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**Kimley»»Horn**

# Surveys, LiDAR and Maps: How Kimley-Horn Solved Project Collaboration and Asset Management Challenges

*November 16, 2021*

# Introduction



**Erin Emmons, GISP**  
Associate Planner  
Kimley-Horn



# Overview

- Overview of things to consider when mixing multiple data collection approaches
- Online tools for engaging, collaborating, and informing project teams and the public
- Turning your partners/clients into believers (users)
- Lessons learned



# Tool Overview

- ArcGIS StoryMap
- ArcGIS Web AppBuilder
- ArcGIS Dashboards
- ArcGIS Collector/Field Maps
- ArcGIS Survey123
- Google Analytics

# City of Hollywood Bicycle Mobility Plan

## Project Objective

- Community Outreach

## Tools Used

- ArcGIS StoryMap
- ArcGIS Web AppBuilder
- Google Analytics

## Challenges

- Reaching the public
- Documenting interactions

## Lessons Learned

- Understanding Google Analytics reporting
- Leveraging social media



## Message from the Mayor

### Add Your Input to the Bike Mobility Plan

The City of Hollywood is developing a Bicycle Mobility Plan and we want to hear from you! The Plan will build upon the City's existing network of...

<https://www.youtube.com/>



# City of Hollywood Bicycle Mobility Plan



## City of Hollywood Bicycle Mobility Plan

### Project Overview

The City of Hollywood is preparing a citywide Bicycle Mobility Plan. The goal of the multi-faceted plan is to:

- Identify and prioritize specific bicycle mobility projects throughout the City;
- Advance Complete Streets principles in key commercial corridors to enhance safety and convenience for bicyclists;
- Maximize funding opportunities available for urban mobility improvements.

The City of Hollywood has a strong foundation for bicycle mobility. The City has a network of local streets that surround a vibrant, historic downtown, a successful Complete Streets project along Hollywood Boulevard in the expanded urban core, a Comprehensive Citywide Master Plan that supports bicycle mobility, and a world-famous oceanfront promenade, the Hollywood Beach Broadwalk, that is a favorite destination for bicyclists of all levels.

The City's Bicycle Mobility Plan will build on these strengths to create a connected network of safe bicycle facilities to provide mobility and recreation opportunities for both residents and visitors alike.

### Activities



**COMMUNITY ENGAGEMENT**

Provide community input opportunities starting in August 2020.



**CITY COMMISSION MEETINGS**

Engage the City Commission throughout the plan, from vision to implementation.



**EXISTING CONDITIONS INVENTORY**

Conduct an inventory of existing multimodal transportation options within the City.



**COST ESTIMATES & FUNDING**

Prepare budget estimates to identify funding opportunities to projects.



**PRIORITIZATION**

Develop a prioritization process and apply it to the list of capital improvements.



**RECOMMENDED PROJECTS**

Adopt a strategic plan by March 2021 with a coordinated set of bicycle transportation project recommendations.

## Types of Bicycle Facilities



**MULTI-PURPOSE PATH**

Dedicated spaces where most forms of non-motorized transport share the same lane. Open space or a physical barrier separate these paths from vehicular lanes.



**SEPARATED BIKE LANE**

Also known as "Protected Bike Lanes," separated bike lanes offer a vertical barrier that physically separates the bicycle lane from the motor vehicle travel lane. These facilities may be found on the roadway or raised at the sidewalk level.



**BUFFERED BIKE LANE**

Similar to conventional bike lanes, buffered bike lanes include a stripe or painted buffer that increases separation between bicyclists and motorists.



**CONVENTIONAL BIKE LANE**

Consists of a striped lane at the edge of the vehicle lanes and is the most basic form of a dedicated bicycle facility. Green color pavement markings can be provided to enhance bicycle lanes.



