Accessible Pedestrian Signal (APS) Action Plan

RIVER TO SEA TPO
Transportation Planning Organization
VISION - PLAN - IMPLEMENT

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Background

As children, we are taught to use caution when crossing streets. Look left, then right, then left again; cross only at crosswalks; watch for unexpected traffic; wait for the "walk" signal; and other such admonitions. Yet, with all of these warnings and good intentions, Florida leads the nation in pedestrian and bicyclist deaths and injuries. There are many factors that contribute to this notorious distinction including increased traffic, roadway design, distracted drivers/riders and walkers, lack of user education, general courtesy and competing priorities for the public funds. As challenging the environment may be for pedestrians, you might imagine how much greater the difficulty is for members of the disabled community who cannot see or hear the traffic. With the passage of the Americans with Disabilities Act (ADA) over two decades ago, the safe transport of individuals who could not see a crosswalk, hear traffic or quickly navigate a street in order to receive services available to all other citizens became law and required action of municipalities to ensure that roadways did not add a barrier to the receipt of those services.

One solution that has been developed is the installation of Accessible Pedestrian Signals (APS) at intersections which are vital to the access of important services by all citizens and, in particular, those with disabilities. This study intends to identify the locations where potential APS equipment is needed to provide the greatest benefit to transportation system users and pedestrians. The study effort will include collecting input from the community regarding their concerns and analyzing the collected data using various criteria to identify locations with the greatest need. In the past, staff from the Florida Department of Transportation has received input regarding these needs and they have compiled a project list based on the blind community's concerns for further site studies. The FDOT's project list focused on the locations of state route road intersections and integrated transit considerations on major corridors. This study intends to integrate this previous effort and focuses on community input and site data analysis to provide a refined list of Key Locations which can be considered in local implementation projects.

What are Accessible Pedestrian Signals (APS)?

There are many factors that make crossing at a signalized location difficult for pedestrians who have visual disabilities, such as increasingly quiet cars, right turns on red, continuous right-turn movements, complex signal operations, traffic circles, and wide streets. Accessible pedestrian signals and detectors provide information in non-visual formats (such as audible tones, speech messages, and/or vibrating surfaces). The primary technique that pedestrians who have visual disabilities use to cross streets at signalized locations is to initiate their crossing when they hear the traffic in front of them stop and the traffic alongside them begin to move, which often corresponds to the onset of the green interval. The existing environment is often not sufficient to provide the information that pedestrians who have visual disabilities need to cross a roadway at a signalized location. Additional discussion for Accessible Pedestrian Signals and Pedestrian Activated Signals at roundabouts can be found in Appendix C.

The Manual on Uniform Traffic Control Devices (MUTCD) indicates that "If a particular signalized location presents difficulties for pedestrians who have visual disabilities to cross the roadway, an engineering study should be conducted that considers the needs of pedestrians in general, as well as the information needs of pedestrians with visual disabilities. The engineering study should consider the following factors:

A. Potential demand for accessible pedestrian signals;
B. A request for accessible pedestrian signals;
C. Traffic volumes during times when pedestrians might be present, including periods of low traffic volumes or high turn-on-red volumes;
D. The complexity of traffic signal phasing (such as split phases, protected turn phases, leading pedestrian intervals, and exclusive pedestrian phases); and
E. The complexity of intersection geometry." (Section 4E.09 Accessible Pedestrian Signals and Detectors – General)

Figure 1 Accessible Pedestrian Signal devices at International Speedway Blvd and Williamson Blvd in Daytona Beach, FL

Scope of Study

The Accessible Pedestrian Signals (APS) Action Plan intends to integrate a coordinated approach for identifying APS needs and potential implementation for local governments, the River to Sea TPO and FDOT. The Plan will identify key locations that would benefit from the installation of APS and opportunities and obstacles for future implementation by local jurisdictions. It aims to improve safety and accessibility for pedestrians and transportation-disadvantaged transit system users, especially those with visual impairments. Identification of the locations will be based on the cross-reference of the community's concerned locations and input from mobility instructors from the Division of Blind Services, travel origins and destinations, bus stops, historical pedestrian accident records, the connection to existing APS, and surrounding population densities.

Public Involvement

The Plan collected community input from both residents in the communities from Volusia and Flagler Counties and the mobility specialist instructors from the Division of Blind Services Rehabilitation Center. The information regarding the communities' concerned locations was collected in the format of public meetings. Three community meetings were held separately in Daytona Beach, DeLand and Bunnell to provide different opportunities for the public to discuss where the APS devices were needed in their communities. In addition, residents who were unable to attend meetings were provided with options to send comments in various ways including email, mail and telephone.

Figure 2 Community Meeting at the Rehabilitation Center for the Blind and Visually Impaired, Daytona Beach

Location Analysis

The concerned locations collected from the community meetings serve as the base for developing key locations in the recommendations in this plan. The community input locations are digitized into ArcGIS Map along with other factors addressing pedestrian safety, system connectivity to existing APS network, and traveling purposes to the adjacent sites. As products of the analysis, a preliminary Key Location list is developed based on total scores from the five aspects, including Community Input, Travel Origin/Destination Types, Pedestrian Crashes, Connections to Existing APS System, and Population Density. In addition, an interactive map was created from the master list, as well as current inventory and pedestrian safety data.

Community Input

Through the public involvement process, the community's input was collected and identified as concerned locations. The demand of APS at these locations is based on the residents' observations, the visually impaired travelers' experience, as well as the Mobility Specialists' suggestions at the Division of Blind Service and Rehabilitation Center based on the mobility training provided.

During the public meetings, road crossing conditions and the adjacent environment were also discussed as factors that contribute to the need for APS at various locations. The community listed crossings that were adjacent to residential areas, shopping plazas, medical facilities, fixed route bus stops, and basic recreational areas. In addition, descriptions for surrounding details are provided in Table 1 for local content of the intersections' surrounding environment. For example, the intersection of US 1 and Mason Avenue in Daytona Beach is marked as serving on a route with heavy local use; US 1 and Walker Avenue is marked as adjacent to Florida Health Care in Holly Hill.

Initially, 55 locations were identified during the community meetings, and they were broken down within city boundaries. Four of the locations already have APS installed or programmed as indicated below with green highlighting in Table 1.

FDOT Work List

The Community Input List (Table 1) also included the currently available FDOT work list of locations that are divided into three tiers for further site studies. The FDOT list prioritizes locations based on their tier status, that is, Tier 1 will be a top consideration to conduct FDOT site studies.

Tier 1 of the FDOT's list includes locations that are intersected by only state routes; Tier 2 of the FDOT's list includes locations that are intersected by state routes and local streets; and Tier 3 includes locations that are intersected by only local streets.

The FDOT's list identified the needs of APS along major corridors and is aligned with the community's concerned locations; however, those that are not planned by FDOT are as equally important as the key locations for APS in the community. The FDOT established "Tier" system serves as a reference for their efforts and will not be used to prioritize locations in this plan.

Table 1 Community Input List

City	Street (North/South)	Street (West/East)	Surrounding Details	Status
Daytona Bch	Nova	Orange	Heavy Local Use (DMV)	City planned for FDOT paving project
Daytona Bch	White	MM Bethune	Daytona State	FDOT Off-system (no SR) list
Daytona Bch	Jimmy Ann	Dunn	School Route	FDOT Off-system (no SR) list
Daytona Bch	Dunn	Bill France	Post Office/ School Route	FDOT Off-system (no SR) list
Daytona Bch	US 1	Mason	Heavy Local Use	FDOT On-system (all SR) Tier 1 list
Daytona Bch	A1A	Earl	Ocean Center	FDOT On-system (SR intersects with off-system roadway) Tier 2 list
Daytona Bch	White	Mason	Blind Services	FDOT On-system (SR intersects with off-system roadway) Tier 2 list
Daytona Bch	Nova	Mason	Heavy Local Use	FDOT On-system (SR intersects with off-system roadway) Tier 2 list
Daytona Bch	Clyde Morris	Dunn	Blind Services	FDOT On-system (SR intersects with off-system roadway) Tier 2 list
Daytona Bch	US 1	MM Bethune	School Route	FDOT On-system (SR intersects with off-system roadway) Tier 2 list
Daytona Bch	Clyde Morris	Mayberry	Halifax Hospital, Main	FDOT On-system (SR intersects with off-system roadway) Tier 2 list
Daytona Bch	Nova	Bellevue	Heavy Local Use	FDOT On-system (SR intersects with off-system roadway) Tier 2 list
Daytona Bch	Williamson	LPGA	New Outlet Mall	Not planned
Daytona Bch	Clyde Morris	Hilton	Daytona State College	Not planned
Daytona Bch	Williamson	Memorial	FL Memorial Hospital	Not planned
Daytona Bch	White	Madison	Blind Services	Not planned

City	Street (North/South)	Street (West/East)	Surrounding Details	Status
DeBary	US 17/92 (S Charles Richard Beall Blvd)	Dirksen Dr	Adjacent to spring-to-spring trail	Not planned
DeBary	US 17/92 (S Charles Richard Beall Blvd)	Highbanks Rd	Commercial strip and Health Center	Not planned
DeBary	US 17/92 (S Charles Richard Beall Blvd)	Fort Florida Rd	SunRail entrance, mobile house community	Not planned
DeLand	US 17/92 (Woodland Blvd)	Minnesota Ave	Direct access to Stetson University, heavy local use	Installed
DeLand	Amelia Ave	SR 44 (New York Ave)	Bank, Post Office, fitness center nearby	Not planned
DeLand	US 17/92 (Woodland Blvd)	Plymouth Ave	Major intersection cross near Stetson University	Not planned
DeLand	US 17/92 (Woodland Blvd)	New Hampshire Ave	Apartments and DeLand Middle School nearby	Not planned
Flagler Beach	A1A (Ocean Shore Blvd)	SR 100 (Moody Blvd)	Shopping/dining/beach side major pedestrian access	Not planned
Flagler Beach	A1A (Ocean Shore Blvd)	S 3rd St	Mid-block crossing to beach side/dining	Not planned
Holly Hill	US 1	Calle Grande	Sr. Residence	FDOT On-system (SR intersects with off-system roadway) Tier 2 list
Holly Hill	US 1	Flomich	School Route	FDOT On-system (SR intersects with off-system roadway) Tier 2 list
Holly Hill	US 1	LPGA	Hollyland Park	FDOT On-system (SR intersects with off-system roadway) Tier 2 list
Holly Hill	Nova	LPGA	Heavy Local Use (Truck Route)	FDOT On-system (SR intersects with off-system roadway) Tier 2 list
Holly Hill	Nova	Walker	Heavy Local Use	FDOT On-system (SR intersects with off-system roadway) Tier 2 list
Holly Hill	US 1	Walker	FL Health Care, Holly Hill	FDOT On-system (SR intersects with off-system roadway) Tier 2 list

City	Street (North/South)	Street (West/East)	Surrounding Details	Status
Holly Hill	Center	LPGA	School Route	Not planned
Ormond Bch	Orchard	Granada	Heavy Local Use (Business Corridor)	FDOT On-system (SR intersects with off-system roadway) Tier 2 list
Ormond Bch	Beach	Granada	OB City Offices/Library	FDOT On-system (SR intersects with off-system roadway) Tier 2 list
Ormond Bch	US 1	Division	Heavy Local Use	FDOT On-system (SR intersects with off-system roadway) Tier 2 list
Ormond Bch	Williamson	Granada	Heavy Local Use	FDOT programmed for construction
Ormond Bch	Nova	Granada	Heavy Local Use	Installed
Ormond Bch	Williamson	Hand	Dining	Not planned
Ormond Bch	A1A	Granada	Tourism	Not planned
Ormond Bch	John Anderson	Granada	Casements	Not planned
Ormond Bch	A1A	Plaza Dr	Tourism Route	Not planned
Ormond Bch	Nova	Wilmette	The Trails	Not planned
Palm Coast	Seminole Woods Blvd	SR 100 (Moody Blvd)	Florida Hospital	Not planned
Palm Coast	I-95 on and off ramp	Matanzas Woods Parkway	Matanzas High School nearby	Not planned
Palm Coast/Bunnell	Belle Terre Pkwy	SR 100 (Moody Blvd)	Shopping Center adjacent to residential community, school route	Installed
Port Orange	Nova	Dunlawton	Tourism Route	FDOT On-system (all SR) Tier 1 list
Port Orange	US 1	Dunlawton	Tourism Route	FDOT On-system (all SR) Tier 1 list
Port Orange	Nova	Village Trail	Sr. Residence	FDOT On-system (SR intersects with off-system roadway) Tier 2 list
Port Orange	Yorktowne	Dunlawton	Activity center and tourism route	FDOT On-system (SR intersects with off-system roadway) Tier 2 list
Port Orange	Villiage Tr	Dunlawton	Halifax Hospital, Port Orange	Not planned
Port Orange	Clyde Morris	Madeline	Walmart shopping center	Not planned
Port Orange	Nova	Madeline	School Route	Not planned

City	Street (North/South)	Street (West/East)	Surrounding Details	Status
South Daytona	Nova	Big Tree	Votran Office	FDOT On-system (SR intersects with off-system roadway) Tier 2 list
South Daytona	US 1	Ridge Blvd	School Route	FDOT On-system (SR intersects with off-system roadway) Tier 2 list
South Daytona	US 1	Big Tree	School Route	FDOT On-system (SR intersects with off-system roadway) Tier 2 list

Already installed or programmed in projects

Travel Origins/Destination Types around the Intersections

Accessing the adjacent points of interest from the intersections is also a primary concern for visually impaired travelers. To evaluate intersections that serve multiple travel purposes, travel origins and/or destinations near the intersections were classified into five categories. These include residential, shopping/dining, medical facilities, bus stops, and recreational. Under the five types, 43 locations are adjacent to residential areas, 36 locations serve adjacent shopping/dining plazas, 14 locations have access to medical facilities, 49 locations are at transit stops, and 21 locations serve recreational use nearby.

As one of the selection criteria for Key Locations, this section aims to identify locations that serve multiple types of travel destinations. The ideal intersections for the Key Locations should provide the most travel origins/destination types around the intersections because they generate more activities and pedestrian volumes. For example, an intersection that is adjacent to residential apartments, health centers and shopping plazas is more favorable than an intersection that is only adjacent to shopping strip malls because of increased anticipated pedestrian activities.

Residential and shopping/dining categories are the two most common origins/destinations adjacent to intersections; medical facilities, such as health centers and hospitals, are considered common travel destinations for essential medical needs; the recreational category refers to parks, trails and gyms that add quality of life through the access of safe crosswalks; bus stops are also considered as a Key Location option for visually impaired pedestrians by allowing them to access bus service. As a result, safe crosswalks can help them reach destinations by walking and/or using nearby bus services. In Volusia County, all the intersections from the Community Input List are located on transit lines, and bus stops are presented either at or adjacent to them. In Flagler County, fixed route bus service is not currently provided, therefore the bus stop factor is not considered.

The number of travel origin/designation types around the intersections contributes to the selection of the Key Location List. For example, if an intersection's adjacent properties are identified as a shopping plaza and residential apartments, then the location will serve two types of travel origin/destinations.

Each Community Input intersection is rated with the number of travel origin/destination types within a ½ mile of its surrounding.

- An intersection surrounded by one type of travel origin/destination is assigned a score of "1";
- An intersection surrounded by two types of travel origins/destinations is assigned a score of "2";
- An intersection surrounded by three types of travel origins/destinations is assigned a score of "3"; and
- An intersection surrounded by four types of travel origins/destinations is assigned a score of "4".

For example, an intersection surrounded by only residential areas has a score of 1, while an intersection surrounded by both a residential area and shopping/dining areas has a score of 2.

Table 2 Intersection scores by travel origin/destination types served

City	Street (North/South)	Street (West/East)	Travel Origin/Destination Types					Number of Travel Type Served
			Residential	Shopping/ Dining	Medical	Bus Stops	Recreational	
Daytona Bch	White	MM Bethune	x		x	x	x	4
Daytona Bch	A1A	Earl	x	x		x	x	4
DeBary	US 17/92 (S Charles Richard Beall Blvd)	Highbanks Rd	x	x	x	x		4
DeLand	Amelia Ave	SR 44 (New York Ave)	x	x		x	x	4
Holly Hill	US 1	Calle Grande	x	x		x	x	4
Ormond Bch	Orchard	Granada	x	x		x	x	4
Ormond Bch	Beach	Granada	x	x		x	x	4
Ormond Bch	US 1	Division	x	x		x	x	4
Ormond Bch	Williamson	Hand	x	x	x	x		4
Ormond Bch	A1A	Granada	x	x		x	x	4
Ormond Bch	John Anderson	Granada	x	x		x	x	4
Ormond Bch	A1A	Plaza Dr	x	x		x	x	4
Ormond Bch	Nova	Wilmette	x	x		x	x	4
Port Orange	Nova	Village Trail	x	x	x	x		4

City	Street (North/South)	Street (West/East)	Travel Origin/Destination Types					Number of Travel Type Served
			Residential	Shopping/ Dining	Medical	Bus Stops	Recreational	
Port Orange	Villiage Tr	Dunlawton	x	x	x	x		4
Daytona Bch	Jimmy Ann	Dunn	x	x		x		3
Daytona Bch	White	Mason	x	x		x		3
Daytona Bch	Nova	Mason	x	x		x		3
Daytona Bch	Williamson	LPGA	x	x		x		3
Daytona Bch	Clyde Morris	Hilton			x	x	x	3
Daytona Bch	Williamson	Memorial	x		x	x		3
DeLand	US 17/92 (Woodland Blvd)	Plymouth Ave	x	x		x		3
Holly Hill	US 1	Flomich	x	x		x		3
Holly Hill	US 1	LPGA	x			x	x	3
Holly Hill	Nova	LPGA	x	x		x		3
Holly Hill	Nova	Walker	x	x		x		3
Holly Hill	Center	LPGA	x			x	x	3
Palm Coast	Seminole Woods Blvd	SR 100 (Moody Blvd)	x	x	x			3
Port Orange	Nova	Dunlawton		x	x	x		3
Port Orange	US 1	Dunlawton		x		x	x	3
Port Orange	Yorktowne	Dunlawton		x	x	x		3
Port Orange	Clyde Morris	Madeline	x	x		x		3
South Daytona	Nova	Big Tree	x			x	x	3
South Daytona	US 1	Ridge Blvd	x	x		x		3
South Daytona	US 1	Big Tree	x	x		x		3
Daytona Bch	Dunn	Bill France	x			x		2
Daytona Bch	US 1	Mason		x		x		2
Daytona Bch	Clyde Morris	Dunn			x	x		2
Daytona Bch	US 1	MM Bethune		x		x		2
Daytona Bch	Clyde Morris	Mayberry			x	x		2
Daytona Bch	Nova	Bellevue	x			x		2
Daytona Bch	White	Madison	x			x		2
DeBary	US 17/92 (S Charles Richard Beall Blvd)	Fort Florida Rd	x			x		2
DeLand	US 17/92 (Woodland Blvd)	New Hampshire Ave	x			x		2

City	Street (North/South)	Street (West/East)	Travel Origin/Destination Types					Number of Travel Type Served
			Residential	Shopping/ Dining	Medical	Bus Stops	Recreational	
Flagler Beach	A1A (Ocean Shore Blvd)	SR 100 (Moody Blvd)		x			x	2
Flagler Beach	A1A (Ocean Shore Blvd)	S 3rd St		x			x	2
Holly Hill	US 1	Walker			x	x		2
Port Orange	Nova	Madeline	x			x		2
DeBary	US 17/92 (S Charles Richard Beall Blvd)	Dirksen Dr					x	1
Palm Coast	I-95 on and off ramp	Matanzas Woods Parkway	x					1

Pedestrian Crashes

To improve crossing safety for the visually impaired pedestrian, intersections with safety concerns for pedestrians should be given additional consideration in integrating the APS system. This can provide more accurate judgments of the onset of the WALK interval. The five-year pedestrian crash data that involves injuries and fatalities is shown in Map 1. The pedestrian crash points scatter around intersections and a 250 feet buffer is applied from the center of each intersection to collect the crash points for the total number of injuries and fatalities at those specific locations. The safety threshold is measured by the number of pedestrian crash incidents around the intersection.

Intersections with a total of 2 or less crash records are given a score of “1”;

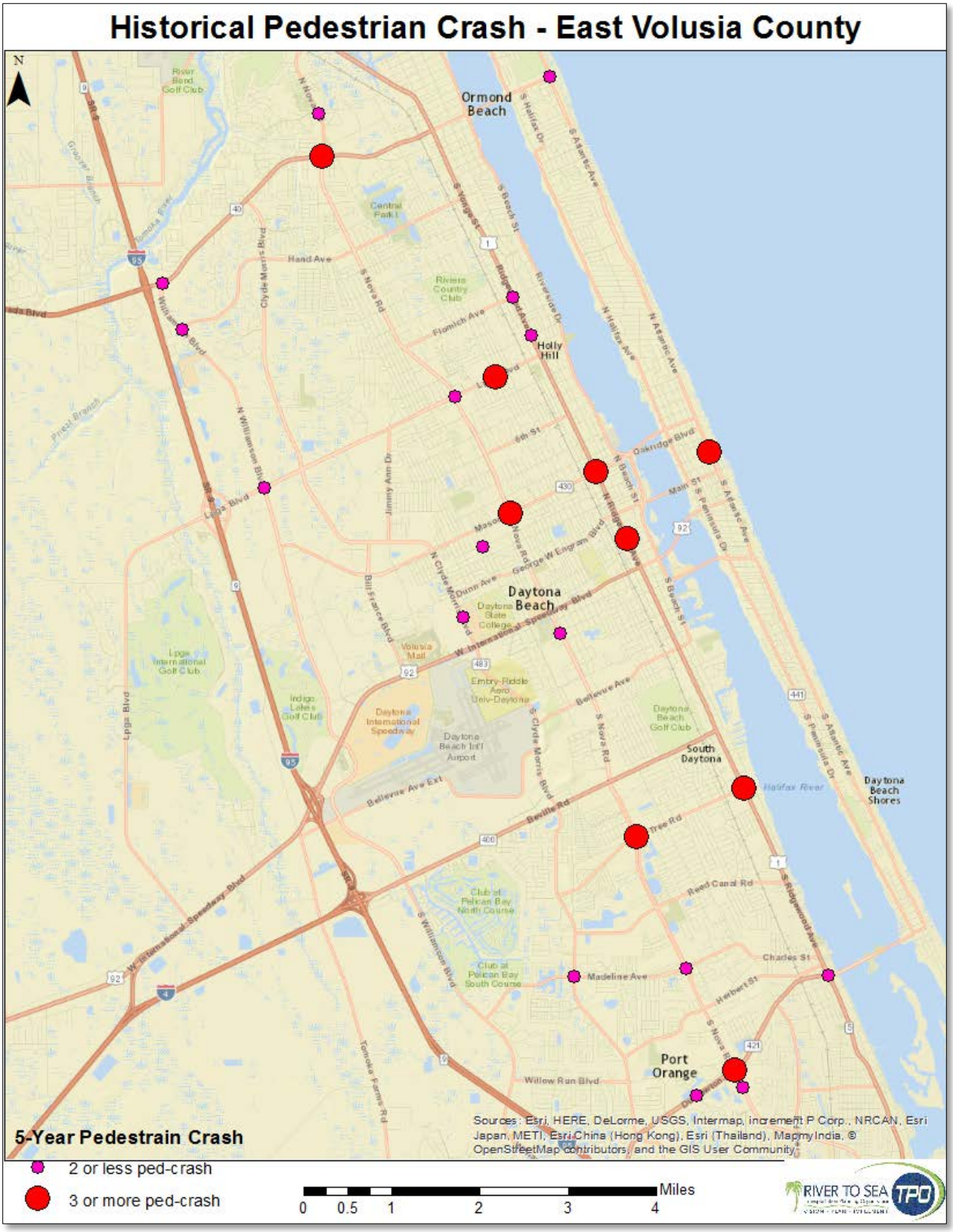
- Intersections with a total of 3 or more crash records are given a score of “2”.

