



**Public Transit Advisory Committee
Collier Area Transit
8300 Radio Rd, Naples FL 34104
June 16, 2020
3:00 p.m.**

1. Call to Order
2. Roll Call
3. Approval of Agenda
4. Approval of Minutes
 - a. May 19, 2020 Minutes
5. Committee Action
 - a. 5307 and 5339 Program of Projects
6. Reports and Presentations
 - a. Update on Transit Development Plan (TDP) Process
7. Member Comments
8. Public Comments
9. Next Meeting Date – July 21, 2020
10. Adjournment

Two or more members of the Board of County Commissioners may be present and may participate at the meeting. The subject matter of this meeting may be an item for discussion and action at a future BCC meeting.

Collier Area Transit operates in compliance with Federal Transit Administration, (FTA) program requirements and ensures that transit services are made available and equitably distributed and provides equal **AGENDA** access and mobility to any person without regard to race, color, or national origin, disability, gender or age. Title VI of the *Civil Rights Act of 1964*; FTA Circular 4702.1A, "Title VI and Title VI Dependent Guidelines for Federal Transit Administration Recipients.

Anyone who required an auxiliary aid or service for effective communication, or other reasonable accommodations in order to participate in this proceeding, should contact the Collier County Facilities Management Department located at 3335 Tamiami Trail East, Naples, Florida 34112 or 239-252-8380 as soon as possible, but no later than 48 hours before the scheduled event. Such reasonable accommodations will be provided at no cost to the individual.

MINUTES OF THE PUBLIC TRANSIT ADVISORY COMMITTEE MEETING

May 19, 2020

LET IT BE REMEMBERED, the Public Transit Advisory Committee in and for the County of Collier, having conducted business herein, met on this date at 3:00 P.M. in REGULAR SESSION via Zoom video teleconference, with the following members present:

ADVISORY COMMITTEE MEMBERS:

Vice-Chairman: Mr. Arthur Dobberstein (via teleconference call)

Mr. James Bennett

Mr. Peter Berry

Mr. James Caton

Ms. Sonja Lee Samek

MEMBERS ABSENT:

Mr. John DiMarco - Excused

ALSO PRESENT:

Ms. Michelle Edwards-Arnold, Director, Public Transit and Neighborhood Enhancement

Mr. Omar DeLeon, Public Transit Manager, Collier Area Transit

Ms. Yousi Cardeso, Operations Analyst, Collier Area Transit

Mr. Devon Browne

Mr. Zach Karto, Senior Planner, Collier Area Transit

Ms. Josephine Medina, Collier Metropolitan Planning Organization

Mr. Braian Morales, General Manager, MV Transportation, Inc.

Mr. Michael Nelson

Ms. Elena Ortiz-Rosado, Events, Sales, and Marketing Coordinator, Collier Area Transit

I. Call to Order

Mr. Dobberstein called the meeting to order at 3:00 P.M.

II. Roll Call

Roll call was taken, and a quorum established.

III. Approval of Agenda

Requested amendment to the Agenda:

- a. Discussion of Program Grant Application (Reports)

Mr. Berry entered a motion to approve the February 25, 2020 meeting agenda, with the noted change. Mr. Caton seconded the motion. All were in favor. The motion was carried.

IV. Approval of Minutes

a. February 25, 2020

Mr. Bennett entered a motion to approve the February 25, 2020 meeting minutes. Mr. Caton seconded the motion. All were in favor. The motion was carried.

V. A. New Membership Application

Two applications for consideration of membership of the Public Transit Advisory Committee (PTAC) have been received, with one Committee seat presently available. Both candidates were in attendance via videoconference and were invited to address the PTAC for introduction, presentation of credentials, and reasons for interest in Committee membership.

- a. Mr. Devon Browne has been a resident of Collier County since 2014, formerly working for Hertz Corporation in Strategic Partnerships and Innovation, focusing on emerging transportation innovations. Mr. Browne detailed his more recent experience in management consulting, with a focus on transportation issues. Mr. Browne noted that his strategic background in seeking future transportation solutions, as well as practical operational experience would facilitate his ability to positively contribute to the PTAC. Mr. Browne fielded questions from Committee members, noting that he has had no further business with Hertz Corporation since his departure, as well as his more recent experience studying public/private business partnerships, and multi-county collaborations seeking to provide an optimal transportation infrastructure. Mr. Browne further noted his experience studying ride-share company applications and technologies, application-based parking providers, as well as employer van pool technologies.

- b. Mr. Michael Nelson has been a resident of Collier County for the past 12 years, currently working as the Associate Dean at Keiser University. Mr. Nelson is a member of the Leadership Collier Foundation, an organization which takes an active role in civic and professional issues, addressing area challenges and working towards solutions in the public interest. Mr. Nelson expressed an interest in continuing to give back to the community, particularly regarding enhancement of public transportation access for underserved members of the community.

Mr. Caton thanked both applicants for their interest in serving on the PTAC and recommended endorsement of Mr. Browne, based upon his extensive previous work experience within the field of public transportation.

Mr. Caton entered a motion to endorse the application for Public Transit Advisory Committee membership submitted by Mr. Devon Browne. Mr. Bennett seconded the motion. All members were in favor. The motion was carried.

Mr. DeLeon encouraged Mr. Nelson's attendance and input at future PTAC meetings, which are open to the public. Mr. Berry further recommended that Mr. Nelson be notified by Staff of any future vacancy on the PTAC.

B. Title VI Program Update, 2020-2023 – Mr. Zach Karto

Mr. Karto provided an overview of an update to the Collier Area Transit (CAT) Title VI Program for the years 2020-2023, which was last revised in 2017. The Federal Transit Administration (FTA), the regulating agency for CAT, requires that a Program update be completed every three years. The Title VI program, which is based on the Civil Rights Act of 1964, is required for receipt of federal funding, and includes all subrecipients. The objectives of the Title VI Program are to ensure that federally assisted benefits and services are made available and equitably distributed, providing equal access to all persons, with participation in planning and decision-making processes. Detailed procedures for investigation of Title VI complaints, as well as corrective/remedial actions to prevent discriminatory treatment of any beneficiary are required. The opportunity for access to programs and activities for individuals with limited English proficiency, as well as notification of rights afforded under Title VI are also required.

CAT participates in Collier Metropolitan Planning Organization (MPO) public involvement activities; however, has its own Public Participation Plan (PPP), which is designed to engage both transit users and non-transit users. Public input and feedback are solicited via multi-language hang-tag surveys, as well as online surveys conducted as part of the Park and Ride Study, and the ongoing Transit Development Plan. Public feedback is encouraged via attendance at PTAC, MPO, and MPO Board Meetings. All meeting notices, press releases, and public service announcements are available in a multi-lingual format as requested or needed, as well as utilizing pictographs to display information and instructions.

Title VI of the Civil Rights Act of 1964 requires that reasonable steps be taken to ensure that individuals with Limited English Proficiency (LEP) be provided meaningful access to benefits, services, information, as well as programs and activities provided by CAT. As such, vital documents are translated from English to Spanish and Creole, as well as other languages upon request. The CAT website provides translation to other languages, including Spanish, Creole, German, and French. Translation is also provided at public meetings. Mr. DeLeon clarified that while certified translators are sometimes utilized, it is not a requirement, and noted the ready availability of Transit Staff for translation assistance. Mr. Karto noted a 1% growth in LEP population in Collier County since 2017. A suggestion was made by Mr. Dobberstein to specifically identify the Creole LEP population on the graph within the report which reflects County foreign language demographics.

An additional component of the Title VI Program is a requirement for a racially balanced composition of participation on non-elected advisory boards, councils, and committees, which is encouraged for all available vacancies.

CAT system-wide standards and policies are required to be reported, including vehicle load standards, on-time performance standards, and service availability, which is comprised of various service delivery factors. Policies are formulated which ensure transit amenities are provided equitably for each mode, including randomized vehicle selection for all routes. Fares and service changes are evaluated to not adversely impact any group, to include major service change policies, disparate impact policies, or disproportionate burden policies. It was noted that while all of CAT routes serve a minority census block group, approximately 45% of the service provided has 50% or more of the service within minority census block groups.

Executive Order 12898 in support of Environmental Justice was passed in February 1994 to protect minority and low-income populations. Measures taken to ensure compliance with the Executive Order are included in the Title VI update; detailing bus stop amenities locations for low income and minority population areas, the minority census tract and CAT fixed route and ADA service area, as well as low income census tract and CAT fixed route and ADA service area.

A copy of a complaint form and instructions detailing the complaint procedure must be included in the TDP, which may be filed with CAT or directly with the FTA. The complaint will be fully investigated, resulting in either a letter of closure or of a finding. It was noted by Mr. Karto that Collier Area Transit has had no investigations for violations, complaints, or lawsuits in this regard. Finally, the document submitted to the FTA will also include the Board Resolution or meeting minutes which demonstrate Board approval of the Title VI program.

Mr. Caton inquired as to the methods employed for engagement of the public for feedback and suggestions. Mr. DeLeon stated that opportunities for public engagement are made available in both a general fashion, such as via surveys collected from the public at a generalized location, or in a more tactical, coordinated effort, such as in partnership with community CRAs.

Mr. Bennett made inquiry regarding on-time performance measures; whether 95% is the current standard or a goal to be met, as well as frequency of measure. Mr. DeLeon clarified that 95% is the on-time performance goal, currently operating at approximately 90% on fixed routes. On-time performance data is measured monthly.

Endorsement of the Title VI Program update was being sought from PTAC, prior to presentation to the Board of County Commissioners for review and approval, and ultimately for submission to the FTA.

A motion to endorse the Title VI Program update was entered by Mr. Peter Berry. Mr. James Caton seconded the motion. All members were in favor. The motion was carried.

VI. Reports and Presentations

a. Update on the Transit TDP Process – Mr. Zach Karto

Mr. Karto provided PTAC with an overview of the status of the Transit Development Plan (TDP) process which is currently underway. The TDP is a 10-year horizon strategic plan for mobility which is required by the Florida Department of Transportation (FDOT). The TDP is comprised of FDOT required conditions which must be satisfied.

The first stage of TDP development details existing conditions, population growth, employment growth, and stakeholder input. These variables were studied utilizing a variety of measures such as the public outreach plan, existing conditions, peer and trend analysis, on-board survey, mobility perspectives, mission, goals and objectives, as well as mobility strategy discussion.

It was noted that the public outreach plan included on-board surveys, online surveys, small group discussions, and public workshops, however the emergence of the coronavirus pandemic interfered with the ability to meet these objectives, and on-board survey information was limited to active transit users. A total of 1091 on-board surveys were completed on various days in January 2020, primarily via tablet, and made available in English, Spanish, and Haitian-Creole. A working group discussion was also conducted with stakeholders in the community, which focused on mobility strategies which support the CAT Vision and Mission statement, the results of which are currently being compiled.

County population density growth was studied, noting the expansive nature of the county, but with identification of areas of population density growth in Immokalee, North Naples, East Naples, and Golden Gate City. Employment density growth was seen to be greatest in the western portion of Collier County.

The second stage of TDP development involves interpretation of online survey results, with questions regarding public transit awareness, experience with using the service, general opinion, and perception of public transportation in Collier County. The online survey was conducted by a consultant firm, Tindale Oliver, and was primarily promoted via social media, as well as the CAT website. Survey results show a desire for mobility improvements in the form of more buses, expanded bus services, and greater frequency. Additional advertising revenue was identified as the most popular public response for covering expenses related to expanded mobility services. Additionally, a series of stakeholder interviews were conducted, which included questions regarding awareness of Transit, role of Transit, key improvements, the population who should benefit, suggestions for how to pay for Transit, as well as the need for more service and options.

Conceptual design principles were discussed, with a focus on streamlining the bus network to provide optimal service, but with a goal to remain cost and revenue neutral. Consideration will be given to transit network changes and expected impacts, as well as technology and policy considerations related to mobility on demand service zones, improved service frequency, the role for premium service along key commercial corridors, the role for park and ride lots, vanpools, and express buses, the need for compact and connected land use, as well as other mobility priorities.

