$31,724,287	\$56,689,618	\$122,628,446
<b>Total Revenues</b>					<b>\$420,934,239</b>
County	Transfer for Cities	-\$12,668,203	-\$11,746,167	-\$20,989,777	(\$45,404,147)
<b>Net Revenues</b>					<b>\$375,530,092</b>

#### Constitutional Fuel Tax (2 cents per gallon)

- Tax applies to every net gallon of motor and diesel fuel sold within a county; collected in accordance with Article XII, Section 9 (c) of the Florida Constitution.
- The state of Florida allocates 80 percent of this tax to counties after first withholding amounts pledged for debt service on bonds issued pursuant to provisions of the Florida Constitution for road and bridge purposes.
- Funds can be used for ROW acquisition, construction, and maintenance of roads.
- Counties are not required to share the proceeds of this tax with their municipalities.



Based on the distribution provided in the *Local Government Financial Information Handbook*,<sup>10</sup> the County will receive approximately **\$4.7 million** from the Constitutional Fuel Tax in FY 2019/2020.

#### County Fuel Tax (1 cent per gallon)

- Tax applies to every net gallon of motor and diesel fuel sold within a county.
- The primary purpose of these funds is to help reduce a county's reliance on ad valorem taxes.
- Proceeds are to be used for transportation-related expenses including reduction of bond indebtedness incurred for transportation purposes. Authorized uses include acquisition of ROW, construction, reconstruction, operation, maintenance; repair of transportation facilities, roads, bridges, bicycle paths, and pedestrian pathways; and reduction of bond indebtedness incurred for transportation purposes.
- Counties are not required to share the proceeds of this tax with their municipalities.

Based on the distribution provided in the *Local Government Financial Information Handbook*, the County will receive approximately **\$2.1 million** from the County Fuel Tax in FY 2019/2020.

#### 9th-Cent Fuel Tax (1 cent/gallon)

- Tax applies to every net gallon of motor and diesel fuel sold within a county.
- Proceeds may be used to fund transportation expenditures as defined in Section 336.027(7), Florida Statutes.
- To accommodate statewide equalization, this tax is automatically levied on diesel fuel in every county, regardless of whether a county is levying the tax on motor fuel at all.
- Counties are not required to share the proceeds of this tax with their municipalities.

Based on the distribution provided in the *Local Government Financial Information Handbook*, the County will receive approximately **\$1.8 million** from this fuel tax in FY 2019/2020. It was assumed that the County allocates a similar portion of these revenues to the municipalities as it does with the 1st Local Option Fuel Tax (14.52 percent to municipalities).

#### 6-Cent 1st Local Option Fuel Tax

- Tax applies to every net gallon of motor and diesel fuel sold within a county.
- Proceeds may be used to fund transportation expenditures as defined in Section 336.025(7), Florida Statutes.
- To accommodate statewide equalization, all 6 cents are automatically levied on diesel fuel in every county, regardless of whether a county is levying the tax on motor fuel at all or at the maximum rate.
- Proceeds are distributed to a county and its municipalities according to a mutually agreed-upon distribution ratio or by using a formula contained in the Florida Statutes.

Based on the distribution provided in the *Local Government Financial Information Handbook*, the County will receive approximately **\$10.2 million** from this fuel tax in FY 2019/2020, with 85.48 percent allocated to the County and the remaining 14.52 percent distributed to cities.

#### 5-Cent 2nd Local Option Fuel Tax

- Tax applies to every net gallon of motor fuel sold within a county except for diesel fuel.

<sup>10</sup> Florida Legislature's Office of Economic and Demographic Research. 2019. *2019 Local Government Financial Information Handbook*. November. <http://edr.state.fl.us/Content/local-government/reports/lgfi19.pdf>

- Tax must be levied by an ordinance adopted by a majority plus one vote of the membership of the governing body or voter approval in a countywide referendum.
- Proceeds may be used to fund transportation expenditures needed to meet requirements of the capital improvements element of an adopted Local Government Comprehensive Plan or for expenditures needed to meet the immediate local transportation problems and for other transportation-related expenditures that are critical for building comprehensive roadway networks by local governments. Routine maintenance of roads is not considered an authorized expenditure.
- Proceeds are distributed to a county and its municipalities according to a mutually agreed-upon distribution ratio or by using a formula contained in the Florida Statutes.

Based on the distribution provided in the *Local Government Financial Information Handbook*, the County will receive approximately **\$7.7 million** from this fuel tax in FY 2019/2020, with approximately 85.48 percent allocated to the County and the remaining 14.52 percent distributed to cities.

#### *General Fund/Ad Valorem*

In the past, the County has used General Fund revenues to help fund capacity expansion and debt service, but with recent constraints placed on this fund, fuel taxes have been shifted into this role. While taxable values are stabilizing, the County will continue to contribute General Fund revenues only to non-capacity roadway improvements.

As outlined in the Collier County FY 2020/2021 adopted budget, the County will transfer General Fund dollars into Capital Fund 310 to support the maintenance and improvement of the transportation network. For LRTP purposes, it was assumed that the County would continue to transfer General Fund revenues to this transportation fund and that the funds would continue to be available to fund transportation-related operations and maintenance improvements. Additionally, it was assumed that the County would continue to transfer these funds at the current level through 2045. FY 2021 General Fund transfers to Fund 310 total approximately **\$12.4 million**. To account for projected population growth in the County, an annual adjustment factor of 1.2 percent was used consistent with the population projections used for the LRTP. As the County's population increases, the revenues transferred to Fund 310 will increase in the same proportion.

In addition to the General Fund transfers for operations and maintenance, the current budget indicates a transfer for Transportation Disadvantaged services. Using the latest "FY 2015 Current" values, General Fund transfers total approximately \$2.3 million annually for Funds 427 and 429. Similar to the transportation-related transfers, the projections for these funds have been adjusted to account for projected population growth in the County. The revenue projections from these transfers are highlighted in Table 5.

**Table 5. General Fund Revenue Projections (YOE)**

Jurisdiction	Funding Source	2026–2030	2031–2035	2036–2045	Total 2026–2045
County	General Fund/Ad Valorem	\$60,000,000	\$60,000,000	\$120,000,000	\$240,000,000
Total Revenue					\$240,000,000

#### *Sales Tax*

The Collier Board of County Commissioners placed a 1-cent infrastructure sales surtax referendum on the November 6, 2018, General Election Ballot. It was subsequently approved by a majority of County voters. This sales tax is estimated to produce an average of \$70 million a year for 7 years (or \$490 million in total revenue). Collier County will receive approximately \$420 million of this projected sales tax revenue. Of this amount, the County will allocate approximately \$191 million for transportation projects between 2019 and 2026.



# **Appendix A**

## **2045 Forecast of State and Federal Revenues for Statewide and Metropolitan Plans – Revenue Forecast for the Collier MPO Long Range Plan Update**

**REVENUE FORECAST FOR THE COLLIER  
MPO LONG RANGE PLAN UPDATE**

**2045 Forecast of State and Federal Revenues  
for Statewide and Metropolitan Plans**



## **2045 REVENUE FORECAST COLLIER MPO**

### **WITH STATEWIDE, DISTRICTWIDE AND COUNTY-SPECIFIC PROJECTIONS**

#### **2045 Forecast of State and Federal Revenues for Statewide and Metropolitan Plans**

#### **Overview**

This report documents the Florida Department of Transportation (FDOT) revenue forecast through 2045. Estimates for major state programs for this metropolitan area, for FDOT Districts, and for Florida as whole are included. This includes state and federal funds that “flow through” the FDOT work program. This information is used for updates of Metropolitan Planning Organization (MPO<sup>1</sup>) Long Range Transportation Plans (LRTPs) and related documents.

#### Background

In accordance with federal statute, longstanding FDOT policy and leadership by the Metropolitan Planning Organization Advisory Council (MPOAC), the Office of Policy Planning (OPP) provides projections of future available funding to Florida’s 27 MPOs. This data is known as the Revenue Forecast. Consistent data is being applied to the development of the FDOT Strategic Intermodal System (SIS) Highway Cost Feasible Plan.

The department developed a long-range revenue forecast through 2045. The forecast is largely based upon recent federal legislation (e.g., the FAST Act<sup>2</sup>) and changes in multiple factors affecting state revenue sources and current policies. This 2045 forecast incorporates (1) amounts contained in the department’s work program for FYs 2018 through 2022, (2) the impact of the department’s objectives and investment policies, and (3) the Statutory Formula (equal parts of population and motor fuel tax collections) for distribution of certain program funds. All estimates are expressed in nominal dollars, also known as year of expenditure (YOE) dollars.

#### Purpose

This version of the forecast (in word processing or portable document format) provides one specific MPO, and all interested parties, with dollar figures that will be necessary and useful as it prepares its 2045 LRTP. If more detail or particular additional numbers are needed, these may subsequently be delivered in spreadsheet format. This document does not forecast funds that do not “flow through” the state work program. Further information concerning local sources of revenue is available from State of Florida sources, particularly *Florida’s Transportation Tax Sources: A Primer*, and the *Local Government Financial Information Handbook*.<sup>3</sup>

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<sup>1</sup> In this document, the general term MPO is used to refer to organizations whose names take different forms, including TPO, TPA and MTPO.

<sup>2</sup> Fixing America’s Surface Transportation (FAST) Act, Public Law 114-94, December 4, 2015.

