AGENDA
TAC

Technical Advisory Committee
ZOOM VIRTUAL MEETING
Meeting ID: 968 1910 9386
Password: 195032

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

September 28, 2020
9:30 am

1. **Call to Order**
2. **Roll Call**
3. **Approval of the Agenda**
4. **Approval of August 31, 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 Amendment to 2040 LRTP Cost Feasible Plan Regarding SR 29
   B. Endorse Draft Chapter 4 System-wide Needs Assessment for the 2045 LRTP
   C. Endorse Draft Chapter 5 Financial Resources for the 2045 LRTP
   D. Endorse Draft Cost Feasible List of Projects
   E. Comment on Draft Chapter 6 Cost Feasible Plan for the 2045 LRTP
   F. Comment on Local Roads Safety Plan Technical Memos – Statistical Analysis and Recommendations
   G. Endorse FY 20/21-21/22 UPWP Amendment
8. **Reports and Presentations (May Require Committee Action)**
   A. Connected and Automated Vehicles (CAV) White Paper, FDOT
9. **Member Comments**
10. **Distribution Items**
    A. n/a
11. **Next Meeting Date**
    October 26, 2020.
    TBD Virtual or In-Person
12. **Adjournment**

PLEASE NOTE:
This meeting of the Technical 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.

TECHNICAL ADVISORY COMMITTEE of the
COLLIER COUNTY METROPOLITAN PLANNING ORGANIZATION
VIRTUAL MEETING
ZOOM MEETING PLATFORM
MEETING MINUTES
August 31, 2020 9:30 a.m.

1. Call to Order

Ms. Lantz called the meeting to order at 9:31 a.m.

2. Roll Call

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

TAC Members Present
Lorraine Lantz, Chair, Collier County Transportation Planning (Chair)
Ute Vandersluis, City of Naples Airport Authority
Dan Hall, Collier County Traffic Operations
Don Scott, Lee County MPO
Tim Brock, Everglades City
Andy Holland, City of Naples
Michelle Arnold, PTNE
Daniel Smith, Director of Community Affairs, City of Marco Island
Debra Brueggeman, Collier County Airport Authority

TAC Members Absent
Tim Pinter, Vice-Chair, City of Marco Island
John Kasten, Collier County School District
Margaret Wuerstle, Southwest Florida Regional Planning Council
Greg Strakaluse, City of Naples

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

Others Present
Zachary Karto, CAT
Randall Farwell, Tindale Oliver
Andrea Halman, At-Large Member (BPAC)
Patty Huff, At-Large Member (BPAC)

Tara Jones, Jacobs Engineering
Bill Gramer, Jacobs Engineering
Victoria Peters, FDOT
Jennifer Marshall, Environmental Administrator (FDOT)
Wally Blain, Tindale Oliver
Tamarin Kirby, CAT
Dennis McCoy
Mary Ross, FDOT
Valerie Nowottnick, Minute Taker

3. Approval of the Agenda

Mr. Smith moved to approve the agenda. Mr. Brock seconded. Carried unanimously.

4. Approval of August 7, 2020 Meeting Minutes.

Mr. Smith moved to approve the August 7, 2020 meeting minutes. Mr. Scott seconded. Carried unanimously.

5. Public Comments for Items not on the Agenda

None.

6. Agency Updates

A. FDOT

Ms. Peters – gave Census update. Will help guide over 6 billion dollars in funding. Referred to 2020 Census; 844-330-2020 and my2020census.gov.

B. MPO Executive Director

Ms. McLaughlin – no update. Agenda is full.

7. Committee Action

A. Endorse Transit Development Plan – Major Update

Ms. McLaughlin – introduced senior planner, Josephine Medina. **Ms. Medina –** referred to materials provided in agenda packet. Randy Farwell w/Tindale Oliver will provide brief overview. Transit Development Plan ("TDP") is to ensure consistency with MPO long-range transit plan. Major update scheduled to go on September 11, 2020 to MPO Board and then to County Commissioners on October 13, 2020. **Mr. Farwell –** reviewed TDP presentation materials in agenda packet. TDP is 10-year strategic plan for transit.

TDP is required by FDOT. Serves as tool to ensure every community that receives federal/state funding for transportation projects is reviewing required criteria under plan. Identifies funded and unfunded needs. Updates every 5 years. Current TDP covers FY 2021-2030. Extensive and lengthy presentation regarding TDP and transit network changes/impacts as provided in agenda packet. Significant efforts focused on streamlining routes and reducing overlap. Added routes for service and provided further studies on connections to Lehigh Acres and UF Ag Center. Explained specific routes that are being added to service area. Discussed 10-year operating cost compared to 10-year capital cost. Approximately $134M in 10-year funded projects. Approximately $25M in 10-year capital costs. Projects are required to be on TDP if receiving federal or state funding. Projects can advance sooner or later depending on funding availability and priority.

Mr. Brock – well organized presentation. Some statistics had older information for Everglades City. 2019 application in incorrect. **Mr. Farwell** – should have mentioned Everglades City van pool that is included in TDP but did not mention it in presentation. **Mr. Brock** - surprised that van pool is not in first 5-year plan. **Ms. Arnold** – should have been mentioned in first 5-years. Currently working with representatives in Everglades City. Brief discussion among members regarding exchanging updated information to be included. **Mr. Brock** – will there be a fixed route across Collier County. **Mr. Farwell** – would be an extension of Route 24 and would connect Everglades City to Government Center and services that convene at Collier Boulevard and US 41 (Super Walmart). Questioned that route may be too long and might be more cost effective to do mobility service. **Mr. Brock** – based on visitors in Everglades City that have been queried, transportation would be very useful. **Ms. Arnold** – intent is to review plan every 5-years and to identify possible projects and to acquire information from the community to include unidentified projects. Brief discussion among members regarding how projects are included and reviewed/identified including participation by community members.

Ms. Lantz – inquired about meeting with City of Naples and City of Marco Island – inquired about on-demand service and reception by City officials. **Ms. Arnold** – reception included a lot of questions about routing. Endorsed plan and encouraged participation with e-Downtown process to figure out how to transport people in downtown area between Goodlette and US 41 to connect with areas in 5th and 3rd Avenues. **Mr. Karto** – City focused on connecting mode to Coastland Mall, autonomous vehicle to Naples Pier. **Ms. Arnold**- this is vision plan. Working with consulting firm to define actual routes, what different modes are appropriate. More details will be forthcoming. Marco Island is excited about TDP. Park is having major redesign and hoping that routing would be servicing park. Will be working with them to define most advantageous routing for their area.

Mr. Brock – page 49 – mentions SunTrail projects – is it part of TDP. **Mr. Farwell** – part of plans review. Recommendations within context of other projects occurring within community. Recognize connecting trails within transit.

Ms. Lantz – coordinating with other LRTP ("Long Range Transportation Plan") for other projects. **Mr. Farwell** – coordinating with FDOT for federal grant purposes. Transit is different. Except for federal formula funding, transit is discretionary. Collier County must apply for grants for services or for capital projects. TDP was 5-year plan initially but was expanded to 10-year plan to better fit into LRTP. **Ms. Arnold** – confirmed coordination with LRTP.

Ms. Arnold – will need to submit comments. **Ms. McLaughlin** – need comments no later than Thursday, September 3, 2020.

Ms. Lantz – in LRTP, commuting between Lee and Collier reported as decreased. Presentation appeared to show increase in commuting statistics.

Mr. Brock moved to endorse the Transit Development Plan with comments as noted. Mr. Smith seconded. Passed unanimously.

B. Endorse Transportation System Performance Report & Action Plan (TSPR)

Ms. Otero – Congestion Management Committee ("CMC") has been working on plan for approximately 1.5 years. Introduced Wally Blaine with Tindale Oliver. Mentioned specific agenda items in packet. Intent to prioritize projects based on data and will feed into LRTP. **Mr. Blaine** – reviewed presentation in agenda packet. Federally required step in securing funding for designated projects. Needed to evaluate 2017 congestion management process. Intent is to reduce traffic using alternative transportation methods. Lengthy and comprehensive presentation regarding performance measures and criteria required to be addressed in plan (as provided in agenda packet materials). Miscellaneous comments by committee members regarding formatting of plan – not substantive.

Ms. Lantz moved to endorse the Transportation System Performance Report & Action Plan. Mr. Scott seconded. Passed unanimously.

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

Ms. McLaughlin – introduced consultants from Jacobs Engineering. Asking for preliminary review and comment on CFP. Three components to be reviewed: 2045 LRTP; draft CFP; draft Chapter 4 system-wide Needs Assessment and draft Financial Resources Technical Memorandum. **Ms. Jones** – information in agenda packet that was

submitted to FDOT. Gave presentation on agenda packet materials. Reviewed Alternative 5 spreadsheet of projects currently scheduled and prioritized. **Mr. Scott** – had cost set at .15/mile for I-75 project. Questioned viability of road project at that cost level. Brief discussion regarding overall scope of project. **Ms. Lantz** (to **Mr. Scott**) – inquired about Livingston Road. **Mr. Scott** – not anything in current runs. Unsure about major intersections other than ones already identified. Continued discussion regarding PD&E studies and flexibility with funding. **Mr. Brock** – is funding included for bridge widening on US 41. **Ms. Lantz** – nothing on the immediate list for US 41. Would be coordinated with FDOT. **Ms. McLaughlin** – FDOT is studying it but no information is available yet. City of Naples proposed bike/ped enhancements. **Ms. Peters** – some raised pavement markers may be removed – waiting for timeline – but have approval on bike/ped recommendations regarding bridge widening.

Ms. McLaughlin – due to time constraints, would welcome comments on remaining portion of plan within 2-3 weeks. **Ms. Jones** – suggested September 7 in agenda. **Ms. McLaughlin** – comments need to be received by September 7.

D. Endorse Collier County's Transit Safety Performance Targets

Ms. McLaughlin – discussed Executive Summary in agenda packet. MPO is required to adopt transit safety targets within certain time frame of local transit agency adopting their program. Still within acceptable response deadline but just seeking comments from members to begin dialogue. Requesting endorsement of target recommendations.

Ms. Lantz – already accepted by BCC that were presented by CAT. **Ms. McLaughlin** – confirmed.

Ms. Lantz moved to endorse Collier County's Transit Safety Performance Targets as presented. Mr. Smith seconded. Passed unanimously.

8. Reports and Presentations (May Require Committee Action)

A. FDOT Update on Current Project Development & Environmental (PD&E) Studies

Ms. Peters – introduced Jennifer Marshall, FDOT Engineer, who will discuss PD&E studies. **Ms. Marshall** – presentation is for informational purposes only. Reviewed PD&E Study Status as of August 2020 (in agenda packet).

Mr. Brock – will US 29 have bike lanes. **Ms. Marshall** – showing shoulders – not bike lanes. I-75 to Oil Well – have not had discussion yet. SR29 to SR82 – design preliminary studies are ongoing. **Ms. Lantz** – questioned about timeline of Immokalee and Randall project. **Ms. Marshall** – approximately one month.

9. Member Comments

Ms. Lantz – will there be joint meeting with TAC and CAC this year. **Mr. Scott** – questioned whether there is time to have one. **Ms. McLaughlin** – would like to have joint meeting with board boards.

Mr. Brock – questioned about SunTrail. **Ms. McLaughlin** – need County agreement to sign off on maintenance agreement. Doubt will be able to obtain it this year. If trail is included in road project, FDOT would maintain. **Mr. Brock** – all SunTrails are interconnected except section in south part of State. **Ms. McLaughlin** – County will maintain off road section. Current disagreement with County maintaining trails within State right-of-ways. Extensive discussion regarding difficulties in obtaining approval for inclusion within SunTrails projects.

10. Distribution Items

A. FY21-25 TIP – Administrative Modifications

11. Next Meeting Date

September 28, 2020 – 9:30 a.m. - Virtual Meeting (current Executive Order expires September 30, 2020)

11. Adjournment

There being no further comment or business to discuss, ***Mr. Brock*** *moved to adjourn.* ***Mr. Smith*** *seconded.* ***Ms. Lantz*** *adjourned the meeting at 11:47 a.m.*

EXECUTIVE SUMMARY
COMMITTEE ACTION
ITEM 7A

Endorse Amendment to 2040 Long Range Transportation Plan (LRTP) Cost Feasible Plan (CFP) for Planning Consistency Regarding Projects on SR 29 in the FY 2021 – 2025 Transportation Improvement Program (TIP)

OBJECTIVE: For the Committee to endorse an amendment to the 2040 LRTP CFP, for planning consistency, regarding projects on SR29 in the FY 2021-2025 TIP.

CONSIDERATIONS: The Federal Highway Administration (FHWA) recently noted a discrepancy between the 2040 LRTP CFP and FDOT-led projects currently programmed in the MPO's FY2021-2025 Transportation Improvement Program (TIP). The discrepancy is due to how the 2040 CFP tables did not show the financial details of the TIP in effect at the time, and revisions made to the Strategic Intermodal System CFP in 2018 that should have triggered amendments to the LRTP.

STAFF RECOMMENDATION: That the Committee endorse an amendment to the 2040 LRTP CFP for planning consistency regarding projects on SR29 in the FY 2021-2025 TIP.

Prepared By: Anne McLaughlin, MPO Director

Attachment:
1. 2040 LRTP Amendment #4 Report

DRAFT AMENDMENT #4 TO THE 2040 LONG RANGE TRANSPORTATION PLAN (LRTP)

Purpose

The purpose of this amendment is to achieve planning consistency between the FY2020/21-2024/25 Transportation Improvement Program (TIP) and the 2040 LRTP Cost Feasible Plan (CFP) with regard to FDOT-led projects on SR 29.

Cost Feasible Plan

- *See Exhibit 1: Amendment to Table 6-4 Partially Funded Highway Improvements and Table 6-2 Highway Improvements Completed 2026-2030*
- *See Exhibit 2: Amendment to Appendix C - YOE Detail Costing Summary*

Additional Planning Factors

There are two new Planning Factors which are hereby amended into the 2040 LRTP:

1. Improve the ***Resiliency*** *and* ***Reliability*** of the Transportation system and ***Reduce*** **or** ***Mitigate stormwater*** impacts of surface transportation
2. Enhance ***Travel*** **and** ***Tourism.***

The MPO's efforts in addressing these new planning factors are noted in our participation on the Urban Resilience Focus Group for the Web-Based Interactive Decision-Support Tool for Adaptation of Coastal Urban and Natural Ecosystems (ACUNE) in Southwest Florida led by Professor Y. Peter Sheng, University of Florida and Michael Savarese, Florida Gulf Coast University. The project received funding from NOAA to create inundation, salinity distribution, habitat distribution, beach and barrier islands vulnerability and economic impact maps for various climate and sea level rise scenarios integrated into a web-based interactive decision-support tool that enables users to identify areas of high vulnerability. The publication of the interactive mapping tool has been delayed due to the COVID-19 pandemic.

Our recent update to our Continuity of Operations Plan (COOP), Public Participation Plan updates, and completion of our Local Roads Safety Plan are intended to improve the resiliency and reliability of the transportation system by ensuring that the planning process continues despite the occurrence of manmade and natural disasters, including flooding, hurricanes and pandemics. Improving safety performance enhances travel time reliability. Enhancing Travel and Tourism is evident in the emphasis placed on conserving natural areas, wetlands and water resources (such as the Everglades) and the area's beaches which attract millions of visitors annually. Providing multimodal transportation options supports the quality of the visitor experience.

System Performance Report

See Exhibit 3 – System Performance Report

Exhibit 1

2040 LRTP AMENDMENT #4 ADD THE FOLLOWING TO TABLE 6-4 HIGHWAY COST FEASIBLE PLAN - Highway Improvements: partially Funded pages 6-15 and 6-16 **Additions Are In Red**
AND TO TABLE 6-2 Highway Improvements Completed 2026-2030 pp 6-7 to 6-8

MAP ID & OR FPN	Improvement	Limits From	Limits To	2021-2040 Total Cost	Funding Allocated in LRTP 2021-2025*			Funding Allocated in LRTP 2026-2030**			Funding Allocated in LRTP 2031-2040			LRTP funding YOE (CST)$	Unfunded Phase Costs	Funding Source
					PE	ROW	CST	PE	ROW	CST	PE	ROW	CST			
4175405	SR 29 [includes Immokalee Bypass]	CR846 (Airport Rd)	N of New Market Rd N	$ 6.74	$ 0.06	$ 6.68										ACNP (SIS), DDR
4175404	SR 29	S of Agriculture Way	CR 845 (Airport Rd)	$ 0.27	$ 0.27											DS, TALT
4175403	SR 29	Sunniland Nursery Rd	S of Agriculture Way	$ 0.50	$ 0.50											SU, TALT
4175402	SR 29	Oil Well Rd	Sunniland Nursery Rd	$ 8.33	$ 8.33											ACNP (SIS), DI
43 4178784	SR 29	North of SR 82	Collier/Hendry Line	$1.36	$0.05	$1.31	~~$10.02~~									ACNP (SIS)
60 4344901	SR 29	I-75 (SR93)	Oil Well	$20.67	$20.67		-									

**Per MPO FY 2021-2025 TIP & FDOT Work Program*

***Per CFP FY2028/29 - FY2044/45 SIS (2018 Edition)*

2040 LRTP AMENDMENT #4 ADD THE FOLLOWING TO TABLE 6-2 HIGHWAY COST FEASIBLE PLAN - Highway Improvements Completed 2026-2030 pp 6-7 to 6-8 **Additions Are In Red**

MAP ID & OR FPN	Improvement	Limits From	Limits To	2021-2040 Total Cost	Funding Allocated in LRTP 2021-2025*			Funding Allocated in LRTP 2026-2030**			Funding Allocated in LRTP 2031-2040			LRTP funding YOE (CST)$	Unfunded Phase Costs	Funding Source
					PE	ROW	CST	PE	ROW	CST	PE	ROW	CST			
4175406	SR 29	N of New Market Rd N	SR 82	$ 31.41	$ 0.38	$ 1.09				$ 29.94				$ 29.94		ACNP (SIS), TALT

**Per MPO FY 2021-2025 TIP & FDOT Work Program*

***Per CFP FY2028/29 - FY2044/45 SIS (2018 Edition)*

Collier MPO 2040 LRTP, Cost Affordable Plan as Previously Amended APPENDIX C

DRAFT AMENDMENT 10/9/20 BOARD MEETING, 9/28 CAC/TAC

Additions Are in Red

Draft Amended 2040 Cost Feasible Plan - Summary of Funded Projects Grouped by Funding Source with Costs Shown in Future Year of Expenditure (YOE) in Millions of Dollars

CF# &/or FPN	Facility	From	To	# of Existing Lanes	Project Length (Miles)	Project Type	CST PDC	2021-2025 PER FY2020/21-2024/25 TIP adopted 6/12/20 & FDOT Work Program			2026-2030 SIS 2028/29 to 2044/45 (2018 Edition)			2031-2040 (2040 LRTP)			2017 - 2040	2041-2050
								PE/ENV	ROW	CST	PE	ROW	CST	PE	ROW	CST	Project Totals	YOE CST
4175405	SR 29 [includes Immokalee Bypass]	CR846 (Airport Rd)	N of New Market Rd N	2		add 2 to build 4 lanes [on existing SR29]; and build 2 lanes for new Bypass - New road construction		$ 0.06	$ 6.68								$ 6.74	
4175406	SR 29	N of New Market Rd N	SR 82	2		add 2 to build 4 lanes		$ 0.38	$ 1.09				$29.94				$31.41	$29.94
4175404	SR 29	S of Agriculture Way	CR 845 (Airport Rd)	2		add 2 to build 4 lanes		$ 0.27									$ 0.27	
4175403	SR 29	Sunniland Nursery Rd	S of Agriculture Way	2		add 2 to build 4 lanes		$ 0.50									$ 0.50	
4175402	SR 29	Oil Well Rd	Sunniland Nursery Rd	2		add 2 to build 4 lanes		$ 8.33									$ 8.33	
43 4178784	SR 29	North of SR 82	Collier/Hendry Line	2	2.4	2-Lane Roadway to 4 Lanes with Paved Shoulders (Includes milling and resurfacing of existing pavement)	$7.89	$0.05	$1.31	~~$10.02~~							$ 1.36	
60 4344901	SR 29	I-75 (SR 93)	Oil Well Rd	2	10.2	2-Lane Roadway to 4 Lanes with Paved Shoulders (Includes milling and resurfacing of existing pavement)	n/a	$20.67						$6.19	$3.63		$30.49	

Exhibit 3

Metropolitan Planning Organization
Long-Range Transportation Plan
System Performance Report Template

Office of Policy Planning

Florida Department of Transportation

June 2020

COLLIER MPO

AMENDMENT #4

2040 LONG RANGE TRANSPORTATION PLAN

OCTOBER 9, 2020

TABLE OF CONTENTS

1 - PURPOSE

This document provides language that Florida's metropolitan planning organizations (MPO) may incorporate in Long-Range Transportation Plan (LRTP) System Performance Reports to meet the federal transportation performance management rules. Updates or amendments to the LRTP must incorporate a System Performance Report that addresses these measures and related information no later than:

- May 27, 2018 for Highway Safety measures (PM1);
- October 1, 2018 for Transit Asset Management measures;
- May 20, 2019 for Pavement and Bridge Condition measures (PM2);
- May 20, 2019 for System Performance measures (PM3); and
- July 20, 2021 for Transit Safety measures.

MPOs may incorporate this template language and adapt it as needed as they update their LRTPs. In most sections, there are two options for the text, to be used by MPOs supporting statewide targets or MPOs establishing their own targets. Areas that require MPO input are highlighted in grey. Input will range from simply adding the MPO name and adoption dates to providing MPO-specific information such as descriptions of strategies and processes.

The document is consistent with the Transportation Performance Measures Consensus Planning Document developed jointly by the Florida Department of Transportation (FDOT) and the Metropolitan Planning Organization Advisory Council. This document outlines the minimum roles of FDOT, the MPOs, and the public transportation providers in the MPO planning areas to ensure consistency to the maximum extent practicable in satisfying the transportation performance management requirements promulgated by the United States Department of Transportation in Title 23 Parts 450, 490, 625, and 673 of the Code of Federal Regulations (23 CFR).

The document is organized as follows:

- Section 2 provides a brief background on transportation performance management;
- Section 3 covers the Highway Safety measures (PM1);
- Section 4 covers the Pavement and Bridge Condition measures (PM2);
- Section 5 covers System Performance measures (PM3);
- Section 6 covers Transit Asset Management (TAM) measures; and
- Section 7 covers Transit Safety measures.

2 - BACKGROUND

Pursuant to the Moving Ahead for Progress in the 21st Century Act (MAP-21) Act enacted in 2012 and the Fixing America's Surface Transportation Act (FAST Act) enacted in 2015, state departments of transportation (DOT) and metropolitan planning organizations (MPO) must apply a transportation performance management approach in carrying out their federally required transportation planning and programming activities. The process requires the establishment and use of a coordinated, performance-based approach to transportation decision-making to support national goals for the federal-aid highway and public transportation programs.

On May 27, 2016, the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) issued the Statewide and Nonmetropolitan Transportation Planning; Metropolitan Transportation Planning Final Rule (The Planning Rule).[1] This rule details how state DOTs and MPOs must implement new MAP-21 and FAST Act transportation planning requirements, including the transportation performance management provisions.

In accordance with the Planning Rule, the Collier MPO must include a description of the performance measures and targets that apply to the MPO planning area and a System Performance Report as an element of its Long-Range Transportation Plan (LRTP). The System Performance Report evaluates the condition and performance of the transportation system with respect to required performance targets, and reports on progress achieved in meeting the targets in comparison with baseline data and previous reports. For MPOs that elect to develop multiple scenarios, the System Performance Report also must include an analysis of how the preferred scenario has improved the performance of the transportation system and how changes in local policies and investments have impacted the costs necessary to achieve the identified targets.[2]

There are several milestones related to the required content of the System Performance Report:

- In any LRTP adopted on or after May 27, 2018, the System Performance Report must reflect Highway Safety (PM1) measures;
- In any LRTP adopted on or after October 1, 2018, the System Performance Report must reflect Transit Asset Management measures;
- In any LRTP adopted on or after May 20, 2019, the System Performance Report must reflect Pavement and Bridge Condition (PM2) and System Performance (PM3) measures; and
- In any LRTP adopted on or after July 20, 2021, the System Performance Report must reflect Transit Safety measures.

The Collier MPO 2040 Long-Range Transportation Plan was amended on October 9, 2020 to add the XXXX SIS projects to the Cost Feasible Plan. Per the Planning Rule, the System Performance Report for the Collier MPO is included for the required Highway Safety (PM1), Bridge and Pavement (PM2), System Performance (PM3), Transit Asset Management, and Transit Safety targets adopted by the MPO Board on September 11, 2020.

[1] The Final Rule modified the Code of Federal Regulations at 23 CFR Part 450 and 49 CFR Part 613.

[2] Guidance from FHWA/FTA for completing the preferred scenario analysis is expected in the future. As of June 2020, no guidance has been issued.

3 - HIGHWAY SAFETY MEASURES (PM1)

Effective April 14, 2016, the FHWA established five highway safety performance measures[3] to carry out the Highway Safety Improvement Program (HSIP). These performance measures are:

1. Number of fatalities;
2. Rate of fatalities per 100 million vehicle miles traveled (VMT);
3. Number of serious injuries;
4. Rate of serious injuries per 100 million VMT; and
5. Number of non-motorized fatalities and non-motorized serious injuries.

The Florida Department of Transportation (FDOT) publishes statewide safety performance targets in the HSIP Annual Report that it transmits to FHWA each year. Current safety targets address calendar year 2020. For the 2020 HSIP annual report, FDOT established statewide at "0" for each performance measure to reflect Florida's vision of zero deaths.

The Collier MPO adopted safety performance targets on November 8, 2019. Table 3.1 indicates the areas in which the MPO is expressly supporting the statewide target developed by FDOT, as well as those areas in which the MPO has adopted a target specific to the MPO planning area.

Table 3.1. Highway Safety (PM1) Targets

Performance Target	**Collier MPO agrees to plan and program projects so that they contribute toward the accomplishment of the FDOT safety target of zero**
Number of fatalities	✓
Rate of fatalities per 100 million VMT	✓
Number of serious injuries	✓
Rate of serious injuries per 100 million VMT	✓
Number of non-motorized fatalities and non-motorized serious injuries.	✓

Statewide system conditions for each safety performance measure are included in Table 3.2, along with system conditions in the Collier MPO metropolitan planning area. System conditions reflect baseline performance (2013-2017). The latest safety conditions will be updated annually on a rolling five-year window and reflected

[3] 23 CFR Part 490, Subpart B

within each subsequent system performance report, to track performance over time in relation to baseline conditions and established targets.

Table 3.2. Highway Safety (PM1) Conditions and Performance

Performance Measures	Florida Statewide Baseline Performance (Five-Year Rolling Average) 2012-2016	2013-2017	2014-2018	Calendar Year 2020 Florida Performance Targets
Number of Fatalities	2,688.2	2,825.4	2,972.0	0
Rate of Fatalities per 100 Million VMT	1.33	1.36	1.39	0
Number of Serious Injuries	20,844.2	20,929.2	20,738.4	0
Rate of Serious Injuries per 100 Million VMT	10.36	10.13	9.77	0
Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries	3,294.4	3,304.2	3,339.6	0

Baseline Conditions

After FDOT set its Safety Performance Measures targets in 2018, both FDOT and the Collier MPO established 2017 Baseline Safety Performance Measures. To evaluate baseline Safety Performance Measures, the most recent five-year rolling average (2013-2017) of crash data and VMT were utilized. Table 3-2 presents the Baseline Safety Performance Measures for Florida and Collier MPO.

Table 3.2 – Baseline Safety Performance Measures – 2013-2017 Rolling Five-Year Average

Performance Measure	Florida	Collier MPO
Number of Fatalities	2,979.0	36.2
Number of Serious Injuries	20,653.6	186.2
Fatality Rate per 100 million Vehicle Miles Traveled (VMT)	1.398	1.038
Serious Injury Rate per 100 million Vehicle Miles Traveled (VMT)	9.732	5.263
Total number of non-motorized fatalities and serious injuries	3,267.0	39.2

Trends Analysis

The process used to develop the MPO's Long-Range Transportation Plan includes analysis of safety data trends, including the location and factors associated with crashes with emphasis on fatalities and serious

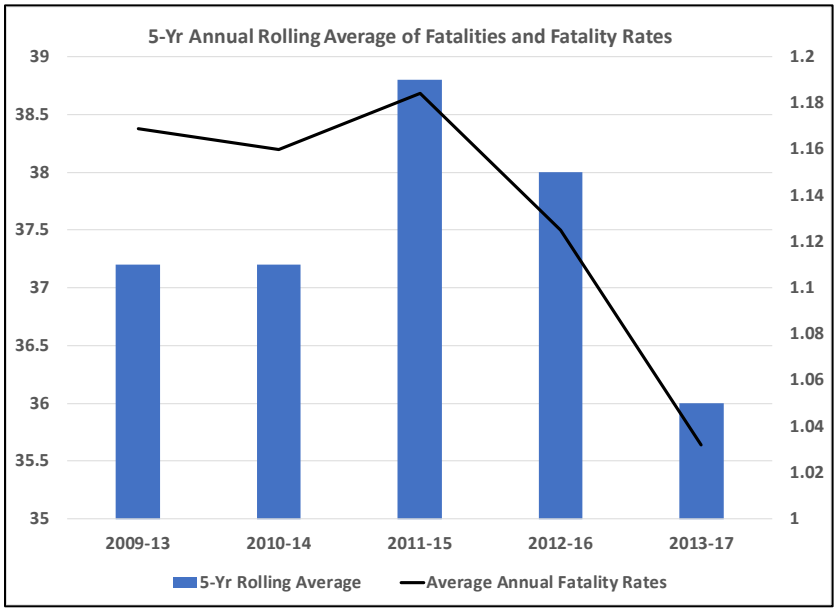
injuries. These data are used to help identify regional safety issues and potential safety strategies for the LRTP and TIP.

The MPO uses crash data tracking fatalities and serious injuries in Collier County to analyze past trends and identify regional safety issues. Tracking these measures will help to estimate the effectiveness of future MPO transportation investment, as reflected

in the TIP. Table 3-3 shows the changes in Safety Performance Measures for Collier MPO from 2009 through 2017. The measures shown in Table 3-3 were calculated by following the same methodology as that used to calculate the baseline conditions.

Table 3-3 Safety Performance Measure Trends in Collier County

Performance Measure	2009-2013	2010-2014	2011-2015	2012-2016	2013-2017
Number of Fatalities	37.2	37.2	38.8	38.0	36.2
Number of Serious Injuries	184.0	174.0	175.2	177.2	186.2
Fatality Rate per 100 million Vehicle Miles Traveled (VMT)	1.169	1.160	1.184	1.125	1.038
Serious Injury Rate per 100 million Vehicle Miles Traveled (VMT)	5.790	5.445	5.388	5.252	5.263
Total number of non-motorized fatalities and serious injuries	37.2	38.6	37.6	40.0	39.2



Coordination with Statewide Safety Plans and Processes

The Collier MPO recognizes the importance of linking goals, objectives, and investment priorities to established performance objectives, and that this link is critical to the achievement of national transportation goals and statewide and regional performance targets. As such, the Collier MPO 2040 LRTP reflects the goals, objectives, performance measures, and targets as they are available and described in other state and public transportation plans and processes; specifically the Florida Strategic Highway Safety Plan (SHSP), the Florida Highway Safety Improvement Program (HSIP), and the Florida Transportation Plan (FTP).

- The 2016 Florida Strategic Highway Safety Plan (SHSP) is the statewide plan focusing on how to accomplish the vision of eliminating fatalities and reducing serious injuries on all public roads. The SHSP was developed in coordination with Florida's 27 metropolitan planning organizations (MPOs) through Florida's Metropolitan Planning Organization Advisory Council (MPOAC). The SHSP guides FDOT, MPOs, and other safety partners in addressing safety and defines a framework for implementation activities to be carried out throughout the state.
- The FDOT HSIP process provides for a continuous and systematic process that identifies and reviews traffic safety issues around the state to identify locations with potential for improvement. The goal of the HSIP process is to reduce the number of crashes, injuries, and fatalities by eliminating certain predominant types of crashes through the implementation of engineering solutions.
- Transportation projects are identified and prioritized with the MPOs and non-metropolitan local governments. Data are analyzed for each potential project, using traffic safety data and traffic demand modeling, among other data. The FDOT Project Development and Environment Manual requires the consideration of safety when preparing a proposed project's purpose and need, and defines several factors related to safety, including crash modification factor and safety performance factor, as part of the analysis of alternatives. MPOs and local governments consider safety data analysis when determining project priorities.

LRTP Safety Priorities

The Collier MPO 2040 LRTP increases the safety of the transportation system for motorized and non-motorized users as required. The LRTP aligns with the Florida SHSP and the FDOT HSIP with specific strategies to improve safety performance focused on prioritized safety projects, pedestrian and/or bicycle safety enhancements, and traffic operation improvements to address our goal to reduce fatalities and serious injuries.

The LRTP identifies safety needs within the metropolitan planning area and provides funding for targeted safety improvements. The Collier MPO has developed a project selection process that incorporates safety in its Project Selection Criteria (see Appendix B 2040 Needs Assessment with Cost Feasible Plan Selection Criteria) The 2040 LRTP includes a Goal to Increase the Safety of the Transportation System for Users p3-4:

"The safety of the users of the transportation system is an important factor in the MPO's planning and project development process. Although not used as a measurable project selection criteria due to the la ck of a consistent correlation between the primary goal of increasing highway capacity and improving system safety, the need for safety-related improvements is none-the-less addressed by the MPO through a variety of practices, including walkable community studies, its CMS/ITS and pathways implementation programs and by ensuring that bicycle and pedestrian-friendly features are incorporated into new highway and transit projects."

The Collier MPO 2040 LRTP will provide information from the FDOT HSIP annual reports to track the progress made toward the statewide safety performance targets. The MPO will document the progress on any safety performance targets established by the MPO for its planning area.

4 - PAVEMENT AND BRIDGE CONDITION MEASURES (PM2)

Pavement and Bridge Condition Performance Measures and Targets Overview

In January 2017, USDOT published the Pavement and Bridge Condition Performance Measures Final Rule, which is also referred to as the PM2 rule. This rule establishes the following six performance measures:

1. Percent of Interstate pavements in good condition;
2. Percent of Interstate pavements in poor condition;
3. Percent of non-Interstate National Highway System (NHS) pavements in good condition;
4. Percent of non-Interstate NHS pavements in poor condition;
5. Percent of NHS bridges (by deck area) classified as in good condition; and
6. Percent of NHS bridges (by deck area) classified as in poor condition.

The four pavement condition measures represent the percentage of lane-miles on the Interstate and non-Interstate NHS that are in good condition or poor condition. The PM2 rule defines NHS pavement types as asphalt, jointed concrete, or continuous concrete. Five metrics are used to assess pavement condition:

- International Roughness Index (IRI) - an indicator of roughness; applicable to asphalt, jointed concrete, and continuous concrete pavements;
- Cracking percent - percentage of the pavement surface exhibiting cracking; applicable to asphalt, jointed concrete, and continuous concrete pavements;
- Rutting - extent of surface depressions; applicable to asphalt pavements only;
- Faulting - vertical misalignment of pavement joints; applicable to jointed concrete pavements only; and
- Present Serviceability Rating (PSR) – a quality rating applicable only to NHS roads with posted speed limits of less than 40 miles per hour (e.g., toll plazas, border crossings). States may choose to collect and report PSR for applicable segments as an alternative to the other four metrics.

For each pavement metric, a threshold is used to establish good, fair, or poor condition. Using these metrics and thresholds, pavement condition is assessed for each 0.1 mile section of the through travel lanes of mainline highways on the Interstate or the non-Interstate NHS. Asphalt pavement is assessed using the IRI, cracking, and rutting metrics, while jointed concrete is assessed using IRI, cracking, and faulting. For these two pavement types, a pavement section is rated good if the rating for all three metrics are good, and poor if the ratings for two or more metrics are poor.

Continuous concrete pavement is assessed using the IRI and cracking metrics. For this pavement type, a pavement section is rated good if both metrics are rated good, and poor if both metrics are rated poor.

If a state collects and reports PSR for any applicable segments, those segments are rated according to the PSR scale. For all three pavement types, sections that are not good or poor are rated fair.

The good/poor measures are expressed as a percentage and are determined by summing the total lane-miles of good or poor highway segments and dividing by the total lane-miles of all highway segments on the applicable system. Pavement in good condition suggests that no major investment is needed and should be considered for preservation treatment. Pavement in poor condition suggests major reconstruction investment is needed due to either ride quality or a structural deficiency.

The bridge condition measures refer to the percentage of bridges by deck area on the NHS that are in good condition or poor condition. The measures assess the condition of four bridge components: deck, superstructure, substructure, and culverts. Each component has a metric rating threshold to establish good, fair, or poor condition. Each bridge on the NHS is evaluated using these ratings. If the lowest rating of the four metrics is greater than or equal to seven, the structure is classified as good. If the lowest rating is less than or equal to four, the structure is classified as poor. If the lowest rating is five or six, it is classified as fair.

The bridge measures are expressed as the percent of NHS bridges in good or poor condition. The percent is determined by summing the total deck area of good or poor NHS bridges and dividing by the total deck area of the bridges carrying the NHS. Deck area is computed using structure length and either deck width or approach roadway width.

A bridge in good condition suggests that no major investment is needed. A bridge in poor condition is safe to drive on; however, it is nearing a point where substantial reconstruction or replacement is needed.

Federal rules require state DOTs and MPOs to coordinate when setting pavement and bridge condition performance targets and monitor progress towards achieving the targets. States must establish:

- Four-year statewide targets for the percent of Interstate pavements in good and poor condition;
- Two-year and four-year targets for the percent of non-Interstate NHS pavements in good and poor condition; and
- Two-year and four-year targets for the percent of NHS bridges (by deck area) in good and poor condition.

MPOs must establish four-year targets for all six measures. MPOs can either agree to program projects that will support the statewide targets or establish their own quantifiable targets for the MPO's planning area.

The two-year and four-year targets represent pavement and bridge condition at the end of calendar years 2019 and 2021, respectively.

Pavement and Bridge Condition Baseline Performance and Established Targets

This System Performance Report discusses the condition and performance of the transportation system for each applicable target as well as the progress achieved by the MPO in meeting targets in comparison with system performance recorded in previous reports. Because the federal performance measures are new, performance of the system for each measure has only recently been collected and targets have only recently been established. Accordingly, this first Collier MPO LRTP System Performance Report highlights performance for the baseline period, which is 2017. FDOT will continue to monitor and report performance on a biennial basis. Future System Performance Reports will discuss progress towards meeting the targets since this initial baseline report.

Table 4.1 presents baseline performance for each PM2 measure for the State and for the MPO planning area as well as the two-year and four-year targets established by FDOT for the State.

Table 4.1. Pavement and Bridge Condition (PM2) Performance and Targets

Performance Measures	Statewide (2017 Baseline)	Statewide 2019 Actual	Statewide 2-year Target (2019)	Statewide 4-year Target (2021)	Collier MPO 2017 Baseline	Collier MPO 2018 Actual
Percent of Interstate pavements in good condition	66.0%		n/a	≥60%	36.2%	38.1%
Percent of Interstate pavements in poor condition	0.1%		n/a	<5%	0%	0%
Percent of non-Interstate NHS pavements in good condition	76.4%		≥40%	≥40%	50.2%	47.1%
Percent of non-Interstate NHS pavements in poor condition	3.6%		<5%	<5%	0%	0%
Percent of NHS bridges (by deck area) in good condition	67.7%		≥50%	≥50%	83.58%	82.21%
Percent of NHS bridges (by deck area) in poor condition	1.2%		<10%	<10%	0%	0%

FDOT established the statewide PM2 targets on May 18, 2018. In determining its approach to establishing performance targets for the federal pavement and bridge condition performance measures, FDOT considered many factors. FDOT is mandated by Florida Statute 334.046 to preserve the state's pavement and bridges to specific standards. To adhere to the statutory guidelines, FDOT prioritizes funding allocations to ensure the current transportation system is adequately preserved and maintained before funding is allocated for capacity improvements. These statutory guidelines envelope the statewide federal targets that have been established for pavements and bridges.

In addition, MAP-21 requires FDOT to develop a Transportation Asset Management Plan (TAMP) for all NHS pavements and bridges within the state. The TAMP must include investment strategies leading to a program of projects that would make progress toward achievement of the state DOT targets for asset condition and performance of the NHS. FDOT's TAMP was updated to reflect MAP-21 requirements in 2018 and the final TAMP was approved on June 28, 2019.

Further, the federal pavement condition measures require a new methodology that is a departure from the methods currently used by FDOT and uses different ratings and pavement segment lengths. For bridge condition, the performance is measured in deck area under the federal measure, while the FDOT programs its bridge repair or replacement work on a bridge by bridge basis. As such, the federal measures are not directly comparable to the methods that are most familiar to FDOT.

In consideration of these differences, as well as the unfamiliarity associated with the new required processes, FDOT took a conservative approach when setting its initial pavement and bridge condition targets.

The Collier MPO agreed to support FDOT's pavement and bridge condition performance targets on October 12, 2018. By adopting FDOT's targets, the Collier MPO agrees to plan and program projects that help FDOT achieve these targets.

The Collier MPO recognizes the importance of linking goals, objectives, and investment priorities to established performance objectives, and that this link is critical to the achievement of national transportation goals and statewide and regional performance targets. As such, the Collier MPO 2040 LRTP reflects the goals, objectives, performance measures, and targets as they are described in other state and public transportation plans and processes, including the Florida Transportation Plan (FTP) and the Florida Transportation Asset Management Plan.

- The FTP is the single overarching statewide plan guiding Florida's transportation future. It defines the state's long-range transportation vision, goals, and objectives and establishes the policy framework for the expenditure of state and federal funds flowing through FDOT's work program. One of the seven goals defined in the FTP is Agile, Resilient, and Quality Infrastructure.
- The Florida Transportation Asset Management Plan (TAMP) explains the processes and policies affecting pavement and bridge condition and performance in the state. It presents a strategic and systematic process of operating, maintaining, and improving these assets effectively throughout their life cycle.

The Collier MPO 2040 LRTP seeks to address system preservation, identifies infrastructure needs within the metropolitan planning area, and provides funding for targeted improvements. The Collier MPO 2040 LRTP incorporates Goal 7 of the Metropolitan and Statewide Planning Factors as shown on p3-7 and as follows:

"Emphasize the preservation of the existing transportation system. The MPO works with FDOT and with its local governments, which are responsible for maintenance and preservation of the transportation system."

On or before October 1, 2020, FDOT will provide FHWA and the Collier MPO a detailed report of pavement and bridge condition performance covering the period of January 1, 2018 to December 31, 2019. FDOT and the Collier MPO also will have the opportunity at that time to revisit the four-year PM2 targets.

5 - SYSTEM PERFORMANCE, FREIGHT, AND CONGESTION MITIGATION & AIR QUALITY IMPROVEMENT PROGRAM MEASURES (PM3)

System Performance/Freight/CMAQ Performance Measures and Targets Overview

In January 2017, USDOT published the System Performance/Freight/CMAQ Performance Measures Final Rule to establish measures to assess passenger and freight performance on the Interstate and non-Interstate National Highway System (NHS), and traffic congestion and on-road mobile source emissions in areas that do not meet federal National Ambient Air Quality Standards (NAAQS). The rule, which is referred to as the PM3 rule, requires MPOs to set targets for the following six performance measures:

National Highway Performance Program (NHPP)

1. Percent of person-miles on the Interstate system that are reliable, also referred to as Level of Travel Time Reliability (LOTTR);
2. Percent of person-miles on the non-Interstate NHS that are reliable (LOTTR);

National Highway Freight Program (NHFP)

3. Truck Travel Time Reliability index (TTTR);

Congestion Mitigation and Air Quality Improvement Program (CMAQ)

4. Annual hours of peak hour excessive delay per capita (PHED);
5. Percent of non-single occupant vehicle travel (Non-SOV); and
6. Cumulative 2-year and 4-year reduction of on-road mobile source emissions (NOx, VOC, CO, PM10, and PM2.5) for CMAQ funded projects.

In Florida, only the two LOTTR performance measures and the TTTR performance measure apply. Because all areas in Florida meet current NAAQS, the last three measures listed measures above pertaining to the CMAQ Program do not currently apply in Florida.

LOTTR is defined as the ratio of longer travel times (80th percentile) to a normal travel time (50th percentile) over all applicable roads during four time periods (AM peak, Mid-day, PM peak, and weekends) that cover the hours of 6 a.m. to 8 p.m. each day. The LOTTR ratio is calculated for each roadway segment, essentially comparing the segment with itself. Segments with LOTTR ≥ 1.50 during any of the above time periods are considered unreliable. The two LOTTR measures are expressed as the percent of person-miles traveled on the Interstate or non-Interstate NHS system that are reliable. Person-miles consider the number of people traveling in buses, cars, and trucks over these roadway segments. To obtain person miles traveled, the vehicle miles traveled (VMT) for each segment are multiplied by the average vehicle occupancy for each type of vehicle on the roadway. To calculate the percent of person miles traveled that are reliable, the sum of the number of reliable person miles traveled is divide by the sum of total person miles traveled.

TTTR is defined as the ratio of longer truck travel times (95th percentile) to a normal travel time (50th percentile) over the Interstate during five time periods (AM peak, Mid-day, PM peak, weekend, and overnight) that cover all hours of the day. TTTR is quantified by taking a weighted average of the maximum TTTR from

the five time periods for each Interstate segment. The maximum TTTR is weighted by segment length, then the sum of the weighted values is divided by the total Interstate length to calculate the Travel Time Reliability Index.

The data used to calculate these PM3 measures are provided by FHWA via the National Performance Management Research Data Set (NPMRDS). This dataset contains travel times, segment lengths, and Annual Average Daily Travel (AADT) for Interstate and non-Interstate NHS roads.