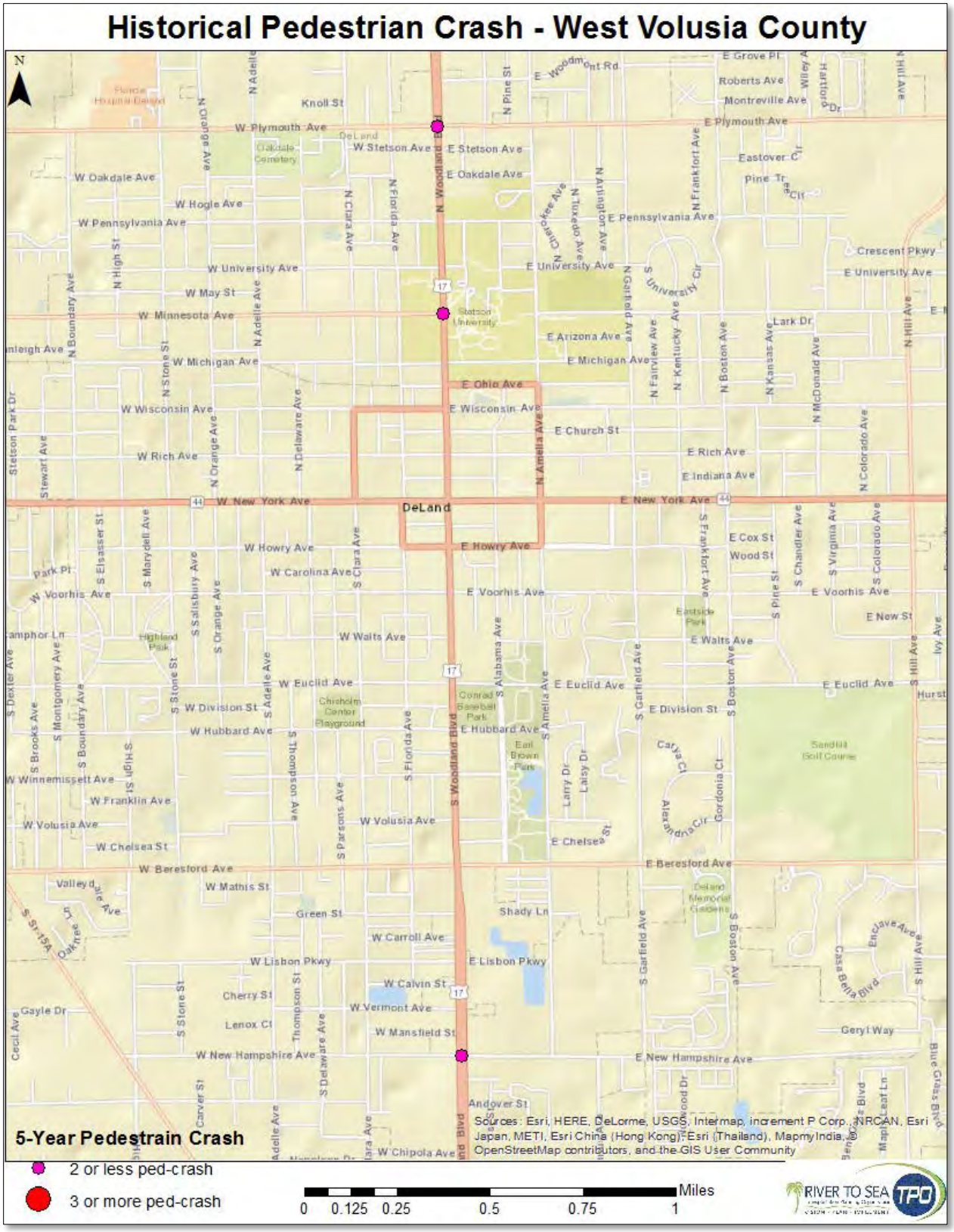
Placing APS at a location with more pedestrian crash records as a single treatment for the crosswalk can raise concerns because the history of the safety record could also suggest a potentially dangerous environment for all pedestrians. Therefore, intersections with more pedestrian crash records should consider additional safety improvements before implementing the APS feature.

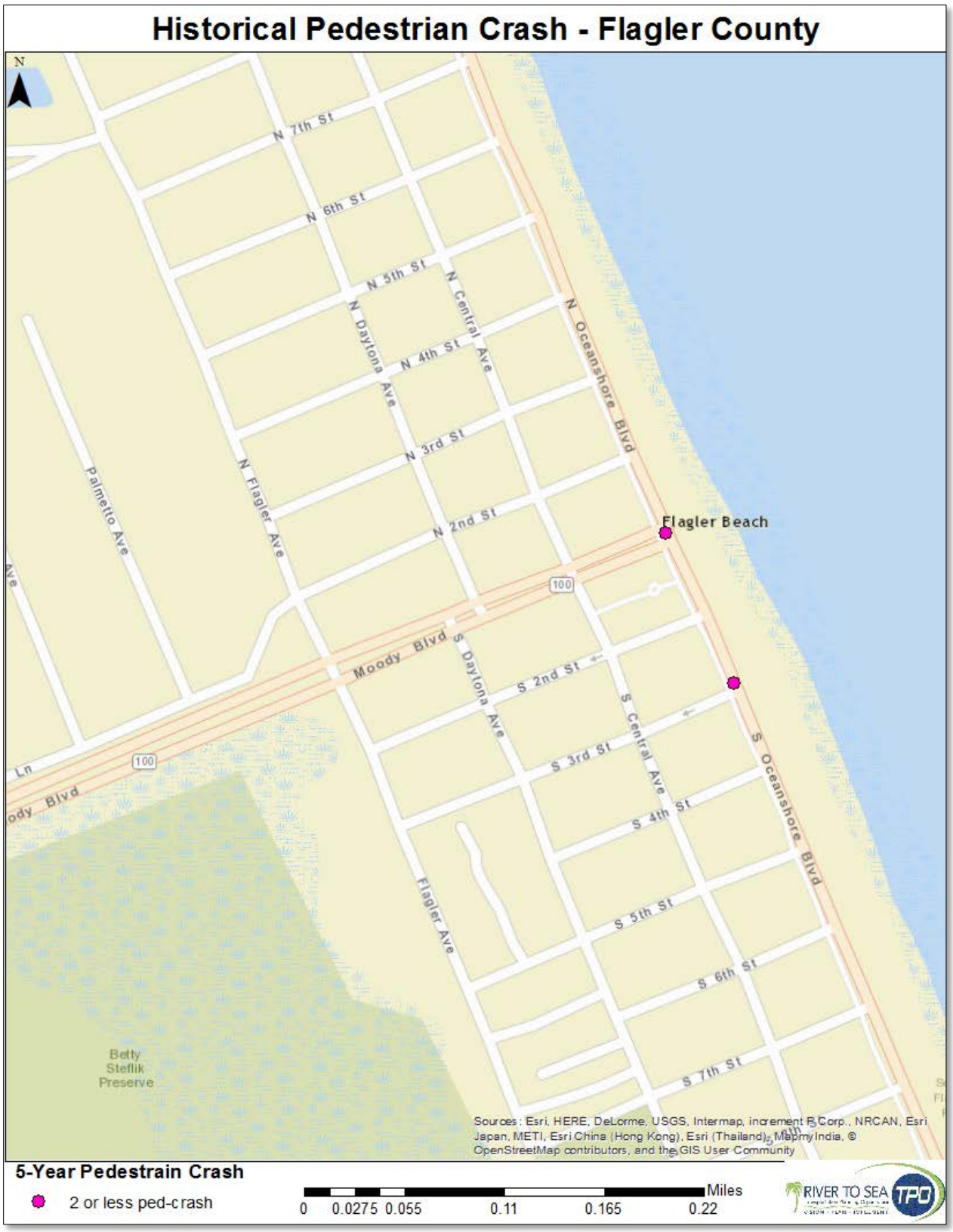
Table 3 5-Year Historical Pedestrian Crash Data (source: Signal Four Analytics)

City	Street (North/South)	Street (West/East)	Total	Fatality	Injury	Surrounding Details	Score
South Daytona	US 1	Big Tree	6	0	6	School Route	2
Daytona Bch	US 1	Mason	4	0	4	Heavy Local Use	2
Port Orange	Nova	Dunlawton	4	0	4	Tourism Route	2
Daytona Bch	A1A	Earl	3	0	3	Ocean Center	2
Daytona Bch	Nova	Mason	3	0	3	Heavy Local Use	2
Holly Hill	Center	LPGA	3	0	3	School Route	2
South Daytona	Nova	Big Tree	3	0	3	Votran Office	2
Daytona Bch	US 1	MM Bethune	3	1	2	School Route	1
Daytona Bch	Clyde Morris	Mayberry	2	1	1	Halifax Hospital, Main	1
Port Orange	Nova	Village Trail	2	0	2	Sr. Residence	1
Port Orange	Nova	Madeline	2	1	1	School Route	1
DeLand	US 17/92 (Woodland Blvd)	Plymouth Ave	2	0	2	Major intersection cross near Stetson University	1
Flagler Beach	A1A (Ocean Shore Blvd)	SR 100 (Moody Blvd)	2	0	2	Shopping/dining/beach side major pedestrian access	1
Flagler Beach	A1A (Ocean Shore Blvd)	S 3rd St	2	0	2	Mid block crossing to beach side/dining	1
Daytona Bch	Williamson	LPGA	1	0	1	New Outlet Mall	1
Daytona Bch	White	Madison	1	0	1	Blind Services	1
Holly Hill	US 1	Walker	1	0	1	FL Health Care, Holly Hill	1
Holly Hill	Nova	LPGA	1	0	1	Heavy Local Use (Truck Route)	1
Holly Hill	US 1	Flomich	1	0	1	School Route	1
Ormond Bch	A1A	Granada	1	0	1	Tourism	1
Ormond Bch	Williamson	Hand	1	1	0	Dining/Movies	1
Ormond Bch	Nova	Wilmette	1	0	1	The Trails	1
Port Orange	Villiage Tr	Dunlawton	1	0	1	Halifax Hospital, Port Orange	1
Port Orange	Clyde Morris	Madeline	1	0	1	School Route	1
Port Orange	US 1	Dunlawton	1	0	1	Tourism Route	1
DeLand	Amelia Ave	SR 44 (New York Ave)	1	0	1	Bank, Post Office, fitness center nearby	1
Palm Coast	Seminole Woods Blvd	SR 100 (Moody Blvd)	1	0	1	Florida Hospital	1

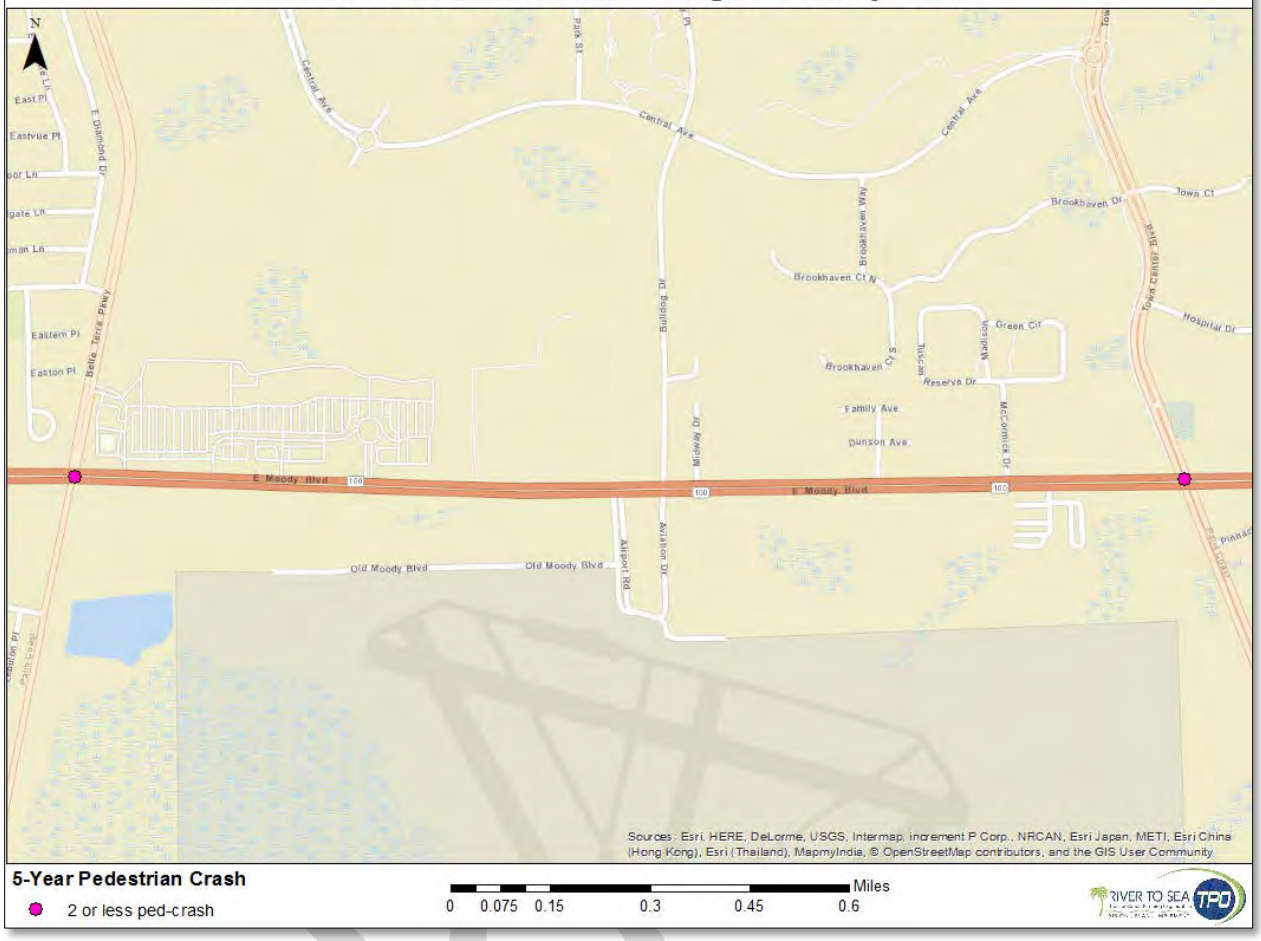
Figure 3 - Historical Pedestrian Accident Locations




Historical Pedestrian Crash - West Volusia County
N
DeLand
W New York Ave
E New York Ave
W Plymouth Ave
E Plymouth Ave
W Stetson Ave
E Stetson Ave
W Oakdale Ave
E Oakdale Ave
W Hogle Ave
W Pennsylvania Ave
E Pennsylvania Ave
W University Ave
E University Ave
W May St
W Minnesota Ave
W Michigan Ave
E Michigan Ave
E Arizona Ave
E Ohio Ave
W Wisconsin Ave
E Wisconsin Ave
E Church St
W Rich Ave
E Rich Ave
E Indiana Ave
W Howry Ave
E Howry Ave
W Carolina Ave
E Voorhis Ave
W Walts Ave
E Walts Ave
W Euclid Ave
E Euclid Ave
W Division St
E Division St
W Hubbard Ave
E Hubbard Ave
W Winnemissett Ave
W Franklin Ave
W Volusia Ave
W Chelsea St
E Chelsea
W Beresford Ave
E Beresford Ave
W Mathis St
Green St
Shady Ln
W Carroll Ave
W Lisbon Pkwy
E Lisbon Pkwy
W Calvin St
W Vermont Ave
W Mansfield St
W New Hampshire Ave
E New Hampshire Ave
Andover St
W Chipola Ave
N Woodland Blvd
S Woodland Blvd
N Clara Ave
N Florida Ave
N Delaware Ave
N Orange Ave
N Adelle Ave
N Boundary Ave
N Stone St
N High St
N Pine St
N Amelia Ave
N Alabama Ave
N Garfield Ave
N Fairview Ave
N Kentucky Ave
N Boston Ave
N Kansas Ave
N McDonald Ave
N Colorado Ave
N Hill Ave
S Florida Ave
S Thompson Ave
S Parsons Ave
S Alabama Ave
S Garfield Ave
S Boston Ave
S Pine St
S Frankfort Ave
S Chandler Ave
S Virginia Ave
S Colorado Ave
S Hill Ave
S Stone St
S Adelle Ave
S Salisbury Ave
S Orange Ave
S Marydell Ave
S Elsasser St
S Montgomery Ave
S Boundary Ave
S Brooks Ave
S Dexter Ave
S Delaware Ave
Stetson Park Dr
Stewart Ave
Park Pl
Camphor Ln
Cecil Ave
Gayle Dr
Lenox Ct
Cherry St
Valley Pine Ave
Oak Tree Ln
Carver St
Blue Oaks Blvd
Maple Leaf Ln
Geryl Way
Case Bella Blvd
Enclave Ave
Eastover Cir
Pine Tr
Crescent Pkwy
Lark Dr
Roberts Ave
Montreville Ave
Woodmont Rd
Knoll St
Florida Hospital DeLand
Oakdale Cemetery
Stetson University
Highland Park
Chisholm Center Playground
Conrad Park Baseball
Earl Brown Park
Eastside Park
Sandria Golf Course
DeLand Memorial Gardens
Carla Ct
Alexandria Cir
Gordonia Ct
Larry Dr
Laisy Dr
Wood St
E Cox St
E New St
Hurst
Ivy Ave
5-Year Pedestrain Crash
2 or less ped-crash
3 or more ped-crash
Miles
0 0.125 0.25 0.5 0.75 1
Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
RIVER TO SEA TPO


Historical Pedestrian Crash - Flagler County
N
N 7th St
N 6th St
N 5th St
N 4th St
N 3rd St
N 2nd St
N Daytona Ave
N Central Ave
N Oceanshore Blvd
N Flagler Ave
Palmetto Ave
Flagler Beach
100
Moody Blvd
S 2nd St
S 3rd St
S 4th St
S 5th St
S 6th St
S 7th St
S Daytona Ave
S Central Ave
S Oceanshore Blvd
Flagler Ave
Betty Steflik Preserve
Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
5-Year Pedestrain Crash
2 or less ped-crash
Miles
0 0.0275 0.055 0.11 0.165 0.22
RIVER TO SEA TPO

Historical Pedestrian Crash - Flagler County Cont'



Connection to Existing APS System

Information regarding the locations of existing APS devices was obtained from Volusia County, and this information was digitized in a map layout. These devices are installed primarily at major intersections of state routes, providing safe crossing features along some parts of the major corridors such as US 92/International Speedway Boulevard. While identifying the key locations for future implementation of an expanded APS network, it is also important to establish connections to the existing APS network in order to maximize pedestrian accessibility, especially for the visually impaired, from major corridors to local streets. Table 4 lists the locations of the current APS network within the TPO's planning boundary in both Volusia and Flagler Counties, and Map 2 illustrates their geographic locations.

To examine the connectivity to the existing APS system, a ½-mile buffer was created based on the locations of the existing APS intersections. The intersections identified in the Community Input section as the community concerns were evaluated: if an intersection falls within the buffer areas of the existing APS network, then it is deemed accessible for providing a connection to the existing APS system. These intersections can help expand the APS coverage as connections, and therefore increase the safe-crossing areas for visually impaired pedestrians. The intersections shown provide extensions that connect to the current APS network, and this is used as a factor in selecting Key Location for the above stated reason.

- If an intersection can provide a connection to the existing APS system, then it is assigned a score of "1", otherwise, it is assigned a score of "0" for evaluation purposes. Six locations can provide such connections and are listed in Table 5. The geographic locations are shown on Map 3.

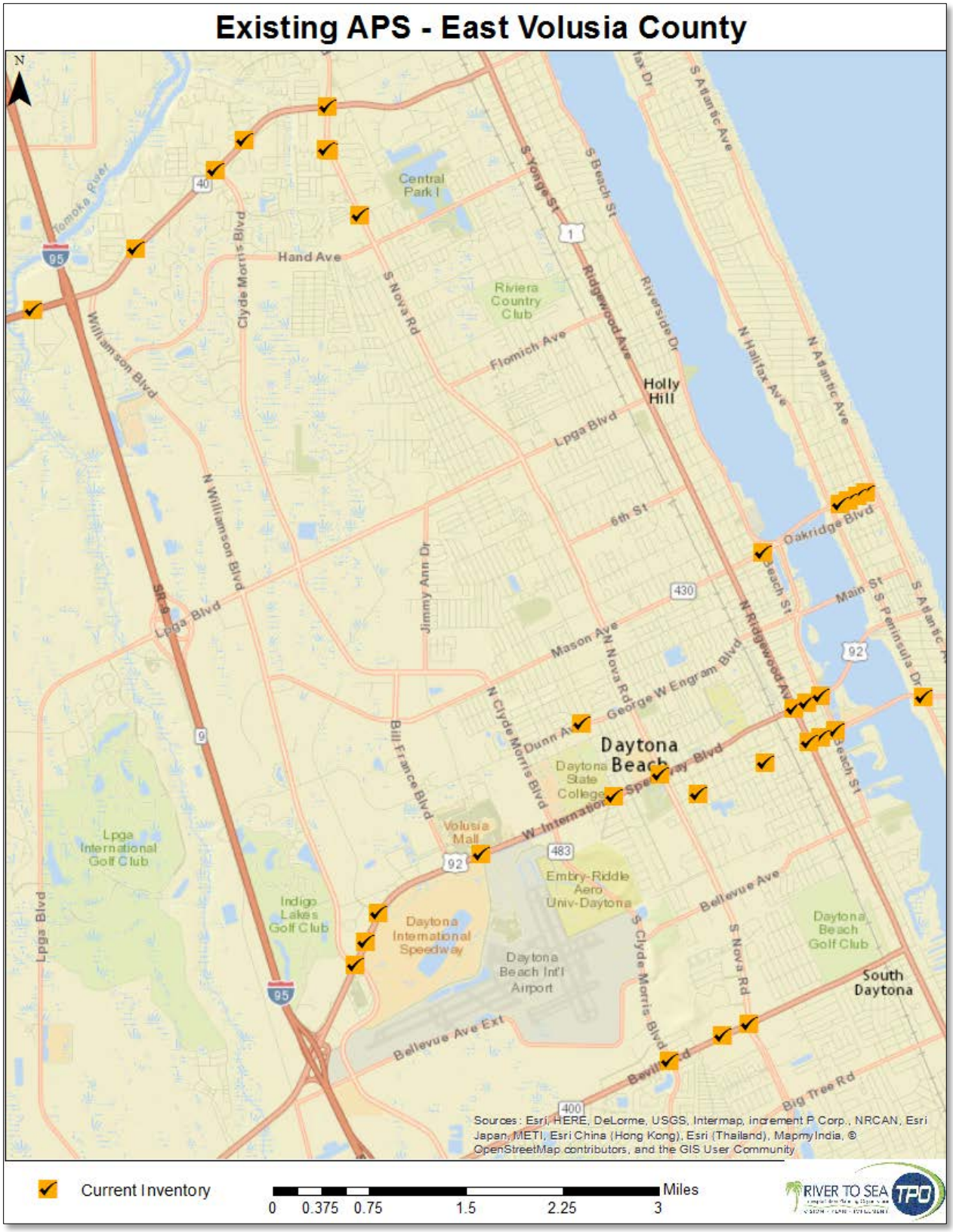
Table 4 - Existing APS Network Inventory

City	Street (North/South)	Street (West/East)
Daytona Beach	Fentress	ISB
	Turn One Dr	ISB
	Midway	ISB
	White	ISB
	Nove	ISB
	US 1	ISB
	Palmetto	ISB
	Beach	ISB
	Nova	Beville
	Walmart	Beville
	Clyde Morris	Beville
	Beach	Mason
	Grandview	SR 430 (Seabreeze Blvd)
	Wild Olive	SR 430 (Seabreeze Blvd)
	Oleander	SR 430 (Seabreeze Blvd)
	Peninsula	SR 430 (Seabreeze Blvd)
	Peninsula	Silver Beach
	Beach	Orange
	Palmetto	Orange
	US 1	Orange
	M.L. King	Orange
	Keech	Orange
	White	Dunn
Ormond Beach	Nova	Division
	Nova	Village Dr
	Nova	Granada
	Nova	Woodlands blvd
	Booth	Granada
	Seminole	Granada
	Main Trail	Granada
	Clydemorris	Granada
DeLand	Amelia	US 92 (ISB)
	Amelia	Minnesota
	US 17/92 (Woodland Blvd)	Minnesota
	SR 15A (Spring Garden)	SR 44 (New York)
	SR 15A (Spring Garden)	US 92 (ISB)
New Smyrna Beach	Saxon Dr (Horton St)	A1A (3rd Ave)
Palm Coast	Old Kings Road Extension	Matanzas Woods Parkway
	Old Kings Road	SR 100 Moody Blvd
	Colbert Lane	SR 100 Moody Blvd
	Belle Terre Pkwy	SR 100 Moody Blvd
Flagler Beach	Roberts Road/John Anderson Highway	SR 100 Moody Blvd

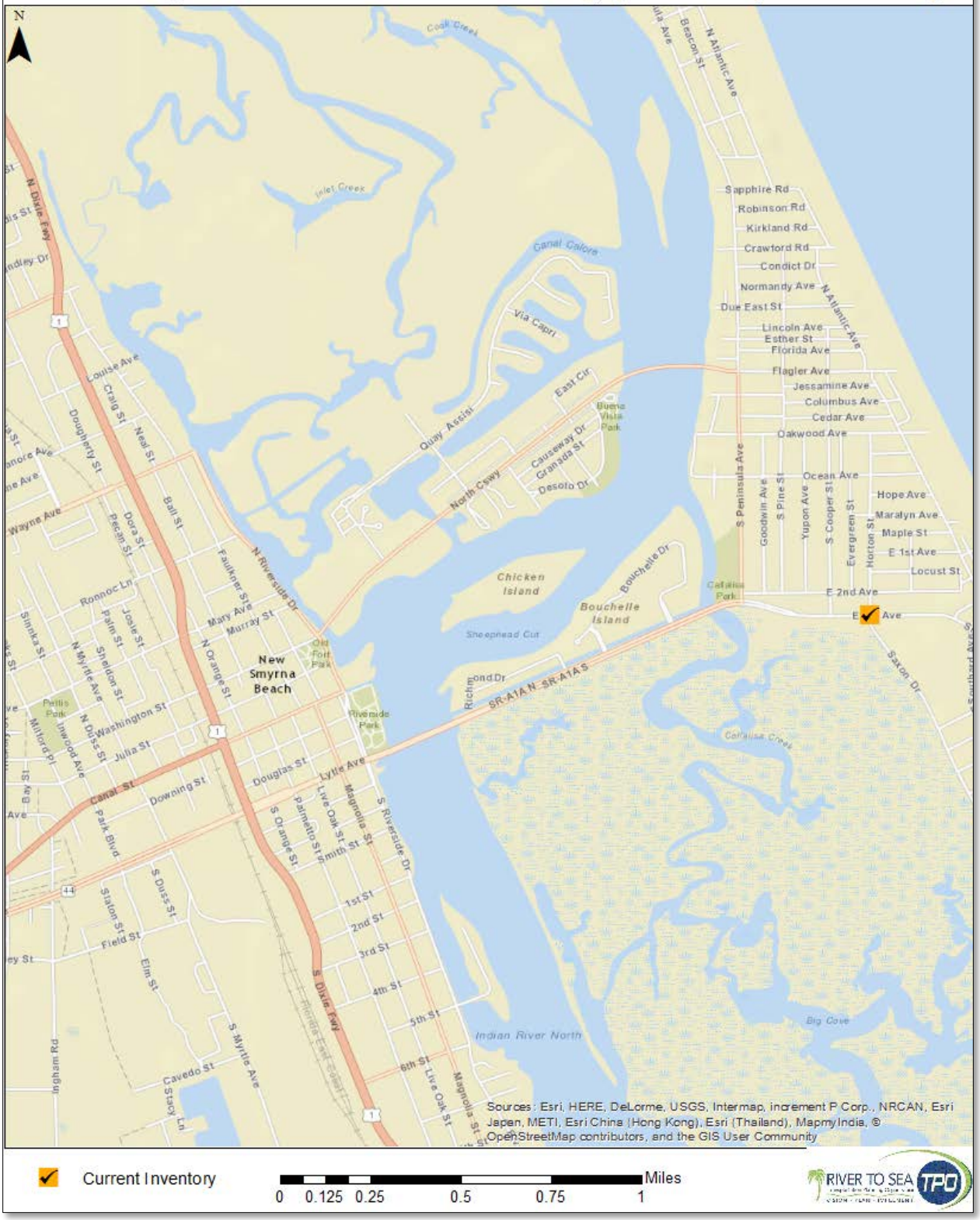
Table 5 Locations with Connection to Existing APS