<sup>3</sup> FDOT’s tax source primer is available at <http://www.fdot.gov/comptroller/pdf/GAO/RevManagement/Tax%20Primer.pdf>. The financial information handbook is prepared by the Office of Economic and Demographic Research, part of the Florida Legislature; it is available at <http://edr.state.fl.us/Content/local-government/reports/lgfih17.pdf>.

This forecast features county level estimates for major FDOT capacity programs, specifically Other Roads and Transit. If an MPO includes more than one county, the county level estimates are totaled to produce an overall MPO estimate. If an MPO's boundary doesn't match county boundaries, the FDOT District will determine appropriate funding totals for that MPO. OPP is available for consultation and support, and Districts are asked to share their method and results with our office. However, final responsibility rests with the appropriate District.

There is a long-term goal to focus planning on metropolitan areas which do not correspond to county or city boundaries. In some cases, analyses and plans are based on census designated urbanized areas (UZAs). But for most sources of funding, it is more practical to define geographic areas by county boundaries.

This forecast does not break down SIS Highway expenditures to the county or District level. SIS Highway expenditures are addressed in the SIS Cost Feasible Plan (CFP), which is under preparation by the FDOT Systems Implementation Office.<sup>4</sup> Districts always inform MPOs of projects that are proposed to be included in the CFP, and, conversely, CFP projects need to be included in the appropriate MPO LRTP(s) to receive federal funding.

This Forecast lists funding for FDOT programs designed to support, operate, and maintain the state transportation system. The FDOT has set aside sufficient funds in the 2045 Revenue Forecast for these programs, referred to as "non-capacity programs" here, to meet statewide objectives and program needs in all metropolitan and non-metropolitan areas. Specific District level amounts are provided for existing facilities expenditures. Funding for these programs is not included in the county level estimates.

### **2045 Revenue Forecast (State and Federal Funds)**

The 2045 Revenue Forecast is the result of a three-step process:

1. State and federal revenues from current sources were estimated.
2. Those revenues were distributed among appropriate statewide capacity and non-capacity programs consistent with statewide priorities.
3. County level estimates for the Other Roads and Transit programs were developed, along with County, District or Statewide estimates for other funding categories that are of particular interest to the 27 Florida MPOs.

### **Forecast of State and Federal Revenues**

The 2045 Revenue Forecast includes program estimates for the expenditure of state and federal funds expected from current revenue sources (i.e., new revenue sources were not added). The forecast estimates revenues from federal, state, and Turnpike sources included in the Department's 5-Year Work Program.

The forecast does not estimate revenue from other sources (i.e., local government/authority taxes, fees, and bond proceeds; private sector participation; and innovative finance sources). Estimates of state revenue sources were based on estimates prepared by the State Revenue Estimating Conference (REC) in September 2017 for state fiscal years (FYs) 2019 through 2028. Estimates of federal revenue sources were based on the Department's Federal Aid Forecast for FYs 2018 through 2027. Assumptions about revenue growth are shown in Table 1:

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<sup>4</sup> Formerly known as the Systems Planning Office.

**Table 1**  
**Revenue Sources and Assumptions**

Revenue Sources	Years	Assumptions*
State Taxes (includes fuel taxes, tourism-driven sources, vehicle-related taxes and documentary stamp taxes)	2019-2028	Florida REC Estimates; these average in the range from 2.5% to 3.0% per year
	2029-2045	Annual 1.93% increase in 2029, gradually decreasing to -0.44% in 2045
Federal Distributions (Total Obligor Authority)	2018-2027	FDOT Federal Aid Forecast
	2028-2045	Annual 0.0% increase through 2045
Turnpike	2018-2028	Turnpike Revenue Forecast
	2029-2045	Annual 1.93% increase in 2029, gradually decreasing to -0.44% in 2045

\* Note all growth rates show nominal, or year of expenditure, dollar figures. Consistent with REC assumptions, a constant annual inflation rate of 2.60% is projected forward indefinitely. Therefore, *an assumption of nominal growth of 1.93% signifies a real decline of about 0.65% per year.*

A summary of the forecast of state, federal and Turnpike revenues is shown in Table 2. The *2045 Revenue Forecast Guidebook* contains inflation factors that can be used to adjust project costs expressed in “present day cost” to “year of expenditure” dollars.

**Table 2**  
**Forecast of Revenues**  
**2045 Revenue Forecast (Millions of Dollars)**  
(Percentages reflect percentage of total period funding produced by that source. For example, Federal funding is projected to provide 24% of all funding for the period of 2021 through 2025)

Major Revenue Sources	Time Periods (Fiscal Years)					26-Year Total <sup>2</sup> 2020-2045
	2020 <sup>1</sup>	2021-2025 <sup>1</sup>	2026-2030	2031-2035	2036-2045	
Federal	2,353 28%	10,884 24%	11,878 23%	12,108 21%	24,217 20%	61,440 22%
State	5,263 62%	27,311 61%	34,040 65%	38,164 66%	80,399 66%	185,178 65%
Turnpike	814 10%	6,572 15%	6,688 13%	7,861 14%	16,518 14%	38,453 13%
<b>Total<sup>2</sup></b>	<b>8,430</b>	<b>44,768</b>	<b>52,606</b>	<b>58,133</b>	<b>121,134</b>	<b>285,071</b>

<sup>1</sup> Based on the FDOT Adopted Work Program for 2018 through 2022.

<sup>2</sup> Columns and rows sometimes do not equal the totals due to rounding.

### Estimates for State Programs

Long range revenue forecasts assist in determining financial feasibility of needed transportation improvements, and in identifying funding priorities. FDOT policy places primary emphasis on

safety and preservation. Remaining funding is planned for capacity programs and other priorities.

The 2045 Revenue Forecast includes the program funding levels contained in the July 1, 2017 Adopted Work Program for 2018 through 2022. The forecast of funding levels for FDOT programs for 2020-2045 was developed based on the corresponding Program and Resource Plan (PRP), which includes the Adopted Work Program and planned funding for fiscal years 2023-2026. This Revenue Forecast provides information for Capacity and Non-Capacity state programs. The information is consistent with “Financial Guidelines for MPO Long Range Plans” moved forward by the Metropolitan Planning Organization Advisory Council Policy and Technical Committee on July 13, 2017.

The Revenue Forecast entails long-term financial projections for support of long-term planning. The forecast is delivered well in advance of the 5-year LRTP adoption schedule, roughly 18 months in advance of the first required adoption. This forecast is considered satisfactory for the remainder of the 5-year cycle; in other words, it is useful for MPOs whose adoptions come at the end of the cycle, about 3½ years after the first MPOs. However, FDOT reserves the right to consider adjustments to the Revenue Forecast during the LRTP adoption cycle, if warranted.

### **Capacity Programs**

Capacity programs include each major FDOT program that expands the capacity of existing transportation systems (such as highways and transit). Table 3 includes a brief description of each major capacity program and the linkage to the program categories used in the PRP.

#### Statewide Forecast for Capacity Programs

Table 4 identifies the statewide estimates for capacity programs in the 2045 Revenue Forecast. \$285 billion is forecast for the entire state transportation program from 2020 through 2045; about \$149 billion (52%) is forecast for capacity programs.

#### Metropolitan Forecast for Capacity Programs

Pursuant to federal law, transportation management area (TMA) funds and certain Transportation Alternatives (TALU) funds are projected based on current population estimates. These 2 categories only apply to federally designated TMAs; 15 of the State’s 27 MPOs qualify for these funds. District estimates for certain Transportation Alternatives (TA) funds and the Other Roads program were developed using the current statutory formula.<sup>5</sup> For planning purposes, transit program funds were divided between Districts and counties according to population.

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<sup>5</sup> The statutory formula is 50% population and 50% motor fuel tax collections.

**TABLE 3**  
**Major Capacity Programs Included in the 2045 Revenue Forecast**  
**and Corresponding Program Categories in the Program and Resource Plan (PRP)**

2045 Revenue Forecast Programs	PRP Program Categories
<u>SIS Highways Construction &amp; ROW</u> - Construction, improvements, and associated right of way on SIS highways (i.e., Interstate, the Turnpike, other toll roads, and other facilities designed to serve interstate and regional commerce including SIS Connectors).	Interstate Construction Turnpike Construction Other SIS Highway Construction SIS Highway Traffic Operations SIS Highway Right of Way (ROW) SIS Advance Corridor Acquisition
<u>Other Arterial Construction/ROW</u> - Construction, improvements, and associated right of way on State Highway System roadways not designated as part of the SIS. Also includes funding for local assistance programs such as the Transportation Regional Incentive Program (TRIP), and the County Incentive Grant Program (CIGP).	Arterial Traffic Operations Construction County Transportation Programs Economic Development Other Arterial & Bridge Right of Way Other Arterial Advance Corridor Acquisition
<u>Aviation</u> - Financial and technical assistance to Florida's airports in the areas of safety, security, capacity enhancement, land acquisition, planning, economic development, and preservation.	Airport Improvement Land Acquisition Planning Discretionary Capacity Improvements
<u>Transit</u> - Technical and operating/capital assistance to transit, paratransit, and ridesharing systems.	Transit Systems Transportation Disadvantaged – Department Transportation Disadvantaged – Commission Other; Block Grants; New Starts Transit
<u>Rail</u> - Rail safety inspections, rail-highway grade crossing safety, acquisition of rail corridors, assistance in developing intercity and commuter rail service, and rehabilitation of rail facilities.	Rail/Highway Crossings Rail Capacity Improvement/Rehabilitation High Speed Rail Passenger Service
<u>Intermodal Access</u> - Improving access to intermodal facilities, airports and seaports; associated rights of way acquisition.	Intermodal Access
<u>Seaport Development</u> - Funding for development of public deep-water ports projects, such as security infrastructure and law enforcement measures, land acquisition, dredging, construction of storage facilities and terminals, and acquisition of container cranes and other equipment used in moving cargo and passengers.	Seaport Development
<u>SUN Trail</u> – FDOT is directed to make use of its expertise in efficiently providing transportation projects to develop a statewide system of paved non-motorized trails as a component of the Florida Greenways and Trails System (FGTS), which is planned by the Florida Department of Environmental Protection (FDEP).	Other State Highway Construction Other State Highway ROW Other Roads Construction Other Roads ROW Other SIS Highway Construction SIS Highway ROW