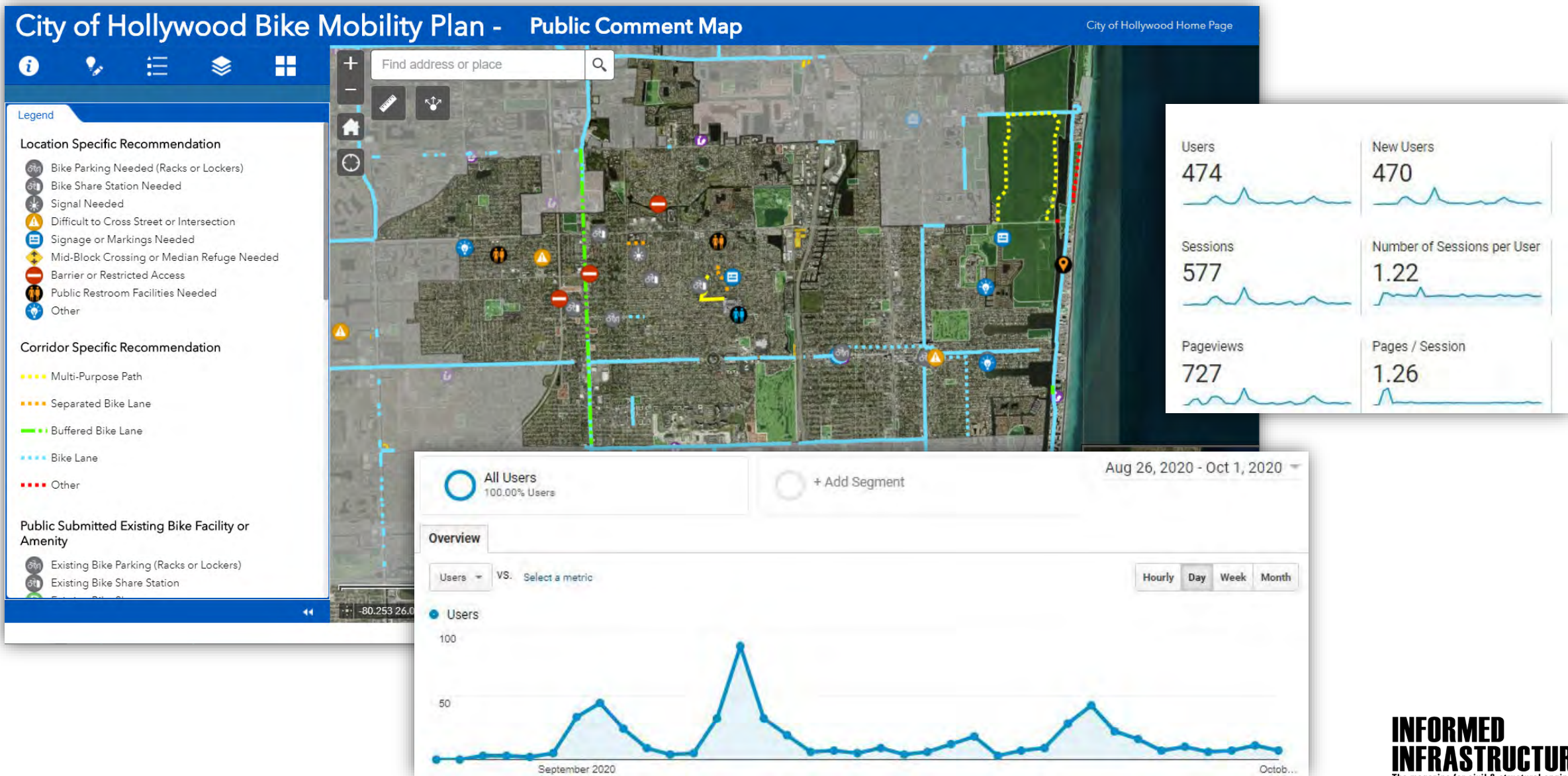
**NEIGHBORHOOD GREENWAYS**

Typically implemented on streets with low motorized traffic volumes and speeds. Street design elements such as signage, pavement markings, and speed management techniques reinforce the priority of bicycle travel along these corridors.

## Your Input Matters!

An interactive Public Comment Map has been created to easily provide recommendations and feedback on the types of projects and bicycle mobility amenities you would like to see in the City of Hollywood. To provide your suggestions, simply select your type of recommendation and drop a pin in the location you would like to see improved.

# City of Hollywood Bicycle Mobility Plan





# FDOT District 4 - Agency Coordination

## Project Objective

- Gather stakeholder and agency feedback for project scoping of state projects

## Tools Used

- ArcGIS Web AppBuilder
- ArcGIS Survey123
- ArcGIS Dashboards

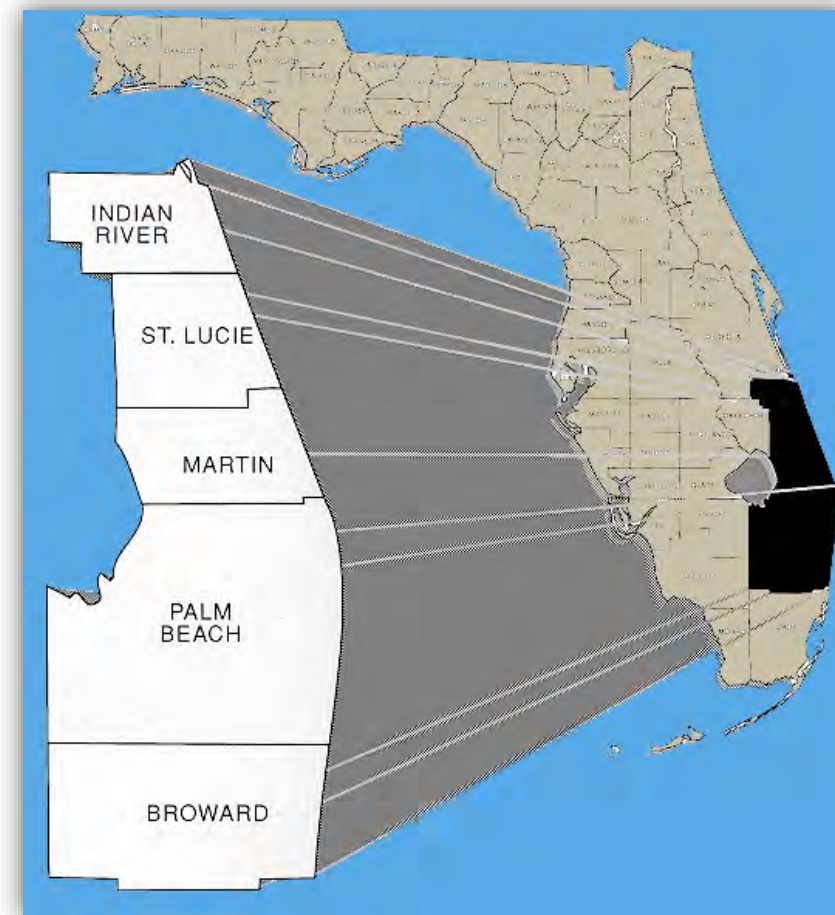
## Challenges

- Overall outreach effort
- Organization and retrieval of submitted comments
- Summarizing submitted information

