AGENDA
CMC
Congestion Management Committee
NOTE: THIS IS AN IN-PERSON MEETING

Collier County Growth Management Department
Construction and Maintenance Building
South Conference Room
2885 South Horseshoe Drive
Naples, Florida 34104

March 16, 2022
2:00 p.m.

1. **Call to Order**
2. **Roll Call**
3. **Approval of Agenda**
4. **Approval of January 19, 2022 Meeting Minutes**
5. **Open to Public for Comment on Items Not on the Agenda**
6. **Agency Updates**
   A. FDOT
   B. MPO
   C. Other
7. **Committee Action**
   A. 2022 Congestion Management Process Update
8. **Reports and Presentations (May Require Committee Action)**
   A. FDOT – US 41 FRAME Project
9. **Member Comments**
10. **Distribution Items (No presentation)**
11. **Next Meeting Date:**
    May 18, 2022
12. **Adjournment**

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

CONGESTION MANAGEMENT COMMITTEE of the
COLLIER METROPOLITAN PLANNING ORGANIZATION

January 19, 2022
2:00 p.m.
Meeting Minutes

1. Call to Order

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

2. Roll Call

Ms. Bates called the roll and confirmed a quorum was present in the room.

CMC Members Present In-Person
Tony Khawaja, Chairman, Collier County Traffic Operations
Omar DeLeon, County Public Transportation & Neighborhood Enhancement (PTNE)
Karen Homiak, CAC Representative
Michael Tisch, County Transportation Planning
Don Scott, Lee MPO
Dave Rivera, City of Naples

CMC Members Absent
Dr. Mort Friedman, BPAC Representative
Allison Bickett, City of Naples
Dan Summers, County Emergency Management
John Kasten, Collier County Public Schools
Tim Pinter, City of Marco Island

MPO Staff
Brandy Otero, Principal Planner
Scott Philips, Principal Planner
Danielle Bates, Administrative Assistant

Others Present
Lorraine Lantz, County Transportation Planning
Ian Debnam, Benesch/Tindale-Oliver & Associates, Inc
Wally Blain, Benesch/Tindale-Oliver & Associates, Inc (virtually)

3. Approval of the Agenda

Mr. Rivera *moved to approve the agenda.* ***Ms. Homiak*** *seconded. Carried unanimously.*

4. Approval of the September 15, 2021 Meeting Minutes.

Mr. Khawaja: Don Scott was here but was listed as present and absent, Mort Friedman was not listed and was absent.

Ms. Homiak *moved to approve the September 15, 2021 minutes with revisions.* ***Mr. Rivera*** *seconded. Carried unanimously.*

5. Public Comments for Items not on the Agenda

None.

6. Agency Updates

A. FDOT

None.

B. MPO Executive Director

None.

C. Other Agencies

Mr. Rivera: For the City of Naples, the director has left, in his place is Andy Holland in the interim, and Allison Bickett will be the Deputy Director.

Mr. Tisch: For Collier County, Florida Department of Transportation (FDOT) sent funding information for Fiscal Year (FY) 2023 projects to the county, including Pierre Beauvoir in Traffic Ops, for one sidewalk and one school light flashers and one IT project. Currently processing paperwork to begin projects.

Ms. Lantz: The Wilson Boulevard Widening from Immokalee Road to Golden Gate Boulevard is going to the Board of County Commissioners (BCC) on January 25. The conceptual study will transition into design quickly, and we will be handing it over after approval.

7. Committee Action

A. Elect Chair and Vice Chair

Mr. Rivera *moved to keep Mr. Khawaja as Chair and Mr. Pinter as Vice-Chair.* ***Ms. Homiak*** *seconded. Carried unanimously.*

B. Endorse 2022 Congestion Management Process Update

Ms. Otero: The CMC adopted the Transportation System Performance Report last year as part of the Congestion Management Process (CMP), this will incorporate that report into

CMP. Introduced Mr. Ian Debnam of Benesch, formally Tindale Oliver (recently merged with Benesch).

Mr. Debnam: Presented the Congestion Management Process Update. The CMP Update process started in December 2021 and will wrap up with Board Approval in September 2022. A CMP is guided by an 8-step framework from Federal Highway Administration (FHWA). There are three main components: 1) update the CMP document, 2) evaluate congested corridors and come back in March with a draft and in July with public friendly fact sheets, 3) county wide origin and destination study further down the road. The methodology will be brought to the committee in May with results in July, you will be able to comment in July. It was last updated in 2017. This update will incorporate analysis for 2020, and include several items from the TSPR: objectives, strategies, and evaluation criteria. The document will be reorganized to match the 8 step process and will be more user friendly. The flowchart shows the process and will be in the document. Steps 1 through 8 are meant to be a cycle, however the process doesn't always restart at 1 after 8. Asking for approval and feedback.

Mr. Khawaja: Mr. Scott, do you have something like this?

Mr. Scott: We had a lot of criteria and did a state of the system report. Last time we did a Transportation Systems Management and Operations (TSMO) plan. SR 78 was identified and we're looking for improvements in that corridor. TSMO was similar.

Mr. Khawaja: You're going to evaluate whole network, what and how?

Mr. Debnam: Evaluation was done in the Baseline Conditions Report, the analysis looked at existing plus planned projects to 2023, to see how people experience congestions based on criteria. It will be revisited periodically to readdress congestion and incorporate programmed projects to address congestion and the use of performance measures to determine how it addresses congestion concerns and whether they need to be revisited. The evaluation is similar to LRTP modeling for future conditions and compared to baseline conditions.

Mr. Khawaja: What are you looking for from the committee?

Mr. Debnam: Looking for an endorsement of the draft, any changes. It's new in the way it's packaged but it's not new information. Data from the previous baseline conditions and Transportation System Performance Report (TSPR) has been incorporated in revisions.

Mr. DeLeon: The next stage, when you're looking at strategies, Table 6.2 is siloed based on mode, but when you're looking at evaluating strategies are you looking at different layers and modes, looking at pedestrians, single occupancy vehicles, and transit?

Mr. Debnam: Everything is on the table; those can be revisited if new strategies become popular or are recommended by federal or state governments. What's in there is a little of both, some is based on mode like transit, some spans multiple modes like safety. It's organized to do it in different ways, the key recommended strategies likely won't change much like transit

vouchers or improved safety on sidewalks those might be put in a different category but looking at them individually they're well represented.