It was noted that the current discussion was informational only, as compilation of the TDP remains ongoing in coordination with the consultant firm. The final plan will be presented to PTAC for review prior to presentation to the Board of County Commissioners in September 2020.

b. Update on Mobile Ticketing Application – Mr. DeLeon

Mr. DeLeon presented an update on the status of “Ride CAT,” the mobile ticketing application provided by Masabi. The live beta testing phase is being conducted utilizing Apple and Android devices, with a full launch anticipated in August 2020.

Implementation of a pilot program which had been scheduled for June 2020 remains uncertain at this time, as bus fares have been temporarily waived due to the coronavirus pandemic. Rigorous staff testing is being done, both on-board buses and on-site.

The process of mobile ticketing was discussed, including built in security measures to prevent user fraud. A link with “My Stop” will coordinate with a trip planning solution, which will plan the route and offer real time information, such as delays or detours for the desired trip. A link with Collier 311 is available for users to report community issues which may require attention.

There is also an opportunity for users to provide feedback regarding the mobile ticketing app or on utilizing the CAT system. On-board technology includes a pass validator, as well as a Wi-Fi router, which will provide free Wi-Fi to the public for their use. Installation of this technology has remained on schedule, performed by the CAT Fleet team.

Mr. Bennett inquired as to whether the technology would be available in a multi-lingual format for the LEP population. Mr. DeLeon confirmed the program does offer multi-lingual options, as well as a text to read function for the visually impaired.

Mr. Browne inquired as to whether integration with park-and-ride locations is included in the trip planning component of the program. Mr. DeLeon stated that all bus stops were tagged and that information regarding the availability of the mobile application will be posted at each bus stop for public awareness.

c. Covid-19 Activity – Mr. Morales

Mr. Morales discussed the procedures in place in response to coronavirus concerns, including enhanced cleaning of buses, and the availability of paper towels and DC7, a disinfectant cleaner that kills a broad spectrum of pathogenic bacteria and viruses. Operators have been provided with hand sanitizer, gloves, masks, both disposable and removable, as well as face shields. A plastic barrier is planned for placement between the operator and the fare box on fixed route buses as a long-term solution for operator safety. Due to the door-to-door service offered by Paratransit operators, the plastic barriers will not be installed on Paratransit vehicles, however operators will be provided with ample sanitizing and disinfectant materials for personal protection from potential viral exposure.

MV Transportation, in partnership with the Department of Health, has installed face mask wraps on the front of some buses, as well as informational wraps on viral protection. Mr. Morales also noted that two buses were made available for use as cooling stations at the Immokalee Health Department during a recent 3-day coronavirus screening event. Sanitizing items continue to be made available for public use at transfer stations and on the buses, and transfer stations and bus stops are pressure washed as needed. Some bus stop benches have been removed due to potential contamination by non-transit users, to ensure the safety of the ridership.

Mr. DeLeon outlined additional measures which have been taken during the coronavirus pandemic, which includes waiving fare box fees to avoid potential contamination via currency, as well as for enabling continued ridership during the economic financial crisis. Further, a rear door entry and alighting procedure was implemented for operator protection from potential viral exposure.

Mr. Dobberstein inquired as to how lost fare box revenue would be recovered for day to day operations. Mr. DeLeon clarified that grant funding has been made available via the CARES Act stimulus package which will cover lost passenger fare revenue.

Mr. Dobberstein noted the current use of the bus wraps and the potential for a transition in perception which may allow for bus wrap advertising in the future. Mr. Dobberstein inquired as to how ridership had been affected by the viral pandemic, including the waiver of bus fares. Mr. DeLeon noted an initial decline in ridership of 65% due to a majority of the population staying home, however which allowed the opportunity to meet CDC guidelines for social distancing. Ms. Arnold pointed out a 10% weekly increase in ridership for the past three weeks, which may result in the use of more buses. Increases in ridership have necessitated the development of long-term plans for adherence to CDC guidelines for safety and social distancing. Mr. DeLeon further noted that issues related to capacity are being investigated, considering maximum capacity per vehicle size, as well as operator safety and training for de-escalation of any negative rider interactions.

Ms. Samek pointed out that the use of the mobile application will facilitate a contactless fare opportunity. Mr. Caton requested clarification of the rear entry and alighting process, which will result in greater passenger interface. Mr. DeLeon ensured that the procurement of plastic shields for operator protection will facilitate a one-way flow of passenger traffic, especially as ridership increases.

Mr. Caton inquired as to whether any Transit operators or staff had tested positive for the Covid-19 virus. Mr. DeLeon confirmed that several members of the operational staff had tested positive, however none of the bus operators. There were operators who were required to quarantine following exposure to an infected nursing home patient. Mr. Caton inquired as to the process and expense associated with cleaning a bus. Mr. DeLeon noted coordination with the Emergency Operations Center (EOC), in which EMS personnel utilized a mister to disinfect the first floor where the virus positive operational employees worked. Buses are thoroughly disinfected using broad spectrum disinfectants. Associated costs are currently being formulated.

VII. Member Comments

+Mr. Dobberstein inquired as to the Grant application status for additional funding, especially with the recent increase in operational costs. Mr. DeLeon stated that the Bus and Bus Facilities Grant had been applied for and is a Federal Grant which is offered through the FTA. There is an opportunity to utilize Transit Development Credits as the required grant match; these are credits which are made available via the Florida Department of Transportation. No local match is required and has no local impact, if selected as a grant recipient. The grant application has been submitted, however is pending review and final disposition by the FTA.

+Ms. Arnold welcomed Mr. Peter Berry as the newest member of PTAC.

VIII. Public Comments

There were no public comments.

IX. Next Meeting: June 16, 2020

X. Adjournment

There being no further business for the good of the County, the meeting was adjourned.

Public Transit Advisory Committee

Arthur Dobberstein, Vice-Chairman

These minutes approved by the Committee on _____ as presented ____ or as amended____.

EXECUTIVE SUMMARY

Committee Action

Item 5a

Endorsement of the Federal Transit Administration (FTA) Section 5307, Section 5339 & CARES ACT Program of Projects

Objective:

To endorse the Program of Projects for the Federal Transit Administration (FTA) Section 5307 & 5339 grant application submittals.

Considerations:

Each year the Public Transit & NBHD Enhancement (PTNE) division receives federal grant funds for the management of the Collier Area Transit (CAT) system under the Urbanized Area Formula Program (49 U.S.C. § 5307) to be used for transit capital projects and operating assistance as defined by the Federal Transit Administration (FTA). In April of 2019 FTA announced the full apportionment.

Collier County is located within the Bonita Springs/Naples Census Urbanized Area; therefore, a portion of the Section 5307 funding received is shared with Lee County. The full amount allocated to the Bonita Springs/Naples Urbanized Area is \$3,246,895.00. The portion of the grant funds awarded to Collier County is \$2,882,918 and the difference of \$363,977 would be distributed to Bonita Springs/Lee County.

Section 5339 program provides capital assistance for new and replacement buses, related equipment and facilities. For urbanized areas with populations of 200,000 and over, funds are apportioned and flow directly to a designated recipient. Collier County is the designated recipient for the urbanized area. The estimated amount to be allocated to the Bonita Springs/Naples Urbanized Area is \$382,670.


The CARES Act (Title XII of Division B) included \$25 billion for public transit formula operating and capital grants to prevent, prepare for, and respond to COVID-19. The bill provided that the Federal Transit Administration (FTA) distribute the transit funds proportionally based on the ratio of funding of four specific programs: urbanized area formula grants (49 U.S.C. § 5307); rural area formula grants (49 U.S.C. § 5311); state-of-good-repair (SOG) formula grants (49 U.S.C. § 5337); and growing/high-density states formula grants (49 U.S.C. § 5340). The full amount allocated to the Bonita Springs/Naples Urbanized Area is \$9,188,742. The portion of the grant funds awarded to Collier County is \$8,158,684 and the difference of \$1,030,058 would be distributed to Bonita Springs/Lee County.

The attached program of project details the anticipated items to be undertaken with these funds.

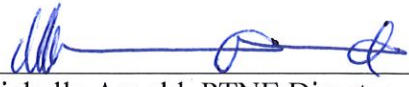
Recommendation:

Recommend endorsement of attached Program of Projects for the FTA Section 5307, Section 5339 and CARES ACT grants.

Attachment: FTA Section 5307, Section 5339 & CARES ACT Program of Projects

Prepared by:  _____
Omar De Leon, Transit Manager

Date: 6/11/20

Approved by:  _____
Michelle Arnold, PTNE Director

Date: 6-11-2020

5307 FY20 - 21 Program of Project

ALI	Description	Amount
1% Enhancement	Shelter Rehab	\$28,829
1% Security (exceeds requirement)	Security - Driver Protection Barriers	\$71,493
20% ADA	ADA paratransit services	\$518,926
Preventative Maintenance - Warranty	Warranty	\$90,000
Rolling Stock	Replacement vehicles - 4 buses	\$1,980,000
Technology	Avail replacement	\$136,012
Operation	Adminstrative Cost	\$57,658
Total Amount		\$2,882,918

5339 FY20 -21 Program of Project

ALI	Description	Amount
Technology	APC	\$296,000
Technology	Annunciators	\$36,200
Technology	Onboard Information Media	\$50,470
Total Amount	Apprtmnt \$382,670 (FY19 \$372,752)	\$382,670

CARES Act Funding

ALI	Description	Amount
ADA Paratransit	ADA Service	\$ 1,136,650
1% Security	Security - Driver Protection Barriers	\$ 81,587
Rolling Stock Replacement	Replacement vehicles - 1 bus	\$ 495,000
Preventative Maintenance	Fleet Maintenance	\$ 1,815,000
Operating Assistance - Fuel	Fuel	\$ 557,500
Operating Assistance - TOMS	Bus Operations (including TOMS) for Fi	\$ 1,870,709
Techology	Avail replcement	\$ 1,249,988
Techology	Farebox replacement	\$ 952,250
Total Amount		\$ 8,158,684

EXECUTIVE SUMMARY
Reports and Presentations
Item 6a
Update on the Transit Development Plan

Collier Area Transit's Updated for 2021 - 2030 Transit Development Plan (TDP)

Objective:

To Update Committee Members on the Current Progress of the 2021 -2030 Transit Development Plan (TDP)

Considerations:

CAT staff recently received Technical Memorandum 3 (attached) from Tindale Oliver and Associates in regard to CAT's 2021 - 2030 TDP and this is an update on what was said and the next steps of the process.

Tech **Memo 3** was designed to summarize the **Transit Demand Analysis** for Collier County, which includes the Density Threshold Assessment (DTA) and the Transit Orientation Index (TOI) for the traditional transit markets. In addition, transit demand and mobility needs were evaluated using the Florida Department of Transportation (FDOT)-approved ridership forecasting tool known as the Transit Boarding Estimation and Simulation Tool (T-BEST). It was found within the document that CAT has a projected favorable ridership increase if the same level of service and funding are maintained.

The Memo also presents a **Gap Analysis** for CAT, which presents the gaps in service compared to the data gathered in the TOI. This step is vital in assessing the performance of public transit in meeting the needs of the transit-disadvantaged populations in the CAT service area.

Section 4 of the Memo provides the **Existing Transit Assessment** of current transit service. It begins with a review of existing ridership by month for the whole system and is followed by a breakdown of ridership by month by route. Also include are an examination of route productivity by comparing ridership per revenue hour and mile and an evaluation of average daily boardings by stop using Automatic Passenger Counting (APC) data from 2019.

Finally, **Section 5** of the Memo presents potential transit improvements for the 10-year transit plan, as known as the **Alternatives Development**. The proposed improvements for transit service represent the community needs for the next 10 years and were developed without consideration of funding constraints.

Information from Tech Memos 1 and 2 were previously presented to the Committee during the last meeting. The service alternatives illustrated in the document were the previously agreed upon fixed route alternative, however new suggestions were made from CAT to improve operationally. Also included in service alternatives were new mobility modes such as Mobility on Demand, shuttle, and vanpool services that are not currently used in Collier County. Technological improvement recommendations on CAT's current systems were also made.

The next steps include, public engagement, the beginnings of writing the TDP draft, as well as running modelling and simulations on the agreed upon service alternatives. The results from the simulation and modelling will be presented within the next technical memorandum, tech memo 4.

Recommendation:

Review and provide input.