## Lessons Learned

- Simple is better

Agency Coordination	# of Agencies/ Departments
FDOT OMD	4
MPO/TPA/TPO	5
Transit Agencies	5
School Boards	5
Counties	5
Municipalities	81
<b>Total Contacts</b>	<b>105+</b>



# FDOT District 4 - Agency Coordination

Confirm contact list with FDOT  
Design PM

Agency Responded	Contacts	Email	Phone
<b>County Transit Agency</b>			
Palm Tran	Steve Anderson	sanderson@pbcgov.org	561.841.4246
<b>MPO Bike/Ped Coordinator</b>			
Palm Beach MPO	Valerie Neilson	VNeilson@PalmBeachMPO.org	561.684.4170
<b>Planning Agency</b>			
City of Boynton Beach (Planning & Zoning)	Amanda Parker	ParkerA@bbfl.us	561.742.6256
City of Delray Beach (Planning & Zoning)	Mark Stivers	stiversm@mydelraybeach.com	
Treasure Coast Regional Planning Council	Kim DeLaney	kdelaney@tcrpc.org	772.221.4060
<b>MPO</b>			
Palm Beach MPO	Valerie Neilson	VNeilson@PalmBeachMPO.org	561.684.4170
<b>County School Board Agency</b>			
Palm Beach County School Board	Michael Owens	Michael.Owens.1@palmbeachschools.org	561.882.1938
<b>Local Government Agency</b>			
City of Boynton Beach (Public Works & Engineering)	Jeffrey Livergood	livergoodj@bbfl.us	561.742.6201
City of Delray Beach (Public Works)	John Morgan	morgan@mydelraybeach.com	561.243.7294
<b>Office of Modal Development</b>			
FDOT District 4 Railroad Coordinator	Maurice Borrows	Maurice.borrows@dot.state.fl.us	954.777.4379
FDOT District 4 Freight Coordinator	Jeremy Upchurch	jeremy.upchurch@dot.state.fl.us	954.777.4279
FDOT District 4 Aviation Coordinator	Laurie McDermott	laurie.mcdermott@dot.state.fl.us	954-777-4497
FDOT District 4 Complete Streets Coordinator	Alexander Barr	Alexander.barr@dot.state.fl.us	954.777.4284

Develop hardcopy version of map series.  
Reviewer emails responses via word document questionnaire

**County Transit Agency**  
(Please see attached maps.)

County Transit Agency:  
Contact:  
Email:  
Phone:

**Confirmation**  
Please confirm the following questions.

	Yes	No	Comments
Transit service at or within 1/2 mile of the project corridor or intersection.	✘	✘	
Are there bus shelters located within the project corridor?	✘	✘	

**Questions**  
Please respond to the following questions.

- What projects, improvements, or services does your agency have planned or programmed near or along the project corridor?
- What operational issues (drainage, lighting, signing, safety & etc.) exist that affect transit operations along the project corridor?
- How are the local emergency evacuation plans incorporated?

**Schools within 2 miles of Project**  
FHW 432344-1  
SR 804/Boynton Beach  
from west of Palm Ave Drive to Congress Avenue

Agency responses summarized and submitted to FDOT Design PM

**HIGHLIGHT PAGE**

**Office of Modal Development (OMD)**

Contact: Lisa Maack (Lisa.Maack@dot.state.fl.us) Phone: 954-717-2253

Highlights of the comments received from OMD and agency staff are listed below. Please consider this important input in the development of this project. The entirety of the responses received is contained within this document.

\*\*\*Please acknowledge receipt of comments and make any responses in the box labeled FDOT Design PM and return MPO\*\*\*

Agency	Comments
Local Planning Agency	<ul style="list-style-type: none"> <li>• Information</li> <li>• Action</li> <li>• Request</li> </ul>
FDOT Design PM	
Local Planning Agency	
FDOT Design PM	The FDOT project manager needs to coordinate with the Broward MPO before contacting the local municipalities to ensure that both agencies (FDOT & MPO) have the same understanding of the project goals. The Broward MPO has had initial conversations/meetings with the respective local government agencies (Danis Beach, Broward County) to gauge support for the project. Please ensure proper coordination with these two agencies to avoid any conflicting impacts with other projects and surrounding development.
MPO	
FDOT Design PM	

# FDOT District 4 - Agency Coordination

**Extent Zoom**

**Search Bar – Search by Project FM# or Address**

**Layer List**

**Add Data**

**Measure**

**Print**

**Legend**

**Basemaps**

**Bookmarks**

**About**

**Share Options**

**Incident Analysis**

**Return to Default Map Extent**

**My Location Finder**

**User Guide**

**Detailed Data Layer Information**

**Individual MMSC Agency Surveys**

**Scale Bar & Map Extent Coordinates**

**Attribute Table**

**Application Help Documents:**  
[MMSC Modal Viewer User Guide](#)  
[List of Tool Layers](#)  
 Links to MMSC Surveys:  
[Aviation](#)  
[County School Board](#)  
[County Transit Agency](#)  
[Freight](#)  
[Local Government Agency](#)  
[Local Planning Agency](#)  
[MPO/TPO/TPA](#)  
[Railroad](#)

Work Mix	FM Number	Location Description	County	Estimated Work Begin Date
Capacity	229004.7	SR-7 FROM SR-704/DKEECHOBEE BLVD TO 60TH STREET	PALM BEACH	01/14/2022
Capacity	413200.1	SR-9A-95 @ PALM BEACH LAKES BLVD	PALM BEACH	12/16/2026
Safety, Bike/Ped, Etc.	429576.6	SR-7AUS-441 TRANSIT CORRIDOR IMPROVEMENTS GROUP/PRIORITY 6	BROWARD	11/11/2024
Safety, Bike/Ped, Etc.	429576.7	SR-7AUS-441 TRANSIT CORRIDOR IMPROVEMENTS	BROWARD	11/16/2026

# FDOT District 4 - Agency Coordination

## ArcGIS Survey123

Confirm contact list with FDOT Design PM

Hardcopy maps series replaced.