**Table 4**  
**Statewide Capacity Program Estimates**  
**State and Federal Funds from the 2045 Revenue Forecast (Millions of Dollars)**

Major Programs	Time Periods (Fiscal Years)					26-Year Total <sup>2</sup>
	2020 <sup>1</sup>	2021-25 <sup>1</sup>	2026-30	2031-35	2036-45	2020-2045
SIS Highways Construction & ROW	2,199	12,940	12,490	13,933	28,971	70,534
Other Roads Construction & ROW	885	6,483	7,918	8,550	17,783	41,618
Aviation	211	1,143	1,433	1,596	3,354	7,738
Transit	417	2,306	2,881	3,154	6,580	15,339
Rail	178	850	1,255	1,425	2,985	6,692
Intermodal Access	40	262	345	379	791	1,816
Seaports	114	622	837	938	1,970	4,481
SUN Trail	25	125	125	125	250	650
<b>Total Capacity Programs</b>	<b>4,068</b>	<b>24,731</b>	<b>27,284</b>	<b>30,100</b>	<b>62,684</b>	<b>148,868</b>
<b>Statewide Total Forecast</b>	<b>8,430</b>	<b>44,768</b>	<b>52,606</b>	<b>58,133</b>	<b>121,134</b>	<b>285,071</b>

<sup>1</sup> Based on the FDOT Tentative Work Program for FYs 2018 through 2022.

<sup>2</sup> Columns and rows sometimes do not equal the totals due to rounding.

Estimates for the Other Roads and Transit program categories for this metropolitan area are included in Table 5.

**Table 5**  
**County Level Capacity Program Estimates**  
**State and Federal Funds from the 2045 Revenue Forecast (Millions of Dollars)**  
Estimates for the Collier Metropolitan Planning Organization

Capacity Programs*	Time Periods (Fiscal Years)					26-Year Total
	2020	2021-25	2026-30	2031-35	2036-45	2020-2045
Other Roads Construction & ROW	9.09	78.40	100.62	110.54	232.04	530.69
Transit	6.60	36.67	46.24	50.64	105.50	245.66
<b>Total - Main Programs</b>	<b>15.69</b>	<b>115.08</b>	<b>146.86</b>	<b>161.18</b>	<b>337.54</b>	<b>776.35</b>

\* Estimates for 2018 through 2022 are contained in the FDOT Adopted Work Program.

# Other Roads estimates do not include projected funding for the TRIP program of the Federal TMA program (SU Fund Code).

^ Transit estimates do not include projected funding for the Florida New Starts program.

A few programs fund capacity projects throughout the state on a competitive basis. The two most prominent programs for MPOs are the Transportation Regional Incentive Program (TRIP) and the Florida New Starts Transit Program. Formerly, TRIP was referred to as a Documentary Stamp Tax program, but there are currently multiple sources of funding. With the economic recovery, the forecast funding for TRIP is now over five times the level of 5 years ago. Also, amounts for the federally funded TMA program (Fund Code SU) are provided in Table 6, and not included in Table 5. Neither TRIP, Florida New Starts or TMA funds are included above.



**Table 6**  
**Transportation Management Area (TMA) Funds Estimates**  
**(Known as SU Funds in FDOT Work Program)**  
**Federal Funds from the 2045 Revenue Forecast (Millions of Dollars)**

Collier Metropolitan Area (Defined as Collier County)	Time Periods (Fiscal Years)					26 Year Total
	2020	2021-25	2026-30	2031-35	2036-45	2020-2045
<b>TMA / SU Funds</b>	5.02	25.09	25.09	25.09	50.18	130.47

Projects which would be partially or entirely funded by TRIP or FL New Starts cannot be counted as “funded” in LRTPs. This is because there is no guarantee of any specific project receiving TRIP or FL New Starts funding in the future. Both programs are competitive, and only a small percentage of potentially eligible projects receive funding. However, these projects can be included in LRTPs as “illustrative” projects.<sup>6</sup> If MPOs have specific questions, they should consult with their District liaison and planning staff; District staff will contact the OPP, Work Program, or other Central Office staff as needed. Conditional estimates of TRIP funds by District are in Table 7. Statewide estimates of FL New Starts funds are in Table 8.

The FAST Act continued funding for Transportation Alternatives projects. Categories impacting MPOs include funds for (1) Transportation Management Areas (TALU funds); (2) areas with populations greater than 5,000 up to 200,000 (TALL funds), and (3) any area of the state (TALT funds). Estimates of Transportation Alternatives Funds are shown further below in Table 9.

**Table 7**  
**Districtwide Transportation Regional Incentive Program Estimates**  
**State Funds from the 2045 Revenue Forecast (Millions of Dollars)**

FDOT District	5-Year Period (Fiscal Years)					26-Year Total <sup>2</sup>
	2020 <sup>1</sup>	2021-25	2026-30	2031-35	2036-2045	2020-2045
District 1	3.1	21.9	32.7	36.4	74.6	<b>168.8</b>
District 2	2.5	17.6	26.3	29.2	59.9	<b>135.5</b>
District 3	1.6	11.6	17.3	19.2	39.3	<b>89.0</b>
District 4	4.1	28.9	43.1	47.9	98.2	<b>222.3</b>
District 5	4.7	32.8	49.0	54.4	111.7	<b>252.6</b>
District 6	2.8	19.7	29.4	32.7	67.0	<b>151.6</b>
District 7	3.3	23.2	34.6	38.4	78.8	<b>178.2</b>
<b>Statewide Total Forecast</b>	<b>22.2</b>	<b>155.8</b>	<b>232.3</b>	<b>258.2</b>	<b>529.5</b>	<b>1,197.9</b>

<sup>1</sup> Estimates for 2018 through 2022 are contained in the FDOT Adopted Work Program.

<sup>2</sup> Columns and rows sometimes do not equal the totals due to rounding.

<sup>6</sup> Other projects for which funding is uncertain may also be included as illustrative projects.

**Table 8**  
**Transit - Florida New Starts Program Estimates**  
**State Funds from the 2045 Revenue Forecast (Millions of Dollars)**

Statewide Program	Time Periods (Fiscal Years)					26-Year Total
	2020	2021-25	2026-30	2031-35	2036-45	2020-2045
Statewide Total Forecast	41.8	226.3	259.2	282.4	593.4	1,403.1

**Table 9**  
**Transportation Alternatives Funds Estimates**  
**Federal Funds from the 2045 Revenue Forecast (Millions of Dollars)**

Collier Metropolitan Area (Defined as Collier County)	Time Periods (Fiscal Years)					26 Year Total <sup>1</sup>
	2020 <sup>1</sup>	2021-25	2026-30	2031-35	2036-45	2020-2045
TALU (Urban); Funds for TMA	0.34	1.69	1.69	1.69	3.38	8.79
TALL (<200,000 population); Entire FDOT District	0.55	2.73	2.73	2.73	5.46	14.20
TALT (Any Area); Entire FDOT District	3.45	17.25	17.25	17.25	34.49	89.67

<sup>1</sup> Rows sometimes do not equal the totals due to rounding.

Other projects for which funding is uncertain may also be included in LRTPs as “illustrative” projects.

### Non-Capacity Programs

Non-capacity programs refer to FDOT programs designed to support, operate and maintain the state highway system: safety, resurfacing, bridge, product support, operations and maintenance, and administration. Table 10 includes a description of each non-capacity program and the linkage to the program categories used in the Program and Resource Plan.

County level estimates are not needed for these programs. Instead, FDOT has included sufficient funding in the 2045 Revenue Forecast to meet the following statewide objectives and policies:

- **Resurfacing program:** Ensure that 80% of state highway system pavement meets Department standards;
- **Bridge program:** Ensure that 90% of FDOT-maintained bridges meet Department standards while keeping all FDOT-maintained bridges open to the public safe;
- **Operations and maintenance program:** Achieve 100% of acceptable maintenance condition standard on the state highway system;
- **Product Support:** Reserve funds for Product Support required to construct improvements (funded with the forecast’s capacity funds) in each District and metropolitan area; and
- **Administration:** Administer the state transportation program.