Attachments: Tech Memo #3

Prepared by: Zachary Karto **Date:** 6-11-2020
Zachary Karto, Senior Planner

Approved by: Michelle Arnold **Date:** 6-11-2020
Michelle Arnold, PTNE Division Director



**Collier County MPO
Transit Development Plan**

Technical Memorandum 3: Analysis of Alternatives

Review Draft

May 2020

Prepared by



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1.0 Introduction

This Technical Memorandum is the memorandum being prepared as part of the Collier Area Transit (CAT) 2021–2030 Transit Development Plan (TDP). The purpose of this document is to summarize Task 2c of the Scope of Services associated with the Collier County TDP and to present the Analysis of Alternatives. This Technical Memorandum is the third of five tasks being prepared as Task 2 of the CAT TDP.

Section 1 includes the **Introduction**.

Section 2 summarizes the **Transit Demand Analysis** for Collier County, which includes the Density Threshold Assessment (DTA) and the Transit Orientation Index (TOI) for the traditional transit markets. In addition, transit demand and mobility needs were evaluated using the Florida Department of Transportation (FDOT)-approved ridership forecasting tool known as the Transit Boarding Estimation and Simulation Tool (T-BEST). This section will help determine if the existing transit network is serving the appropriate areas in Collier County.

Section 3 presents the **Gap Analysis** for CAT, which presents the gaps in service compared to the data gathered in the TOI. This step is vital in assessing the performance of public transit in meeting the needs of the transit-disadvantaged populations in the CAT service area.

Section 4 provides the **Existing Transit Assessment** of current transit service. It begins with a review of existing ridership by month for the whole system and is followed by a breakdown of ridership by month by route. Also include are an examination of route productivity by comparing ridership per revenue hour and mile and an evaluation of average daily boardings by stop using Automatic Passenger Counting (APC) data from 2019. This will help evaluate productivity at the stop level compared to other stops in the service.

Section 5 presents potential transit improvements for the 10-year transit plan, as known as the **Alternatives Development**. The proposed improvements for transit service represent the community needs for the next 10 years and were developed without consideration of funding constraints. Once the improvements are prioritized using the evaluation process in the full TDP, they will be used to develop the 10-year implementation and financial plans, which will be presented in Technical Memorandum 4.

2.0 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, the two predominant rider markets for transit service. Analytical tools for conducting each market analysis include a DTA for the discretionary market, a TOI for the traditional market, and a ridership projection using T-BEST. These tools are used to determine if existing transit routes are serving appropriate areas that include locations with transit-supportive characteristics consistent with a robust transit market.

This section also documents the analytical tools that help identify gaps in the current service area that ultimately will be addressed with new service and/or modifications to existing service.

2.1 Discretionary Market Assessment

The discretionary market refers to the potential riders living in higher-density areas of the service area who may choose to use transit as a commute or transportation alternative though they have other options with which to meet their mobility needs. 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 whether an area has sufficient density to sustain a level of fixed-route transit operations. The analysis assesses an area's 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 2-1 presents the dwelling unit and employment density thresholds associated with each threshold of transit investment.

Table 2-1: Transit Service Density Thresholds

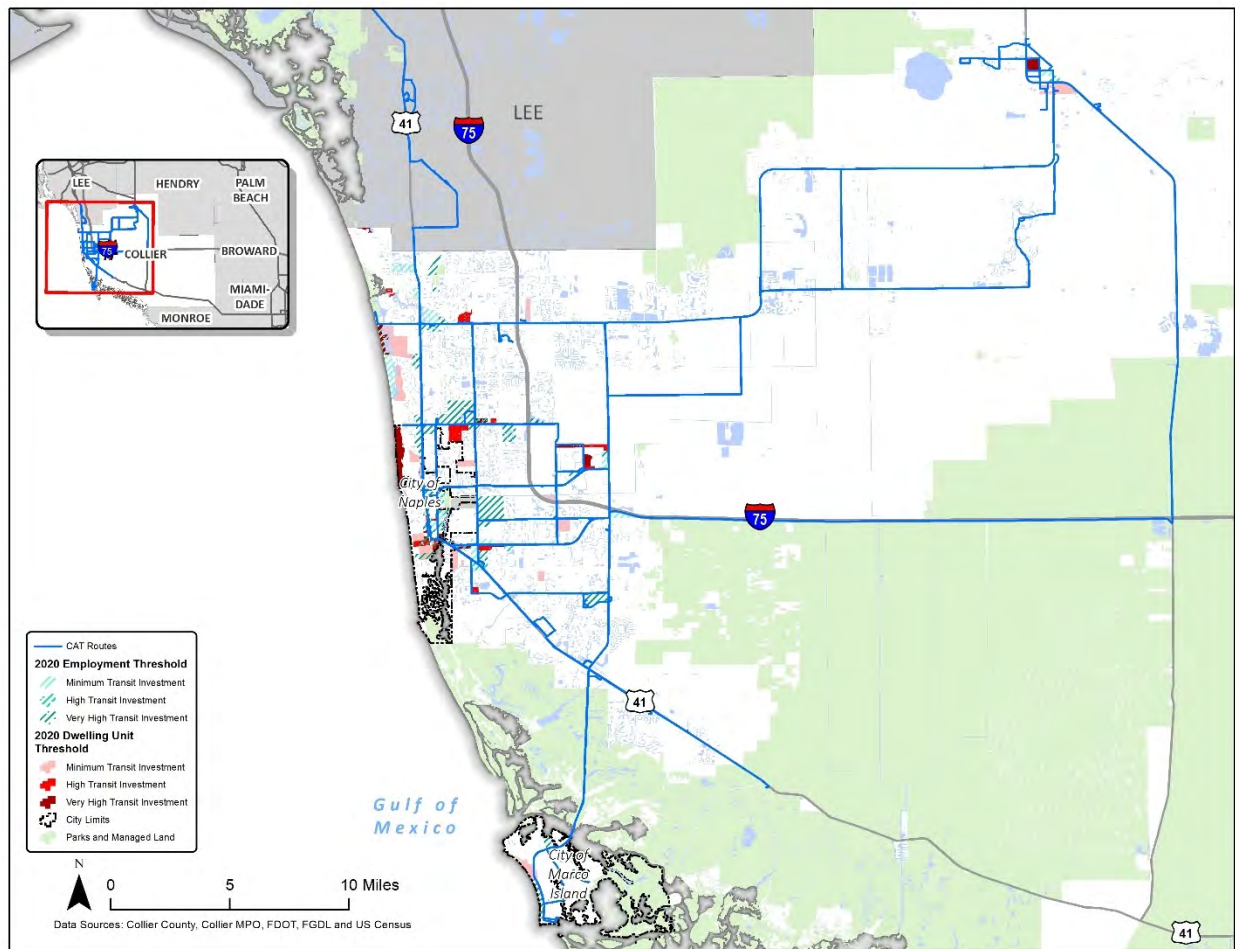
Level of Transit Investment	Dwelling Unit Density Threshold ¹	Employment Density Threshold ²
Minimum Investment	4.5–5 dwelling units/acre	4 employees/acre
High Investment	6–7 dwelling units/acre	5–6 employees/acre
Very High Investment	≥8 dwelling units/acre	≥7 employees/acre

¹ 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.

² Based on review of research on relationship between transit technology and employment densities.

Map 2-1 illustrates the results of the 2020 DTA analysis and identify 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 in east of Naples Airport and north of Pine Ridge Road. Other areas of “High” to “Very High” employment-related transit investment are located along Tamiami Trail.

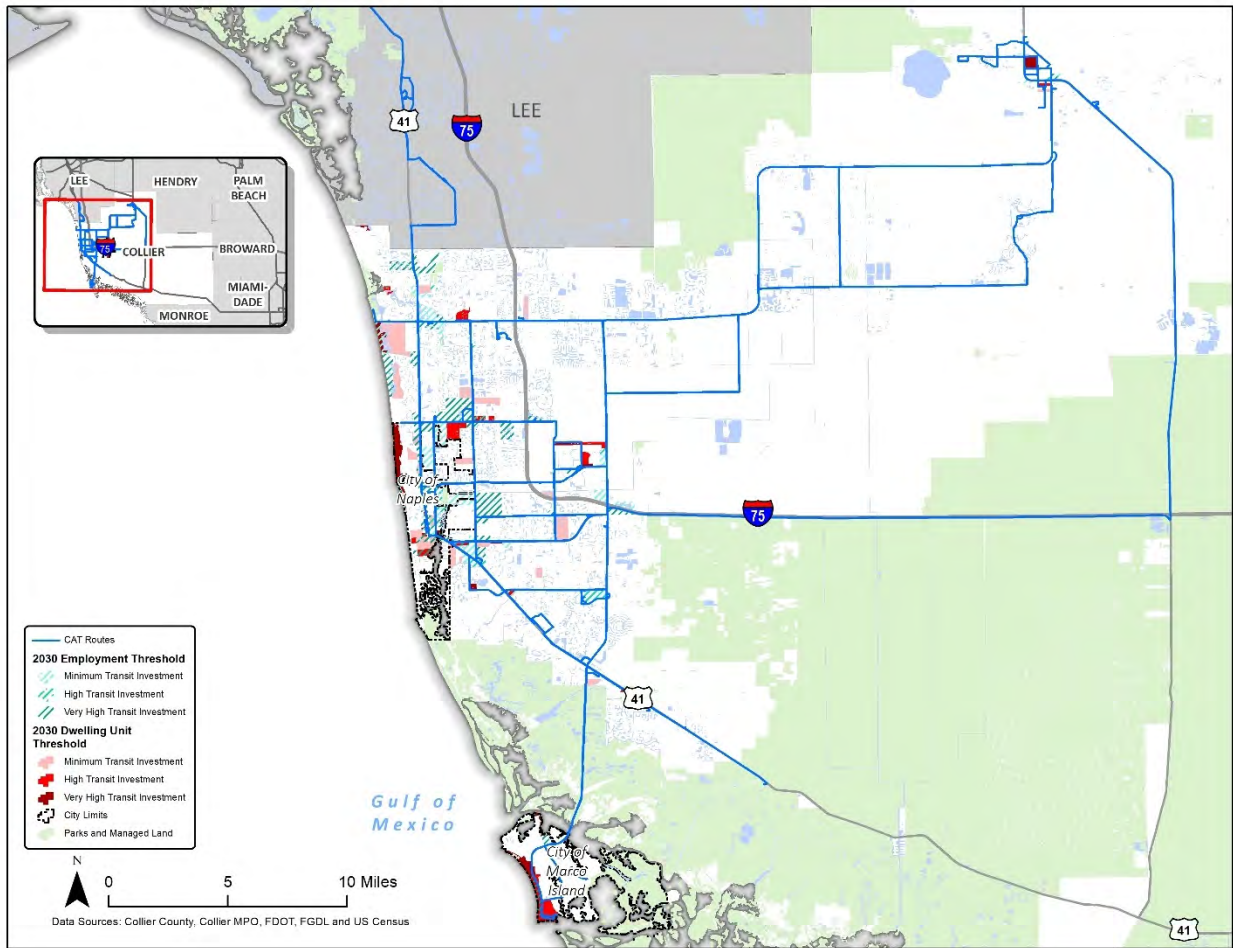
Map 2-1: 2020 Density Threshold Assessment



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 2-2 illustrates the results of the 2030 DTA, which are similar to the 2020 discretionary transit markets; however, there is noticeable growth along Golden Gate Parkway in Immokalee and areas of Marco Island. Areas with a “High” to “Very High” employment-based discretionary transit market are concentrated in areas around Davis Boulevard and Collier Boulevard.