The PM3 rule requires state DOTs and MPOs to coordinate when establishing performance targets for these measures and to monitor progress towards achieving the targets. FDOT must establish:

- Two-year and four-year statewide targets for percent of person-miles on the Interstate system that are reliable;
- Four-year targets for the percent of person-miles on the non-Interstate NHS that are reliable[4]; and
- Two-year and four-year targets for truck travel time reliability

MPOs must establish four-year performance targets for all three measures within 180 days of FDOT establishing statewide targets. MPOs establish targets by either agreeing to program projects that will support the statewide targets or setting quantifiable targets for the MPO's planning area.

The two-year and four-year targets represent system performance at the end of calendar years 2019 and 2021, respectively.

PM3 Baseline Performance and Established Targets

The System Performance Report discusses the condition and performance of the transportation system for each applicable PM3 target as well as the progress achieved by the MPO in meeting targets in comparison with system performance recorded in previous reports. Because the federal performance measures are new, performance of the system for each measure has only recently been collected and targets have only recently been established. Accordingly, this Collier MPO 2040 LRTP System Performance Report highlights performance for the baseline period, which is 2017. FDOT will continue to monitor and report performance on a biennial basis. Future System Performance Reports will discuss progress towards meeting the targets since this initial baseline report.

Table 5.1 presents baseline performance for each PM3 measure for the state and for the MPO planning area as well as the two-year and four-year targets established by FDOT for the state

[4] Beginning with the second performance period covering January 1, 2022 to December 31, 2025, two-year targets will be required in addition to four-year targets for the percent of person-miles on the non-Interstate NHS that are reliable measure.

Table 5.1. System Performance and Freight (PM3) - Performance and Targets

Performance Measures	Statewide (2017 Baseline)	Statewide 2019 Actual	Statewide 2-year Target (2019)	Statewide 4-year Target (2021)	Collier MPO 2017 Baseline	Collier MPO 2018 Actual
Percent of person-miles on the Interstate system that are reliable	82.2%		≥75.0%	≥70.0%	100%	100%
Percent of person-miles on the non-Interstate NHS that are reliable	84.0%		n/a	≥50.0%	97%	98%
Truck travel time reliability index (TTTR)	1.43		≤1.75	≤2.00	1.12	1.15

FDOT established the statewide PM3 targets on May 18, 2018. In setting the statewide targets, FDOT reviewed external and internal factors that may affect reliability, conducted a trend analysis for the performance measures, and developed a sensitivity analysis indicating the level of risk for road segments to become unreliable within the time period for setting targets. One key conclusion from this effort is that there is a lack of availability of extended historical data with which to analyze past trends and a degree of uncertainty about future reliability performance. Accordingly, FDOT took a conservative approach when setting its initial PM3 targets.

The Collier MPO agreed to support FDOT's PM3 targets on October 12, 2018. By adopting FDOT's targets, the Collier MPO agrees to plan and program projects that help FDOT achieve these targets.

The Collier MPO recognizes the importance of linking goals, objectives, and investment priorities to established performance objectives, and that this link is critical to the achievement of national transportation goals and statewide and regional performance targets. As such, the Collier MPO 2040 LRTP reflects the goals, objectives, performance measures, and targets as they are described in other state and public transportation plans and processes, including the Florida Transportation Plan (FTP) and the Florida Freight Mobility and Trade Plan.

- The FTP is the single overarching statewide plan guiding Florida's transportation future. It defines the state's long-range transportation vision, goals, and objectives and establishes the policy framework for the expenditure of state and federal funds flowing through FDOT's work program. One of the seven goals of the FTP is Efficient and Reliable Mobility for People and Freight.
- The Florida Freight Mobility and Trade Plan presents a comprehensive overview of the conditions of the freight system in the state, identifies key challenges and goals, provides project needs, and identifies funding sources. Truck reliability is specifically called forth in this plan, both as a need as well as a goal.

The Collier MPO 2040 LRTP seeks to address system reliability and congestion mitigation through various means, including capacity expansion and operational improvements. The 2040 LRTP incorporates the following Goal: Reduce Roadway Congestion, p3-3 with the following language:

"Congestion, and the delay that accompanies it, is a serious cost to the residents of Collier County. It reduces their ability to access jobs, shopping, recreation and other activities. The Collier 2040 LRTP places a great deal of emphasis on reducing congestion, thereby enhancing the quality of life of County residents. During the ranking of projects., this Goal received a weighting factor of 2.

Objective: Reduce the aggregate lane miles with volume to capacity ratio (v/c) exceeding 1.0, based on the 2040 traffic assignment to the existing plus committed (E+C) network.

Project Selection Criteria:

- Improvement to an existing deficient facility, or improvement to a new or neighboring facility intended to relieve an existing deficient facility with v/c greater than 1.3=5
- Improvement to an existing deficient facility, or improvement to a new of neighboring facility intended to relieve an existing deficient facility with v/c greater than 1.15=3
- Improvement to an existing deficient facility, or improvement to a new of neighboring facility intended to relieve an existing deficient facility with v/c greater than 1.0=1"

On or before October 1, 2020, FDOT will provide FHWA and the Collier MPO a detailed report of performance for the PM3 measures covering the period of January 1, 2018 to December 31, 2019. FDOT and the Collier MPO also will have the opportunity at that time to revisit the four-year PM3 targets.

6 - TRANSIT ASSET MANAGEMENT MEASURES

Transit Asset Performance

On July 26, 2016, FTA published the final Transit Asset Management rule. This rule applies to all recipients and subrecipients of Federal transit funding that own, operate, or manage public transportation capital assets. The rule defines the term "state of good repair," requires that public transportation providers develop and implement transit asset management (TAM) plans, and establishes state of good repair standards and performance measures for four asset categories: equipment, rolling stock, infrastructure, and facilities. The rule became effective on October 1, 2018.

Table 6.1 below identifies performance measures outlined in the final rule for transit asset management.

Table 6.1. FTA TAM Performance Measures

Asset Category	Performance Measure and Asset Class
1. Equipment	Percentage of non-revenue, support-service and maintenance vehicles that have met or exceeded their useful life benchmark
2. Rolling Stock	Percentage of revenue vehicles within a particular asset class that have either met or exceeded their useful life benchmark
3. Infrastructure	Percentage of track segments with performance restrictions
4. Facilities	Percentage of facilities within an asset class rated below condition 3 on the TERM scale

For equipment and rolling stock classes, useful life benchmark (ULB) is defined as the expected lifecycle of a capital asset, or the acceptable period of use in service, for a particular transit provider's operating environment. ULB considers a provider's unique operating environment such as geography and service frequency.

Public transportation agencies are required to establish and report transit asset management targets annually for the following fiscal year. Each public transit provider or its sponsors must share its targets, TAM, and asset condition information with each MPO in which the transit provider's projects and services are programmed in the MPO's TIP.

MPOs are required to establish initial transit asset management targets within 180 days of the date that public transportation providers establish initial targets. However, MPOs are not required to establish transit asset management targets annually each time the transit provider establishes targets. Instead, subsequent MPO targets must be established when the MPO updates the LRTP.

When establishing transit asset management targets, the MPO can either agree to program projects that will support the transit provider targets or establish its own separate regional transit asset management targets for the MPO planning area. In cases where two or more providers operate in an MPO planning area and establish different targets for a given measure, the MPO has the option of coordinating with the providers to establish a single target for the MPO planning area, or establishing a set of targets for the MPO planning area that reflects the differing transit provider targets.

To the maximum extent practicable, transit providers, states, and MPOs must coordinate with each other in the selection of performance targets.

The TAM rule defines two tiers of public transportation providers based on size parameters. Tier I providers are those that operate rail service or more than 100 vehicles in all fixed route modes, or more than 100 vehicles in one non-fixed route mode. Tier II providers are those that are a subrecipient of FTA 5311 funds, or an American Indian Tribe, or have 100 or less vehicles across all fixed route modes, or have 100 vehicles or less in one non-fixed route mode. A Tier I provider must establish its own transit asset management targets, as well as report performance and other data to FTA. A Tier II provider has the option to establish its own targets or to participate in a group plan with other Tier II providers whereby targets are established by a plan sponsor, typically a state DOT, for the entire group.

A total of 20 transit providers participated in the FDOT Group TAM Plan and continue to coordinate with FDOT on establishing and reporting group targets to FTA through the National Transit Database (NTD) (Table 6.2). The participants in the FDOT Group TAM Plan are comprised of the Section 5311 Rural Program and open-door Section 5310 Enhanced Mobility of Seniors & Individuals with Disabilities FDOT subrecipients. The Group TAM Plan was adopted in October 2018 and covers fiscal years 2018-2019 through 2021-2022. Updated targets were submitted to NTD in 2019.

Table 6.2. Florida Group TAM Plan Participants

District	Participating Transit Providers	
1	Good Wheels, Inc Central Florida Regional Planning Council	DeSoto County Transportation
2	Suwannee Valley Transit Big Bend Transit Baker County Transit Nassau County Transit	 Ride Solutions Levy County Transit Suwannee River Economic Council
3	Tri-County Community Council Big Bend Transit Gulf County ARC	Calhoun Transit Liberty County Transit JTRANS Wakulla Transit
4	*No participating providers*	
5	Sumter Transit Marion Transit	
6	Key West Transit	
7	*No participating providers*	

Collier Area Transit (CAT), a Tier II provider, is the only transit provider within the MPO region. CAT does not participate in the FDOT Group TAM Plan as it has too few busses to meet the criteria. On November 9, 2018, the Collier MPO agreed to support the Collier County Board of County Commissioners (BCC) / Collier Area Transit (CAT) transit asset management targets which were adopted on October 23, 2018, thus agreeing to plan and program projects in the TIP that once implemented, are anticipated to make progress toward achieving the transit provider targets. Table 6.3 displays the TAM performance measures targets for CAT and the current conditions within the Collier MPO.

The transit asset management targets are based on the condition of existing transit assets and planned investments in equipment, rolling stock, infrastructure, and facilities. The targets reflect the most recent data available on the number, age, and condition of transit assets, and expectations and capital investment plans for improving these assets. Table 6.3 summarizes both existing conditions for the most recent year available, and the targets.

Table 6.3. FTA TAM Targets for Collier Area Transit (CAT)

Asset Category	FDOT and MPO Transit Targets	Current Conditions within Collier MPO	Met or Exceed Target
Equipment	10% have met or exceeded their Useful Like Benchmark (ULB)	0% exceed ULB	Yes
Rolling Stock	10% have met or exceeded their ULB	50% exceed ULB	No
Infrastructure	n/a	n/a	n/a
Facilities	25% of facilities less than 3.0 on the TERM scale	0% at or above 3.0 TERM	Yes

TAM Performance

The Collier MPO recognizes the importance of linking goals, objectives, and investment priorities to stated performance objectives, and that establishing this link is critical to the achievement of national transportation goals and statewide and regional performance targets. As such, the LRTP directly reflects the goals, objectives, performance measures, and targets as they are described in other public transportation plans and processes, including the System-wide Transit Needs Assessment beginning on p4-27, which builds upon the Collier County FY 2016-2025 Transit Development Plan (TDP) Major Update, the Collier 2034 LRTP and the 2013 Collier Area Transit Comprehensive Operations Analysis (COA) as well as public input, regional model ridership projections and transit market assessments.

To support progress towards TAM performance targets, transit investment and maintenance funding in the 2040 LRTP Transit Cost Feasible Plan totals approximately $402.5 million (see Table 6-7 p6-32), approximately 34 percent of total LRTP funding. and 100% percent of requested CAT funding for transit preservation. Improving the State of Good Repair (SGR) of capital assets is an overarching goal of this process.

7 - TRANSIT SAFETY PERFORMANCE

The Federal Transit Administration (FTA) published a final Public Transportation Agency Safety Plan (PTSAP) rule and related performance measures as authorized by Section 20021 of the Moving Ahead for Progress in the 21st Century Act (MAP– 21). The PTASP rule requires operators of public transportation systems that receive federal financial assistance under 49 U.S.C. Chapter 53 to develop and implement a PTASP based on a safety management systems approach. Development and implementation of PTSAPs is anticipated to help ensure that public transportation systems are safe nationwide.

The rule applies to all operators of public transportation that are a recipient or sub-recipient of FTA Urbanized Area Formula Grant Program funds under 49 U.S.C. Section 5307, or that operate a rail transit system that is subject to FTA's State Safety Oversight Program. The rule does not apply to certain modes of transit service that are subject to the safety jurisdiction of another Federal agency, including passenger ferry operations that are regulated by the United States Coast Guard, and commuter rail operations that are regulated by the Federal Railroad Administration.

Transit Safety Performance Measures

The transit agency sets targets in the PTASP based on the safety performance measures established in the National Public Transportation Safety Plan (NPTSP). The required transit safety performance measures are:

1. Total number of reportable fatalities.
2. Rate of reportable fatalities per total vehicle revenue miles by mode.
3. Total number of reportable injuries.
4. Rate of reportable injuries per total vehicle revenue miles by mode.
5. Total number of reportable safety events.
6. Rate of reportable events per total vehicle revenue miles by mode.

7. System reliability - Mean distance between major mechanical failures by mode.

Each provider of public transportation that is subject to the rule must certify it has a PTASP, including transit safety targets for the above measures, in place no later than July 20, 2020. However, on April 22, 2020, FTA issued a Notice of Enforcement Discretion that extends the PTASP deadline to December 31, 2020 due to the extraordinary operational challenges presented by the COVID-19 public health emergency.

Once the public transportation provider establishes targets, it must make the targets available to MPOs to aid in the planning process. MPOs have 180 days after receipt of the PTASP targets to establish transit safety targets for the MPO planning area. In addition, the Collier MPO must reflect those targets in any LRTP and TIP updated on or after July 20, 2021.

In Florida, each Section 5307 and 5311 transit provider must develop a System Safety Program Plan (SSPP) under Chapter 14-90, Florida Administrative Code. FDOT technical guidance recommends that Florida's transit agencies revise their existing SSPPs to be compliant with the new FTA PTASP requirements.

Transit Provider Coordination with States and MPOs

Key considerations for MPOs and transit agencies:

- Transit operators are required to review, update, and certify their PTASP annually.
- A transit agency must make its safety performance targets available to states and MPOs to aid in the planning process, along with its safety plans.
- To the maximum extent practicable, a transit agency must coordinate with states and MPOs in the selection of state and MPO safety performance targets.
- MPOs are required to establish initial transit safety targets within 180 days of the date that public transportation providers establish initial targets. MPOs are not required to establish transit safety targets annually each time the transit provider establishes targets. Instead, subsequent MPO targets must be established when the MPO updates the TIP or LRTP. When establishing transit safety targets, the MPO can either agree to program projects that will support the transit provider targets or establish its own regional transit targets for the MPO planning area. In cases where two or more providers operate in an MPO planning area and establish different targets for a given measure, the MPO has the option of coordinating with the providers to establish a single target for the MPO planning area, or establishing a set of targets for the MPO planning area that reflects the differing transit provider targets.
- MPOs and states must reference those targets in their long-range transportation plans. States and MPOs must each describe the anticipated effect of their respective transportation improvement programs toward achieving their targets.

Over the course of 2020-2021, the Collier MPO will coordinate with public transportation providers in the planning area on the development and establishment of transit safety targets. LRTP amendments or updates after July 20, 2021 will include the required details about transit safety performance data and targets.

EXECUTIVE SUMMARY
COMMITTEE ACTION
ITEM 7B

Endorse Draft Chapter 4 System-wide Needs Assessment - 2045 LRTP

OBJECTIVE: For the Committee to endorse the Draft Chapter 4 System-wide Needs Assessment for the 2045 LRTP.

CONSIDERATIONS: Jacobs has revised the System-wide Needs Assessment **(Attachment 1)** in response to comments and to incorporate new text on transit needs based on the Transit Development Plan Major Update, approved by the MPO Board on 9/11/2020.

Chapter 4 will be reviewed by the MPO Board at their meeting on October 9, 2020. MPO staff is requesting endorsement in order to move forward in compiling a draft of the entire 2045 LRTP for advisory committee reviews in October and Board review in November. The 2045 LRTP must be adopted at the December 11, 2020 MPO Board meeting in order to meet state and federal requirements for funding.

STAFF RECOMMENDATION: That the Committee endorse the Draft Chapter 4 System-wide Needs Assessment for the 2045 LRTP.

Prepared By: Anne McLaughlin, MPO Director

Attachment:
1. Draft Chapter 4 System-wide Needs Assessment

Collier MPO

2045 Long Range Transportation Plan

Chapter 4 – System-wide Needs Assessment

September 2020

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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:[1]

- 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.

[1] https://www.colliercountyfl.gov/home/showdocument?id=74327

- 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) 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.

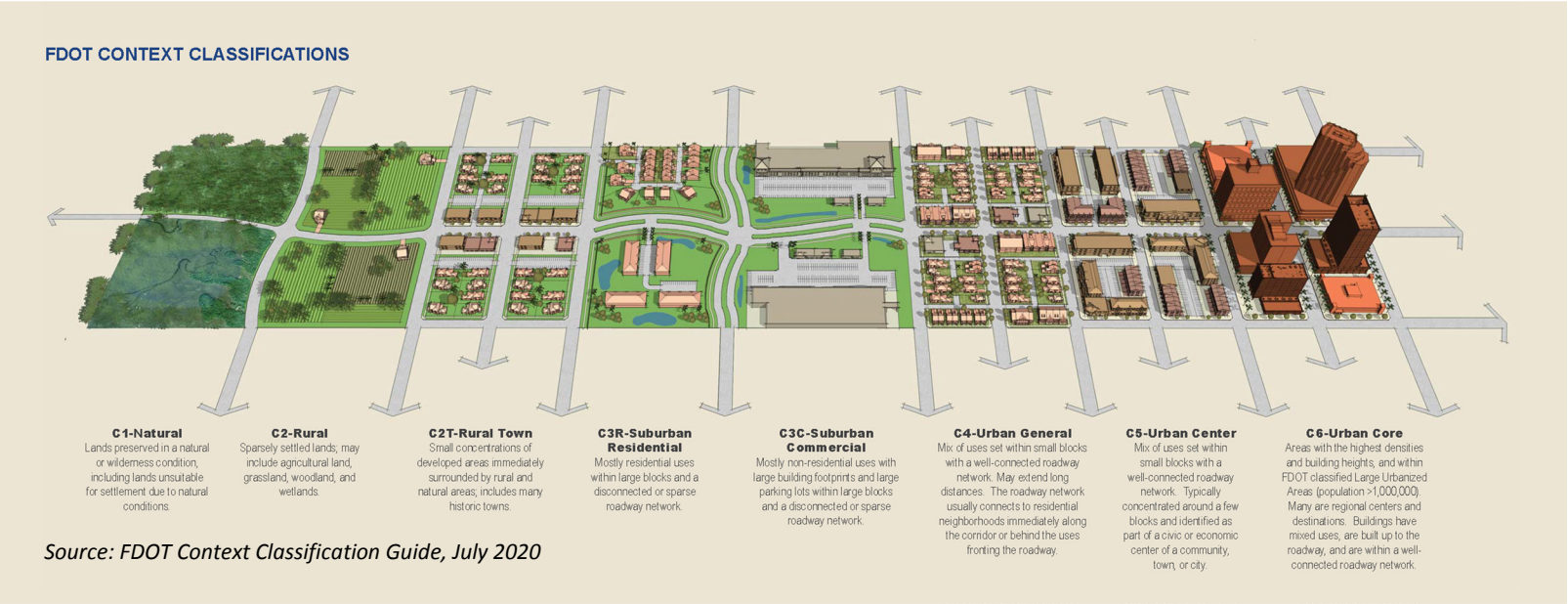


Figure 4-1. FDOT Context Classifications

The following policy constraints are noted in the *City of Naples Comprehensive Plan* Transportation Element amended October 20, 2010:[2]

- 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.

[2] 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.

Additionally, on November 7, 2014, the City of Naples adopted a resolution to support the Southwest Florida Blue Zones Project. The Southwest Florida Blue Zones Project works with community leaders to inspire positive sustainable changes to policy and built-environment to improve the well-being among the community. Such infrastructure as sidewalks and bike lanes improve the ability of community members to move naturally, connect socially, and access healthy food.

The following policy constraints are noted in the *City of Marco Island Comprehensive Plan* Transportation Element amended December 7, 2009:[3]

- 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.

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)

[3] https://www.cityofmarcoisland.com/sites/default/files/fileattachments/growth_management/page/5551/compplanpart1_2009.pdf

- *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

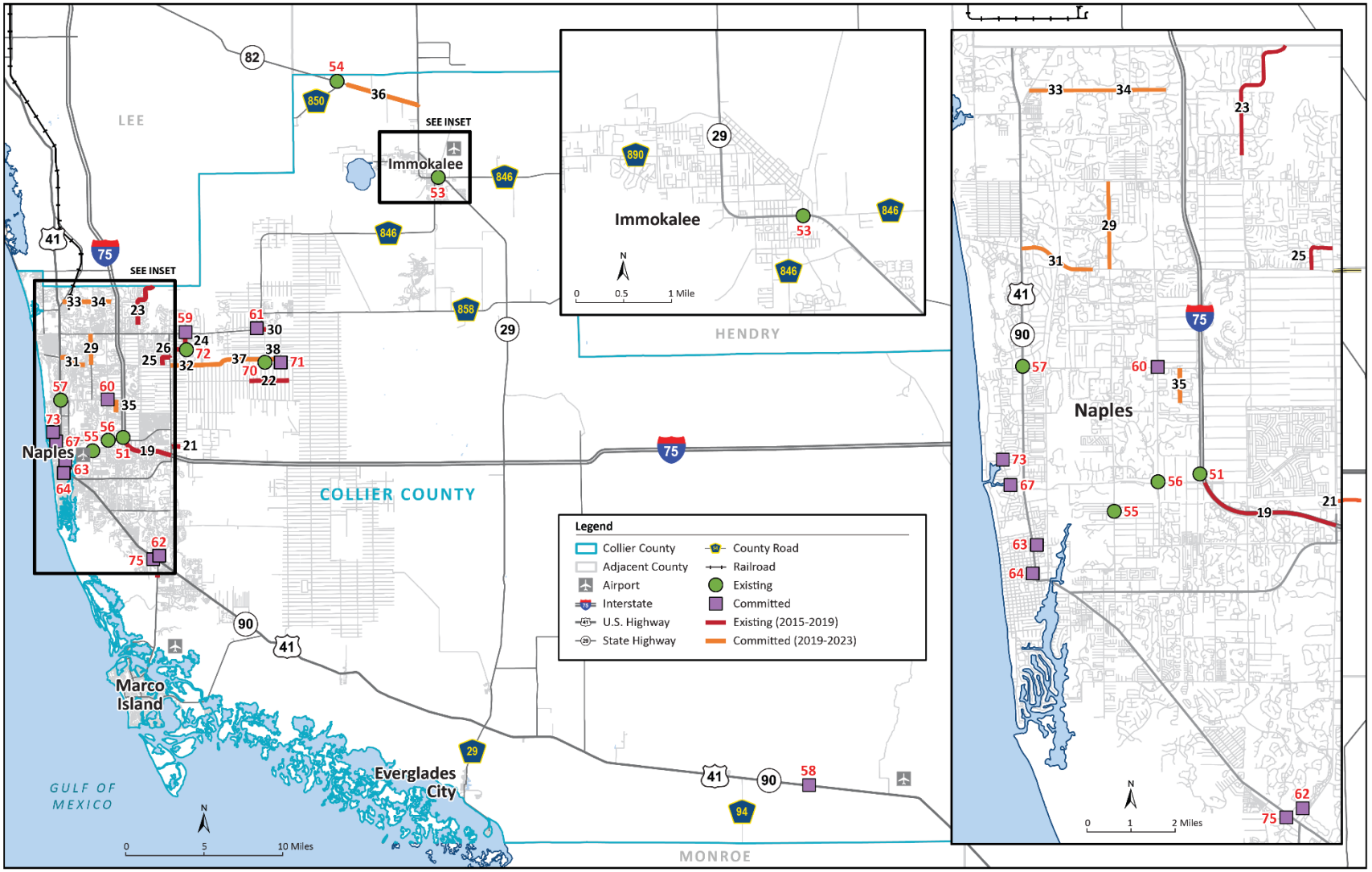


Figure 4-2. 2045 Existing Plus Committed (E+C) Project Map

Table 4-1. 2045 Existing Plus Committed (E+C) Projects

Map ID	Roadway	From	To	Improvement	Agency or Municipality	Included in 2019–2023 TIP?
Existing (2015–2019)						
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?
Committed (2019–2023)						
29	Airport Pulling Rd.[a]	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 [a]	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 [a]	Curry Canal	Wilson Blvd.	New Four-Lane Facility	Collier County	Yes
38	Vanderbilt Beach Rd. Extension [a]	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.[a]	Livingston Rd.	-	Intersection Improvements	Collier County	Yes
61	Randall Blvd.[a]	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.[a]	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.[a]	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

[a] Collier One-Cent Sales Surtax Transportation Project

Note:

FPN = Financial Project Number

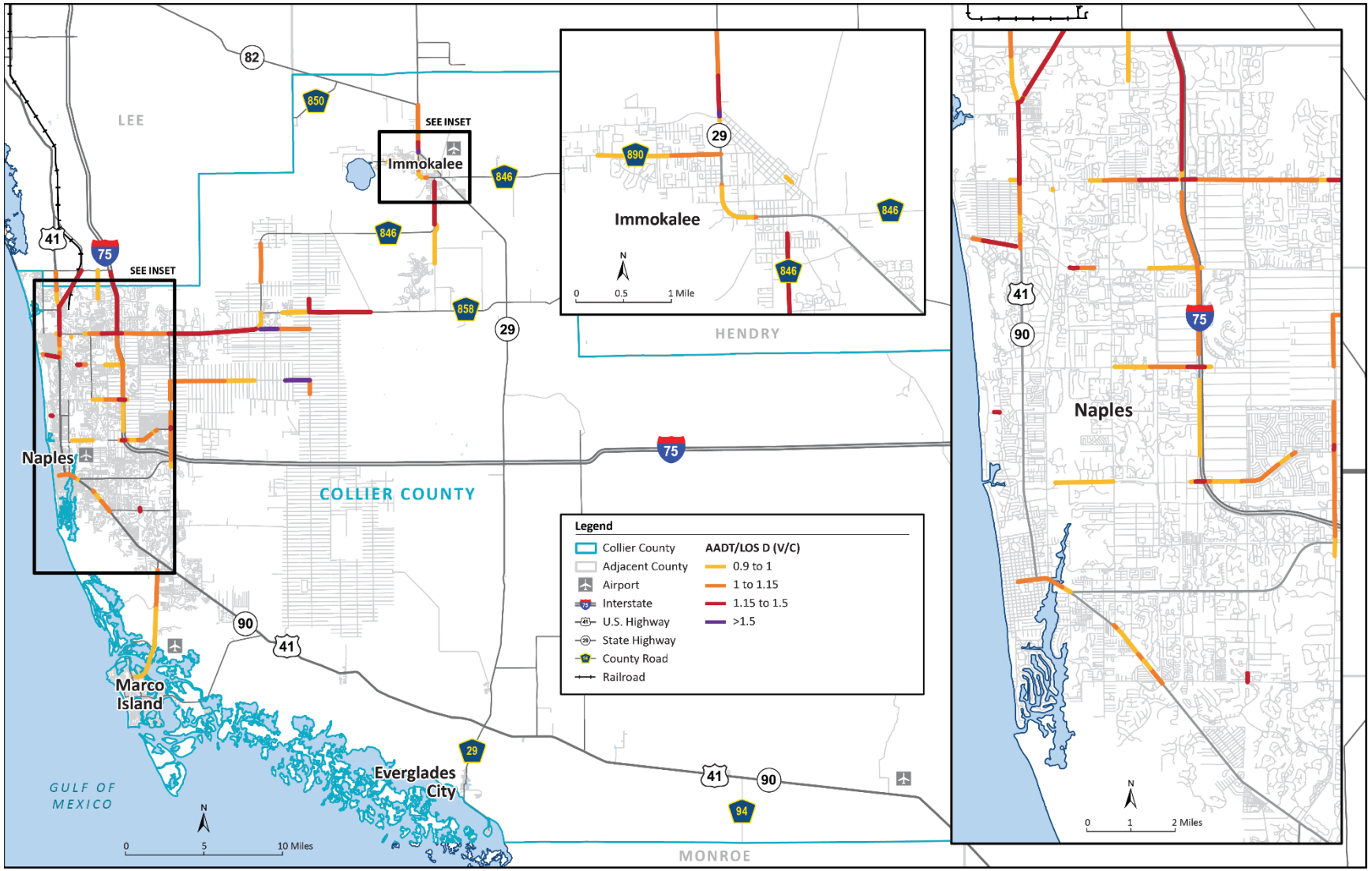


Figure 4-3. 2045 E+C Travel Network Congestion Map

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 infra-structure 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[a]	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)
115	23rd St. SW (south of Golden Gate Blvd.)

[a] Refer to Figure 4-9

Freight

The Collier Freight Network is defined in the Collier MPO 2040 LRTP Freight Congestion Considerations Technical Memorandum[4] 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.[5] 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 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

[4] https://www.colliermpo.org/wp-content/uploads/2018/11/3-Freight-Considerations-Tech-Memo.pdf

[5] FDOT Traffic Online (2019 Volumes) https://tdaappsprod.dot.state.fl.us/fto/

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

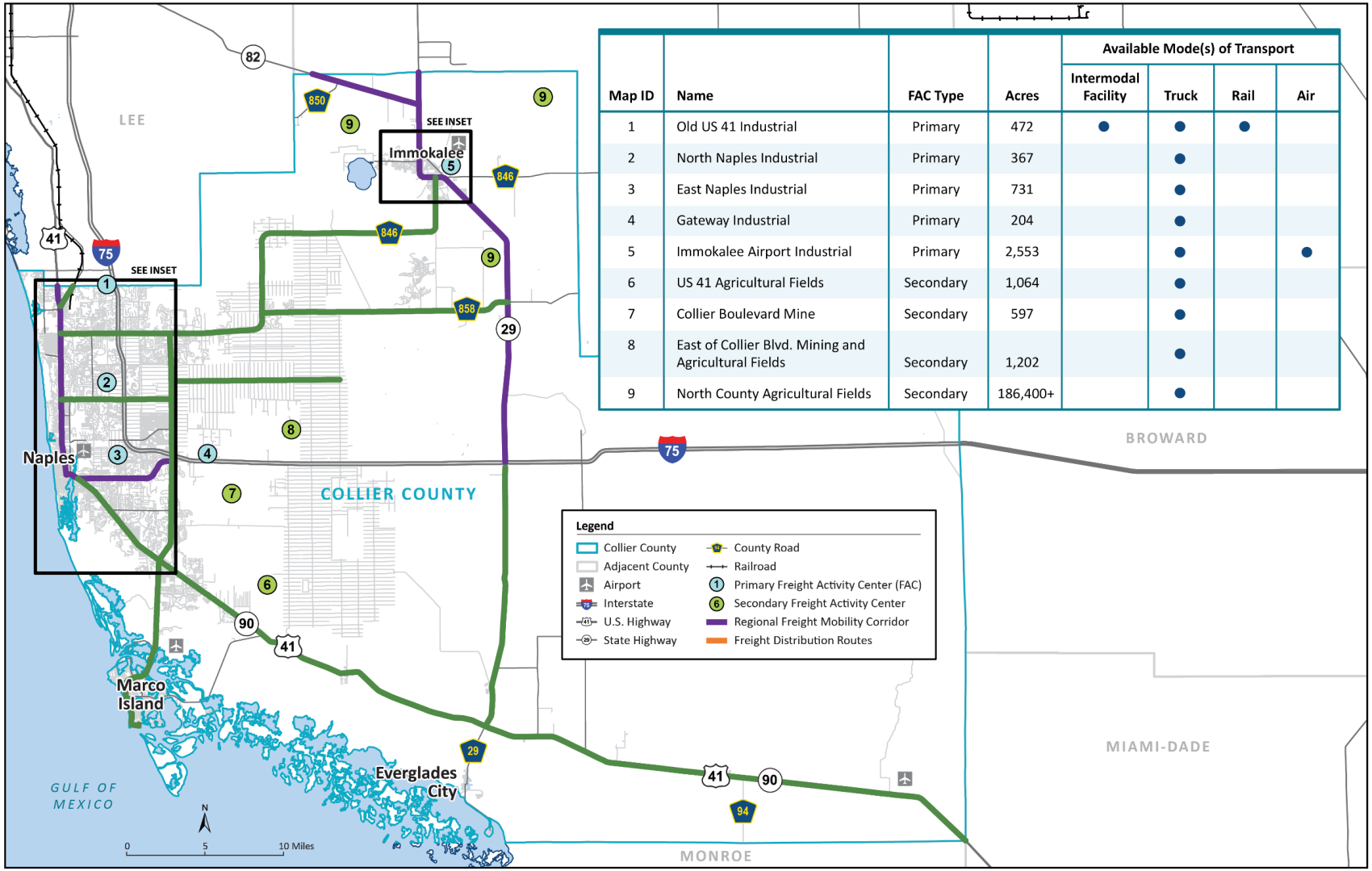
Freight distribution routes serve to distribute truck traffic to local delivery areas. These include state roadways and other local roadways designated in local truck route ordinances at the county and municipal levels. The freight distribution routes within the County consist of:

- 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*[6] 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.

[6] https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/rail/fmtp/april-2020/fmtp-tm-vp-april-2020.pdf



Map ID	Name	FAC Type	Acres	Available Mode(s) of Transport			
				Intermodal Facility	Truck	Rail	Air
1	Old US 41 Industrial	Primary	472	●	●	●	
2	North Naples Industrial	Primary	367		●		
3	East Naples Industrial	Primary	731		●		
4	Gateway Industrial	Primary	204		●		
5	Immokalee Airport Industrial	Primary	2,553		●		●
6	US 41 Agricultural Fields	Secondary	1,064		●		
7	Collier Boulevard Mine	Secondary	597		●		
8	East of Collier Blvd. Mining and Agricultural Fields	Secondary	1,202		●		
9	North County Agricultural Fields	Secondary	186,400+		●		

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.[7] 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.[8] 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*[9] provides an evaluation of existing and future congestion issues in the County and associated municipalities. **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

[7] https://www.colliercountyfl.gov/your-government/divisions-a-e/airport-authority/immokalee-regional-airport
[8] https://ops.fhwa.dot.gov/plan4ops/focus_areas/cmp.htm
[9] https://www.colliermpo.org/wp-content/uploads/Baseline-Conditions-Report-V5-Combined-1.pdf

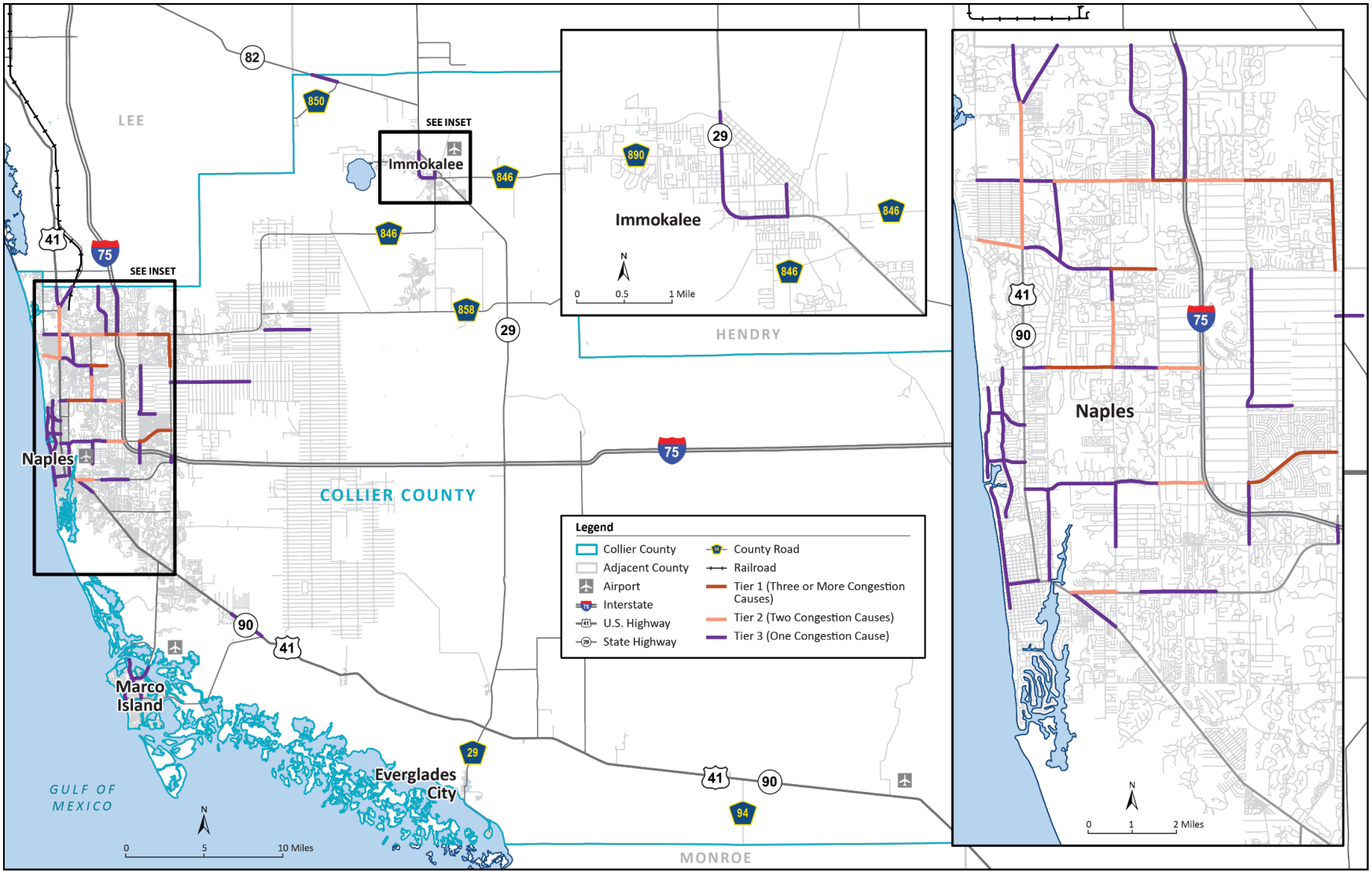


Figure 4-6. TSPR Congestion Hot Spot Locations

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*,[10] 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 map presents total crash locations between 2014 to 2018, as well as crash locations where a fatality by vehicle, including a pedestrian, or bicyclist occurred.

[10] https://www.colliermpo.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[a]	Top 20 Crash Frequency[b] 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[a]	Top 20 Crash Frequency[b] 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 Pkwy.	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 Pkwy.	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

[a] Crash rate expressed as the number of crashes per 100 million vehicle miles of travel (AADT x Length) for the 5-year reporting period.

[b] Frequency is defined as the number of crashes occurring within a specific jurisdiction, on a roadway segment, or at an intersection.

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)[11] 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:

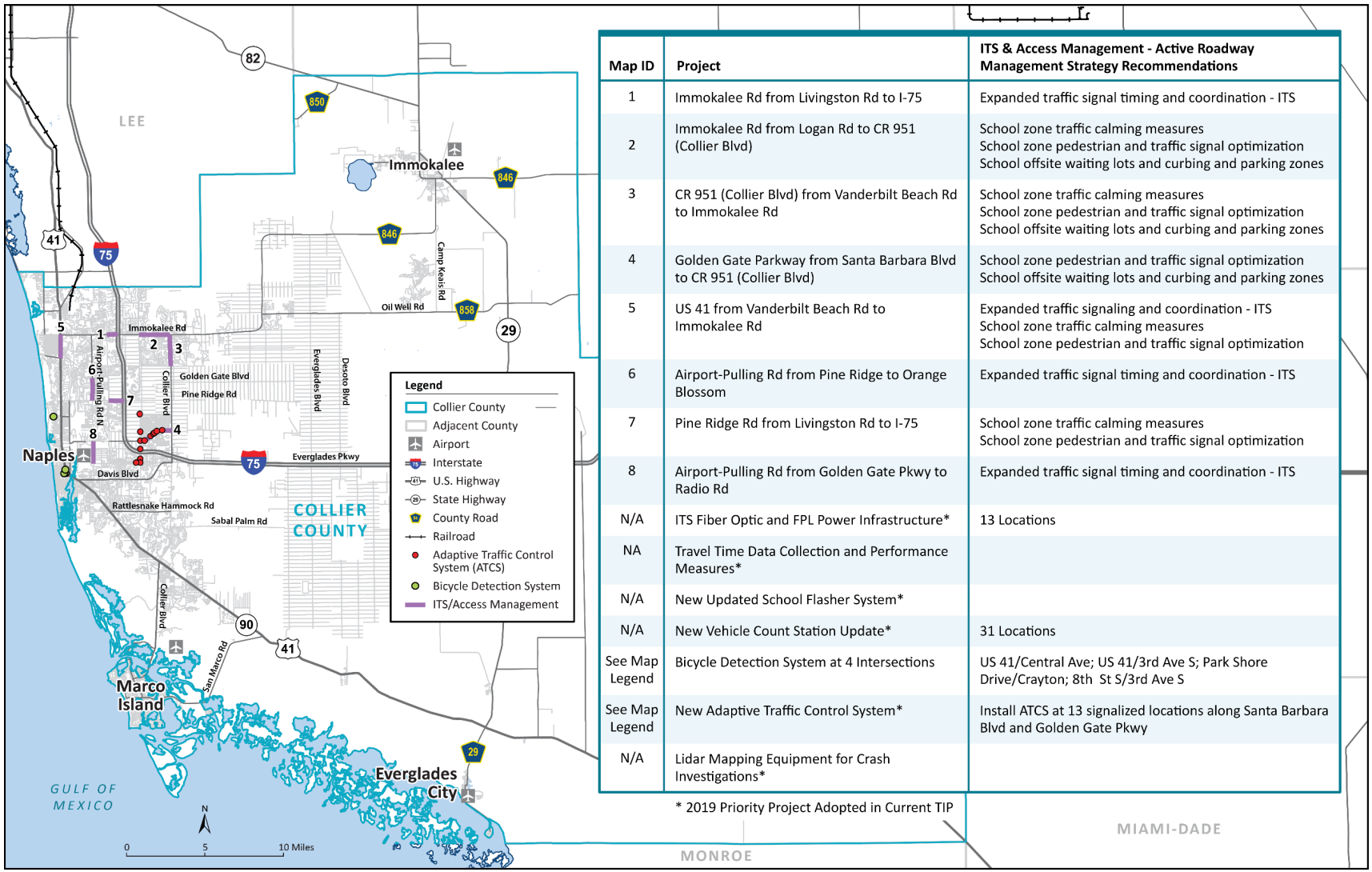
- Maintaining concurrency with FDOT Regional ITS Architecture and technological advances in TOC equipment and operations
- Increased number of signalized intersections connected to ITS
- Improved Travel Time Reliability

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).

[11] https://www.colliermpo.org/wp-content/uploads/2017-CMP.pdf



Map ID	Project	ITS & Access Management - Active Roadway Management Strategy Recommendations
1	Immokalee Rd from Livingston Rd to I-75	Expanded traffic signal timing and coordination - ITS
2	Immokalee Rd from Logan Rd to CR 951 (Collier Blvd)	School zone traffic calming measures School zone pedestrian and traffic signal optimization School offsite waiting lots and curbing and parking zones
3	CR 951 (Collier Blvd) from Vanderbilt Beach Rd to Immokalee Rd	School zone traffic calming measures School zone pedestrian and traffic signal optimization School offsite waiting lots and curbing and parking zones
4	Golden Gate Parkway from Santa Barbara Blvd to CR 951 (Collier Blvd)	School zone pedestrian and traffic signal optimization School offsite waiting lots and curbing and parking zones
5	US 41 from Vanderbilt Beach Rd to Immokalee Rd	Expanded traffic signaling and coordination - ITS School zone traffic calming measures School zone pedestrian and traffic signal optimization
6	Airport-Pulling Rd from Pine Ridge to Orange Blossom	Expanded traffic signal timing and coordination - ITS
7	Pine Ridge Rd from Livingston Rd to I-75	School zone traffic calming measures School zone pedestrian and traffic signal optimization
8	Airport-Pulling Rd from Golden Gate Pkwy to Radio Rd	Expanded traffic signal timing and coordination - ITS
N/A	ITS Fiber Optic and FPL Power Infrastructure*	13 Locations
NA	Travel Time Data Collection and Performance Measures*	
N/A	New Updated School Flasher System*	
N/A	New Vehicle Count Station Update*	31 Locations
See Map Legend	Bicycle Detection System at 4 Intersections	US 41/Central Ave; US 41/3rd Ave S; Park Shore Drive/Crayton; 8th St S/3rd Ave S
See Map Legend	New Adaptive Traffic Control System*	Install ATCS at 13 signalized locations along Santa Barbara Blvd and Golden Gate Pkwy
N/A	Lidar Mapping Equipment for Crash Investigations*	

* 2019 Priority Project Adopted in Current TIP

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 principals 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	• Restore degraded wetlands • Create new wetland habitats • Enhance or preserve existing wetlands • Improve stormwater management • Purchase credits from a mitigation bank
Forested and Natural Areas	• Use selective cutting and clearing • Replace or restore forested areas • Preserve existing vegetation
Habitats	• Construct underpasses, such as culverts • Implement other design measures to minimize potential fragmenting of animal habitats
Streams	• Perform stream restoration • Create vegetative buffer zones • Enforce strict erosion and sedimentation control measures
Threatened or Endangered Species	• Preservation • Enhance or restore degraded habitat • Create new habitats • Establish buffer areas around existing habitat

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[12] began in June 2017 to

[12] 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)[13] 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 02.5 miles of a potential low lying area.

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.[14] 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.