Mr. Blaine: We asked questions about how the MPO is doing it, they're using TSMO which uses those strategies, your process allows you to bring things forward during the funding cycle. The framework here is saying we've looked at areas of congestion and identified many potential strategies in different modes too. Gives you the opportunity to look at strategies for hot spots as projects move through the CMC prioritization process.

Mr. Debnam: A good example is schools, there's a segment of strategies for areas with school traffic so if that applied to that corridor you could go to that section.

Mr. Khawaja: They can't store the demand for schools, they use roads to do that.

Ms. Homiak *moved to endorse 2022 Congestion Management Process Update.* ***Mr. DeLeon*** *seconded. Carried unanimously.*

C. Endorse Congested Corridors Evaluation Methodology

Mr. Debnam: Presented the Congested Corridors Evaluation Methodology. There are the Tier 1 and Tier 2 Congested Corridors that came from the TSPR, these are the worst congested corridors based on analysis. These are the corridors that we will use existing data and sources to analyze conditions and congestion to see what's going wrong or causing congestion. The result is going to be 10 fact sheets that overview the top 10 congestion corridors. We had 15 corridors from Tier 1 and Tier 2 from the last process, so we consolidated the corridors using segments located on the same road. The best example is Immokalee Road, it had several segments but is now corridor 6. As we're doing analysis, we may need to look at the corridor segments separately as there could be different issues creating congestion, however, we will explain the issues in a single fact sheet for each corridor. They all touch end to end so it doesn't make sense to do one and not the other.

Mr. Khawaja: These 10 covered all 15?

Mr. Debnam: Yes

Mr. Rivera: Are they prioritized?

Mr. Debnam: They are not prioritized beyond Tiers 1, 2, and 3, they aren't ranked. Behind the scenes the main data source is Regional Integrated Transportation Information System (RITIS) and Replica. FDOT is used for supplementary data for roadway characteristics. The RITIS platform has been developed by the University of Maryland and works by feeding speed data from private vendors to allow users to look and use as an analysis tool with different outputs (graphs, tables, timelapse, etc.).

Mr. Khawaja: Does Benesch have license or FDOT?

Mr. Debnam: FDOT has RITIS and holds the license to provide access to each district and MPO. Replica is private and requires a subscription, and Benesch has a Replica subscription. Replica's data is only available through a consulting contract.

Ms. Otero: Anne granted them [Benesch] access to RITIS as our consultant.

Mr. Debnam: It's kind of confusing but basically the Project Manager at an agency sends an email vouching for the consultant.

Mr. Rivera: FDOT showed City of Naples and it showed certain sections of road were congestion but on the live cameras it wasn't congested.

Mr. Debnam: There could be reasons why it isn't accurate, it is transparent about that. Replica gives you a percentage of accuracy based on data sources. Rural areas with fewer signals may be less accurate, but a busy arterial in major area would have more activity to read and is more accurate. There's a learning curve to know when it's reliable versus when to take a second look. It's near real time data, it's not using three year old data, some is as recent as last week. We can use historic information for patterns. There's lots of flexible options, the proposed option is to use 2021 data. We were struggling with pre-COVID versus during COVID. 2019 was the last normal year, but now things are returning to more normal than 2020 and recency is more valuable.

Mr. Khawaja: Did you compare the two to see it?

Mr. Debnam: Some tools make it quick to snapshot, it's hard to do a full look, but preliminarily we can look at a couple indicators.

Mr. Khawaja: Do you look at speed?

Mr. Debnam: Yes. RITIS and Replica let us look at the time of day for peak travel times and days of the week, and time of the year for season and visitors etc. We're planning to do more detail about data sources. RITIS has the average travel time, congestion percentage, and vehicle speeds to see how the road is performing. We want to relay this in a way that's easy to understand for the public, vehicle speed is easy to understand. For example: at 5 pm the average speed is 36 mph versus 46 mph at other times, that is easier to understand. We can look at bottleneck data, traffic queues, length of queues, estimated number of cars, delay time, purpose of trips, recreational mode information, bike ped info, etc.

Mr. Khawaja: How?

Mr. Debnam: Different sources, it's not forthright but would they probably give it if asked, A lot is from cell phone apps, Replica does economic factors, jobs, industry lots of census information.

Mr. Khawaja: Do they track you going to Publix?

Mr. Scott: There are probably searches in Publix. If you're going to place for 8 hours, it's probably work.

Mr. Debnam: I don't know the algorithms.

Ms. Homiak: I got a report from my Google phone of where I went all last year and miles and how long I spent there.

Mr. Khawaja: Google tracks everything, with data coming from phones and cars. The only thing missing is volume.

Mr. Debnam: RITIS is not the best with volume, it does speed and performance, but not the number of vehicles. We rely on an agency like FDOT or the planning department to feed them volume data. They [RITIS] put an assumption factor but include a disclaimer that if an agency has more accurate data to send it. If you do traffic counts send them our way so we may load them into RITIS.

Mr. Khawaja: Mr. Blain has access to our traffic counts.

Mr. Scott: StreetLight does the same.

Mr. Khawaja: That's expensive and they massage the data.

Mr. Debnam: Traffic volumes are great for predicting and making statements about congestion, but we do not want to include a lot of volume information on the public factsheets, but the information is helpful to us. We lean toward providing speed and travel time information for members of the public.

Mr. Scott: It's still acceptable levels of service, which people hate to hear.

Mr. Debnam: It's typical for arterial roads.

Mr. Khawaja: Is this a corridor or a point? How do you do it?

Mr. Debnam: You can define the segment length, this is a segment, it's usually divided at major intersections.

Mr. Blain: I remember doing a System Performance Report with 6-month access to data, one of those observations is similar: Immokalee Road east of 951 as traffic comes in from the east but looking at that stretch to Wilson Boulevard or Oil Well Road the averages are high because of conditions, intersection congestion, travel speed. This doesn't dip below failing. The bottleneck tool pinpoints point level congestion**.**

Mr. Khawaja: We will need a graph of the whole road, to see smoothness, delays, drops etc to know what kind of delays or bottleneck spots.

Mr. Scott: RITIS is better now, but there could be an incident out there or wrong data.

Mr. Khawaja: That's the same as google.

Mr. Debnam: Looking at an extended time period helps, one incident could skew the data, and there are pitfalls if the roadway is under construction.

Mr. Khawaja: He's talking about real time.

Mr. Debnam: RITIS is used by Traffic Operations.

Mr. Khawaja: Sometimes it's not bad, you must understand data.