The Department has reserved funds in the 2045 Revenue Forecast to carry out its responsibilities and achieve its objectives for the non-capacity programs on the state highway system in each

**TABLE 10**  
**Major Non-Capacity Programs Included in the 2040 Revenue Forecast**  
**and Corresponding Program Categories in the Program and Resource Plan (PRP)**

<b>2045 Revenue Forecast Programs</b>	<b>PRP Program Categories</b>
<u>Safety</u> - Includes the Highway Safety Improvement Program, the Highway Safety Grant Program, Bicycle/Pedestrian Safety activities, the Industrial Safety Program, and general safety issues on a Department-wide basis.	Highway Safety Grants
<u>Resurfacing</u> - Resurfacing of pavements on the State Highway System and local roads as provided by state law.	Interstate Arterial and Freeway Off-System Turnpike
<u>Bridge</u> - Repair and replace deficient bridges on the state highway system. In addition, not less than 15% of the amount of 2009 federal bridge funds must be expended off the federal highway system (e.g., on local bridges not on the State Highway System).	Repair - On System Replace - On System Local Bridge Replacement Turnpike
<u>Product Support</u> - Planning and engineering required to “produce” FDOT products and services (i.e., each capacity program; Safety, Resurfacing, and Bridge Programs).	Preliminary Engineering Construction Engineering Inspection Right of Way Support Environmental Mitigation Materials & Research Planning & Environment Public Transportation Operations
<u>Operations &amp; Maintenance</u> - Activities to support and maintain transportation infrastructure once it is constructed and in place.	Operations & Maintenance Traffic Engineering & Operations Toll Operations Motor Carrier Compliance
<u>Administration and Other</u> - Resources required to perform the fiscal, budget, personnel, executive direction, document reproduction, and contract functions. Also includes the Fixed Capital Outlay Program, which provides for the purchase, construction, and improvement of non-highway fixed assets (e.g., offices, maintenance yards). The “Other” category consists primarily of debt service.	Administration Fixed Capital Outlay Office Information Systems Debt Service

District and metropolitan area. Table 11 identifies the statewide estimates for non-capacity programs. About \$136 billion (48% of total revenues) is forecast for non-capacity programs.

**Table 11**  
**Statewide Non-Capacity Expenditure Estimates**  
**State and Federal Funds from the 2045 Revenue Forecast (Millions of Dollars)**

Major Categories	Time Periods (Fiscal Years)					26-Year Total <sup>1</sup>
	2020	2021-25	2026-30	2031-35	2036-45	2020-2045
Safety	141	820	826	825	1,659	<b>4,271</b>
Resurfacing	633	4,354	4,150	4,241	8,756	<b>22,135</b>
Bridge	1,035	1,051	2,403	2,946	6,122	<b>13,556</b>
Product Support	1,302	6,576	6,709	7,096	14,614	<b>36,299</b>
Operations and Maintenance	1,384	7,442	8,596	9,162	18,939	<b>45,523</b>
Administration and Other	429	2,770	2,891	2,819	5,559	<b>14,468</b>
<b>Statewide Total Forecast</b>	<b>4,923</b>	<b>23,013</b>	<b>25,576</b>	<b>27,089</b>	<b>55,650</b>	<b>136,251</b>

<sup>1</sup> Columns and rows sometimes do not equal the totals due to rounding.

Table 12 contains District-wide estimates for State Highway System (SHS) existing facilities expenditures for information purposes. Existing facilities expenditures include all expenditures for the program categories Resurfacing, Bridge, and Operations and Maintenance (O&M). In the previous Revenue Forecast, these expenditures were described as SHS O&M, but the expenditures on the Resurfacing and Bridge categories, in combination, are about as much as those for O&M. These existing facilities estimates are provided pursuant to an agreement between FDOT and the Federal Highway Administration (FHWA) Division Office.

**Table 12**  
**State Highway System Existing Facilities Estimates by District**  
**State and Federal Funds from the 2045 Revenue Forecast (Millions of Dollars)**

Major Programs	Time Periods (Fiscal Years)					26-Year Total <sup>1</sup>
	2020	2021-25	2026-30	2031-35	2036-45	2020-2045
District 1	457	1,922	2,267	2,446	5,060	<b>12,151</b>
District 2	606	2,551	3,009	3,247	6,716	<b>16,129</b>
District 3	495	2,084	2,458	2,652	5,487	<b>13,176</b>
District 4	410	1,728	2,038	2,199	4,549	<b>10,924</b>
District 5	561	2,362	2,785	3,006	6,217	<b>14,931</b>
District 6	203	854	1,007	1,087	2,248	<b>5,399</b>
District 7	319	1,345	1,586	1,712	3,541	<b>8,503</b>
<b>Statewide Total Forecast</b>	<b>3,051</b>	<b>12,847</b>	<b>15,150</b>	<b>16,348</b>	<b>33,817</b>	<b>81,214</b>

Note: Includes Resurfacing, Bridge, and Operations & Maintenance Programs.

<sup>1</sup> Columns and rows sometimes do not equal the totals due to rounding.

### Advisory Concerning Florida's Turnpike Enterprise

Within the framework of FDOT, Florida's Turnpike Enterprise (Turnpike) is given authority, autonomy and flexibility to conduct its operations and plans in accordance with Florida Statute and its Bond Covenants. The Turnpike's traffic engineering consultant projects Toll Revenues and Gross Concession Revenues for the current year and the subsequent 10-year period, currently FYs 2018-2028. The consultant's official projections are available at [http://www.floridasturnpike.com/documents/reports/Traffic%20Engineers%20Annual%20Report/1\\_Executive%20Summary.pdf](http://www.floridasturnpike.com/documents/reports/Traffic%20Engineers%20Annual%20Report/1_Executive%20Summary.pdf).

Projections of Turnpike revenues within the State of Florida Revenue Forecast beyond FY2028 are for planning purposes, and no undue reliance should be placed on these projections. Such amounts are generated and shared by the FDOT Office of Policy Planning (OPP) for purposes of accountability and transparency. They are part of the Revenue Forecast process, which serves the needs of MPOs generating required Long Range Transportation Plans (LRTPs).

MPOs do not program capital projects or make decisions concerning Turnpike spending. OPP projections are not part of the Turnpike's formal revenue estimating process and are not utilized for any purpose other than to assist MPOs and perform related functions. Such amounts do not reflect the Turnpike's requirement to cover operating and maintenance costs, payments to bondholders for principal and interest, long-term preservation costs, and other outstanding Turnpike obligations and commitments.

**EXECUTIVE SUMMARY**  
**COMMITTEE ACTION**  
**ITEM 7D**

**Endorse Collier County's Transit Safety Performance Targets**

---

**OBJECTIVE:** For the Committee to endorse Collier County's Transit Safety Performance Targets.

**CONSIDERATIONS:** The next step in the Federal Transportation Performance Measures process is the adoption of Transit Safety targets by the MPOs within 180 days of their local transit agency's adoption of its Public Transit Agency Safety Plan (PTASP). The MPO can adopt its own transit safety targets or those of the local transit agency. The Board of County Commissioners (BCC) adopted a Public Transit Agency Safety Plan (PTASP) on May 12, 2020 that includes the Transit Safety Performance Measures and Targets shown in **Attachment 1**.

According to guidance provided by FDOT, a transit agency is required to establish performance targets in the PTASP for each federal safety performance measure defined by FTA in the National Public Transportation Safety Plan. The transit safety performance measures are:

- Fatalities
  - Total number of reportable fatalities
  - Rate of reportable fatalities per total vehicle revenue miles (VRM) by mode
- Injuries
  - Total number of reportable injuries
  - Rate of reportable injuries per total VRM by mode
- Reportable safety events
  - Total number of reportable safety events
  - Rate of reportable events per total VRM by mode
- System reliability
  - Mean distance between major mechanical failures by mode

There are two ways MPOs can choose to establish PTASP targets:

1. The MPO adopts the transit agency's targets and agrees to plan and program projects so that they contribute toward their accomplishment.
2. The MPO establishes numeric targets that are different from those established by the transit agency and the MPO plans and programs projects that contribute toward the accomplishment of the MPO targets.

**STAFF RECOMMENDATION:** That the Committee endorses Collier County's Transit Safety Performance Targets.

Prepared By: Anne McLaughlin, MPO Director

Attachments:

1. Transit Safety Performance Targets Adopted by BCC



## EXCERPT FROM COUNTY PUBLIC TRANSIT AGENCY SAFETY PLAN (PTASP) – Adopted by Board of County Commissioners on May 12, 2020

### Section 3 – Safety Performance Targets

Collier Area Transit has established safety performance targets based on the safety performance measures reported under the National Public Transportation Safety Plan. These measures will be evaluated periodically to determine when action must be taken to address inadequate safety performance. In conducting the assessment of the system's safety performance, the information may not directly show us what is wrong as much as it discloses that something is wrong. A deeper look into the information available may be required to better determine how best to address safety deficiencies.

A plan to address identified safety deficiencies could involve:

- Addressing underlying hazards and potential consequences through Safety Risk Management;
- Changing data collection or analysis techniques to better understand what's really going on;
- Testing and evaluating new approaches to Safety Management System (SMS) processes.