[13] https://coast.noaa.gov/slr/#/layer/slr

[14] 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	• Potential increase in VMT from empty vehicles • Changes in land use or urban form	• Increased mobility for children, elderly or the disabled at potentially lower costs • Reduced parking demand • Changes in land use or urban form
Connected Vehicles	• Potential hacking of a transportation network	• Potential increase in roadway capacities • New safety features • Improved congestion management
Electric Vehicles	• Decrease in transportation funding sources from reduction in motor fuel tax revenues	• Potential reduction in air emissions (depending on energy sources used to generate electricity)
Shared-Use Vehicles	• Complete Street design challenges because of competition for limited curb space in urban areas	• Opportunities for mobility hubs and new funding sources

The Florida Connected Vehicle Initiative includes multiple planning, design/implementation, and operational connected vehicle projects throughout the state.[15] While there are currently no projects or initiatives in Collier County, there is 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[16] 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**.

[15] https://www.fdot.gov/traffic/its/projects-deploy/cv/connected-vehicles

[16] Light Detection and Ranging

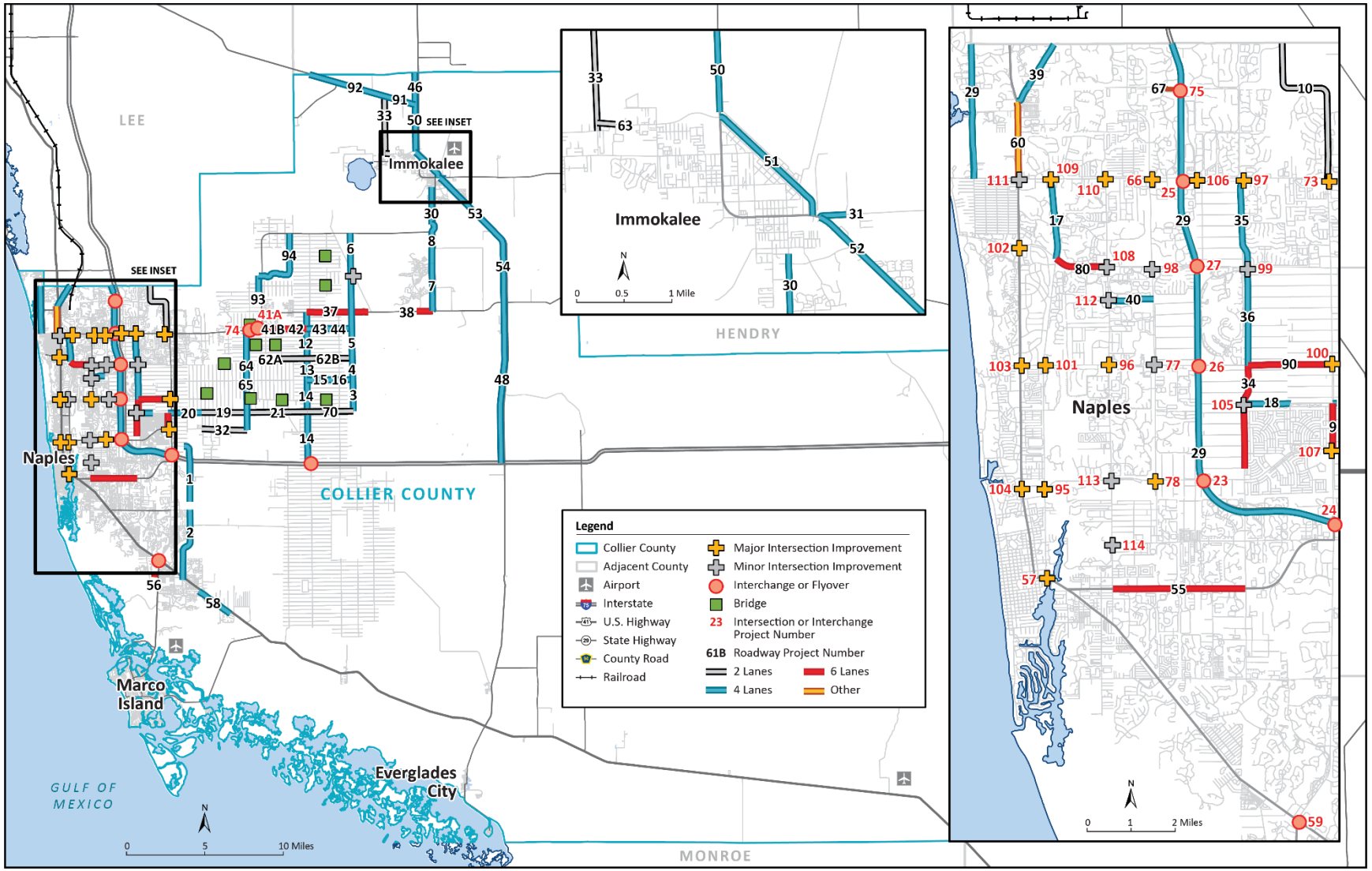


Figure 4-9. 2045 Needs Plan Project Map

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.[17] The BPMP is incorporated in the LRTP by reference.

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's Vision, Goals, Objectives, and Strategies were developed with input from the MPO's advisory committees, the BPMP stakeholders group, Collier MPO staff, and the consultant, and were vetted by the MPO Board. The Vision combines an emphasis on safety with creating a network for the community to use and enjoy:

"To provide a safe and comprehensive bicycle and pedestrian network that promotes and encourages community use and enjoyment."

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

[17] https://www.colliermpo.org/bp-master-plan/

limited ability to speak English. EJ community areas were defined as areas where the criteria were 10 percent greater than the County average. The areas were ranked "Low", "Medium", "High", or "Very High" based on how many EJ factors overlapped within them. **Appendix C** presents the EJ Community Area map.

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 local plans and documents that address bicycle and pedestrian issues and opportunities. Locally adopted plans and formal studies are incorporated by reference into the BPMP so that the projects identified within them are eligible for MPO funding. Examples include the *City of Naples Downtown Circulation and Connectivity Plan*, the *Marco Island Bike Path Master Plan*, and two plans currently in process: the Everglades City Bicycle and Pedestrian Master Plan and the City of Naples Pedestrian and Bicycle Master Plan update.
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, network gaps, facility needs, and priority projects.

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. The Needs Analysis in the Plan is comprehensive and inclusive of many attributes. For example, **Table 4-8** identifies road segments that are prioritized for Complete Streets – Safety Corridor Studies resulting from an analysis of high crash locations on arterial and collector roads overlapping with EJ communities and transit corridors. **Table 4-9** lists the bicycle and pedestrian priorities based on technical need (gap analysis) and public comments. 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[a]	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[b]	85.3	26.0	1.7	1.3
Connector sidewalk[b]	65.0	18.5	11.4	4.5
Total miles	224.2	67.4	15.5	5.8

[a] Equity criterion established as block groups receiving a medium, high, or very high ranking from the Composite Equity Analysis.

[b] Paved shoulder/ connector sidewalk are sub-categories of Insufficient Facility total.

Table 4-8. Complete Streets – Safety Corridor Studies

Source: Collier MPO BPMP

Rank	Road Name	From	To	Project Description
1	US-41 Tamiami Trail	Commercial Dr./ Palm St.	Guilford Rd.	Review, adopt and implement FDOT Road Safety Audit recommendations
	Airport Rd.	US-41 Tamiami Trail	Estey Ave.	
2	Airport Rd.	Estey Ave.	Golden Gate Pkwy.	Corridor Study
3	US41 Tamiami Trail	Commercial Dr./ Palm St.	9th Ave.	Corridor Study
4	Goodlette-Frank Rd.	US-41 Tamiami Trail	Golden Gate Pkwy.	Corridor Study
5	Davis Blvd.	US-41 Tamiami Trail	Airport Rd.	Corridor Study
6	Golden Gate Pkwy.	Santa Barbara Blvd.	Collier Blvd.	Corridor Study

Table 4-9. 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
Total Miles			**66.3**		

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[18] and Spine Trail network. 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 combined SUN Trail/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. The Collier MPO has completed a total of four Walkable Community Studies, including Immokalee, Bayshore and Naples Manor in addition to Golden Gate City. A fifth study completed for Naples Park was never officially approved by the MPO because of unresolved differences of opinion within the community.

Local Agency Priorities on Local Roads

Adopted local agency plans are incorporated into the BPMP by reference. Key priorities are summarized as follows.

[18] https://www.fdot.gov/planning/systems/SUNTrail.shtm

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 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 identified four sidewalks projects (along Copeland Avenue, Datura Street, Broadway, and Collier Avenue) as part of their priority needs in response to the MPO's call for projects in 2017. A second call for projects issued in 2018 resulted in the identification of segments of Copeland, Hibiscus, and Broadway as priority needs for sidewalks or bike lanes.

Immokalee Urban Area

The Immokalee Walkable Community Study served as the basis for a $13 million TIGER Grant application, which the County was awarded in 2018. The BPMP identifies 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 2019 *Bike Path Master Plan* include:

- Collier Boulevard – alternate bike lanes (Landmark extension)
- Bald Eagle Drive – bike lanes (Collier to San Marco)

Future updates to the Marco Island *Bike Path Master Plan* are automatically incorporated by reference into the BPMP.

4-4 Transit Needs

This section summarizes the needs and improvements identified in the Collier County *Ten-Year Transit Development Plan* (TDP),[19] which is incorporated by reference into this LRTP and was developed by CAT in coordination with the Collier MPO. Transit needs information identified this document was used to assess transit needs for the County and its municipalities in the next 20 years.

Goals and Objectives

CAT has established seven goals to help fulfill their vision and mission for the County and its municipalities. These goals guide the transit needs and improvement development process.

- 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.
- 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.

[19] https://www.colliermpo.org/wp-content/uploads/2020/08/Draft-CAT-TDP-2021-2030-Rev-08.25.2020.pdf

- 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.
- Goal 4: Coordinate the development and provision of mobility services with local, regional, state planning efforts and through public and private partnerships.
- Goal 5: Use technologies and innovations in service delivery to improve productivity, efficiency, reliability, and cost-effectiveness of mobility services and operations.
- Goal 6: Monitor and improve mobility service quality and service standards.
- 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.

Development of Transit Needs

The development of transit needs was guided by a review of existing plans and studies, baseline conditions, existing transit performance, public input, regional coordination, and the development of a transit demand analysis, which includes market assessments and transit modeling to identify gaps in the system.

Existing Plans and Studies

The initial process for developing the list of transit needs included a review of local, regional, state, and federal planning documents, as noted in the TDP.

Public Outreach

Public outreach occurred throughout the development of the TDP to ensure that public input guided the development of needs and potential improvements. Collier community members, elected officials, and other stakeholders were all invited to engage with the TDP planning team through surveys made available on CAT bus routes, online public surveys, stakeholder interviews, discussion workshops, public transit advisory committee, project group meetings, and public workshops.

Existing Transit Evaluation

The existing transit evaluation process consisted of three elements – identifying existing transit service in the County and its municipalities, comparing CAT transit performance against similarly sized peer transit agencies, and developing a trend analysis that summarizes the results from the peer review analysis.

Existing Transit Service

CAT operates a fleet of 29 buses that provide service on 19 fixed-route bus lines to the public 7 days per week from 3:55 a.m. to 8:48 p.m. CAT also provides complementary paratransit service through CAT Connect for people with a qualifying disability that are not otherwise able to access the fixed-route buses. CAT operates out of the County-owned Radio Road Transit facility. This facility offers connections for pedestrians, bicyclists, drop-off passengers, and nearby park-and-ride passengers at its Intermodal Transfer Station .

Peer and Trend Analysis

The peer comparison and trend analysis examine CAT transit system performance and compared services to peer agencies. The peer comparison and trend analysis provided a starting point for understanding CAT's transit system operating

environment over time when compared to other similarly sized transit systems. Key trends between 2013 and 2018 included:

- CAT increased vehicle miles, revenue miles, vehicle hours and route miles, and vehicle miles per capita. CAT was above the peer average for passenger miles, vehicle miles, revenue miles, and route miles.
- Passenger trips and passenger miles declined , as did passenger trips per capita, passenger trips per revenue mile, and passenger trips per revenue hour. CAT was 19 percent below the peer average for passenger trips and 20 percent above the peer average for passenger miles.
- Total operating expenses increased 6 percent. CAT operating expense per passenger mile and operating expense per revenue mile was below the peer average.
- The share of operating expenses funded by passenger fares decreased 34 percent, which was near the peer average.

Transit Demand Analysis

The transit demand analysis for MPO boundary area included an evaluation from two different customer types, described below. The discretionary market refers to people who may choose to ride transit but who have other mobility options. Previous studies have shown most CAT riders are not discretionary riders. The analysis was based primarily on population and employment density to identify these markets. While much of the area falls under the ”Low” category, the density threshold assessment indicated that there are employment-based areas that have “High” or “Very High” transit-investment potential east of Naples Airport, north of Pine Ridge Road, and along the Tamiami Trail. Household unit-based areas with “High” transit-investment potential are located along Naples Beach, south of Pine Ridge Road, and in Immokalee east of Sunshine Boulevard.

Traditional Market Assessment

As part of the transit market assessment, socioeconomic and demographic characteristics were studied among people that are more likely to use transit because they have limited mobility options and depend on public transit for most transportation. Demographic factors including population density, older adults, youth, and households below the federal poverty level helped identify where people are likely to rely on transit the most. CAT serves areas with traditional transit markets, such as north of downtown Naples and near Lee County. Areas in Immokalee also have strong traditional transit markets.

Ridership Projections

Transit demand and mobility needs were evaluated for the CAT fixed-route system using the Federal Transit Administration’s ridership forecasting tool T-BEST. The model was based on the assumption that population and employ-ment, travel demand, technology, and transit routes are the same as today. **Table 4-10** provides the ridership forecast by route in the years 2021 and 2030. The model projected a 17-percent increase in transit ridership for all routes by 2030, particularly for Routes 21, 27, and 121. The transit plan suggests the highest ridership increases are possible by expanding service in areas with high population density and growth.

Table 4-10. Ridership and Growth Rates with No Improvements, 2021–2030[a]

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%**

[a] Based on T-BEST model

Source: Collier County *Ten-Year Transit Development Plan*

Gap Overview

The gap analysis compares existing service coverage to transit market analysis results. The goal was to identify gaps in public transit where travel demand is high but where transit service is less than predicted demand, and where transit stops may have barriers.

The gap analysis from the TDP revealed that the areas that have 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.

Transit Needs Results

The evaluation baseline conditions, existing transit performance, public input, regional coordination, and transit demand and gap analysis helped identify a set of transit needs for the County and its municipalities.

Once the transit needs were identified, a quantitative-qualitative methodology was developed to evaluate and prioritize the transit needs. Prioritization was based on weighing the benefits of each service improvement against the others. Three evaluation categories were identified for determining the criteria for evaluation: public outreach, transit markets, and productivity and efficiency. **Table 4-11** presents the criteria, measure of effectiveness, and weighting used to rank the needs.

Table 4-11. Transit Needs 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%

Table 4-12 lists the transit needs based on the TDP and socioeconomic data expected through 2045. Table 4-12 also presents the ranking (where available) for the transit needs identified. **Figure 4-10** illustrates the transit network service needs, which includes extending service, realigning routes, and providing new service. The needs listed are organized by type of improvement: route network, route frequency, span of service, and new service. There is a need to extend current bus routes to reach more riders, realign routes to create more efficient service, increase how often buses provide service, and provide new service to unserved areas. More details on route descriptions and benefits are provided in the TDP.

Table 4-12. 2045 Transit Needs Summary

Route Location	Rank	Improvement Description
Proposed Realignment Changes		
Route 22	1	Realign 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.
Route 23	1	Realign to provide direct connections to the westernmost residential cluster on Lake Trafford Road, the County Health Department, several packing houses along New Harvest Road, and the easternmost residential cluster on Farm Workers Way.
Route 11	2	Minor extension of the north to connect to the Walmart on Tamiami Trail and Immokalee Rd. Or consider connecting to the LinC at the Walmart.
Routes 17/ and 18	4	• Realign to combine the two routes along the portion from Government Center along Tamiami Trail to Rattlesnake Hammock Road to Collier Blvd. to the Super Walmart at Tamiami Trail. • Remove service along Tamiami Trail
Routes 19 and /28	6	Realign by eliminating unproductive segments of Route 19 and combining the service hours into Route 28 with increased frequency.
Route 12	7	Minor extension west into Walmart and other shopping plazas at the intersection of Tamiami Trail and Immokalee Rd.
Route 13 and 14	4 and 3	Realign from a one-way pair to two bidirectional routes, with one operating along 9th Street/Tamiami Trail and the other along Goodlette-Frank Rd.
Route 20 and 26	9	Combine Routes 20 and 26 to improve frequency and streamline service.
Route 21 (Marco Island Express)	11	Provide express service to the Walmart Supercenter on Collier Blvd. and Tamiami Trail and potentially to the Government Center.
Route 25 (NS and EW)	8 and 13	• Extend the North-South alignment north to Immokalee Rd. • East-West alignment would remain the same.
Route 27 (NS and EW)	15 and 12	• Extend the North-South alignment south along Collier Boulevard to Tamiami Trail. • Extend the East-West alignment east to provide service along Immokalee Rd. to the Publix shopping center at Immokalee Rd. and Oil Well Rd.

Table 4-12. 2045 Transit Needs Summary

Route Location	Rank	Improvement Description
Proposed Frequency Changes		
Route 19/28		Reduce headway time from 165 minutes to 60 minutes.
Route 23		Reduce headway from 60 minutes to 40 minutes
Route 121	1	Add two morning and two evening trips during peak periods, while coordinating with employee shift times at major employment locations.
Route 11	3	Reduce headway time from 30-minutes to 20-minutes.
Route 12	3	Reduce headway time from 25- to 90-minutes to 30-minute peak headway and a 60-minute off-peak headway.
Route 13	6	Reduce headway time from 40 minutes to 30 minutes.
Route 14	6	Reduce headway time from 60 minutes 30 minutes.
Route 24	6	Reduce headway time from 85 minutes to 60 minutes.
Route 15 and 16	2 and 5	Reduce headway time from 90 minutes to 45 minutes.
Proposed Span Improvements		
Route 11, 13, 14, 17/18, 19/28, 24	1, 1, 1, 6, 4, 4	Extend service to 10:00 p.m.
Proposed New Service Routes		
Island Trolley		Would travel along Collier Blvd. on Marco Island as a fixed-route and connect to the realigned Route 21 Marco Island Express route. Would be a hop-on/hop-off type, fare-free service using two vehicles with 30-minute headways.
New UF/IFAS and Lehigh Acres Route		Would connect Immokalee to the University of Florida/IFAS satellite campus and Lehigh Acres. Further study is recommended due to the roadway constraints for transit vehicles entering/exiting UF/IFAS campus.
I-75 Premium Express	9	Would operate like an express commuter service beginning at the Government Center and end at the Florida Gulf Coast Town Center. The route would require one vehicle to provide 90-minute headway service from 6 a.m. to 8 p.m.

Table 4-12. 2045 Transit Needs Summary

Route Location	Rank	Improvement Description
Bayshore Shuttle		Would operate as a fixed-route electric shuttle with free hop-on/hop-off service. The route would require one vehicle to provide 15-minute headway service from Weeks Ave. to the Naples Botanical Garden from 11:00 a.m. to 9:00 p.m.
Downtown Autonomous Circulator		Would address the parking shortage in downtown and would begin on S. 4th Ave. from S. 9th St. to S. 3rd St. and go south along S. 3rd St. to S. 13th Ave.
Naples Pier Electric Shuttle		The downtown autonomous circulator would alleviate parking demand in downtown. It would begin at Naples Pier and run along Broad Avenue with a stop at Crayton Cove, before going north along S. 8th St. to S. 6th Ave.
Mobility-On-Demand		Uses on-demand information, real-time data, and predictive analytics that provides travelers the best transportation choice for their needs. Service can be requested via a mobile app, website, or by calling CAT. Helps solve the 'first/last mile' problem associated with limited access to transit. Four MOD Zones identified: Golden Gate, North Naples, Naples Zone, and Marco Island.
Vanpooling (Everglades City)		Indicated by FDOT District 1 as a workable solution for rural communities, such as Everglades City. The proposed program could connect commuters from Everglades City to the Government Center.
Capital Infrastructure		
Regionwide Technology		The technology needs outlined in the TDP's Situation Appraisal includes implementing or upgrading transit scheduling and dispatching software, installing automatic passenger count and vehicle announcement systems for fixed-route vehicles, updating fare collection systems, and enhancing on-board safety measures.
Bus Stop Infrastructure		Improve benches, shelters, bicycle storage facilities, and other infrastructure at bus stops to enhance the rider experience and potentially attract new riders.
Improve ADA Accessibility		Improve bus stop safety and ADA accessibility throughout the entire system for all riders.
Replace and Add New Vehicles		Continue to replace existing fleet and add new vehicles in order to provide new service.
Park-and-Ride Lots		Improve transit access through the development of park-and-ride lots.

Other improvements and policy recommendations for transit service needs include:

- Pursue public-private partnerships local hotels in Marco Island to support Route 21, the proposed new service - Island Trolley and MOD.
- Brand buses on the beach and those associated with proposed MOD services.
- Conduct a comprehensive analysis of the existing CAT network, routes, and further study proposed new service.
- Create a transfer hub along the urbanized area of Immokalee Road to provide passenger transfers, vehicle staging, and driver relief.
- Establish a coordinating committee with the region's local planning departments to review transportation needs and ensure funding and strategies are in place for implementation.
- Establish transit service 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.
- Further study a new CAT and LeeTran route that connects Immokalee to the University of Florida/IFAS satellite campus and Lehigh Acres. The study will include roadway constraints, determining final alignment, endpoint, and stop locations.

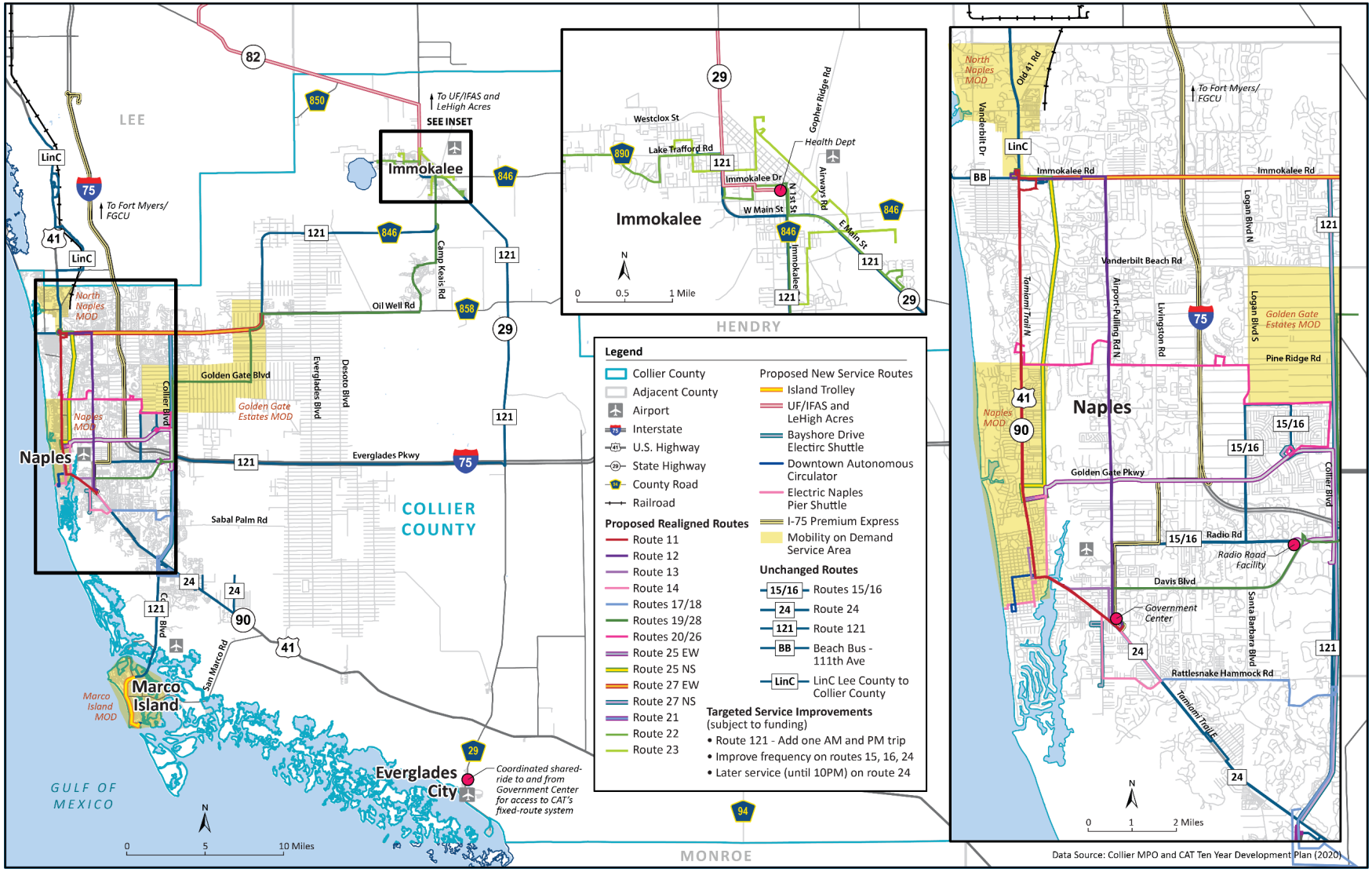


Figure 4-10. Transit Network Service Needs

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.[20] 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*,[21] 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 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[22] 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.

[20] https://flynaples.com/about/
[21] https://flynaples.com/wp-content/uploads/2020/04/APF-MP-Consolidated-Draft-Report-February-29-2020.pdf
[22] Immokalee Regional Airport, Airport Layout Plan Update

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.

Dade-Collier Training and Transition Airport

Located just west of the Collier and Miami-Dade County line, the Dade-Collier Training and Transition Airport (TNT) provides a precision-instrument landing and training facility in South Florida for commercial pilots, private training, and small military operations. Originally named the Everglades Jetport, the airport includes one 10,499-foot-long runway and is operated by the Miami-Dade Aviation Department. The airport is situated within a 24,960-acre property and has approximately 900 acres of developed and operational land. The remaining area is managed and operated by the Florida Game and Freshwater Fish Commission.

EXECUTIVE SUMMARY
COMMITTEE ACTION
ITEM 7C

Endorse Draft Chapter 5 Financial Resources - 2045 LRTP

OBJECTIVE: For the Committee to endorse the Draft Chapter 5 Financial Resources - 2045 LRTP

CONSIDERATIONS: Jacobs has revised the Draft Chapter 5 Financial Resources **(Attachment 1)** in response to comments and added financial information from the FY2021-2025 Transportation Improvement Program (TIP) as required based on the MPO's federal certification review site visit which occurred August 11 through 13, 2020.

During certification, it was also noted that airport projects and revenues needed to be included in the LRTP. At the time agendas were prepared, airport revenue information is still pending. This information will be included in Chapter 5 at a later date when it is received from the Airport Authority.

Chapter 5 will be reviewed by the MPO Board at their meeting on October 9, 2020. MPO staff is requesting endorsement in order to move forward in compiling a draft of the entire 2045 LRTP for advisory committee reviews in October and Board review in November. The 2045 LRTP must be adopted at the December 11, 2020 MPO Board meeting in order to meet state and federal requirements for funding.

STAFF RECOMMENDATION: That the Committee endorse the Draft Chapter 5 Financial Resources for the 2045 LRTP

Prepared By: Anne McLaughlin, MPO Director

Attachment:
1. Draft Chapter 5 Financial Resources

Collier MPO

2045 Long Range Transportation Plan

Chapter 5 – Financial Resources

September 2020

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Chapter 5 Financial Resources

The Collier 2045 LRTP financial plan establishes the basis for determining how many Needs Assessment projects can be included in the Cost Feasible Plan. The financial plan recognizes all revenues by source that can reasonably be expected to be available during the planning period. The available revenues and planning-level cost estimates are applied to each project from the Needs Assessment to develop the Cost Feasible Plan.

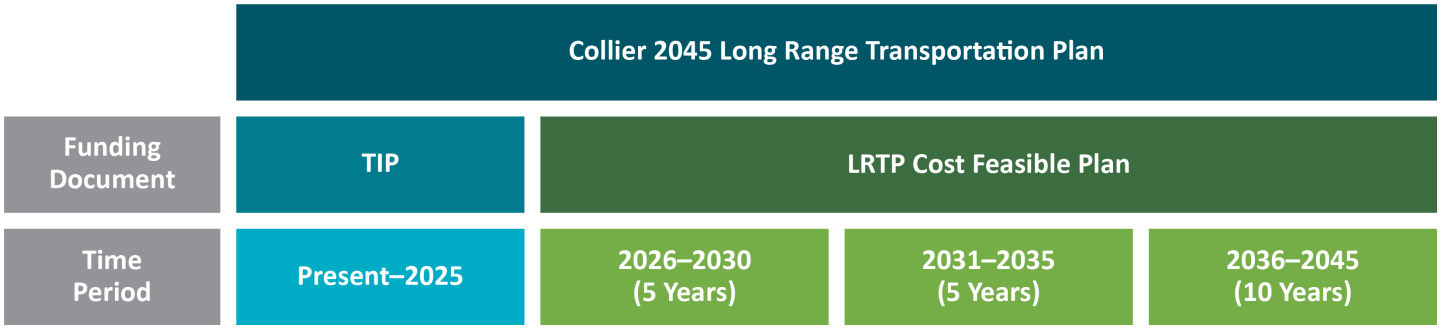
5-1 Overview

Ensuring that the financial resources will be available to fund the multimodal transportation projects by 2045 is an important element of the Collier MPO 2045 LRTP. The premise of the long-range revenue forecast is rooted in federal regulation originally required by the Intermodal Surface Transportation Efficiency Act of 1991. All transportation acts since that time have continued the requirement for a financial plan. Consistent with the most recent requirements of 23 U.S. Code §134, the revenues identified for this LRTP update are reasonably expected to be available to implement the adopted 2045 LRTP. This chapter summarizes transportation revenues available to fund multimodal transportation projects within the County and its municipalities through 2045. This chapter further documents the assumptions used to develop the future revenues.

In accordance with federal statutes, FDOT in coordination with the Florida Metropolitan Planning Organization Advisory Council (MPOAC)[1] provides long-range revenue forecasts to assist Florida MPOs. These forecasts help MPOs comply with federal requirements for developing cost feasible transportation plans and demonstrate a coordinated planning effort for transportation facilities and services in Florida.

As shown on **Figure 5-1**, financial planning for statewide and metropolitan transportation plans is typically required for three periods: long range (20 or more years), intermediate range (10 to 15 years), and short range (5 years). As noted in the FDOT *Revenue Forecasting Guidebook,*[2] long-range revenue and program forecasts are general in nature to

Figure 5-1. Planning Periods Summary (Revenue Bands)



[1] https://www.mpoac.org/

[2] https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/content/planning/revenueforecast/revenue-forecasting-guidebook.pdf

encourage a variety of approaches and technologies to meet the goals and objectives.

The revenues and ultimately the cost feasible project costs in this LRTP update are shown in year of expenditure (YOE) dollars to reflect inflation. Federal guidance [23 C.F.R. 450.324(F)(11)] notes that revenue and cost estimates must use an inflation rate to reflect the YOE dollars. The YOE represents the value of money at the time it will be collected. The YOE dollars is based on reasonable financial principles and information, and is developed in cooperation between the MPO, state, and public transportation operator(s).

The Collier MPO 2045 LRTP *Revenue Projections Technical Memorandum* describes each revenue source, revenue forecasting assumptions, and the methodology for developing statewide estimates of federal and state revenues (refer to Appendix E).

5-2 Roadway and Transit Revenue Projections

Revenue projections include federal, state, and county sources. The County and its municipalities have historically funded transportation projects using local sources, such as fuel taxes, impact fees, and general fund transfers (ad valorem) in addition to federal and state revenues. Except for general fund transfers (which are projected to only support operations and maintenance [O&M]), it is assumed that the County and it municipalities will continue to use these revenue sources to fund transportation projects from 2026 through 2045. **Table 5-1** summarizes the total projected revenues in YOE dollars that are anticipated to be available for the 2045 LRTP.

5-3 Roadway and Transit Federal/State Funding

Projections of federal and state roadway and transit revenues for use in LRTPs are developed by FDOT.

FDOT's 2045 *Revenue Forecast for the Collier MPO* provides federal and state funds for the Collier MPO to use in developing its forecasted revenues. These revenues are for capacity and non-capacity programs consistent with statewide priorities. **Table 5-2** highlights these revenue amounts in YOE format as required by MAP-21.[3] The following provides a brief description of each revenue source (Appendix E provides further details).

- **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.
- **Transportation Alternatives Program:** Created as a new funding program under current federal transportation legislation (MAP-21), the Transportation Alternatives Program combines three previous programs—Transportation Enhancements, Safe Routes to School, and Recreational Trails Program.

[3] 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 5-1. 2045 LRTP Revenue Projections

Jurisdiction	Funding Source	Total 2026–2045 (YOE)
Revenues Dedicated to Transit Operations		
Federal	Transit Operations	$57,776,881
State	Transit Operations	$39,783,673
Local	Transit Operations	$168,249,259
Fares	Transit Operations	$38,082,379
Local	Transportation Disadvantaged	$6,607,296
	Subtotal for Transit Operations	***$310,499,488***
Revenues Dedicated to Transit Capital Projects		
Federal	Transit Capital	$81,820,050
Federal & State	Transit Capital	$2,526,514
State	Transit Capital	$0
Local	Transit Capital	$17,436,545
	Subtotal for Transit Capital Projects	***$101,783,109***
	Total Transit Revenues	**$412,282,597**
Revenues Dedicated to Operations and Maintenance (Roadway)		
County	General Fund (Ad Valorem)	$240,000,000
County	Fuel Tax (48% of $375.53 Million Net Revenues)	$180,254,444
	Total Operations and Maintenance (Roadway)	**$420,254,444**
Revenues Remaining for Collier MPO 2045 LRTP Projects (Roadway)		
Federal	Transportation Alternatives Program	$6,760,000
Federal	Transportation Management Area	$100,360,000
State	Strategic Intermodal System	$337,404,000
State	Other Arterial and Construction & ROW	$443,200,000
County	Transportation Impact Fees	$346,275,729
County	Fuel Tax (52% of $375.53 Million Net Revenues)	$195,275,648
County	General Fund (Ad Valorem)	$0
County	Sales Tax Referendum	$0
	Total for Collier MPO 2045 LRTP Projects (Roadway)	**$1,429,275,377**

- **Strategic Intermodal System:** The SIS capacity program provides funds for construction, improvements, and associated ROW acquisition on the State Highway System (SHS) roadways that are designated as part of SIS.
- **Other Arterial Construction/ROW:** This capacity program provides funds for construction, improvements, and associated ROW acquisition on SHS roadways that are not designated as part of SIS.
- **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 regionally significant transportation facilities identified and prioritized by regional partners.
- **Federal and State Transit Revenues:** Estimates of federal and state transit revenues are based on information provided in the FDOT *Revenue Forecasting Guidebook*.

5-4 Local Revenue Projections and Sources

In addition to federal and state funding, local revenue sources help build and maintain the transportation network within the County and its municipalities. The following text briefly describes each County funding element (Appendix E provides further details).

- **Transportation Impact Fees:** Transportation impact fees provide revenue for financing the addition and expansion of roadway facilities needed to accommodate specific new growth and development.
- **Fuel Taxes:** Fuel taxes represent a major portion of Collier County's local transportation revenues. Fuel tax revenue is dedicated to both transportation capacity expansion and maintenance and operations. Fuel taxes collected by the cities within the County were not considered during the LRTP.
- **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 that role. While taxable values help stabilize the revenues, the County will continue to assign General Fund revenues to non-capacity roadway improvements.
- **Sales Tax:** A 2018 1-cent infrastructure sales surtax that is assigned to a variety of projects including transportation infrastructure.

5-5 Bicycle and Pedestrian Funding Sources

Similar to roadway and transit funding sources, there are multiple funding sources for bicycle and pedestrian projects. The primary funding sources available for bicycle and pedestrian projects presented in the BPMP are through federal programs, as discussed in the following text.

- **National Highway Performance Program:** These funds were established under MAP-21 and provide support for projects or program projects that are on an eligible facility or an eligible activity that supports national performance goals. Bicycle and pedestrian improvements associated with a National Highway System facility are eligible.

Table 5-2. 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	$25,090,000	$25,090,000	$50,180,000	$100,360,000
State and Federal	Other Arterial/Construction & ROW	$100,620,000	$110,540,000	$232,040,000	$443,200,000
State	Transportation Regional Incentive Program	$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
	Total Revenues	$177,564,000	$192,328,000	$400,052,000	$769,944,000
Jurisdiction	**Funding Source**	**2026–2030**	**2031–2045**	**Total 2026–2045**	
Federal	Strategic Intermodal System	$38,622,000	$298,782,000	$337,404,000	

- **Surface Transportation Block Grant (STBG) Program:** The STBG Program provides the most flexible funding among all federal-aid transportation programs. Specifically, the STBG-Transportation Alternatives provides funding for programs and projects defined as transportation alternatives.
- **Highway Safety Improvement Program (HSIP):** This program provides funds to reduce traffic fatalities and serious injuries on all public roads, including non-state-owned public roads and roads on tribal lands and can be used for pedestrian and bicycle safety improvements. States may obligate funds under HSIP to carry out any highway safety improvement project on any public road or publicly owned bicycle or pedestrian pathway or trails.
- **Recreational Trails Program:** This federally funded competitive grant program provides financial assistance to city, county, state, or federal governments; organizations approved by the state; or state- and federally recognized Indian tribal governments, for the development of recreational trails, trailheads, and trailside facilities.
- **Federal Transit Administration Funds:** Some FTA funds may be used to fund the design, construction, and maintenance of pedestrian and bicycle projects that enhance or are related to public transportation facilities.
- **National Highway Traffic Safety Administration (NHTSA) Funds:** NHTSA provides funding to states for implementing priority area programs and activities to improve traffic safety and reduce crashes, serious injuries, and fatalities. Emphasis areas under the pedestrian and bicycle safety program include:
  - Increasing awareness and understanding of safety issues and compliance with traffic laws
  - Development and use of a systematic approach to identify locations and behaviors prone to bicycle and pedestrian crashes and implementing multidisciplinary countermeasures
  - Creating urban and rural built environments that support and encourage safe walking and biking
- **SUN Trail Network Funds:** SUN Trail funds are managed by the FDEP Office of Greenways and Trails. The Southwest Coast Connector Trail Alignment noted in the Needs Plan (Chapter 4) is eligible to receive SUN Trail funding.

Not all funding for bicycle and pedestrian projects is done through traditional funding programs. Alternative funding sources include the following:

- The Collier MPO has jurisdictional authority over land use and zoning and can, therefore, work with developers to address gaps in bicycle and pedestrian infrastructure and make connections as new homes, communities, and shopping areas are constructed.
- The MPO can form partnerships with other agencies to implement projects.
- Bicycle and pedestrian improvements can be incorporated into roadway construction projects or funded independently. For example, Collier County typically funds transportation improvements that incorporate bicycle and pedestrian facilities using local funds on County-owned roads.

- The County and its municipalities can apply for funding related to state and federal grant programs, Safe Routes to Schools Programs, NHTSA, and the Better Utilizing Investments to Leverage Development Transportation Discretionary Grant program (formerly the Transportation Investment Generating Economy Recovery Grant program).

EXECUTIVE SUMMARY
COMMITTEE ACTION
ITEM 7D

Approve Draft List of Cost Feasible Projects for the 2045 LRTP for Concurrence to Move Forward for Public Involvement

OBJECTIVE: For the Committee to approve the Draft List of Cost Feasible Projects for the 2045 LRTP for concurrence to move forward for public involvement

CONSIDERATIONS: Jacobs and Collier County Transportation Planning have revised the Draft Cost Feasible Plan List of Projects **(Attachment 1)** based on the alternative roadway network analysis completed over the summer and adjustments to revenue projections, which are now presented in 5-year increments. The Draft Cost Feasible Plan Road Network is shown in **Attachment 2.**

The Cost Feasible Plan List of Projects and Network map will be presented to the MPO Board on October 9th to ask for concurrence to move the list forward for public involvement. Proposed additions to the previous network alternatives reviewed by the Committee include several that are funded through Construction (CTS):

- New I-75 interchange in the vicinity of Everglades Blvd
- Connector roadway from new I-75 interchange to Golden Gate Blvd and continuing on to Vanderbilt Beach Rd (2 segments)

The majority of the projects added to the list are only partially funded. The phases are Preliminary Engineering (PE), Right of Way (ROW) or partially funded for Construction (CST):

- Benfield Road (The Lords Way to City Gate Blvd N) – CST partially funded
- Big Cypress Parkway (Vanderbilt Beach Road Extension to Oil Well Road) – PE and ROW
- Little League Road Extension (SR 82 to Westclox) – PE and ROW
- Randall Blvd Intersection (flyover) at Immokalee Rd – interim improvements are funded for CST, PE phase only for long term solution
- Vanderbilt Beach Rd Ext (Everglades Blvd to Big Cypress Pkwy) – PE and ROW
- Immokalee Rd (43rd Ave/ Shady Hollow Blvd E to North of 47th Ave NE - PE and ROW
- Rural Village Blvd (Immokalee Rd to Immokalee Rd) - PE and ROW
- Vanderbilt Beach Road Intersection at Livingston Rd – PE
- SR 84/ Davis Blvd (Airport Pulling Rd to Santa Barbara Blvd – CST partially funded
- Immokalee Rd intersection at Wilson Blvd – PE
- US 41 intersection at Vanderbilt Beach Rd – PE
- US 41 intersection at Pine Ridge Rd – PE
- US 41 intersection at Golden Gate Parkway – PE

In August, the Florida Department of Transportation (FDOT) notified MPOs that work on the Strategic Intermodal System (SIS) 2045 CFP has been temporarily halted due to COVID-19's impact on revenue projections. The MPO's CFP has been revised to reflect the 2019 show the version of the 2045 SIS CFP that was adopted in 2018. The revisions show that only two (2) projects on SR 29 are funded through construction:

- SR 29 from Agriculture Way to CR 846 E (Immokalee Rd)

- SR 29/New Market Rd W – New road from Immokalee Rd (CR 846) to New Market Rd N (this road segment is commonly referred to as the Immokalee Bypass)

STAFF RECOMMENDATION: That the Committee approve the Draft Cost Feasible List of Projects and Roadway Network map for the 2045 LRTP for concurrence to move forward for public involvement.