Reviewer submits responses online through Modal Viewer, uses Web-based questionnaire

Agency responses summarized and submitted to FDOT Design PM

Agency Responded	Contacts	Email	Phone
<b>County Transit Agency</b>			
Palm Tran	Steve Anderson	sanderson@pbcgov.org	561.841.4246
<b>MPO Bike/Ped Coordinator</b>			
Palm Beach MPO	Valerie Neilson	VNeilson@PalmBeachMPO.org	561.684.4170
<b>Planning Agency</b>			
City of Boynton Beach (Planning & Zoning)	Amanda Parker	ParkerA@bbfl.us	561.742.6256
City of Delray Beach (Planning & Zoning)	Mark Stivers	stiversm@mydelraybeach.com	
Treasure Coast Regional Planning Council	Kim DeLaney	kdelaney@tcrpc.org	772.221.4060
<b>MPO</b>			
Palm Beach MPO	Valerie Neilson	VNeilson@PalmBeachMPO.org	561.684.4170
<b>County School Board Agency</b>			
Palm Beach County School Board	Michael Owens	Michael.Owens.1@palmbeachschools.org	561.882.1938
<b>Local Government Agency</b>			
City of Boynton Beach (Public Works & Engineering)	Jeffrey Livergood	livergoodj@bbfl.us	561.742.6201
City of Delray Beach (Public Works)	John Morgan	morgan@mydelraybeach.com	561.243.7294
<b>Office of Modal Development</b>			
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FDOT District 4 Aviation Coordinator	Laurie McDermott	laurie.mcdermott@dot.state.fl.us	954-777-4497
FDOT District 4 Complete Streets Coordinator	Alexander Barr	Alexander.barr@dot.state.fl.us	954.777.4284

The screenshot shows the 'D4 Modal Viewer' web application. It features a map of Florida with a highlighted route. Below the map is a questionnaire titled 'Local Planning and Government Agency MMSC'. The form includes sections for 'Project Details', 'Reviewer's Information', 'Agency Submitting', 'Project Review', and 'Support Documentation'. A 'Submit' button is at the bottom. A red arrow points from the map area to the 'Project Details' section, and another red arrow points from the 'Project Review' section to a separate document titled 'Public Department of Transportation District Four Multimodal Scoping Checklist (MMS) Agency Responses'.

The screenshot shows a 'HIGHLIGHT PAGE' document from the 'Office of Modal Development (OMD)'. It contains contact information for Lisa Maack and a summary of comments received from OMD and agency staff. A prominent box highlights the following items:

- Information
- Action
- Request

The document also includes a checklist of agencies and a section for 'MPO' with a note about coordinating with the Broward MPO.



# FDOT District 4 - Agency Coordination

MMSC Agency Comments

All Projects

Date Response Submitted

### Modal Viewer

FDOT D4 Modal Viewer Created By: D4 GIS Team

Search by Address or FM

30mi

-78.571 25.638 Degrees

Esri, HERE, Garmin, FAO, USGS, EPA, NPS

### Aviation MMSC Response

1 of 50

GlobalID {32218B39-7046-42AD-851F-F86E7EC3D4F7}

created\_user

created\_date 11/16/2020, 4:09:51 PM

last\_edited\_user

last\_edited\_date 11/16/2020, 4:09:51 PM

Financial Management Number (FM) 446,175.10

Facilities Name/Limits SR-A1A from north of Emerald Beach Way to south of SR-704/Royal Palm Way

Reviewer's First Name Laurie

Reviewer's Last Name McDermott

Reviewer's Email laurie.mcdermott@dot.state.fl.us

Reviewer's Phone Number 954-777-4497

This project is within 10 nautical miles of the following airports: Palm Beach International Airport

Airspace Obstructions Federal regulations exist to protect the national airspace system and must be considered when planning, designing and constructing a Department Project. The Department must comply with the requirements of Title 14 Code of Federal Regulations (CFR), Part 77 (14 CFR, Part 77) regarding the construction or alteration of existing or proposed permanent and temporary structures.

FAA Notification Please provide the District Modal Development Office with copies of the 7460-1 and the Determination.

Aviation and Spaceports Office Coordination The FAA notification process is a complex and lengthy process; therefore, coordinate with both of the following as early as possible in the initial phases of the project for assistance: District Aviation Coordinator and Airspace and Land Use Manager Aviation and Spaceports Office FDOT Aviation and Spaceports Office 605 Suwanee St., M.S. 46 Tallahassee, Florida 32399-0450 Tel: (850) 414-4502 Fax: (850) 414-4508 Internet: http://www.dot.state.fl.us/Aviation/