#### Section 3.1 – Annual Safety Performance Targets

[See Table on following page]

#### Section 3.2 – Safety Performance Target Coordination

CAT Director and Transit Manager will communicate regularly with Collier Metropolitan Planning Organization (MPO) and the Florida Department of Transportation (FDOT) for establishing and maintaining safety performance targets. A bi-annual meeting schedule between FDOT, Collier MPO and CAT will be organized and the safety activities that impact the performance targets will be reviewed during these meetings. Upon completion of the PTASP, in which the performance targets are established, the safety activities will be monitored regularly, and documentation of these activities will be made available at the bi-annual meetings. The safety performance target review shall include discussion about whether the targets are being met and if not, what steps will be required to better meet the established targets. An evaluation of the targets shall also consider whether the targets are realistic and attainable. If it has been determined that the targets are not attainable, recommendations for modification or replacement of the target will be considered. On or around June 30<sup>th</sup> of each year the Safety Performance targets will be transmitted to the FDOT and the Collier MPO for their records.

### Section 3.1 – Annual Safety Performance Targets

VRM = Vehicle Revenue Miles

MB = Motor Bus (Fixed Route)

DR = Demand Response (Paratransit)

SPT Category	2015		2016		2017		2018		2019		5-Year Average		Target	
	MB	DR	MB	DR	MB	DR	MB	DR	MB	DR	MB	DR	MB	DR
Total Number of Fatalities	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0
Fatality Rate per 100,000 VRM	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.0	0.0	0.0	0.0
Total Number of Injuries	5	0	5	1	3	2	5	1	3	2	4.2	1.2	3.0	1.0
Injury Rate per 100,000 VRM	0.38	0	0.38	0	0.23	0	0.39	0	0.22	0	0.3	0.1	0.0	0.0
Total Number of Safety Events	5	0	5	1	3	2	2	1	3	3	3.6	1.4	2.0	1.0
Safety Event Rate per 100,000 VRM	0.38	0	0.38	0	0.23	0	0.16	0	0.22	0	0.3	0.1	0.0	0.0
Total Number of Major Mechanical System Failures	31	30	23	26	94	87	98	82	15	9	52.2	46.8	20.0	20.0
Vehicle Failures Per 100,000 VRM)	2.35	3.15	1.74	2.49	7.31	7.69	7.72	6.49	1.09	0.64	4.0	4.1	2.0	2.0
Annual VRM	1,320,547	952,694	1,318,931	1,044,873	1,285,354	1,131,859	1,268,696	1,263,684	1,378,866	1,406,149	1,314,479	1,159,852	1,200,000	1,200,000

**EXECUTIVE SUMMARY**  
**Committee Presentation**  
**Item 8A**

**FDOT Update on Current Project Development & Environmental (PD&E) Studies**

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**OBJECTIVE:** For the committee to receive a presentation from FDOT on current PD&E Studies.

**CONSIDERATIONS:** Jennifer Marshall, P.E., FDOT Environmental Administrator in Environmental Management, will present an update on a number of current PD&E Studies. The presentation is not available for inclusion in the packet. The presentation includes the following projects:

- 417540-1: SR 29 from Oil Well Road to SR 82
- 434490-1: SR 29 from I-75 to Oil Well Road
- 435110-1: CR 887 US 41 to Lee County Line
- 435368-1: CR 846 Immokalee at Randall

**STAFF RECOMMENDATION:** That the committee receives a presentation from FDOT on current PD&E Studies.

Prepared By: Anne McLaughlin, MPO Director

**EXECUTIVE SUMMARY**  
**Committee Distribution**  
**Item 10A**

**Administrative Modifications to FY2021-2025 Transportation Improvement Program (TIP)**

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**OBJECTIVE:** For the committee to receive a copy of administrative modification made to FY2021-2025 TIP.

**CONSIDERATIONS:** The combined pages shown in **Attachment 1** include the Roll-Over Report provided by FDOT, made on 7/22/20 and corrections to the map for the Lake Trafford Rd Sidewalk Projects on p117 and p118 made on 8/13/20.

**STAFF RECOMMENDATION:** That the committee receive a copy of the administrative modifications made to FY2021-2025 TIP.

Prepared By: Anne McLaughlin, MPO Director

Attachment 1: 7/22 and 8/13/20 administrative modifications to the FY2021-2025 TIP



# COLLIER METROPOLITAN PLANNING ORGANIZATION

## TRANSPORTATION IMPROVEMENT PROGRAM FY2021 - FY2025

Adopted: June 12, 2020



*The preparation of this report has been financed in part through grants from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation, under the Metropolitan Planning Program, Sections 134 and 135 of Title 23 U.S. Code. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation.*

Incorporates the following Administrative Modifications and Amendments:

- 7/22/20 Admin. Mod. to add Eastern Federal Lands Highway Division Funded Project Appendix F (p228) and Roll Over Report Appendix L (p243)
- 8/13/20 Admin. Mod to replace maps on p117 & 118, FPN 4433753 & 4433754, Lake Trafford Rd Sidewalk & Bike Lanes, to match FDOT Work Program mapping

# APPENDIX F

## FEDERAL LANDS APPROPRIATIONS

(Eastern Federal Lands Highway Division of the  
Federal Highway Administration (FHWA))

### FY2020-FY2023 Transportation Improvement Program Mid-Year Update

Last Printed: 7/13/2020

Federal Highway Administration  
Eastern Federal Lands Highway Division

PROJECT	PROGRAM FISCAL YEAR	STATE	COUNTY	PARK, REFUGE, FOREST OR OTHER PARTNER/AGENCY	DESCRIPTION	TYPE OF WORK	PRIMARY FUND SOURCE	TOTAL PROGRAMMED AMOUNT	FUNDS FROM TITLE	DELIVERED BY	STATUS	CONGRESSIONAL DISTRICT	FLMA
FL FLTP FW MEIS (2)	2020	FL	Brevard	Merritt Island National Wildlife Refuge	Rehab Rt# 802, maintenance parking area and repair rt#126, Shiloh 3 Access Road	3RH	FLTP	\$ 533,941.00	Title 23	FWS	Planned	FL-08	FWS
FL_FLAP_LEON_375(1)	2020	FL	Leon	USFS/Apalachicola National Forest	Add 2 bike lanes & Overlay/re-stripe Leon Co. Rd. 375 8.3miles.	3RL	FLAP	\$ 1,020,000.00	Title 23	LOCAL	In Design	FL-05	USFS
FW FLPA 419(1)	2020	FL	Collier	Florida Panther National Wildlife Refuge	Rehab Fritz Rd (RT 419)	3RL	FLTP	\$ 750,000.00	Title 23	EFLHD	In Design	FL-25	FWS



ITEM NUMBER:430878 1  
DISTRICT:01  
ROADWAY ID:03000601

PROJECT DESCRIPTION: CR 953/BARFIELD DR FROM CR 92 (SAN MARCO RD) TO INLET DRIVE  
COUNTY: COLLIER  
PROJECT LENGTH: 1.100MI

TYPE OF WORK:SIDEWALK  
LANES EXIST/IMPROVED/ADDED: 4/ 0/ 0

[illegible]

ITEM NUMBER:431895 1  
DISTRICT:01  
ROADWAY ID:03000000

PROJECT DESCRIPTION: 8TH STREET NE BRIDGE FROM GOLDEN GATE BLVD TO RANDALL BLVD  
COUNTY: COLLIER  
PROJECT LENGTH: 3.212MI

\*NON-SIS\*

TYPE OF WORK:NEW BRIDGE CONSTRUCTION

LANES EXIST/IMPROVED/ADDED: 0/ 0/ 2

FUND CODE	LESS THAN 2021	2021	2022	2023	2024	2025	GREATER THAN 2025	ALL YEARS
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT								
SU	62,088	0	0	0	0	0	0	62,088
PHASE: DESIGN BUILD / RESPONSIBLE AGENCY: MANAGED BY FDOT								
ACSA	96,536	8,405	0	0	0	0	0	104,941
SA	6,932,926	0	0	0	0	0	0	6,932,926
TOTAL 431895 1	7,091,550	8,405	0	0	0	0	0	7,099,955
TOTAL PROJECT:	7,091,550	8,405	0	0	0	0	0	7,099,955

ITEM NUMBER:432283 4  
DISTRICT:01  
ROADWAY ID:

PROJECT DESCRIPTION:ALLIGATOR ALLEY WEST HVAC REPLACEMENT  
COUNTY:COLLIER  
PROJECT LENGTH: .000

```

*NON-SIS*
TYPE OF WORK:TOLL COLLECTION
LANES EXIST/IMPROVED/ADDED: 0/ 0/ 0

```

FUND CODE	LESS THAN 2021	2021	2022	2023	2024	2025	GREATER THAN 2025	ALL YEARS
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY FDOT								
DSB2	33,500	7,337	0	0	0	0	0	40,837
TOTAL 432283 4	33,500	7,337	0	0	0	0	0	40,837
TOTAL PROJECT:	33,500	7,337	0	0	0	0	0	40,837

ITEM NUMBER:433002 4  
DISTRICT:01  
ROADWAY ID:

PROJECT DESCRIPTION:HURRICANE IRMA COUNTY WIDE (03) PERMANENT SIGNAL REPAIR  
COUNTY:COLLIER  
PROJECT LENGTH: .000

\*NON-SIS\*

TYPE OF WORK:EMERGENCY OPERATIONS

LANES EXIST/IMPROVED/ADDED: 0/ 0/ 0

FUND CODE	LESS THAN 2021	2021	2022	2023	2024	2025	GREATER THAN 2025	ALL YEARS
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT DS	1,865	0	0	0	0	0	0	1,865
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY FDOT ACER	919,448	29,984	0	0	0	0	0	949,432
DER	30,720	0	0	0	0	0	0	30,720
TOTAL 433002 4	952,033	29,984	0	0	0	0	0	982,017