Prepared By: Anne McLaughlin, MPO Director

Attachment:
1. Draft Cost Feasible Plan List of Projects
2. CFP Network Map

DRAFT

Collier MPO 2045 LRTP Cost Feasible Plan Projects
FDOT Other Roads Projects and Local Roadway Projects
Draft 9/21/2020 [in millions $]

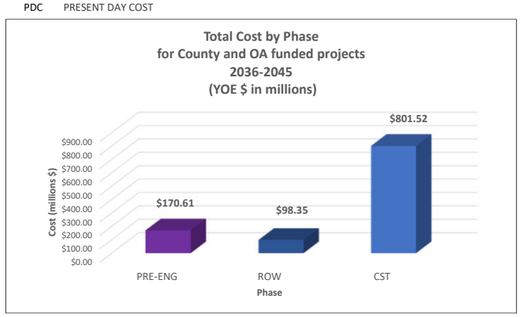
Map ID	FACILITY	LIMITS FROM	LIMITS TO	DESCRIPTION	Total Project Cost (PDC 2019 $)	TIP FUNDING 2021-25 (YOE)	PLAN PERIOD 1 (TIP): 2020-2025			PLAN PERIOD 2: 2026-2030			PLAN PERIOD 3: 2031-2035			PLAN PERIOD 4: 2036-2045			TOTAL COST 2026-2045 (YOE $ without SIS)	FUNDING SOURCE
							PRE-ENG	ROW	CST	PRE-ENG	ROW	CST	PRE-ENG	ROW	CST	PRE-ENG	ROW	CST		
PLAN PERIOD 2 CONSTRUCTION FUNDED PROJECTS																				
12	Everglades Boulevard	Vanderbilt Bch Rd Ext	Randall Blvd	Widen from 2-Lanes to 4-Lanes	$32.80					$5.59	$2.38	$35.31							$43.27	County
37	Oil Well Road / CR 858[60144]	Everglades Blvd	Oil Well Grade Rd	Widen from 2-Lanes to 6-Lanes	$36.78	$1.81	$0.91		$0.90	$6.73		$42.11							$48.83	County
66	Immokalee Rd intersection	Livingston Rd		Major Intersection Improvement	$24.50							$26.82							$26.82	County
78	Golden Gate Parkway (Intersection)	Livingston Rd		Major Intersection Improvement	$24.50					$5.63		$26.82							$32.45	County
23	I-75 (SR-93) Interchange (new)	Golden Gate Pkwy		Interchange Improvement	$9.59					$0.58		$12.24							$12.81	OA
25	I-75	Immokalee Rd		Interchange Improvement (DDI proposed)	$9.59					$0.58		$12.24							$12.81	OA
58	US 41 (SR 90) (Tamiami Trail E)	Greenway Rd	6 L Farm Rd	Widen from 2-Lane to 4 Lanes	$43.13					$3.91	$17.84	$33.53							$55.27	OA
111	US 41	Immokalee Rd		Intersection Innovation/Improvements	$17.50					$3.13		$20.12							$23.24	OA
PLAN PERIOD 3 CONSTRUCTION FUNDED PROJECTS																				
36	Logan Boulevard	Pine Ridge Road	Vanderbilt Beach Road	Widen from 2-Lanes to 4-Lanes	$22.23					$3.40				$3.16	$27.47				$34.03	County
42	Randall Boulevard	8th St NE	Everglades Blvd	Widen from 2-Lanes to 6-Lanes	$47.07					$7.29					$65.04				$72.32	County
90	Pine Ridge Rd	Logan Blvd	Collier Blvd	Widen from 4-Lanes to 6-Lanes	$21.72					$1.99	$3.56				$25.00				$30.54	County
39	Old US 41	US 41 (SR 45)	Lee/Collier County Line	Widen from 2-Lanes to 4-Lanes	$22.59					$3.85	$1.70				$30.06				$35.61	OA
57	US 41 (SR 90) (Tamiami Trail E) intersection	Goodlette-Frank Rd		Major Intersection Improvement	$13.00					$0.63	$2.97				$15.77				$19.37	OA
59	US 41	Collier Blvd		Major Intersection Improvement	$17.25					$2.81					$23.66				$26.47	OA
60	US 41 (SR 90) (Tamiami Trail E)	Immokalee Rd	Old US 41	Further Study Required	$17.25					$0.46			$2.00		$23.66				$26.12	OA
PLAN PERIOD 4 CONSTRUCTION FUNDED PROJECTS																				
11	Everglades Boulevard	Randall Blvd	South of Oil Well Road	Widen from 2-Lanes to 4-Lanes	$16.42											$3.39	$2.22	$24.65	$30.26	County
31	Immokalee Rd (CR 846)	SR 29	Airpark Blvd	Widen from 2-Lanes to 4 Lanes	$3.90											$0.77	$0.55	$5.88	$7.20	County
63	Westclox Street Extension	Little League Road	West of Carson Road	New 2-Lane Road	$3.01								$0.51				$0.55	$4.45	$5.51	County
65	Wilson Blvd	Keane Ave	Golden Gate Boulevard	New 2-Lane Road (Expandable to 4-Lanes)	$36.15								$8.82				$6.15	$50.29	$65.26	County
97	Immokalee Road (Intersection)	Logan Blvd		Major Intersection Improvement	$11.50											$2.40		$18.55	$20.95	County
99	Vanderbilt Beach Road (Intersection)	Logan Blvd		Minor Intersection Improvement	$11.50								$2.12					$18.55	$20.67	County
101	Pine Ridge Rd	Goodlette-Frank Rd		Minor Intersection Improvement	$5.75											$1.20		$9.28	$10.48	County
C1	Connector Roadway from I-75 Interchange (New)	Golden Gate Blvd	Vanderbilt Beach Rd	4-Lane Connector Roadway from New Interchange (Specific	$17.63					$0.44			$2.80	$1.66				$26.34	$31.24	OA
C2	Connector Roadway from I-75 Interchange (New)	I-75 (SR-93)	Golden Gate Blvd	4-Lane Connector Roadway from New Interchange (Specific	$80.59					$2.00			$13.28	$7.41				$120.02	$142.70	OA
22	I-75 (SR-93) Interchange (new)	Vicinity of Everglades Blvd		New Interchange	$42.26					$3.76			$5.30	$8.32				$55.65	$73.03	OA
PARTIALLY FUNDED PROJECTS																				
1	Benfield Rd (New) [60129]	The Lords Way	City Gate Blvd N	New 2-Lane Road (Expandable to 4-Lanes)	$37.31	$11.00	$0.00	$4.00	$7.00		$4.00			$5.00				$18.00	$27.00	County
5	Big Cypress Parkway	Vanderbilt Beach Road Ext.	Oil Well Road	New 2-Lane Road (Expandable to 4-Lanes)	$37.31											$7.70	$4.04		$11.74	County
33	Little League Rd. Ext.	SR-82	Westclox St.	New 2-Lane Road	$40.99											$8.48	$7.33		$15.81	County
62B	Vanderbilt Beach Road Ext	Everglades Blvd	Big Cypress Parkway	New 2-Lane Road (Expandable to 4 Lanes)	$41.17											$8.38	$16.07		$24.46	County
93	Immokalee Rd	43rd Ave/Shady Hollow Blvd E	North of 47the Ave NE	Widen from 2-Lanes to 4-Lanes	$9.79											$2.26	$0.48		$2.74	County
94	Rural Village Blvd	Immokalee Rd	Immokalee Rd	New 4-Lane Road	$23.41											$5.84	$2.96		$8.80	County
98	Vanderbilt Beach Road (Intersection)	Livingston Rd		Minor Intersection Improvement	$21.50											$2.40			$2.40	County
41A	Randall Blvd Intersection (flyover) [60147]	Immokalee Rd		Ultimate Intersection Improvement: Overpass	$35.66	$9.75	$0.95		$8.80							$9.46			$9.46	OA
55	SR 84 (Davis Blvd)	Airport Pulling Rd	Santa Barbara Blvd	Widen from 4-Lanes to 6-Lanes	$40.26								$0.94			$9.01		$30.04	$39.99	OA
74	Immokalee Rd (CR 846) intersection	Wilson Blvd		Major Intersection Improvement	$17.25											$6.60			$6.60	OA
102	US 41 (SR 90) (Tamiami Trail E) intersection	Vanderbilt Beach Rd		Major Intersection Improvement	$2.50											$4.90			$4.90	OA
103	US 41 (SR 90) (Tamiami Trail E) intersection	Pine Ridge Rd		Major Intersection Improvement	$2.50											$4.90			$4.90	OA
104	US 41 (SR 90) (Tamiami Trail E) intersection [44645	Golden Gate Pkwy		Major Intersection Improvement	$3.50	$0.50	$0.27	$0.23								$4.40			$4.40	OA
					$901.36	$23.06	$2.13	$4.23	$16.70	$52.75	$32.44	$209.17	$35.78	$25.55	$210.65	$82.08	$40.36	$381.70	$1,070.48	
											$294.36			$271.97			$504.14			

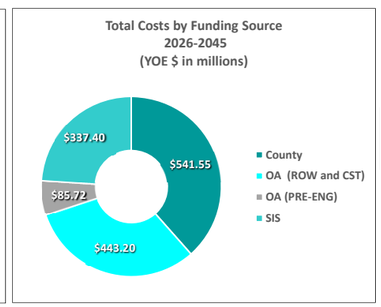
Notes:

PARTIALLY FUNDED FOR CONSTRUCTION

PRE-ENG PRE-ENG INCLUDES PD&E AND DESIGN

PDC PRESENT DAY COST





		PLAN PERIOD 2: 2026-2030			PLAN PERIOD 3: 2031-2035			PLAN PERIOD 4: 2036-2045			TOTAL COST 2026-2045	FUNDING SOURCE
		PRE-ENG	ROW	CST	PRE-ENG	ROW	CST	PRE-ENG	ROW	CST		
NEW	MPO Supplemental Planning Funds	$0.70			$0.80			$1.90			$3.40	SU
NEW	Bicycle Pedestrian Box Funds			$10.42			$10.39			$20.65	$41.46	SU/TALU
NEW	Congestion Management/Intelligent Transportation Box Funds			$10.42			$10.39			$20.65	$41.46	SU
NEW	Bridge Box Funds			$5.24			$5.20			$10.36	$20.80	SU

Collier MPO 2045 LRTP Cost Feasible Plan Projects
FDOT SIS Projects
Draft 9/21/2020 [in millions $]

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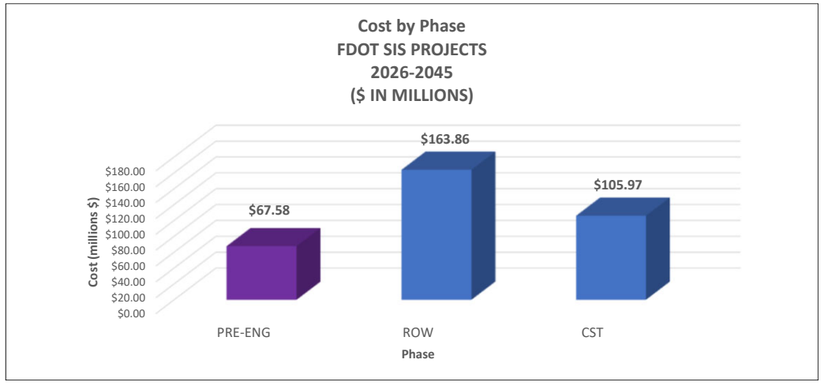
Map ID	FACILITY [FPID NO.]	LIMITS FROM	LIMITS TO	DESCRIPTION	TIP FUNDING 2021-25 (YOE)	PLAN PERIOD 1 (TIP): 2020-2025			PLAN PERIOD 2: 2026-2030			PLAN PERIOD 3: 2031-2035			PLAN PERIOD 4: 2036-2045			TOTAL COST 2026-2045
						PRE-ENG	ROW	CST	PRE-ENG	ROW	CST	PRE-ENG	ROW	CST	PRE-ENG	ROW	CST	
29	I-75 (SR-93) Managed (Toll) Lanes [FPID 4425192]	E of Collier Blvd (SR 951)	Collier/Lee County Line	New 4-Lane Express (Toll) Lanes (10-lanes)	$0.03	0.03						63.25				145.43		$208.67
48	SR 29 [4344901]	I-75 (SR 93)	Oil Well Rd	Widen from 2-Lane to 4 Lanes	$0.03	0.03						4.33						$4.33
50	SR 29 [4175406]	New Market Road North	North of SR-82	Widen from 2-Lanes to 4-Lanes (with center turn lane)	$1.47	0.38	1.09				29.94							$29.94
51	SR 29/New Market Rd W - New Road [4175405]	Immokalee Rd (CR 846)	New Market Rd N	New 4-Lane Road	$6.74	0.06	$6.68			$5.88							$49.91	$55.78
52	SR 29 [4175404]	Agriculture Way	CR 846 E	Widen from 2-Lanes to 4-Lanes	$0.27	0.27							$5.63				$23.32	$28.95
53	SR 29 (SEGMENT D) [4175403]	Sunniland Nursery Rd	Agriculture Way	Widen from 2-Lanes to 4-Lanes	$0.50	0.5							$2.38					$2.38
54	SR 29 (SEGMENT E) [4175402	Oil Well Rd	Sunniland Nursery Rd	Widen from 2-Lanes to 4-Lanes	$8.33	8.33							$4.55					$4.55
46	SR 29 [4178784]	SR 82	Hendry C/L	Widen from 2-Lanes to 4-Lanes	$1.37	0.07	$1.30											$0.00
92	SR 82 [4308481]	Hendry Co.Line	Gator Slough Lane	Widen from 2-Lanes to 4-Lanes	$44.73	0.07	$2.12	$42.54			$2.80							$2.80
				Totals	$63.47	$9.74	$11.19	$42.54	$0.00	$5.88	$32.74	$67.58	$12.55	$0.00	$0.00	$145.43	$73.22	**$337.40**
							$63.47			$38.62			$80.13			$218.65		



2045 Cost Feasible Plan Network Draft

DRAFT

2045 LRTP Update

#33 Little League Rd Ext.
Partially Funded

#93 and #94
Roadway
Partially Funded

#41A and #74
Intersections
Partially Funded

#5 BCP and
#62B VBR Ext
Partially Funded

C1& #C2 Connector to I-75
4 lanes
From VBR Ext to I-75
Add to CFP

#48 SR 29
I-75 to Oil Weill Rd
Widen from 2 Lane to 4 lane
REMOVED FROM CFP
Partially Funded

#1 Benfield (new)
New 2 lane expandable to 4
Partially Funded

SEE INSET

IMMOKALEE INSET

NAPLES INSET

#108 VBR Rd at Airport
Pulling Rd
#110 Immokalee Rd at Airport
Pulling Rd
Removed from CFP

#102, #103, #104
Intersections
Partially Funded

#98 VBR/LIVINGSTON
Partially Funded

#55 SR 84
Partially Funded

LEE

COLLIER COUNTY

HENDRY

MONROE

Naples

Marco Island

Everglades City

Westclox ST

W Main ST

W 1st ST

S 1st ST

Gopher Ridge RD

Airport RD

Vanderbilt DR

Old 41

Pine Ridge Rd

Vanderbilt Beach RD

Immokalee RD

Pipers BLVD

Golden Gate PKWY

Davis BLVD

Rattlesnake Hammock RD

Tamiami TRL E

Airport Pulling Rd N

Livingston RD

- Bridge
- Interchange or Flyover
- Major Intersection Improvement
- Minor Intersection Improvement

Number of Lanes

- 2
- 4
- 6
- Other

23 Intersection or Interchange Project Number*

61B Roadway Project Number*

Partially Funded Projects are Noted

N

0 2.5 5 Miles

*For Map Identification (MAP ID) numbers and project descriptions, please refer to Table 1 at www.colliermpo.org/lrtp

DRAFT 9/19/20

EXECUTIVE SUMMARY
COMMITTEE ACTION
ITEM 7E

Comment on Draft Chapter 6 Cost Feasible Plan for the 2045 LRTP

OBJECTIVE: For the Committee to comment on the Draft Chapter 6 Cost Feasible Plan for the 2045 LRTP

CONSIDERATIONS: Jacobs has produced a Draft Chapter 6 Cost Feasible Plan for the 2045 LRTP, which is the narrative component to the Cost Feasible List of Projects. **The Draft Chapter 6 is not available at the time the agenda packet is distributed (9/21/20) but is expected to be available for distribution on 9/23/20. MPO staff asks that Committee members provide comments by 10/7/20.**

STAFF RECOMMENDATION: That the Committee comment on the Draft Chapter 6 Cost Feasible Plan for the 2045 LRTP

Prepared By: Anne McLaughlin, MPO Director

Attachment:

1. Draft Chapter 6 Cost Feasible Plan – 2045 LRTP (to be distributed on 9/23/20)

EXECUTIVE SUMMARY
COMMITTEE ACTION
ITEM 7F

Comment on Local Roads Safety Plan Technical Memos – Statistical Analysis and Recommendations

OBJECTIVE: For the Committee to comment on the Local Roads Safety Plan (LRSP) Technical Memos – Statistical Analysis and Recommendations

CONSIDERATIONS: The Congestion Management Committee (CMC) and MPO Board prioritized SU box funding for a Strategic Highway Safety Plan (SHSP) and the MPO Board concurred in 2013. The name was subsequently changed to differentiate the LRSP from FDOT's SHSP.

Tindale Oliver has submitted a Statistical Analysis Technical Memorandum and a Recommendations Technical Memorandum (**Attachment 1**) for review and comment. The analysis and recommendations are based on an analysis of traffic crash data, interviews with local law enforcement officials and an on-line public survey. The consultant presented initial findings to the Community Traffic Safety Team on May 28, 2020.

In addition to the CAC and TAC, the draft Technical Memos will be distributed to CMC members, the MPO's Adviser Network and posted on the MPO's website for public comment. The final draft LRSP will be brought to the TAC and CAC for endorsement in October, the CMC for endorsement in November, and the MPO Board in December for approval.

STAFF RECOMMENDATION: That the Committee comment on the Local Roads Safety Plan Technical Memos – Statistical Analysis and Recommendations

Prepared By: Anne McLaughlin, MPO Director

Attachment:
1. Local Roads Safety Plan – Statistical Analysis and Recommendations

Collier County MPO
Local Road Safety Plan

Statistical Analysis Technical Memorandum

09/15/2020

Draft/Final

Prepared for

Prepared by:

Table of Contents

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Appendices

SECTION 1: INTRODUCTION AND METHODOLOGY

Introduction

A critical input into the Collier Local Road Safety Plan (LRSP) is analysis of traffic crash data and other relevant quantitative data inputs. This Technical Memorandum provides a description of the data analysis methodology and findings used to inform the Collier LRSP. Key elements of this memorandum include:

- Analysis of countywide crash data distributions and comparison with Statewide norms
- Analysis of traffic citation data for Collier County and comparisons with statewide citation data and citation data from peer counties
- Establishment of Collier County-specific safety emphasis areas and identification of high crash locations based on safety emphasis areas
- Summary of public outreach survey data

Methodology

The Collier LRSP uses traffic crash data from the Collier Crash Data Management System (CDMS) for the years 2014 to 2018. As described in the LRSP Crash Data Quality Control Memorandum, fatal, incapacitating injury and bicycle/pedestrian crash reports were manually reviewed and key data fields were updated to ensure accuracy.

Next, crashes that occurred in parking lots and along private roads were removed from the data sample and crashes that occurred along the County's major roadway network were assigned ID numbers from the major roadway database. This was done using a spatial query in which crashes within 100 feet of a major roadway segment were assigned to that segment. Data from Collier County's Annual Update and Inventory Report (AUIR) was then used to understand crash data distributions in the context of roadway system vehicle miles of travel (VMT), roadway characteristics, and other factors.

To evaluate traffic citations data was collected from the Florida Department of Highway Safety and Motor Vehicles (FLHSMV) Crash and Citation Reports and Statistics web page. Data from Collier County, the State of Florida, and similar sized coastal counties was downloaded as Excel spreadsheets and compared.

A Glossary of Terms used throughout the remainder of this Technical Memorandum is provided as Appendix A.

Appendix B provides an overview of a public outreach survey that was disseminated by the Collier MPO to help understand public perceptions of traffic safety in Collier County.

SECTION 2: CRASH DATA ANALYSIS

This section of the LRSP Statistical Analysis Technical Memorandum summarizes the following traffic crash data distributions:

- Comparison of State and County Crash Rates
- Roadway Functional Class
- Major Roadway Maintenance Authority
- Major Roadway Number of Lanes
- Area Type (Urban/Rural)
- Lighting Condition
- Crash Type
- (At Fault) Driver Age
- Temporal Trends (Annual and Monthly)

State of Florida Crash Rate Comparison

Using data from FLHSMV (for consistency) the average number of reported crashes, fatalities, and injuries from the State of Florida and Collier County are shown in Table 2-1. These crash totals are represented as crash rates as a function of millions of daily vehicle miles of travel (DVMT) and as a function of 100,000 persons. The data shows that Collier County has fewer crashes and traffic fatalities and injuries than the State of Florida in terms of both population and vehicle miles of travel.

	State of Florida	Collier County	Collier vs. State
Crashes	383,862	4,962	NA
Fatalities	2,972	38	NA
Injuries	242,709	2,829	NA
Daily VMT	582,491,060	9,939,709	76%
Crashes/m DVMT	659	499	76%
Fatalities/mDVMT	5.1	3.8	75%
Injuries/mDVMT	417	285	68%
Population	20,159,183	351,121	NA
Crashes/100k Pop.	1,904	1,413	74%
Fatalities/100k Pop.	15	11	73%
Injuries/100k Pop.	1,204	806	67%

Table 2-1: Comparison of Collier County and State of Florida Crash Rates

Crash Distribution by Roadway Functional Class

Using the location data for each traffic crash report and a GIS layer representing Collier County's major road network (arterial and collector roads), all Collier County crashes from 2014 – 2018 were either assigned to a major roadway segment or classified as a local roadway crash.

Figure 2-2 shows the distribution of All Crashes and Severe Crashes in Collier County. Approximately three quarters of crashes occur along the County's major signalized arterial and collector road network with less than 10% occurring along I-75 and less than 20% occurring along local streets.

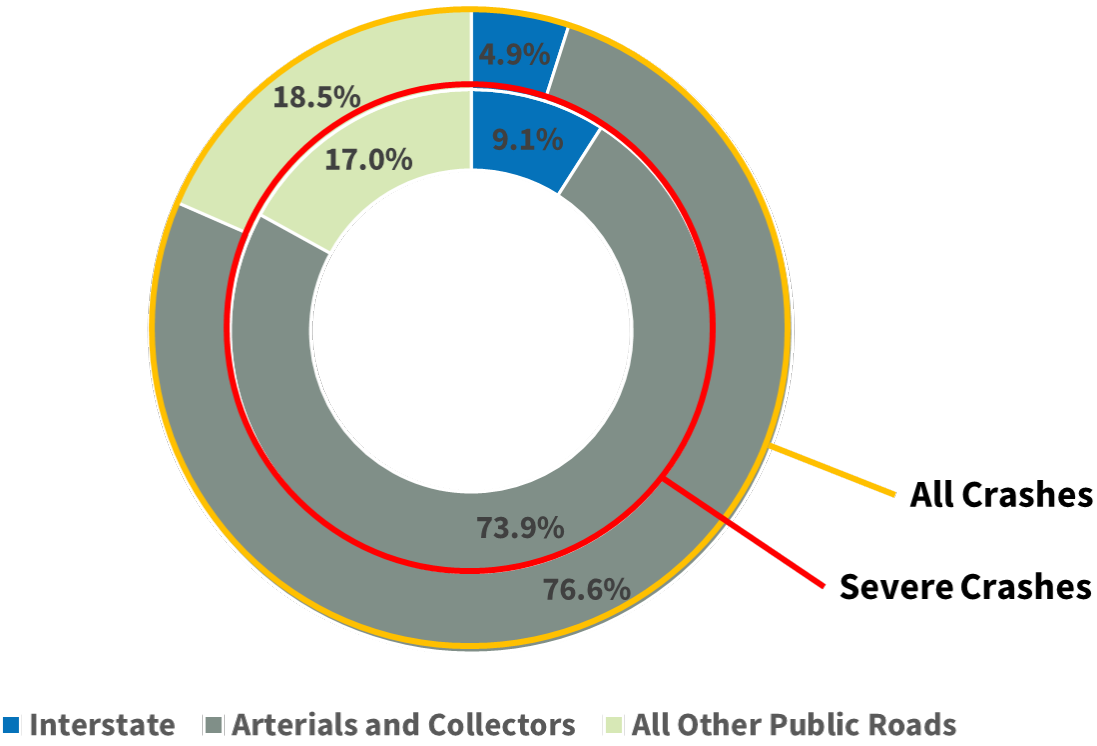

Figure 2-1: Crashes by Roadway Functional Classification

To put this data into context, Table 2-2 show how automobile traffic is distributed across Collier County's roadway network as compared with roadways statewide. The table shows that proportionally fewer vehicle miles of travel (VMT) in Collier County is handled by limited access highways (interstate, turnpike, etc.) while a greater share of VMT is handled by arterial roads and major collector roadways. These types of roadways tend have a higher number of reported crashes per VMT than limited access highways or lower-speed minor collectors and local roads.

ROADWAY FUNCTIONAL CLASSIFICATION	FLORIDA		COLLIER		CRASH CHARACTERISTICS
Interstate, Turnpike & Freeways	26%		21%		Limited Access, Low Crashes/VMT
Other Principle Arterials	25%	50%	16%	59%	Higher Speed, More Conflict Points
Minor Arterials	15%		29%		
Major Collectors	11%		14%		
Minor Collectors	2%	23%	2%	20%	Lower Speed, Less Severe Crashes
Locals	21%		18%		

Table 2-2: VMT Distribution of Collier County and Florida by Functional Classification

Crash Distribution of Major Roadway Crashes by Maintenance Authority

To understand how Collier County, the Florida Department of Transportation (FDOT), and the Cities of Naples and Marco Island each contribute to managing safety along the County's road network, it is useful to look at how crashes are distributed based on roadway ownership/maintenance responsibility. Figure 2-3 show the distribution of All Crashes, Severe Crashes, and Vehicle Miles of Travel along the County's major roadway network excluding I-75.

The percent of All Crashes and Severe Crashes is more-or-less proportional to each maintenance jurisdictions' overall vehicle miles of travel with a slightly higher proportion of Severe Crashes occurring along State Roads compared with County-Maintained Roads. In more metropolitan areas of Florida, there is a denser grid of state-maintained arterial roads than in Collier County. Accordingly, up to half of VMT and half of all crashes in those jurisdictions occur on the State Highway System. In Collier County, county-maintained major roadways—that look and function like state highways—carry a greater share of the load and therefore account for a more significant proportion of crashes.

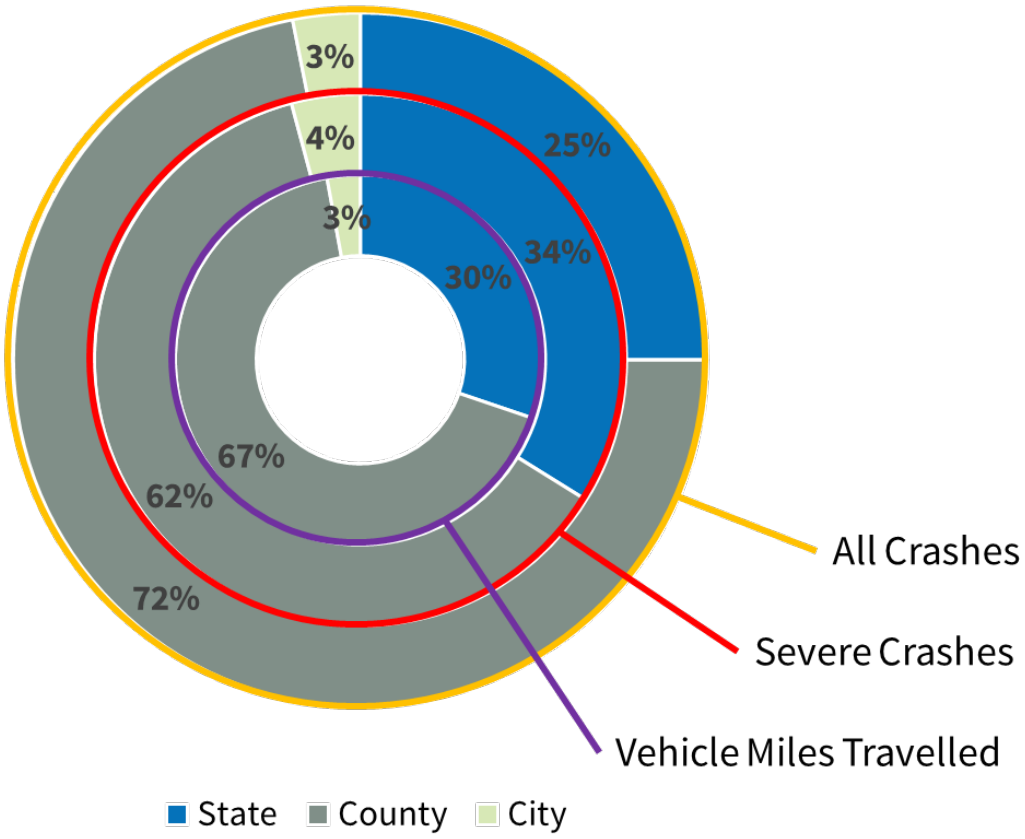

Figure 2-2: Crash Distribution by Major Roadway Maintenance Authority

Crash Distribution of Major Roadway Number of Lanes

Another way to understand Collier County's crash history—especially when comparing concentrations of Severe Crashes—is to look at the distribution of crashes by the number of roadway lanes along the major roadway network (excluding I-75). Referring to the inner ring of Figure 2-4, roadways with six or more lanes account half of arterial and collector roadway VMT and overall crashes but only 38% of Severe Crashes. Conversely, two-lane roadways account for 31% of VMT but 41% of Severe Crashes.

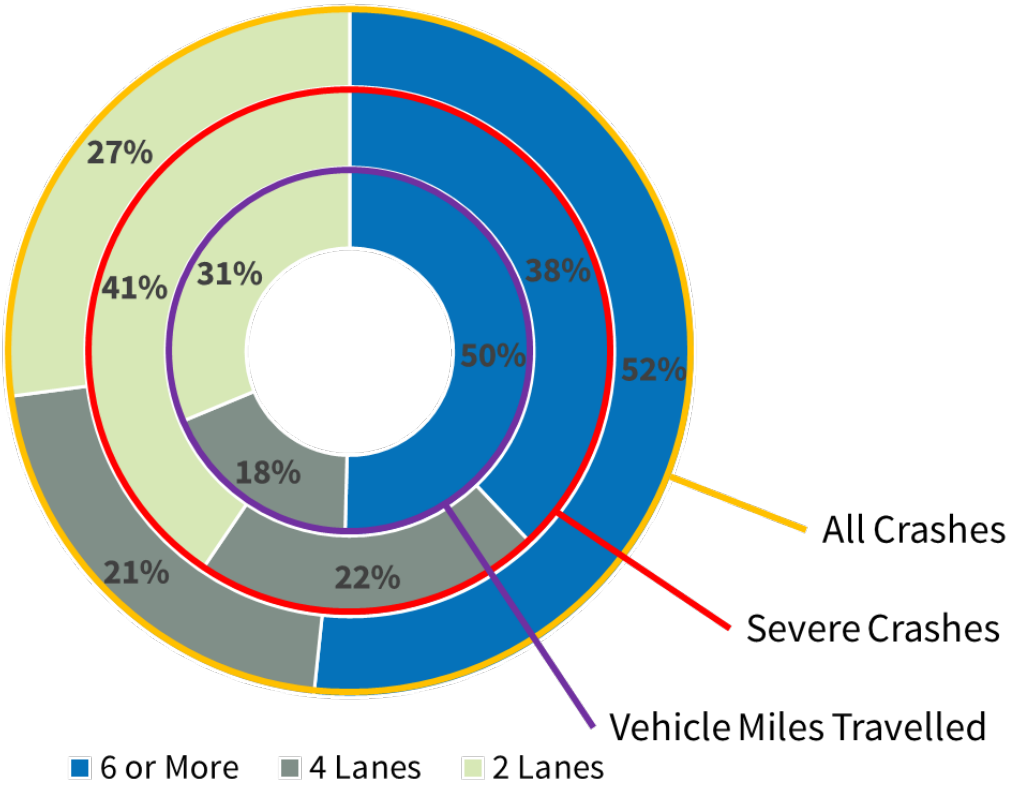

Figure 2-3: Crash Distribution by Major Roadway Number of Lanes

Crash Distribution by Area Type

The proportion of All Crashes, Severe Crashes, and VMT was also compared for the western, more urban part of the county and the eastern, more rural part of Collier County using County Road 951/Collier Boulevard as an approximate meridian. Including travel on I-75, approximately 60% of all VMT occurs on major roadways to the west of and including CR 951 and these roadways account for nearly three quarters of All Crashes and about 57% of Severe Crashes.

Roadways in the eastern, more rural part of the County account for proportionally fewer crashes overall, but a somewhat higher proportion of Severe Crashes compared with VMT. This data, combined with the prior analysis of crash severity by number of lanes indicates a potential issue with rural highway safety including a potential for single-vehicle (lane departure) crashes.

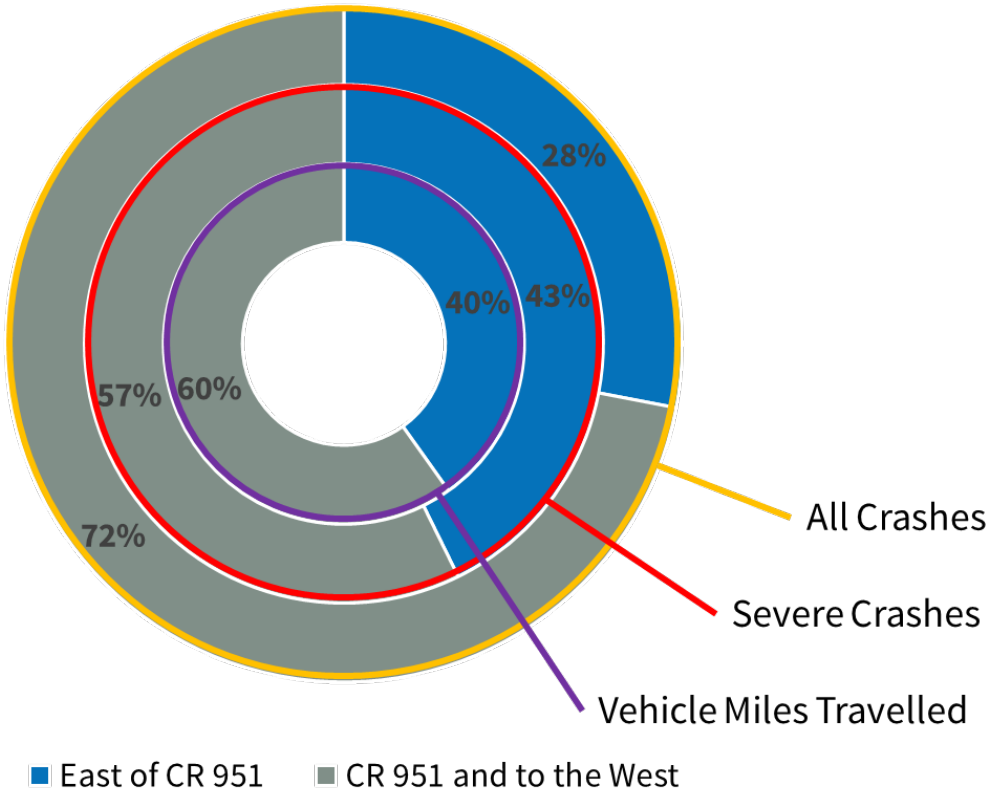

Figure 2-4: Major Roadway Crashes by Sub-Area

Crash Distribution by Lighting Condition

In addition to the roadway characteristics of the County's Crash history, it is also helpful to understand key environmental conditions. One of the most useful of these is the lighting condition in which crashes occur. Because crash report coding of lighting condition does not always reflect whether nighttime lighting is functionally adequate (i.e. meets applicable AASHTO or FDOT standards) it is better to focus on whether crashes occurred during daylight or non-daylight conditions as a primary indicator while considering the specific non-daylight conditions as a secondary measure.

The chart on the left of Figure 2-6 compares the observed lighting condition of All Crashes and Severe Crashes while the chart on the right shows a comparison between All Non-Motorized Crashes, Severe Non-Motorized Crashes and All Crashes. The overall percentage of non-daylight crashes (22%) is about typical for the State of Florida (25%). This data also shows that Severe Crashes are more likely to occur outside of daylight hours for both motorized and non-motorized crashes.

The preponderance of severe non-motorized crashes during non-daylight hours is also a common finding statewide and nationally and reflects the fact that drivers' ability to observe, react, and respond to non-motorized users in the roadway is drastically diminished at night due to the frequent lack of adequate running lights on bicycles or use of retroreflective clothing by cyclists and pedestrians.

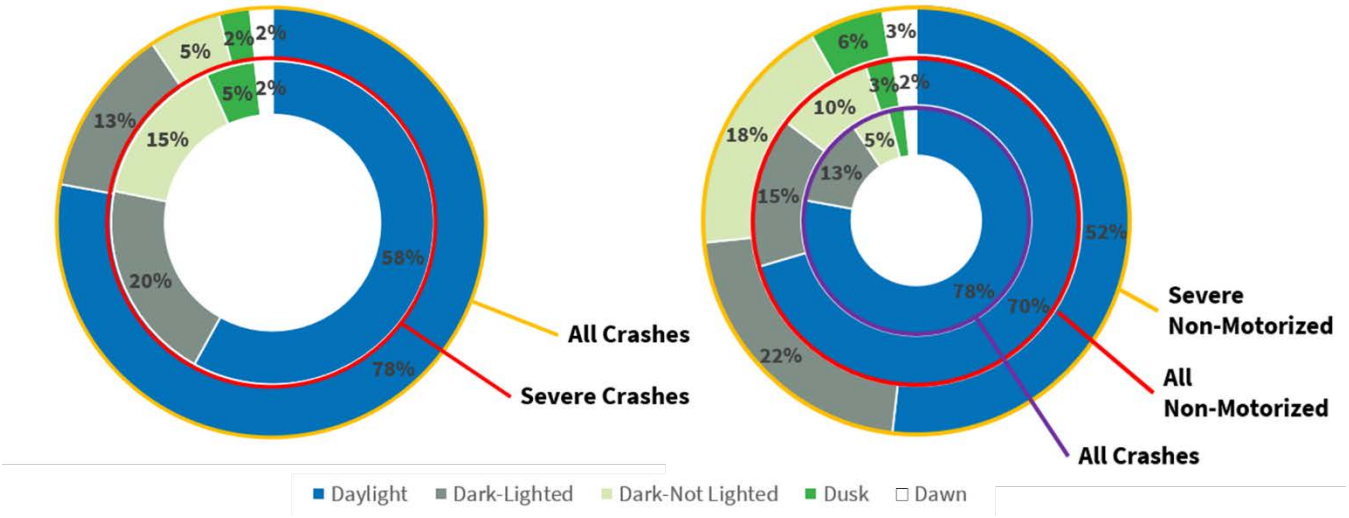

Figure 2-5: Lighting Condition

Crash Type Distribution

A critical way of looking at Collier County's crash history is to understand what type of crashes occur most frequently and what type of crashes result in the most incapacitating injuries and fatalities. Figure 2-7 shows All Crashes ranked by crash type and shows the percent of Severe Crashes for each crash type. This data shows that while rear end crashes are the most common overall crash type—nearly half of all crashes are assigned to the "rear end" crash type—and result in the highest overall number of Severe Crashes, the relative severity of rear end crashes is lower than many other crash types.

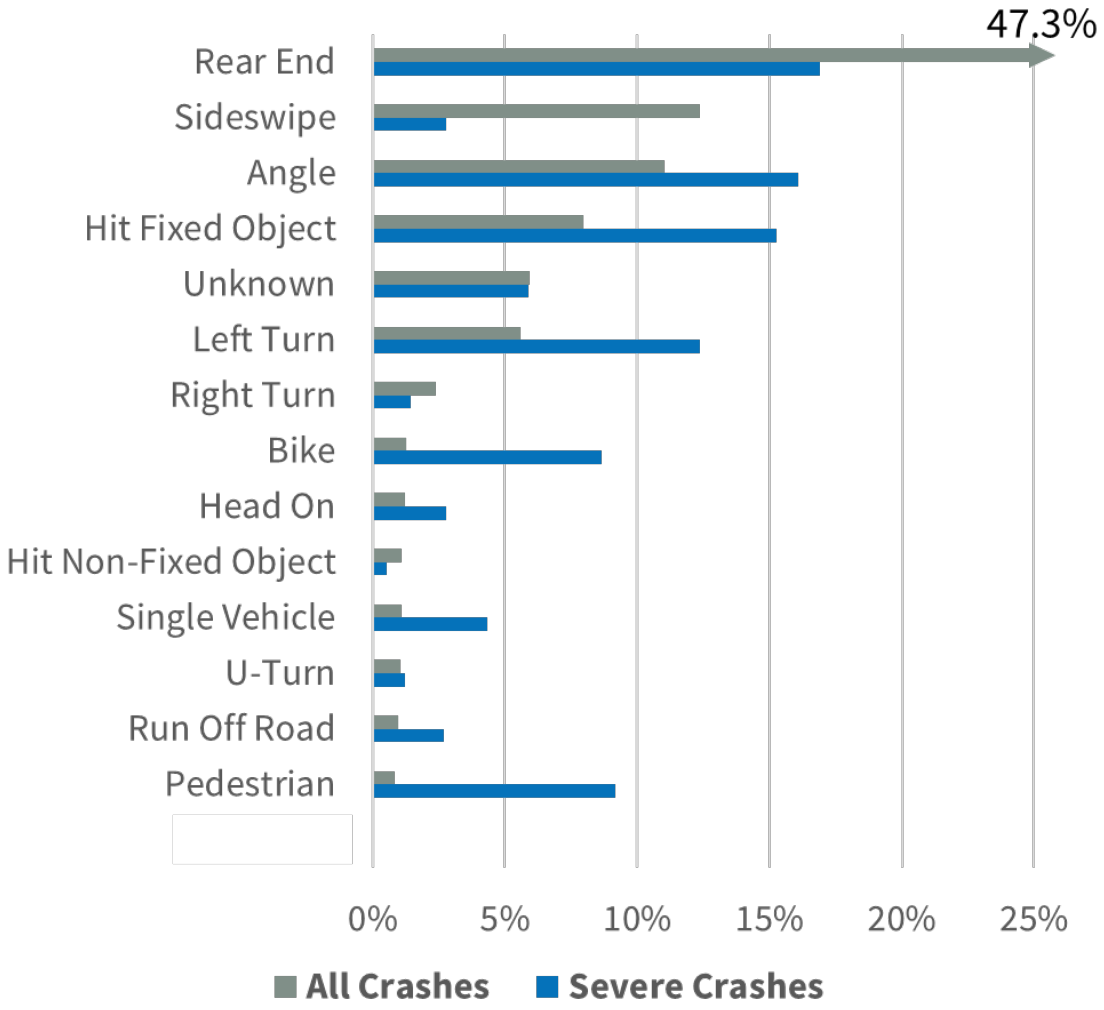

Figure 2-7: Crash Type Distribution

Figure 2-8 shows crash type and severity data shown in Figure 2-7 presented as a two-by-two matrix. The top left quadrant represents crash types that have a high severity ratio (account for a greater percentage of severe crashes than overall crashes) and also a high absolute number of severe crashes (account for more than 5% of all severe crashes). This quadrant is the most important strategically since eliminating a relatively small percentage of overall crashes can have a relatively large effect in reducing life-altering injuries and fatalities.

	High Severity Ratio	Low Severity Ratio
High Severity Frequency (> 5% of All Severe Crashes)	Bike Pedestrian Left Turn Angle Hit Fixed Object	Rear End Unknown/Other
Low Severity Frequency (<5% of All Severe Crashes)	Head On Single Vehicle U-Turn Run Off Road	Sideswipe Right Turn Hit Non-Fixed Object

Figure 2-8: Crash Type and Severity Matrix

Driver Age

In addition to understanding where and how crashes occur in Collier County, it is also useful to consider demographic information about the people involved in crashes. Figure 2-9 shows the relative contribution of different aged drivers to crashes countywide. The figure also shows the extent to which each age bracket contributes to the County's overall population. This data indicates that young drivers are more likely to cited as "at fault" in crashes both in absolute terms and in proportion to their representation in the County's population.

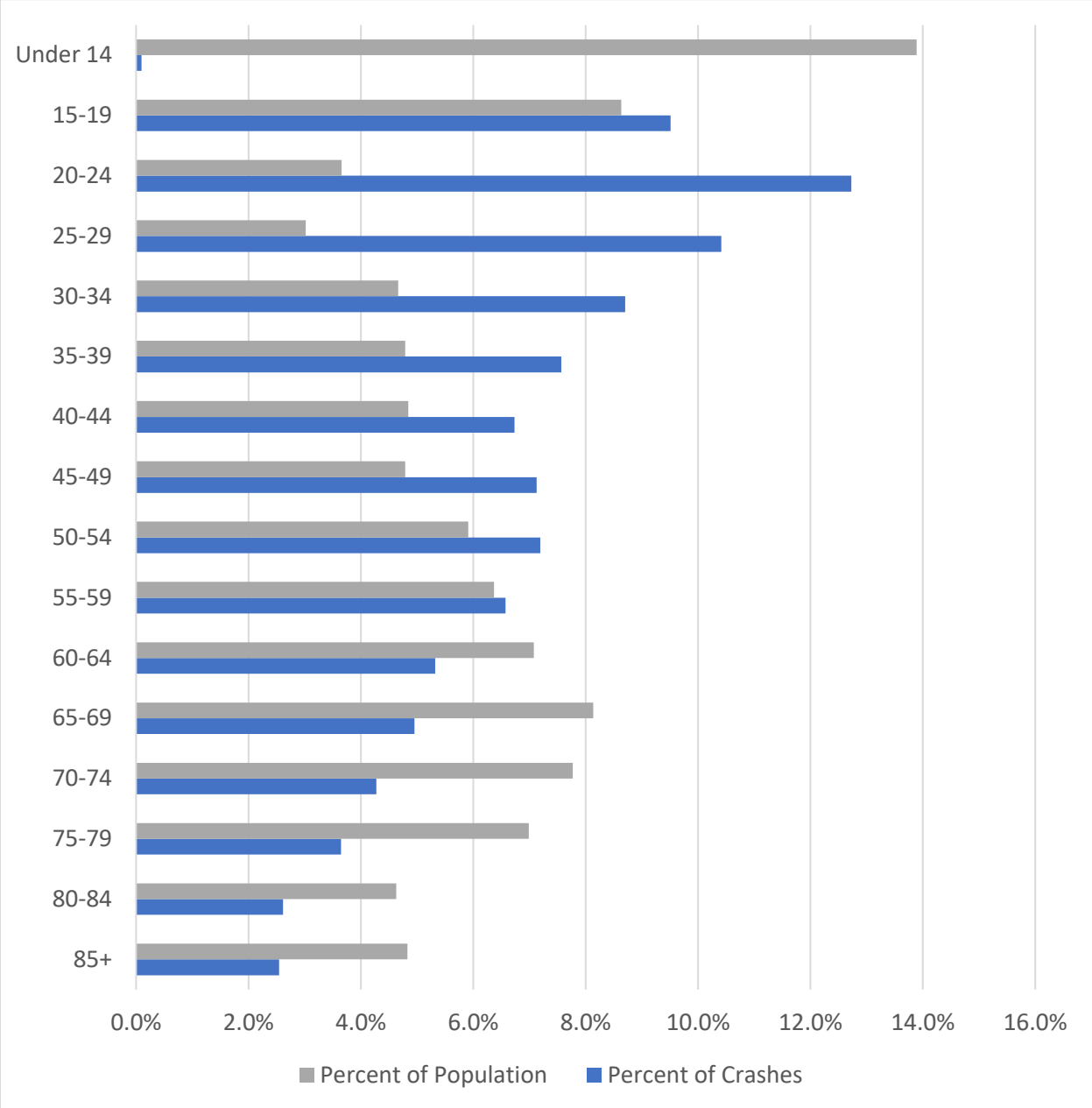

Figure 2-6: At Fault Driver Age

While it is common to find that younger drivers are at a greater risk of being involved in a crash, it is unusual to find that middle-aged adult drivers are over-represented compared to older drivers. To understand this data better, Crash Time-of-Day data was compared to At Fault Driver Age looking at drivers 54 and younger and 55 and up. Figure 2-10 confirms that some of the difference in older and younger driver risk is related to the time of day.

Across all time periods drivers 54 and younger account for 70% of all crashes and drivers 55 and older account for the remaining 30% of all crashes. Accordingly, the younger age group is over dramatically over-represented late at night but also during the morning and afternoon rush hours and in the evening. Conversely older drivers very rarely are at fault in late night crashes and are instead over-represented during the midday period.

While not definitive proof, this data implies that part of the lower risks attributed to older drivers is that they are less likely to drive at night and may also avoid driving during the most congested times of day.