Street (North/South)	Street (West/East)	City	Surrounding Details
White	Madison	Daytona Bch	Blind Services
US 1	MM Bethune	Daytona Bch	School Route
A1A	Earl	Daytona Bch	Ocean Center
White	MM Bethune	Daytona Bch	All Stop, Daytona State
US 1	Mason	Daytona Bch	Heavy Local Use
Nova	Wilmette	Ormond Bch	The Trails

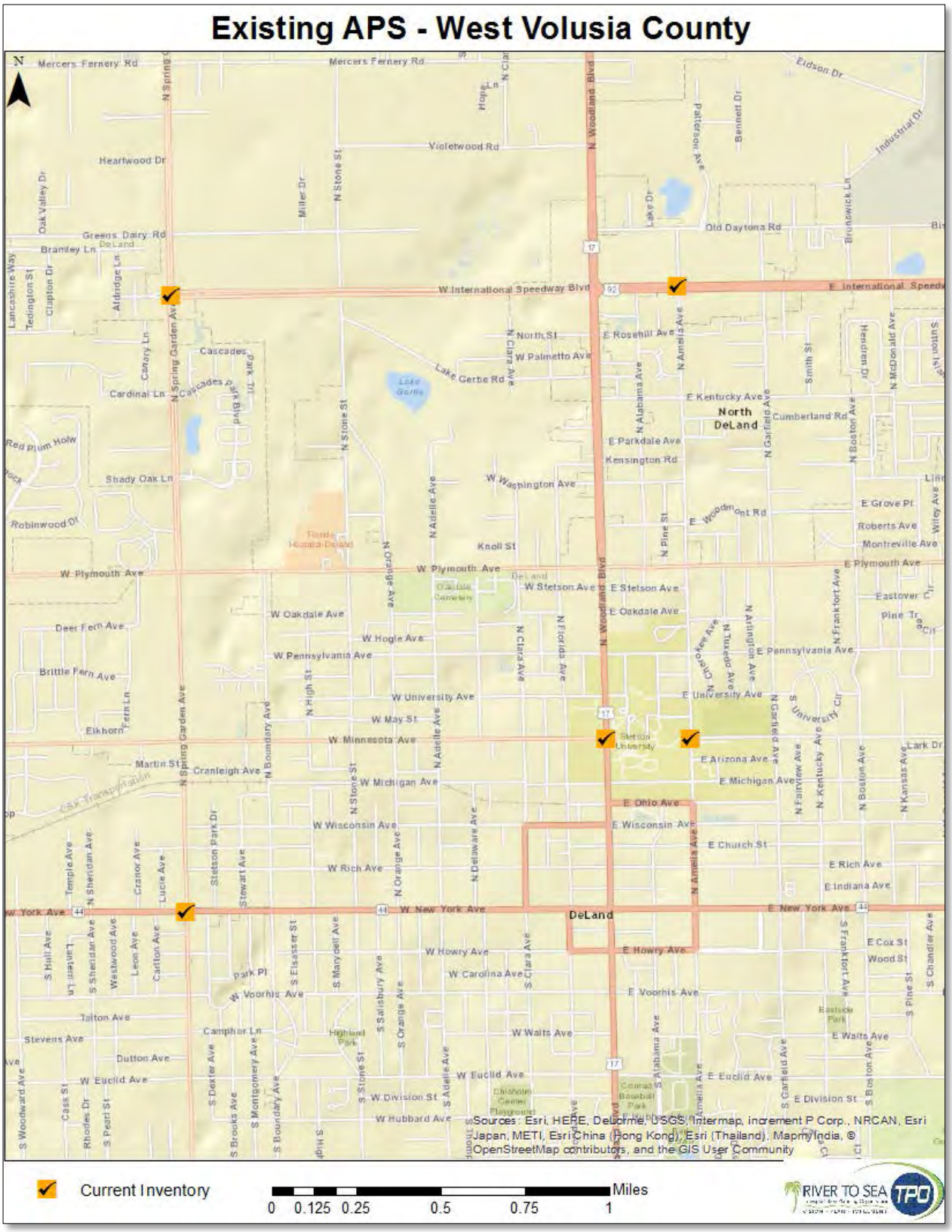
Figure 4 Existing APS Intersections (East Volusia, New Smyrna Beach, West Volusia and Flagler)

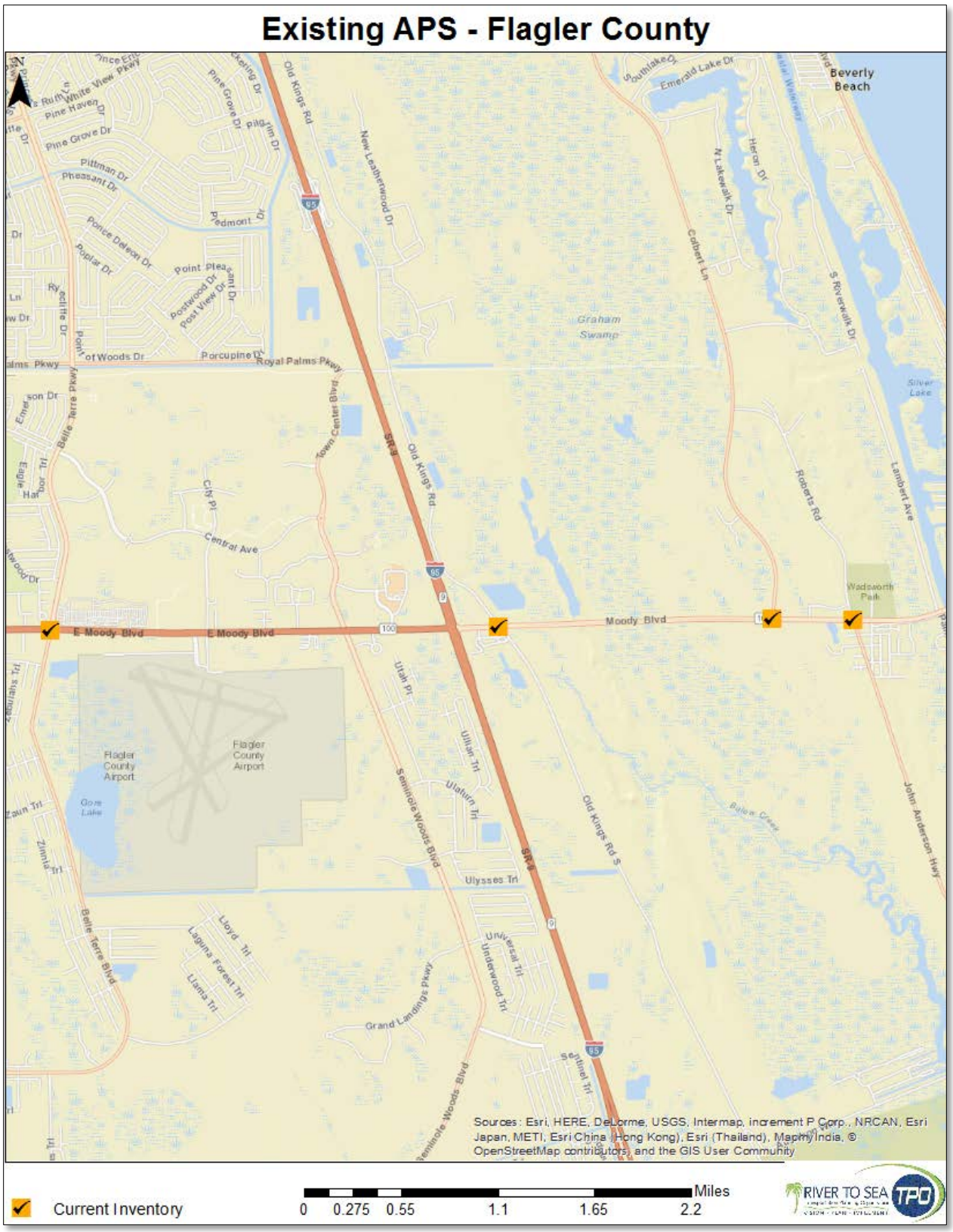


Existing APS - East Volusia County (New Smyrna Beach)



Existing APS - West Volusia County




Existing APS - Flagler County
N
Beverly Beach
Graham Swamp
Silver Lake
Old Kings Rd
New Leatherwood Dr
Emerald Lake Dr
Heron Dr
N Lakewalk Dr
Colbert Ln
S Riverwalk Dr
Roberts Rd
Lambert Ave
Pine Grove Dr
Pittman Dr
Pheasant Dr
Piedmont Dr
Ponce Deleon Dr
Poplar Dr
Point Pleasant Dr
Postwood Dr
Post View Dr
Point of Woods Dr
Porcupine Dr
Royal Palms Pkwy
Belle Terre Pkwy
Town Center Blvd
SR 9
I-95
City Pl
Central Ave
E Moody Blvd
Moody Blvd
Wadsworth Park
Flagler County Airport
Gore Lake
Utah Pl
Utilan Trl
Ulatum Trl
Seminole Woods Blvd
Ulysses Trl
Old Kings Rd S
Belle Terre Blvd
Lloyd Trl
Laguna Forest Trl
Llama Trl
Universal Trl
Underwood Trl
Grand Landings Pkwy
Sentinel Trl
Bulow Creek
John Anderson Hwy
Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Current Inventory
0 0.275 0.55 1.1 1.65 2.2
Miles
RIVER TO SEA TPO

Existing APS - Flagler County Cont'

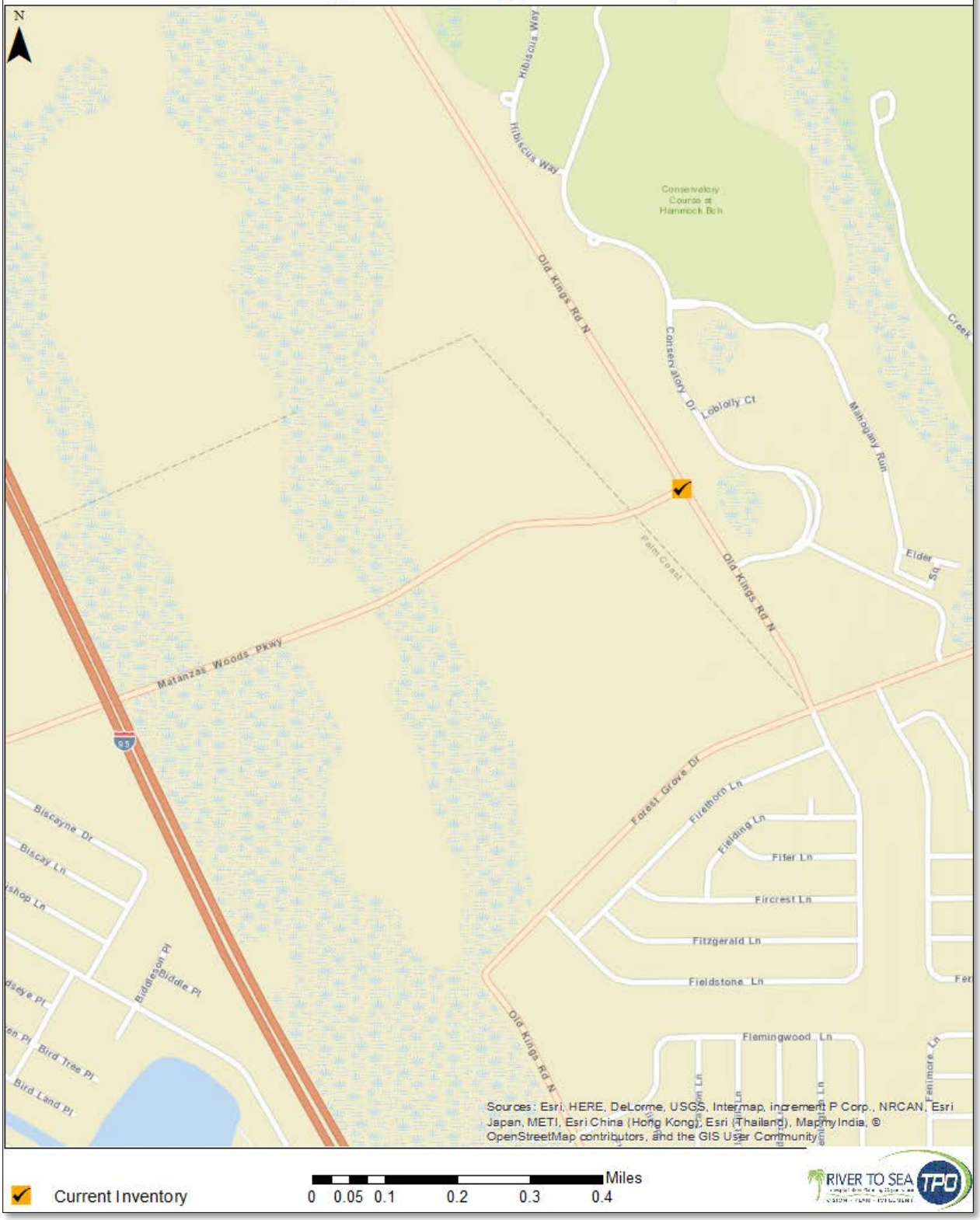
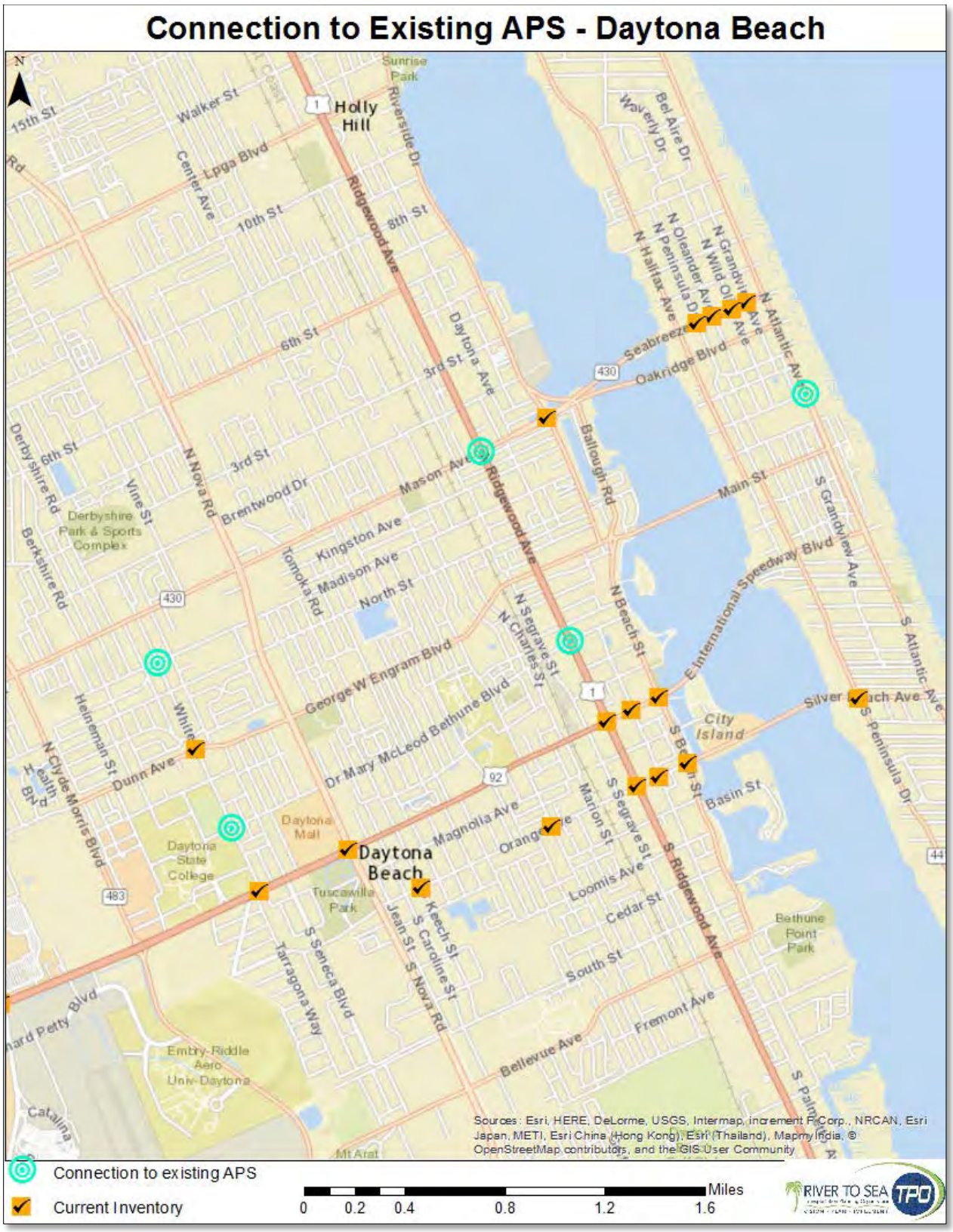
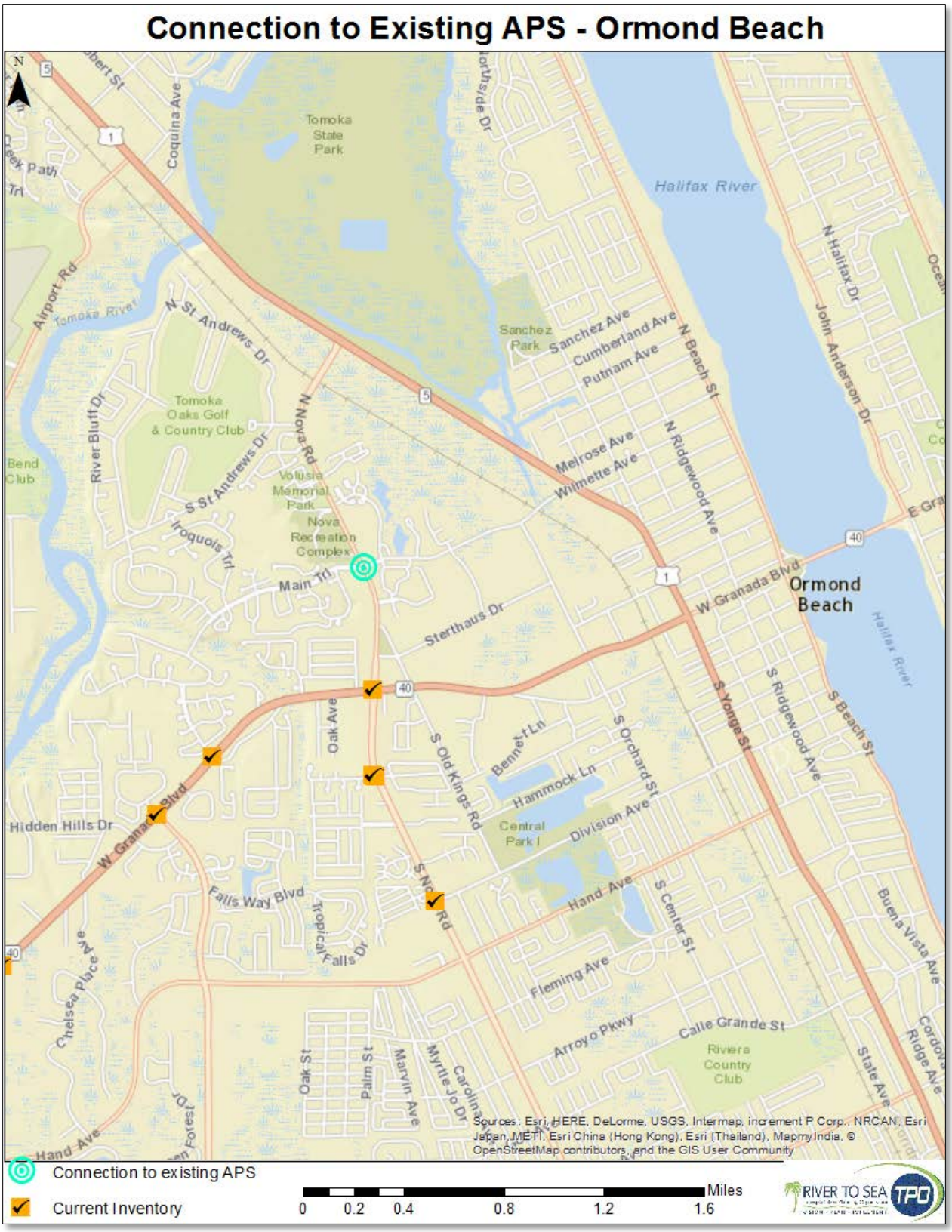


Figure 5 Existing APS Intersections (East Volusia, New Smyrna Beach, West Volusia and Flagler)




Connection to Existing APS - Ormond Beach
Tomoka State Park
Halifax River
Tomoka Oaks Golf & Country Club
Volusia Memorial Park
Nova Recreation Complex
Sanchez Park
Ormond Beach
Riviera Country Club
Central Park I
Hidden Hills Dr
Main Trl
Sterthaus Dr
W Granada Blvd
Falls Way Blvd
Tropical Falls Dr
Fleming Ave
Hand Ave
Arroyo Pkwy
Calle Grande St
Division Ave
Hammock Ln
Bennett Ln
Melrose Ave
Wilmette Ave
Cumberland Ave
Putnam Ave
Sanchez Ave
Airport Rd
Tomoka River
N St Andrews Dr
S St Andrews Dr
River Bluff Dr
N Nova Rd
S Nova Rd
S Old Kings Rd
Oak Ave
N Beach St
S Ridgewood Ave
N Ridgewood Ave
S Yonge St
S Beach St
John Anderson Dr
N Halifax Dr
Buena Vista Ave
Chelsea Place
Oak St
Palm St
Marvin Ave
Myrtle Jo Dr
Carolina Dr
Connection to existing APS
Current Inventory
Miles
0 0.2 0.4 0.8 1.2 1.6
Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
RIVER TO SEA TPO

Population Density around the Intersections

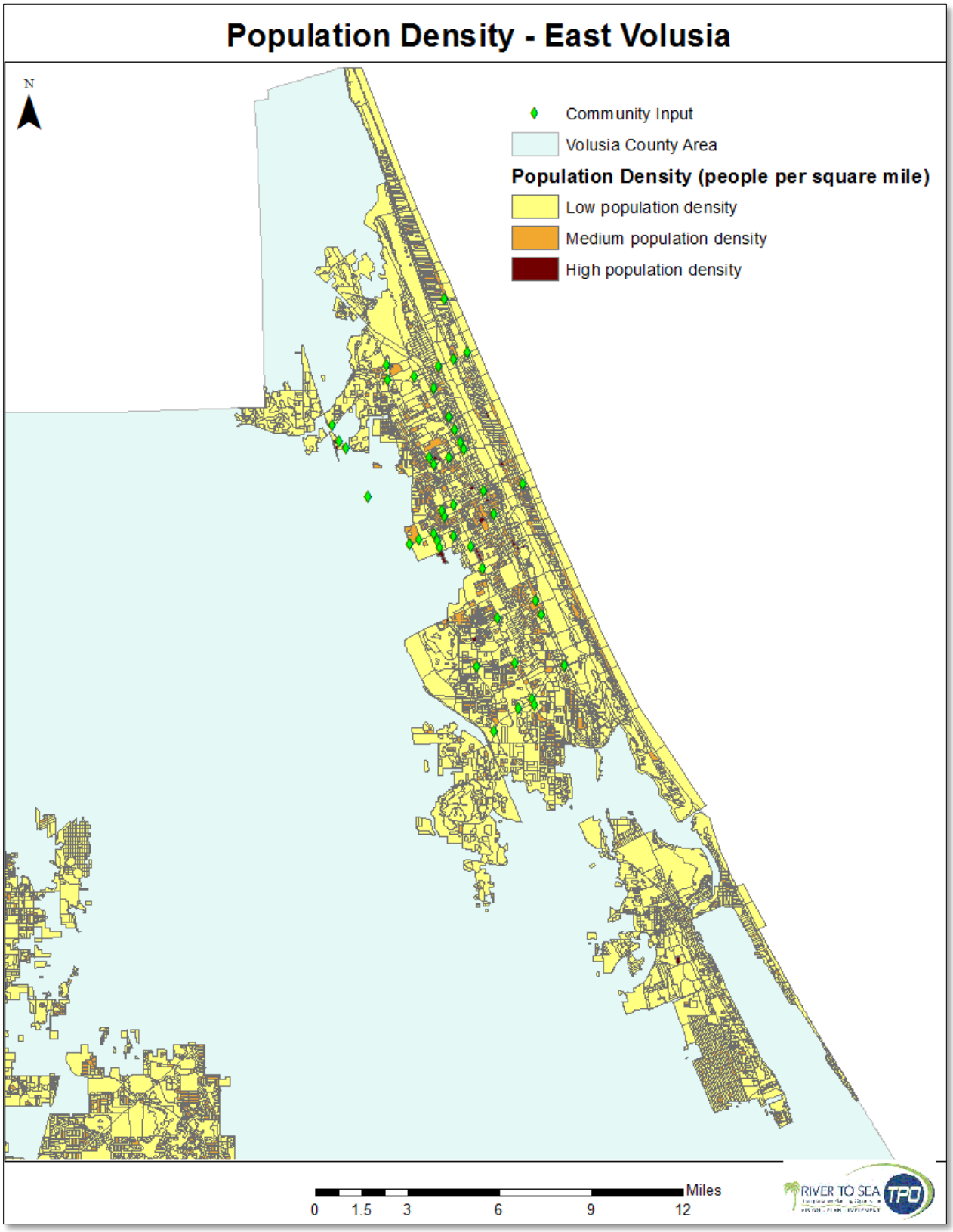
Population density measures the number of people who live in a certain land area and is usually expressed as the number of residents per square mile. Population density can help indicate the amount of residential and pedestrian activities on the street because an area with a higher population density can generate more pedestrian activities than that with a lower population density. In this study, 2010 Census block data is used to show the relevant population density around a ½ mile radius of the intersections being evaluated from the community's input.