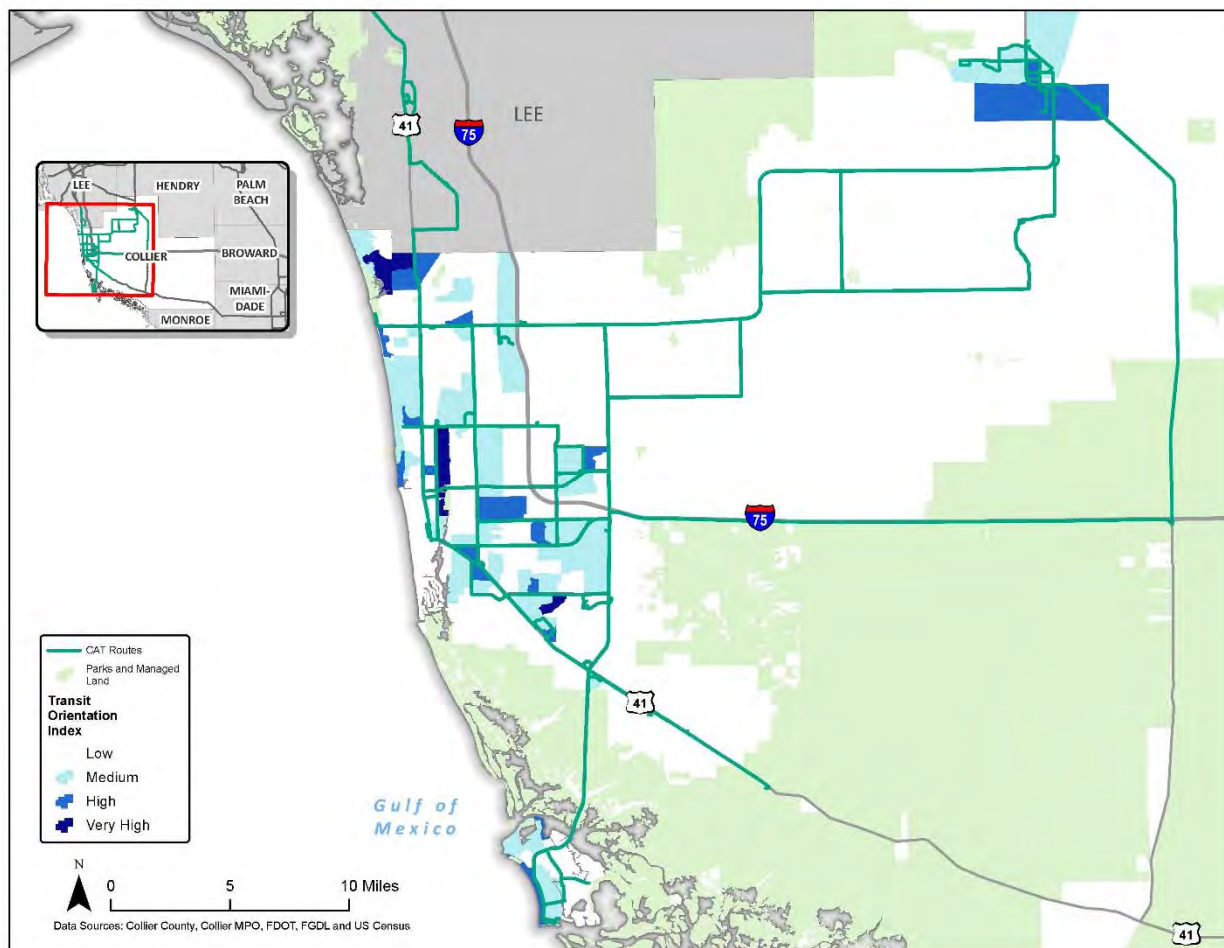
Map 2-2: 2030 Density Threshold Assessment



2.2 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. The 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 2-3 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.

Map 2-3: Transit Orientation Index



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 (MOD) 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.

2.3 Ridership Projections using T-BEST

The ability to forecast demand is necessary to support transit development planning. Florida Administrative Code (F.A.C.) Rule 14-73.001 specifically mentions ridership forecasting as part of a Situation Appraisal. It requires an estimation of the community's demand for transit service using the planning tools provided by the Florida Department of Transportation (FDOT) 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.

2.3.1 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.

2.3.1.1 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.

2.3.1.2 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.

2.3.1.3 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.

2.3.2 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. Table 2-2 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 2-2: 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

2.3.3 Forecast Ridership Analysis

Based on the T-BEST model results shown in Table 2-2, maintaining the status quo will 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 percent by 2030, an annual growth rate of about 1.7 percent. 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.

3.0 Gap Analysis

This section 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.

3.1 Gap Analysis Overview

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.

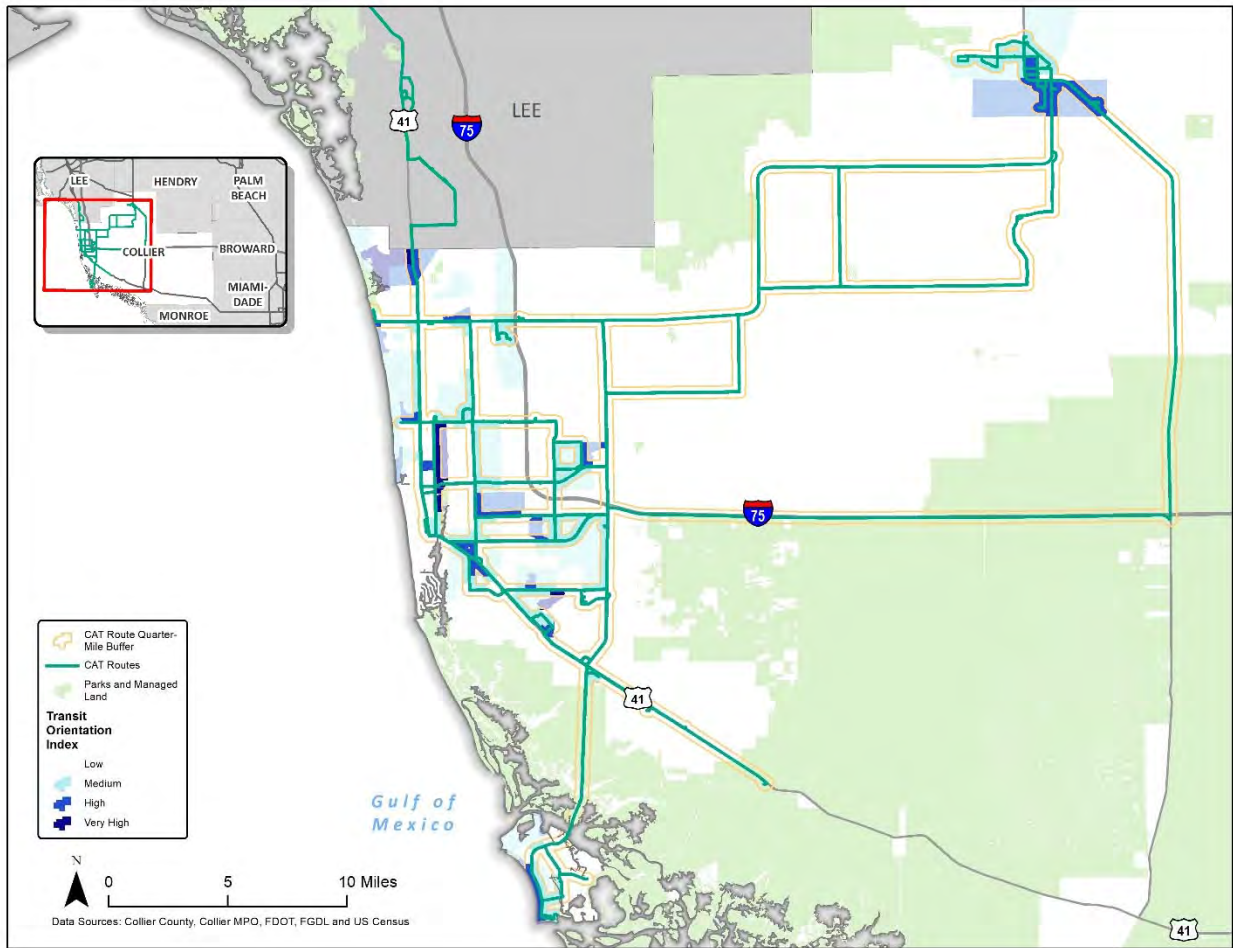
The first step involves determining transit service subareas with high transit TOI scores using factors such as youth and younger adult populations, older adult populations, households in poverty, and zero-vehicle households. The TOI score is then mapped to the CAT service area, as previously shown on 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 3-1, 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 Immokalee and residential complexes north of Radio Road and east of Airport-Pulling 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 3-1: CAT Gap Analysis



4.0 Existing Transit Assessment

As noted in Technical Memorandum 2, CAT operates 19 fixed routes and also provides non-fixed route transit service, such as Collier Area Paratransit (CAP) service. This section documents existing ridership for CAT's services and any additional performance statistics that will help determine transit alternatives.

4.1 Route Level Ridership by Month

Route-level ridership in the study area by month is shown in Figure 4-1; Figures 4-2 through 4-5 show a more detailed representation of ridership by month by route:

- Ridership increases on most routes from February to May, as shown in Figures 4-2, 4-3, and 4-4.
- Routes 11 and 15 show the highest ridership in CAT service for FY 2019.
- Figure 4-5 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 4-1: CAT Systemwide Ridership, 2019