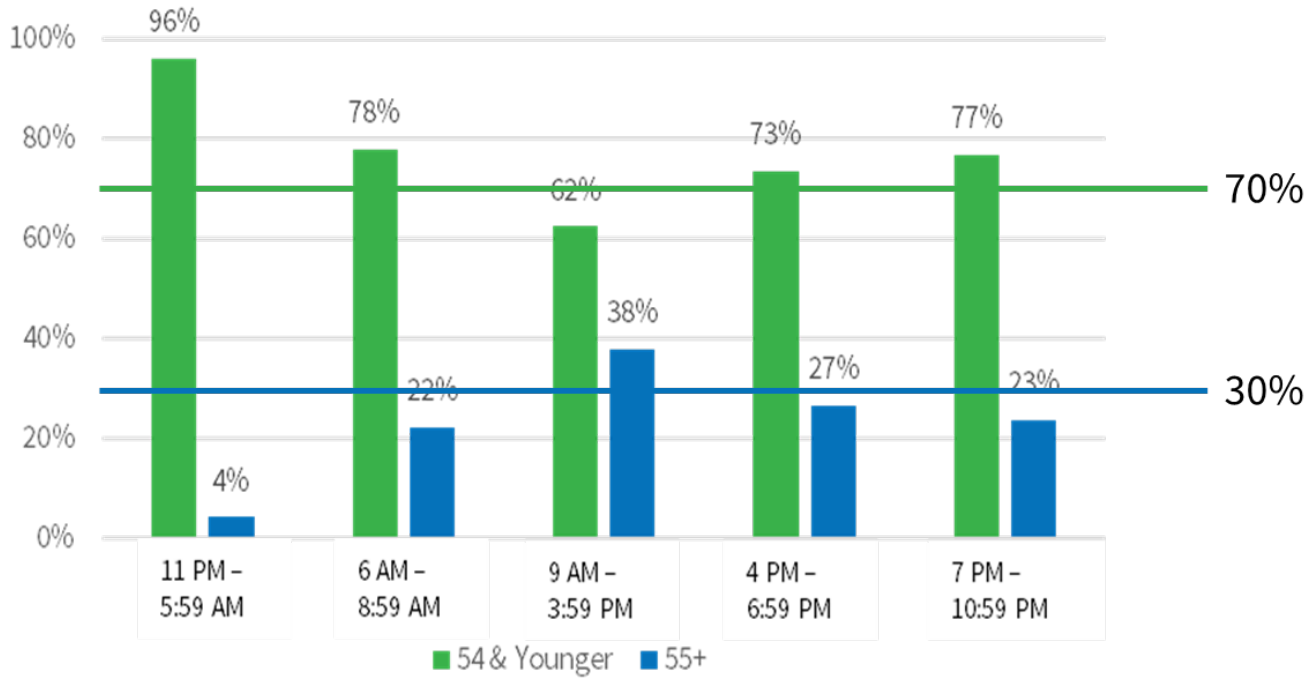

Figure 2-7: Crash Distribution for Age 54 & Younger vs. 55 and Older

Temporal Trends

Figures 2-11 shows annual crash frequencies for crashes in Collier County from 2014 – 2018. Reported crashes have ranged from a low of approximately 7,600 crashes in 2014 to a high of nearly 9,000 crashes in 2016. Nominally, the trend in crash frequency is increasing by about 130 crashes per year; however, the year over year data is somewhat erratic resulting in a low R2 value of about 0.20.

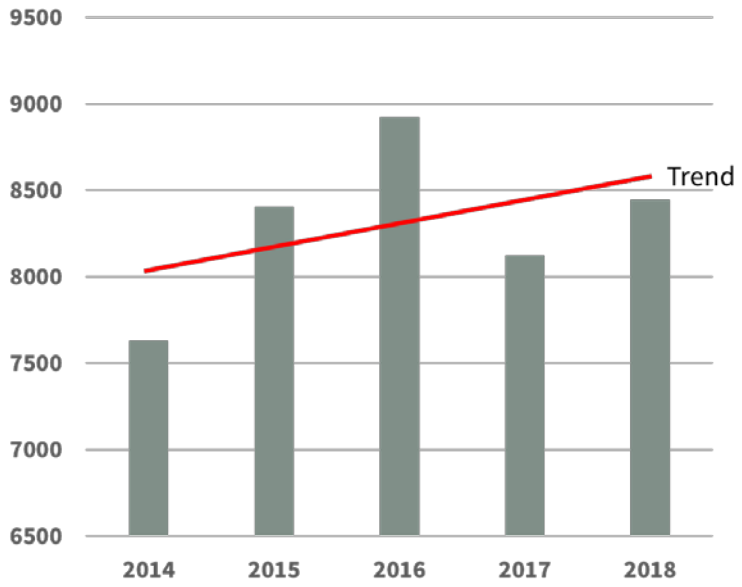

Figure 2-8: Crash Trend from 2014 to 2018

Figures 2-12 shows average monthly crash frequencies Collier County from 2014 – 2018. Over this period there is an average of approximately 700 reported crashes per month with a monthly distribution that more-or-less reflects the overall seasonal traffic patterns exhibited in Collier County.

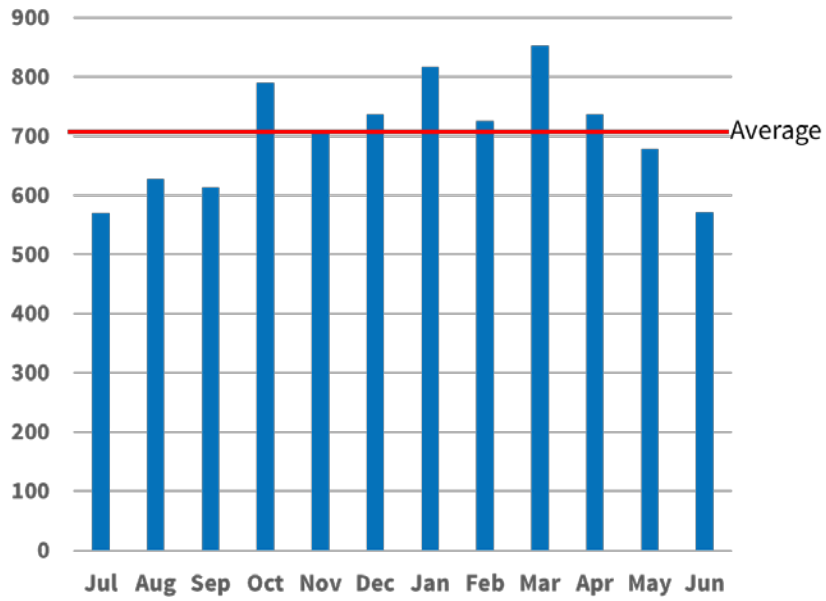

Figure 2-9: Average Crashes per Month

SECTION 3: TRAFFIC CITATION ANALYSIS

Traffic citation data is another lens through which to analyze traffic safety in Collier County. For the Local Road Safety Plan, citation data from 2014 – 2018 was obtained from the Florida Department of Highway Safety and Motor Vehicles (DHSMV) for Collier County, the State of Florida, and several "peer" counties.

Figure 3-1 shows the most common moving violations recorded in Collier County. "Exceeding the Posted Speed" (speeding) accounts for more than half of all moving violations followed by "Disregard Traffic Control Device" (e.g. ran stop sign or yield sign) and "Disregard Traffic Signal" (ran red light).

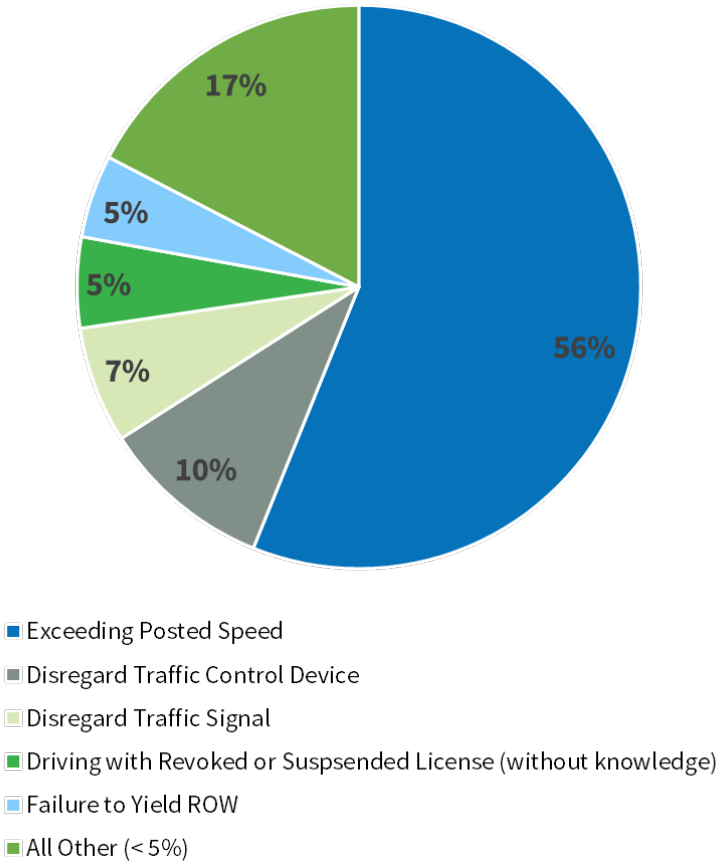

Figure 3-3-1: Most Common Collier County Moving Violations

Figure 3-2 shows the distribution of traffic citations by issuing agency for Collier County. This data indicates that the Collier County Sheriff's Office accounts for about 45% of all traffic citations followed by the Florida Highway Patrol with 39%. The Cities of Naples and Marco Island collectively issue about 15% of the citations countywide.

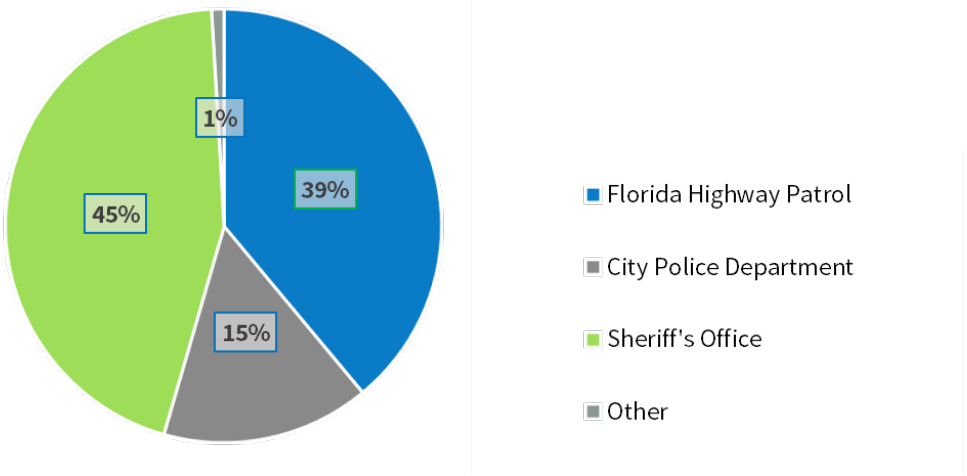

Figure 3-2: Traffic Citation by Law Enforcement Agency (LEA)

Figure 3-3 compares traffic citation activity in Collier County with similarly sized coastal Florida Counties and with the State of Florida overall. This data suggests that Collier County law enforcement agencies issue fewer citations on average than the State of Florida and most peer counties in terms of both citations per capita and citations per vehicle miles of travel.

State and County	Violations (2014-18)	Total VMT (2014-18)	Citations per 100K VMT	Population	Citations per 100K Pop.
Florida	1,978,741	582,491,060	340	20,159,183	9,816
Collier	22,136	9,939,709	223	351,121	6,304
Brevard	29,592	17,784,554	166	568,367	5,206
Escambia	24,176	9,657,445	250	310,556	7,785
Lee	83,614	20,667,894	405	682,448	12,252
Manatee	23,208	10,038,803	231	358,616	6,472
Sarasota	33,880	12,052,890	281	400,694	8,455

Table 3-1: Traffic Citations per Capita and per VMT Comparison

Table 3-2 shows the types of criminal, non-criminal (moving), and non-moving traffic violations in Collier County compared with the State of Florida. Generally high-frequency citation types in Collier County align with those issued statewide; however, the following exceptions are noteworthy:

- Collier County issues a lower percentage of citations for driving with a suspended or revoked drivers license. This may be due, in part, to the relative affluence of Collier County compared with the State.
- Collier County does not have a substantial number of red-light running camera violations. These account for approximately 15% of moving violations statewide.

COLLIER COUNTY			STATE TOTALS		
Infraction	Average Annual Citations	Percent of Category	Infraction	Average Annual Citations	Percent of Category
CRIMINAL					
DR/DL/Sus/RV	1,287	25%	DR/DL/SUS/RV	149,717	37%
No/Imp/Expired Driver's License	1,243	24%	No/Imp/Expired Driver's License	87,385	22%
DUI	1,173	23%	DUI	45,791	11%
Other Crime	349	7%	No/Imp/Exp TAG	36,220	9%
No/Imp/Exp. Tag	240	5%	Other Crime	20,857	5%
All Other (< 5%)	400	9%	All Other (<5%)	30,648	8%
NON-CRIMINAL (MOVING)					
Exceeding Posted Speed	12,428	56%	SPD Post Zone	746,886	38%
Disregard Traffic Control Device	2,182	10%	Red Light Camera	302,601	15%
Disregard Traffic Signal	1,480	7%	Careless Dr	203,096	10%
Driving with Revoked or Suspended License (without knowledge)	1,154	5%	Disregard Traffic Control Device	116,733	6%
Failure to Yield ROW	1,053	5%	UNK DR/DL/SUS/RV	93,217	5%
All Other (< 5%)	3,850	17%	All Other (<5%)	516,207	26%
NON-MOVING INFRACTIONS					
Exp/Fail Display Tag	2,637	25%	Exp/Fail/ Display Tag	253,969	28%
No Proof of Insurance	2,518	24%	No Proof of Insurance	215,538	24%
Seat Belt Viol	2,215	21%	Seat Belt Viol	159,253	18%
Other	1,185	11%	Other	81,346	9%
Exp/Fail Display DL	1,097	10%	Exp/Fail Disp DL	67,964	8%
Def/Unsafe Equip	536	5%	Def/Unsafe Equip	63,465	7%
All Other (<5%)	199	2%	All Other (<5%)	30,158	3%

Table 3-2: Traffic Citations (State Totals vs. Collier County)

SECTION 4: COLLIER LRSP EMPHASIS AREAS

Based on the data analysis described above, four key Collier County Local Road Safety Plan emphasis areas were identified for further analysis and identification of high-crash corridors. Referring to Figure 2-8, the following crash types were identified as having a high severity ratio (constituting a greater percentage of Severe Crashes than All Crashes) and as accounting for a high overall number of Severe Crashes (more than 5% of total Severe Crashes):

- Bicycle
- Pedestrian
- Left Turn
- Angle
- Hit Fixed Object

Additionally, Rear End, Single Vehicle, Head On, and Run-Off-Road crash types either account for a high frequency of Severe Crashes or have a high severity ratio. Based on similar characteristics and countermeasure profiles, these crash types can be combined to form the following Emphasis Areas:

- Non-Motorized (Bicycle and Pedestrian crashes)
- Intersection (Left Turn and Angle crashes)
- Lane Departure (Hit Fixed Object, Single Vehicle, Head On, and Run Off Road crashes)
- Same Direction (Rear End and Sideswipe crashes)

Table 4-1 shows a summary of Emphasis Area crash statistics excluding private roads and interstate highways. Each emphasis area is discussed further throughout the remainder of this section including a summary of high-crash corridors and a "heat map" showing crash concentrations for each emphasis areas. Because much of Collier County is undeveloped, the maps in this section focus on the western, urban part of the county and the area around Immokalee and Marco Island.

	All Crashes	Non-Motorized	Intersection	Lane Departure	Same Direction
Total Crashes	38,887	862	6,819	3,829	23,419
Injury Crashes	3,469	448	1,030	567	1,111
Total Injuries	4,719	470	1,621	747	1,492
Total Serious Injuries	928	136	326	201	187
Fatal Crashes	148	38	39	53	10
Total Fatalities	160	38	40	64	10
Severity Ratio	2.4%	15.8%	4.8%	5.2%	0.8%
Percent of All Crashes	NA	2%	18%	10%	60%
Percent of Severe Injuries	NA	15%	35%	22%	20%
Percent of Fatalities	NA	24%	25%	40%	6%

Table 4-1: Emphasis Area Summary

Emphasis Area 1: Non-Motorized Crashes

Non-motorized crashes (crashes where a pedestrian or bicyclist are involved) are a statewide emphasis area and an important component of traffic safety challenges in Collier County. These crashes account for only 2% of all reported crashes in Collier County but constitute 15% of the County's severe injury crashes and 24% of the County's crash fatalities.

Table 4-2 shows a list of major roadway corridors with the most non-motorized crashes and Figure 4-1 shows a "heat map" of non-motorized user crashes. Consistent with prior Collier MPO Bicycle/Pedestrian safety analyses, key focus areas include the area defined by US 41 (Tamiami Trail), Airport Road, and Davis Boulevard and SR 29 through the town of Immokalee.

Other critical corridors are listed below and highlighted in Figure 4-1.

On Street	From Street	To Street	Crashes	Fatal Crashes	Incap. Injury Crashes
Airport Road	US 41 (Tamiami Trail)	Davis Boulevard	31	2	3
Tamiami Trail East	Davis Boulevard	Airport Road	24	2	2
Tamiami Trail North	Vanderbilt Beach Road	Immokalee Road	22	1	0
SR 29	1st St	9th Street	21	1	4
Bayshore Drive	Thomasson Drive	US 41 (Tamiami Trail)	20	0	3
Radio Road	Livingston Road	Santa Barbara Boulevard	20	0	2
SR 29	9th Street	Immokalee Dr	19	0	5
Tamiami Trail East	Airport Road	Rattlesnake Hammock Road	19	0	2
Collier Boulevard	Vanderbilt Beach Road	Immokalee Road	16	0	1
Lake Trafford Rd	Carson Rd	SR 29	16	1	3
Immokalee Rd	Stockade Rd	SR 29	15	0	2
Davis Boulevard	Lakewood Boulevard	County Barn Road	14	0	2
SR 29	Immokalee Dr	CR 29A North	14	1	2
Airport Road	Davis Boulevard	North Rd	13	0	2
Airport Road	Radio Road	Golden Gate Parkway	13	0	1

Table 4-2: Non-Motorized High Crash Corridors

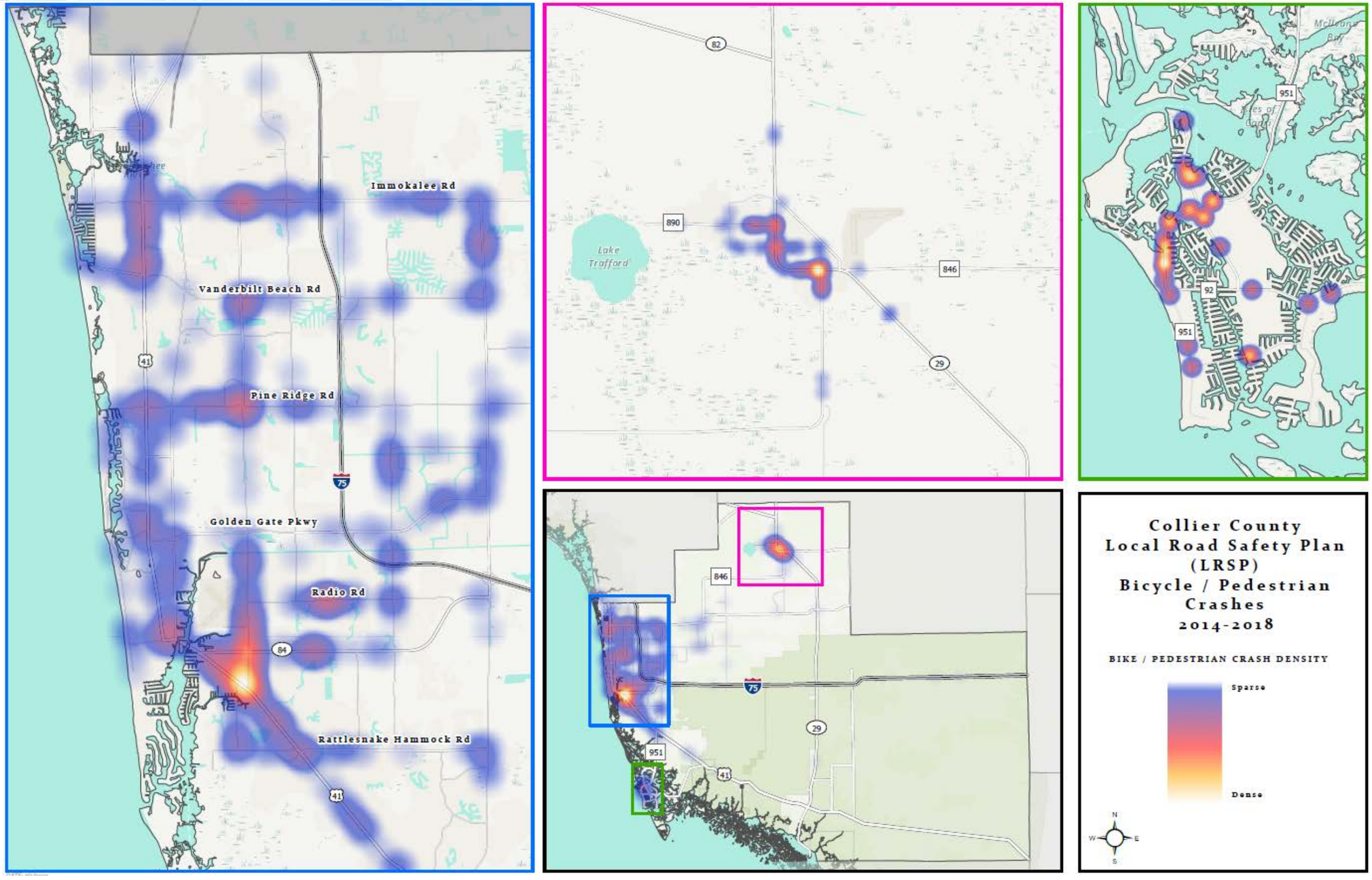

Figure 4-1: Non-Motorized Crash Heat Map

Emphasis Area 2: Intersection Crashes (Angle and Left Turn)

Angle and left turn crashes involve either two motor vehicles travelling at roughly perpendicular directions or a motor vehicle making a left turn across the path of an oncoming vehicle. Because these crashes are often extremely violent, high-energy events, they are more likely to result in incapacitating or fatal injuries than crashes in which vehicles are travelling in the same direction. These crashes account for only 18% of all crashes but 35% of severe injuries and 25% of fatalities.

Table 4-3 shows a list of major roadway corridors with the most angle and left turn crashes based on the data mapped in Figure 4-2. Many of the high-crash corridors include one or more high-volume arterial intersections; however, some corridors, including Golden Gate Parkway (Santa Barbara Blvd. to Collier Blvd.) include crash concentrations associated with lower-volume intersections.

On Street	From Street	To Street	Crashes	Fatal Crashes	Incap. Injury Crashes
Golden Gate Parkway	Santa Barbara Boulevard	Collier Boulevard	190	0	4
Tamiami Trail North	SR 84 (Davis Blvd)	CR 851 (Goodlette Rd South)	136	0	1
Collier Boulevard	Golden Gate Pwky	Green Boulevard	111	1	4
Tamiami Trail North	12th Ave	Park Shore Dr / Cypress Woods Dr	106	0	4
Goodlette-Frank Road	US 41 (Tamiami Trail)	Golden Gate Parkway	87	0	3
Tamiami Trail North	Park Shore Dr / Cypress Woods Dr	Pine Ridge Rd / Seagate Dr	84	1	2
Santa Barbara Boulevard	Golden Gate Parkway	Green Boulevard	82	0	1
Airport Road	Radio Road	Golden Gate Parkway	81	1	1
Airport Road	Pine Ridge Road	Orange Blossom Drive	74	2	1
Goodlette-Frank Road	Golden Gate Parkway	Pine Ridge Road	74	0	4
Pine Ridge Road	Airport Road	Livingston Road	73	0	2
Collier Boulevard	Vanderbilt Beach Road	Immokalee Road	67	0	4
SR 29	9th Street	Immokalee Dr	67	0	2
Tamiami Trail North	Pine Ridge Rd / Seagate Dr	Gulf Park Drive	65	1	4
Tamiami Trail East	Airport Road	Rattlesnake Hammock Road	63	1	2

Table 4-3: Intersection (Angle and Left Turn) High-Crash Corridors

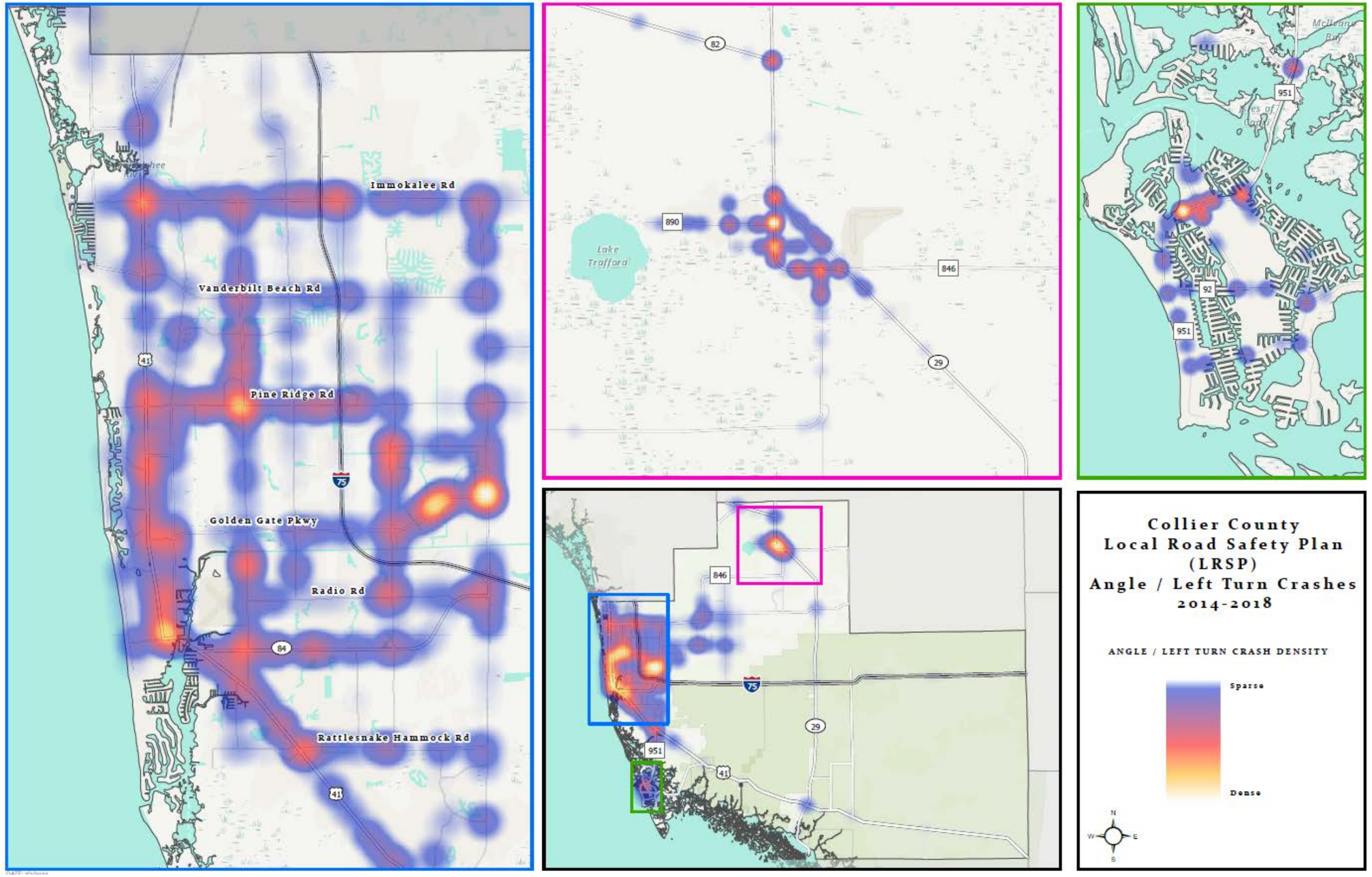

Figure 4-2: Angle and Left Turn Crash Heat Map

Emphasis Area 3: Lane Departure

Lane departure crashes, less formally referred to as "run-off-road" crashes, include crash types where a single vehicle leaves the roadway and either strikes a fixed object or otherwise crashes. Head-on crashes, though a rare event, are included in this Emphasis Area as well as they are precipitated by similar circumstances. Because these types of crashes often involve vehicles travelling at speed, they are more likely to have severe outcomes. In Collier County roadway departure crashes account for only 10% of overall crashes but are responsible for 22% of severe injuries and 40% of fatalities.

Table 4-4 shows a list of major roadway corridors with the most lane departure crashes and Figure 4-3 shows a "heat map" of non-motorized user crashes. While more lane departure crashes occur in the along busier roadways west of and including Collier Boulevard, approximately 40% of these crashes occur along rural highways and local roadways in the eastern part of Collier County.

On Street	From Street	To Street	Crashes	Fatal Crashes	Incap. Injury Crashes
Immokalee Rd	Collier Boulevard	Wilson Boulevard	51	1	3
Immokalee Rd	Oil Well Road	Stockade Rd	45	0	4
Golden Gate Boulevard	Collier Boulevard	Wilson Boulevard	43	0	2
Airport Road	Radio Road	Golden Gate Parkway	39	0	1
Airport Road	Pine Ridge Road	Orange Blossom Drive	35	0	1
Goodlette-Frank Road	US 41 (Tamiami Trail)	Golden Gate Parkway	35	0	1
Collier Boulevard	Vanderbilt Beach Road	Immokalee Road	33	0	2
Tamiami Trail North	12th Ave	Park Shore Dr / Cypress Woods Dr	33	0	0
Tamiami Trail North	SR 84 (Davis Blvd)	CR 851 (Goodlette Rd South)	33	0	0
Collier Boulevard	US 41 (Tamiami Trail)	Rattlesnake Hammock Road	32	0	2
Collier Boulevard	Rattlesnake Hammock Road	Davis Boulevard	31	0	2
Collier Boulevard	Mainsail Drive	Manatee Road	29	0	0
Tamiami Trail East	Rattlesnake Hammock Road	Treetops Dr	29	0	2
Vanderbilt Beach Road	Logan Blvd	Collier Blvd	28	0	1
Pine Ridge Road	Airport Road	Livingston Road	28	0	1

Table 4-4: Lane Departure High Crash Corridors

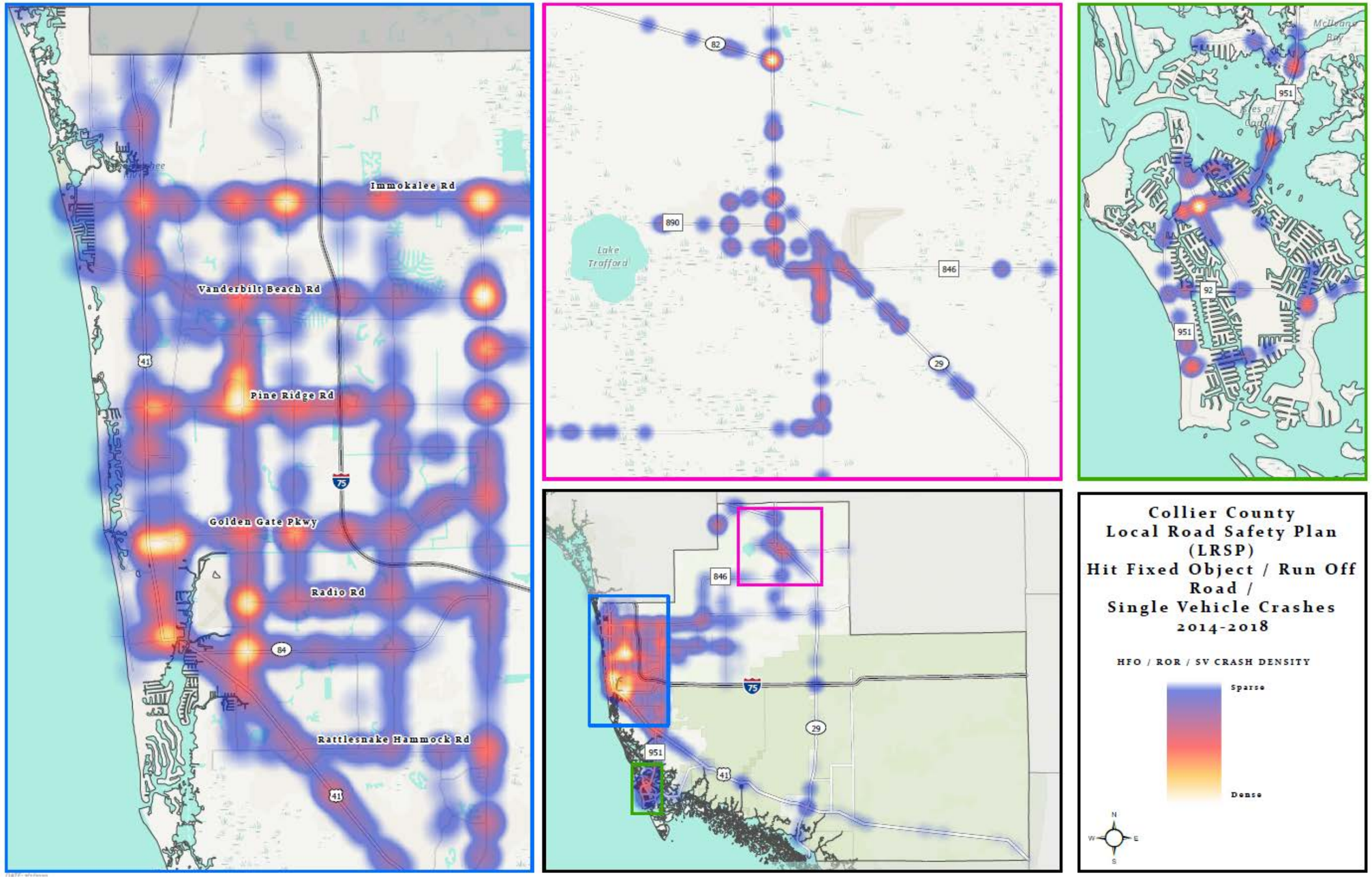

Figure 4-3: Lane Departure Crash Heat Map

Emphasis Area 4: Same Direction (Rear End and Sideswipe) Crashes

Rear-end and sideswipe crashes are much less likely to result in incapacitating or fatal injuries than crash types included in the other three emphasis areas; however, these crashes are the most common type of crash to occur and therefore contribute to injuries and deaths as a function of their frequency.

Table 4-5 shows a list of major roadway corridors with the most non-motorized crashes and Figure 4-1 shows a "heat map" of non-motorized user crashes. Consistent with prior Collier MPO Bicycle/Pedestrian safety analyses, key focus areas include the area defined by US 41 (Tamiami Trail), Airport Road, and Davis Boulevard and SR 29 through the town of Immokalee.

On Street	From Street	To Street	Crashes	Fatal Crashes	Incap. Injury Crashes
Pine Ridge Road	Airport Road	Livingston Road	653	0	4
Airport Road	Radio Road	Golden Gate Parkway	512	0	3
Airport Road	Pine Ridge Road	Orange Blossom Drive	511	0	1
Immokalee Rd	I-75	Logan Boulevard	474	0	1
Collier Boulevard	Vanderbilt Beach Road	Immokalee Road	435	0	0
Golden Gate Parkway	Santa Barbara Boulevard	Collier Boulevard	390	0	1
Tamiami Trail North	Immokalee Road	Wiggins Pass Road	386	0	2
Golden Gate Parkway	Livingston Road	I-75	384	0	2
Immokalee Rd	Logan Boulevard	Collier Boulevard	383	0	3
Tamiami Trail East	Airport Road	Rattlesnake Hammock Road	383	0	4
Pine Ridge Road	Livingston Road	I-75	372	0	0
Immokalee Rd	Livingston Road	I-75	367	0	1
Vanderbilt Beach Road	Livingston Road	Logan Blvd	359	0	0
Goodlette-Frank Road	Golden Gate Parkway	Pine Ridge Road	351	1	3
Pine Ridge Road	Airport Road	Livingston Road	653	0	4

Table 4-5: Same Direction High Crash Corridors

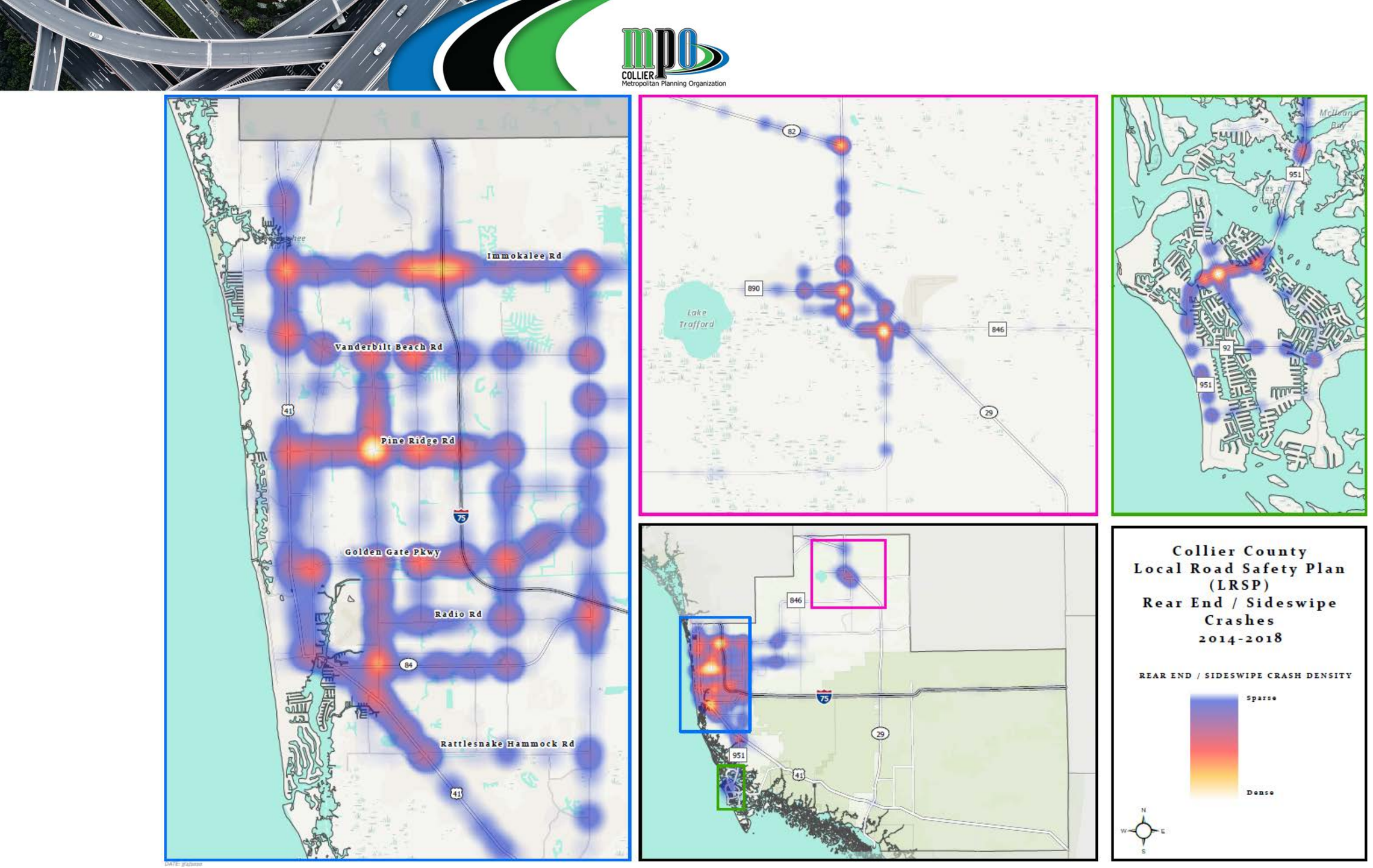

Figure 4-4: Same Direction Crash Heat Map

SECTION 5: KEY CONCLUSIONS

Based on the data analysis summarized above, the following key conclusions are evident:

- Collier County has fewer crashes, traffic injuries, and traffic fatalities than the State of Florida as a function of population and daily vehicle miles of travel.
- As is common in many urbanized Florida communities, a significant majority of public road traffic crashes, including severe injury crashes, occurs along elements of the County's arterial and collector road network.
- Because Collier County has a relatively sparse network of State Highways and many County-maintained roadways that carry significant traffic volume, approximately 2/3 of crashes occur along county-maintained roadways. This means Collier County has substantial agency to self-manage safety outcomes on its roadway network.
- Driver age data shows that older road users DO NOT disproportionately contribute to crashes in Collier County; however, inferential time-of-day data suggests that older drivers (55+) also have less exposure to nighttime driving and driving during rush hour.
- Fewer traffic citations per capita and per vehicle mile of travel are issued in Collier County than in the State of Florida and within a group of similarly sized coastal counties.
- Certain crash types contribute disproportionately to incapacitating injury and fatal crashes. Collectively, non-motorized road user, angle and left turn, and lane departure crashes account for 30% of all crashes but result in 72% of severe injuries and 89% of fatalities.
- Though significantly less likely to result in severe injury than the crash types discussed above, rear-end and sideswipe crashes nonetheless result in a significant number of incapacitating injuries due to their frequency.

Appendix A: Glossary

Appendix B: Public Outreach Survey Summary

Collier County MPO
Local Road Safety Plan

Recommendations Technical Memorandum

09/20/2020

Draft/Final

Prepared for

Prepared by:

Tindale Oliver

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SECTION 1: INTRODUCTION AND PROBLEM STATEMENT

Introduction

Based on the data analysis documented in the Collier Local Road Safety Plan Statistical Analysis Technical Memorandum, the following key conclusions help to formulate data-driven recommendations for reducing crashes, injuries, and fatalities in Collier County.

1. **Roadway Safety Relative to the State of Florida:** Collier County has fewer crashes, traffic injuries, and traffic fatalities than the State of Florida as a function of population and daily vehicle miles of travel.
2. **Major Roadway Focus:** As is common in many urbanized Florida communities, a significant majority of public road traffic crashes, including severe injury crashes, occurs along elements of the County's arterial and collector road network.
3. **Local Autonomy:** Because Collier County has a relatively sparse network of State Highways and many County-maintained roadways that carry significant traffic volume, approximately 2/3 of crashes occur along county-maintained roadways. This means Collier County has substantial agency to self-manage safety outcomes on its roadway network.
4. **Driver Demographics:** Driver age data shows that older road users DO NOT disproportionately contribute to crashes in Collier County; however, inferential time-of-day data suggests that older drivers (55+) also have less exposure to nighttime driving and driving during rush hour.
5. **Moderate Enforcement:** Fewer traffic citations per capita and per vehicle mile of travel are issued in Collier County than in the State of Florida and within a group of similarly sized coastal counties.
6. **High Severity Emphasis Areas:** Certain crash types contribute disproportionately to incapacitating injury and fatal crashes. Collectively, non-motorized road user, angle and left turn, and lane departure crashes account for 30% of all crashes but result in 72% of severe injuries and 89% of fatalities.
7. **High Frequency Emphasis Area:** Though significantly less likely to result in severe injury than the crash types discussed above, rear-end and sideswipe crashes nonetheless result in a significant number of incapacitating injuries due to their frequency.

Each of these conclusions is considered below to begin formulating recommended strategies.

Conclusion #1 and 4: Roadway Safety Relative to the State of Florida and Driver Demographics

Data from 2014 – 2018 indicates that Collier County experiences approximately 25% fewer traffic crashes and fatalities than the State of Florida when normalized for both population and vehicle miles of travel (VMT). Understanding what factors contribute to this can help to build on Collier County's existing strengths. Some potential explanations for Collier County's relatively low rate of traffic crashes and fatalities compared with the State of Florida include:

- **Demographics:** Collier County has a lower proportion of younger drivers than the State as a whole. Statewide approximately 18.4% of the population is aged 15 – 29 while in Collier County

only 14.4% of the population falls within this age range. Less experienced drivers are more likely to be involved in crashes than older drivers so a community with proportionately fewer younger drivers should exhibit fewer crashes per capita than average. When statewide crash rates for each age bracket are applied to Collier County's population, the expected crashes in Collier County are approximately 90% of statewide figures. Accordingly, driver demographics may explain part of the reason why Collier County has fewer crashes per capita and per VMT than the State overall.

- **Roadway Characteristics:** Compared with the State of Florida, Collier County has a similar proportion of VMT on relatively safe roadway types like limited access highway, minor collector streets, and local roads but carries substantially less VMT on signalized principal arterials and instead, handles more traffic with its minor arterial network. While both principal arterials and minor arterials are focused on longer-distance mobility, minor arterials tend to be more compact and generally operate at somewhat lower ambient speeds. While difficult to quantify, this may in part contribute to Collier County's superior safety performance compared with the State.
- **Land Use and Network Characteristics:** With some exceptions, commercial land uses in Collier County tend to be organized around major intersection nodes rather than along thoroughfare roadways. This means that between major intersections, access points are limited resulting in fewer potential conflicts.

As Collier County continues to grow it is reasonable to expect its demographic profile will "regress to the mean" resulting in a more normal proportion of young drivers and associated increase in crashes. Strategies to improve driver training and education for younger drivers as well as services to provide mobility for older road users will be discussed in Section 3 of this technical memorandum. Strategies to further enhance safety on the county's major roadway network and maintain good access controls will be discussed in Section 2 of this technical memorandum.

Conclusions #2 and #3: Major Roadway Focus and Local Autonomy

Because a majority of crashes in Collier County occur along county-maintained minor arterial and collector roadways, Collier County, in conjunction with the Collier MPO has the ability to be proactive in making roadway safety infrastructure investments while continuing to coordinate with the Florida Department of Transportation (FDOT) to enhance safety on I-75 and major state highways such as US 41 and SR 29, Davis Boulevard, and state-maintained sections of Collier Boulevard.

Specific strategies applicable to the county's roadway network will be discussed in Section 2 of this technical memorandum.