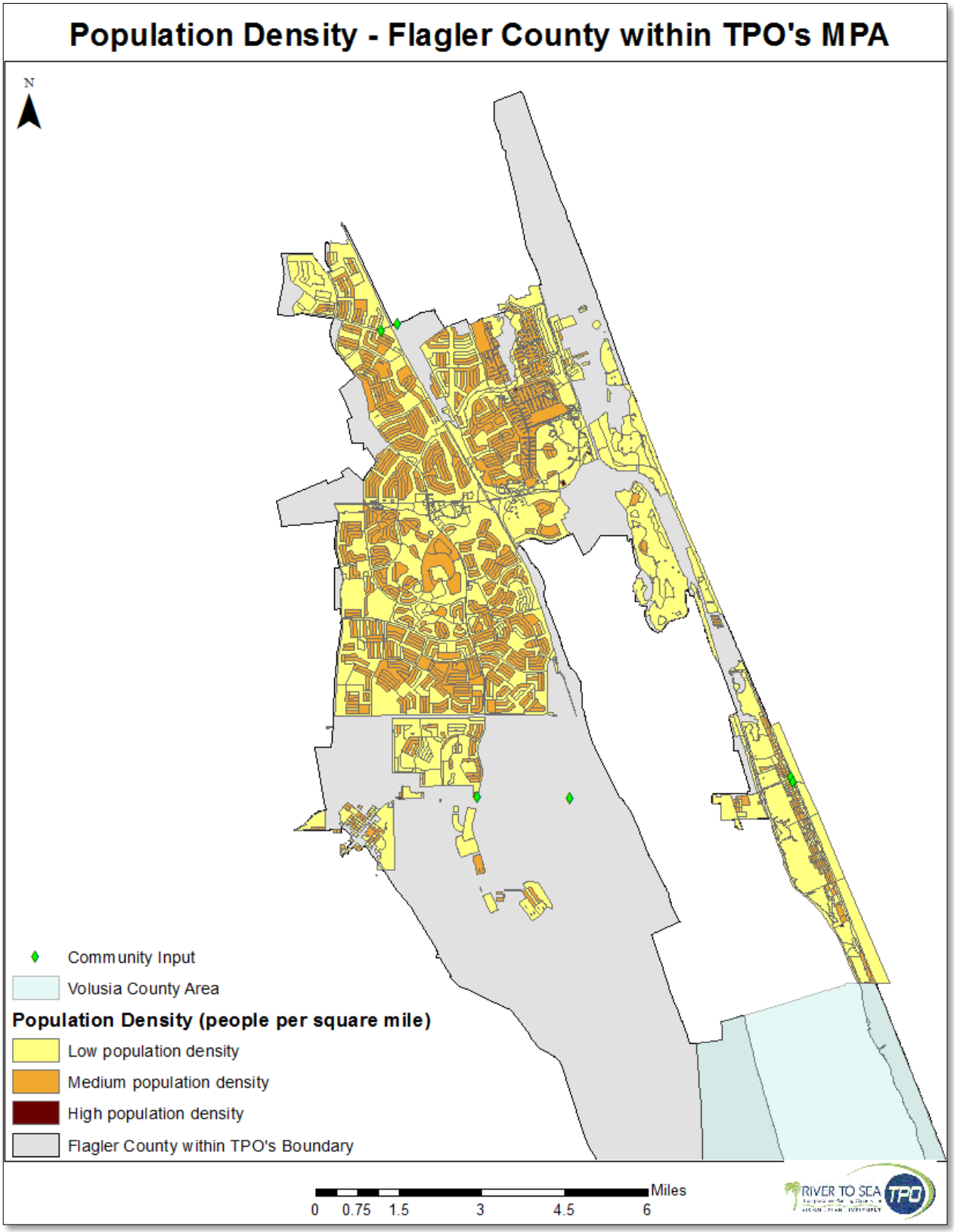
The population density layer is divided into three categories, including "low population density" blocks, "medium population density" blocks, and "high population density" blocks. Every intersection from the community's input is examined based on the population density blocks within a ½ mile radius surrounding them:

- if the intersection only has "low population density" blocks within ½ mile, it is given a rating score of 1;
- if the intersection has "medium population density" blocks within ½ mile, it is given a rating score of 2; and
- if the intersection has "high population density" blocks within ½ mile, it is given a rating score of 3.

The indication of a higher population density is an indication of a higher level of pedestrian activities. As a result, intersections with a higher population density surrounding them can expect more people using the crosswalk, demonstrating a higher need for the APS devices.

Figure 6 Population Density in the Study Area (source: 2010 Census Block)




Population Density - Flagler County within TPO's MPA
N
Community Input
Volusia County Area
Population Density (people per square mile)
Low population density
Medium population density
High population density
Flagler County within TPO's Boundary
Miles
0 0.75 1.5 3 4.5 6
RIVER TO SEA TPO

Identified Key Locations

After applying the four factors evaluated above to the 55 intersections from the Community Input section, a score was developed for each location. The Key Locations with a score of "6" or more are considered the locations with the greatest potential benefit for the installation of APS devices. These 22 locations are highlighted in Table 6. The remaining locations should also be brought forward for consideration during the roadway project planning phase for APS integration or upgrade. The full list of scores for 55 locations can be found in Appendix A.

The site analysis on each Key Location provides the background description and geographical content of these intersections and their surroundings, illustrating the need for the addition of APS. The individual site analysis can be found in Appendix B.

An interactive map with the criteria in the Location Analysis and Key Location is published on www.r2ctpo.org. This is meant to provide project managers and decision-makers easy access to the geographic information and other aspects considered in this study.

Table 6 Preliminary Key Locations

County	City	Street (North/South)	Street (West/East)	Surroundings
Volusia	Daytona Beach	A1A	Earl	Ocean Center
		White	MM Bethune	All Stop, Daytona State
		Nova	Mason	Heavy Local Use
		US 1	Mason	Heavy Local Use
		US 1	MM Bethune	School Route
		White	Madison	Blind Services
	DeBary	US 17/92 (S Charles Richard Beall Blvd)	Highbanks Rd	Commercial strip and Health Center
	DeLand	US 17/92 (Woodland Blvd)	Plymouth Ave	Major intersection cross near Stetson University
		Amelia Ave	SR 44 (New York Ave)	Bank, Post Office, fitness center nearby
	Holly Hill	US 1	Calle Grande	Sr. Residence
		Center	LPGA	School Route
	Ormond Beach	Williamson	Hand	Dining
		A1A	Granada	Tourism
		John Anderson	Granada	Casements
		A1A	Plaza Dr.	Tourism Route
		Nova	Wilmette	The Trails
	Port Orange	Nova	Village Trail	Sr. Residence
		Villiage Tr	Dunlawton	Halifax Hospital, Port Orange
		Nova	Dunlawton	Tourism Route
		Clyde Morris	Madeline	School Route
	South Daytona	Nova	Big Tree	Votran Office
		US 1	Big Tree	School Route

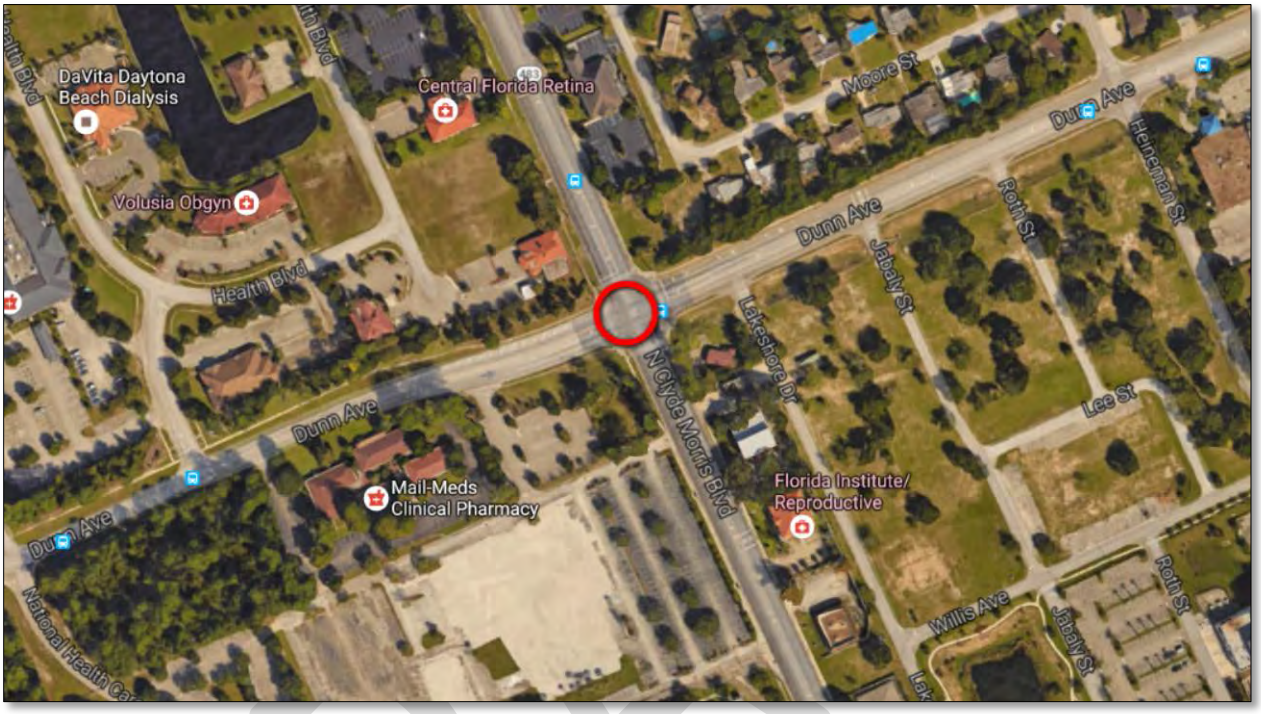
Other Considerations

Mobility Instruction Class Area

It had been expressed by the Mobility Instructors that although APS will greatly improve conditions for the visually impaired people to safely access pedestrian crosswalks, these features may also pose challenges for the Division of Blind Services training program. The Daytona Beach area is the only rehab and training center in Florida that provides a comprehensive training program to help visually impaired individuals regain the skills of independent living. One of the skills in the rehab and training program is the training of going across roadways without APS. This is an important skill for students who will not reside locally as well as for local residents that will travel to other locations. The intersection of Clyde Morris Blvd and Dunn Avenue (shown in Map 4) is a major roadway crossing adjacent to the Division of Blind Services and Rehabilitation Center, and it is currently utilized by the Mobility Instructors as a training location for a non-APS crossing for training purposes. Therefore, implementation

of APS at this location should consult with Mobility Specialists at the Division of Blind Service per their recommendations for both pedestrian safety and mobility training purposes.

Figure 7 Intersection of the Division of Blind Services and Rehabilitation Center's class training location



Flagler Beach Locations Affected by Hurricane Mathew in 2016

The intersections of "SR 100 and SR A1A" and "S 3rd Street and SR A1A" in Flagler Beach are affected by the partial destruction of A1A as the result of the 2016 Hurricane Matthew. A 1.4 mile stretch of A1A that was destroyed by the hurricane will be replaced, forcing the Florida Department of Transportation to close part of the scenic highway. Limited access is provided to this location; however, new road construction is expected to occur soon and this presents opportunities to include the element of APS as part of the reconstruction of A1A. The replacement of the roadway should consider incorporating the APS design in the planning phase.

Short-term Implementation

The Americans with Disabilities Act (ADA) requires that any improvements made to public infrastructure necessitates that the location be brought up to full ADA compliance. This means that installing APS equipment at the recommended Key Locations require sidewalk facilities on both sides of the street to optimize the effort of improving accessibility and safety for pedestrians. In the near term, streets that have complete sidewalks meeting current ADA standards on both sides can support the installation of APS equipment more easily than those

that lack sidewalks on either side. This same rationale applies to the installation of APS at intersection locations.

The FDOT (District 5) maintained sidewalk data provides sidewalk condition information on major state-maintained corridors. This information was used to evaluate the intersections that can implement APS equipment in the short-term because of the completeness of sidewalks which allows maximum accessibility for pedestrians all sides of the intersections. Based on Map 4 and satellite images, 12 intersections from the Key Locations are identified as suitable for short-term implementation with complete state-maintained sidewalks for pedestrian access. The list is shown in Table 7.

Figure 8 – Key Locations and State-maintained Sidewalk

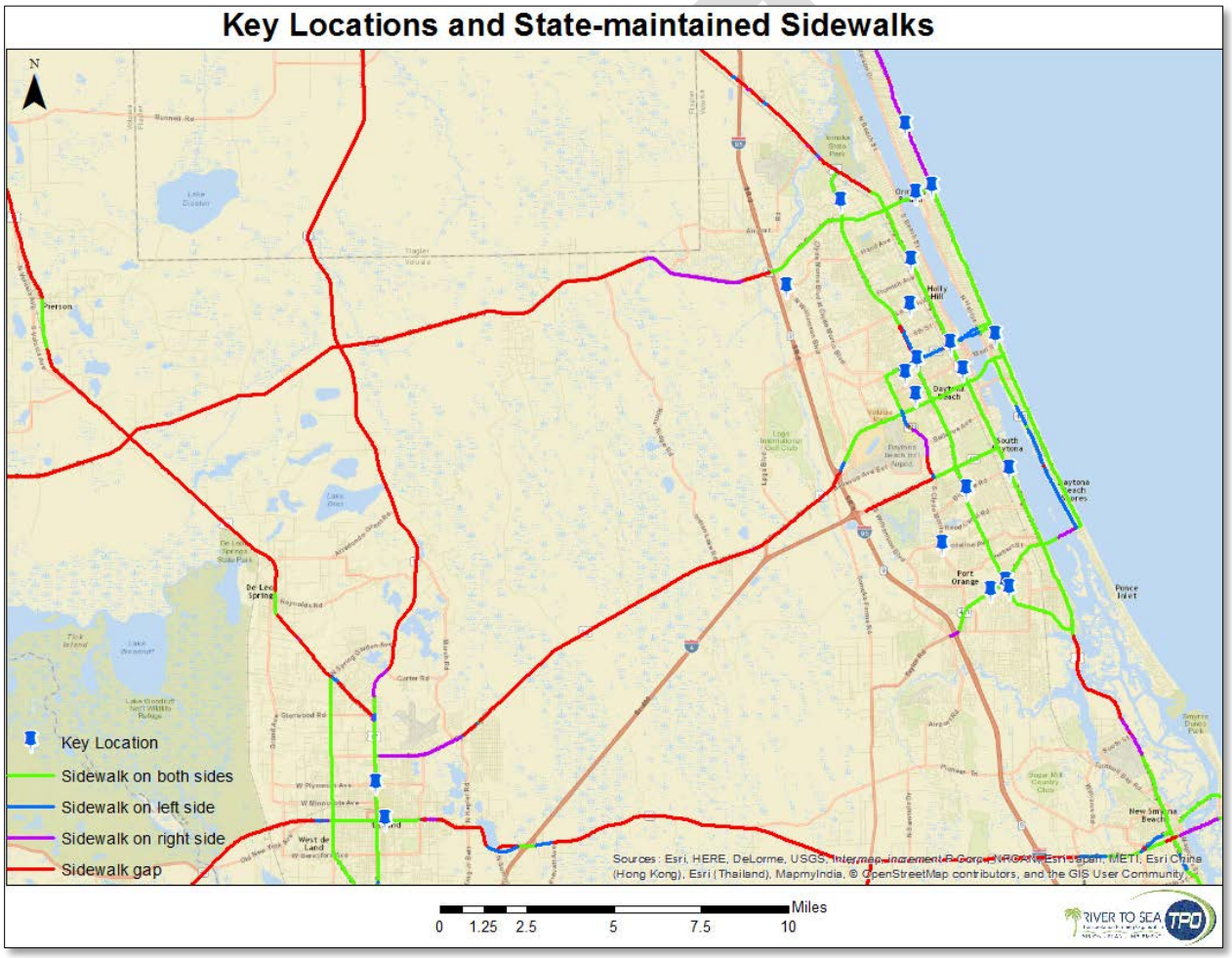


Table 7 Key Locations with Complete Sidewalks for Short-Term Implementation

County	City	Street (North/South)	Street (West/East)	Surroundings
Volusia	Daytona Beach	A1A	Earl	Ocean Center
		White	MM Bethune	All Stop, Daytona State
		Nova	Mason	Heavy Local Use
		US 1	Mason	Heavy Local Use
		US 1	MM Bethune	School Route
		White	Madison	Blind Services
	DeBary	US 17/92 (S Charles Richard Beall Blvd)	Highbanks Rd	Commercial strip and Health Center
	DeLand	US 17/92 (Woodland Blvd)	Plymouth Ave	Major intersection cross near Stetson University
		Amelia Ave	SR 44 (New York Ave)	Bank, Post Office, fitness center nearby
	Holly Hill	US 1	Calle Grande	Sr. Residence
		Center	LPGA	School Route
	Ormond Beach	Williamson	Hand	Dining
		A1A	Granada	Tourism
		John Anderson	Granada	Casements
		A1A	Plaza Dr.	Tourism Route
		Nova	Wilmette	The Trails
	Port Orange	Nova	Village Trail	Sr. Residence
		Villiage Tr	Dunlawton	Halifax Hospital, Port Orange
		Nova	Dunlawton	Tourism Route
		Clyde Morris	Madeline	School Route
	South Daytona	Nova	Big Tree	Votran Office
		US 1	Big Tree	School Route

Key Locations for short-term implementation

Feasibility and Recommendations

The 2009 Manual on Uniform Traffic Control Devices (MUTCD) includes standards and guidance for APS and APS detector (pushbutton) placement in sections 4E.09 through 4E.13. According to estimates provided by Volusia County Traffic Engineering, the cost of adding an APS feature to an existing intersection ranges from $15,000 to $100,000 (per leg of an intersection). The APS equipment and installation cost is approximately $15,000 and the ADA intersection upgrade costs between $25,000 and $75,000; however, the amount of electrical and construction work at the individual locations eventually determines the estimated cost. Due to the various and potentially high costs to implement a stand-alone APS at individual sites, a more effective and financially feasible approach would involve incorporating the APS feature as part of planned roadway improvement projects. Two processes should occur as coordinated efforts during the addition of APS features in the roadway improvement plans:

1. The roadway improvement projects should incorporate a review process to include the Division of Blind Services (DBS) for optimal APS equipment installation and design recommendations. A sample letter for project communication from the DBS is included in Appendix C.
   The roadway improvement projects at the recommended Key Locations should also include a letter for Local Agency Consensus that identifies maintenance responsibilities of the APS equipment for different jurisdictions (cities, counties and state).

The **22** locations listed in the Identified Key Locations section are considered locations that will have the most significant impacts on pedestrians travel safety and mobility, and therefore should be considered for APS installation either as individual projects or as part of current and future roadway improvement projects. The short-term implementation section identified **12** out of the 22 Key Locations that may require less financial resources and engineering input to implement because of the complete existing sidewalk conditions. These 12 intersections may be candidates for the addition of APS features as individual projects because of the potentially lower costs than the other intersections.

The other locations obtained from the community's input should also be seen as top concerns expressed during the public meetings; however, due to funding constraints, the installation of APS at the intersections which are not identified as Key Locations may need to rely on incorporation into the roadway improvement projects. Planning and integration of APS should be based on the individual site's roadway characteristics and sidewalk conditions. If an intersection is currently not accessible, then the project implementation at new APS intersections should also comply with Americans with Disabilities Act (ADA) implementing regulations, providing accessible features such as wheelchair ramps, accessible sidewalk width, etc. In order to comply with ADA requirements for accessible sidewalk and wheelchair ramp standards, implementing APS requires an upgrade of the entire intersection to ADA standards. While that sounds like a reasonable goal, it is one that can have significant costs associated with it that may make the installation difficult to fund.

When implementing at specific locations, local organizations providing support services to pedestrians who have visual and/or hearing disabilities can often act as important advisors to the traffic engineer when consideration is being given to the installation of devices to assist such pedestrians. Additionally, orientation and mobility specialists or similar staff also might be able to provide a wide range of advice. The U.S. Access Board (www.access-board.gov) provides technical assistance for making pedestrian signal information available to persons with visual disabilities.

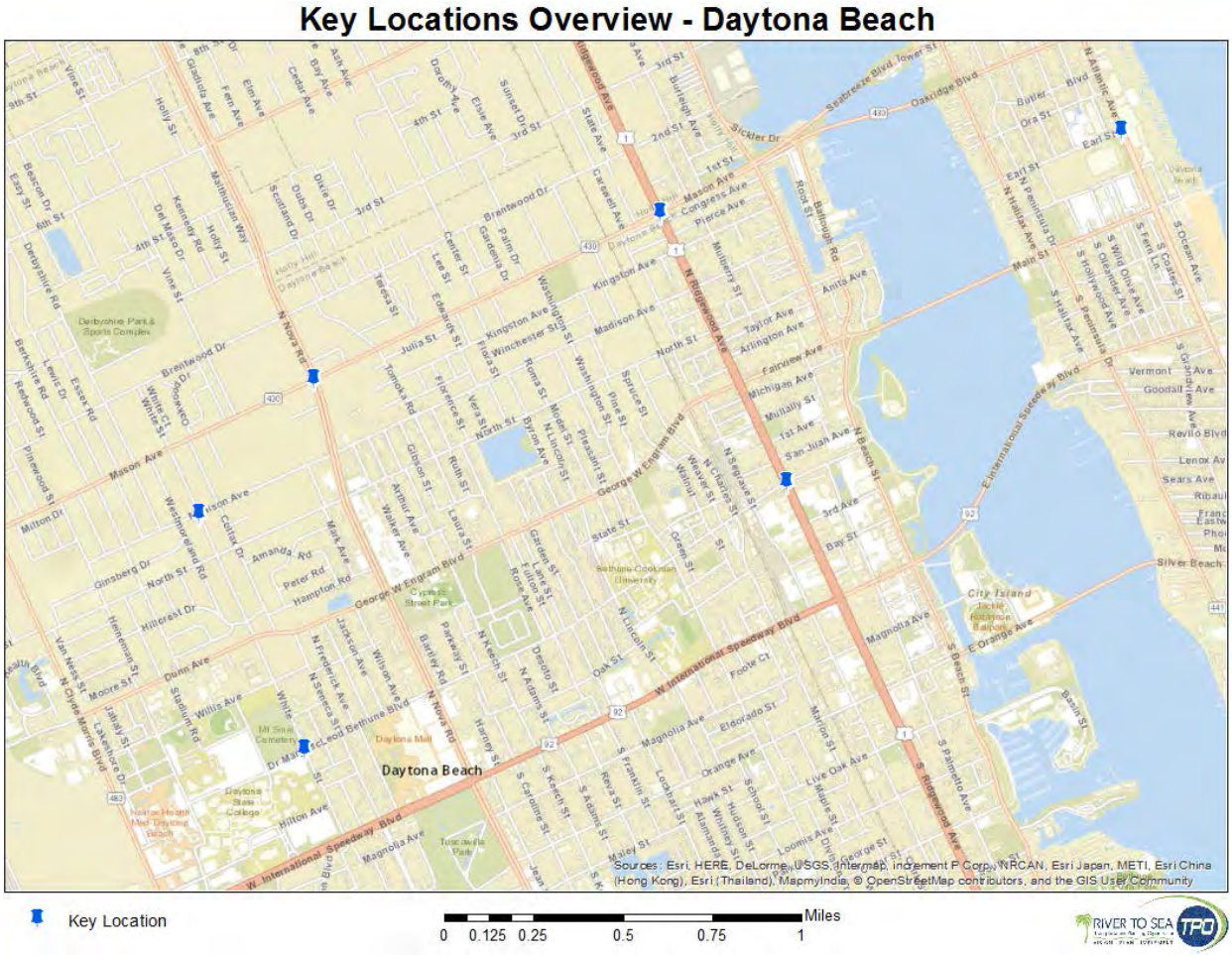
APPENDIX A Complete List of the Scores for 55 Locations