Mr. Debnam: You can display different metrics with different colors. A lot of times its green (good) for the whole day, you can see what time the congestion starts and ends. Visuals help with patterns. You can export the data into Excel, and it is color coded. Replica is not as visual, it does provide data that can be transposed into a graph. We're looking for the committee to endorse this.

Mr. Khawaja: We need someone to explain RITIS

Ms. Otero: We talked about someone from FDOT to come in, but we didn't have time, we will follow up.

Mr. Khawaja: Give us examples, it could help everyone: operations, planning, transit.

Mr. Scott: If you asked me before this meeting about the average travel length on Airport Road north of Pine Ridge Road, I don't think I'd say 12 miles, it disproves our impact fees, that's a long trip.

Mr. Debnam: These slides are Frankensteined, this may not be the information for this corridor.

Mr. Scott: It proved some of the things we have problems with.

Ms. Lantz: We recently did 2 studies, Pine Ridge Road from Livingston Road to I-75, which I think is Corridor 8, and Immokalee Road from Livingston Road to Logan Boulevard. We have—with those studies—made recommendations and are moving projects into the Work Program. Now that you're doing analysis, how will that work? We're recommending an overpass, but if you come back with strategies, hoping they don't replicate studies we already adopted.

Mr. Debnam: We will look at planned projects and we should know about the TIP and LRTP and County and City projects, and we'll try not to duplicate, that's the goal.

Mr. Khawaja: There's good data you may want, counts, data etc.

Mr. Scott: The evaluation criteria has higher scores for things in the pipeline, FDOT gets crazy when you switch the order and cycle through.

Mr. Rivera: Vanderbilt Beach Road

Mr. Khawaja: Fighting it every year, finally lost or won, it's good for the community.

Mr. DeLeon *moved to endorse Congested Corridors Evaluation Methodology.* ***Mr. Rivera*** *seconded. Carried unanimously.*

8. Reports and Presentations (May Require Committee Action)

A. CAT – Transit Signal Priority & Automatic Vehicle Location System Update

Mr. DeLeon: We are finalizing the contract for our CAT Automatic Vehicle Location (AVL) system and computer aided dispatch and location system. The system we have now is about 10 years old, we had an assessment done for the technology and one of the recommendations was to update the AVL system. We put together a solicitation to either upgrade or replace the system. We made a recommendation and selection with a French company ENGIE. The project includes the hardware in the buses and the software that schedules and sees performance. This will give information on the number of riders, if there are delays or detours to keep people up to date. We're upgrading signage at the transfer stations; and we are adding kiosk signs so people who need more information can get it on the display board. We are also adding signage to show which route is pulling into the bay. The software will help with scheduling the operators and business intelligence.

Mr. Khawaja: This is a total replacement?

Mr. DeLeon: Yes, and enhancements. In addition to AVL we are enhancing our fare boxes and mobile ticketing and adding separate software on the paratransit side. These systems will pull together the information so we have a better understanding of the data. We're working on Transit Signal Prioritization (TSP), tied into this new technology. We're working with Mr. Khawaja and Leandro Goicoechea and others in Traffic Ops. We coordinated with them to vet the scope of work and assist with the language. We are defining items. It is hardware in the bus and on the cabinets at intersections. There are different options for TSPs, infrared is the current system the firetrucks and ambulances use. We're looking at a GPS solution to see the location of the bus, how late is it running, how many people are on it. The system will send a request to lengthen or truncate the signal at a lower priority than emergency services. We're looking at 50 intersections to see how it performs based on current reliability and on time performance. Our hope is to share the data and how it's working. We're making sure that existing traffic signal and other technology work together and that nothing gets interrupted with this new system. Our plan is to finalize the contract in March and the project is 12 months.

Mr. Tisch: Is it part of a grant?

Mr. DeLeon: Yes, grants are being used for portions of the project.

Mr. Khawaja: The difference between preemption and low priority is that with preemption for emergency services we would interrupt the flow to give a green light fastest, the only signal that can't be terminated immediately is when it's in conflict with a walk signal just in case there's a wheelchair crossing. They will zigzag if needed. For low priority transit, the bus analyzes itself first—am I late? How far from the intersection am I? —and the bus decides and sends a request if needed. The buses don't want to be ahead of schedule either. If signal is green and knows bus is 10 seconds away it will stay green longer than usual. If it's serving a side street it will cut the side street sooner. It doesn't interrupt or preempt a change.

Mr. Rivera: If it gives 10 additional seconds, will it shorten the cycle?

Mr. Khawaja: Yes, it will shorten it, depends on the time of day, how much time can I give up? But it will go back to normal.

Mr. Rivera: How does the number of people matter?

Mr. DeLeon: If its empty it doesn't matter if there's more people you won't want them to be late.

Mr. Khawaja: They are weighted items, you can say if there's 20 people on the bus and it's running a minute late it's more critical to act, if there are only 5 people maybe it can be 3 minutes late. We are trying to code each firetruck using system and we're almost there, but it's hard because you need the code of each truck, but a lot are coded 000, they can preempt but are not identified. We'd would like to see report of trips and the time, are they emergencies, why is this one doing it 20 times when most are doing it 3 times? If there are units purchased online, we want to be able to shut them off.

Mr. Tisch: Is the technology being used in other places in Florida?

Mr. DeLeon: Orlando uses same technology combination. The technology is the same as what's already existing in the cabinets in Collier, and they've done some of these with other bus systems. Next, we'll look at different thresholds, in some places transit has priority over everything. There are different opportunities here. For mobile ticketing the QR code is live so it can't have a picture taken. Tampa's HART system is operating similarly. We're looking at working with Lee Tran for regional fares, LinC, Route 600 comes into Collier County.

Mr. Khawaja: They've done it for tolls, they can do it for transit. especially neighboring counties.

B. FDOT – US 41 FRAME Presentation

Tabled to next meeting.

9. Member Comments

Mr. Khawaja: Double check if Lorraine or Mike is the voting member.

10. Distribution Items

11. Next Meeting Date

March 16, 2022 – 2:00 p.m.

12. Adjournment

There being no further comments or business to discuss, Mr. Khawaja adjourned the meeting at 3:18 p.m.

EXECUTIVE SUMMARY
COMMITTEE ACTION
ITEM 7A

2022 Congestion Management Process Update

OBJECTIVE: For the committee to receive an update on the consultant's progress and provide comments on the congested corridors evaluation and suggested data for the fact sheets.