Conclusions #5: Moderate Enforcement Efforts

Statewide, over half of Floridians live in municipalities and just over half of all traffic citations are issued by city police departments with the remainder split roughly 60/40 between county sheriffs and the Florida Highway Patrol. Because the municipalities in Collier County account for only about 10% of the county's population, the role of city police departments in traffic enforcement is less prevalent in Collier County with approximately 15% of Citations being issued by municipal police. Section 3 of this Technical Memorandum will address strategies to target and enhance traffic enforcement where appropriate.

Conclusions #6 and 7: High Severity Ratio and High Frequency Crash Emphasis Areas

Because specific crash types are more likely to result in incapacitating injury or death, it is logical that these should be the focus of both infrastructure and non-infrastructure strategies to enhance traffic safety in Collier County. All types of crashes and crash severities may be reduced by speed management strategies as well as strategies to combat distracted driving while other crash types respond to specific infrastructure and non-infrastructure interventions.

The remainder of this Technical Memorandum will offer infrastructure and non-infrastructure strategies that relate to the conclusions from the LRSP's data and analysis described above.

SECTION 2: INFRASTRUCTURE STRATEGIES

The term, "Substantive Safety" refers to the measurable safety performance of a roadway or roadway system, usually expressed in terms of crashes, injuries, and fatalities normalized for user exposure—typically expressed in terms of vehicle miles of travel. The design and operating characteristics of a roadway system affect the substantive safety performance of the system based on the interplay of two other expressions of safety: nominal safety and perceived safety.

"Nominal Safety" refers to the application of evidence-based design standards and best practices intended to reduce the frequency and severity of crashes. Examples include elements such as minimum lane widths, speed limits, effective drainage, clear and level roadside shoulders, curve super-elevation, guardrails, roadway lighting, and hundreds of other roadway design and operating standards. Each of these elements is intended to reduce the likelihood of automobile crashes and/or to reduce the severity of crashes if they occur.

"Perceived Safety" refers to how roadway users gauge the relative safety of the roadway system—including the crashworthiness of their automobiles. This is important because for most roadway users, perceived safety impacts their level of focus and operating behavior. Roadway users who perceive a particular roadway environment to be relatively safe are more likely to relax their concentration and may engage in higher-risk driving behaviors such as speeding, multi-tasking, and "jaywalking" while roadway users who perceive a roadway environment to be less safe are more likely to remain vigilant.

There are two primary challenges implicit in the interaction of these fundamental aspects of roadway safety. The first challenge is that many of the measures intended to make roadways nominally safer also result in increased perception of safety by roadway users and corresponding increases in riskier user behavior. This riskier behavior, in turn, diminishes the safety benefits of the roadway system design.

The second challenge is that the typical roadway user is not well equipped to accurately assess their risk operating in a modern roadway system. The former challenge is intuitive but nonetheless problematic to the extent that the very design decisions that are meant to make a roadway system safer often contribute to the abuse of that system by its users. The latter challenge is a function of both biological and cognitive limitations which, when combined, can contribute to unsafe user behavior.

From a biological perspective, the speeds, distances, and complexities of modern roadway environments are outside the normal parameters of what the "human animal" has encountered for the vast majority of our recorded history. Multiple times per minute, a human roadway user will pass within arm's length of objects that are comparable in mass to some of the largest animals on earth, travelling at speeds that are naturally achievable only by falling from a high place. Rationally, human/automobile interactions should be terrifying, but most modern humans have been conditioned since childhood to accept them as a normal, low-risk activity.

From a cognitive perspective, most people's ability to accurately assess and process risk is more limited when probabilities are very low and outcomes are extreme. For example, most people can easily understand both the probabilities and outcomes of a $1.00 bet against a coin toss but have almost no capacity to logically process the risk/reward proposition of buying a lottery ticket. By the same

mechanism, most people cannot intuitively process the extent to which individual higher-risk, but otherwise routine, behaviors alter their probability of being involved in an automobile crash.

Historically, the traffic safety industry has focused considerable attention on nominal safety both in terms of roadway system design and operations and motor vehicle design (bumpers, crush zones, air bags, etc.). Generally, the assumption has been made that roadway users will behave as "rational actors" using available information to make benefit/cost analyses which govern choices expected to deliver preferred outcomes. Based on quantitative and qualitative assessment of crash histories, there is ample evidence that road users do not consistently perform according to the rational actor model. This includes incidences of wantonly irrational behavior (road racing, driving while intoxicated, etc.) but more commonly occurs from a failure accurately process risk.

Accordingly, the Collier LRSP will consider infrastructure strategies from the perspective of nominal safety and also from the standpoint of how each strategy provides better information to roadway users to help them make safer decisions about how they interact with each other and the roadway system. Table 2-1 provides a summary of infrastructure strategies and shows how each strategy is applicable to the four emphasis areas defined through the analysis of Collier County's crash history.

The remainder of this section provides more information about each strategy and discusses how the strategies relate to one another. Non-infrastructure strategies are addressed in Section 3 of this Technical Memorandum.

Infrastructure Strategies	Non-Motorized	Intersection	Lane Departure	Same Direction
Speed Management	X	X	X	X
Alternative Intersections (ICE Process)	X	X		X
Intersection Design Best Practices for Pedestrians	X			
Median Restrictions/Access Management		X		X
Right Turn Lanes	?			X
Signal Coordination	?			X
Rural Road Strategies Including:				
• **Paved shoulder**	X		X	
• **Safety Edge**			X	
• **Curve geometry, delineation, and warning**			X	
• **Bridge/culvert widening/attenuation**			X	
• **Guard Rail/ditch regrading/tree clearing**			X	
• **Isolated intersection conspicuity/geometry**		X		
Shared Use Pathways, Sidewalk Improvements	X			
Mid-Block Crossings & Median Refuge	X			
Intersection Lighting Enhancements	X	X	X	
Autonomous vehicles (longer term)	TBD	X	X	X
X = Applicable Strategy; ? = Possible Contra-indications				

Table 2-1: Infrastructure Strategies Matrix

Speed Management

Speed is a critical factor in both a driver's ability to perceive, react, and effectively respond to roadway conflicts and in determining crash outcomes/severity. "Speed Management" refers to a combination of infrastructure and non-infrastructure strategies to both curtail incidences of speeding—traveling too fast for conditions or exceeding the posted speed limit—and designing roadways to deliver operating speeds that match the land use and access contexts of the roadway. From an infrastructure standpoint, key elements of Speed Management include:

- Context classification and establishment of target speeds
- Design interventions
- Proactive signal management

Each of these elements is discussed in greater detail below.

Context Classification and Target Speeds

As part of FDOT's implementation of "Complete Streets," the Department has established a process for classifying major roadways based on land use and roadway network connectivity to create a continuum of context classifications ranging from rural preserve to urban core (Figure 2-1). The context classification assignment of each segment of the State Highway System (SHS) is then used to define design specifications including appropriate design speed ranges.

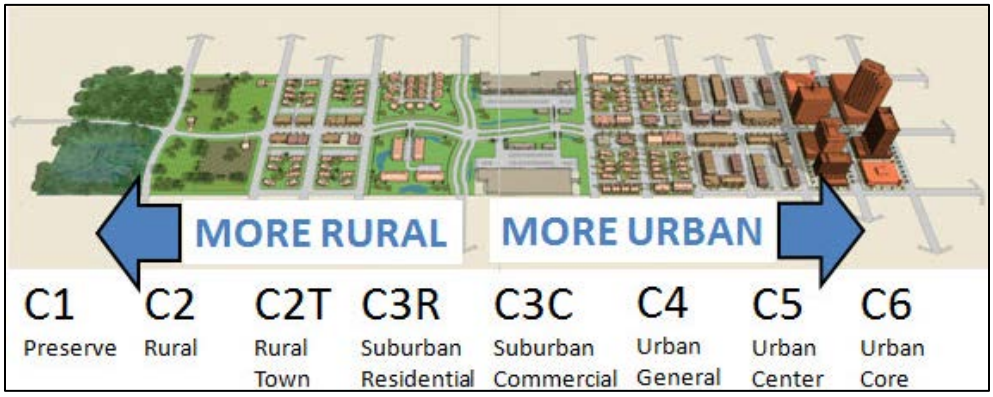


Figure 2-1: FDOT Context Classification System

In addition to design elements like lane width and multimodal facilities requirements, a roadway's context classification establishes allowable design speed ranges and identifies speed management strategies for each context class and design speed range. Context classifications also provide guidance for establishing appropriate target speeds. Target speed refers to the desired operating speed for any given segment of roadway based on strategic safety and mobility objectives. When a roadway's target speed is not supported by the roadways design characteristics (e.g. design speed) the roadway owner (city, county, FDOT) can establish short, medium, and longer-term strategies to modify the subject roadway so that the target speed is achieved.

Design Interventions

There are many design techniques to modify roadway characteristics to achieve a desired target speed, but generally they correspond with the concepts of Enclosure, Engagement, and Deflection. Chapter 202 of the FDOT's 2020 Florida Design Manual (FDM) defines these concepts as follows:

- **Enclosure:** Enclosure is the sense that the roadway is contained in an "outside room" rather than in a limitless expanse of space. Drivers' sense of speed is enhanced by providing a frame of reference in this space. The same sense of enclosure that provides a comfortable pedestrian experience also helps drivers remain aware of their travel speed. Street trees, buildings close to the street, parked cars, and terminated vistas help to keep drivers aware of how fast they are traveling. This feedback system is an important element of speed management.
- **Engagement:** Engagement is the visual and audial input connecting the driver with the surrounding environment. Low speed facilities utilize engagement to help bring awareness to the driver resulting in lower operating speeds. As the cognitive load on a driver's decision-making increases, drivers need more time for processing and will manage their speed accordingly. Uncertainty is one element of engagement – the potential of an opening car door, for instance, alerts drivers to drive more cautiously. On-street parking and proximity of other moving vehicles in a narrow-lane are important elements of engagement, as are architectural detail, shop windows, and even the presence of pedestrians.
- **Deflection:** Deflection is the horizontal or vertical movement of the driver from the intended path of travel. Deflection is used to command a driver's attention and manage speeds. Being a physical sensation, deflection is the most visceral and powerful of the speed management strategies. Whereas enclosure and engagement rely in part on psychology, deflection relies primarily on physics. Examples includes roundabouts, splitter medians (horizontal deflection), and raised intersections (vertical deflection). Deflection may not be appropriate if they hinder truck or emergency service vehicle access.

Chapter 202 of the FDM describes specific design strategies and provides a matrix of applicable strategies to achieve various speed ranges for each roadway context classification.

Signalization

Traffic signalization is another method of providing actionable information to drivers to help achieve desired operating speeds. When traffic signals are spaced at intervals of not more than 0.25 miles and are timed in a coordinated pattern consistent with a desired operating speed, most road users will learn to drive at the signal "progression speed" rather than race ahead to stop at a standing queue. Alternative performance measures for signal timing will be discussed further later in this section.

Recommendation:

As part of the Collier LRSP, Collier County should consider adopting/adapting FDOT's context classification to the County's major roadway network as a critical aspect of an overall speed management strategy. Once context classes have been established, the County should define target speeds for each segment of the major roadway network and prioritize engineering studies to identify necessary design interventions based on the frequency of severe crashes and other considerations. As part of these engineering studies, the County should consider traffic signal operations (signal density, progression speed, and cycle length) as potential interventions to help achieve desired target speeds.

Alternative Intersections (ICE Process)

According to the Federal Highway Administration (FHWA) the term "Alternative Intersections" refers to at-grade intersections that remove one or more conventional left turn movements. By removing one or more of the critical conflicting traffic maneuvers from the major intersection, fewer signal phases are required for signal operation. This can result in shorter signal cycle lengths, shorter delays, and higher capacities compared to conventional intersections.

Alternative intersections also offer substantial safety benefits with expected crash reductions of at least 15% depending on the specific treatment. When deployed along an integrated corridor, alternative intersections can also aid in speed management and other systemic safety improvements. The key concepts, constraints, and safety benefits of common alternative intersections are described below.

ICE Process

"ICE" refers to Intersection Control Evaluation which is a data-driven process to objectively identify optimal geometric and control solutions for roadway intersections. Factors considered in the ICE process include capacity/operational analysis, safety, and feasibility/cost. ICE is required for new intersections and for substantial changes to existing intersections on FDOT roadways and the ICE process used by FDOT may be applied or adapted to county and city-maintained roadways as well.

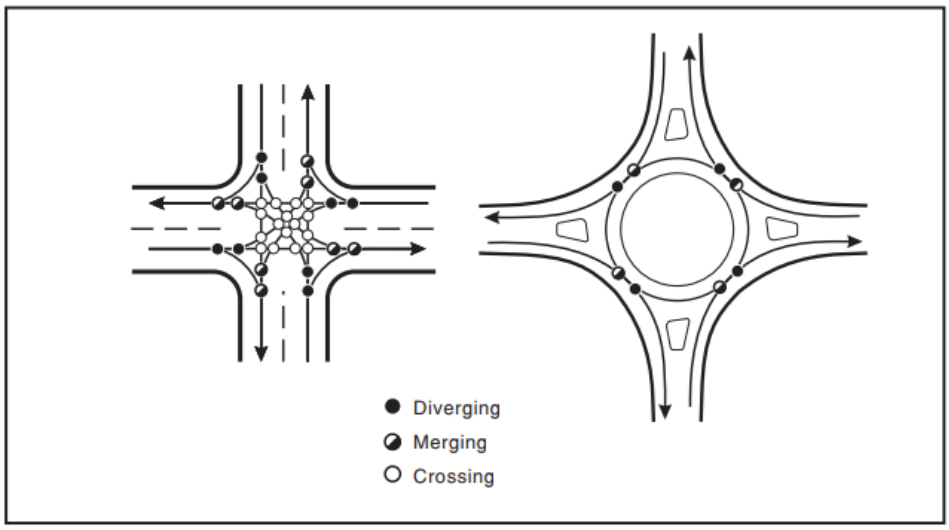
Roundabouts

FHWA's informational guide on roundabouts (Publication#: FHWA-DR-00-067) explains that: "Roundabouts are circular intersections with specific design and traffic control features. These features include yield control of all entering traffic, channelized approaches, and appropriate geometric curvature to ensure that travel speeds on the circulatory roadway are typically less than 30 mph." Modern roundabouts may connect 3 or more roadway approaches and may have one or more circulating lanes.

The key safety benefit of roundabouts is that they eliminate high-energy "crossing" conflicts and have fewer overall conflicts than conventional intersections. Figure 2-2, sourced from FHWA-DR-00-067, shows and explains the difference in conflict points between roundabouts and conventional intersections. Attention is directed to the fact that while traffic signals assign right-of-way to crossing conflicts, these conflicts are not eliminated by signals in cases of red-light-running and permissive left-turn movements. Merge conflicts also exist in the context of right-turn on red movements.

Properly designed roundabouts also are generally easier/safer to navigate for pedestrians and bicyclists and pedestrian crossings at multi-lane roundabouts can be supplemented with various mid-block crossing devices (see discussion on pedestrian mid-block crossing elsewhere in this section).Because of these motorized and non-motorized user safety benefits, roundabouts have been found to reduce crashes overall by about 37% and reduce injury crashes by 51%.

The principal constraint of roundabouts is that they often require a greater right-of-way footprint than conventional intersections of equivalent capacity. This is especially challenging in retrofit scenarios along commercial corridors where right-of-way costs may make roundabout retrofits cost prohibitive. Because the safety benefits of roundabouts diminish as more circulating lanes are added, most roundabouts are limited to two circulating lanes. Accordingly, they are most commonly used at the intersections of either two, 2-lane roadways or a 4-lane roadway and 2-lane roadway.



Conflicts can be divided into three basic categories, in which the degree of severity varies, as follows:

- *Queuing conflicts.* These conflicts are caused by a vehicle running into the back of a vehicle queue on an approach. These types of conflicts can occur at the back of a through-movement queue or where left-turning vehicles are queued waiting for gaps. These conflicts are typically the least severe of all conflicts because the collisions involve the most protected parts of the vehicle and the relative speed difference between vehicles is less than in other conflicts.
- *Merge and diverge conflicts.* These conflicts are caused by the joining or separating of two traffic streams. The most common types of crashes due to merge conflicts are sideswipes and rear-end crashes. Merge conflicts can be more severe than diverge conflicts due to the more likely possibility of collisions to the side of the vehicle, which is typically less protected than the front and rear of the vehicle.
- *Crossing conflicts.* These conflicts are caused by the intersection of two traffic streams. These are the most severe of all conflicts and the most likely to involve injuries or fatalities. Typical crash types are right-angle crashes and head-on crashes.

Figure 2-2: Roundabout Safety Benefits

Restricted Crossing U-Turn and Median U-Turn Intersections

Restricted Crossing U-Turn (RCUT) and Median U-Turn (MUT) intersections are illustrated in Figure 2-3 and Figures 2-4 sourced from FHWA Informational Guides #FHWA-SA-14-070 and #FHWA-SA-14-069 respectively. Generally, RCUT intersections are more effective when the minor street thru volumes are lower than the major street left-turn volumes with the reverse being true for MUT intersections. RCUT intersections, when sequenced together in a corridor also allow each direction of the major street to thru movements to be coordinated separately which can have exceptional benefits for mainline capacity.

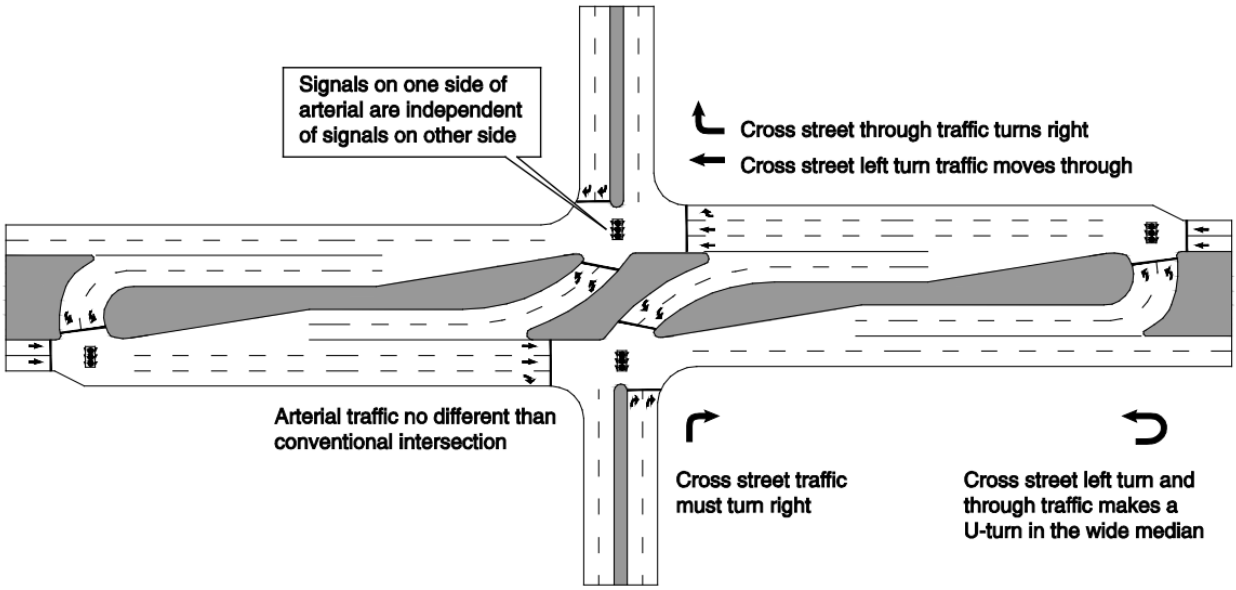


Figure 2-3: Diagram of Signalized RCUT Intersection

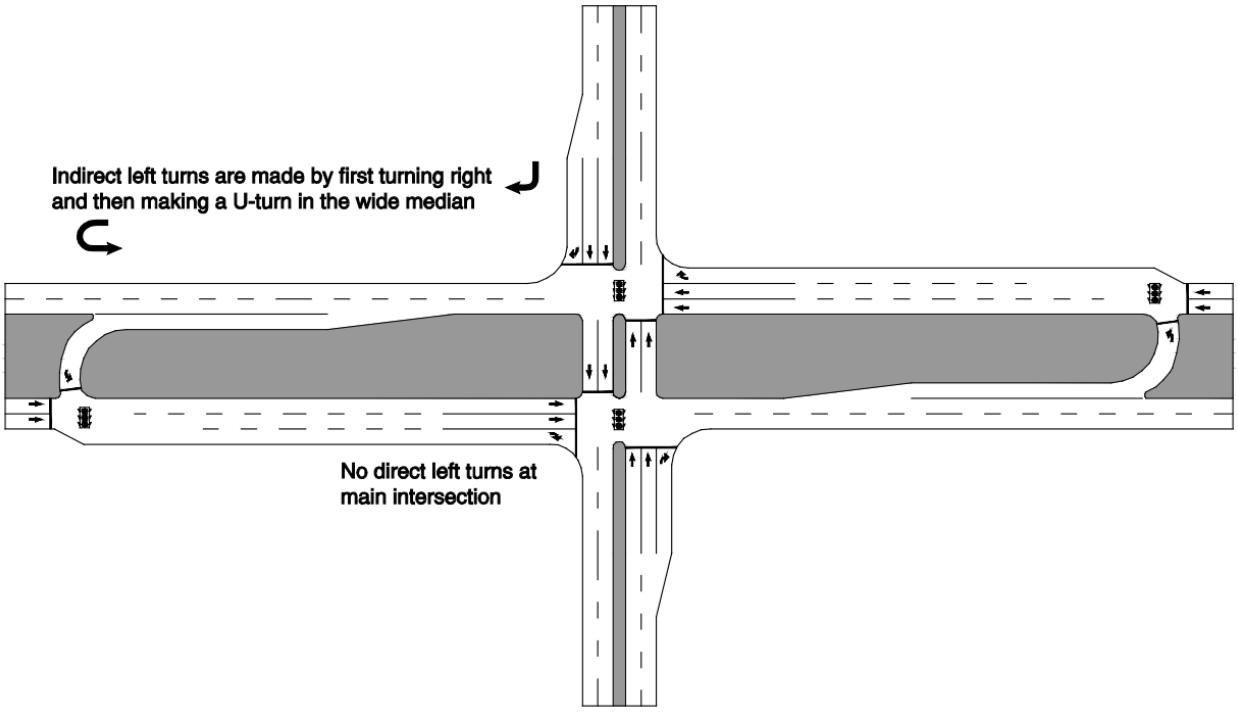


Figure 2-4: Diagram of Median U-Turn Intersection

Common feature of both these alternative intersection types include:

- Both RCUT and MUT intersections use adjacent "secondary" intersections to help process the movements that are restricted at the main intersection. These are usually about 1/8 of a mile from the main intersection and may be signalized, as shown in Figure 2-3, or stop/yield controlled, similar to commonplace directional median openings. When signalized, these secondary intersections provide an opportunity for mid-block pedestrian crossing locations.
- When either intersection type displaces truck movements, either an extra-wide median or U-turn aprons, sometimes referred to as "loons," are necessary to accommodate truck movements. The U-turn diameter (referred to as the swept-path) for a typical tractor-trailer is just under 90 feet but the U-turn diameter of a typical 6-lane arterial with a standard 22 ft median is a little over 60 feet.
- Except in cases where the displaced movements represent an unusually high proportion of all intersection movements RCUT and MUT intersections generally offer substantial reductions to major roadway delay and more moderate reductions in overall intersection delay. The distance travelled by displaced movements is naturally increased but delay for displaced movements may be slightly reduced or only moderately increased depending on a range of operational factors.
- Both RCUT and MUT intersections allow for reduced signal cycle length—especially when pedestrian crossings of the major roadway are handled as two-stage movements. This, combined with greater signal density from the use of secondary intersections, can help with speed management and platooning of vehicles along alternative intersection corridors.

Similar to roundabouts, RCUTs and MUTs convert some high-energy crossing conflicts to lower energy merge-diverge conflicts helping to reduce crash frequency and severity. According to FHWA publications# FHWA-HRT-17-073, RCUT intersections can have an overall crash reduction of 15% and reduce injury crashes by 22% compared with conventional intersections. MUT intersections have similar benefits with a 16% overall crash reduction and 30% injury crash reduction compared to conventional intersections.

As noted above, the principal constraint on converting existing 4-phase conventional intersections to 2-phase RCUT or MUT intersections is available right-of-way to accommodate truck U-turn movements is about 140 feet for a six lane road and about 130 feet for a 4-lane road. Other constraints include the suitability of the RCUT or MUT operations with respect to individual intersection turning volumes and driver education about navigating the intersections.

Other Alternative Intersections

Besides RCUTs and MUTs other alternatives at-grade intersections include Displaced Left Turn Intersections (DLT) as shown in Figure 2-5 (FHWA-SA-14-068) and Quadrant intersections as shown in Figure 2-6 (FHWA-SA-19-029). The safety outcomes of these intersection alternatives are less well understood than for RCUT and MUT intersections and for reasons discussed below, their limited applicability makes them less integral to the LRSP than roundabout, RCUT, and MUT intersections. Nonetheless, they are included in the County's toolkit should specific circumstances warrant their use.

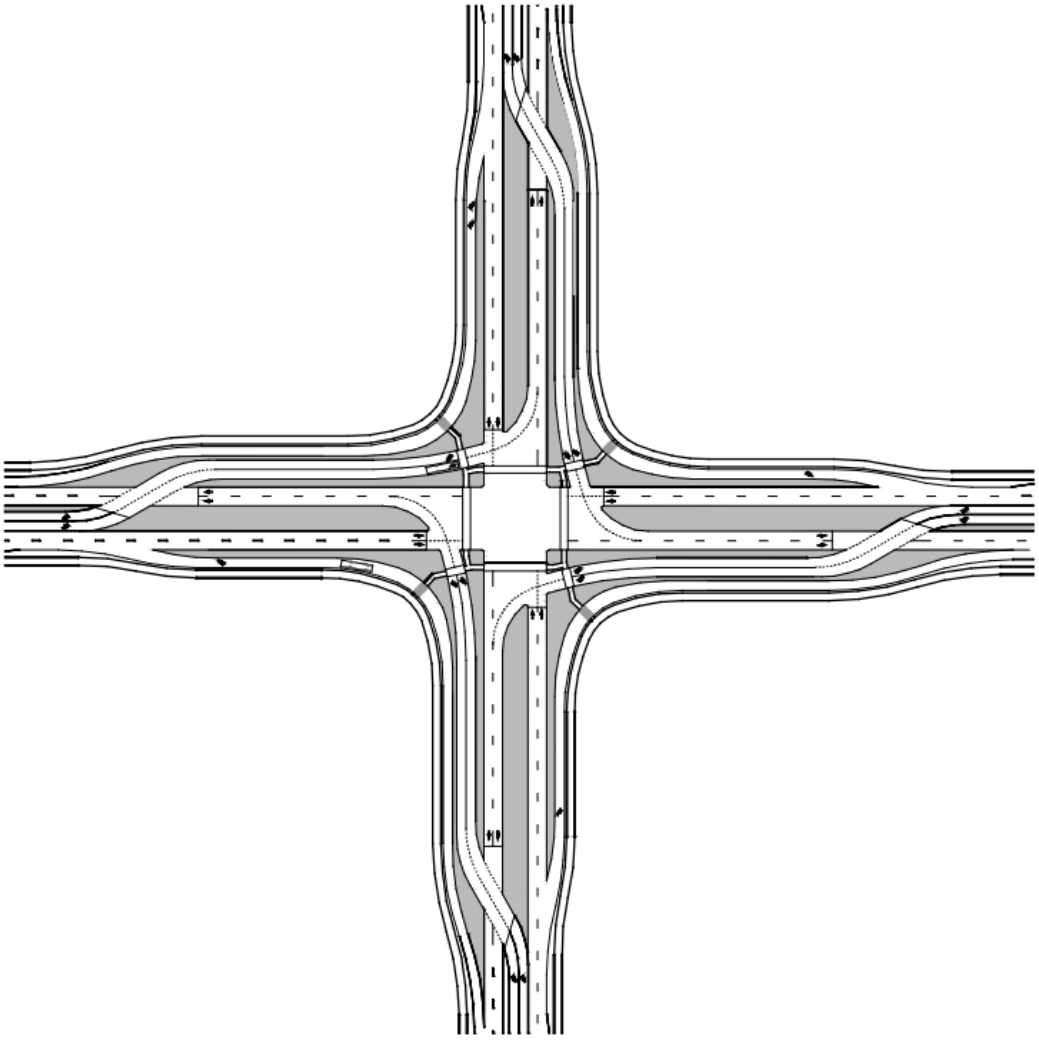


Figure 2-5: Displaced Left Turn Intersection

DLT intersections are very-high capacity at-grade intersections which “displace” left turn movements at “cross-over” intersections in advance of the main intersection. This allows left turn and thru movements from the same roadway to occur concurrently. Given the high capacity, complexity, and cost of DLT intersections, they are perhaps better thought of as alternatives to grade separation (trading right-of-way costs for structure costs) rather than alternatives to conventional intersections. Because of their substantial right-of-way footprints and potential for substantial business access impacts to adjacent land uses, DLT intersections are challenging to implement as retrofit projects..

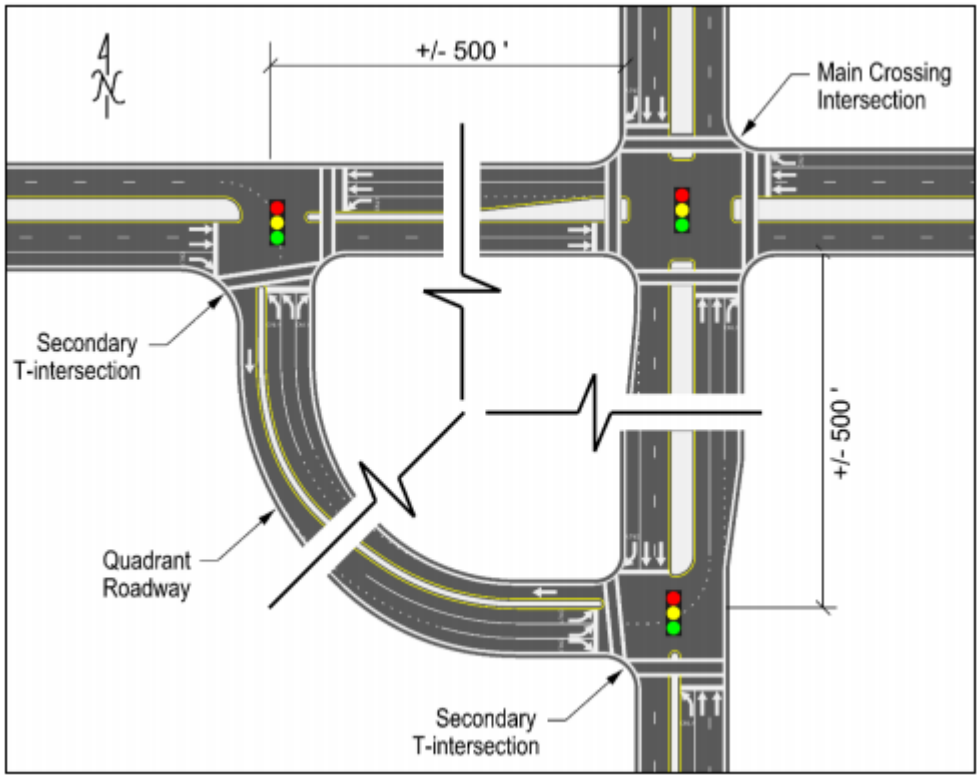


Figure 2-6: Quadrant Intersection Diagram

Quadrant intersections distribute turning movements at the main intersection across multiple smaller intersections allowing left turn movements at the main intersection to be eliminated or limited to either roadway. While all turning movements can be accommodated with a single quadrant roadway, quadrant intersections offer more benefits when diagonal opposing quadrants or all four quadrants can be fitted with perimeter roads. Unlike DLT intersections, quadrant intersections allow the main intersection to be quite compact; however, existing land uses often preclude the construction of the quadrant roadways except in greenfield or redevelopment scenarios.

Recommendation:

Collier County should adopt/adapt FDOT's ICE process to provide data-driven analysis of intersection alternatives as part of new intersection construction and substantial modification of existing intersections. The Collier MPO, in cooperation with Collier County and FDOT, should identify candidate intersections and corridors based on traffic crash history and other planning factors to conduct feasibility studies (Stage 1 ICE/SPICE analysis) for prioritizing and programming retrofit projects.

Intersection Design for Pedestrians

Many existing major roadway intersections in Collier County (as well as throughout Florida) were designed with the primary intention of maximizing motor-vehicle throughput. Besides arterial intersections often having multiple thru traffic lanes as well as auxiliary left and right turn lanes, the radii of an intersection's curbs are also often very large. All of these features increase the exposure of pedestrians to motor vehicle traffic and can contribute suboptimal placement of crosswalks and curb ramps which may make crosswalks longer than necessary and/or place pedestrians in positions where they may be difficult for turning drivers to see.

When pedestrians are exposed to overly large intersections with right turning traffic and permissive left turns, they may not see a value proposition in using signalized intersection pedestrian features. This may result in pedestrians crossing away from intersections—relying on their own judgment rather than trusting motorists to yield—and reducing pedestrian compliance with traffic signals.

Curb Radii

Large curb radii are sometimes necessary to allow trucks to navigate turns without running over the curb, damaging infrastructure, and posing a hazard to pedestrians waiting to cross. However, in many cases, urban and suburban intersections are using highway design principles where large curb radii are provided to reduce friction between right-turning vehicles and high-speed thru traffic. This makes sense in a rural setting where pedestrians are rare, but when right-turning drivers can navigate a turn at high speeds, their ability to perceive and react to pedestrians in a crosswalk is severely limited.

Whenever possible, urban intersection should be designed with the smallest possible radii that still can accommodate the appropriate design vehicle. When there are multiple lanes, intersection should be designed so that trucks turn into the interior lane(s) rather than the curb lane. When large radii cannot be avoided due to heavy truck movements, channelization (discussed below) or use of truck aprons is preferable to very large radii.

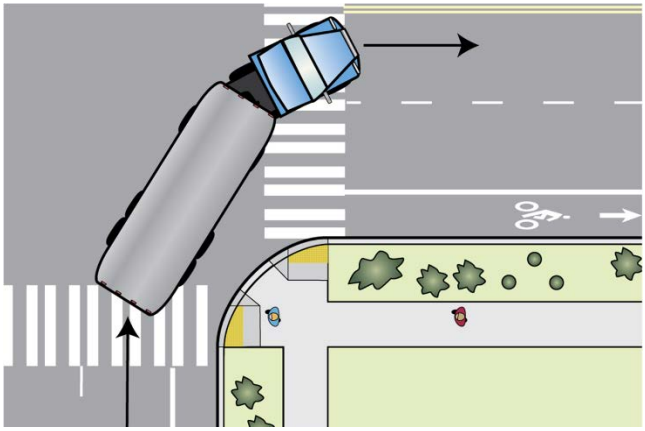


Figure 2-7: Truck Turning Into Interior Lane

Figure 2-8: Truck Apron Helps Slow Turning Cars

Channelization

Using channelizing islands to break pedestrian crossings into multiple smaller stages can make large, high-capacity intersections safer and more accommodating for pedestrians. Figure 2-9 shows the preferred design for right turn islands in which approach traffic has a clear view of the crosswalk between the curb and the island and also good views of approaching traffic. The graphic also shows the crosswalk "engaged" with the median nose. This helps ensure left turning drivers cannot cut the corner thereby helping to moderate their speed.

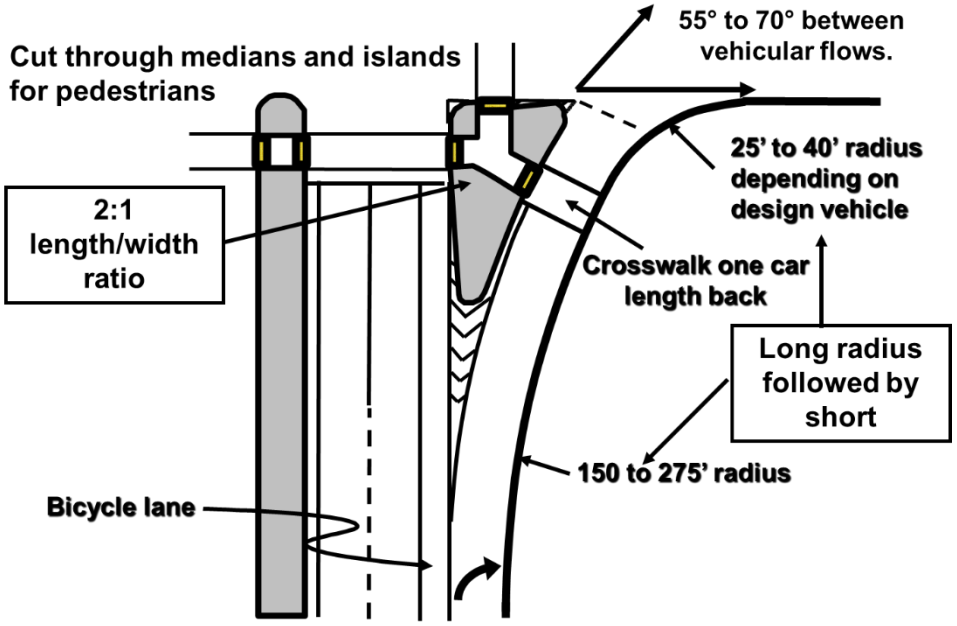


Figure 2-9: Preferred Right Turn Island Design Parameters and "Engaged" Median

Crosswalk Design & Operation

As shown in Figure 2-10, crosswalks should be marked using both lateral and transverse markings, be placed with individual/directional curb ramps, where possible, and should generally be aligned parallel to the roadway they are along. While crosswalks must be a minimum of 10 feet wide, they may be wider where pedestrian volumes are high, or intersection geometry is irregular. Textured or colored pavement is acceptable to supplement the retroreflective pavement markings but should not be a substitute for those markings.

At signalized intersections, crosswalks should be supplemented with countdown pedestrian signals and the "Walk" phase should be provided automatically for crossing along the major roadway and should also be provided automatically whenever the concurrent minor roadway thru-green signal interval is greater than or equal to the minimum pedestrian crossing interval. Except in special circumstances where high pedestrian volumes may effectively prohibit right-turning traffic to pass through an intersection, the "walk" interval should be timed so that the countdown reaches zero when the concurrent thru-green signal changes from green to amber thereby maximizing the available time for pedestrians to cross.

When heavy right turn movements conflict with pedestrian crossings, a leading pedestrian interval (LPI) should be considered. A LPI provides pedestrians with a “walk” indication a few seconds before parallel traffic gets a green signal. This gives pedestrian an opportunity to “take possession” of the crosswalk before turning traffic commences.

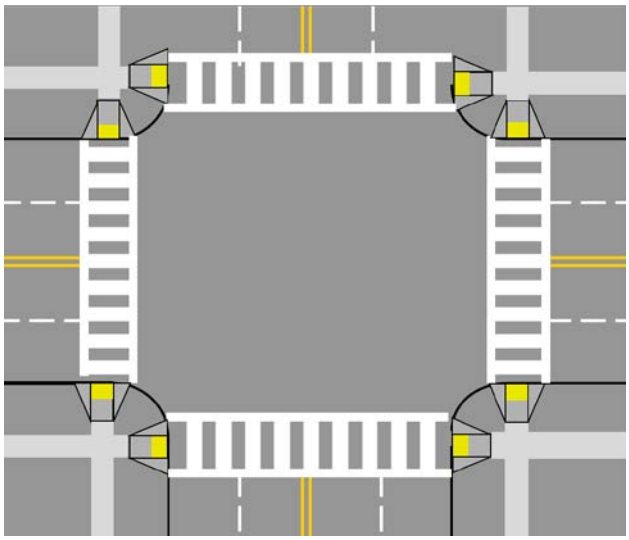


Figure 2-10: Proper Crosswalk Placement and Markings

Figure 2-11: Countdown Pedestrian Signal

Recommendation:

Collier County should ensure new major roadway intersections incorporate design best practices for pedestrians and the Collier MPO, in cooperation with Collier County and FDOT, should identify candidate intersections based on traffic crash history and other planning factors for prioritizing and programming retrofit projects.

Median Restrictions/Access Management

FDOT and Collier County both have sophisticated approaches to managing access along arterial roadway corridors. Strategies include restricting median access to prohibit direct left turns from unsignalized approaches, consolidation of driveways, provisions for interconnected parking lots, reverse-frontage access, and avoiding driveways within major intersection influence areas.

While the default approach to access management is to convert full-access medians to directional medians, as shown below along Radio Road in Figure 2-12, maintaining cross-access and providing a new traffic signal may help to address speed management and signal coordination issues as discussed elsewhere in this section.

Figure 2-12: Conversion of Full Access Median to Dual Directional Median

Recommendation:

Continue to employ access management strategies to minimize curb cuts and encourage right-turn-then-U-turn movements instead of direct left turns across high-volume arterial streets. However, in more urban contexts, consider the potential of signalizing problem intersections as an alternative to installing directional medians with the intent of providing more controlled crossings for motorists and non-motorized road users and facilitating greater signal density to help with corridor signal coordination.

Right Turn Lanes

Right turn lanes can help reduce rear-end and sideswipe crashes by allowing turning traffic to move out of the way of thru traffic; however, in urban contexts right turn lanes can present the following safety challenges:

- Right turn lanes can make intersections larger than they need to be, posing challenges to pedestrians.
- Right turns lanes between signalized intersections (i.e. at commercial driveways) create higher-speed conflict points for cyclists travelling in bike lanes.
- When right turn lanes extend a substantial distance from an intersection, right turning traffic may be able to speed past standing queues waiting at the signal. If another vehicle or a pedestrian is "nosing" thru the queues of stopped traffic to access a driveway, the resulting crash can be very severe.
- Right-turn lanes facilitate right-turn-on-red movements because the lane will never be blocked by a vehicle waiting to pass thru an intersection. Right-turn-on-red movements can make crossing more challenging for pedestrians—especially if the failure of right turning traffic to yield to pedestrians in the crosswalk results in inadequate time to safely cross the intersection.

Recommendation:

Right turn lanes should be used primarily along higher-speed, high volume suburban roadways where the mitigation of high-speed rear-end and sideswipe crashes outweighs the challenges presented by the scenarios above. Right turn lanes should be no longer than necessary to allow for safe deceleration of turning vehicles and should not be designed with the primary intent of allowing right turning traffic to bypass queues. Because right turn lanes allow turning traffic to get out of the way of thru traffic, curb radii should be minimized to allow for very low speed turns.

Signal Coordination

Signal coordination refers to the timing of traffic signals relative to one another in order to manage the flow of traffic along a roadway corridor. Generally, the goal of signal coordination is to minimize delay along major roadways while allowing for side-street approaches to process traffic with a reasonable amount of delay. While this approach is effective to maintain roadway level of service (LOS) along major thoroughfares, it is not always the best approach for promoting safety.

When traffic signals along a corridor are optimized to process thru traffic, the cycle-length of signals often becomes very long taking 3, 3.5, or even 4 minutes to completely cycle through all the various signal phases. Long cycle lengths, combined with signals spaced a half-mile or more apart, can result in vehicles being randomly spaced along a roadway with greater variation in speeds. Conversely, when signal cycle lengths are short and traffic signals are more closely spaced, vehicles tend to group together in "platoons" and this grouping, combined with visual cues from the next traffic signal, result in drivers maintaining a more consistent speed.

The top of Figure 2-13 shows traffic moving along a roadway with widely-spaced signals and long cycle lengths. Because there is little driver feedback and a very wide "green band" in which approaching traffic can clear the next signal, cars are spread out along the roadway with few adequate gaps for drivers, pedestrians, and cyclists to cross the road or turn across oncoming traffic. The lower graphic shows the same number of cars in a platoon with large gaps between the beginning of one platoon and the end of the preceding one. These gaps allow cross-traffic maneuvers can be made more safely.

Gaps between platoons also mean fewer vehicles will be caught in the "dilemma zone" when approaching a changing traffic signal in which the driver must quickly decide whether to brake or try and accelerate to clear the signal. Keeping traffic out of the dilemma zone can reduce both rear-end crashes and left turn/angle crashes.

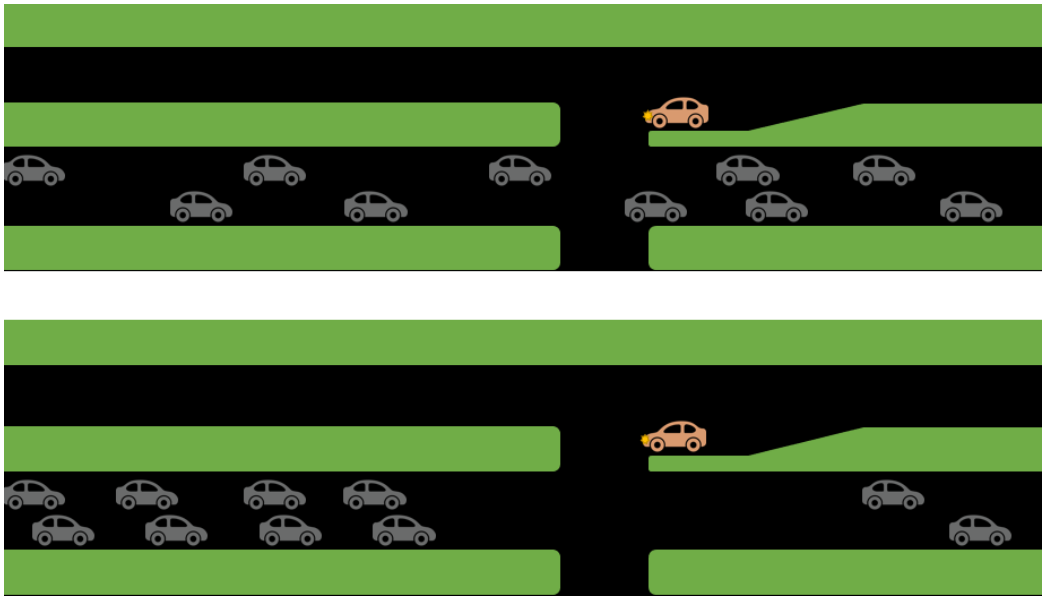


Figure 2-13: Graphic Depicting Random vs. Platooned Traffic

Recommendation:

As discussed above, converting roadway corridors to two-phase signal operation using alternative intersection designs is an excellent method of reducing cycle length and increasing signal density to allow for more effective platooning of traffic and achieving resulting safety outcomes. Independent of alternative intersection implementation, the MPO should coordinate with Collier County and FDOT to identify corridors where alternative signal coordination approaches may be feasible. This may include reducing cycle lengths off-peak, operating minor intersections between arterial intersections at half the cycle length of the adjacent major intersections, and identifying locations where a new traffic signal might help the coordinated signal system perform more efficiently and more safely.