City	Street (N/S)	Street (W/E)	Surroundings	Crash	Connec-tivity	Origin/ Destination Types Served	Population Density	Score
Daytona Beach	A1A	Earl	Ocean Center	2	1	4	1	8
	White	MM Bethune	All Stop, Daytona State	0	1	4	1	6
	White	Mason	Blind Services	0	0	3	2	5
	Nova	Mason	Heavy Local Use	2	0	3	1	6
	Jimmy Ann	Dunn	School Route	0	0	3	2	5
	Williamson	LPGA	New Outlet Mall	1	0	3	0	4
	Clyde Morris	Hilton	Daytona State College	0	0	3	1	4
	Williamson	Memorial	FL Memorial Hospital	0	0	3	2	5
	US 1	Mason	Heavy Local Use	2	1	2	1	6
	Clyde Morris	Dunn	Blind Services	0	0	2	1	3
	US 1	MM Bethune	School Route	2	1	2	1	6
	Clyde Morris	Mayberry	Halifax Hospital, Main	1	0	2	1	4
	Nova	Bellevue	Heavy Local Use	0	0	2	2	4
	Dunn	Bill France	Post Office/ School Route	0	0	2	1	3
	White	Madison	Blind Services	1	1	2	2	6
DeBary	US 17/92 (S Charles Richard Beall Blvd)	Highbanks Rd	Commercial strip and Health Center	0	0	4	2	6
	US 17/92 (S Charles Richard Beall Blvd)	Fort Florida Rd	SunRail entrance, mobile house community	0	0	2	2	4
	US 17/92 (S Charles Richard Beall Blvd)	Dirksen Dr	Votran SunRail feeder bus on north side, adjacent to trail, SunRail connection on south side	0	0	1	1	2
DeLand	US 17/92 (Woodland Blvd)	Plymouth Ave	Major intersection cross near Stetson University	1	0	3	2	6
	Amelia Ave	SR 44 (New York Ave)	Bank, Post Office, fitness center nearby	1	0	4	1	6
	US 17/92 (Woodland Blvd)	New Hampshire Ave	Apartments and DeLand Middle School nearby	0	0	2	3	5
Holly Hill	US 1	Calle Grande	Sr. Residence	0	0	4	2	6
	US 1	Flomich	School Route	1	0	3	1	5
	Center	LPGA	School Route	2	0	3	2	7
	US 1	LPGA	Hollyland Park	0	0	3	2	5
	Nova	LPGA	Heavy Local Use (Truck Route)	1	0	3	1	5
	Nova	Walker	Heavy Local Use	0	0	3	1	4
	US 1	Walker	FL Health Care, Holly Hill	1	0	2	2	5
Ormond Beach	Williamson	Hand	Dining	1	0	4	3	8
	Orchard	Granada	Heavy Local Use (Business Corridor)	0	0	4	1	5

	Beach	Granada	OB City Offices/Library	0	0	4	1	5
	US 1	Division	Heavy Local Use	0	0	4	1	5
	A1A	Granada	Tourism	1	0	4	1	6
	John Anderson	Granada	Casements	0	0	4	2	6
	A1A	Plaza Dr.	Tourism Route	0	0	4	2	6
	Nova	Wilmette	The Trails	1	1	4	1	7
Port Orange	Nova	Village Trail	Sr. Residence	1	0	4	1	6
	Villiage Tr	Dunlawton	Halifax Hospital, Port Orange	1	0	4	1	6
	Nova	Dunlawton	Tourism Route	2	0	3	1	6
	US 1	Dunlawton	Tourism Route	1	0	3	1	5
	Yorktowne	Dunlawton	Activity center and tourism route	0	0	3	1	4
	Clyde Morris	Madeline	School Route	1	0	3	2	6
	Nova	Madeline	School Route	1	0	2	1	4
South Daytona	Nova	Big Tree	Votran Office	2	0	3	1	6
	US 1	Ridge Blvd	School Route	0	0	3	2	5
	US 1	Big Tree	School Route	2	0	3	2	7
Flagler Beach	A1A (Ocean Shore Blvd)	SR 100 (Moody Blvd)	Shopping/dining/beach side major pedestrian access	1	0	2	1	4
	A1A (Ocean Shore Blvd)	S 3rd St	Mid-block crossing to beach side/dining	1	0	2	1	4
Palm Coast	Seminole Woods Blvd	SR 100 (Moody Blvd)	Florida Hospital	1	0	3	0	4
	I-95 on and off ramp	Matanzas Woods Parkway	Matanzas High School nearby		0	1	0	1

Key locations based on evaluating scores

APPENDIX B: Individual Site Analysis for Preliminary Key Locations



Daytona Beach

A1A and Earl St

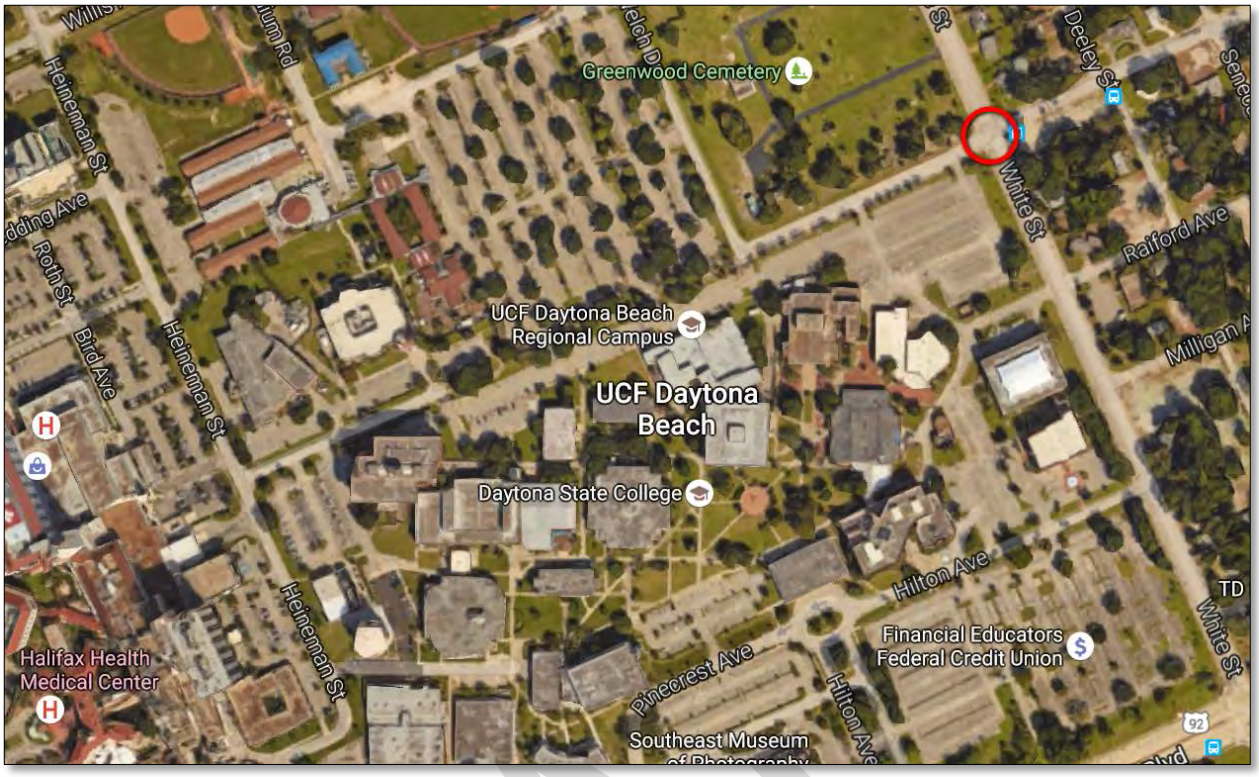
This is a “T” shaped intersection of Hwy A1A (Atlantic Ave), a two-lane roadway in each direction with an additional left turn lane. Earl St. which is a two-lane roadway in each direction. This is a major beach access road intersection for vehicular and pedestrian traffic. The major surrounding travel destinations include the Ocean Center, hotels, restaurants, the beach side and the Ocean Walk Shoppes. Votran’s Intermodal Transit Facility is also located adjacent to these locations, and serves as a major bus transfer plaza with 16 bus lines.

The intersection serves four types of travel origin/destination, including residential, shopping/dining, transit stop, and recreational. It also provides a connection to the current APS intersection within a half mile. In addition, it reveals a safety concern with a record of pedestrian crashes. This intersection is on the FDOT on-system (SR intersects with off-system roadway) Tier 2 list.

White St and Dr. Mary McLeod Bethune Blvd

This is a four-way intersection with two-lane roadways in each travel direction. This is a local intersection surrounded by residential houses, the UCF Daytona Beach Regional Campus, and Halifax Health Medical Center on the far side. Votran's Route 10 serves in both the north-south and west-east direction of this area, providing trips from and to the local residential areas, the adjacent UCF Daytona Beach Regional Campus and Halifax Health Medical Center.

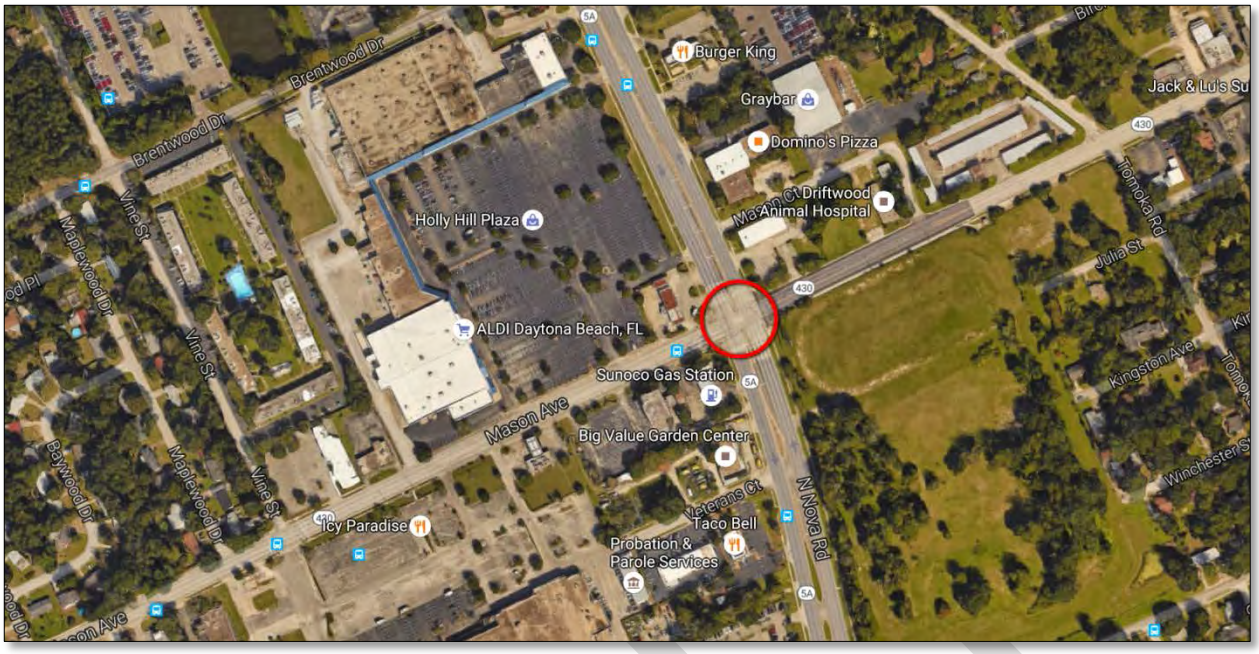
The intersection serves four types of travel origin/destinations, including residential, medical, transit stops, and recreational. It also provides a connection to the current APS intersection within a half mile. There is no record of pedestrian crashes in the recent five-year period at this location. This intersection is on FDOT's off-system (no state route) list.



Nova Rd and Mason Ave

This is a major intersection of Mason Avenue which is a two-lane roadway in each direction with an additional left turn lane and Nova Road which is a three-lane roadway in each direction with two additional left turn lanes. This location serves heavy local use for pedestrians and vehicle traffic. The major surrounding travel destination includes Holly Hill Plaza, ALDI Supermarket, various fast food restaurants on the street front, and residential houses further behinds the roadway. Votran's Route 6 and 11 have multiple stops along both Nova and Mason at accessible near distance.

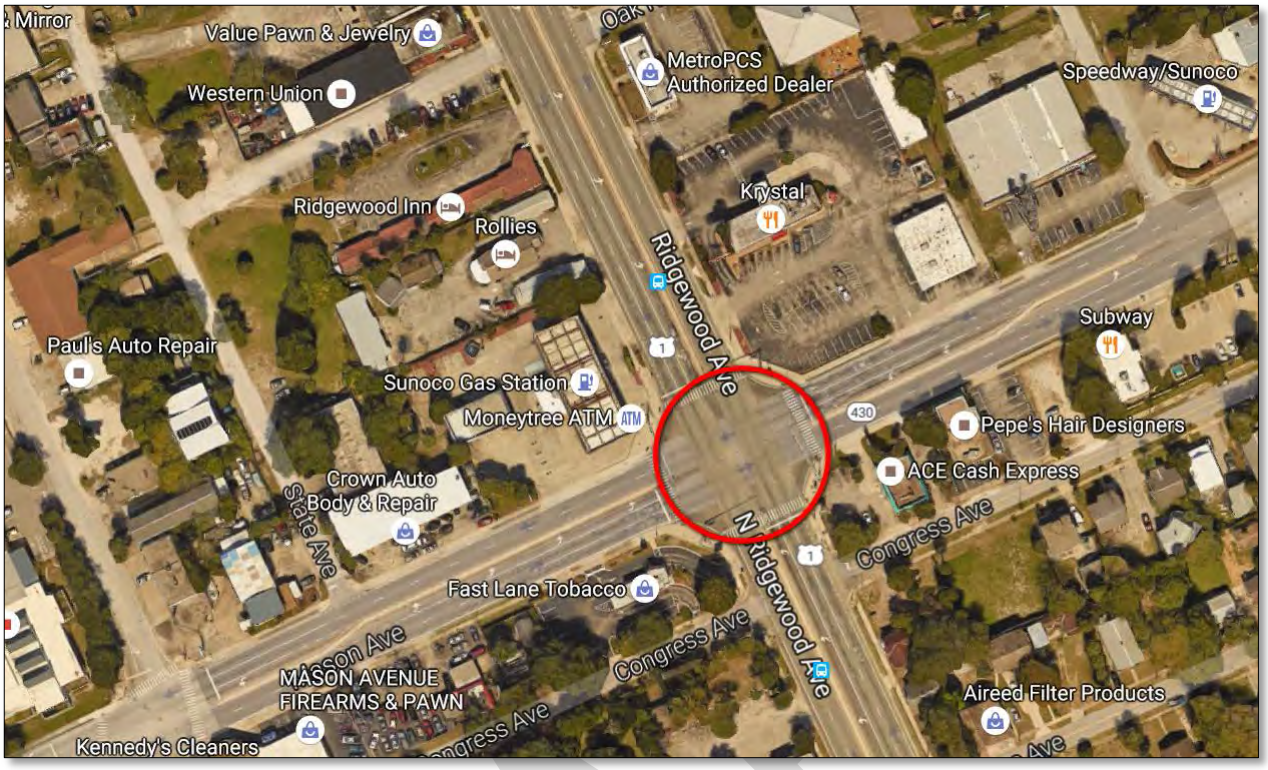
The intersection serves three types of travel origin/destinations, including residential, shopping/dining and transit stops. It reveals a safety concern with a record of pedestrian crashes. However, it does not provide a connection to the current APS intersection within a half mile distance. This intersection is on FDOT on-system (SR intersects with off-system roadway) Tier 2 list.



US 1 and Mason Ave

This is a major intersection of Mason Avenue and US 1 (Ridgewood Ave), both of which are two-lane roadways in each direction with one additional left turn lane. The surrounding travel destinations include a hair salon, various fast food restaurants and pawn shops on the street front, and residential houses further behind the roadway. Votran's Route 3 serves along US 1 adjacent to the intersection. Heavy local vehicular and pedestrian traffic are seen at this location.

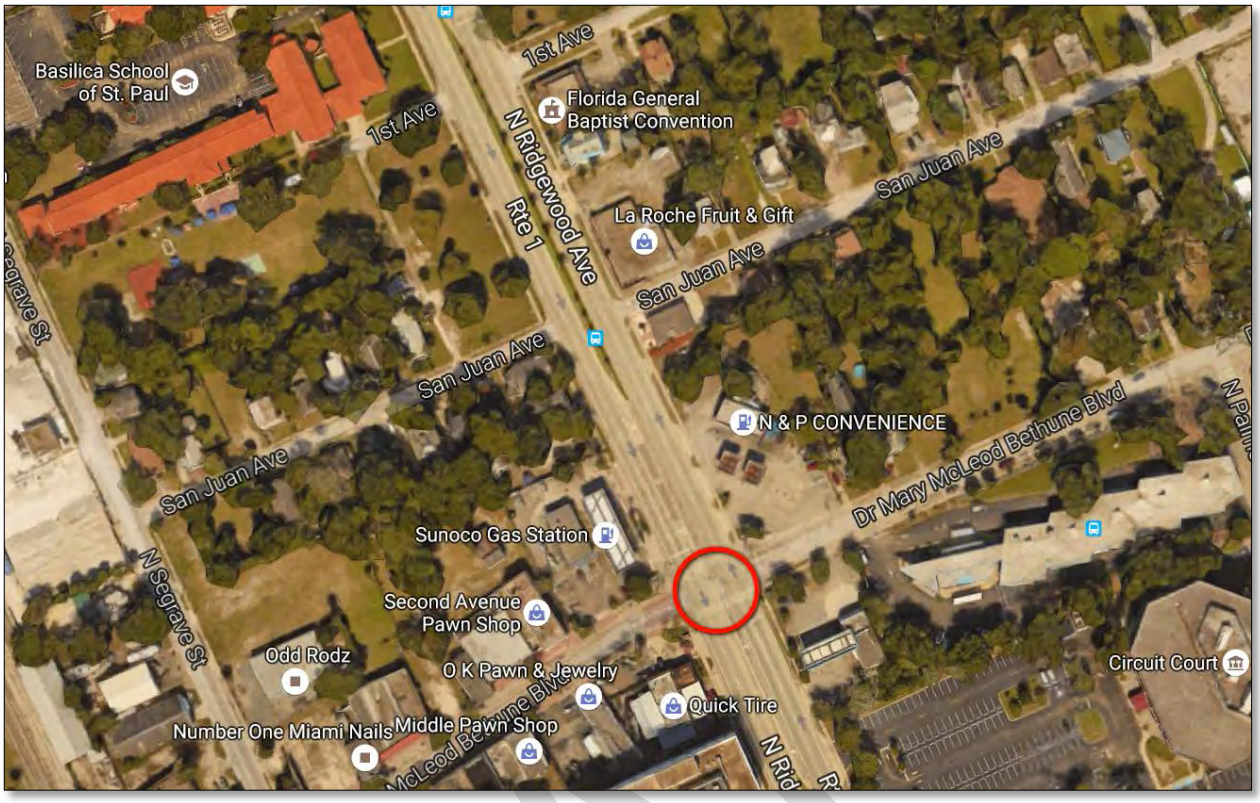
The intersection serves two types of travel origin/destinations, including shopping/dining and transit stops. It reveals a safety concern with a record of pedestrian crashes. In addition, it provides a connection to the current APS intersection within a half mile distance. This intersection is on FDOT's on-system (all state route) Tier 1 list.



US 1 and Dr. Mary McLeod Bethune Blvd

This is a intersection of US 1 (Ridgewood Ave) which is a two-lane roadway in each direction with one additional left turn lane and MM Bethune Blvd which is a one-lane roadway in each direction with one additional left turn lane. The surrounding travel destinations include two pawn shops and a convenience store on the street front, and residential houses further behind the roadway. Votran's Routes 3, 4, 5, 6, 10 and 12 serve within one block adjacent to the intersection. Votran's Bus Transfer Plaza is also located at the intersection. Heavy bus and pedestrian traffic are seen at this location. In addition, this intersection serves as a school route connecting the Basilica School of St. Paul two blocks north.

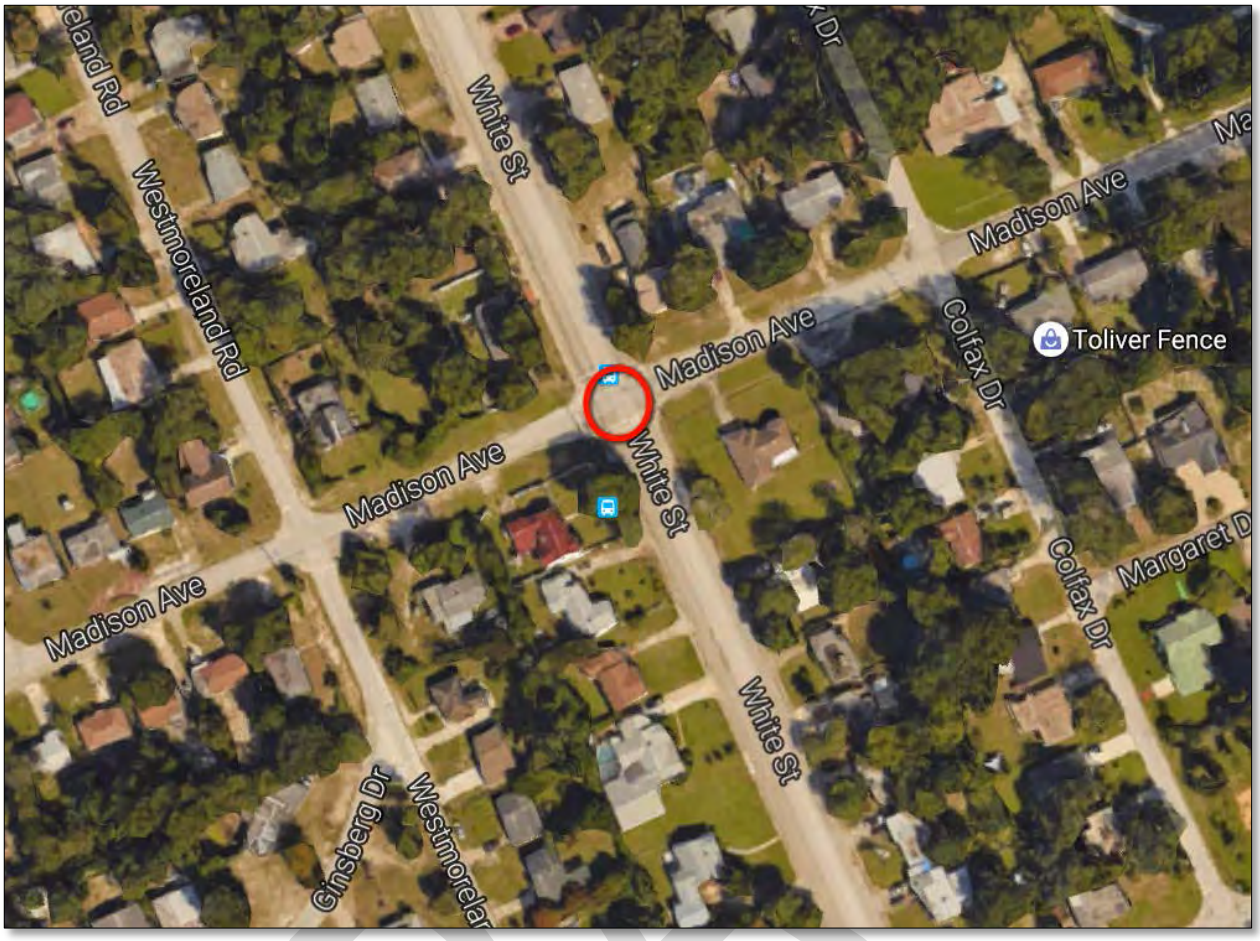
The intersection serves two types of travel origin/destinations, including shopping/dining and transit stops. It reveals a safety concern with a record of pedestrian crashes. In addition, it provides a connection to the current APS intersection within a half mile distance. This intersection is on 'DOT's on-system (SR intersects with off-system roadway) Tier 2 list.