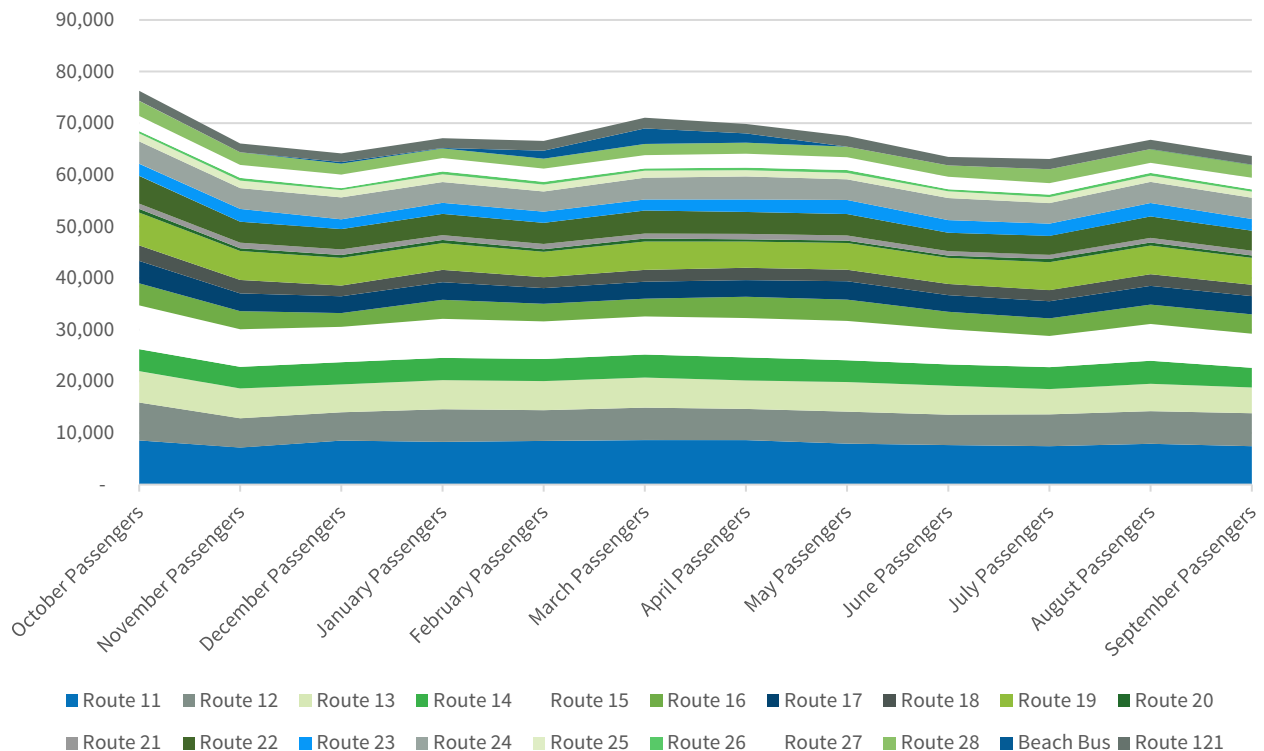


Figure 4-2: Monthly Ridership by Route, Routes 11-15

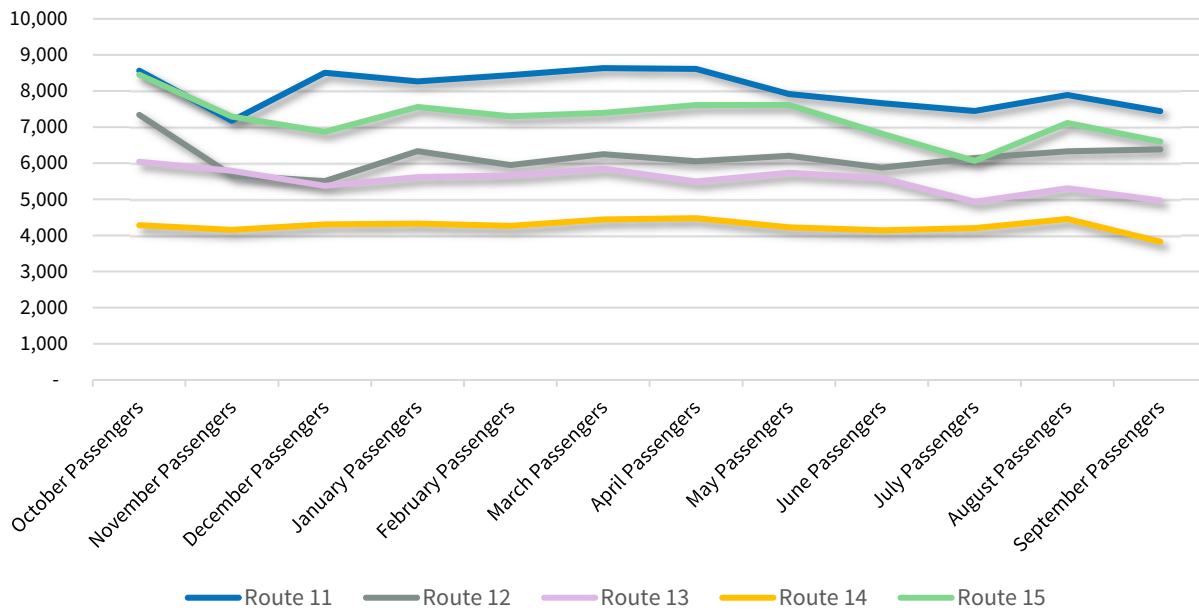


Figure 4-3: Monthly Ridership by Route, Routes 16-20

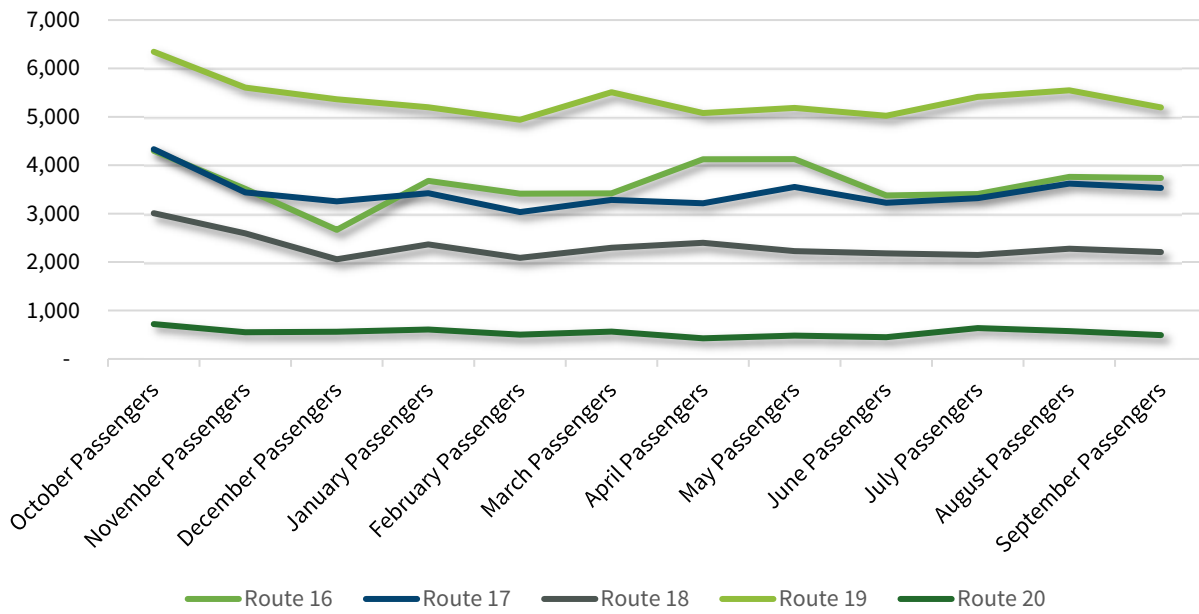


Figure 4-4: Monthly Ridership by Route, Routes 21–25

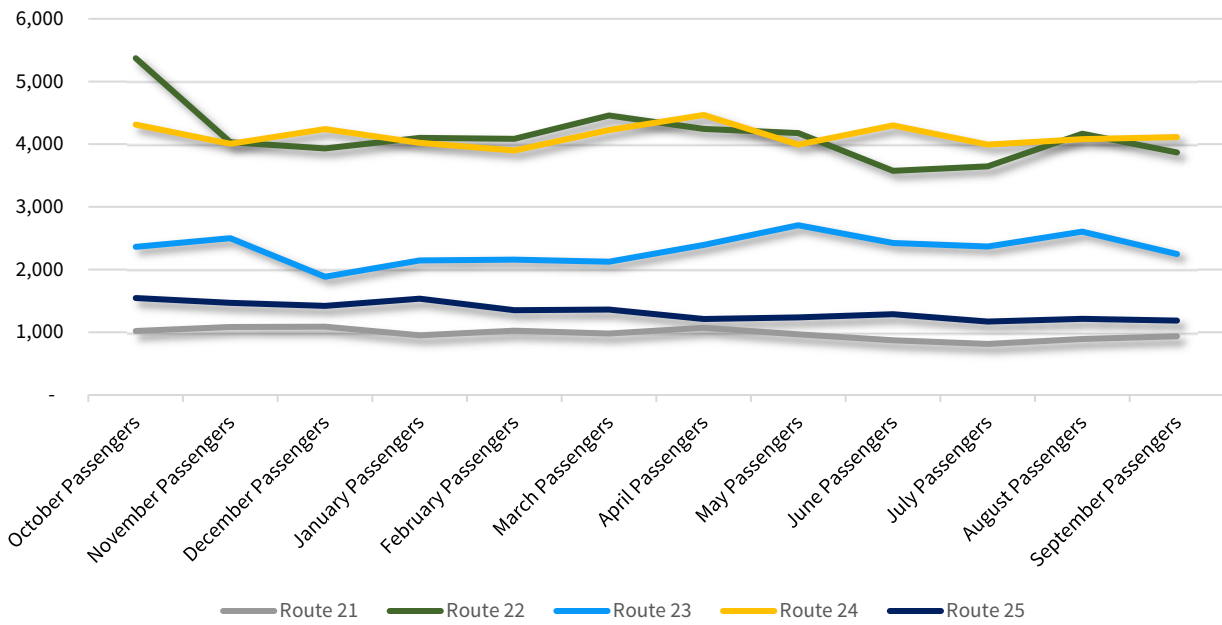
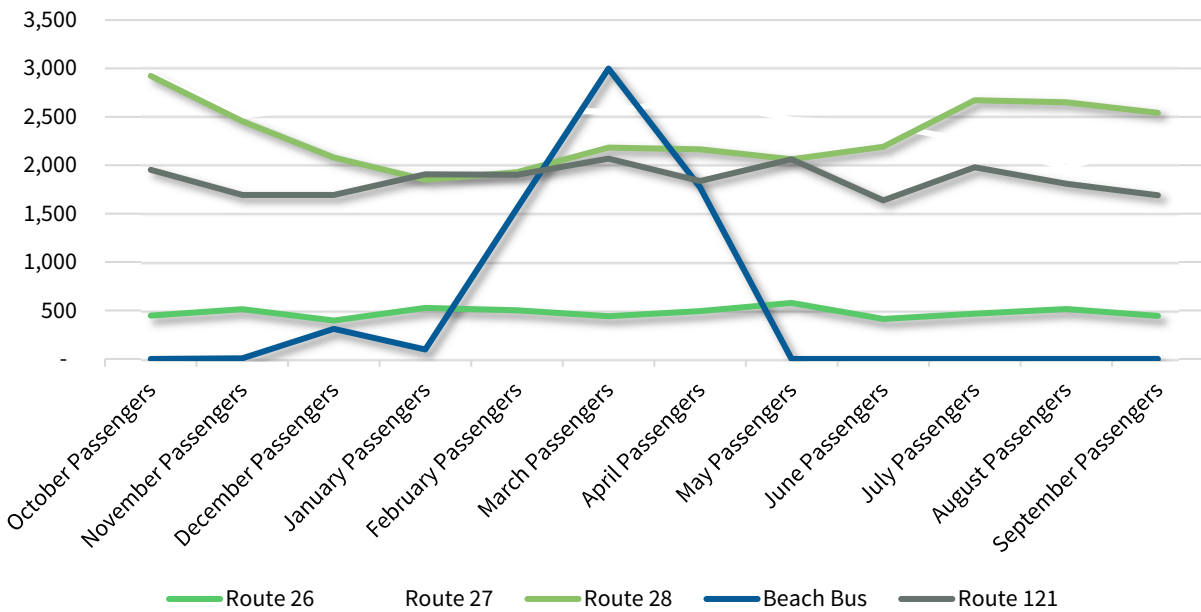


Figure 4-5: Monthly Ridership by Route, Routes 26–121



4.2 Route Productivity

Figures 4-6 and 4-7 show route productivity based on revenue mile and revenue hour for FY 2019. Figure 4-6 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 4-6 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 4-6: Passengers per Mile by Route, FY 2019

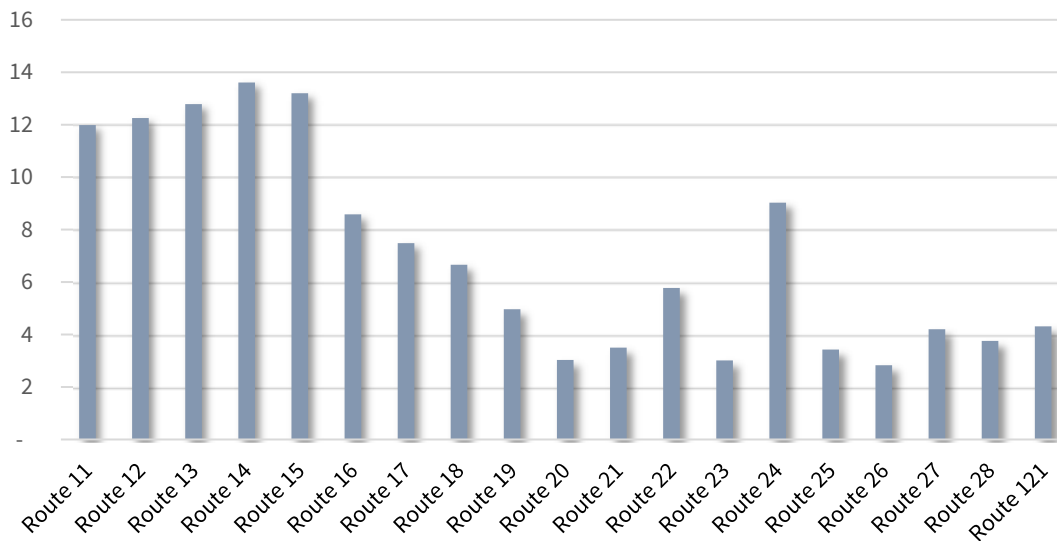
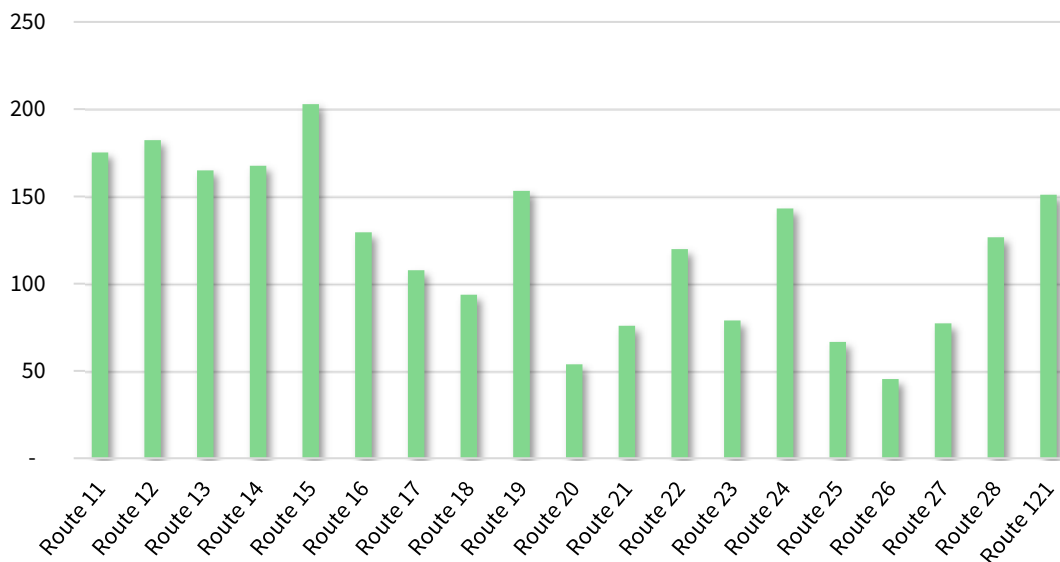