Rural Road Strategies

Rural roadways tend to have lower traffic volumes and fewer crashes per mile than busy urban roads; however, because of generally higher travel speeds and the potential for fixed objects and/or deep ditches along the roadside, crash severity tends to be higher. The strategies discussed below can be used to treat known problem locations but should also deployed in a systemic approach to reduce severe crashes along rural highways and local streets.

Paved Shoulder, Safety Edge, and Audible-Vibratory Markings

Where possible, rural roadways should have 5-foot paved shoulders and adequate, level clear zones to facilitate recovery of vehicles that leave the roadway. Audible, vibratory pavement markings or ground-in rumble strips should be provided between the travel lanes and the shoulder to help alert drivers before they leave the roadway and retroreflective pavement markings should be used to delineate both the roadway centerline and the outside edge of the travel lanes.

When drivers do leave the roadway, steering the tires back onto the pavement against a vertical edge can make it difficult for a driver to safely re-enter the travel lane. Drivers may oversteer and lose control of the vehicle, leading to severe crashes. As shown in Figure 2-14, providing a 30-degree contoured pavement “safety edge” can mitigate this issue—especially on roadways that lack adequate paved shoulders and warning strips.

Figure 2-14: Photo Depicting "Safety Edge" Pavement Design

Curve Geometry, Warning, and Delineation

Because rural highways often have long, straight segments with few discerning features, drivers may become complacent and not exercise due care when entering curves. Accordingly, curves should be well-marked with pavement markings and chevrons and attempts should be made to provide adequate shoulders and recovery areas. Where necessary, the roadway should be super-elevated to help drivers navigate high-speed curves and guardrail should be used when roadside hazards within the clear zone cannot be completely eliminated. Devices such as solar static or actuated flashing beacons and speed feedback signs may also be used to alert drivers to curve advisory speeds.

Clear Zone Hazards

Common hazards adjacent to the roadway include trees and ditches as well as lateral and cross-drain structures and concrete bridge barrier walls. Efforts should be made to inventory infrastructure elements within roadway clear zones and implement measures to mitigate the hazards they pose. This can include removing trees, re-grading ditches, providing attenuation in advance of bridge walls, and converting projecting or square edge drains to mitered-end-section designs.

Figure 2-15: Mitered-End-Section Drain Pipe

Intersection Conspicuity/Geometry

Much like curves along rural highways may catch drivers by surprise, rural intersections can be unexpected features and drivers travelling along a rural highway may not be prepared to respond to crossing traffic. Rural intersections may also exhibit irregular, skew, geometry and may have foliage interrupting sight triangles or exhibit other features that make it more challenging for side-street traffic to maneuver safely. Mitigation strategies may include correcting poor geometry, consistently maintain sight triangles, and posting advance warning signs with/or without flashing beacons to raise awareness of approaching drivers.

Recommendations:

Specific, known issues along rural highways should be mitigated, but a proactive, systemic approach is also necessary to improve the overall safety performance of rural road systems. The Collier MPO should work with Collier County and FDOT to identify funding “boxes” for systemic inventory and improvements to the county’s rural and exurban roadways including curve and isolated intersection treatments, improved shoulders and edge treatment, and mitigation of roadside hazards.

Low Stress, Separated Cycling Facilities

Since the 1970s "vehicular cycling" has been the predominant approach to accommodating bicyclists within the roadway network. This approach means that cyclists operate using the same rules as motor vehicle traffic and share the roadway with motor vehicles either operating in marked bicycle lanes or riding with traffic. Vehicular cycling can be an effective approach for faster, confident cyclists to safely interact with traffic; however, a substantial majority of cyclists do not fall within this group and are uncomfortable or unwilling to ride with traffic on higher-volume, higher-speed roadways.

While vehicular cycling has been shown to help cyclists avoid certain crash risks, sideswipe and rear-end crash types that would generally result in less severe outcomes between two motor vehicles can have severe outcomes when one of the vehicles is a bicycle. This is especially true when the speed differential between the cyclist and overtaking traffic is large. For example, the typical road cyclists operates at speeds between 15 and 20 mph, so along 30 – 35 mph roadways, the closing speed of the cyclist and overtaking traffic is not more than 20 mph. While this can result in a serious crash, the overtaking motorist has more time to observe and react to the cyclist and, if a crash does occur, it is likely to be survivable. Conversely, along roadways with operating speeds of 45 mph or greater, the faster closing speed means a motorist is less likely to react and respond to a cyclist and, if a crash does occur, it is much more likely to be fatal.

For these reasons, many agencies, including FDOT, are working to provide separated bicycle facilities—especially along roadways that operate at speeds greater than 35 mph. Separated facilities include protected bike lanes, sometimes referred to as cycle tracks, and shared-use pathways along the edge of roadways. Other low-stress bicycling facilities form alternative networks to thoroughfare streets and include "bike boulevards" and off-road trails.

Cycle tracks may be two-way or directional and feature some type of physical barrier between motor vehicle lanes and the cycling facility. Figure 2-16 shows an example of a two-way cycle track in downtown Tampa which uses a raised curb and on-street parking to separate bicycle and motor-vehicle traffic. The cycle track features special signals and other design features at intersections to help mitigate bicycle/turning motor vehicle conflicts.

When separated facilities cannot be provided along thoroughfare streets, parallel "bike boulevards" are an option to provide for bicycle mobility. Bike boulevards are streets that have been designed, designated, and prioritized for bicycle travel and can provide a safe, inviting, low-stress option for bicyclists of varying degrees of experience. Although there is no set design template for bike boulevards, a few common principles apply:

- Logical, direct, and continuous bike route
- Safe and comfortable intersection crossings
- Reduced bicyclists delay
- Enhanced access to desired destinations
- Low motor vehicle speeds
- Low motor vehicle volumes

Figure 2-16: Rendering of a 2-way Cycle Track in Downtown Tampa along Jackson Street/SR 60

Recommendation:

Consistent with emerging guidance from FDOT and FHWA, the Collier MPO and Collier County should prioritize major roadway corridors to provide separated bicycle facilities and work to establish networks of bike boulevards and other off-road facilities where public rights of way connect between major roadways. One strategy to provide space for a curb to separate bike lanes from traffic is to reduce the lane width on roadways with existing 5-foot wide bike lanes and using the recovered space to provide for separating features.

On roadways that lack adequate pavement width to construct protected bike lanes, it will usually be more cost effective to provide parallel side-paths than to widen and reconstruct the roadway. If the shoulder is sufficiently wide, side-paths may be provided by widening or reconstructing the existing sidewalk. Along roadways with constrained rights-of-way, it may be possible to provide pathways by narrowing the roadway either by reducing lane widths or cannibalizing an existing bike lane.

When side-paths are constructed, care must be taken to ensure good visibility at unsignalized conflict points (driveway and side-street approaches). Cyclists should also be encouraged to ride in the same direction as parallel traffic when facilities are provided on both sides of the road. This helps with driver expectancy—especially drivers turning left across the pathway who are not likely to anticipate a cyclist approaching over their left shoulder.

Pedestrian Crossings and Median Refuge

Given the distances between traffic signals along most of Collier County's suburban roadway network, it is reasonable to expect that pedestrians will cross major roadways between signalized intersections. Elements like adequate lighting, traffic platooning, and speed management make it safer to cross the street generally; however specific infrastructure to facilitate pedestrian crossings is also necessary. These include median refuge areas and mid-block crossings.

Median Refuge Areas

When pedestrian crossing patterns are not concentrated between obvious origins and destinations, continuous raised medians or intermittent median islands allow pedestrians to break roadway crossings into two discreet movements. Ensuring medians are dry, level walking surfaces can help encourage pedestrians to wait for an adequate gap before attempting the second leg of their crossing.

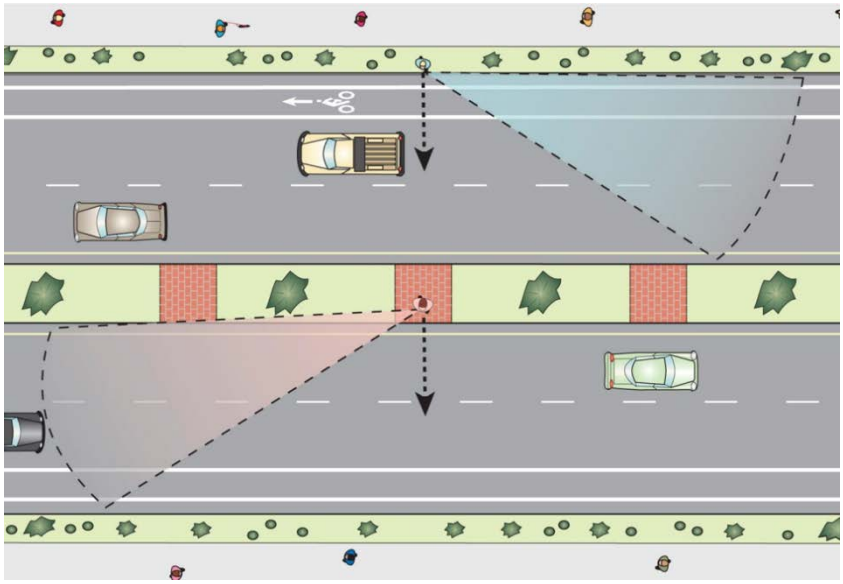


Figure 2-17: Median Refuge Breaks Complex Crossing into Two Simple Crossings

Median Refuge Areas

When pedestrian crossing patterns are more tightly clustered, mid-block marked crosswalks should be considered to provide a safer crossing option; however, along multilane roadways, a marked crosswalk alone is insufficient to provide a safe crossing and the crosswalk markings should be supplemented with warning beacons or traffic control devices. Beacons such as the rectangular rapid-flashing beacon (RRFB) pictured in Figure 2-18 should be pedestrian actuated are best suited to roadways with no more than four lanes and speeds of 35 mph or less.

If a midblock crosswalk is provided across a roadway with more than four lanes or speeds greater than 35 mph, a pedestrian hybrid beacon (PHB) is the preferred supplemental device. A PHB is like a traffic signal but creates less motor vehicle delay by switching to a flashing red (stop sign) operations after the first few seconds of the walk interval as shown in Figure 2-19.

Figure 2-18: RRFB

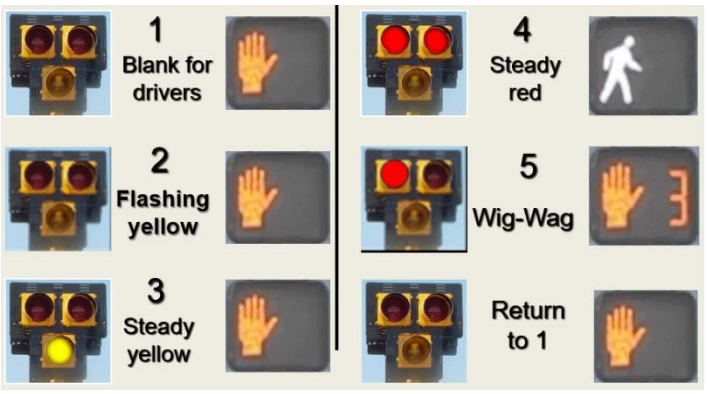


Figure 2-19: Pedestrian Hybrid Beacon Sequence

Recommendation:

Median refuge islands and pedestrian mid-block crossings complement speed management and signal coordination strategies to allow pedestrians to more safely cross major roadways. Medians should be used when there are not clear concentrations of pedestrian traffic and crosswalks should be considered to connect origins and destinations such as transit stops and neighborhood serving commercial lane uses. Marked crosswalks across major roadways generally require supplemental devices and these should be selected based on the speed and characteristics of motor vehicle travel.

As with considerations related to restricting median access, traffic engineers should investigate whether a midblock crossing need might be better served by signalizing a local street intersection to provide for controlled crossings at that point while also helping to provide downstream gaps for other crossing movements.

Lighting

Roadway lighting helps drivers see roadway features at night and, if properly designed, can help drivers detect pedestrians and cyclists. Adequate lighting and well-maintained pavement markings reduce lane departure crashes, but also can reduce all types of nighttime crashes by reducing the workload necessary for drivers to stay in their lane and thereby freeing up mental resources for other defensive driving tasks.

Intersection lighting provides the same function for drivers, but if designed correctly, can also help drivers see pedestrians at night. Figure 2-20 shows how intersection lighting should be in advance of crosswalk approaches to that light reflects from pedestrians back towards approaching traffic. Section 231.3.2 – 4 defines lighting criteria for intersections, roundabouts, and mid-block crosswalks to help ensure pedestrians are visible to approaching drivers.

Figure 2-21 shows a roadway corridor with light-emitting diode (LED) street lights. Contemporary LED lights offer energy cost savings compared to conventional street lights and the spectrum of light is more effective to promote safety.

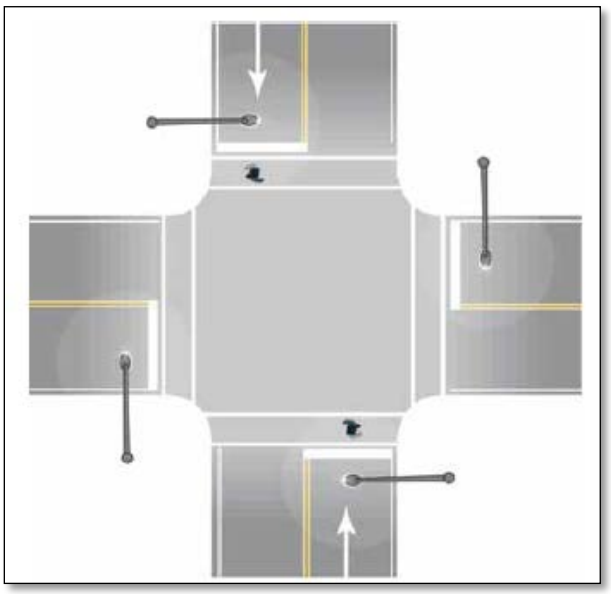


Figure 2-20: Simplified Intersection Lighting Schematic

Figure 2-21: LED Lighting Photo

Recommendation:

Collier County should adopt or adapt FDOT's current intersection lighting standards for new construction and the Collier MPO, Collier County, and FDOT should coordinate to prioritize intersections and roadway corridors for lighting retrofits based on nighttime crash percentages and non-motorized user crashes. Collier County or the Collier MPO should consider using the mobile lighting data collection system developed by the University of South Florida to inventory actual lighting levels along county-maintained throroughfare streets.

Autonomous and Connected Vehicles

Because the majority of traffic crashes involve some element of human error, the promise of automated vehicles offers tremendous crash reduction potential—especially when those vehicles are not only able to sense the roadway environment but are also capable of communicating with one another.

While this technology is generally thought of as futuristic, the really is that vehicle automation has been with us for some time. Figure 2-22 shows how elements such as cruise control, anti-lock brakes, and various warning sensors have been part of our vehicle fleet for some time while Figure 2-23 shows the various levels of vehicle autonomy with level one and two being common today.

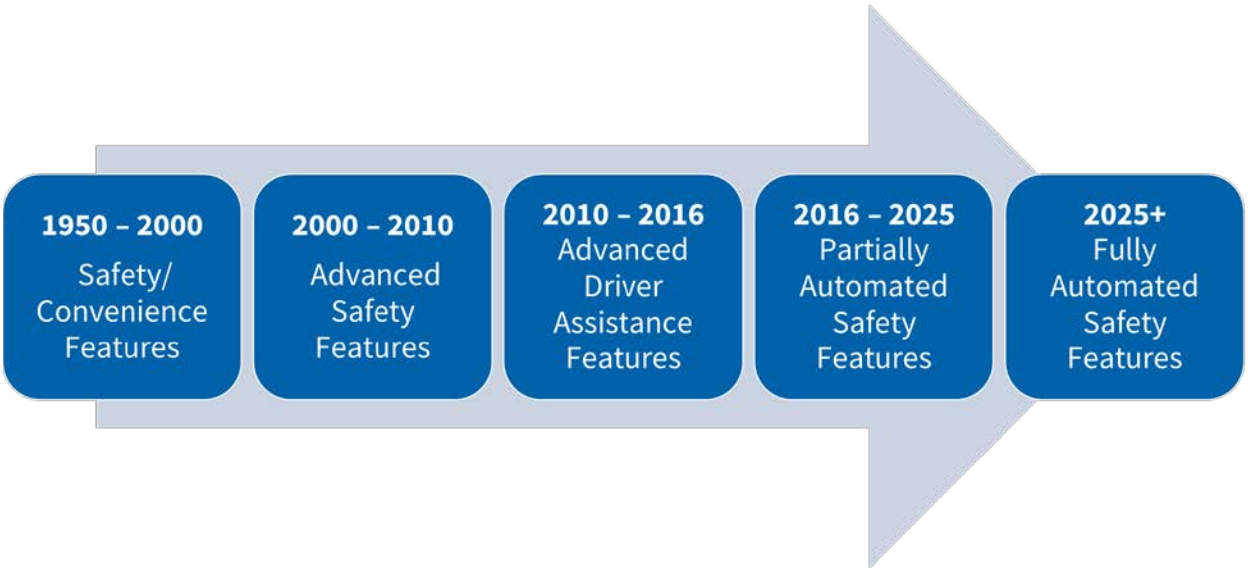


Figure 2-22: History and Future of Autonomous Vehicles

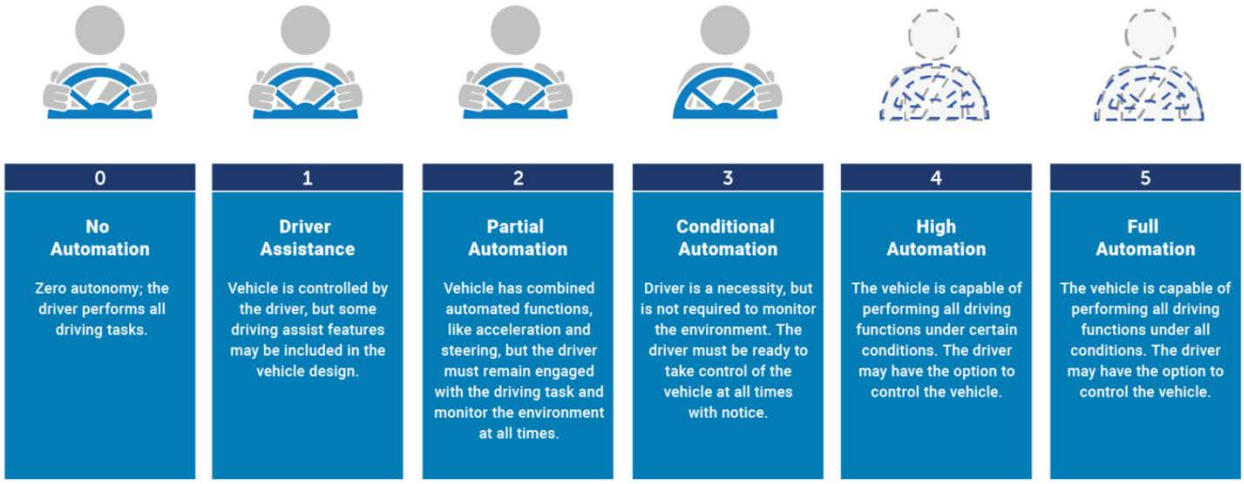


Figure 2-23: Vehicle Autonomy Levels and Features

Some challenges with automated vehicles include delay between the time fully automated technologies are available and there is sufficient saturation in the motor vehicle fleet to result in effective use of vehicle-to-vehicle communications and measurable safety benefits. Another challenge is the limitations of automated/connected vehicles detecting non-motorized road users. Specifically, pedestrians and cyclists are relatively small, varied in appearance, hard to predict, most exposed/fragile, and not "connected" to vehicle-to-vehicle communication systems.

Recommendation:

Within the 2045 planning timeframe it is reasonable to assume that Collier County's motor vehicle fleet will be largely comprised of automated/connected vehicles; however, in the interim, proactive spot and systemic safety measures are still necessary. Good design of roadways with a balance between mobility and connectivity and good infrastructure for non-motorized road users will provide benefits even once the majority of motorized vehicles drive themselves.

SECTION 3: NON-INFRASTRUCTURE STRATEGIES

Referring to the same four emphasis areas, table 3-1 shows a list of non-infrastructure strategies and the emphasis areas to which they correspond.

Non-Infrastructure Strategies	Intersection	Lane Departure	Non-Motorized	Rear End/ Sideswipe
Traffic Enforcement				
• Targeted Speed Enforcement	X	X	X	X
• Red Light Running Enforcement	X		X	
• Automated Enforcement	X			?
• Pedestrian Safety Enforcement			X	
Bike Light and Retroreflective Material Give-Away			X	
Young Driver Education	X	X	X	X
WalkWise/BikeSmart or Similar Campaign			X	
Continuing Education	X	X	X	X
Safety Issue Reporting	X	X	X	X
Vision Zero Policy	X	X	X	X

Table 3-1: Non-Infrastructure Strategies Matrix

Traffic Enforcement

The Statistical Analysis Technical Memorandum indicates that Collier County records fewer traffic citations per capita and per vehicle mile of travel. This appears to be in part due to relatively small municipal law enforcement agencies and therefore a greater reliance on the Collier County Sheriff's Office and the Florida Highway Patrol to handle traffic enforcement needs. Based on the Statistical Analysis Technical Memorandum, the following enforcement areas could help to reduce severe crashes in Collier County.

- Speed Enforcement
- Red Light Running Enforcement
- Non-Motorized User Safety Enforcement (focusing on driver yield behaviors)

Although automated enforcement (red light running cameras) was suspended in Collier County in 2013, a transparent use of red-light cameras with revenues directed to fund other traffic safety programs should be considered as part of the County's toolkit.

Recommendation:

Traffic enforcement is one aspect of an effective speed management program and should be used to target drivers who are significantly exceeding the Speed Limit. Collier County law enforcement agencies should consider applying for FDOT High Visibility Enforcement Grants for bicycle and pedestrian enforcement and automated enforcement should be revisited—especially if manpower resources preclude additional human red-light-running enforcement.

Material Give-Aways

The LRSP Statistical Analysis Memorandum notes that while Collier County does not have a disproportionate ratio of nighttime crashes overall, non-motorized road user crashes are more likely to occur at night. A common tactic to reduce nighttime non-motorized user crashes it to provide retro-reflective materials to vulnerable populations including:

- School-age children
- Transit customers
- Homeless shelter clients
- Shift workers who may commute at night

Examples of retroreflective materials include low-cost backpacks with reflective strips, Velcro ankle strips to keep pant cuffs from catching in bicycle gears, and simple safety vests. Low-cost bicycle light kits can also be distributed and may be provided as part of a warning stop when police officers notice cyclists riding at night without proper lights.

Figure 3-1: Example Retroreflective Promotional Materials

Young Driver Education

A key conclusion from the LRSP Statistical Analysis Memorandum is that Collier County's demographics likely play a role in its better than average safety performance. Because Collier County does not have a high proportion of younger drivers, the overall expected crash rates as a function of population age demographics are better than Florida as a whole. However, as Collier County continues to grow, it is likely that its demographic profile will become more "normal" and the introduction of more, young drivers will begin to adversely impact Collier County crash statistics.

Although older drivers certainly have limitations in terms of vision, reflexes, and other age-related deficits, these drivers are more likely to recognize their limitations than younger drivers and act accordingly. This is born-out by data showing that older drivers are less likely to be involved in nighttime crashes or crashes during rush hour because these drivers choose to avoid higher-risk times of day.

To help reduce crashes among younger drivers, supplemental drivers' education programs should be considered. One such program, funded by FDOT District 7, provides high school seminars focused on teen driver safety issues including bicycle and pedestrian safety, motorcycle safety, and impacts of DUI. Statewide FDOT provides grants under the umbrella of the State Safety Office Teen Driver Safety program to fund programs that help to educate teen drivers.

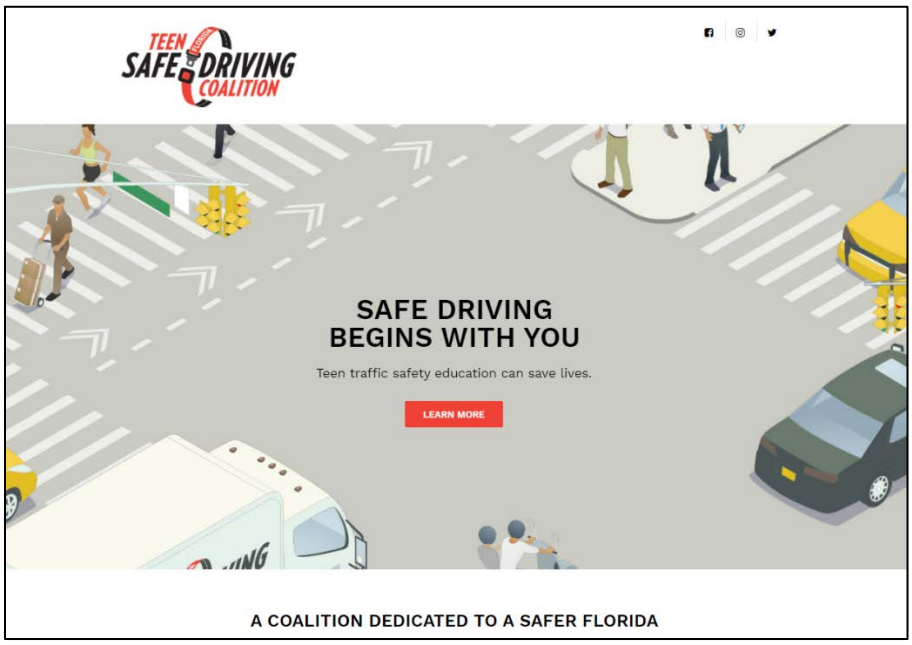


Figure 3-2: Florida Teen Safe Driving Coalition Homepage

Recommendation:

The Collier MPO and/or the Collier County Sheriff's Office should engage with the Florida Teen Safety Driving Coalition to identify potential teen driver education programs that can be implemented in Collier County. Although teen drivers make up a relatively small proportion of Collier County's demographic presently, safer driving habits will have a long-term benefit and establishing programs now will be useful as the County's population continues to grow.

Adult Traffic Safety Education

From the public outreach survey responses, it is clear that many Collier County residents do not feel safe biking or walking along major roadways and that driver behavior with respect to yielding/making space for non-motorized users is inadequate. The Bike/Walk Tampa Bay program, administered by the University of South Florida and funded by FDOT District 7, offers virtual and in-person pedestrian, driver and bicyclist safety presentations to adult audiences. The presentation uses an Audience Response System to quiz the audience and poll their opinions.

Since 2015 over 30,000 individuals have participated in seminars with each participant taking a "pledge" to WalkWise, BikeSmart, and Drive Safely and work to educate others about the importance of safe behaviors.

Table 3-2: Walk Wise Class Photo

Recommendation:

The Collier MPO should consider coordinating with FDOT District 1 to pilot a similar program within the District. Implementation activities included as part of the Collier LRSP include an inventory of safety-oriented organizations which can be reviewed to identify potential seminar providers.

Continuing Education

Continuing education programs for safety professionals can help ensure that as standards and practices evolve, the professional community remains abreast with the state of the art. This is especially important in Collier County where so much of the public roadway system is constructed by private developers. The Collier MPO should encourage participation in FDOT's Local Agency Traffic Safety Academy (LATSA).

LATSA is a free webinar series focused on:

- Sharing knowledge about traffic safety
- Discussing new and ongoing safety programs
- Explaining available funding sources
- Presenting local best practices,
- Learning about new safety treatments and technologies
- Discussing project delivery processes

Over 75 webinars have been presented since 2013 covering a wide range of traffic safety topics.

Recommendation:

The Collier MPO should encourage local agency partners and the development community to participate in LATSA webinars to help ensure good roadway design practices along both public and private roadways.

Safety Issue Reporting System

Non-emergency reporting systems can help identify potential safety issues before crash histories are established. Applications such as Wikimaps allow agencies to collect "crowdsourced" tips which can be categorized. These applications also allow users to click on and concur with previously reported issues and/or upload photos so that monitoring agencies can gather more actionable intelligence about potential issues.

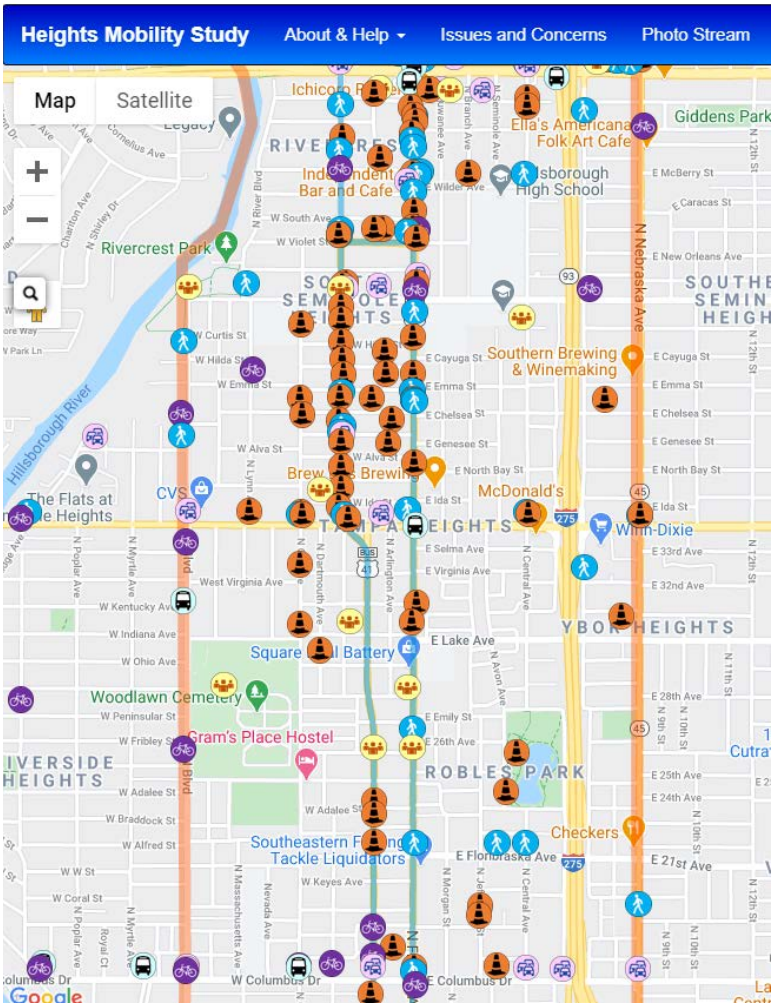


Figure 3-3: Example Wikimaps Issue Page

Recommendation:

The Collier MPO consider piloting a safety issue reporting system; however it is important that unlike an automated public works customer services system, users are clearly informed that the program is a pilot project only until such time as the agency workload, intake, and resolution process can be understood and managed.

Vision Zero Policy

Vision Zero is a strategy to eliminate all traffic fatalities and severe injuries, while increasing safe, healthy, equitable mobility for all. First implemented in Sweden in the 1990s, Vision Zero has proved successful across Europe — and now it is now gaining momentum in major American cities. Vision Zero focuses on systems approaches to preventing crash fatalities and incapacitating injuries. Speed management, equity, and human engagement are key aspects of Vision Zero.

While Vision Zero is normally a city-centric approach to traffic safety relying on the strong executive leadership of a city mayor, aspects of Vision Zero can be translated to a County framework. According to the Vision Zero Network, there are nine components of a strong Vision Zero commitment:

1. Political commitment from the highest-ranking local officials
2. Multi-disciplinary leadership
3. Action plan identifying clear strategies, owners, and interim targets and performance measures
4. Equity focus
5. Cooperation and collaboration
6. Systems-based approach
7. Data-driven
8. Community engagement
9. Transparency

Recommendation:

As part of the implementation process for the Collier LRSP, the Collier MPO and the County's leadership should continue to explore the merits of adopting a Vision Zero approach to safety in Collier County.

SECTION 4: IMPLEMENTATION PLAN

The implementation Plan of the Collier LSRP will be developed following feedback from the MPO's committees and Board on the Plan's analyses and recommendations.

OMMITTEE ACTION
ITEM 7G

Endorse Amendment to FY 20/21-21/22 Unified Planning Work Program

OBJECTIVE: For the committee to review and endorse the draft amendment to the Fiscal Year (FY) 20/21-21/22 Unified Planning Work Program (UPWP).

CONSIDERATIONS: The UPWP provides a planning work program that identifies and describes the MPO's budget for activities, studies and technical support expected to be undertaken in the metropolitan area on behalf of the MPO Board. It also lists the funding source(s) for each planning task and specifies whether the task will be conducted by MPO staff, consultants or county agencies.

At the time the UPWP was adopted, the final FY 20/21 FTA 5305(d) allocation was not available. Task 6 has been revised to reflect the final allocation (an increase of $11,802) for the FY 20/21 FTA 5305(d) grant.

In addition, this amendment breaks apart the carryforward funding and adds another funding table to show FY 17/18 and FY 18/19 5305(d) funding. Most of this funding has been spent or has been allocated to a study however there is a small amount of funding remaining in "travel" and "office supplies". Funding was originally allocated for MPO staff and Public Transit and Neighborhood Enhancement Staff to attend conferences this year, but due to Covid-19 all training has moved to a virtual platform. Both of these grants expire this year so the funding must be reallocated, or it will be lost.

Other changes to the UPWP include:

- Cover Page – Added Contract G1J00
- FY 19/20 5305(d) funding - Removed $45,000 from consultant services of the Transit Element of the Long Range Transportation Plan (LRTP). The MPO was able to fully fund the LRTP with SU funding. This funding was added to assist PTNE with their Comprehensive Operational Analysis.
- Revised summary tables T1 and T2
- Added Appendix E – FY 20/21 5305(d) Grant application

The revised pages are included in **Attachment 1**. Typically proposed changes are included in strikethrough/underline format, but due to the extensive changes in the table format, the document is very difficult to read. A summary of all changes is included as **Attachment 2.**

STAFF RECOMMENDATION: That the committee endorse the amendment to the FY 20/21-21/22 UPWP.

ATTACHMENTS:

1. Draft Amendment to FY 19/20-20/21 UPWP
2. Amendment 1 Summary of Changes

Prepared By: Brandy Otero, Principal Planner

COLLIER
METROPOLITAN PLANNING ORGANIZATION
BONITA SPRINGS (NAPLES), FL UZA

UNIFIED PLANNING WORK PROGRAM
FISCAL YEARS (FY) 2020/21-2021/22
July 1, 2020-June 30, 2022

This document was approved and adopted by the
Collier Metropolitan Planning Organization on

May 8, 2020

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Councilwoman Elaine Middelstaedt, MPO Chair

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Federal Planning Fund
Federal Aid Program (FAP) - # 0313-058-M
Financial Management (FM) - # 439314-3-14-01 & 439314-3-14-02
FDOT Contract #

Federal Transit Administration (FTA) Section 5305(d) Funds
Financial Management (FM) - # 410113 1 14
Contract # GO581
Contract # G1619
Contract #G1J00

Prepared by the staff and the participating agencies of the Collier Metropolitan Planning Organization. The preparation of this document has been financed in part through grants from the Federal Highway Administration (CFDA Number 20.205), the Federal Transit Administration (CFDA Number 20.505), the U.S. Department of Transportation, under the Metropolitan Planning Program, Section 104(f) of title 23, U.S. Code, and from Local funding provided by Collier County, the City of Naples, the City of Marco Island, and the City of Everglades City. The contents of this document do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

Amendment 1 - 10/9/20

TABLE OF CONTENTS

TASK 6 TRANSIT AND TRANSPORTATION DISADVANTAGED PLANNING

PURPOSE:

To provide the necessary resources to support a multimodal transportation system in the Collier MPO area. This task includes completing the Transit Development Plan, the 2045 Long Range Transportation Plan, a multimodal TIP and other plans, programs and technical studies relating to public transportation. This task includes coordination with the transit agency for the establishment of transit asset management target measures and target setting for the required Public Transit Safety Agency Plan. In addition, this task includes overseeing and providing planning services for a coordinated Transportation Disadvantaged (TD) Program in Collier County, in accordance with Chapter 427 of the Florida Statutes (FS) and Florida Administrative Code (F.A.C.) Rule 41-2.

PREVIOUS WORK

- TDP Major Update – Carryover from last UPWP
- Park and Ride Study – Carryover from last UPWP
- Transit Impact Analysis – Carryover from last UPWP
- Coordinated with PTNE to review and adopt the Transit Asset Management Performance Measures for the Collier Metropolitan Area.
- Ongoing transit and transportation disadvantaged coordination between the Collier MPO and PTNE.
- Staff support to the Local Coordinating Board as required by the TD Planning Grant.

REQUIRED TASKS:

Activity	Deliverable(s)	Target Date
Conduct and maintain the operations of the MPO including providing administrative support activities such as financial management, contract management, public outreach, personnel matters, procurement of equipment and supplies and general management of Transit Planning at the system level within the MPO.	Office supplies; reports Documented on progress reports	Ongoing
MPO staff, Board, and PTNE staff will participate in meetings, trainings, workshops, or seminars related to fixed route which may include fixed routes, ADA or paratransit service.	Enhanced knowledge of MPO and PTNE staff understanding of best practices; Completed Travel Forms, Receipts, Progress Reports	As needed
Project Management and Consultant Services to complete the Transit Development Plan Major Update. This is	Transit Development Plan submitted to FDOT	September 2020

Activity	Deliverable(s)	Target Date
a carryover from the previous fiscal year. Provide comments on the annual reports of the Transit Development Plan prepared by PTNE	Comments on Annual Report	June - Annually
Coordinate with PTNE on compliance with all Federal requirements to address transit performance measures including, Transit Asset Management and Public Transit Agency Safety Plan	Updated documents with performance measures included as required	As directed by FDOT
Prepare and submit Section 5305(d) grant application. Prepare quarterly progress reports and invoices.	Completed and submitted application Completed Progress Report and invoice	Annually Quarterly
Consultant and staff activities for a Park and Ride study. This is carryover from the previous fiscal year.	Park and Ride Study	October 2020
Consultant activities for the 2045 LRTP. Coordinate TDP and Park and Ride study with 2045 LRTP. Elements of both documents will be included in the LRTP	Multi-modal LRTP	December 2020
Consultant and staff services to complete the transit impact analysis. This is a carryover from the previous fiscal year.	Completed study	December 2020
Consultant and staff services to conduct a study identified as a result of the TDP major update (still to be determined)	Completed study	June 2022
Consultant services to complete a Comprehensive Operational Analysis. This is a PTNE study funded with 5307 funding and is shown for illustrative purposes.	Completed study	January 2021
Staff support to the LCB, including preparation of agendas, preparation of meeting materials including legal advertisements of meetings.	Quarterly	Ongoing
Complete TD activities as required by TD Planning Grant, including annual updates to TDSP, CTC Evaluation, annual review of bylaws, completion of LCB training, public workshop, etc.	TDSP Annual Report CTC Evaluation Bylaw Update Public Workshop LCB Board Training	June - Annual June - Annual May - Annual March - Annual March -Annual
Staff attendance at TD training and workshops as required by the TD planning grant	Sign in sheets, agendas, travel forms	As needed

RESPONSIBLE AGENCY: Collier MPO, Collier County PTNE, Consultant Services

Task 6 - Financial Tables

Task 6 – Transit & TD Planning Estimated Budget Detail for FY 17/18 & 18/19							
Budget Category & Description	FTA 5305 FY 17/18	FTA State Match FY 17/18	FTA Local Match FY 17/18	FTA 5305 FY 18/19	FTA 5305 State Match FY 18/19	FTA 5305 Local Match FY 18/19	Total
A. Personnel Services							
and other deductions	$78,208	$9,776	$9,776	$21,504	$2,688	$2,688	$124,640
Subtotal:	**$78,208**	**$9,776**	**$9,776**	**$21,504**	**$2,688**	**$2,688**	**$124,640**
B. Consultant Services							
Transit Impact Analysis	$32,800	$4,100	$4,100				$41,000
Park and Ride Study				$48,000	$6,000	$6,000	$60,000
TDP Major Update				$45,916	$5,739	$5,739	$57,394
Subtotal:	**$32,800**	**$4,100**	**$4,100**	**$93,916**	**$11,739**	**$11,739**	**$158,394**
C. Travel							
at training and conferences	$2,287	$286	$286	$0	$0	$0	$2,859
Subtotal:	**$2,287**	**$286**	**$286**	**$0**	**$0**	**$0**	**$2,859**
D. Other Direct Expenses							
Legal Ads	$0	$0	$0	$0	$0	$0	**$0**
Website	$240	$30	$30	$0	$0	$0	**$300**
Fed Ex/ Postage	$120	$15	$15	$80	$10	$10	**$250**
Office Supplies	$0	$0	$0	$400	$50	$50	**$500**
Subtotal:	**$360**	**$45**	**$45**	**$480**	**$60**	**$60**	**$1,050**
Total:	**$113,655**	**$14,207**	**$14,207**	**$115,900**	**$14,487**	**$14,487**	**$286,943**

This is not new funding. This table is shown to allow an amendment for the remaining FTA 5305(d) FY 17/18 and FY18/19 funding. Most of the funding for this grant period has already been spent. All carryforward funding (FY 17/18, 18/19 and 19/20) will be summarized and shown in one column in the summary tables.

Task 6 – Transit & TD Planning Estimated Budget Detail for FY 20/21									
Budget Category & Description	**FTA 5305 FY 19/20**	**FTA State Match FY 19/20**	**FTA Local Match FY 19/20**	**FTA 5307 FFY 19**	**FTA 5305 FY 20/21**	**FTA State Match FY 20/21**	**FTA Local Match FY 20/21**	**Trans. Disad.**	**Total**
A. Personnel Services									
MPO staff salaries, fringe benefits, and other deductions	$23,264	$2,908	$2,908	$0	$58,924	$7,366	$7,367	$21,156	$123,893
Subtotal:	**$23,264**	**$2,908**	**$2,908**	**$0**	**$58,924**	**$7,366**	**$7,367**	**$21,156**	**$123,893**
B. Consultant Services									
TDP Major Update	$52,501	$6,562	$6,562	$0	$0	$0	$0	$0	$65,625
Transit Study – TBD after TDP Completion	$0	$0	$0	$0	$58,984	$7,372	$7,372	$0	$73,728
Comprehensive Operational Analysis	$36,000	$4,500	$4,500	$93,559	$0	$0	$0	$0	$138,559
Subtotal:	**$88,501**	**$11,062**	**$11,062**	**$93,559**	**$58,984**	**$7,372**	**$7,372**	**$0**	**$277,912**
C. Travel									
MPO Staff and PTNE staff attendance at training and conferences	$4,819	$602	$602	$0	$9,600	$1,200	$1,200	$2,000	$20,023
Subtotal:	**$4,819**	**$602**	**$602**	$0	**$9,600**	**$1,200**	**$1,200**	**$2,000**	**$20,023**
D. Other Direct Expenses									
Legal Ads	$0	$0	$0	$0	$0	$0	$0	$2,760	**$2,760**
Website	$240	$30	$30	$0	$0	$0	$0	$0	**$300**
Fed Ex/ Postage	$120	$15	$15	$0	$120	$15	$15	$1,100	**$1,400**
Office Supplies	$1,643	$206	$206	$0	$400	$50	$50	$0	**$2,555**
Subtotal:	**$2,003**	**$251**	**$251**	**$0**	**$520**	**$65**	**$65**	**$3,860**	**$7,015**
Total:	**$118,587**	**$14,823**	**$14,823**	**$93,559**	**$128,028**	**$16,003**	**$16,004**	**$27,016**	**$428,843**

Task 6 – Transit & TD Planning Estimated Budget Detail for FY 21/22								
Budget Category & Description	**FTA 5305 Carry-forward**	**5305 Carry-forward State Match**	**5305 Carry-forward Local Match**	**FTA 5305**	**FTA State Match**	**FTA Local Match**	**Trans. Disad.**	**Total**
A. Personnel Services								
MPO staff salaries, fringe benefits, and other deductions	$0	$0	$0	$64,000	$8,000	$8,000	$21,156	$101,156
Subtotal:	**$0**	**$0**	**$0**	**$64,000**	**$8,000**	**$8,000**	**$21,156**	**$101,156**
B. Consultant Services								
Transit Study – TBD after TDP Completion	$0	$0	$0	$43,867	$5,483	$5,483	$0	$54,833
Subtotal:	**$0**	**$0**	**$0**	**$43,867**	**$5,483**	**$5,483**	**$0**	**$54,833**
C. Travel								
MPO Staff and PTNE staff attendance at training and conferences	$0	$0	$0	$9,600	$1,200	$1,200	$2,000	$14,000
Subtotal:	**$0**	**$0**	**$0**	**$9,600**	**$1,200**	**$1,200**	**$2,000**	**$14,000**
D. Other Direct Expenses								
Legal Ads	$0	$0	$0	$0	$0	$0	$2,760	**$2,760**
Website	$0	$0	$0	$240	$30	$30	$0	**$300**
Fed Ex/ Postage	$0	$0	$0	$80	$10	$10	$1,100	**$1,200**
Office Supplies	$0	$0	$0	$800	$100	$100	$0	**$1,000**
Subtotal:	**$0**	**$0**	$0	**$1,120**	**$140**	**$140**	**$3,860**	**$5,260**
Total:	**$0**	**$0**	**$0**	**$118,587**	**$14,823**	**$14,823**	**$27,016**	**$175,249**

SUMMARY TABLES

TABLE 1 – FY 2020/21 AGENCY PARTICIPATION

Task #	Task Description	De-obligation from 19/20	FHWA (PL)	FHWA (SU)	FTA 5307*	FTA Section 5305**	FDOT		Local	TD Trust	Total	Amount to Consultant
							Soft Match	Cash Match				
1	Administration	$ 73,588	$ 374,200			$ -	$ 98,761	$ -	$ -	$ -	**$ 546,549**	$ 108,000
2	Data Collection/ Development		$ 25,000			$ -	$ 5,514	$ -	$ -	$ -	**$ 30,514**	$ 15,000
3	Transportation Improvement Program (TIP)		$ 10,000			$ -	$ 2,206	$ -	$ -	$ -	**$ 12,206**	
4	Long Range Planning		$ 55,000	$ 120,000		$ -	$ 38,597	$ -	$ -	$ -	**$ 213,597**	$ 140,000
5	Special Projects and Systems Planning	$ 10,000	$ 53,285	$ 65,000		$ -	$ 28,294	$ -	$ -	$ -	**$ 156,579**	$ 43,285
6	Transit and Transportation Disadvantaged				$ 93,559	$ 476,170		$ 59,520	$ 59,521	$ 27,016	**$ 715,786**	$ 275,353
7	Regional Coordination		$ 31,000			$ -	$ 6,837	$ -	$ -	$ -	**$ 37,837**	
8	Locally Funded Activities		$ -			$ -	$ -	$ -	$ 8,000	$ -	**$ 8,000**	
	Total fiscal year 2020/21 funds for all tasks		$ 548,485			$ 476,170	$ 180,209	$ 59,520	$ 67,521	$ 27,016	**$ 1,358,921**	
	Total De-obligation from prior fiscal years	$ 83,588	$ -			$ -	$ -	$ -	$ -	$ -	**$ 83,588**	
	Total cost, including carryover, for all tasks	**$ 83,588**	**$ 548,485**	**$ 185,000**	**$ 93,559**	**$ 476,170**	**$ 180,209**	**$ 59,520**	**$ 67,521**	**$ 27,016**	**$ 1,721,068**	$ 581,638

	FHWA PL	FHWA SU	FDOT	FTA 5305	FTA 5307	TD Trust	Collier Co.	Naples	Everglades	Marco Is.	Total
State Support/Match for MPO (1)	$ -		$ 180,209	$ -		$ -	$ -	$ -	$ -	$ -	$ 180,209
FY 20/21 State and Local Support for FTA Program (2)	$ -		$ 16,003	$ -		$ -	$ 10,003	$ 4,001	$ -	$ 2,000	$ 32,007
FY 2020/21 Funding	$ 548,485	$ 185,000	$ -	$ 128,028		$ 27,016	$ -	$ -	$ -	$ -	$ 888,529
FY 2020/21 Local Funding	$ -		$ -	$ -		$ -	$ 5,000	$ 2,000	$ -	$ 1,000	$ 8,000
FTA Carryover	$ -		$ 43,517	$ 348,142	$ 93,559	$ -	$ 27,198	$ 10,879	$ -	$ 5,440	$ 528,735
De-Obligation from Prior Fiscal Years	$ 83,588		$ -	$ -		$ -	$ -	$ -	$ -	$ -	$ 83,588
Total cost, including carryover, for all tasks	**$ 632,073**	**$ 185,000**	**$ 239,729**	**$ 476,170**	**$ 93,559**	**$ 27,016**	**$ 42,201**	**$ 16,880**	**$ -**	**$ 8,440**	**$ 1,721,068**

(1) For FY 2020/2021, FDOT will "soft match" the MPP/PL Funds using toll revenue expenditures as a credit toward the non-Federal matching share. The amount identified on this line represent the amount of "soft match" required (both State and local) for the amount of Federal PL section 112 funds requested in this UPWP.