Safety Issues This information may be placed in the plans for reference

Additional Comments None

Date of Completion 11/16/2020, 12:00:00 PM

Transit Agency  
**41**  
Last update: a few seconds ago

MPO/TPO/TPA  
**61**  
Last update: a few seconds ago

School Board  
**87**  
Last update: a few seconds ago

Local Agencies  
**146**  
Last update: a few seconds ago

OMD Rail  
**90**  
Last update: a few seconds ago

OMD Aviation  
**83**  
Last update: a few seconds ago

OMD Freight  
**0**  
Last update: a few seconds ago

OMD Complete Streets  
**67**  
Last update: a few seconds ago

# FDOT District 7 - Lighting Inventory

## Project Objective

- Collect all streetlights along State Roadways

## Tools Used

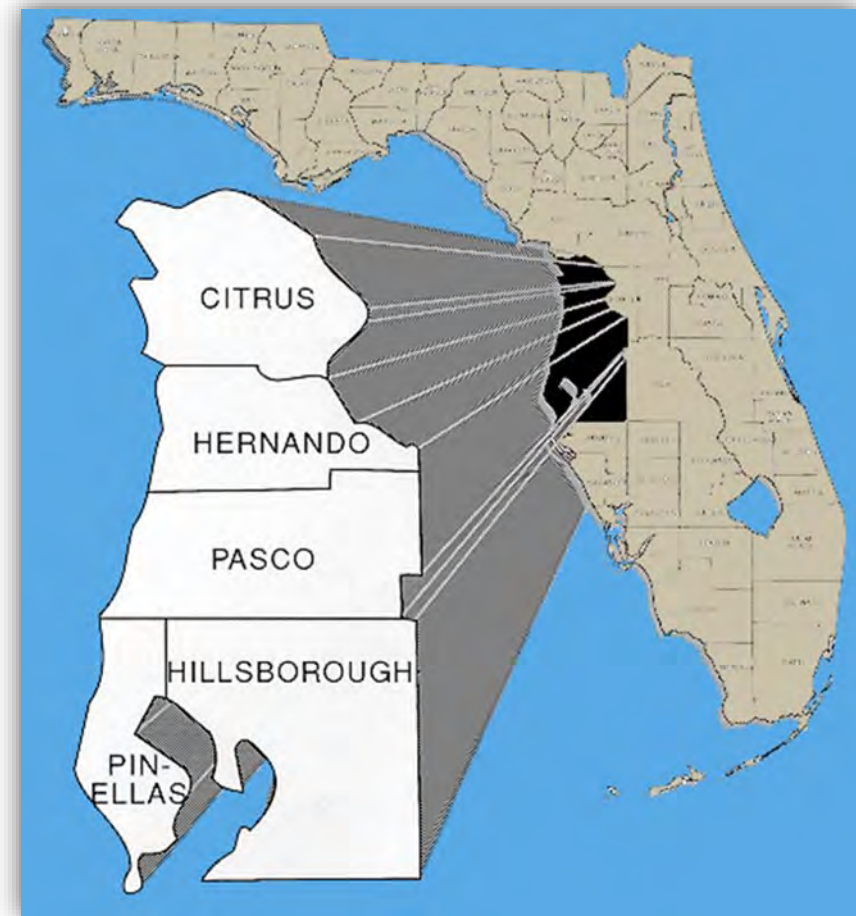
- LiDAR
- ArcGIS Survey123
- ArcGIS Collector
- ArcGIS Dashboards

## Challenges

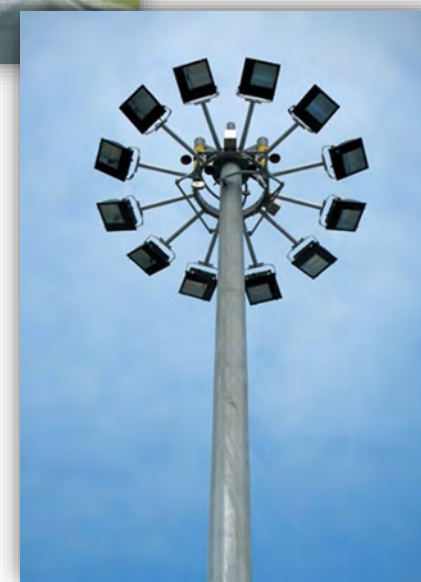
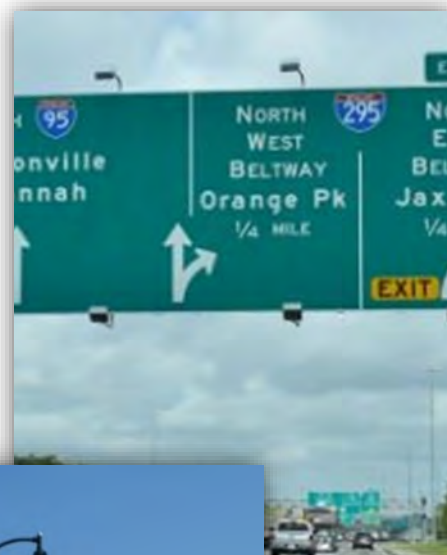
- Uniformed schema
- Stakeholder needs