CONSIDERATIONS: The Congestion Management Committee reviewed changes to the Congestion Management Process (CMP) at the January meeting. The next step is to prepare the fact sheets for the ten corridors identified based upon the methodology presented to the committee at the January meeting.

The consultant will provide an overview of the presentation (**Attachment 1)** which includes examples of data that can be included in the fact sheets. An example fact sheet is included as **Attachment 2** and a summary of the preliminary corridor data as **Attachment 3**.

STAFF RECOMMENDATION: Receive the presentation and provide guidance to the consultant regarding data to be included in the fact sheets.

Prepared By: Brandy Otero, Collier MPO Principal Planner

ATTACHMENT(S):

1. Consultant Presentation
2. Example Fact Sheet
3. Preliminary Data Summary

Congestion Management Process Update

Congestion Management Committee

March 16, 2022

Tindale Oliver is now benesch

Today's Agenda

- Recap of CMP Update Process and Project Schedule
- Congested Corridors Evaluation Results
  - Summary of Available Data for Top 10
  - Example of Preliminary Data Results
- Corridor Summary Fact Sheets
  - Data and Visualization Preferences
  - Layout Options
- Next Steps
- Requested Actions

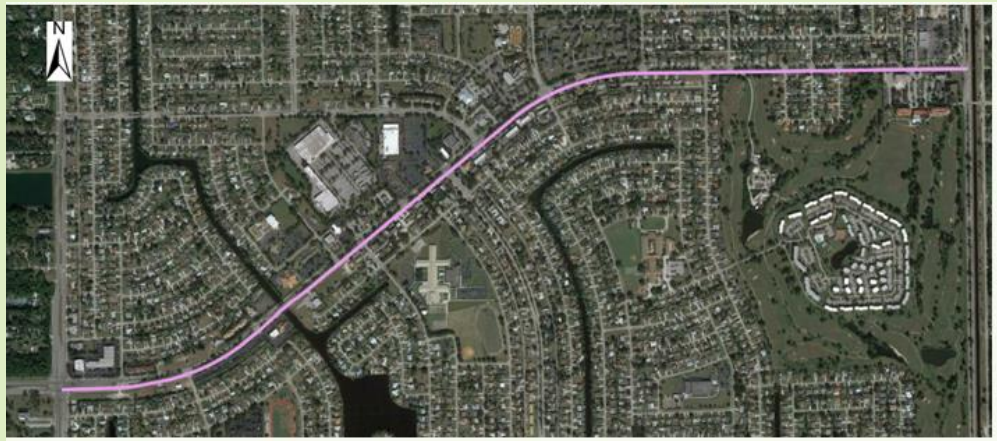
Congested Corridors Evaluation Results

Summary of Available Data and Visualization Options

Date/Metrics Available	Visualization Options	Intended Use(s)
Speed and Travel Time	• **Graph** (time of day and direction)	• Time of day traffic patterns
Congestion % and Speed	• **Map, Graphic Chart,** or **Colorized Matrix** (time of day, direction, and roadway segment)	• Time of day traffic patterns • Problematic locations
Bottleneck Queue Length and Avg Daily Duration	• **Map** • **Graphic Chart** (location and time of day/year)	• Location of recurring bottlenecks • Severity of recurring bottlenecks • Trends in bottleneck occurrences
Delay Cost and Hours of Delay	• **Colorized Matrix** (time of day/year)	• Time of year patterns • Time of day patterns
Trip Origin/Destination (Census Block Group)	• **Map**	• Broad travel patterns • Solution recommendations
Trip Purpose	• **Graph or Infographic**	
Trip Mode	• **Graph or Infographic**	
Trip Start Times	• **Graph or Infographic**	
Trip Length (in Miles and Minutes)	• **Graph or Infographic**	
Planned/Programmed Improvement Projects	• **Map**	• Solution recommendations

Congested Corridors Evaluation Results

Corridor #5: Golden Gate Pkwy
(from Santa Barbara Blvd to Collier Blvd)



MPO CMP Tier Classification	Tier 1
Corridor Length (Miles)	2.19
Estimated Corridor Travel Time	4-7 Min
Posted Speed Limit	35 MPH
AADT	33,400
LOS	D

Avg Weekday Travel Speed	EB- 28 MPH WB- 27 MPH
Avg Weekend Travel Speed	EB- 30 MPH WB- 29 MPH
Lowest Avg Weekday Travel Speed	21 MPH EB @ 4 PM
Lowest Avg Weekend Travel Speed	27 MPH WB @ 12 PM
Total Estimated Delay Costs	$70,000
Total Vehicle-Hours of Delay	2,328

Most Severe Recurring Bottleneck

Direction & Location	EB @ Sunshine Blvd
Avg Queue Length (Miles)	1.27
Avg Daily Duration	5 Min
Trend(s)	Primarily PM Peak

Most Severe Recurring Congestion Area

Highest Avg Congestion	78% of free-flow speed
Location	Sunshine Blvd
Direction & Time	EB @ 4PM
Other Notable Areas of Congestion	None

Total Trips	70k
Avg Trip Length	12.3 miles
Avg Trip Duration	12 min
Private Automobile Mode Share	88.8%
Most Common Trip Purpose (Other Than Home/Work)	Shopping
Most Common Start Trip Time	4PM