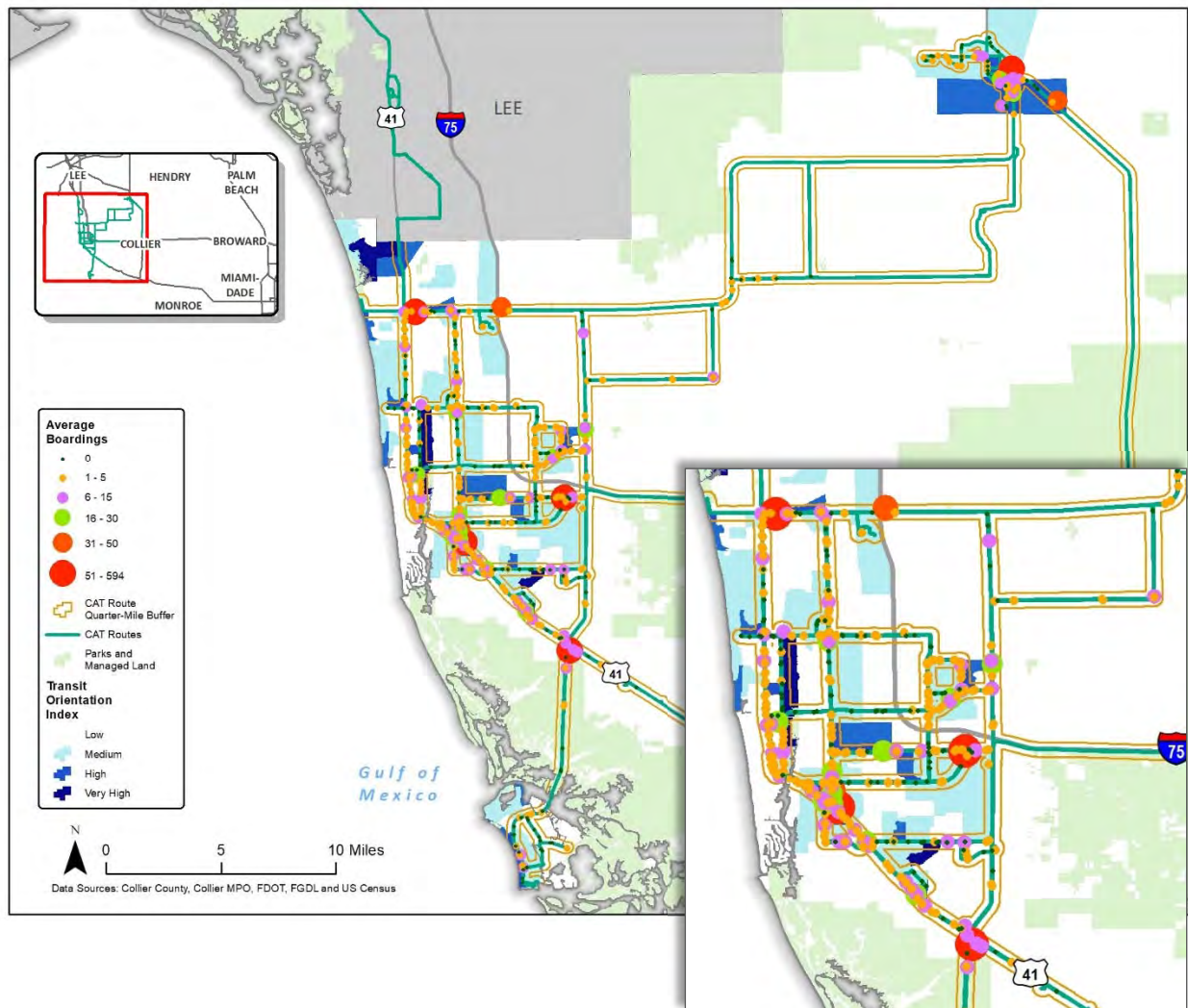
Figure 4-7: Passengers per Hour by Route, FY 2019



4.3 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 3-1. APC data also is 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 4-1. Other areas of CAT service that have high average boardings are the Immokalee Health Department, Northbrooke Plaza Drive, and Walmart near Collier Boulevard and Tamiami Trail. Areas with zero average boardings vary by route, but it is most noticeable along Davis Boulevard, Golden Gate Parkway, Pine Ridge Road, Airport-Pulling Road, and Santa Barbara Boulevard. 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 4-1: Systemwide APC Data



5.0 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.

5.1 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:

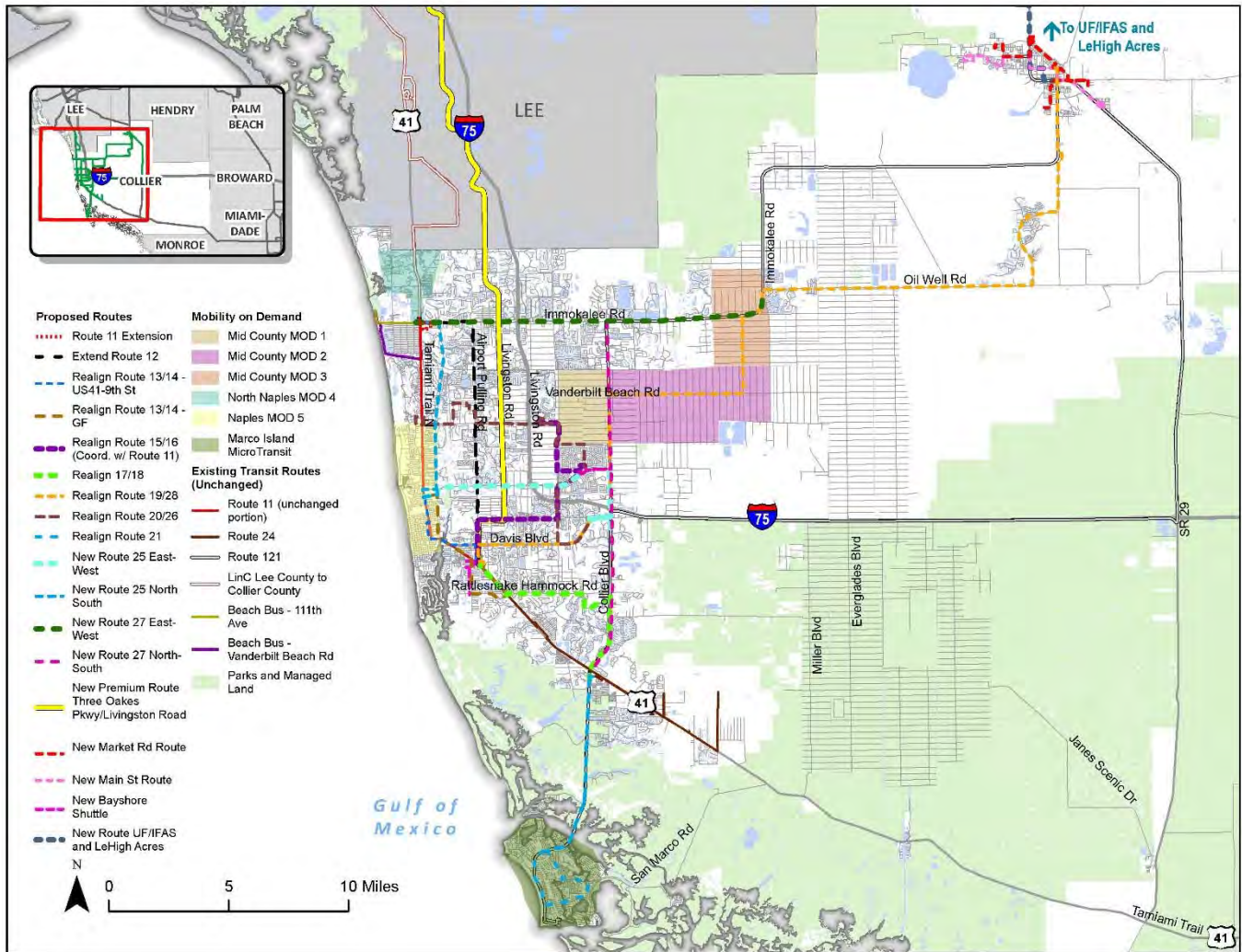
- **Public outreach** – Multiple techniques were used to obtain substantive public input on transit needs throughout the CAT TDP planning process. An on-board rider survey, two online general public surveys, key person/stakeholder interviews, two well-attended mobility discussion group workshops, two 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 5-1 illustrates the proposed network that includes several realignments of existing routes and new service improvements.

Map 5-1: Alternatives in Proposed Transit Network



5.2 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.

5.2.1 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.

5.2.1.1 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-min headway; recommend 20-min peak headway
 - Route 12 - currently has headways of 25–90 min; recommend 30-min peak headway and 60-min off-peak headway
 - Route 13 – currently has 60-min headway throughout day; recommend 30-min headway
 - Route 14 – currently has 60-min headway throughout day; recommend 30-min headway
 - Route 15/16 – currently has 90-min headway; recommend 60-min headway
 - Route 19/28 – currently has 165-min headway; recommend 60-min headway
 - Route 24 – currently has 85-min headway; recommend 60-min headway

5.2.1.2 Later Service

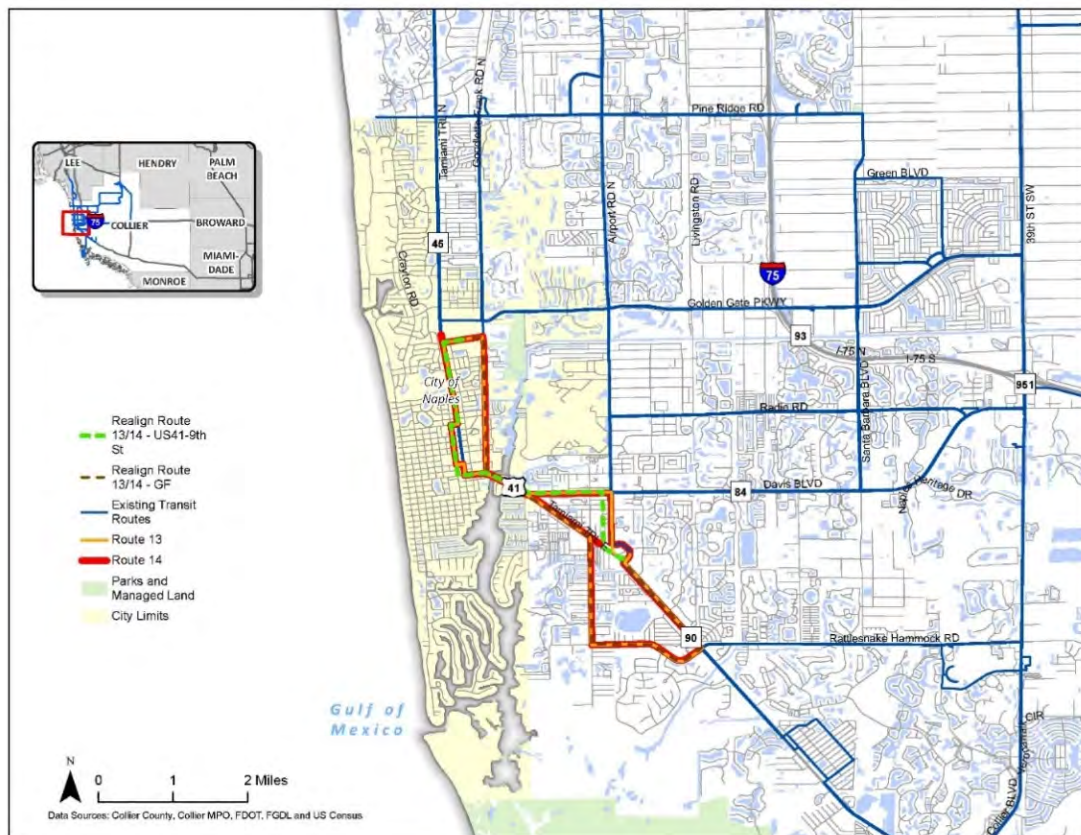
Based on results from the on-board survey, a need for adding later service was identified as a priority. It is proposed to extend service later on routes 11, 13, 14, 17, 19, and 24. The end times for the service span of these routes currently ranges between 6:25 PM and 8:52 PM; it is recommended to extend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

5.2.1.3 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 to travel along Creekside Boulevard, north on Goodlette-Frank Road, and then west on Immokalee Road to provide service to the Walmart on Tamiami Trail and Immokalee Road. This extension will enhance connectivity to other improved routes such 12, 25, and 27.
- **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 these routes 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 9th Street/Tamiami Trail, the other along Goodlette-Frank Road. Map 5-2 illustrates the proposed alignments for routes 13 and 14.