(2) This amount identified on this line represents the amount of FTA 5305 funding and the amount of local match (10%) required.

* FTA Section 5307 includes FFY 19 funding for CAT and is shown for illustrative purposes only

** - FTA Section 5305 includes 2017/18, 2018/19 and 19/20 funding

TABLE 2 – FY 2020/21 FUNDING SOURCE

Task #	Task Description	De-obligated Funding from 19/20 UPWP	FHWA PL Federal	FHWA SU Federal	FDOT Soft Match	Total Federal Funding	FY 19 FTA 5307	FTA 5305 Carry Forward			FTA 5305 20/21			State TD Trust	Local Funding	Total
								Federal	State	Local	Federal	State	Local			
1	Administration	$ 73,588	$ 374,200		$ 98,761	$ 447,788			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 546,549
2	Data Collection/Development		$ 25,000		$ 5,514	$ 25,000			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 30,514
3	Transportation Improvement Program (TIP)		$ 10,000		$ 2,206	$ 10,000			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,206
4	Long Range Planning		$ 55,000	$ 120,000	$ 38,597	$ 175,000			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 213,597
5	Special Projects and Systems Planning	$ 10,000	$ 53,285	$ 65,000	$ 28,294	$ 128,285			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 156,579
6	Transit and Transportation Disadvantaged					$ -	$ 93,559	$ 348,142	$ 43,517	$ 43,517	$ 128,028	$ 16,003	$ 16,004	$ 27,016		$ 715,786
7	Regional Coordination		$ 31,000		$ 6,837	$ 31,000			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 37,837
8	Locally Funded Activities	$ -	$ -		$ -	$ -			$ -	$ -	$ -	$ -	$ -	$ -	$ 8,000	$ 8,000
	Total fiscal year 2020/21 funds for all tasks	$ 83,588	$ 548,485	$ 185,000	$ 180,209	$ 817,073	$ 93,559	$ 348,142	$ 43,517	$ 43,517	$ 128,028	$ 16,003	$ 16,004	$ 27,016	$ 8,000	$ 1,721,068
State Support/Match for MPO (1)		$ -	$ -	$ -	$ 180,209	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ -		$ 180,209
State and Local Support for FTA Program (2)		$ -	$ -	$ -	$ -	$ -		$ -	$ -	$ -		$ 16,003	$ 16,004	$ -		$ 32,007
FY 2020/21 Funding		$ -	$ 548,485	$ 185,000	$ -	$ -		$ -	$ -		$ 128,028	$ -		$ -		$ 861,513
FY 2020/21 Local Funding		$ -	$ -	$ -	$ -	$ -		$ -	$ -	$ -	$ -	$ -	$ -	$ 27,016	$ 8,000	$ 35,016
Roll Forward from Prior Fiscal Year		$ 83,588			$ -	$ -	$ 93,559	$ 348,142	$ 43,517	$ 43,517	$ -	$ -	$ -	$ -		$ 612,323
Total cost, including carryover, for all tasks		$ 83,588	$ 548,485	$ 185,000	$ 180,209	$ 817,073	$ 93,559	$ 348,142	$ 43,517	$ 43,517	$ 128,028	$ 16,003	$ 16,004	$ 27,016	$ 8,000	$ 1,721,068

TABLE 3 – FY 2021/22 AGENCY PARTICIPATION

Task #	Task Description	FHWA (PL)	FTA Section 5305	FDOT		Local	TD Trust	Total	Amount to Consultant
				Soft Match	Cash Match				
1	Administration	$ 345,200	$ -	$ 76,135	$ -	$ -	$ -	**$ 421,335**	$ 2,000
2	Data Collection/ Development	$ 25,000	$ -	$ 5,514	$ -	$ -	$ -	**$ 30,514**	$ 15,000
3	Transportation Improvement Program (TIP)	$ 10,000	$ -	$ 2,206	$ -	$ -	$ -	**$ 12,206**	$ -
4	Long Range Planning	$ 40,000	$ -	$ 8,822	$ -	$ -	$ -	**$ 48,822**	$ 5,000
5	Special Projects and Systems Planning	$ 107,285	$ -	$ 23,662	$ -	$ -	$ -	**$ 130,947**	$ 62,285
6	Transit and Transportation Disadvantaged	$ -	$ 118,587	$ -	$ 14,823	$ 14,823	$ 27,016	**$ 175,249**	$ 54,833
7	Regional Coordination	$ 21,000	$ -	$ 4,632	$ -	$ -	$ -	**$ 25,632**	$ -
8	Locally Funded Activities	$ -	$ -	$ -	$ -	$ 8,000	$ -	**$ 8,000**	$ -
	Total fiscal year 2021/22 funds for all tasks	$ 548,485	$ 118,587	$ 120,971	$ 14,823	$ 22,823	$ 27,016	**$ 852,705**	$ -
	Total De-obligation from prior fiscal years	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total cost, including carryover, for all tasks	**$ 548,485**	**$ 118,587**	**$ 120,971**	**$ 14,823**	**$ 22,823**	**$ 27,016**	**$ 852,705**	$ 139,118

	FHWA PL	FDOT	FTA 5305	TD Trust	Collier Co.	Naples	Everglades	Marco Is.	Total
State Support/Match for MPO (1)	$ -	$ 120,971	$ -	$ -	$ -	$ -	$ -	$ -	$ 120,971
State and Local Support for FTA Program (2)	$ -	$ 14,823	$ -	$ -	$ 9,264	$ 3,706	$ -	$ 1,853	$ 29,646
FY 2021/22 Funding	$ 548,485	$ -	$ 118,587	$ 27,016	$ -	$ -	$ -	$ -	$ 694,088
FY 2021/22 Local Funding	$ -	$ -	$ -	$ -	$ 5,000	$ 2,000	$ -	$ 1,000	$ 8,000
5305 Carryover	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
PL Roll Forward from Prior Fiscal Years	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Close-Out from FY 2019/20	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total cost, including carryover, for all tasks	**$ 548,485**	**$ 135,794**	**$ 118,587**	**$ 27,016**	**$ 14,264**	**$ 5,706**	**$ -**	**$ 2,853**	**$ 852,705**

(1) For FY 2021/2022, FDOT will "soft match" the MPP/PL Funds using toll revenue expenditures as a credit toward the non-Federal matching share. The amount identified on this line represent the amount of "soft match" required (both State and local) for the amount of Federal PL section 112 funds requested in this UPWP.

(2) This amount identified on this line represents the amount of FTA 5305 funding and the amount of local match (10%) required.

TABLE 4 – FY 2021/22 FUNDING SOURCE

Task #	Task Description	FHWA PL	FDOT	TOTAL	FTA 5305 2021-22			State TD	Local	
		Federal	Soft Match	FEDERAL PL	Federal	State	Local	Trust	Funding	Total
1	Administration	$ 345,200	$ 76,135	$ 345,200	$ -	$ -	$ -	$ -	$ -	$ 421,335
2	Data Collection/Development	$ 25,000	$ 5,514	$ 25,000	$ -	$ -	$ -	$ -	$ -	$ 30,514
3	Transportation Improvement Program (TIP)	$ 10,000	$ 2,206	$ 10,000	$ -	$ -	$ -	$ -	$ -	$ 12,206
4	Long Range Planning	$ 40,000	$ 8,822	$ 40,000	$ -	$ -	$ -	$ -	$ -	$ 48,822
5	Special Projects and Systems Planning	$ 107,285	$ 23,662	$ 107,285	$ -	$ -	$ -	$ -	$ -	$ 130,947
6	Transit and Transportation Disadvantaged	$ -	$ -	$ -	$ 118,587	$ 14,823	$ 14,823	$ 27,016	$ -	$ 175,249
7	Regional Coordination	$ 21,000	$ 4,632	$ 21,000	$ -	$ -	$ -	$ -	$ -	$ 25,632
8	Locally Funded Activities	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,000	$ 8,000
	Total fiscal year 2019/20 funds for all tasks	$ 548,485	$ 120,971	$ 548,485	$ 118,587	$ 14,823	$ 14,823	$ 27,016	$ 8,000	$ 852,705
State Support/Match for MPO		$ -	$ 120,971	$ -	$ -	$ -	$ -	$ -	$ -	$ 120,971
State and Local Support for FTA Program		$ -	$ -	$ -	$ -	$ 14,823	$ 14,823	$ -	$ -	$ 29,646
FY 2021/22 Funding		$ 548,485	$ -		$ 118,587	$ -	$ -	$ 27,016		$ 694,088
FY 2021/22 Local Funding		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,000	$ 8,000
PL Roll Forward from Prior Fiscal Year		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total cost, including carryover, for all tasks		$ 548,485	$ 120,971	$ -	$ 118,587	$ 14,823	$ 14,823	$ 27,016	$ 8,000	$ 852,705

TABLE 5 – PLANNING FACTOR AND PEA MATRIX

The Planning Factors listed below are priority themes for the FHWA, the FTA and the FDOT. The matrix identifies which of the Planning Factors and Emphasis Areas that will be considered in each of the UPWP Task activity.

	Administration	Data Collection	TIP Maintenance & Development	Long Range Planning	Special Projects & Systems Planning	Transit & Transportation Disadvantaged Planning	Regional Coordination	Locally Funded Activities
Federal Planning Factors								
1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.			✓	✓	✓		✓	
2. Increase the safety of the transportation system for motorized and non-motorized users.	✓	✓	✓	✓	✓		✓	
3. Increase the security of the transportation system for motorized and non-motorized users.		✓		✓	✓		✓	
4. Increase the accessibility and mobility of people and for freight.		✓		✓	✓	✓	✓	
5. Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.	✓	✓	✓	✓	✓	✓	✓	✓
6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.		✓		✓	✓	✓	✓	
7. Promote efficient system management and operation.		✓		✓	✓	✓	✓	
8. Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation.		✓	✓	✓	✓		✓	
9. Enhance travel and tourism.	✓		✓	✓	✓	✓	✓	✓
10. Emphasize the preservation of the existing transportation system.		✓	✓	✓				✓
FDOT Planning Emphasis Areas								
11. Safety	✓	✓	✓	✓	✓	✓	✓	
12. System Connectivity		✓		✓	✓	✓	✓	
13. Resilience		✓	✓	✓	✓	✓	✓	
14. ACES (Automated/Connected/Electric/Shared-use) Vehicles		✓		✓	✓	✓	✓	

APPENDICES

APPENDIX E – FTA GRANT APPLICATION

View Burden Statement

OMB Number: 4040-0004
Expiration Date: 12/31/2022

Application for Federal Assistance SF-424

* 1. Type of Submission:	* 2. Type of Application:	* If Revision, select appropriate letter(s):
☐ Preapplication	☒ New	
☒ Application	☐ Continuation	* Other (Specify):
☐ Changed/Corrected Application	☐ Revision	

* 3. Date Received:	4. Applicant Identifier:

5a. Federal Entity Identifier:	5b. Federal Award Identifier:
	FL-80-0009

State Use Only:

6. Date Received by State:	7. State Application Identifier:
	1001

8. APPLICANT INFORMATION:

* a. Legal Name:	Collier Metropolitan Planning Organization

* b. Employer/Taxpayer Identification Number (EIN/TIN):	* c. Organizational DUNS:
59-6000558	0235645830000

d. Address:

* Street1:	2885 South Horseshoe Drive
Street2:	
* City:	Naples
County/Parish:	
* State:	FL: Florida
Province:	
* Country:	USA: UNITED STATES
* Zip / Postal Code:	31404-6130

e. Organizational Unit:

Department Name:	Division Name:
Collier MPO	Collier MPO

f. Name and contact information of person to be contacted on matters involving this application:

Prefix:		* First Name:	Anne
Middle Name:			
* Last Name:	McLaughlin		
Suffix:			

Title:	Executive Director

Organizational Affiliation:

* Telephone Number:	239-252-5884	Fax Number:	

* Email:	Anne.McLaughlin@colliercountyfl.gov

Application for Federal Assistance SF-424

*** 9. Type of Applicant 1: Select Applicant Type:**

X: Other (specify)

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

MPO

*** 10. Name of Federal Agency:**

Federal Transit Administration

11. Catalog of Federal Domestic Assistance Number:

20.505

CFDA Title:

Section 5305 (d) Metropolitan Transportation Planning and State and Non-Metropolitan Planning Research

*** 12. Funding Opportunity Number:**

FL-80-009

* Title:

Metropolitan Transportation Planning

13. Competition Identification Number:

Not Applicable

Title:

Not Applicable

14. Areas Affected by Project (Cities, Counties, States, etc.):

Add Attachment | Delete Attachment | View Attachment

*** 15. Descriptive Title of Applicant's Project:**

Support of transit planning activities identified in the 2020/21-2021/22 Unified Planning Work Program.

Attach supporting documents as specified in agency instructions.

Add Attachments | Delete Attachments | View Attachments

Application for Federal Assistance SF-424

16. Congressional Districts Of:

* a. Applicant: 19,25,

* b. Program/Project: 19,25,

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment | Delete Attachment | View Attachment

17. Proposed Project:

* a. Start Date: 10/01/2020

* b. End Date: 10/01/2021

18. Estimated Funding ($):

* a. Federal	128,028.00
* b. Applicant	
* c. State	16,003.00
* d. Local	16,004.00
* e. Other	
* f. Program Income	
* g. TOTAL	160,035.00

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

☐ a. This application was made available to the State under the Executive Order 12372 Process for review on .

☐ b. Program is subject to E.O. 12372 but has not been selected by the State for review.

☒ c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**

☐ Yes ☒ No

If "Yes", provide explanation and attach

Add Attachment | Delete Attachment | View Attachment

21. *By signing this application, I certify (1) to the statements contained in the list of certifications and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)**

☒ ** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix: | * First Name: Elaine

Middle Name:

* Last Name: Middelstaedt

Suffix:

* Title: MPO Chair

* Telephone Number: 239-252-5884 | Fax Number:

* Email: Anne.McLaughlin@colliercountyfl.gov

* Signature of Authorized Representative: | * Date Signed:

Section 5305(d) Collier MPO

Approved Project Budget for Fiscal Year

$160,035

TECHNICAL CLASSIFICATIONS

44.21.00	Program Support and Administration	$ 37,654.00
44.22.00	General Development and Comprehensive Planning	$ 18,828.00
44.23.00	Long Range Transportation Planning: System Level	$ 9,414.00
44.23.02	Long Range Transportation Planning	$ 9,414.00
44.24.00	Short Range Transportation Planning	$ 18,828.00
44.25.00	Transportation Improvement Program	$ 9,414.00
44.26.12	Coordination of Non-Emergency Human Services Transportation	$ 9,414.00
44.26.13	Participation of Transit Operators in Metropolitan Planning	$ 18,828.00
44.26.14	Planning for Transit Systems Management/Operations to Increase Ridership	
44.26.15	Support Transit Capital Investment Decisions through Effective Systems Planning	
44.26.16	Incorporating Safety & Security in Transportation Planning	$ 9,414.00
44.27.00	Other Activities	$ 18,827.00
	TOTAL NET PROJECT COSTS	$ 160,035.00

ACCOUNTING CLASSIFICATIONS

44.30.01	Personnel		$ 51,560.00
44.30.02	Fringe Benefits	(__%)	$ 22,097.00
44.30.03	Travel		$ 12,000.00
44.30.04	Equipment		
44.30.05	Supplies		$ 500.00
44.30.06	Contractual		$ 73,728.00
44.30.07	Other		$ 150.00
44.30.08	Indirect Charges	(__%)	
	TOTAL NET PROJECT COSTS		$ 160,035.00

FUND ALLOCATIONS

44.40.01	MPO Activities	$ 160,035.00
44.40.02	Transit Operator Activities	
44.40.03	State and/or Local Agency Activities	
	TOTAL NET PROJECT COSTS	$ 160,035.00
	Federal Share (80%)	$ 128,028.00
	Local Share (20%)	$ 32,007.00

ACCOUNTING

Classification	*FPC*	*Description*	*Amount*
91.37.08.8P-2	02	*Technical Studies - Planning*	$ 160,035.00

Section 5305(d) Collier MPO

GMIS Planning Line Item Codes

(FTA FUNDS ONLY)

TECHNICAL CLASSIFICATIONS				
44.21.00	Program Support and Administration		$	30,125.00
44.22.00	General Development and Comprehensive Planning		$	15,062.00
44.23.00	Long Range Transportation Planning: System Level		$	7,531.00
44.23.02	Long Range Transportation Planning		$	7,531.00
44.24.00	Short Range Transportation Planning		$	15,062.00
44.25.00	Transportation Improvement Program		$	7,531.00
44.26.12	Coordination of Non-Emergency Human Services Transportation		$	7,531.00
44.26.13	Participation of Transit Operators in Metropolitan Planning		$	15,062.00
44.26.14	Planning for Transit Systems Management/Operations to Increase Ridership			
44.26.15	Support Transit Capital Investment Decisions through Effective Systems Planning			
44.26.16	Incorporating Safety & Security in Transportation Planning		$	7,531.00
44.27.00	Other Activities		$	15,062.00
		TOTAL NET PROJECT COSTS	$	128,028.00

ACCOUNTING CLASSIFICATIONS				
44.30.01	Personnel		$	41,248.00
44.30.02	Fringe Benefits	(__%)	$	17,678.00
44.30.03	Travel		$	9,600.00
44.30.04	Equipment			
44.30.05	Supplies		$	400.00
44.30.06	Contractual		$	58,982.00
44.30.07	Other		$	120.00
44.30.08	Indirect Charges	(__%)		
		TOTAL NET PROJECT COSTS	$	128,028.00

FUND ALLOCATIONS				
44.40.01	MPO Activities		$	128,028.00
44.40.02	Transit Operator Activities			
44.40.03	State and/or Local Agency Activities			
		TOTAL NET PROJECT COSTS	$	128,028.00

FFY20 Title VI / Non-Discrimination Policy Statement

The Collier MPO assures the Florida Department of Transportation that no person shall on the basis of race, color, national origin, sex, age, disability, family or religious status, as provided by Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987 and the Florida Civil Rights Act of 1992 be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination or retaliation under any program or activity.

The Collier MPO further agrees to the following responsibilities with respect to its programs and activities:

1. Designate a Title VI Liaison that has a responsible position within the organization and access to the subrecipient's Chief Executive Officer.
2. Issue a policy statement signed by the Chief Executive Officer, which expresses its commitment to the nondiscrimination provisions of Title VI. The policy statement shall be circulated throughout the subrecipient's organization and to the general public. Such information shall be published where appropriate in languages other than English.
3. Insert the clauses of Appendix A of this agreement in every contract subject to the Acts and Regulations.
4. Develop a complaint process and attempt to resolve complaints of discrimination against subrecipients. Complaints against the Florida Department of Transportation (FDOT) shall immediately be forward to the FDOT District Title VI Coordinator.
5. Participate in training offered on Title VI and other nondiscrimination requirements.
6. If reviewed by FDOT or the United States Department of Transportation, take affirmative action to correct any deficiencies found within a reasonable time period, not to exceed ninety (90) calendar days.
7. Have a process to collect racial and ethnic data on persons impacted by the subrecipient's programs.

This assurance is given in consideration of and for the purpose of obtaining any and all federal funds, grants, loans, contracts, properties, discounts or other federal financial assistance under all programs and activities and is binding. The person whose signature appears below is authorized to sign this assurance on behalf of the subrecipient.

_____ _____

Signature of Presiding Officer for the MPO/TPO **Date of Signature**

FFY20 Disadvantaged Business Enterprise Utilization

It is the policy of the Collier MPO that disadvantaged businesses, as defined by 49 Code of Federal Regulations, Part 26, shall have an opportunity to participate in the performance of Collier MPO contracts in a nondiscriminatory environment. The objects of the Disadvantaged Business Enterprise Program are to ensure nondiscrimination in the award and administration of contracts, ensure firms fully meet eligibility standards, help remove barrier to participation, create a level playing field, assist in development of a firm so it can compete successfully outside of the program, provide flexibility, and ensure narrow tailoring of the program. The Collier MPO, and its consultants shall take all necessary and reasonable steps to ensure that disadvantaged businesses have an opportunity to compete for and perform the work of the Collier MPO in a non-discriminatory environment. The Collier MPO shall require its consultants to not discriminate on the bases of race, color, national origin, sex, age handicap/disability, or income status in the award and performance of its contracts. This policy covers in part the applicable federal regulations and the applicable statutory references contained therein for the Disadvantaged Business Enterprise Program Plan, Chapters 337 and 339, Florida Statutes, and Rule Chapter 14-78, Florida Administrative Code.

_____ _____

Signature of Presiding Officer for the MPO/TPO **Date of Signature**

FEDERAL FY20 CERTIFICATION REGARDING LOBBYING

Certification for Contracts, Grants, Loans, and Cooperative Agreements

The undersigned certifies, to the best of her or his knowledge and belief, that:

(1) No federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress in connection with the awarding of any Federal Contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress, in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000.00 and not more that $100,000.00 for each such failure.

_____ _____

Chairperson for the MPO **Date**

FEDERAL FY20 DEBARMENT AND SUSPENSION CERTIFICATION

As required by U.S. Regulations on Government wide Debarment and Suspension (Nonprocurement) at 49 CFR 29.510

(1) The Metropolitan Planning Organization hereby certifies to the best of its knowledge and belief, that it and its principles:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any federal department or agency;

(b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, state or local) transaction or contract under a public transaction; violation of Federal or state antitrust statutes; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, state or local) with commission of any of the offenses listed in paragraph (b) of this certification; and,

(d) Have not within a three-year period preceding this certification had one or more public transactions (Federal, state or local) terminated for cause or default.

(2) The Metropolitan Planning Organization also hereby certifies that if, later, it becomes aware of any information contradicting the statements of paragraphs (a) through (d) above, it will promptly provide that information to the U.S. DOT.

_____ _____

Chairperson for the MPO **Date**

FEDERAL FISCAL YEAR 2020 CERTIFICATIONS AND ASSURANCES FOR FTA ASSISTANCE PROGRAMS

(Signature pages alternate to providing Certifications and Assurances in TrAMS.)

Name of Applicant: Collier MPO

The Applicant certifies to the applicable provisions of categories 01–20. X

Or,

The Applicant certifies to the applicable provisions of the categories it has selected:

Category		Certification
01	Certifications and Assurances Required of Every Applicant	
02	Public Transportation Agency Safety Plans	
03	Tax Liability and Felony Convictions	
04	Lobbying	
05	Private Sector Protections	
06	Transit Asset Management Plan	
07	Rolling Stock Buy America Reviews and Bus Testing	
08	Urbanized Area Formula Grants Program	
09	Formula Grants for Rural Areas	
10	Fixed Guideway Capital Investment Grants and the Expedited Project Delivery for Capital Investment Grants Pilot Program	
11	Grants for Buses and Bus Facilities and Low or No Emission Vehicle Deployment Grant Programs	

12	Enhanced Mobility of Seniors and Individuals with Disabilities Programs	_____
13	State of Good Repair Grants	_____
14	Infrastructure Finance Programs	_____
15	Alcohol and Controlled Substances Testing	_____
16	Rail Safety Training and Oversight	_____
17	Demand Responsive Service	_____
18	Interest and Financing Costs	_____
19	Construction Hiring Preferences	_____
20	Cybersecurity Certification for Rail Rolling Stock and Operations	_____

FEDERAL FISCAL YEAR 2020 FTA CERTIFICATIONS AND ASSURANCES SIGNATURE PAGE

(Required of all Applicants for federal assistance to be awarded by FTA in FY 2020)

AFFIRMATION OF APPLICANT

Name of the Applicant: Collier MPO

BY SIGNING BELOW, on behalf of the Applicant, I declare that it has duly authorized me to make these Certifications and Assurances and bind its compliance. Thus, it agrees to comply with all federal laws, regulations, and requirements, follow applicable federal guidance, and comply with the Certifications and Assurances as indicated on the foregoing page applicable to each application its Authorized Representative makes to the Federal Transit Administration (FTA) in federal fiscal year 2020, irrespective of whether the individual that acted on his or her Applicant's behalf continues to represent it.

FTA intends that the Certifications and Assurances the Applicant selects on the other side of this document should apply to each Award for which it now seeks, or may later seek federal assistance to be awarded during federal fiscal year 2020.

The Applicant affirms the truthfulness and accuracy of the Certifications and Assurances it has selected in the statements submitted with this document and any other submission made to FTA, and acknowledges that the Program Fraud Civil Remedies Act of 1986, 31 U.S.C. § 3801 *et seq.*, and implementing U.S. DOT regulations, "Program Fraud Civil Remedies," 49 CFR part 31, apply to any certification, assurance or submission made to FTA. The criminal provisions of 18 U.S.C. § 1001 apply to any certification, assurance, or submission made in connection with a federal public transportation program authorized by 49 U.S.C. chapter 53 or any other statute

In signing this document, I declare under penalties of perjury that the foregoing Certifications and Assurances, and any other statements made by me on behalf of the Applicant are true and accurate.

Signature_____ Date: _____

Name Elaine Middelstaedt, Collier MPO Chair Authorized Representative of Applicant

AFFIRMATION OF APPLICANT'S ATTORNEY

For (Name of Applicant): Collier MPO

As the undersigned Attorney for the above-named Applicant, I hereby affirm to the Applicant that it has authority under state, local, or tribal government law, as applicable, to make and comply with the Certifications and Assurances as indicated on the foregoing pages. I further affirm that, in my opinion, the Certifications and Assurances have been legally made and constitute legal and binding obligations on it.

I further affirm that, to the best of my knowledge, there is no legislation or litigation pending or imminent that might adversely affect the validity of these Certifications and Assurances, or of the performance of its FTA assisted Award.

Signature_____ Date: _____

Name Scott R. Teach, Deputy County Attorney Attorney for Applicant

Each Applicant for federal assistance to be awarded by FTA must provide an Affirmation of Applicant's Attorney pertaining to the Applicant's legal capacity. The Applicant may enter its electronic signature in lieu of the Attorney's signature within TrAMS, provided the Applicant has on file and uploaded to TrAMS this hard-copy Affirmation, signed by the attorney and dated this federal fiscal year.

17/18

Budget Category and Description	5305(d)	UPWP Amendment	5305(d) Funding After Amendment
MPO staff salaries, fringe benefits, and other deductions	$ 93,705	$ 4,055	$ 97,760
Consultant Services - Transit Impact Analysis	$ 41,000		$ 41,000
Travel	$ 4,859	$ (2,000)	$ 2,859
Legal Ads	$ -	$ -	$ -
Website	$ 300		$ 300
Fed Ex/Postage	$ 150	$ -	$ 150
Office Supplies	$ 2,055	$ (2,055)	$ -
Subtotal			
	$ 142,069	$ -	$ 142,069

18/19

Budget Category and Description	5305(d)	UPWP Amendment	5305(d) Funding After Amendment
MPO staff salaries, fringe benefits, and other deductions	$ 24,080	$ 2,800	$ 26,880
Consultant Services - Transit Impact Analysis	$ -		$ -
Consultant Services - Park and Ride Study	$ 60,000		$ 60,000
Consultant Sercices - TDP Major Update	$ 57,394		$ 57,394
Travel	$ 2,000	$ (2,000)	$ -
Legal Ads	$ -	$ -	$ -
Website	$ 300	$ (300)	$ -
Fed Ex/Postage	$ 100	$ -	$ 100
Office Supplies	$ 1,000	$ (500)	$ 500
Subtotal			
	$ 144,874	$ -	$ 144,874

19/20

Budget Category and Description	5305(d)	UPWP Amendment	5305(d) Funding After Amendment
MPO staff salaries, fringe benefits, and other deductions	$ 29,080		$ 29,080
Consultant Services - Transit Element of the 2045 LRTP	$ 45,000	$ (45,000)	$ -
Consultant Sercices - TDP Major Update	$ 65,625		$ 65,625
Consultant Services - Comprehensive Operational Analysis		$ 45,000	$ 45,000
Travel	$ 6,023		$ 6,023
Legal Ads	$ -		$ -
Website	$ 300		$ 300
Fed Ex/Postage	$ 150		$ 150
Office Supplies	$ 2,055		$ 2,055
Subtotal			
	$ 148,233	$ -	$ 148,233

20/21

Budget Category and Description	5305(d)	UPWP Amendment	5305(d) Funding After Amendment
MPO staff salaries, fringe benefits, and other deductions	$ 60,000	$ 13,657	$ 73,657
Consultant Services - Transit Study TBD	$ 73,728		$ 73,728
Travel	$ 12,000		$ 12,000
Legal Ads	$ -		$ -
Website	$ 300	$ (300)	$ -
Fed Ex/Postage	$ 150		$ 150
Office Supplies	$ 2,055	$ (1,555)	$ 500
Subtotal			
	$ 148,233	$ 11,802	$ 160,035

EXECUTIVE SUMMARY
COMMITTEE REPORTS
ITEM 8A

Connected and Automated Vehicles (CAV) Report

OBJECTIVE: For the Committee to receive a copy of FDOT's report on Connected and Automated Vehicles

CONSIDERATIONS: The Florida Department of Transportation (FDOT) District 1 Regional Planning Model (D1RPM) explores the potential effects of CAV on traffic forecasting to assist MPOs in developing the new 2045 Long Range Transportation Plan (LRTP) and addressing new State legislative guidance. FDOT tested a 35% market saturation rate for CAVs in modeling Alternatives 4 and 5 for the MPO's. The CAV Report (**Attachment 1**) describes the underlying assumptions. The report will be incorporated in the 2045 LRTP.

STAFF RECOMMENDATION: That the Committee receive a copy of FDOT's report on Connected and Automated Vehicles

Prepared By: Anne McLaughlin, MPO Director

Attachment:
1. Connected and Automated Vehicles Report, FDOT

White Paper -- Implementation of CAV into the D1RPM in Development of 2045 LRTP Updates

PURPOSE

In light of emerging technologies and State legislative guidance (Appendix 1), Metropolitan Planning Organizations/Transportation Planning Organizations (MPO/TPO) must address the potential effects of Connected and Automated Vehicles (CAV) in developing their 2045 Long-Range Transportation Plan (LRTP) updates. Development of the District 1 Regional Planning Model D1RPM is currently underway by the Florida Department of Transportation (FDOT) District 1 with MPO/TPO alternative testing scheduled for completion prior to the adoption of the MPO/TPO LRTPs in 2020-2021. The purpose of this white paper is to explore the potential effects of level 2 and level 3 CAV on traffic forecasting in developing the new 2015-2045 (D1RPM) and explain steps the District is taking to assist the MPO/TPOs in addressing these new requirements.

INTRODUCTION

The new automotive technologies addressed in this paper include adaptive cruise control, traffic incident warning, and self-parking systems provided by some new car models on the road today. Defined by Society of Automotive Engineers as "levels 2-3 automation", these vehicles are anticipated to provide safer and more efficient travel as their numbers increase and become a significant portion of vehicles on Florida's roadways. For example, the study: *Planning for Cars That Drive Themselves: Metropolitan Planning Organizations, Regional Transportation Plans, and Autonomous Vehicles, Erick Guerra, Journal of Planning Education and Research, 2015,* suggests that by providing safer and more efficient spacing or platooning of vehicles, these CAVs can potentially bring significant increases roadway capacity and reductions in vehicle collisions.

While we may continue to speculate about when fully autonomous vehicles (levels 4 and 5 automation) will become a significant portion of the vehicle mix, it is understood this level of technology has the potential to fundamentally change transportation infrastructure planning, engineering, and operations. It also promises to expand mobility for the very young, the elderly, and the disabled and may substantially lower travel costs for all.

According to the 2018 FDOT report "Guidance for Assessing Planning Impacts and Opportunities of Automated, Connected, Electric and Shared-Use Vehicles (ACES)", level 3 automation may represent 30% to 60% of the vehicle fleet by 2035 (see table A 2-1 in Appendix 3). As previously mentioned, this significant increase could yield an increase in roadway lane capacity. Therefore, our discussion begins by considering the impact this may have on the development and use of the 2045 D1RPM model in District 1.

MODEL PLANNING ELEMENTS

With respect to Travel Demand Forecasting, the FDOT report "*Emerging Technology, Demographic Changes, and Travel Behavior; Trends, Key Parameters, and Scenarios*", FDOT-2016" proposes several key parameters in modeling CAV technology.

- Capacity of Freeway and Major Arterial Segments associated with reduced headway
- Trip Generation/Generational Effects associated with 0 car households and unlicensed driver mobility
- Value of In-Vehicle Time (IVT) associated with trip length
- Auto Operating Cost (including Parking Costs)

While data is not yet available to reliably forecast the potential effects of many of these elements, data is available pertaining to potential increases in roadway capacity due to the effects of decreased and consistent vehicle headways, or following distance, of Level 2 and 3 automation which is available on many vehicles today.

D1RPM CAV IMPROVEMENTS

As presented at past Florida Statewide Model Task Force (MTF) meetings, the 2045 D1RPM model under development has been improved to include features that allow for the testing of potential roadway capacity effects of CAV. These features include:

- A *saturation-rate* parameter used to determine the proportion of CAV in the vehicle fleet (currently on a system-wide basis);
- A *lookup table* used to estimate the effects of CAV on roadway capacity based on fleet saturation rate and facility type;
- A *separate trip purpose* designation for CAV;
- *Special-use lanes* which may be designated for exclusive use by CAV resulting in a maximum capacity increase.

A summary of other CAV related improvements to the D1RPM are as follows:

- The Model Network
  - — Special-use lanes and ramps have been included in the roadway network on I-4 in Polk County; on I-75 in Sarasota/Manatee County; and on I-75 in Lee and Collier Counties.
  - — Link capacity for certain facility types is modified according to the current "*lookup*" table of capacity effects which is in use.
- Auto Occupancy and Mode Choice
  - — Vehicle trips are split into two tables for identification of CAV and non-CAV vehicle trips.

- Highway Assignment
  - CAV trips are identified with a special *'linkgroup"* code which enables special-use lanes to be used exclusively by CAV.
- Reporting
  - Model output reports modified to reflect inclusion of CAV.

Figure 1 was developed by District 1 in coordination with Professor Xiaoping (Shaw) Li, PhD with the Center for Urban Transportation Research (CUTR) at the University of South Florida (USF), to reflect his extensive research and field experiments in testing autonomous vehicles. Dr. Li's research provides a reasonable, albeit conservative estimate of the effects of platooning and CAV fleet saturation rates on roadway capacity. Additional data on potential capacity effects are included in Appendix 2.

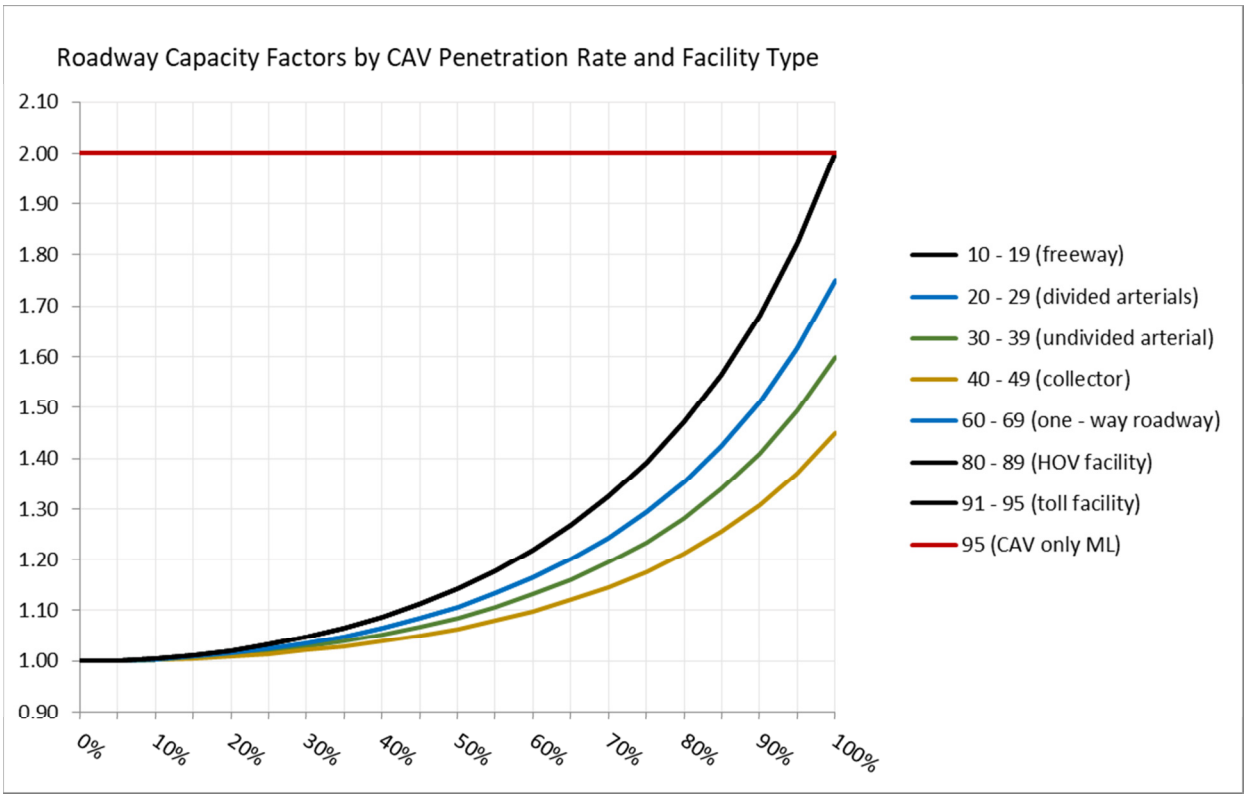

Figure 1: Roadway Capacity Factors by CAV Penetration Rate and Facility Type

IMPLEMENTATION OF D1RPM CAV CAPABILITIES IN THE MPO/TPO 2045 LRTP UPDATES

In consideration of Federal and State of Florida legislative guidance, FDOT District 1 proposes to assist District MPO/TPOs in the development of their upcoming 2045 LRTP Updates by

incorporating these model procedures within the D1RPM, as deemed appropriate, as an initial step in addressing the potential effects of CAV on roadway capacity.

Appendix 1 – Legislative Guidance

Federal Highway Administration, Section 1430 of the FAST ACT, with respect to Use of Modeling and Simulation Technology, states "*It is the sense of Congress that the Department should utilize, to the fullest and most economically feasible extent practicable, modeling and simulation technology to analyze highway and public transportation projects authorized by this Act to ensure that these projects: (1) will increase transportation capacity and safety, alleviate congestion, and reduce travel time and environmental impacts; and (2) are as cost effective as practicable.*"

Recent CAV legislation available on the FDOT Florida Automated Vehicles site, (automatedfl.com) conveys the following:

Florida HB 7027 Recommends MPOs consider advances in vehicle technology when developing long-range transportation plans and requires FDOT to accommodate advances in vehicle technology when updating the Strategic Intermodal System Plan.

Statute 339.175 – (with respect to Long Range Transportation Plans) directs FDOT to make the most efficient use of existing transportation facilities to relieve vehicular congestions, improve safety, and maximize the mobility of people and goods. Further, it states that such efforts must include, but are not limited to, consideration of infrastructure and technological improvements necessary to accommodate advances in vehicle technology, such as autonomous technology and other developments.

Statute 339.64 (3)(c) – (with respect to Strategic Intermodal System Plan) directs FDOT to coordinate with federal, regional, and local partners, as well as industry representatives, to consider infrastructure and technological improvements necessary to accommodate advances in vehicle technology, such as autonomous technology and other developments, in Strategic Intermodal System facilities.

Appendix 2 Roadway Capacity Factors by CAV Penetration Rate and Facility Type

D1RPM Lookup Table: Roadway Capacity Factors by CAV Penetration Rate and Facility Type

CAV Pct.	Facility Type	10 - 19 (freeway)	20 - 29 (divided arterials)	30 - 39 (undivided arterial)	40 - 49 (collector)	60 - 69 (one - way roadway)	80 - 89 (HOV facility)	91 - 95 (toll facility)	95 (CAV only ML)
	0%	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	2.0000
	5%	1.0013	1.0009	1.0008	1.0006	1.0009	1.0013	1.0013	2.0000
	10%	1.0050	1.0038	1.0030	1.0023	1.0038	1.0050	1.0050	2.0000
	15%	1.0114	1.0085	1.0068	1.0051	1.0085	1.0114	1.0114	2.0000
	20%	1.0204	1.0153	1.0122	1.0092	1.0153	1.0204	1.0204	2.0000
	25%	1.0323	1.0242	1.0194	1.0145	1.0242	1.0323	1.0323	2.0000
	30%	1.0471	1.0353	1.0283	1.0212	1.0353	1.0471	1.0471	2.0000
	35%	1.0652	1.0489	1.0391	1.0294	1.0489	1.0652	1.0652	2.0000
	40%	1.0870	1.0652	1.0522	1.0391	1.0652	1.0870	1.0870	2.0000
	45%	1.1127	1.0845	1.0676	1.0507	1.0845	1.1127	1.1127	2.0000
	50%	1.1429	1.1071	1.0857	1.0643	1.1071	1.1429	1.1429	2.0000
	55%	1.1782	1.1337	1.1069	1.0802	1.1337	1.1782	1.1782	2.0000
	60%	1.2195	1.1646	1.1317	1.0988	1.1646	1.2195	1.2195	2.0000
	65%	1.2678	1.2009	1.1607	1.1205	1.2009	1.2678	1.2678	2.0000
	70%	1.3245	1.2434	1.1947	1.1460	1.2434	1.3245	1.3245	2.0000
	75%	1.3913	1.2935	1.2348	1.1761	1.2935	1.3913	1.3913	2.0000
	80%	1.4706	1.3529	1.2824	1.2118	1.3529	1.4706	1.4706	2.0000
	85%	1.5656	1.4242	1.3393	1.2545	1.4242	1.5656	1.5656	2.0000
	90%	1.6807	1.5105	1.4084	1.3063	1.5105	1.6807	1.6807	2.0000
	95%	1.8223	1.6167	1.4934	1.3700	1.6167	1.8223	1.8223	2.0000
	100%	2.0000	1.7500	1.6000	1.4500	1.7500	2.0000	2.0000	2.0000

Estimated CAV percentage ranges based on 2018 ACES guidance (Appendix 3)

Appendix 3 – 2018 ACES GUIDEBOOK ADOPTION RATE ESTIMATE TABLE

Figure A2-1 Autonomous Vehicle (AV) Fleet Share by Scenario, 2020-2060