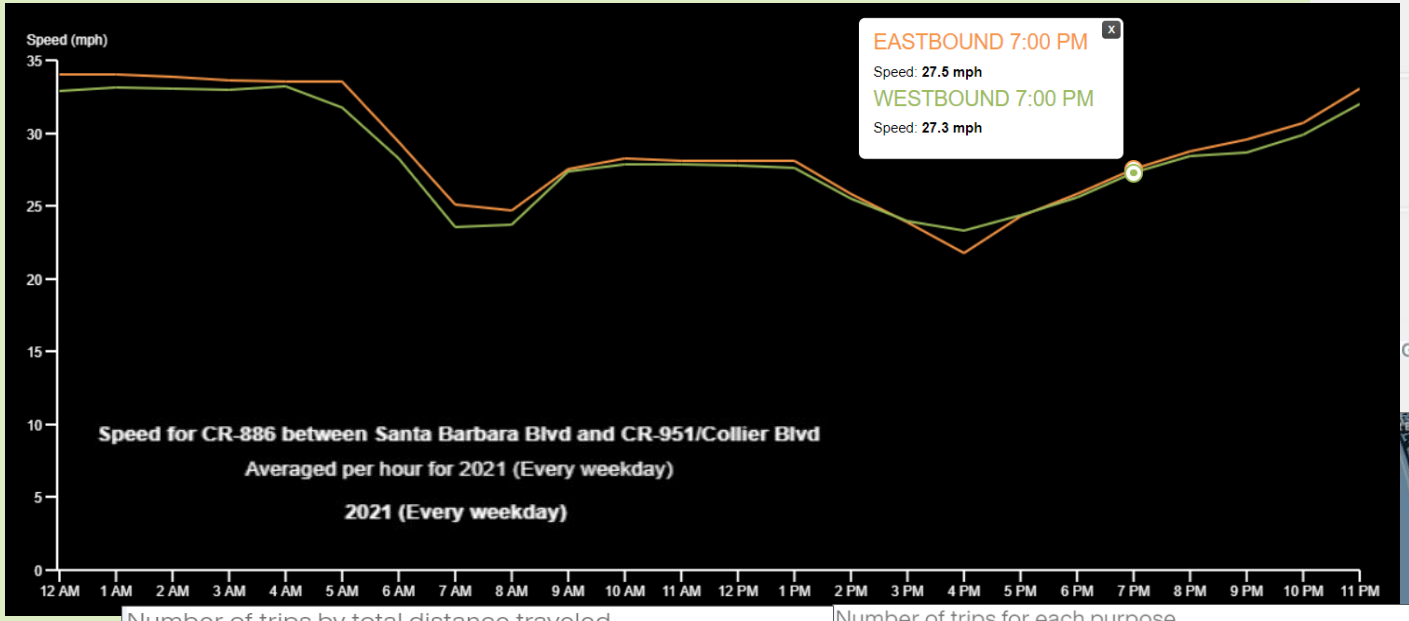
Most Common Trip Origin/Destination

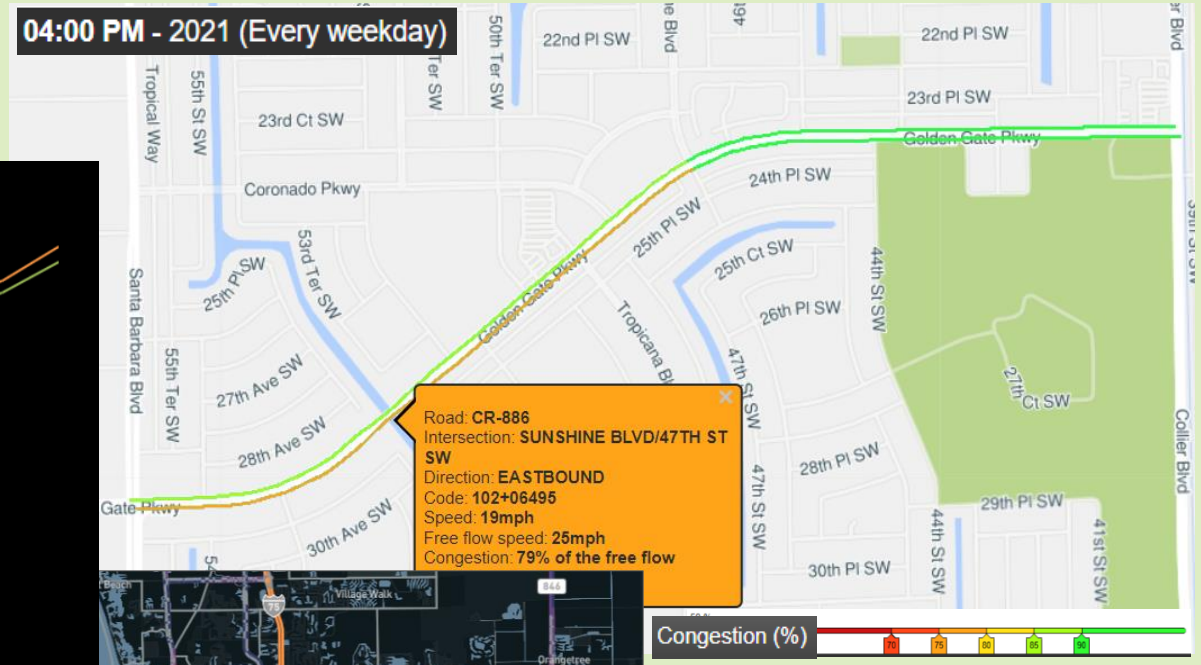
East of Santa Barbara Blvd between Golden Gate Parkway and Coronado Pkwy

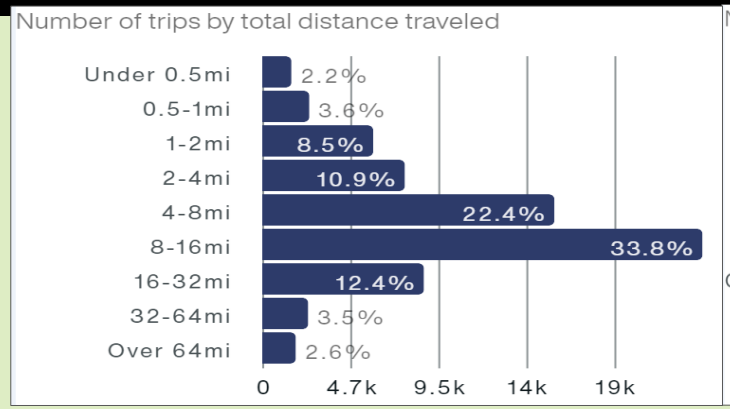
Other Common Origins / Destinations:
South of Golden Gate Pkwy West of Tropicana Blvd