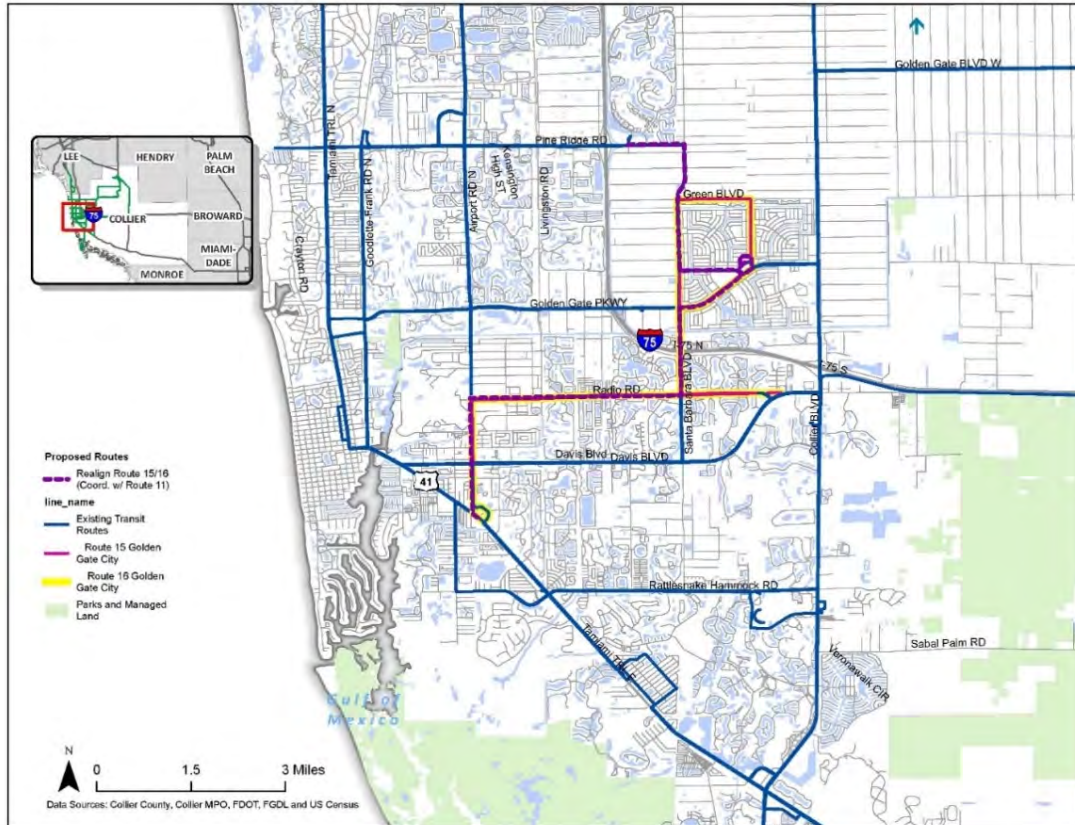
Map 5-2: Proposed Route 13/14 Realignment



Realign Routes 15 and 16 – Service between routes 15 and 16 is redundant along several roadways, including Santa Barbara Boulevard and Radio Road. The proposed improvement would combine these routes and provide more direct service between the Government Center, Golden Gate Community Center, and Physicians Regional Medical Center–Pine Ridge.

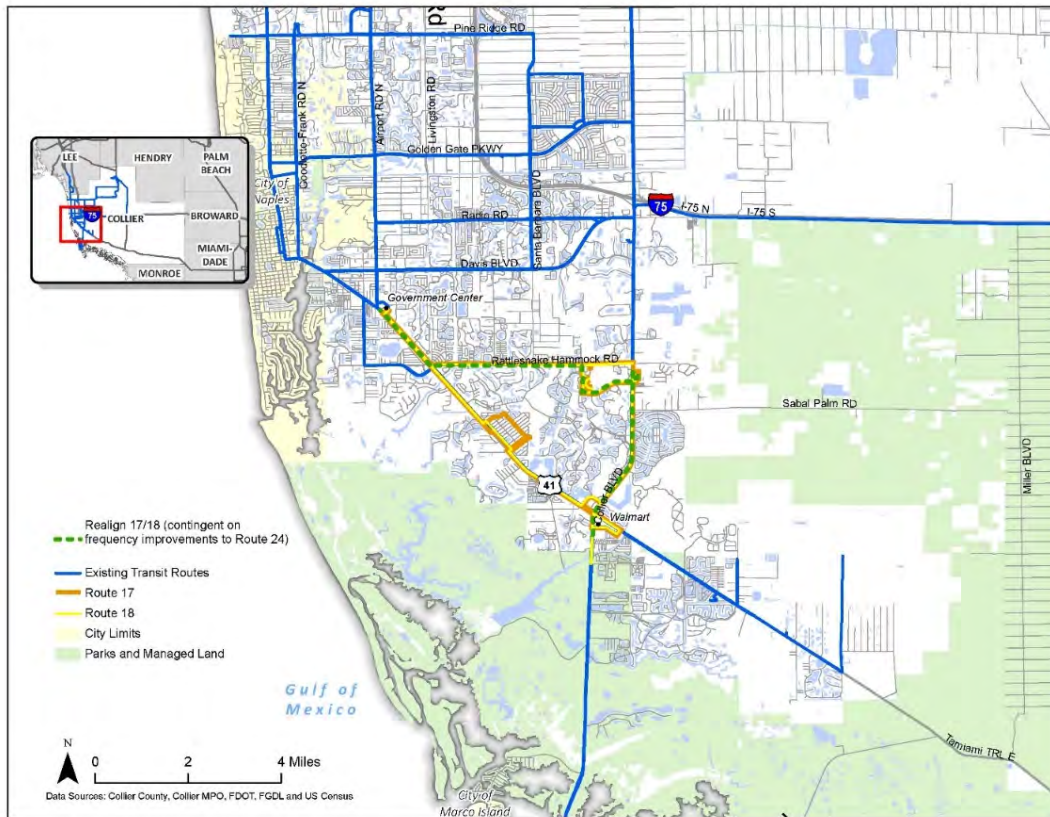
The combined routes would be coordinated with the Route 11 schedule to allow for fast transfers at the Government Center. Map 5-3 illustrates the proposed alignments for routes 15 and 16.

Map 5-3: Proposed Route 15/16 Realignment



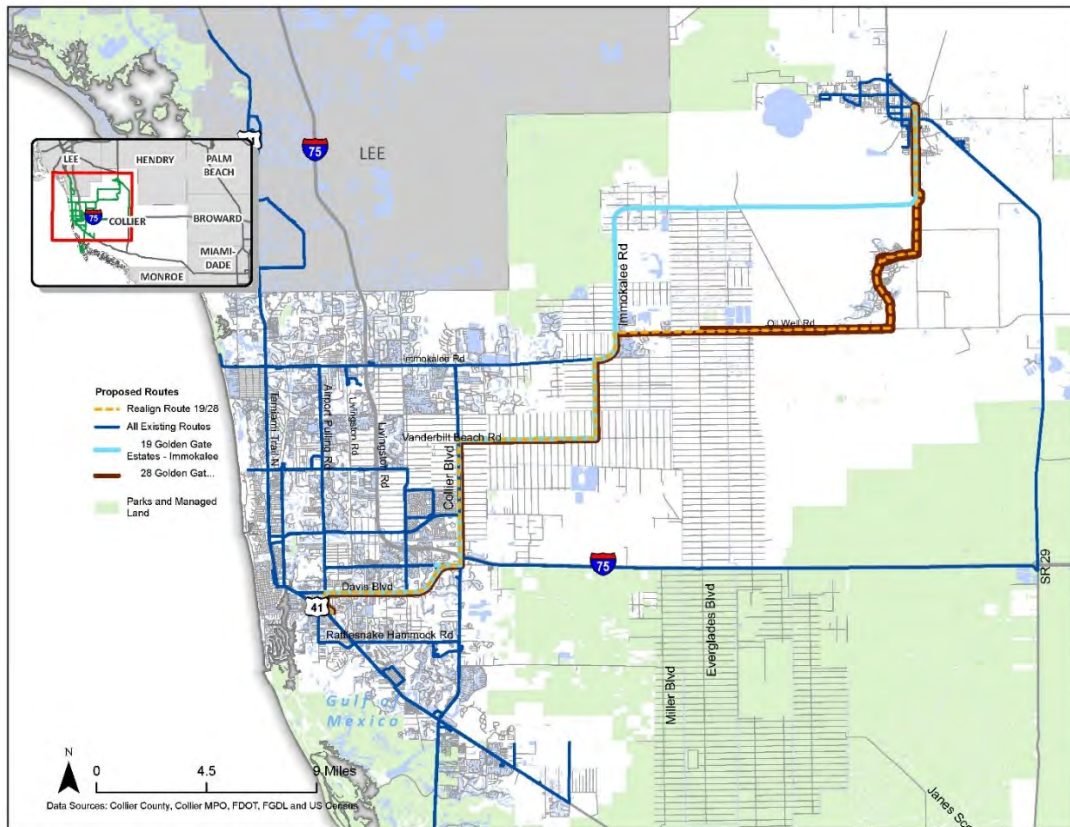
- Realign Routes 17 and 18** – Routes 17 and 18 operate as a one-way pair to provide service between the Government Center along Rattlesnake Hammock Road, Collier Boulevard, and Tamiami Trail, with destinations such as Walmart Supercenter on Collier Boulevard. To provide a more grid-like network, simplify 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 5-4 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 5-4: Proposed Route 17/18 Realignment