FLORIDA DEPARTMENT OF TRANSPORTATION  
OFFICE OF WORK PROGRAM  
MPO ROLLFORWARD REPORT  
=====

DATE RUN: 07/01/2020  
TIME RUN: 11.18.04  
MBRMPOTP

HIGHWAYS  
=====

ITEM NUMBER:433002 5		PROJECT DESCRIPTION:HURRICANE IRMA COUNTY WIDE (03) LIGHTING REPAIRS					*NON-SIS*		
DISTRICT:01		COUNTY:COLLIER					TYPE OF WORK:EMERGENCY OPERATIONS		
ROADWAY ID:		PROJECT LENGTH: .000					LANES EXIST/IMPROVED/ADDED: 0/ 0/ 0		
FUND CODE	LESS THAN 2021	2021	2022	2023	2024	2025	GREATER THAN 2025	ALL YEARS	
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT									
DS		300	0	0	0	0	0	0	300
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY FDOT									
ACER		148,240	105,673	0	0	0	0	0	253,913
DER		153,629	0	0	0	0	0	0	153,629
DS		4,245	0	0	0	0	0	0	4,245
<b>TOTAL 433002 5</b>		<b>306,414</b>	<b>105,673</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>412,087</b>
<b>TOTAL PROJECT:</b>		<b>1,258,447</b>	<b>135,657</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,394,104</b>

ITEM NUMBER:433176 1		PROJECT DESCRIPTION:PINE RIDGE RD AT VARIOUS LOCATIONS					*NON-SIS*		
DISTRICT:01		COUNTY:COLLIER					TYPE OF WORK:ADD TURN LANE(S)		
ROADWAY ID:03504000		PROJECT LENGTH: .191MI					LANES EXIST/IMPROVED/ADDED: 5/ 5/ 1		
FUND CODE	LESS THAN 2021	2021	2022	2023	2024	2025	GREATER THAN 2025	ALL YEARS	
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY COLLIER COUNTY									
LFP		92,572	0	0	0	0	0	0	92,572
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY COLLIER COUNTY									
ACSU		1,202,083	0	0	0	0	0	0	1,202,083
SU		161,038	0	0	0	0	0	0	161,038
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY FDOT									
SU		1,023	4,918	0	0	0	0	0	5,941
<b>TOTAL 433176 1</b>		<b>1,456,716</b>	<b>4,918</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,461,634</b>
<b>TOTAL PROJECT:</b>		<b>1,456,716</b>	<b>4,918</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,461,634</b>

ITEM NUMBER:435019 1		PROJECT DESCRIPTION:AIRPORT-PULLING RD AND PINE RIDGE RD SIGNAL TIMING					*NON-SIS*		
DISTRICT:01		COUNTY:COLLIER					TYPE OF WORK:ATMS - ARTERIAL TRAFFIC MGMT		
ROADWAY ID:03003000		PROJECT LENGTH: .001MI					LANES EXIST/IMPROVED/ADDED: 4/ 0/ 0		
FUND CODE	LESS THAN 2021	2021	2022	2023	2024	2025	GREATER THAN 2025	ALL YEARS	
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY COLLIER COUNTY									
ACSU		451,560	1,000	0	0	0	0	0	452,560
<b>TOTAL 435019 1</b>		<b>451,560</b>	<b>1,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>452,560</b>
<b>TOTAL PROJECT:</b>		<b>451,560</b>	<b>1,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>452,560</b>

ITEM NUMBER:435030 1		PROJECT DESCRIPTION:SUNSHINE BLVD FROM 17TH AVE SW TO GREEN BLVD					*NON-SIS*		
DISTRICT:01		COUNTY:COLLIER					TYPE OF WORK:SIDEWALK		
ROADWAY ID:03000000		PROJECT LENGTH: .001MI					LANES EXIST/IMPROVED/ADDED: 0/ 0/ 0		
FUND CODE	LESS THAN 2021	2021	2022	2023	2024	2025	GREATER THAN 2025	ALL YEARS	
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY COLLIER COUNTY									
SU		124,448	0	0	0	0	0	0	124,448

# HIGHWAYS

PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT								
ACSU	44	3,442	0	0	0	0	0	3,486
SU	1,951	5	0	0	0	0	0	1,956
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY COLLIER COUNTY								
ACSU	103,238	0	0	0	0	0	0	103,238
SU	343,471	0	0	0	0	0	0	343,471
TALU	69,869	0	0	0	0	0	0	69,869
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY FDOT								
SU	0	607	0	0	0	0	0	607
TOTAL 435030 1	643,021	4,054	0	0	0	0	0	647,075
TOTAL PROJECT:	643,021	4,054	0	0	0	0	0	647,075

ITEM NUMBER:435111 2  
DISTRICT:01  
ROADWAY ID:03030000

PROJECT DESCRIPTION:SR 951 FROM MANATEE RD TO N OF TOWER RD  
COUNTY:COLLIER  
PROJECT LENGTH: .769MI

\*NON-SIS\*

TYPE OF WORK:ADD LANES & REHABILITATE PVMNT  
LANES EXIST/IMPROVED/ADDED: 5/ 0/ 2

	FUND CODE	LESS THAN 2021	2021	2022	2023	2024	2025	GREATER THAN 2025	ALL YEARS
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT									
	DIH	40,852	1,279						42,131
	DS	649,931	0						649,931
PHASE: RIGHT OF WAY / RESPONSIBLE AGENCY: MANAGED BY FDOT									
	DDR	0	3,164,811						3,164,811
	DIH	43,875	3,268						47,143
	DS	86,674	1,295,179						1,381,853
PHASE: RAILROAD & UTILITIES / RESPONSIBLE AGENCY: MANAGED BY FDOT									
	DDR	0	0			1,000,000			1,000,000
	LF	0	0			1,550,000			1,550,000
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY FDOT									
	DDR	0	0			12,657,429			12,657,429
	DIH	0	0			11,110			11,110
	DS	648	0			0			648
	LF	0	0			166,650			166,650
TOTAL 435111 2		821,980	4,464,537			15,385,189			20,671,706
TOTAL PROJECT:		821,980	4,464,537			15,385,189			20,671,706

ITEM NUMBER:435116 1  
DISTRICT:01  
ROADWAY ID:03513000

PROJECT DESCRIPTION:GOLDEN GATE COLLECTOR SIDEWALKS VARIOUS LOCATIONS  
COUNTY:COLLIER  
PROJECT LENGTH: 1.213MI

TYPE OF WORK:SIDEWALK  
LANES EXIST/IMPROVED/ADDED: 4/ 4/ 0

	FUND CODE	LESS THAN 2021	2021	2022	2023	2024	2025	GREATER THAN 2025	ALL YEARS
PHASE:	PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY:	MANAGED BY COLLIER COUNTY							
	ACTU	124,552	0	0	0	0	0	0	124,552
PHASE:	PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY:	MANAGED BY FDOT							
	ACTU	47	26	0	0	0	0	0	73
PHASE:	CONSTRUCTION / RESPONSIBLE AGENCY:	MANAGED BY COLLIER COUNTY							
	ACSA	609,819	0	0	0	0	0	0	609,819
	SA	298	0	0	0	0	0	0	298
PHASE:	CONSTRUCTION / RESPONSIBLE AGENCY:	MANAGED BY FDOT							
	ACSA	1	814	0	0	0	0	0	815
TOTAL	435116 1	734,717	840	0	0	0	0	0	735,557
TOTAL PROJECT:		734,717	840	0	0	0	0	0	735,557

ITEM NUMBER:435117 1  
DISTRICT:01  
ROADWAY ID:03631000

PROJECT DESCRIPTION:NORTH NAPLES SIDEWALKS AT VARIOUS LOCATIONS  
COUNTY:COLLIER  
PROJECT LENGTH: 1.248MI

TYPE OF WORK:SIDEWALK  
LANES EXIST/IMPROVED/ADDED: 6/ 0/ 0

	FUND CODE	LESS THAN 2021	2021	2022	2023	2024	2025	GREATER THAN 2025	ALL YEARS
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY COLLIER COUNTY	ACTU	99,392	0	0	0	0	0	0	99,392
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT	ACTU	0	683	0	0	0	0	0	683
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY COLLIER COUNTY	ACSU	239,882	0	0	0	0	0	0	239,882
	SU	579,798	0	0	0	0	0	0	579,798
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY FDOT	SU	0	856	0	0	0	0	0	856
TOTAL 435117 1		919,072	1,539	0	0	0	0	0	920,611
TOTAL PROJECT:		919,072	1,539	0	0	0	0	0	920,611

ITEM NUMBER:435118 1  
DISTRICT:01  
ROADWAY ID:03550000

PROJECT DESCRIPTION:CR 862 (VANDERBILT) FROM CR 901 TO GULF PAVILLION DR  
COUNTY:COLLIER  
PROJECT LENGTH: .674MI

TYPE OF WORK:BIKE LANE/SIDEWALK  
LANES EXIST/IMPROVED/ADDED: 2/ 0/ 0

[illegible]