## Lessons Learned

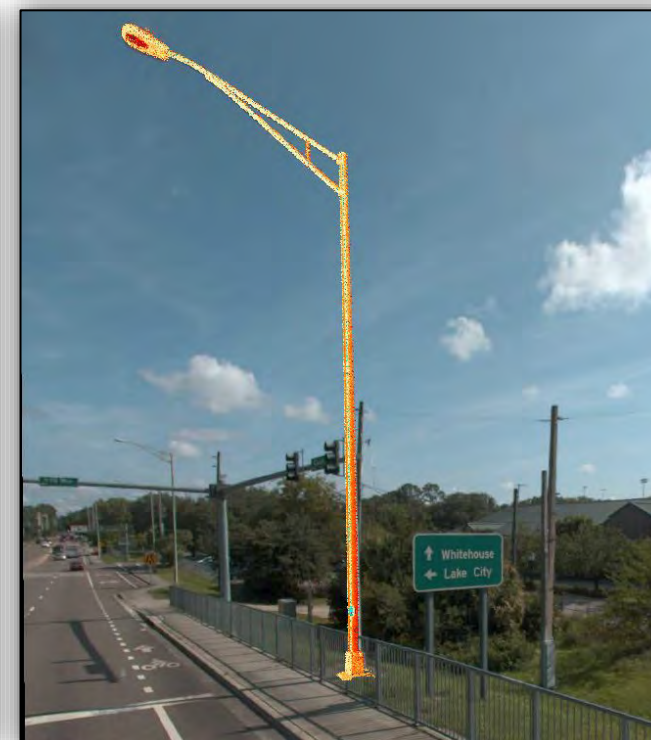
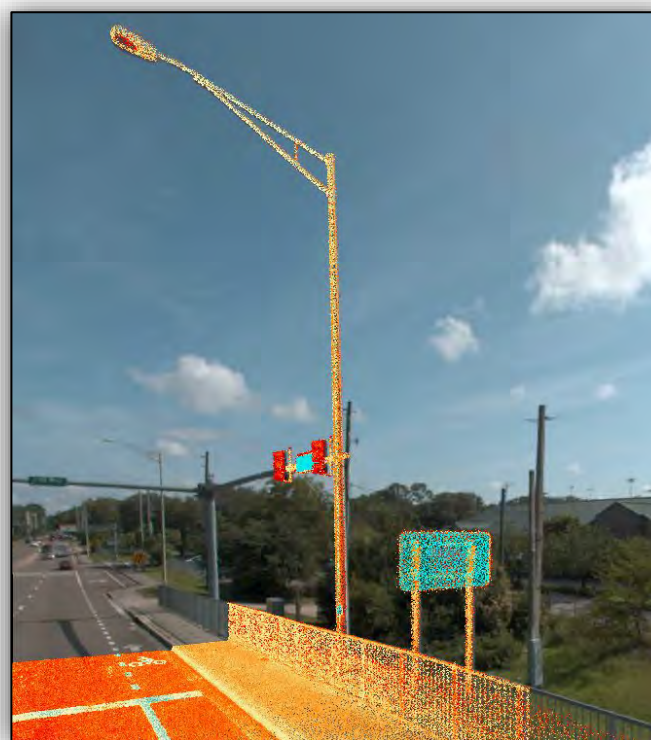
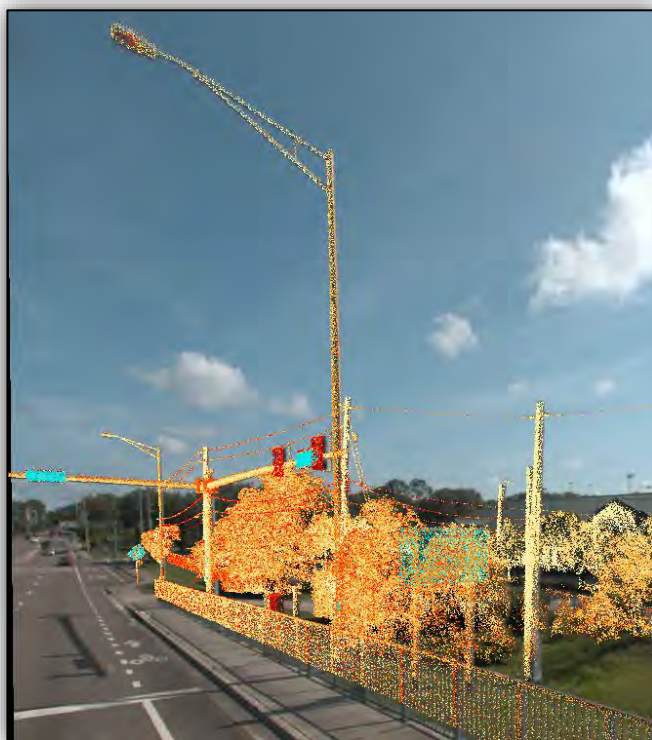
- Calibration of equipment
- Schema standardization
- Training for collectors/QC process



# FDOT District 7 - Lighting Inventory



# FDOT District 7 - Lighting Inventory





# FDOT District 7 - Lighting Inventory

FDOT District 7 Lighting Dashboards
No issues detected

Executive Overview
Pinellas County
Citrus County
Hernando County
Hillsborough County
Pasco County

### D7 Lighting (Executive Dashboard)

**Filter Lighting**

**Asset Type**

Clear All Unknown Pole Underdeck

Sign Structure High Mast

**County**

Clear All

**State Road**

Clear All

**Roadway Section**

Clear All

**Agency Type**

Clear All

Local Government: Highway Lighting Maintenance

**Fixture Arm Count**

Clear All N/A Single Double

**Pole Type**

Clear All N/A Aluminum Concrete

Fiberglass Steel Wood

**Light Bulb Type**

Clear All Other/Unknown Lighting

High Pressure Sodium (HPS)

Light Emitting Diode (LED)

**Total Light Bulb Count**

Clear All 0 1 2 3 4 5 6

**Lights Currently Displayed**

4,150

0 4,150

**District Statistics**

4,150 (100%) displayed

of 4,150 total

**Lighting**

- Pole
- High Mast
- Underdeck
- Sign Structure
- Unknown

**Load Center**

- Survey Point

**Feature Details**

Load Center ID: HER-0015

Meter Number: 000219421B

**Lighting Asset Location**

District: District 7

Coast Center: (798) Brooksville

County: (08) Hernando

Route Location: 50 at 9.75MP (Right offset)

Roadway Section: 040 (000)

**Ownership / Management**

Type: Local Government: Highway Lighting Maintenance and Compensation Agreement

Name: AN743: Hernando County

**Lighting Type**

Pole Height: 35 ft.