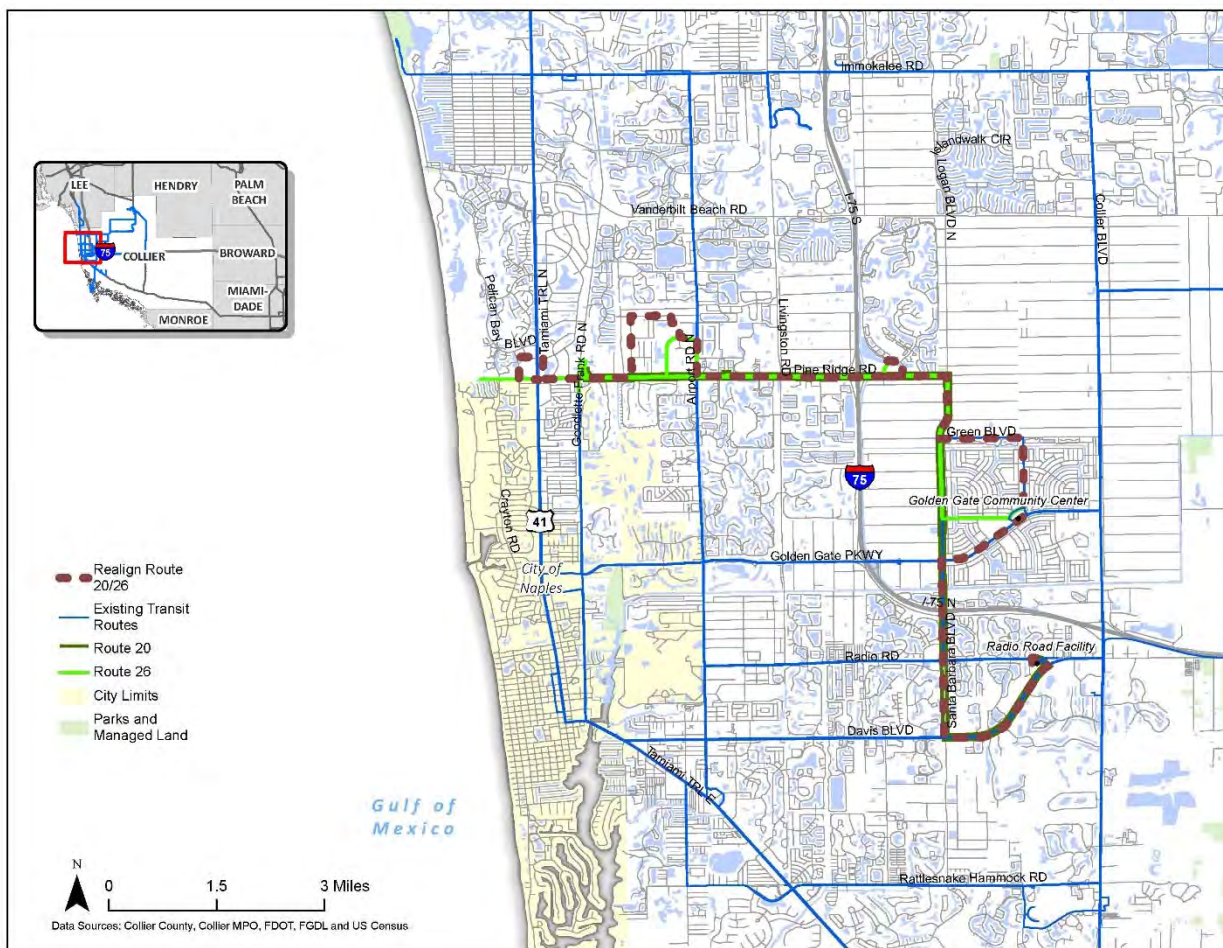
- Realign Routes 19 and 28** – Routes 19 and 28 provide service from the Health Department in Immokalee to the Government Center using the same path, except Route 19 currently serves Immokalee Road instead of Ave Maria and Oil Well Road. To simplify the route, eliminate redundancy, and eliminate unproductive 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 5-5 illustrates the proposed alignment for the Route 19/28 combination.

Map 5-5: 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 5-6.

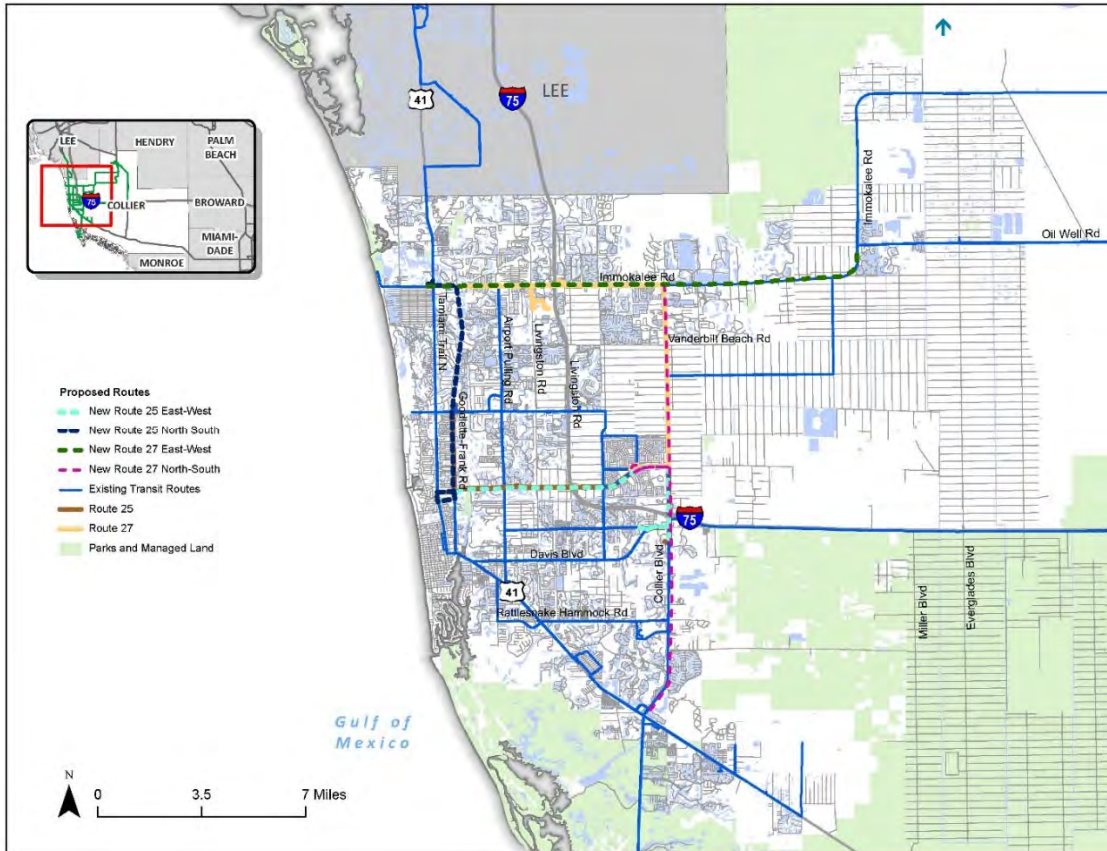
Map 5-6: Proposed Route 20/26 Realignment



- **Realign Route 21** – This route serves as a circulator in Marco Island and also connects to the Walmart Supercenter on Collier Boulevard. The proposed alignment would eliminate service to the southernmost portion of Marco Island and the boat ramp at Caxambas Park, instead continuing the entire stretch of Winterberry Drive and heading north on S Barfield Drive before continuing its normal route to Walmart. It is also proposed to extend the route to service Freedom Square via Triangle Boulevard, an area that currently has a moderate amount of rider activity.
- **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 would provide service along Goodlette-Frank Road from Immokalee Road to the Coastland Center Mall. The East-West route 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 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 would provide service along Immokalee Road from Walmart on Tamiami Trail to the Publix shopping center at Immokalee Road and Oil Well Road. Map 5-7 illustrates the proposed alignments for Routes 25 and 27.

Map 5-7: Proposed Alignments for Routes 25 and 27

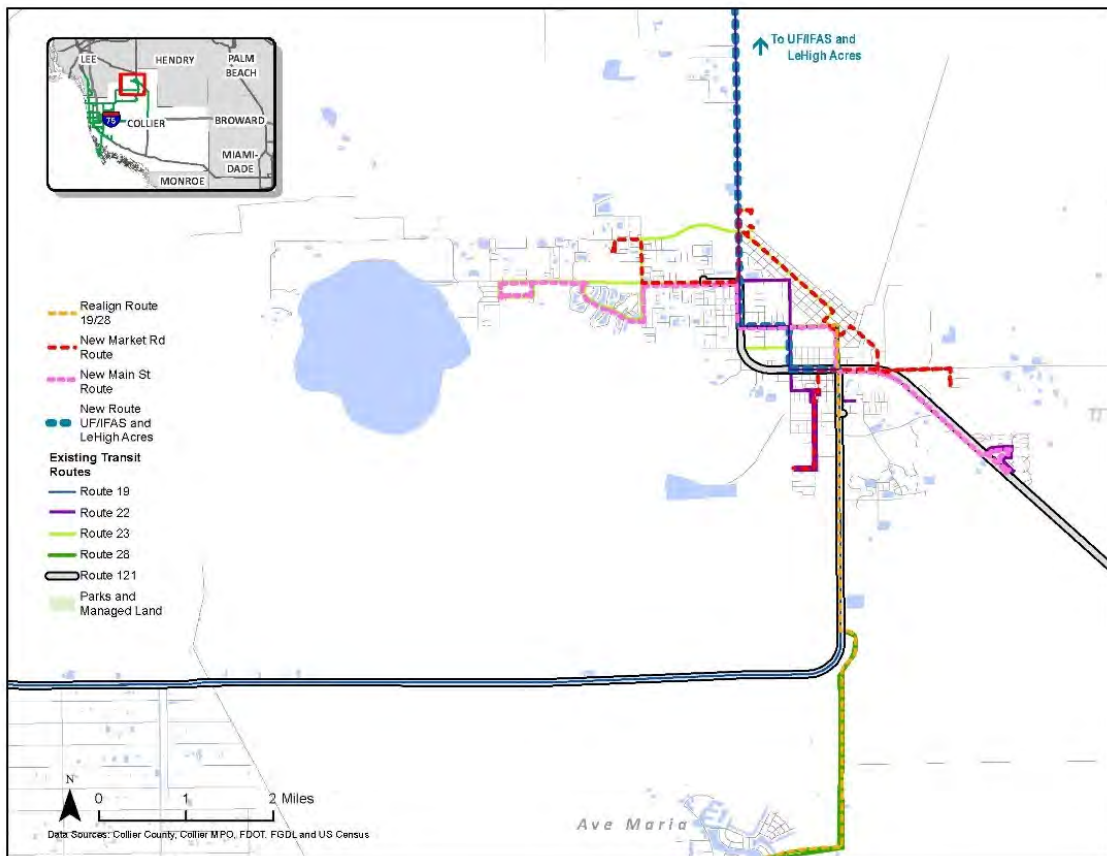


5.2.2 New Service

- New Market Road Route** – This proposed route would replace 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 5-8 illustrates the proposed New Market Road Route alignment.
- New Main Street Route** – This proposed route would replace 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 5-8 illustrates the proposed New Main Street Route alignment.

Map 5-8: Proposed Network in Immokalee



- **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.
- **New Premium Route Three Oakes Parkway/Livingston Road** – Tree Oaks Parkway and Livingston Road were identified for study in the presentation for CAT’s Sustainable Future and Intelligent Growth Topic. 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, and continue north on Livingston Road. The implementation of this route would provide service to a large transit gap east of Airport-Pulling Road and north of Radio Road, which is currently underserved by CAT routes. The final

northern terminus is to be determined but could include Coconut Point Mall, Florida Gulf Coast University, or Gulf Coast Town Center. 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. This service should be explored jointly by CAT and LeeTran based on mutual considerations and consensus.

- Bayshore Drive Electric Shuttle** – 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 to introduce the proposed service and vehicle, gauge community support, and identify the most visited destinations in the Bayshore Area (Figure 5-1). The Community Redevelopment Agency (CRA) has requested that



CAT help mitigate parking needs by operating two shuttles within the Bayshore CRA; the route would require one vehicle to provide 15-minute headway service from Weeks Avenue to the Naples Botanical Garden from 11:00AM to 9:00PM.

Figure 5-1: Bayshore Survey Destination Results




5.2.3 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



Image source: www.transit.dot.gov



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 is recommended to obtain a Software-as-a-Service (SaaS) cloud-based platform and operate MOD service as an additional CAP 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 CAP to MOD.

The following potential MOD zones were identified:

- **Mid-County Zones (1, 2, and 3)** – These MOD zones would include areas of Golden Gate Estates, a large development east of I-75. Zone 1 would be bounded by Vanderbilt Beach Road to the north, Pine Ridge Road to the south, Logan Boulevard to the west, and Collier Boulevard to the east and would serve the more densely-populated areas of the Golden Gate Estates. Zone 2 would serve areas south of Vanderbilt Beach Road but east of Collier Boulevard as well as areas north/south of Golden Gate Boulevard. Zone 3 would be the northernmost zone in Golden Gate Estates, located west of Orangetree and north/south of Immokalee Road. These zones currently have 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 more than one vehicle to operate due to poor roadway connectivity.
- **North Naples Zone (4)** – 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. Zone 4 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 (5)** – 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 routes 17, 18, and 21 at the Walmart at US-41 and Collier Boulevard. 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.

5.2.4 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.

5.3 Capital/Infrastructure

5.3.1 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.

5.3.2 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

5.4 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.
- Conduct of a Comprehensive Operations Analysis (COA) to take a more detailed review of the existing CAT routes and network.
- 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.