ITEM NUMBER:435119 1  
DISTRICT:01  
ROADWAY ID:03000000

PROJECT DESCRIPTION:49TH TERRACE SW FROM 20TH PLACE SW TO 19TH PLACE SW  
COUNTY:COLLIER  
PROJECT LENGTH: .001MI

TYPE OF WORK:SIDEWALK  
LANES EXIST/IMPROVED/ADDED: 0/ 0/ 0

	FUND CODE	LESS THAN 2021	2021	2022	2023	2024	2025	GREATER THAN 2025	ALL YEARS
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY COLLIER COUNTY									
TALT		50,755	0	0	0	0	0	0	50,755
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT									
TALT		103	670	0	0	0	0	0	773
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY COLLIER COUNTY									
SU		23,764	0	0	0	0	0	0	23,764
TALU		158,692	1,000	0	0	0	0	0	159,692
TOTAL 435119 1		233,314	1,670	0	0	0	0	0	234,984
TOTAL PROJECT:		233,314	1,670	0	0	0	0	0	234,984

ITEM NUMBER:437067 1  
DISTRICT:01  
ROADWAY ID:03175000

PROJECT DESCRIPTION: I-75 (SR93) NORTH OF IMMOKALEE ROAD SOUTH OF LEE COUNTY LINE  
COUNTY: COLLIER  
PROJECT LENGTH: .855MI

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                                *SIS*
TYPE OF WORK:LANDSCAPING
LANES EXIST/IMPROVED/ADDED: 6/ 0/ 0

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FUND CODE	LESS THAN 2021	2021	2022	2023	2024	2025	GREATER THAN 2025	ALL YEARS
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY FDOT								
DIH	0	11,914	0	0	0	0	0	11,914
DS	149,398	0	0	0	0	0	0	149,398
TOTAL 437067 1	149,398	11,914	0	0	0	0	0	161,312
TOTAL PROJECT:	149,398	11,914	0	0	0	0	0	161,312

ITEM NUMBER:440436 1  
DISTRICT:01  
ROADWAY ID:03010000

PROJECT DESCRIPTION:MANDARIN GREENWAY SIDEWALKS AT VARIOUS LOCATIONS  
COUNTY:COLLIER  
PROJECT LENGTH: 10.415MI

TYPE OF WORK:BIKE LANE/SIDEWALK  
LANES EXIST/IMPROVED/ADDED: 6/ 0/ 0

	FUND CODE	LESS THAN 2021	2021	2022	2023	2024	2025	GREATER THAN 2025	ALL YEARS
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY CITY OF NAPLES									
	TALU		0	45,311	0	0	0	0	45,311
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY CITY OF NAPLES									
	DDR		0	17,478	0	0	0	0	17,478
	SU		0	331,929	0	0	0	0	331,929
<b>TOTAL 440436 1</b>		0	45,311	349,407	0	0	0	0	394,718
<b>TOTAL PROJECT:</b>		0	45,311	349,407	0	0	0	0	394,718

ITEM NUMBER:442788 1  
DISTRICT:01  
ROADWAY ID:03175000

PROJECT DESCRIPTION:HURRICANE IRMA FENCE REPAIR I-75 (SR 93) MP 58.6 - 116  
COUNTY:COLLIER  
PROJECT LENGTH: 57.470MI

\*SIS\*

TYPE OF WORK:EMERGENCY OPERATIONS

LANES EXIST/IMPROVED/ADDED: 3/ 3/ 0

	FUND CODE	LESS THAN 2021	2021	2022	2023	2024	2025	GREATER THAN 2025	ALL YEARS
PHASE:	PRELIMINARY ENGINEERING / DS	RESPONSIBLE AGENCY: 300	MANAGED BY FDOT 0						
				0	0	0	0	0	300
PHASE:	CONSTRUCTION / ACER	RESPONSIBLE AGENCY: 205,228	MANAGED BY FDOT 37,174	0	0	0	0	0	242,402
	DER	65,190	0	0	0	0	0	0	65,190
TOTAL	442788 1	270,718	37,174	0	0	0	0	0	307,892
TOTAL PROJECT:		270,718	37,174	0	0	0	0	0	307,892

ITEM NUMBER:442789 1  
DISTRICT:01  
ROADWAY ID:03080000

PROJECT DESCRIPTION:HURRICANE IRMA FENCE REPAIR SR 29  
COUNTY:COLLIER  
PROJECT LENGTH: .001MI

TYPE OF WORK:EMERGENCY OPERATIONS  
LANES EXIST/IMPROVED/ADDED: 2/ 0/ 0

FUND CODE	LESS THAN 2021	2021	2022	2023	2024	2025	GREATER THAN 2025	ALL YEARS
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY FDOT								
DER	10,000	10,970	0	0	0	0	0	20,970
TOTAL 442789 1	10,000	10,970	0	0	0	0	0	20,970
TOTAL PROJECT:	10,000	10,970	0	0	0	0	0	20,970

FLORIDA DEPARTMENT OF TRANSPORTATION  
OFFICE OF WORK PROGRAM  
MPO ROLLFORWARD REPORT  
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DATE RUN: 07/01/2020  
TIME RUN: 11.18.04  
MBRMPOTP

HIGHWAYS  
=====

ITEM NUMBER:442796 1		PROJECT DESCRIPTION:HURRICANE IRMA LIGHT & FENCE REPAIR GOLDEN GATE PKWY BRIDGE 03199					*NON-SIS*	
DISTRICT:01		COUNTY:COLLIER					TYPE OF WORK:EMERGENCY OPERATIONS	
ROADWAY ID:03511000		PROJECT LENGTH: .112MI					LANES EXIST/IMPROVED/ADDED: 6/ 0/ 0	
FUND CODE	LESS THAN 2021	2021	2022	2023	2024	2025	GREATER THAN 2025	ALL YEARS
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY FDOT								
DER	11,000	77,000	0	0	0	0	0	88,000
<b>TOTAL 442796 1</b>	<b>11,000</b>	<b>77,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>88,000</b>
<b>TOTAL PROJECT:</b>	<b>11,000</b>	<b>77,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>88,000</b>

ITEM NUMBER:443598 1		PROJECT DESCRIPTION:HURRICANE IRMA CHOKOLOSKEE BRIDGE (CR 29) REPAIRS 030161					*NON-SIS*	
DISTRICT:01		COUNTY:COLLIER					TYPE OF WORK:EMERGENCY OPERATIONS	
ROADWAY ID:		PROJECT LENGTH: .000					LANES EXIST/IMPROVED/ADDED: 0/ 0/ 0	
FUND CODE	LESS THAN 2021	2021	2022	2023	2024	2025	GREATER THAN 2025	ALL YEARS
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: RESPONSIBLE AGENCY NOT AVAILABLE								
ACER	0	40,081	0	0	0	0	0	40,081
PHASE: MISCELLANEOUS / RESPONSIBLE AGENCY: RESPONSIBLE AGENCY NOT AVAILABLE								
ACER	0	428,181	0	0	0	0	0	428,181
<b>TOTAL 443598 1</b>	<b>0</b>	<b>468,262</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>468,262</b>
<b>TOTAL PROJECT:</b>	<b>0</b>	<b>468,262</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>468,262</b>

ITEM NUMBER:443989 1		PROJECT DESCRIPTION:SR 90 (US 41) FROM SR 951 (COLLIER BLVD) TO GREENWAY ROAD					*NON-SIS*	
DISTRICT:01		COUNTY:COLLIER					TYPE OF WORK:LANDSCAPING	
ROADWAY ID:03010000		PROJECT LENGTH: 6.174MI					LANES EXIST/IMPROVED/ADDED: 3/ 3/ 0	
FUND CODE	LESS THAN 2021	2021	2022	2023	2024	2025	GREATER THAN 2025	ALL YEARS
PHASE: PRELIMINARY ENGINEERING / RESPONSIBLE AGENCY: MANAGED BY FDOT								
DIH	0	10,000	0	0	0	0	0	10,000
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY COLLIER COUNTY								
DDR	0	1,978,000	0	0	0	0	0	1,978,000
<b>TOTAL 443989 1</b>	<b>0</b>	<b>1,988,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,988,000</b>
<b>TOTAL PROJECT:</b>	<b>0</b>	<b>1,988,000</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,988,000</b>
<b>TOTAL DIST: 01</b>	<b>14,976,269</b>	<b>7,270,853</b>	<b>349,407</b>	<b>0</b>	<b>15,385,189</b>	<b>0</b>	<b>0</b>	<b>37,981,718</b>
<b>TOTAL HIGHWAYS</b>	<b>14,976,269</b>	<b>7,270,853</b>	<b>349,407</b>	<b>0</b>	<b>15,385,189</b>	<b>0</b>	<b>0</b>	<b>37,981,718</b>



FLORIDA DEPARTMENT OF TRANSPORTATION  
OFFICE OF WORK PROGRAM  
MPO ROLLFORWARD REPORT  
=====

AVIATION

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DATE RUN: 07/01/2020  
TIME RUN: 11.18.04  
MBRMPOTP

ITEM NUMBER:441765 1                      PROJECT DESCRIPTION:NAPLES MUNICIPAL AIRPORT RUNWAY 5-23 DRAINAGE SWALE IMPROVEMENTS                      \*NON-SIS\*  
DISTRICT:01    COUNTY:COLLIER                      TYPE OF WORK:AVIATION PRESERVATION PROJECT  
ROADWAY ID:    PROJECT LENGTH: .000                      LANES EXIST/IMPROVED/ADDED: 0/ 0/ 0