Pole ID: A1-2

Pole Type: Aluminum

Standard Pole: Yes

Other Info:

**Light Bulb Information**

Type: High Pressure Sodium (HPS)

Notes: N/A

Count: 1

ID\_5398\_lighting\_asset\_photo-20200723-133746.jpg

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The magazine for civil & structural engineers

# FDOT District 7 - Lighting Inventory

## Asset Type

- Pole
- Underdesk
- Sign Structure
- High Mast



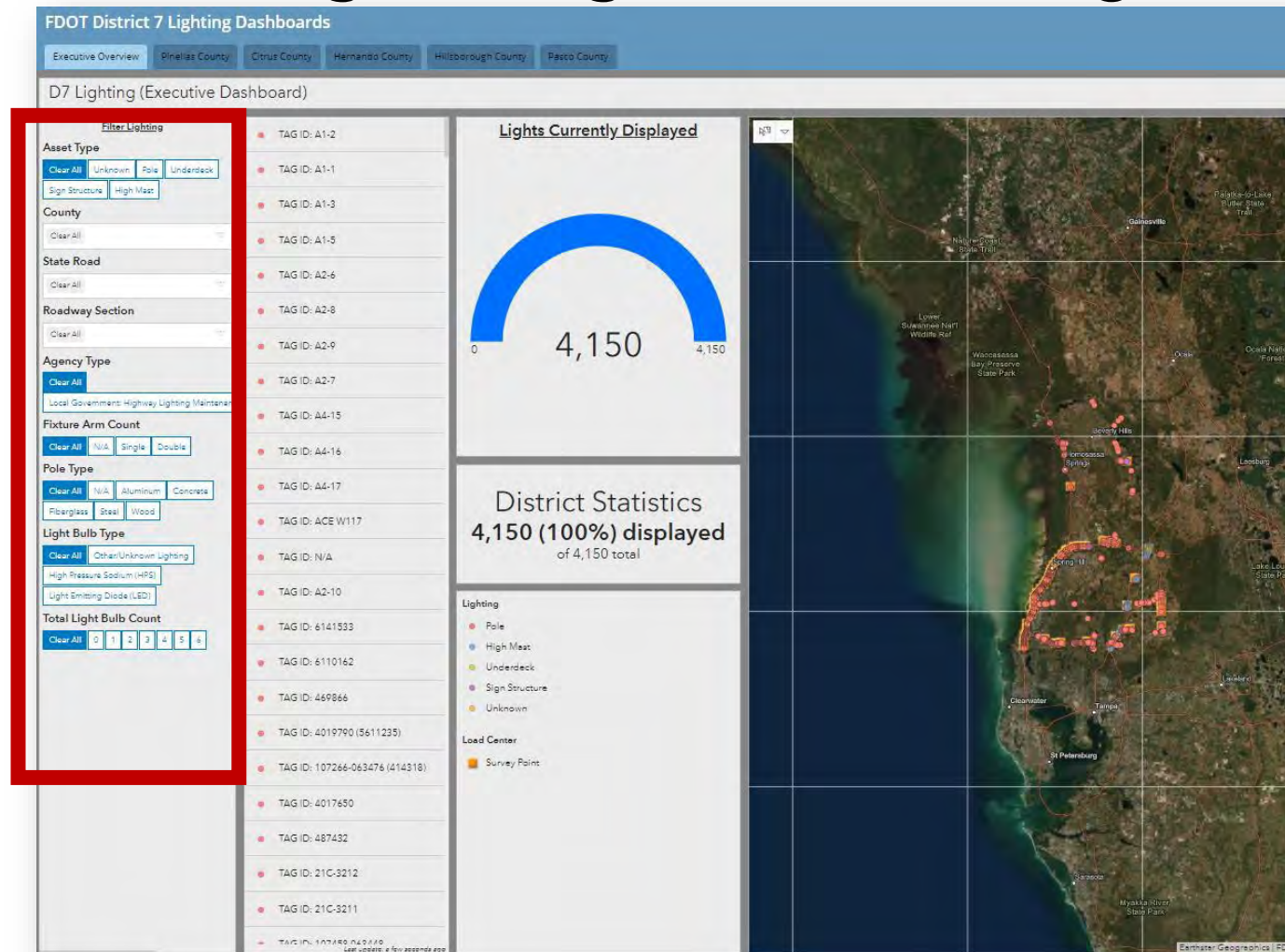
## Pole Type

## County

## State Road

## Agency Type

## Light Bulb Type



# Town of Surfside - FEMA Reimbursement

## Project Objective

- Document damage caused to dunes following emergency response following collapse