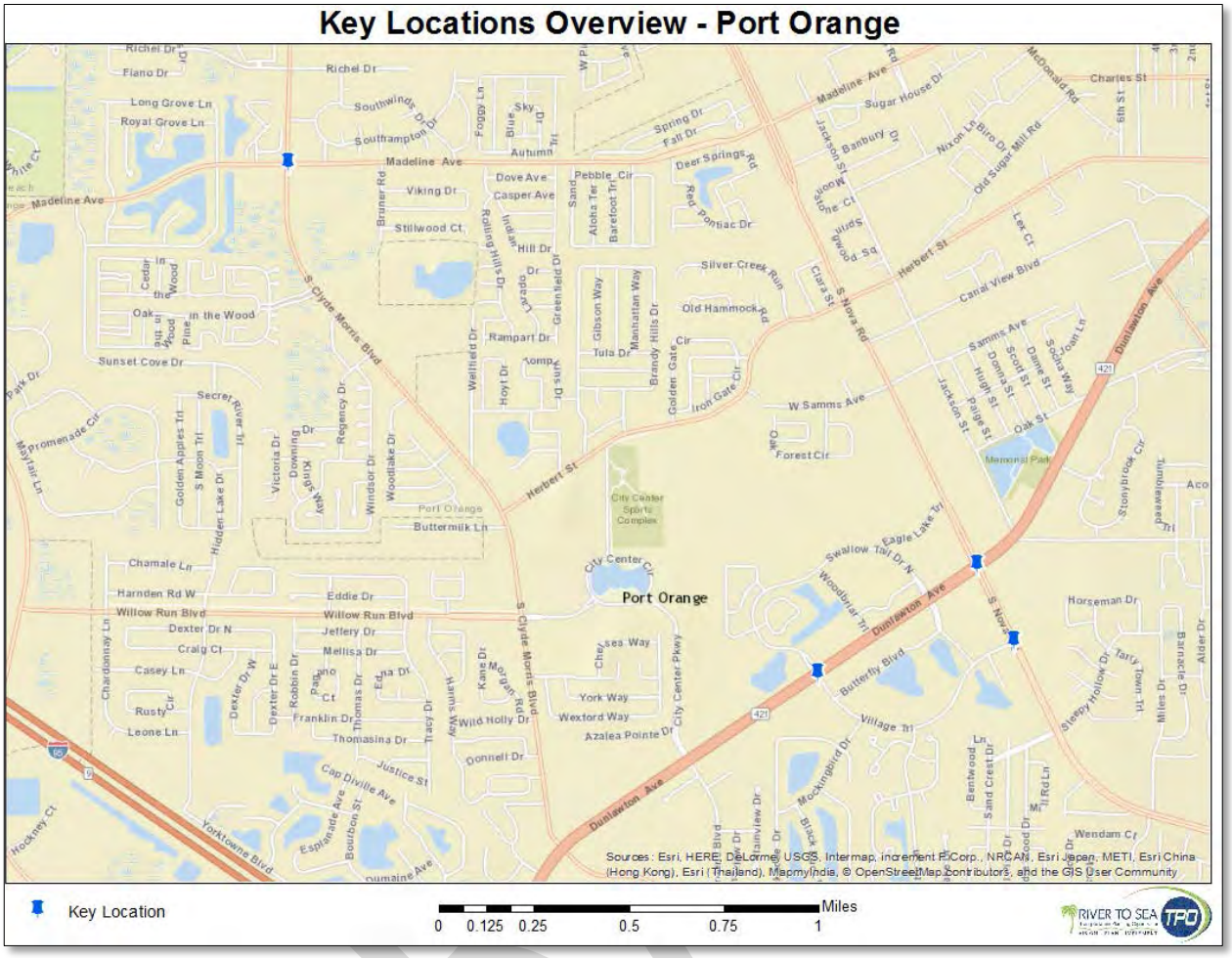
White St and Madison Ave

This location is in a residential area. Both White St and Madison Ave are local streets. Madison Ave is a one-lane roadway in each direction, and White St is a two-lane roadway in each direction. The pedestrian crossing at this intersection serves the surrounding residents. Votran Route 6 runs along White St through the residential community. The Rehabilitation Center for the Blind and Visually Impaired is located one half mile to the south of the intersection, and is accessible by walking as well as by Votran Route 6 from the intersection.

The intersection serves two types of travel origin/destinations, including residential and transit stops. It reveals a safety concern with a record of pedestrian crashes. In addition, it provides a connection to the current APS intersection within a half mile distance. This intersection is on ’DOT's on-system (SR intersects with off-system roadway) Tier 2 list.


White St
Madison Ave
Colfax Dr
Toliver Fence
Madison Ave
White St
Madison Ave
Madison Ave
Colfax Dr
White St
Ginsberg Dr

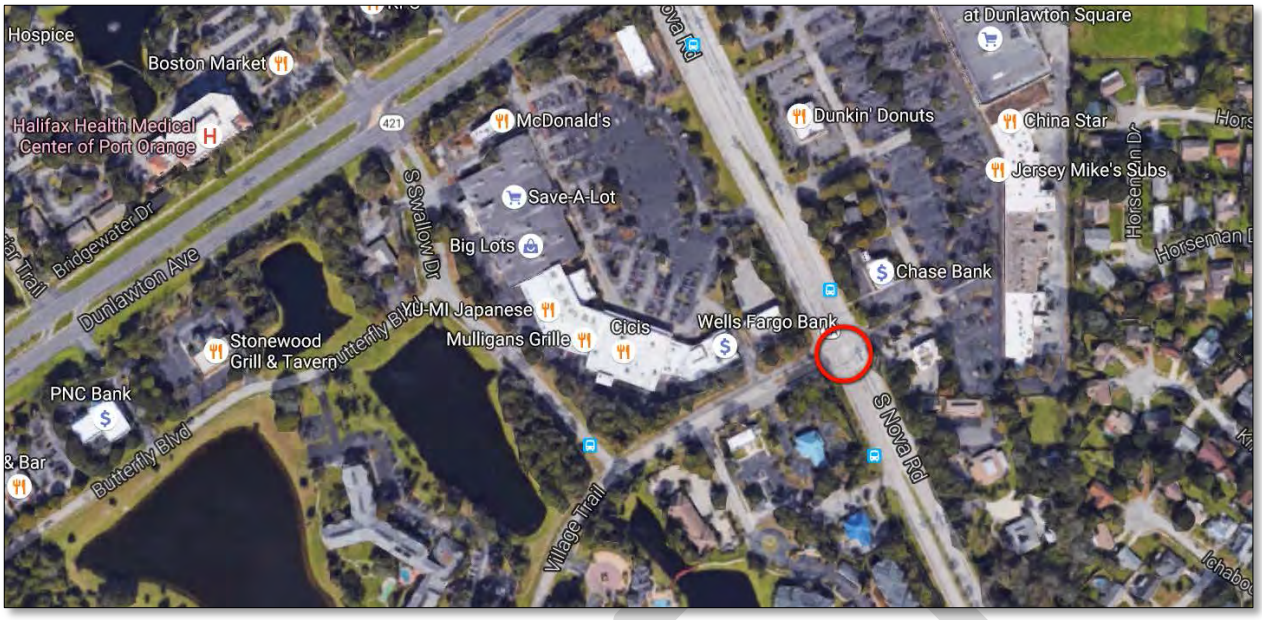
Port Orange



Nova Rd and Village Trail

This is a major pedestrian crossing intersection for the adjacent residents to access shopping centers and dining plazas. Nova Road is a two-lane roadway in each direction with one additional left turn lane and one right-turn-only lane that accesses Village Trail. Village Trail is a one-lane roadway in each direction with one additional left turn lane and one right-turn-only lane. The surrounding travel destinations include various shopping/grocery centers and restaurants, banks, apartments, houses, and the Halifax Health Medical Center of Port Orange on the far northwest side. Votran's Routes 4, 7, 12, 17b and 40 serve areas adjacent to the intersection. Heavy pedestrian and vehicle traffic are observed at the location.

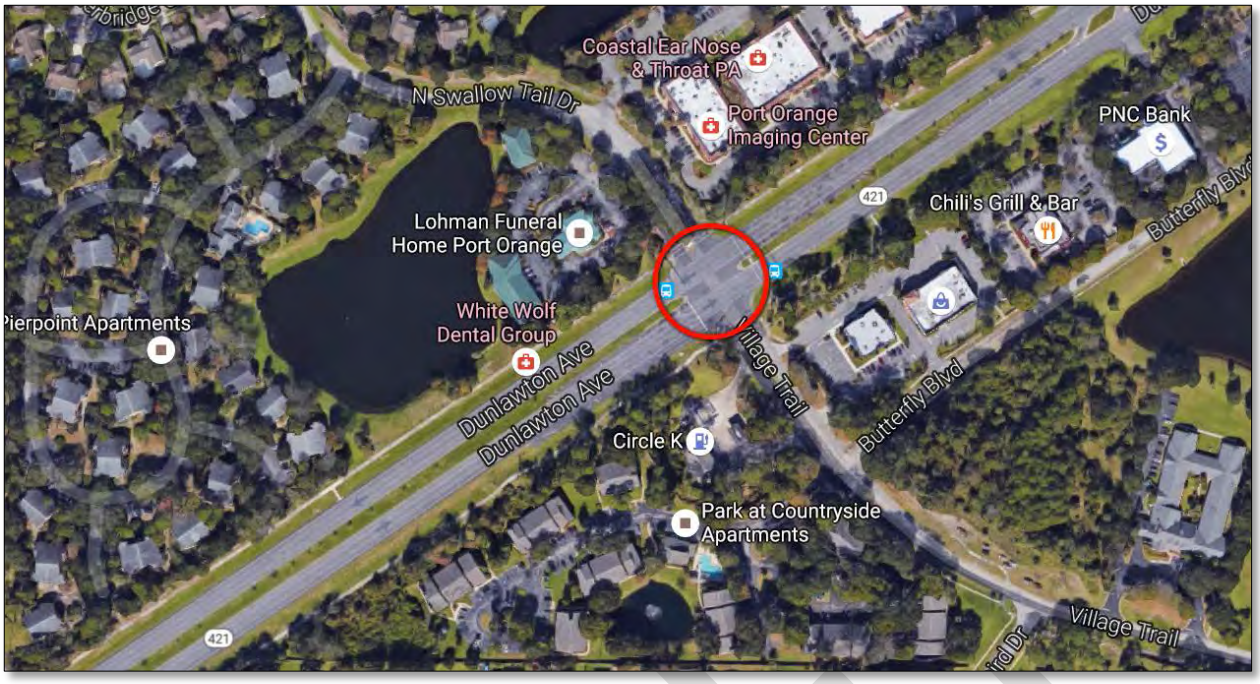
The intersection serves four types of travel origin/destinations, including residential, shopping/dining, medical and transit stops. It reveals a safety concern with a record of pedestrian crashes but it does not provide a connection to the current APS intersection within a half mile distance. This intersection is on 'DOT's on-system (SR intersects with off-system roadway) Tier 2 list.



Dunlawton Ave and Village Trail

Similar to the intersection of Nova Rd and Village Trail, this is a major pedestrian crossing intersection for the adjacent residents to access shopping centers, dining plazas and medical facilities. Dunlawton Avenue is a three-lane roadway in each direction with one additional left turn lane and one right-turn-only lane that accesses Village Trail. Village Trail is a one-lane roadway in each direction with one additional left turn lane. The surrounding travel destinations include various restaurants, banks, apartments, houses, and various medical centers. Votran's Routes 4, 12, and 17b serve areas adjacent to the intersection. Heavy pedestrian and vehicle traffic are observed at the location.

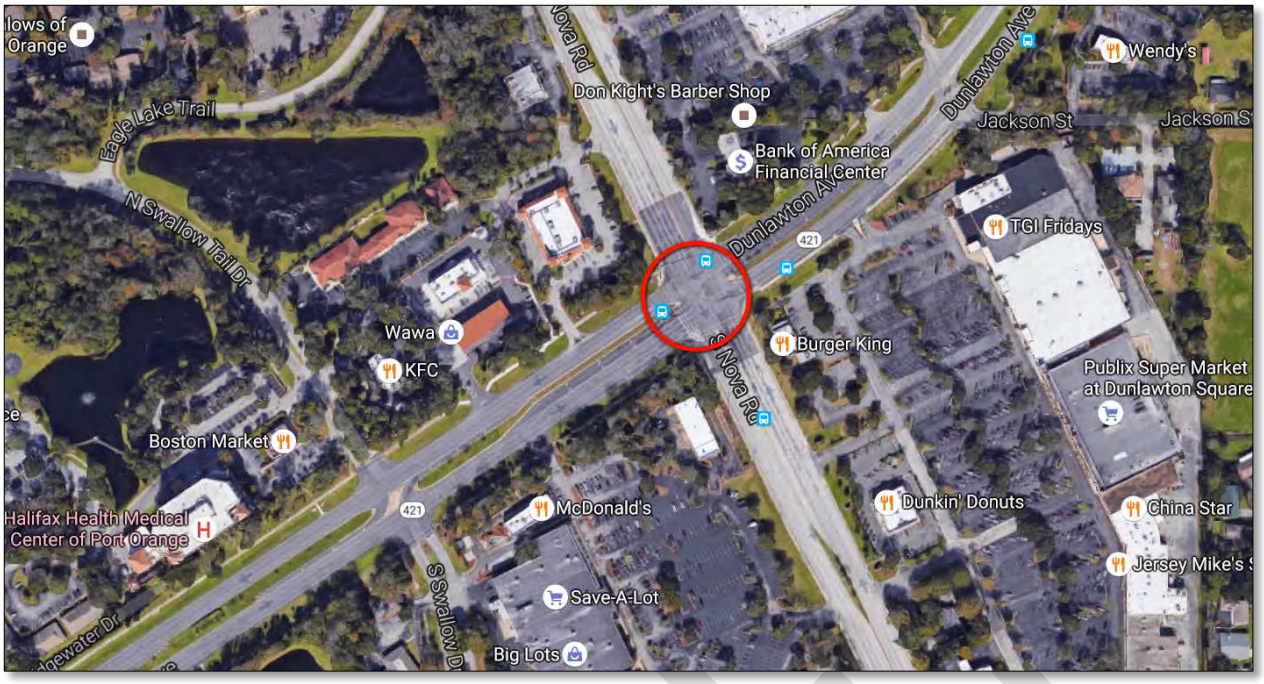
The intersection serves four types of travel origin/destinations, including residential, shopping/dining, medical and transit stops. It reveals a safety concern with a record of pedestrian crashes, but it does not provide a connection to the current APS intersection within a half mile distance. This intersection is not planned on FDOT's APS list.



Dunlawton Ave and Nova Road

This is a major traffic intersection in Port Orange, and it is adjacent to shopping centers and dining plazas. Nova Road is a two-lane roadway in each direction with one additional left turn lane and one right-turn-only lane. Dunlawton Avenue is a three-lane roadway in each direction with one additional left turn lane. The surrounding travel destinations include various restaurants, Dunlawton Shopping Square, banks, and the Halifax Health Medical Center of Port Orange on the far west side. Votran's Routes 7, 17b and 40 serve the areas adjacent to the intersection. Heavy pedestrian and vehicular traffic are observed at this location.

The intersection serves four types of travel origin/destinations, including shopping/dining, medical and transit stops. It reveals a safety concern with a record of pedestrian crashes, but it does not provide a connection to the current APS intersection within a half mile distance. This intersection is on FDOT's on-system (all State Route) Tier 1 list.



Clyde Morris Blvd and Madeline Ave

This is a major pedestrian crossing intersection for the adjacent residents to access shopping and dining centers. High vehicular traffic is observed on both roadways. Clyde Morris Blvd is a two-lane roadway in each direction with one additional left turn lane. Madeline Avenue is a one-lane roadway in the east direction of Clyde Morris Blvd, with one additional left turn lane and one additional right-turn-only lane. It becomes a wider two-lane roadway to the west direction after crossing Clyde Morris Blvd. The surrounding travel destinations include various restaurants, Walmart Neighborhood Market, a bank, CVS Pharmacy and residential apartments. Votran's Route 12 serves on Clyde Morris Blvd, providing trips from/to the Walmart and the residential areas.

The intersection serves three types of travel origin/destinations, including residential, shopping/dining, and transit stops. It reveals a safety concern with a record of pedestrian crashes, but it does not provide a connection to the current APS intersection within a half mile distance. This intersection is not planned on FDOT's APS list.

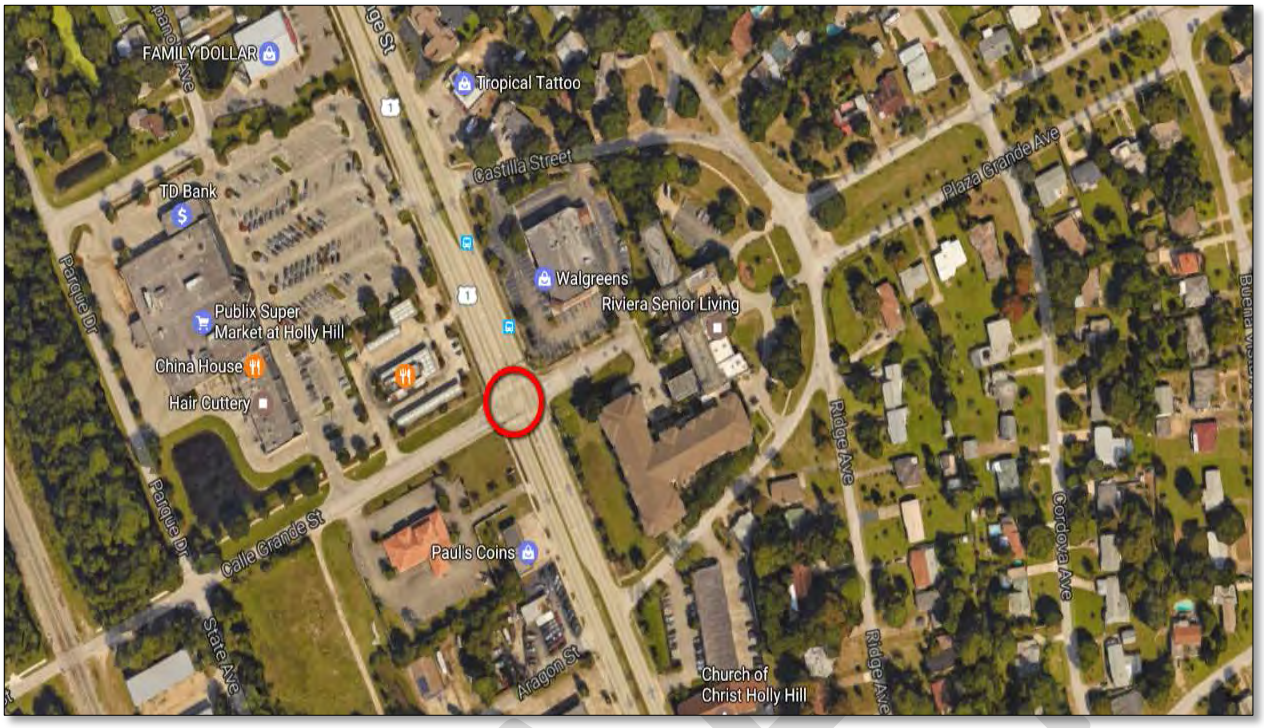

The Groves
Trustco Bank
Subway
Groves Apartments
Southampton
CVS Pharmacy
S Clyde Morris Blvd
Madeline Ave
Madeline Ave
MoneyGram
McDonald's
Walmart
Neighborhood Market
Book Rack
Luigi's

Holly Hill

US 1 and Calle Grande

This intersection is surrounded by residential, commercial and recreational areas. US 1 is a two-lane roadway in each direction with an additional left-turn lane and Calle Grande St is a one-lane roadway with an additional left-turn lane. The pedestrian crossing at this intersection serves the surrounding residents, a senior living complex, a shopping center and restaurants, and it also provides access to Riviera Park on the east side within a half mile distance. Votran's Route 3 serves US 1 at this location.

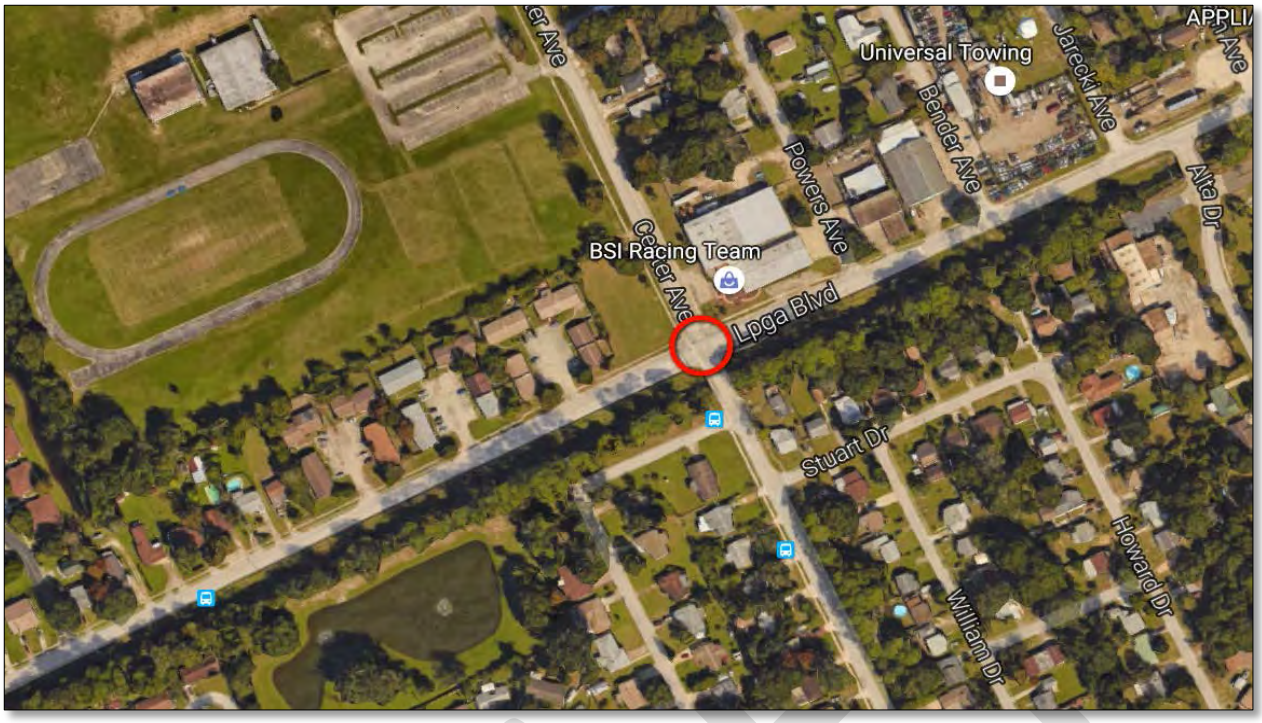
The intersection serves four types of travel origin/destinations, including residential, shopping/dining, and recreational and transit stops. The intersection does not reveal a safety concern with a record of pedestrian crashes, and the medium level of population density surrounding this intersection may indicate a medium level of pedestrian activities.



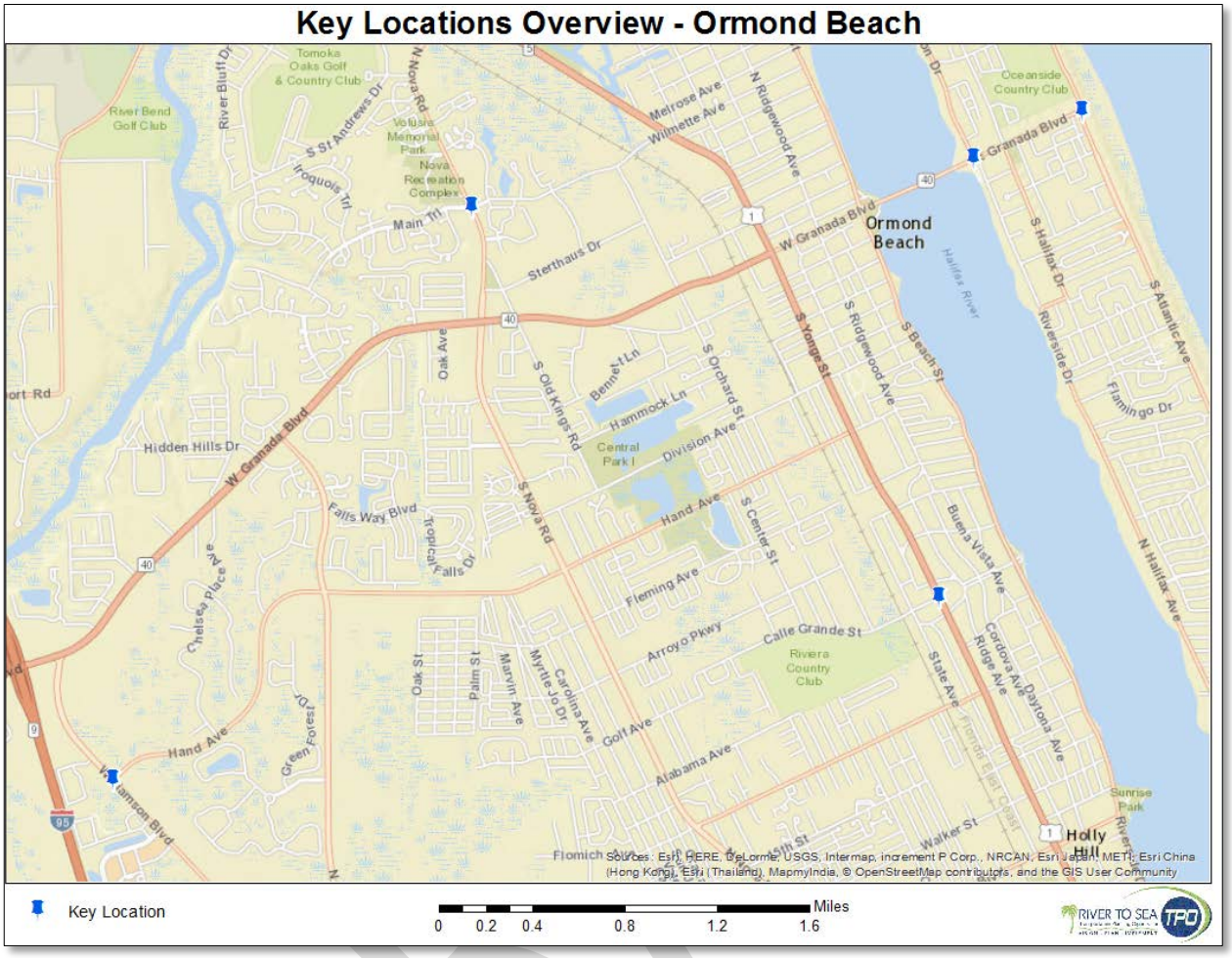
LPGA Blvd and Center Ave

This location is in a residential area. Both LPGA Blvd and Center Avenue have one-lane roadways in each direction with an additional left-turn lane. The pedestrian crossing at this intersection serves the surrounding residents, and there is a recreational field adjacent to the intersection. Votran's Route 5 serves this area of the residential community.

The intersection serves three types of travel origin/destinations, including residential, recreational and transit stops. It reveals a safety concern with a record of pedestrian crashes. In addition, it provides a connection to the current APS intersection within a half mile distance. This intersection is not planned on FDOT's APS list.