FUND CODE	LESS THAN 2021	2021	2022	2023	2024	2025	GREATER THAN 2025	ALL YEARS
PHASE: CAPITAL / RESPONSIBLE AGENCY: RESPONSIBLE AGENCY NOT AVAILABLE								
DDR	0	90,000	0	0	0	0	0	90,000
FAA	0	2,700,000	0	0	0	0	0	2,700,000
LF	0	90,000	0	0	0	0	0	90,000
TOTAL 441765 1	0	2,880,000	0	0	0	0	0	2,880,000
TOTAL PROJECT:	0	2,880,000	0	0	0	0	0	2,880,000
TOTAL DIST: 01	0	2,880,000	0	0	0	0	0	2,880,000
TOTAL AVIATION	0	2,880,000	0	0	0	0	0	2,880,000

TRANSIT  
=====

ITEM NUMBER:410146 1  
DISTRICT:01  
EX DESC:SECTION 5307 - URBANIZED AREAS

PROJECT DESCRIPTION:COLLIER COUNTY FTA SECTION 5307 CAPITAL ASSISTANCE  
COUNTY:COLLIER

\*NON-SIS\*  
TYPE OF WORK:CAPITAL FOR FIXED ROUTE

ROADWAY ID:		PROJECT LENGTH: .000					LANES EXIST/IMPROVED/ADDED: 0/ 0/ 0	
FUND CODE	LESS THAN 2021	2021	2022	2023	2024	2025	GREATER THAN 2025	ALL YEARS
PHASE: CAPITAL / RESPONSIBLE AGENCY: MANAGED BY COLLIER COUNTY								
FTA	27,419,005	3,716,064	1,998,517	2,098,443	2,203,365	2,313,533	0	39,748,927
LF	6,792,798	929,017	499,630	524,611	550,842	578,384	0	9,875,282
TOTAL 410146 1	34,211,803	4,645,081	2,498,147	2,623,054	2,754,207	2,891,917	0	49,624,209

ITEM NUMBER:410146 2  
DISTRICT:01  
ROADWAY ID:

PROJECT DESCRIPTION:COLLIER COUNTY FTA SECTION 5307 OPERATING ASSISTANCE  
COUNTY:COLLIER  
PROJECT LENGTH: .000

\*NON-SIS\*  
TYPE OF WORK:OPERATING FOR FIXED ROUTE  
LANES EXIST/IMPROVED/ADDED: 0/ 0/ 0

FUND CODE	LESS THAN 2021	2021	2022	2023	2024	2025	GREATER THAN 2025	ALL YEARS
PHASE: OPERATIONS / RESPONSIBLE AGENCY: MANAGED BY COLLIER COUNTY								
FTA	2,832,607	1,298,900	100,000	442,610	807,700	798,900	0	6,280,717
LF	2,832,607	1,298,900	100,000	442,610	807,700	798,900	0	6,280,717
TOTAL 410146 2	5,665,214	2,597,800	200,000	885,220	1,615,400	1,597,800	0	12,561,434
TOTAL PROJECT:	39,877,017	7,242,881	2,698,147	3,508,274	4,369,607	4,489,717	0	62,185,643

ITEM NUMBER:434030 1  
DISTRICT:01  
EX DESC:LEE COUNTY (LEE TRAN) \$00.00 ZERO FUNDS

PROJECT DESCRIPTION:COLLIER CO./BONITA SPRINGS UZA FTA SECTION 5339 CAPITAL ASSISTANCE  
COUNTY:COLLIER

\*NON-SIS\*  
TYPE OF WORK:CAPITAL FOR FIXED ROUTE

ROADWAY ID:		PROJECT LENGTH: .000					LANES EXIST/IMPROVED/ADDED: 0/ 0/ 0	
FUND CODE	LESS THAN 2021	2021	2022	2023	2024	2025	GREATER THAN 2025	ALL YEARS
PHASE: CAPITAL / RESPONSIBLE AGENCY: MANAGED BY COLLIER COUNTY								
FTA	2,077,358	764,142	410,959	431,507	453,082	475,737	0	4,612,785
LF	519,341	191,035	102,740	107,877	113,271	118,934	0	1,153,198
TOTAL 434030 1	2,596,699	955,177	513,699	539,384	566,353	594,671	0	5,765,983
TOTAL PROJECT:	2,596,699	955,177	513,699	539,384	566,353	594,671	0	5,765,983

ITEM NUMBER:447008 1  
DISTRICT:01  
ROADWAY ID:

PROJECT DESCRIPTION:COLLIER COUNTY AREA TRANSIT ADA IMPROVEMENTS  
COUNTY:COLLIER  
PROJECT LENGTH: .000

\*NON-SIS\*  
TYPE OF WORK:CAPITAL FOR FIXED ROUTE  
LANES EXIST/IMPROVED/ADDED: 0/ 0/ 0

FUND CODE	LESS THAN 2021	2021	2022	2023	2024	2025	GREATER THAN 2025	ALL YEARS
PHASE: CAPITAL / RESPONSIBLE AGENCY: MANAGED BY COLLIER COUNTY								
FTAT	0	250,000	0	0	0	0	0	250,000
SU	0	250,000	0	0	0	0	0	250,000
TOTAL 447008 1	0	500,000	0	0	0	0	0	500,000
TOTAL PROJECT:	0	500,000	0	0	0	0	0	500,000
TOTAL DIST: 01	42,473,716	8,698,058	3,211,846	4,047,658	4,935,960	5,084,388	0	68,451,626
TOTAL TRANSIT	42,473,716	8,698,058	3,211,846	4,047,658	4,935,960	5,084,388	0	68,451,626

MISCELLANEOUS  
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ITEM NUMBER:412918 3		PROJECT DESCRIPTION:COLLIER COUNTY ASSET MAINTENACE					*NON-SIS*		
DISTRICT:01		COUNTY:COLLIER					TYPE OF WORK:ROUTINE MAINTENANCE		
ROADWAY ID:		PROJECT LENGTH: .000					LANES EXIST/IMPROVED/ADDED: 0/ 0/ 0		
FUND	LESS						GREATER	ALL	
CODE	THAN	2021	2022	2023	2024	2025	THAN	YEARS	
	2021						2025		
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY FDOT									
DDR	20,421			0	0	0	0	0	20,421
DIH	0	1,000		0	0	0	0	0	1,000
TOTAL 412918 3	20,421	1,000		0	0	0	0	0	21,421
TOTAL PROJECT:	20,421	1,000		0	0	0	0	0	21,421

ITEM NUMBER:438094 1		PROJECT DESCRIPTION:SIGNAL PRE-EMPTION FOR THE CITY OF NAPLES					*NON-SIS*		
DISTRICT:01		COUNTY:COLLIER					TYPE OF WORK:TRAFFIC CONTROL DEVICES/SYSTEM		
ROADWAY ID:03000000		PROJECT LENGTH: .001MI					LANES EXIST/IMPROVED/ADDED: 0/ 0/ 0		
FUND	LESS						GREATER	ALL	
CODE	THAN	2021	2022	2023	2024	2025	THAN	YEARS	
	2021						2025		
PHASE: CONSTRUCTION / RESPONSIBLE AGENCY: MANAGED BY FDOT									
SU	41	959		0	0	0	0	0	1,000
PHASE: CAPITAL / RESPONSIBLE AGENCY: MANAGED BY CITY OF NAPLES									
SU	227,800	0		0	0	0	0	0	227,800
TOTAL 438094 1	227,841	959		0	0	0	0	0	228,800
TOTAL PROJECT:	227,841	959		0	0	0	0	0	228,800
TOTAL DIST: 01	248,262	1,959		0	0	0	0	0	250,221
TOTAL MISCELLANEOUS	248,262	1,959		0	0	0	0	0	250,221
GRAND TOTAL									
	57,698,247	18,850,870	3,561,253	4,047,658	20,321,149	5,084,388		0	109,563,565

**4433753****COLLIER COUNTY LAKE TRAFFORD ROAD SIDEWALK AND BIKE LANES****Project Description:** BPAC PRIORITY 2017-13, 16-13, 15-03; 5' BIKE LANES

Prior Years Cost: 92,000

Future Years Cost: 0

Total Project Cost: 892,460

**Work Summary:** SIDEWALK

LRTP Ref: CFP P6-25

**Lead Agency:** COLLIER COUNTY**Length:** 0.01

Phase	Fund	2020/21	2021/22	2022/23	2023/24	2024/25	Total
CST	SU	800,460	0	0	0	0	800,460

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<b>Total</b>	800,460	0	0	0	0	0	800,460
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**4433754****COLLIER COUNTY LAKE TRAFFORD ROAD SIDEWALK AND BIKE LANES****Project Description:** BPAC PRIORITY 2017-11, 16-11, 15-11; 6' SW

Prior Years Cost: 83,000

Future Years Cost: 0

Total Project Cost: 655,675

**Work Summary:** SIDEWALK

LRTP Ref: CFP P6-25

**Lead Agency:** COLLIER COUNTY**Length:** 0.01

Phase	Fund	2020/21	2021/22	2022/23	2023/24	2024/25	Total
CST	SU	572,675	0	0	0	0	572,675
							0
							0
							0
							0
							0
							0
							0
<b>Total</b>		572,675	0	0	0	0	572,675