## Tools Used

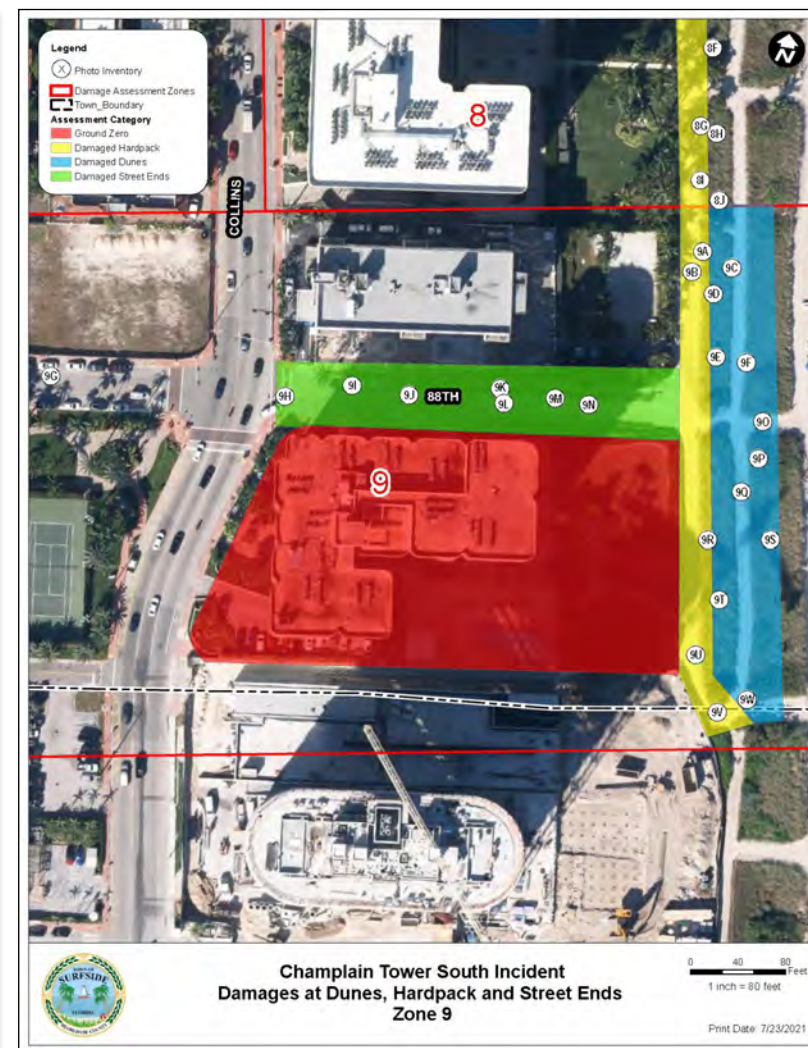
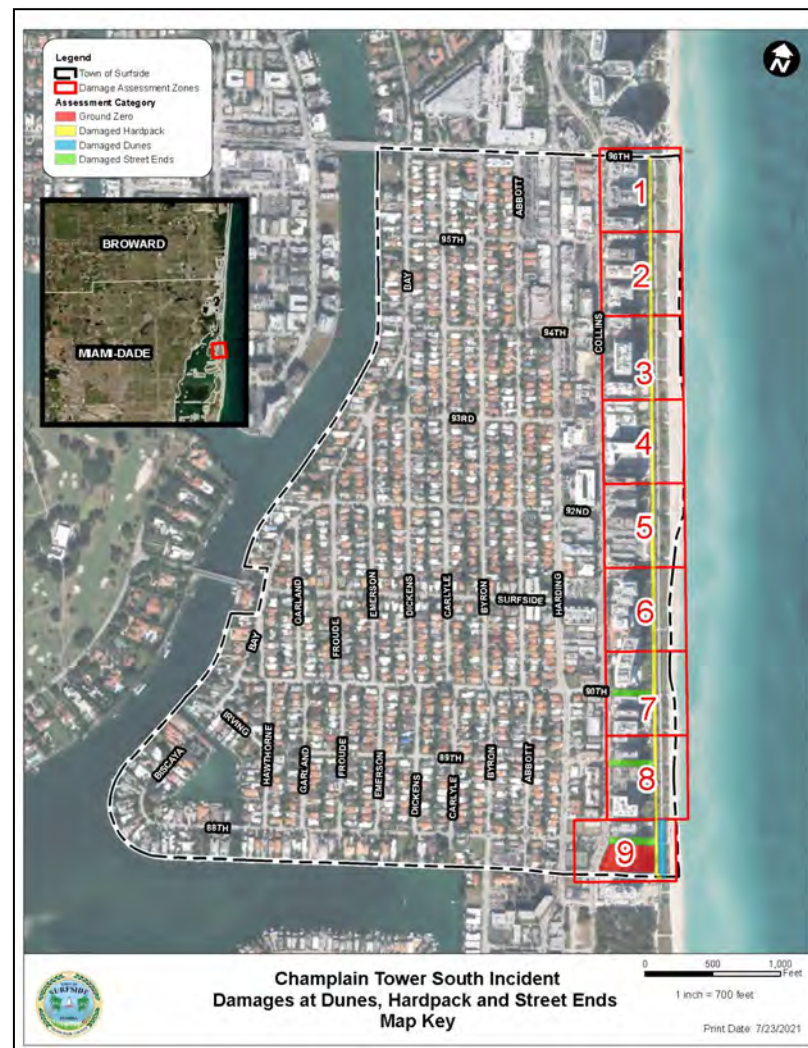
- ArcGIS Collector

## Challenges

- Turnaround time
- First time user

## Lessons Learned

- Take the time to understand final deliverable and keep it simple for collection



# Town of Surfside - FEMA Reimbursement



Figure 13- 4A Potholes Photo 1



Figure 14- 4B Potholes Photo 1



Figure 65- 9J 88 ST Damages Photo 1



Figure 66- 9K 88 ST Damages Photo 1



Figure 15- 4C Potholes Photo 1



Figure 16- 4C Potholes Photo 2



Figure 67- 9L 88 ST Damages Photo 1



Figure 68- 9M 88 ST Damages Photo 1



# Closing

- Things to consider when mixing multiple data collection approaches
- Engaging, collaborating, and informing project teams and the public
- Turning your partners/clients into believers (users)
- Lessons learned

# Questions and Answers with:



**Erin Emmons, GISP**  
Associate Planner  
Kimley-Horn



**Todd Danielson**  
Editorial Director  
*Informed  
Infrastructure*

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