Universal Towing
Jarecki Ave
Bender Ave
Powers Ave
Alta Dr
BSI Racing Team
Ceder Ave
Lpga Blvd
Stuart Dr
Howard Dr
William Dr

Ormond Beach



Williamson Blvd and Hand Ave

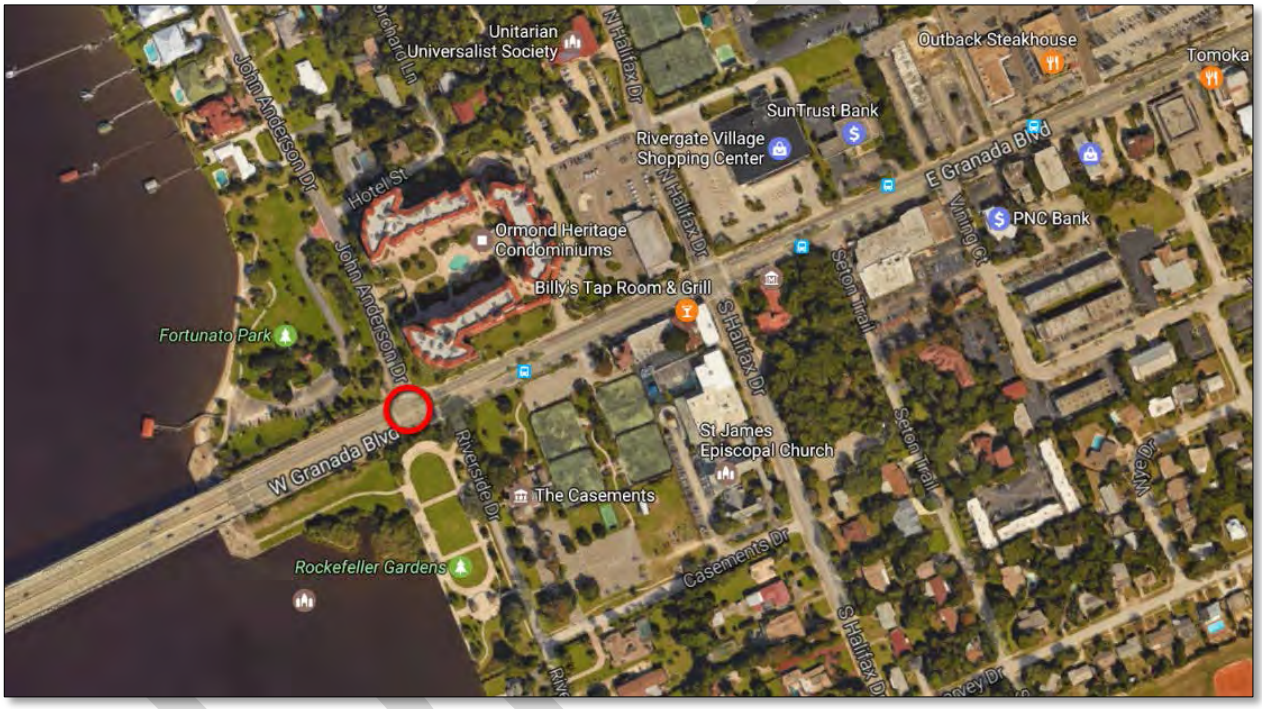
This intersection provides residents local access to transit stops that connect to the shopping center and restaurants in the northern direction and a hospital in the southern direction. Williamson Blvd is a two-lane roadway in each direction, and Hand Avenue is a one-lane roadway with an additional left-turn lane onto Williamson Blvd. The location is accessible by residents from two adjacent apartment complexes, and the surrounding destinations include a café, food market and a US Post Office. Votran Routes 6, 18 and 19 serve this location, providing trips that take the residents to the northern Ormond Towne Square, Walmart Supercenter and surrounding restaurants, as well as the southern Florida Hospital Memorial Medical Center.

The intersection serves four types of travel origin/destinations, including residential, shopping/dining, and medical and transit stops. It reveals a safety concern with a record of pedestrian crashes, but it does not provide a connection to the current APS intersection within a half mile distance. This intersection is not planned on FDOT's APS list.

John Anderson Dr and Granada Blvd

Granada Blvd is major roadway corridor in Ormond Beach with a two-lane roadway in each direction and one additional left turn lane. John Anderson Dr is a one-lane roadway. The surrounding travel destinations include a condominium complex, various restaurants and shopping center, a tennis center and recreational parks along the Halifax River. Votran Routes 1, 18 and 19 serve along Granada Blvd, providing trips on this major corridor.

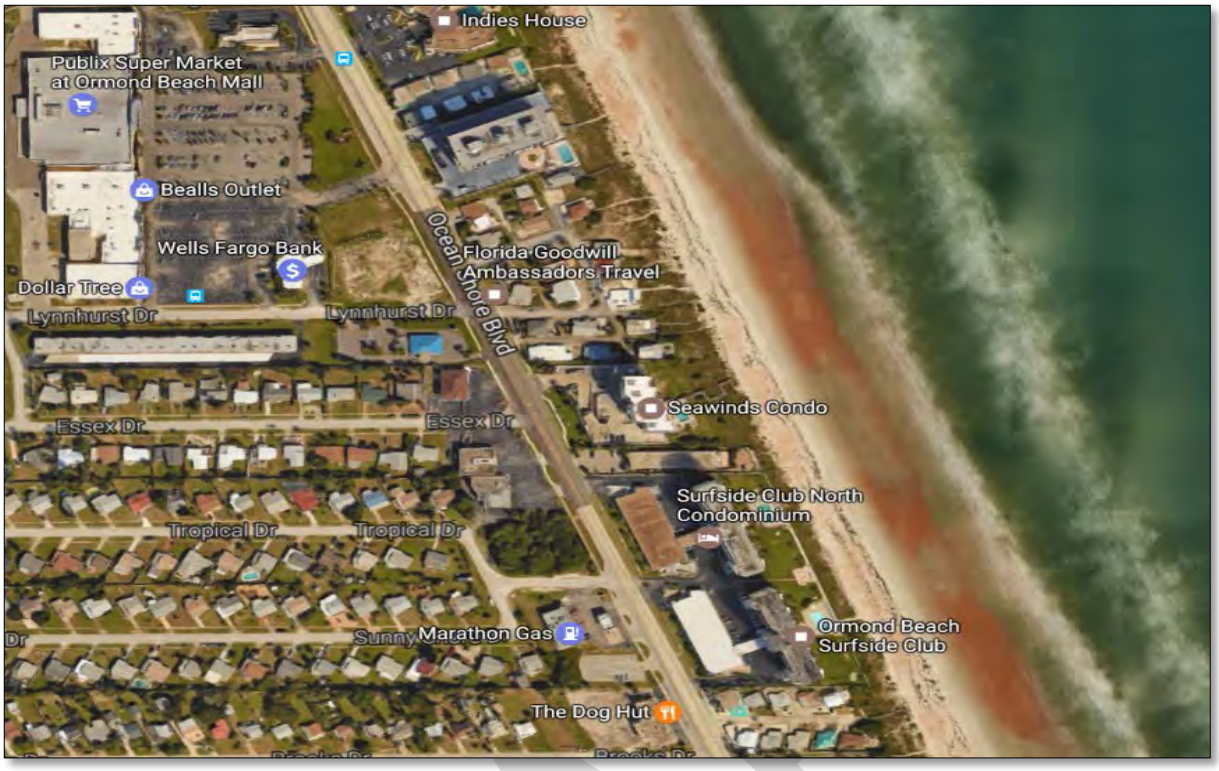
The intersection serves four types of travel origin/destinations, including residential, shopping/dining, bus stops and recreational. The intersection does not reveal a safety concern with a record of pedestrian crashes, and the medium level of population density surrounding this intersection may indicate a medium level of pedestrian activities.

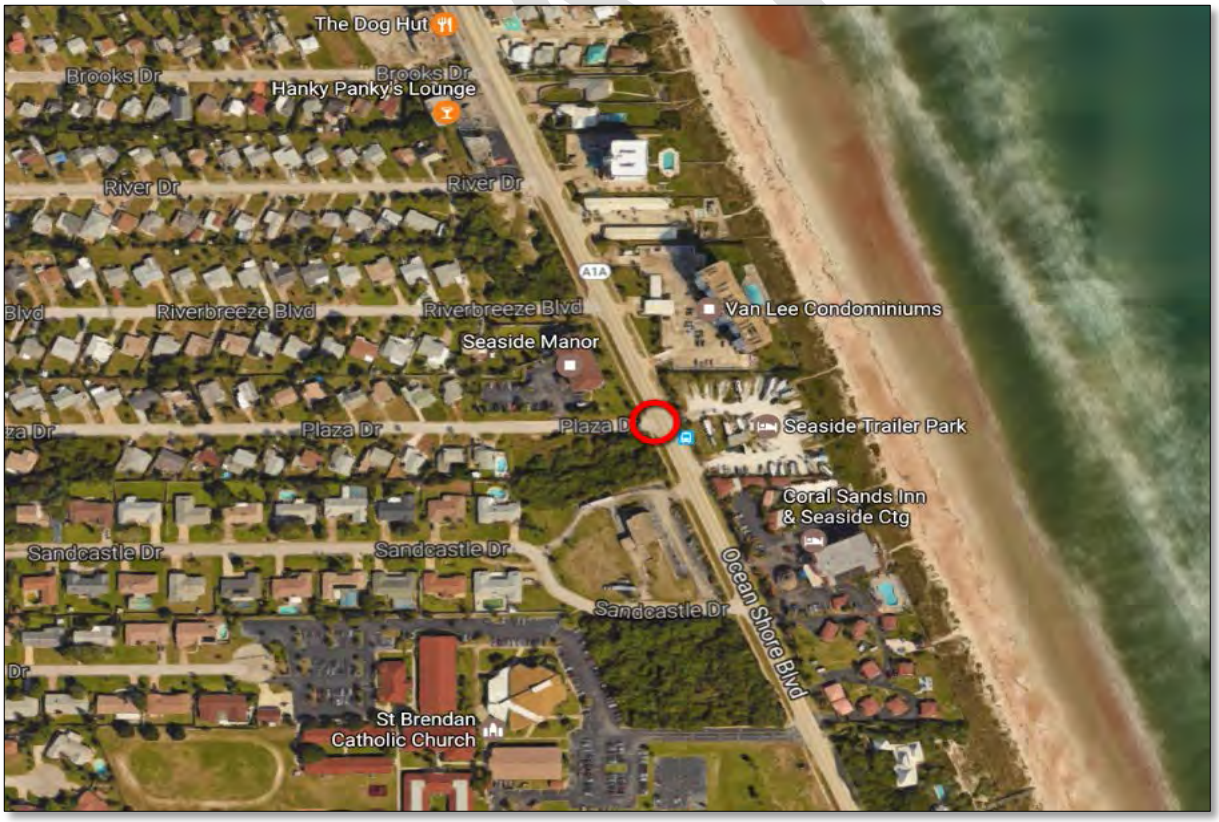


A1A and Plaza Dr

A1A is major roadway corridor along the beach side in Ormond Beach with a one-lane roadway in each direction, and Plaza Dr is a one-lane local street. The surrounding travel destinations include residential houses, condominiums complexes, a church, various hotels, shopping center and restaurants within a half mile to the north, and the beach side to the east. Votran Route 1 serves along A1A, providing trips on the corridor.

The intersection serves four types of travel origin/destinations, including residential, shopping/dining, bus stops and recreational. The intersection is on a tourism route near the beach side. It does not reveal a safety concern with a record of pedestrian crashes, and the medium level of population density surrounding this intersection may indicate a medium level of pedestrian activities.

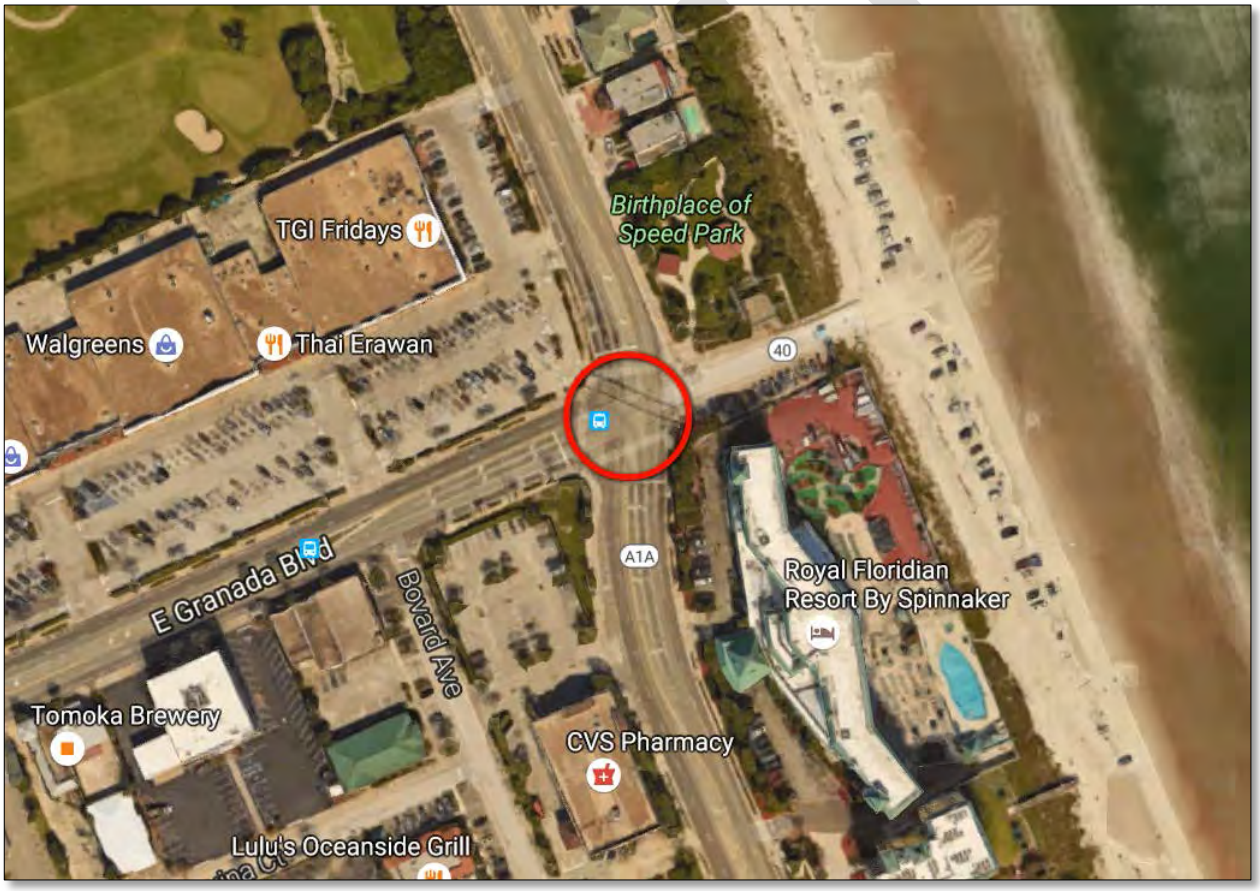

Indies House
Publix Super Market at Ormond Beach Mall
Bealls Outlet
Wells Fargo Bank
Dollar Tree
Florida Goodwill
Ambassadors Travel
Ocean Shore Blvd
Lynnhurst Dr
Lynnhurst Dr
Seawinds Condo
Essex Dr
Essex Dr
Surfside Club North Condominium
Tropical Dr
Tropical Dr
Sunny
Marathon Gas
Ormond Beach Surfside Club
The Dog Hut


The Dog Hut
Brooks Dr
Brooks Dr
Hanky Panky's Lounge
River Dr
River Dr
A1A
Riverbreeze Blvd
Riverbreeze Blvd
Van Lee Condominiums
Seaside Manor
Plaza Dr
Plaza Dr
Seaside Trailer Park
Coral Sands Inn & Seaside Ctg
Sandcastle Dr
Sandcastle Dr
Sandcastle Dr
Ocean Shore Blvd
St Brendan Catholic Church

A1A and Granada Blvd

This intersection provides major beach access for both pedestrians and vehicles and is also a major tourism destination in Ormond Beach. A1A is a two-lane roadway in each direction with two additional turn lanes, and Granada Blvd is a two-lane roadway including one-lane access to the beach, with two additional left-turn lanes onto A1A. The surrounding travel destinations include a major hotel resort, Granada Plaza Shopping center, the Birthplace of Speed Park and a CVS Pharmacy. The residential area is located to the southwest of this intersection. Votran Routes 1, 18 and 19 serve this location, providing transportation along both major corridors of Granada Blvd and A1A.

The intersection serves four types of travel origin/destinations, including residential, shopping/dining, and recreational and transit stops. It reveals a safety concern with a record of pedestrian crashes, but it does not provide a connection to the current APS intersection within a half mile distance. This intersection is not planned on FDOT's APS list.

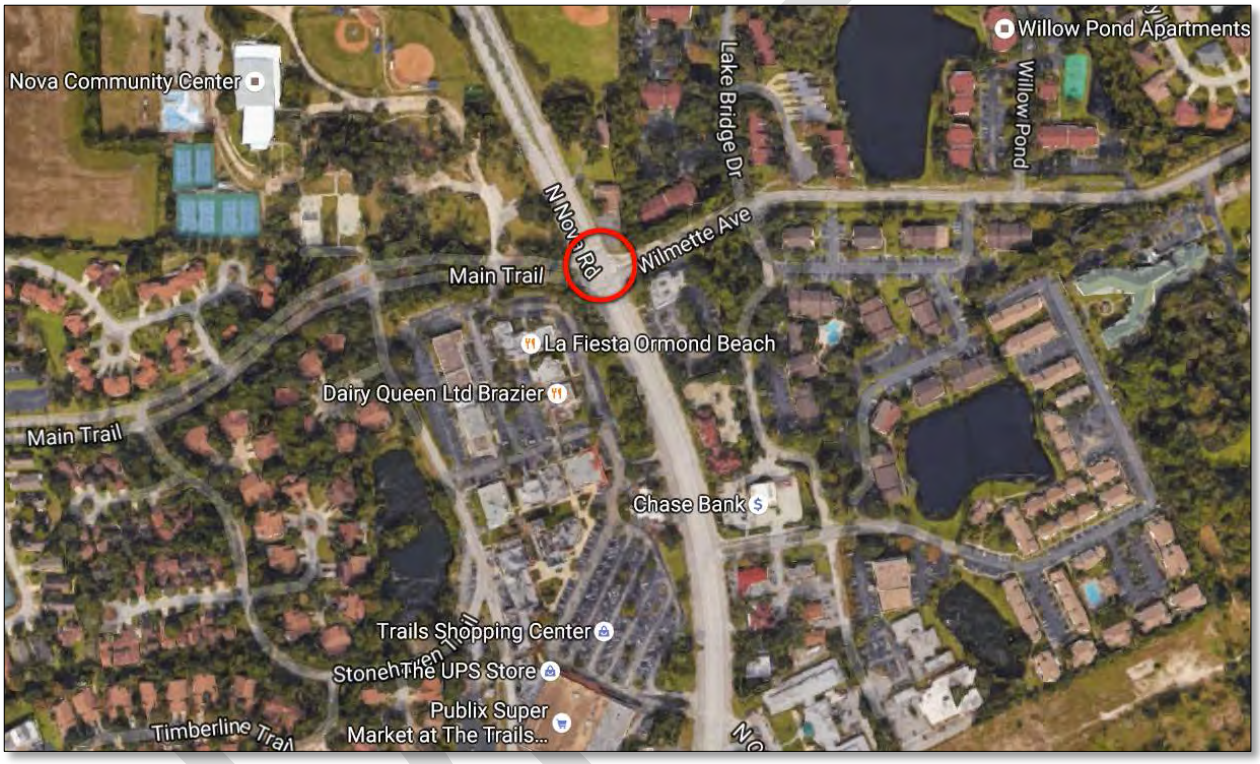


Nova Rd and Wilmette Ave

This intersection provides residents local access across a major corridor, Nova Road, to transit connections and shopping centers. Nova Road is a two lane roadway with an additional left-turn lane into the residential areas through Wilmette Avenue. The location is surrounded by multiple housing and apartment communities, such as Gran Villa of Ormond Beach, Willow Pond Apartments,

Wildwood Villas, Woodridge and others. The surrounding destinations for residents include restaurants, banks and shopping centers at the southwest corner of the intersection along Nova Road. In addition, Wilmette Avenue becomes Main Trail on the west side of Nova Road, connecting to multiple short community trails that provide recreational use for residents. Votran Route 6 serves this location, providing trips that take the residents to the above-mentioned travel destinations, as well as a major corridor connection to Granada Blvd which is in the far south.

The intersection serves four types of travel origin/destinations, including residential, shopping/dining, and recreational and transit stops. It reveals a safety concern with a record of pedestrian crashes, and it also provides a connection to the current APS intersection within a half mile distance. This intersection is not planned on FDOT's APS list.

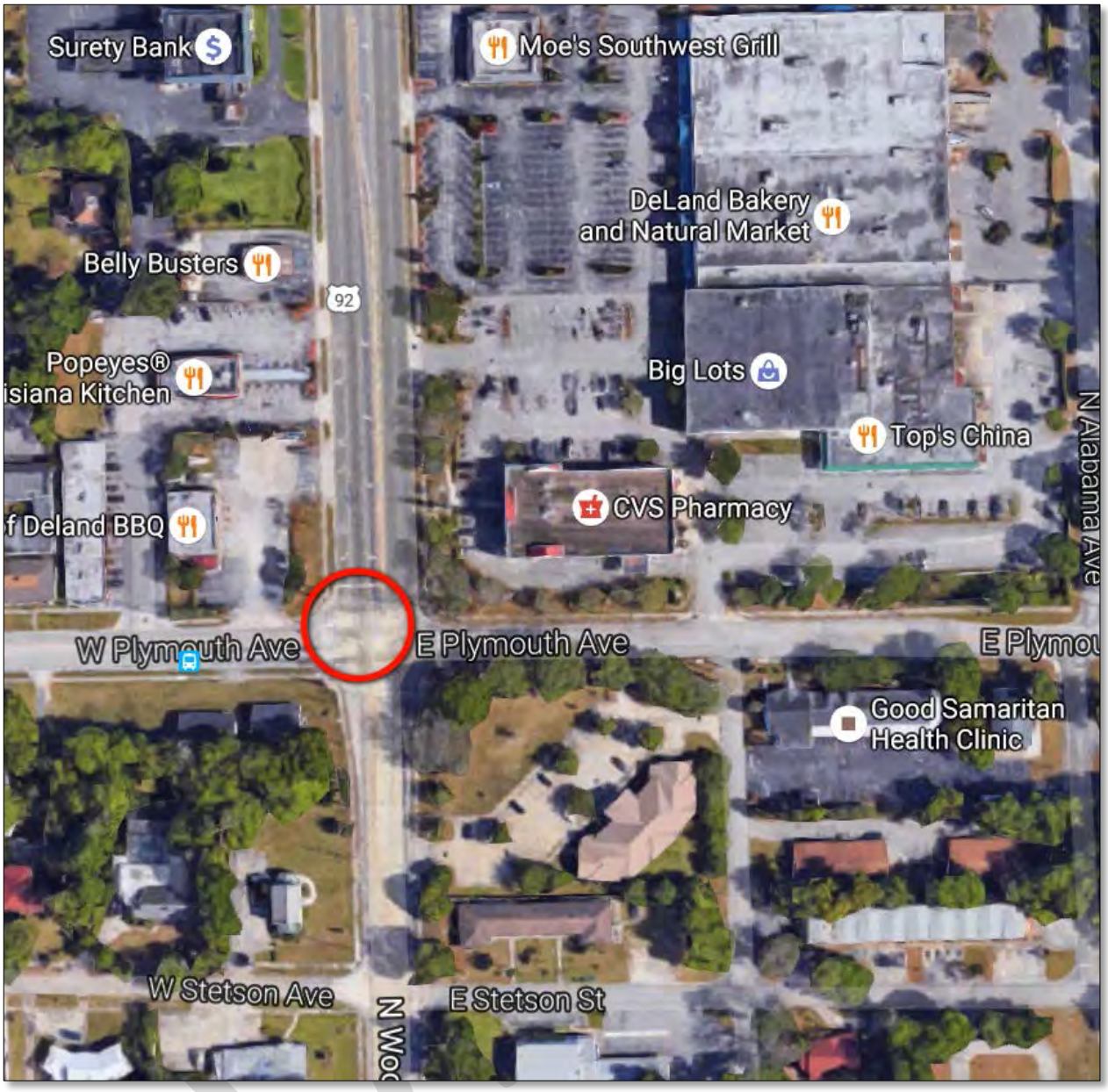


DeLand

US17/92 and Plymouth Ave

This is a major intersection near Stetson University. US 17/92 (Woodland Blvd) is a major north-south corridor in DeLand, while Plymouth Avenue is a one-lane roadway with an additional left-turn lane. The surrounding destinations for residents include various restaurants, Big Lots, CVS Pharmacy, Good Samaritan Health Clinic, and North Boulevard Church of Christ. Pedestrian traffic is generated from the University's student residents near this location. Votran Routes 20 and 31 stops are near this location, connecting Stetson University to the south, commercial areas to the north, and Florida Hospital in DeLand to the west.

The intersection serves three types of travel origin/destinations, including residential, shopping/dining, and transit stops. It reveals a safety concern with a record of pedestrian crashes, but it does not provide a connection to the current APS intersection within a half mile distance. This intersection is not planned on FDOT's APS list.

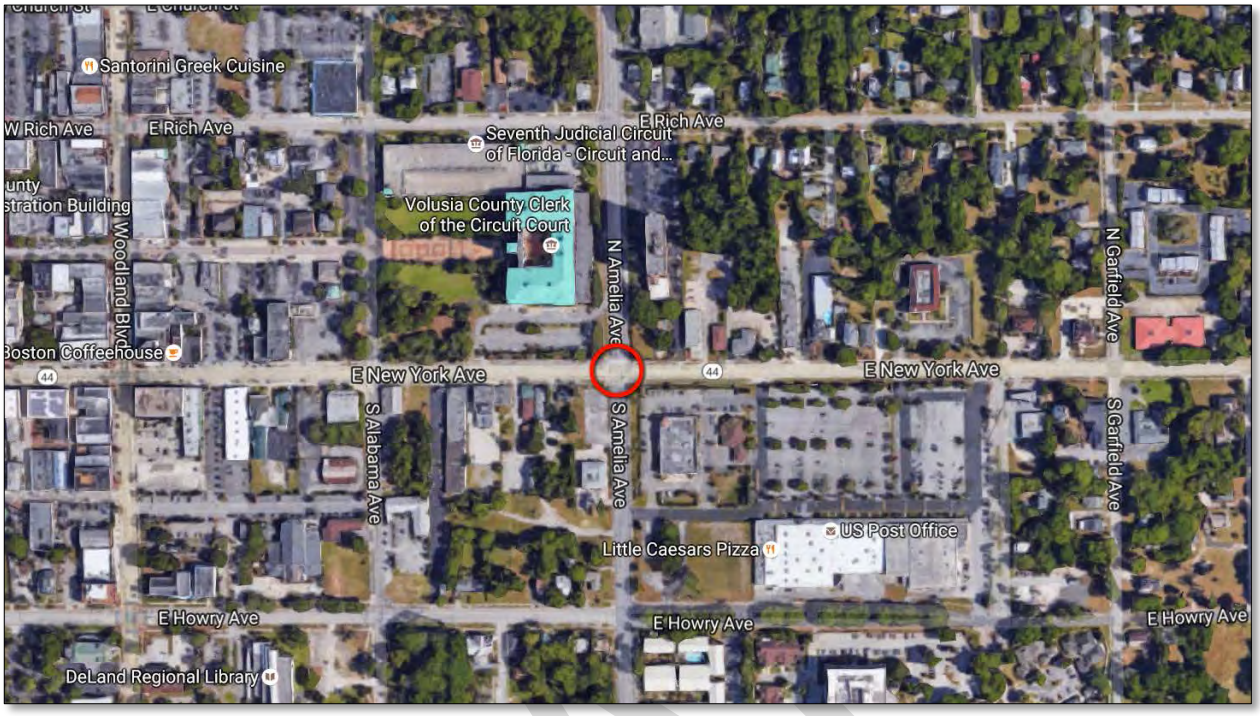


Amelia Ave and SR 44 (New York Ave)

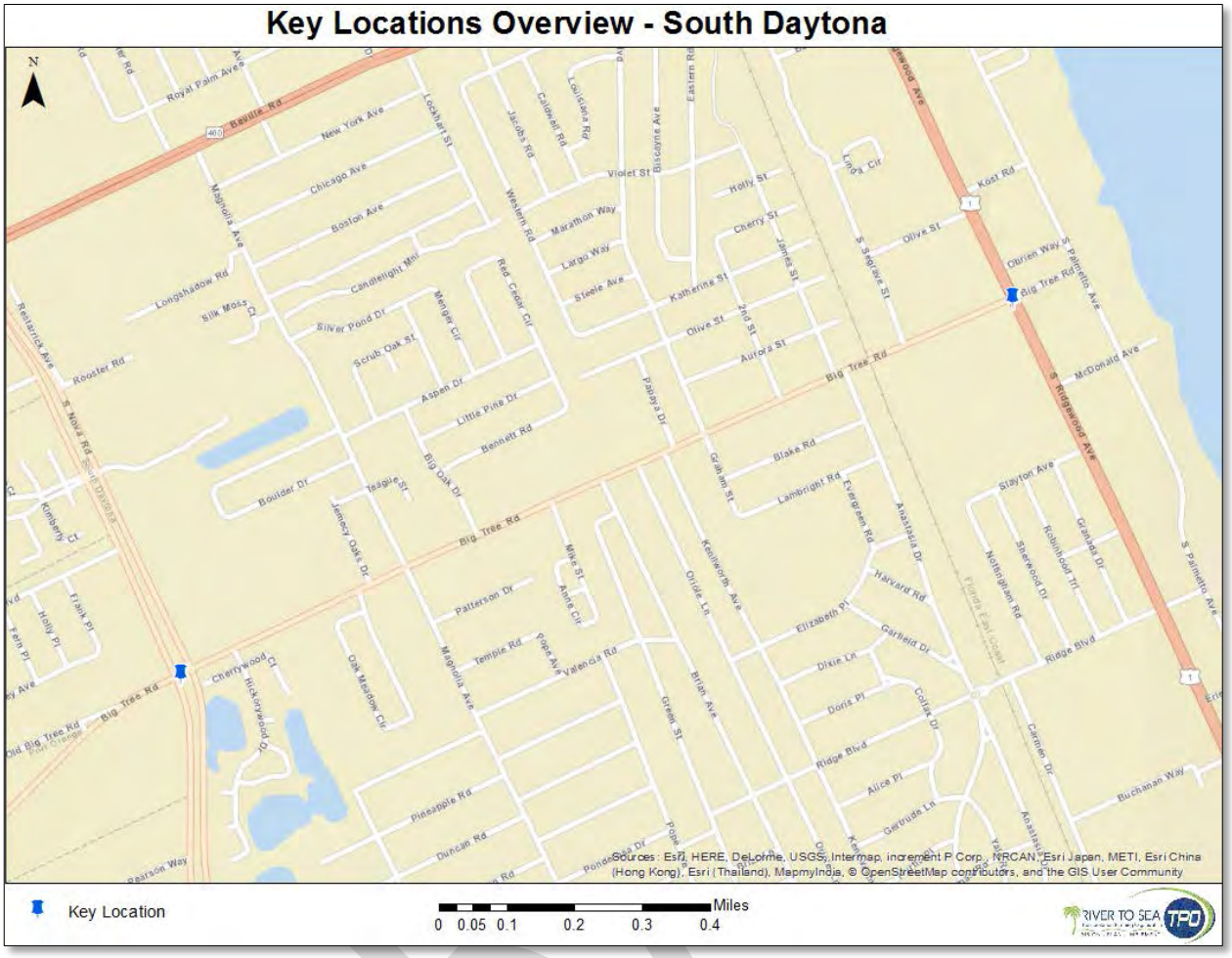
This is a major intersection near Stetson University. US 17/92 (Woodland Blvd) is a major north-south corridor in DeLand, while Plymouth Avenue is a one-lane roadway with an additional left-turn lane. The surrounding destinations for residents include various restaurants, Big Lots, CVS Pharmacy, Good Samaritan Health Clinic, and North Boulevard Church of Christ. Pedestrian traffic is generated from the University's student residents near this location. Votran Routes 20 and 31 stops are near this location, connecting Stetson University to the south, commercial areas to the north, and Florida Hospital in DeLand to the west.

The intersection serves three types of travel origin/destinations, including residential, shopping/dining, and transit stops. It reveals a safety concern with a record of pedestrian crashes, but

it does not provide a connection to the current APS intersection within a half mile distance. This intersection is not planned on FDOT's APS list.



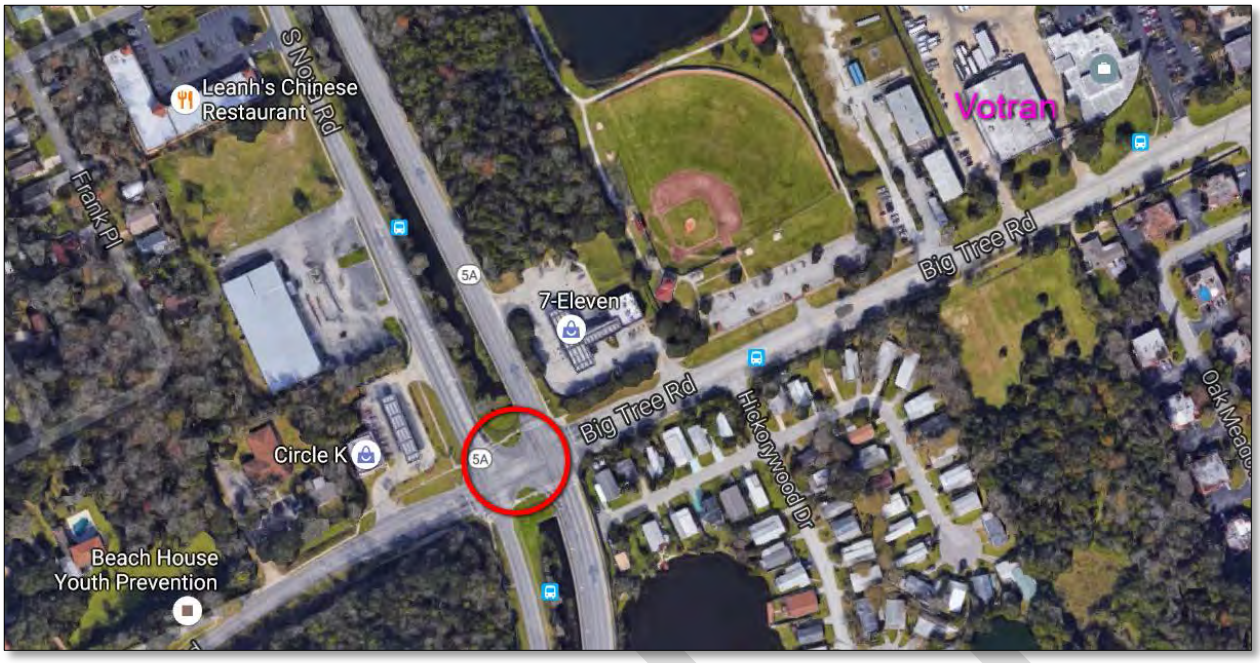
South Daytona



Nova Rd and Big Tree Rd

This is a high vehicle traffic volume intersection. Nova Road is a three-lane roadway in the northern direction and a two-lane roadway in the southern direction with one additional left turn lane. Big Tree Road is a one-lane roadway in each direction with one additional left turn lane and one additional right-turn-only lane. The surrounding areas are mainly residential houses and apartments surrounded by two convenience stores and a recreational park. Votran's office building is located within one quarter mile to the east of the intersection, and pedestrians can use this intersection crossing to access the Votran building for ticket purchases. Route 7 serves near this location.

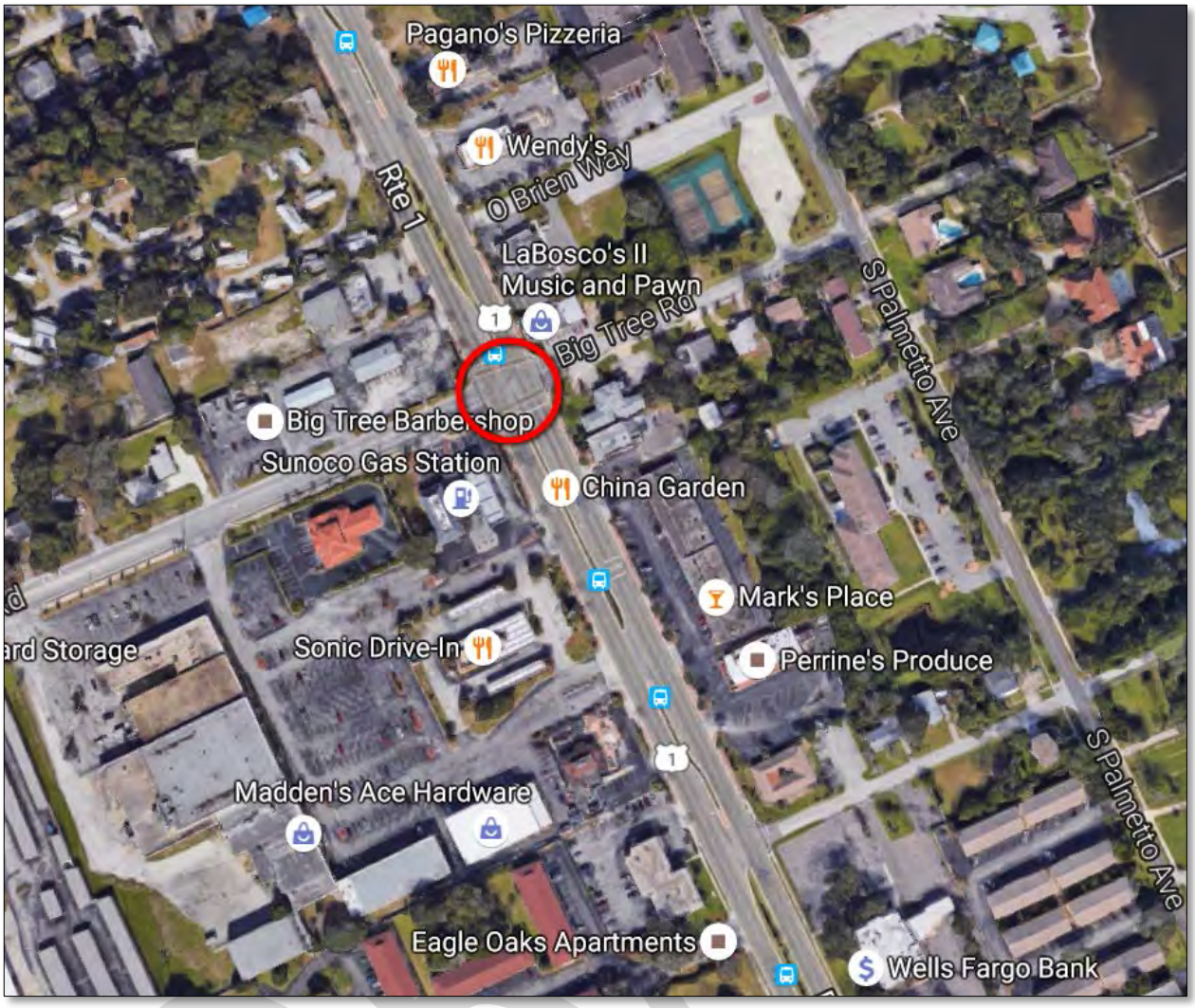
The intersection serves three types of travel origin/destination, including residential, recreational, and transit stop. It reveals a safety concern with the record of pedestrian crash, but it does not provide connection to the current APS intersection within a half mile distance. This intersection is on FDOT On-system (SR intersects with off-system roadway) Tier 2 list.



US 1 and Big Tree Rd

US 1 (Ridgewood Avenue) is major roadway corridor in South Daytona with a two-lane roadway in each direction and one additional left turn lane, and Big Tree Road is a one-lane roadway in each direction with one additional left turn lane. The surrounding destinations for travel include various restaurants, a barbershop, a produce store and residential houses and apartments. Votran Route 4 serves along US 1, providing trips on this major corridor.

The intersection serves three types of travel origin/destination, including residential, shopping/dining, and transit stop. It reveals a safety concern with the record of pedestrian crash, but it does not provide connection to the current APS intersection within a half mile distance. This intersection is on FDOT On-system (SR intersects with off-system roadway) Tier 2 list.

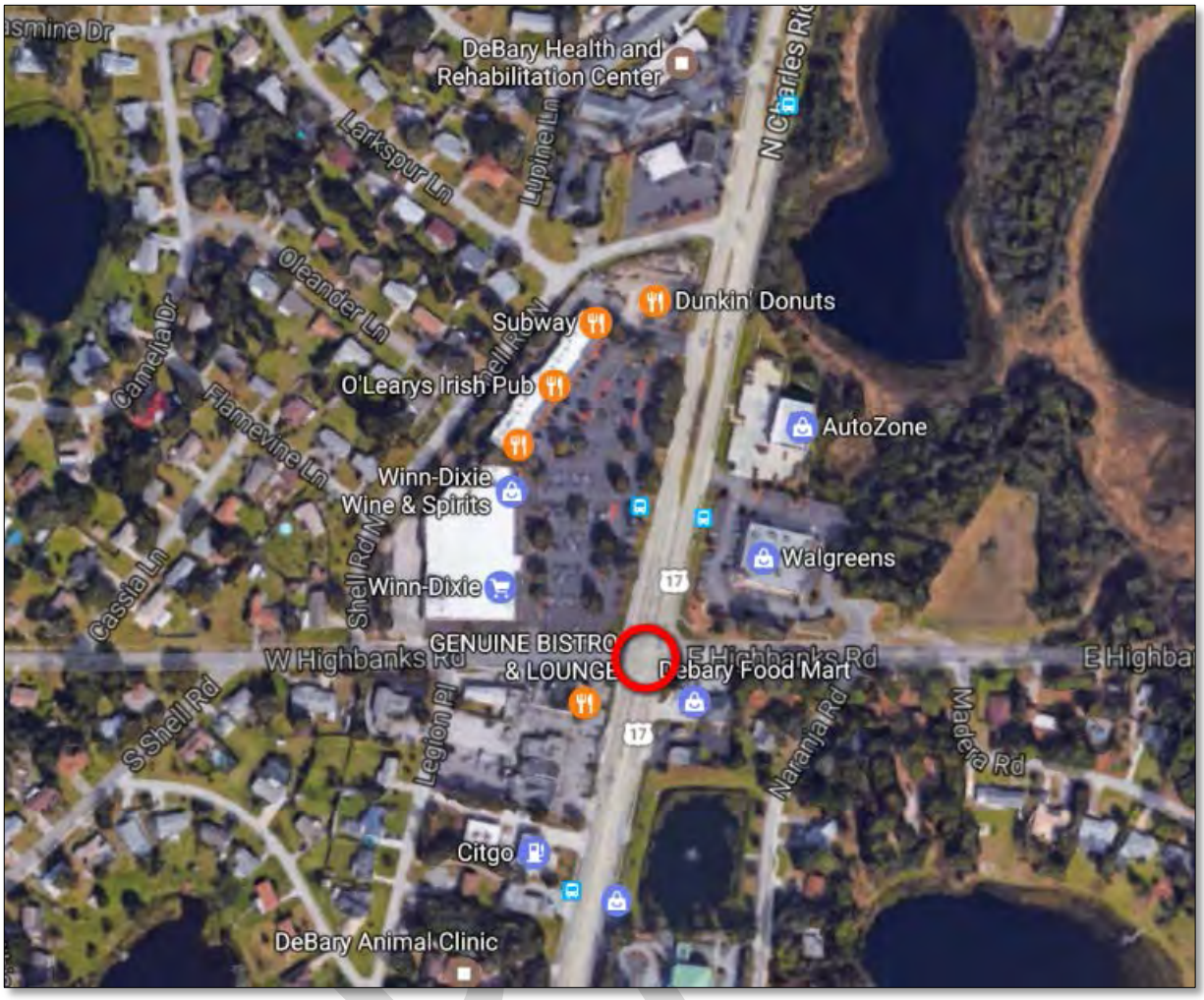

Pagano's Pizzeria
Wendy's
O Brien Way
Rte 1
LaBosco's II
Music and Pawn
Big Tree Rd
S Palmetto Ave
Big Tree Barbershop
Sunoco Gas Station
China Garden
Mark's Place
Sonic Drive-In
Perrine's Produce
Madden's Ace Hardware
Eagle Oaks Apartments
Wells Fargo Bank

DeBary

US 17/92 (S Charles Richard Beall Blvd) and Highbanks Rd

US 17/92 (S Charles Richard Beall Blvd) is major roadway corridor in DeBary with a two-lane roadway in each direction and one additional left turn lane, and Highbanks road is a one-lane roadway in each direction with one additional left turn lane. The surrounding travel destinations include various restaurants and shops, a health center within ½ mile in the north, and residential houses. Votran Route 23, 31, 32 and 33 serve along US 17/92, providing trips on this major corridor.

The intersection serves four types of travel origin/destination, including residential, shopping/dining, medical facility and bus stops. The intersection does not reveal a safety concern with the record of pedestrian crash, and the medium level of population density surrounding this intersection may indicate medium level of pedestrian activities.


DeBary Health and Rehabilitation Center
Larkspur Ln
Lupine Ln
N Charles Rd
Oleander Ln
Camelia Dr
Subway
Dunkin' Donuts
O'Learys Irish Pub
Flamevine Ln
AutoZone
Winn-Dixie Wine & Spirits
Shell Rd N
Walgreens
Cassia Ln
Winn-Dixie
17
W Highbanks Rd
GENUINE BISTRO & LOUNGE
Debary Food Mart
E Highbanks Rd
E Highba
S Shell Rd
Legion Pl
Naranja Rd
Madera Rd
Citgo
DeBary Animal Clinic

APPENDIX C: Sample Project Communication Letter from Division for Blind Services

On behalf of the Florida Division of Blind Services, the FDOT District Office and the Daytona Beach Rehabilitation Center for the Blind and Visually Impaired, I am pleased to review your project plans to make improvements to the intersection of _____ and offer this letter recommending the addition/upgrading of Accessible Pedestrian Signals (APS) devices at your project's intersection.

Well-designed and maintained intersections with appropriate crosswalks, traffic signals and curb features are critical in promoting safe access to essential services to all citizens and visitors, and in particular to the blind and visually impaired.

The Deltona-Daytona Beach-Ormond Beach area has been identified as the 5th most dangerous for pedestrians in the 2016 Pedestrian Danger Index(PDI) (Smart Growth America and National Complete Streets Coalition, 2017). The Florida Department of Transportation has identified the intersection where your proposed work will occur as a Tier _____ area of concern (cite), and the River to Sea Transportation Planning Organization's Accessible Pedestrian Signal (APS) Action Plan has recommended installation of Accessible Pedestrian Signal devices at your project location by a consortium of community members and service providers.

In addition, the Americans with Disabilities Act (ADA) requires sidewalks to be in compliance for providing accessible pedestrian services to individuals. We believe that the addition/upgrade of APS devices and accessible sidewalks at the proposed project location is required for safe access at _____ , and we heartily request these above-mentioned APS improvements to be made.

Should you have any concerns with our recommendations, please contact the Daytona Beach Rehabilitation Center for the Blind and Visually Impaired for a more detailed discussion.

APPENDIX D: Accessible Pedestrian Signals and Pedestrian Activated Signals at Roundabouts

Information is quoted from both United States Access Board and Pedestrian Safety Guide and Countermeasure Selection System from U.S. Department of Transportation.

What are roundabouts?

A roundabout is a circular intersection with yield control at entry, which permits a vehicle on the circulatory roadway to proceed, and with deflection of the approaching vehicle counter-clockwise around a central island (MUTCD section 1A.13).

Unlike traditional signalized and stop-controlled intersections, vehicles generally flow and merge through roundabouts without having to stop; therefore, roundabouts should be designed for slow speeds and geometry that facilitates motor vehicles yielding to pedestrians and bicyclists.

Figure D-1 Overlook of a modern roundabout design

Source: Designing for Pedestrian Safety

How does the roundabout affect visually-impaired pedestrians?

The continuous traffic flow at roundabouts removes many of the audible cues that pedestrians who are blind use to navigate pedestrian street crossings. At new roundabouts with multi-lane pedestrian street crossings, the proposed guidelines require pedestrian activated signals to be provided for each multi-lane segment of each crossing, including the splitter island (see R206 and R306.3.2). The

pedestrian activated signals are required to comply with the MUTCD standards for accessible pedestrian signals and pedestrian pushbuttons.

ADA compliant pedestrian crosswalks and curb ramps should be provided at least 20 feet from the entry of the roundabout to give room for a vehicle to stop prior to the crosswalk but outside of the circulatory roadway. Channelization islands at the approaches can help slow vehicles and allow pedestrians to cross one direction of travel at a time. At-grade pedestrian cut-throughs should be provided at channelization islands with ADA compliant detectable warning strips.

Roundabouts present unique challenges for individuals with visual disabilities. Because traffic is governed by yield-control entry, as opposed to stop or signal control, pedestrians with visual disabilities must not only decide when to cross the road, but they also have to determine where and which direction to cross. Wayfinding and gap selection cues need to be adequately addressed in roundabout designs. Accessible pedestrian signals should also be considered for all crosswalks at single lane roundabouts, and are required for multilane roundabouts in accordance with the draft Public Right-of-Way Accessibility Guidelines (PROWAG).

What is a possible solution with Pedestrian Hybrid Beacons?

Pedestrian Hybrid Beacons can be used at roundabouts (see MUTCD sections 4F.01 through 4F.03). Pedestrian Hybrid Beacons are traffic signals that consist of a yellow signal centered below two horizontally aligned red signals. The signals are normally dark (i.e., not illuminated) and are initiated only upon pedestrian activation; they can be timed to minimize the interruption of traffic. The signals cease operation after the pedestrian clears the crosswalk. When activated by a pedestrian, the following signals are displayed to drivers: a flashing yellow signal, then a steady yellow signal, then two steady red signals during the pedestrian walk interval, andfinally an alternating flashing red signal during the pedestrian clearance interval.

References

Accessible Pedestrian Signals: A Guide to Best Practices (2010). http://www.apsguide.org/chapter_overview.cfm

Smart Growth America and National Complete Streets Coalition (January 2017). Dangerous by Design 2016.

Iacono et al. (2008). Access to Destinations: How Close is Close Enough? Estimating Accurate Distance Decay Functions for Multiple Modes and Different Purposes. http://www.lrrb.org/PDF/200811.pdf

Pedestrian Activated Signals at Roundabouts with Multi-Lane Pedestrian Street Crossings (2011). United States Access Board

https://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/background/regulatory-assessment/pedestrian-activated-signals-at-roundabouts-with-multi-lane-pedestrian-street-crossings

Public Right of Way Guidelines, U.S. Access Board, May 2010.

Roundabouts (2013). Pedestrian Safety Guide and Countermeasure Selection System. Prepared for the Federal Highway Administration, Office of Safety by the University of North Carolina Highway Safety Research Center, Vanasse Hangen Brustlin, Inc. and Toole Design Group. http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=25

Rue and Barlow (2000). Accessible Pedestrian Signals. http://library.ite.org/pub/e265363d-2354-d714-51ea-d4c109e9493c