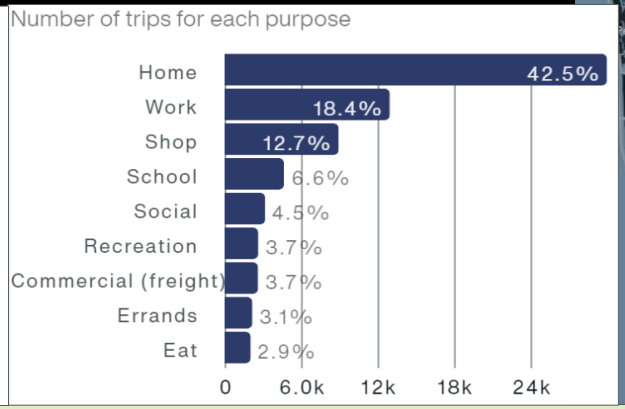
Congested Corridors Evaluation Results

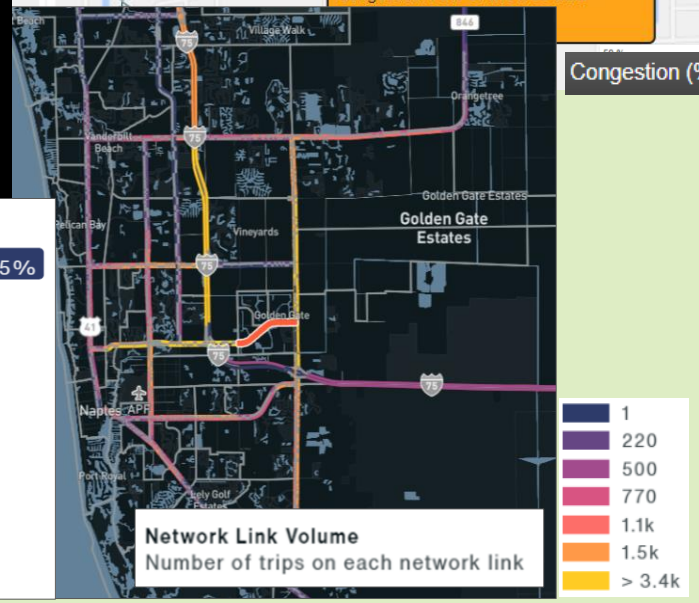
Corridor #5: Golden Gate Pkwy
(from Santa Barbara Blvd to Collier Blvd)











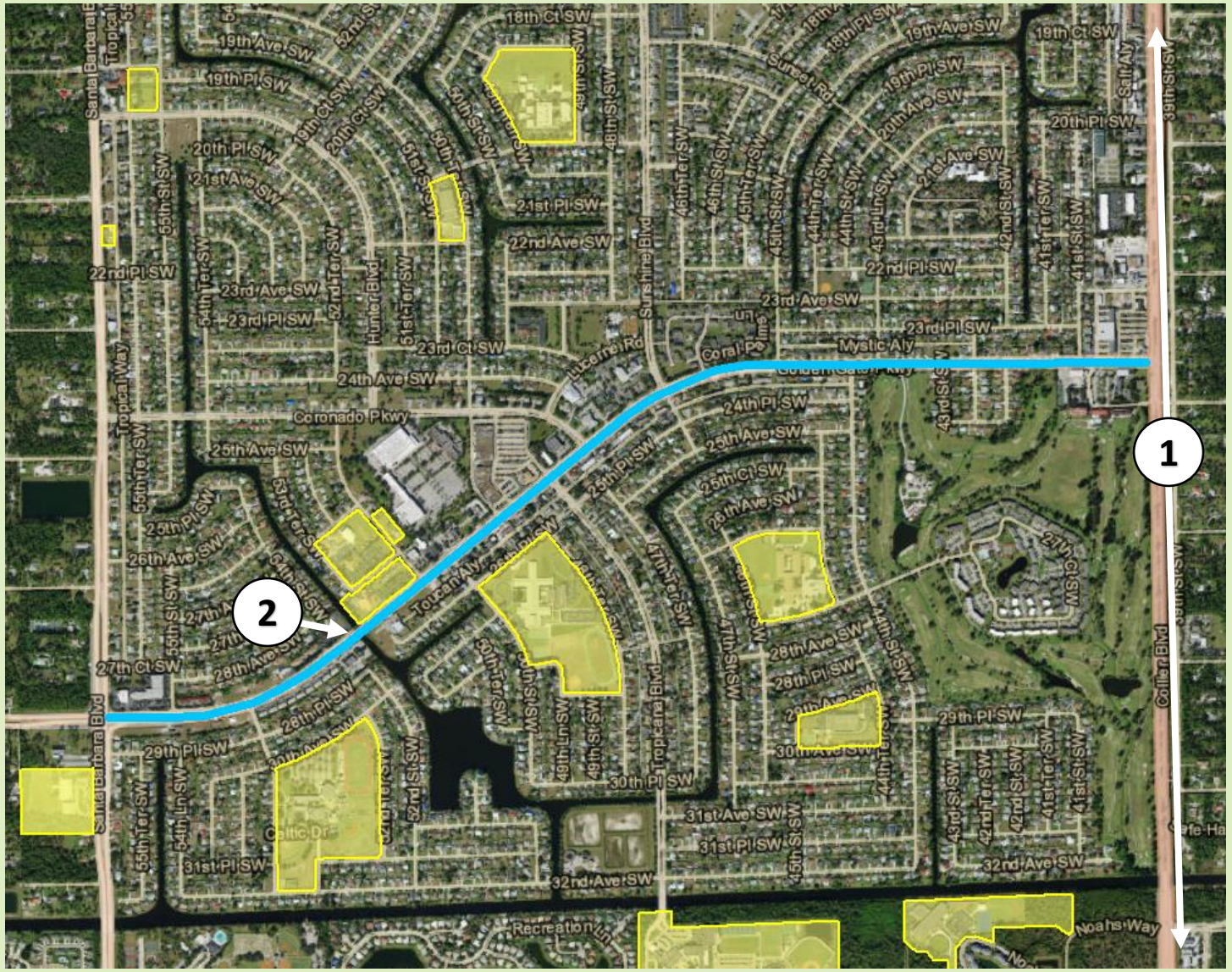
Congested Corridors Evaluation Results

Corridor #5: Golden Gate Pkwy
(from Santa Barbara Blvd to Collier Blvd)

Initial Corridor Observations:

- Significant number of **school zones** influence traffic patterns
- Weekend congestion does **not** seem to be a problem
- **4PM to 5PM** is the most common time period for recurring delays
- **EB travel** seems to be the most problematic direction
- Most trips are to/from immediately surrounding areas using I-75, Collier Blvd, and western Golden Gate Pkwy
- Planned improvement projects:
  1. Collier Blvd Widening (4 to 6 lanes)
  2. Santa Barbara Canal Bridge

Surrounding Schools in Yellow:

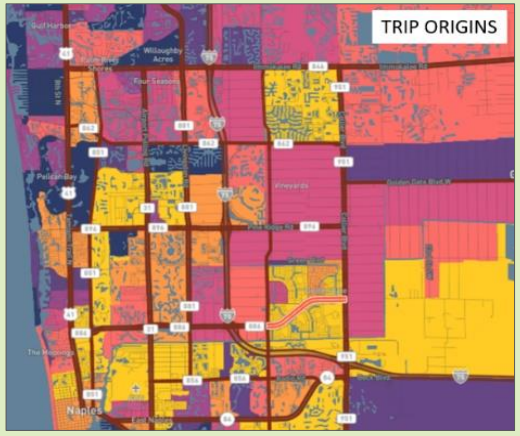


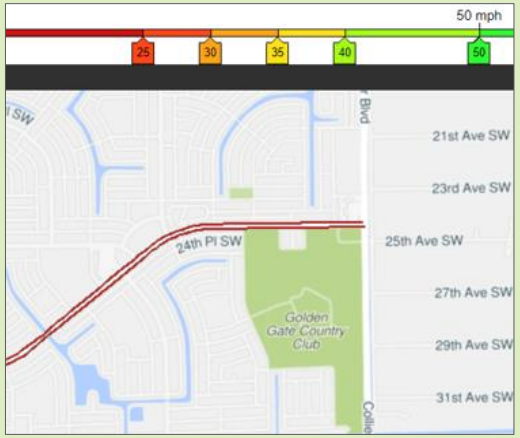
Congested Corridors Evaluation Results

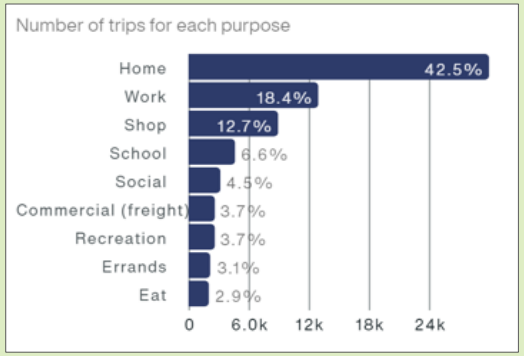
Data and Visualization

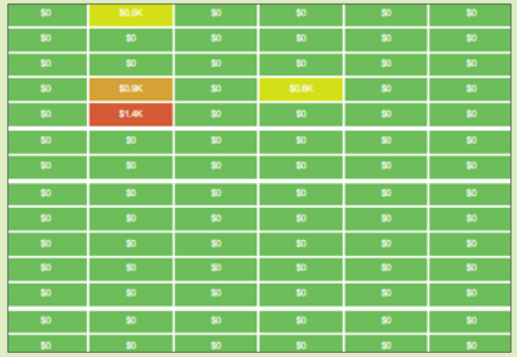
- Data/Metric Preferences?
  - Speed, travel time, congestion %
  - Bottleneck queue length, duration, location
  - Delay costs, hours of delay
  - Trip O/D, purpose, length, mode
- Visualization Preferences?
  - Maps (aerial vs. graphic)
  - Bar graphs / Line charts
  - Roadway congestion diagrams
  - Colorized matrix
  - Infographics with key stats

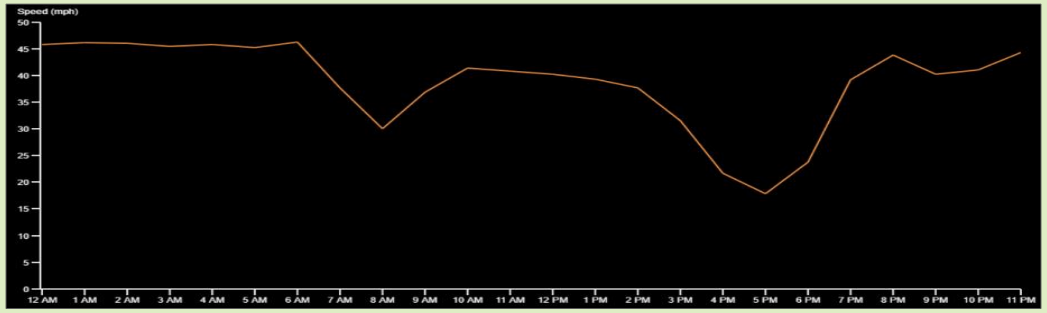
Visualization Examples:

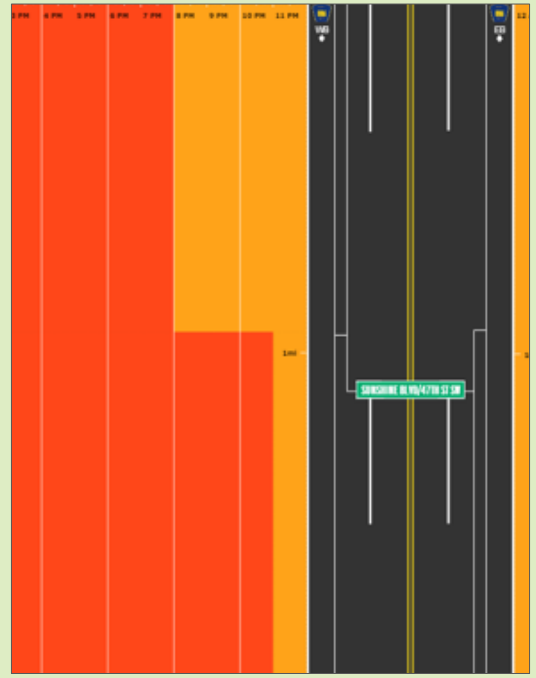








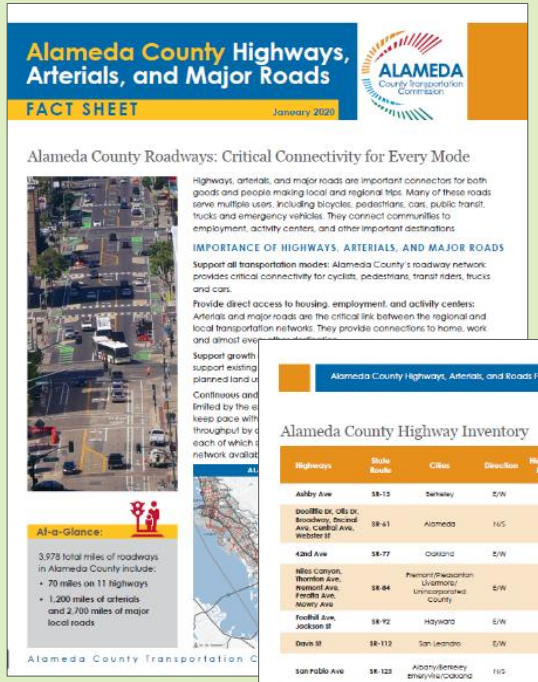




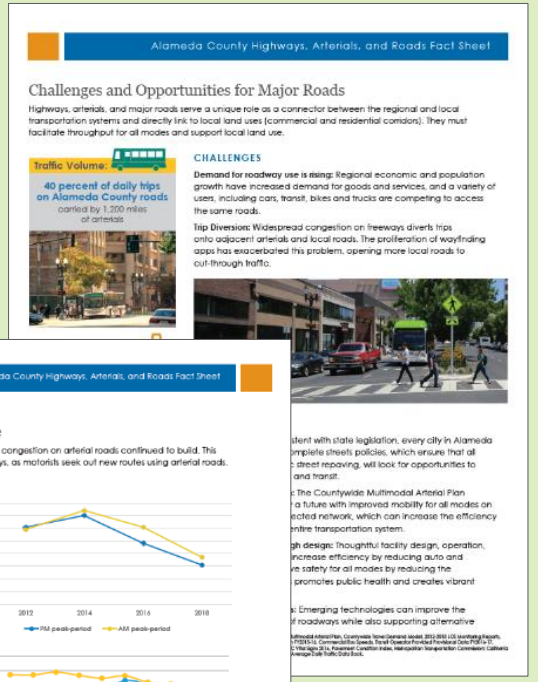
Corridor Summary Fact Sheets

- Size and Layout:
  - 11x17 fold over for maximum space
  - All ten with consistent layout, graphics, and information provided
- Are there metrics or graphic elements that should be prioritized or featured more prominently for the public audience?

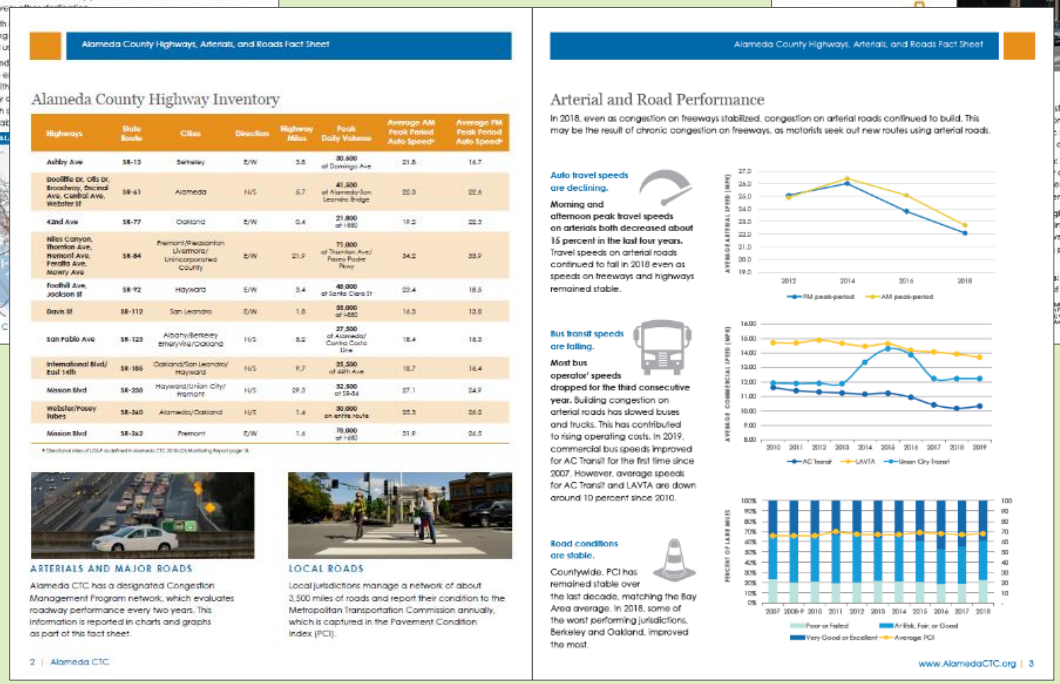
8.5x11 FRONT COVER



8.5x11 BACK COVER



11x17 INSIDE



Tindale Oliver is now benesch

Corridor Summary Fact Sheets

Other Items:

- Improvement strategy recommendations
- Challenges and opportunities for each corridor
- Overview map showing all ten corridors and all planned improvement projects in the County
- Other ideas or information not mentioned yet?

CHALLENGES

Demand for roadway use is rising: Regional economic and population growth have increased demand for goods and services, and a variety of users, including cars, transit, bikes and trucks are competing to access the same roads.

Trip Diversion: Widespread congestion on freeways diverts trips onto adjacent arterials and local roads. The proliferation of wayfinding apps has exacerbated this problem, opening more local roads to cut-through traffic.

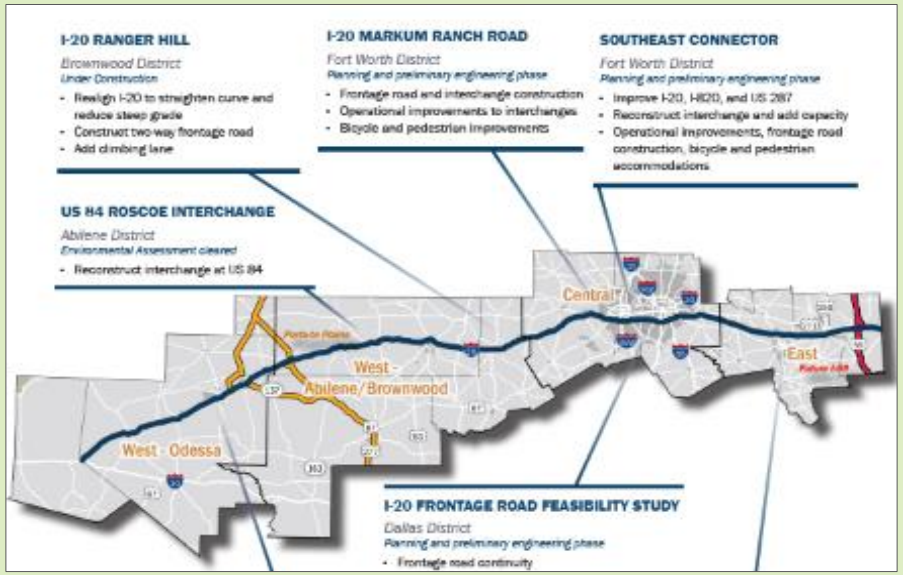
OPPORTUNITIES

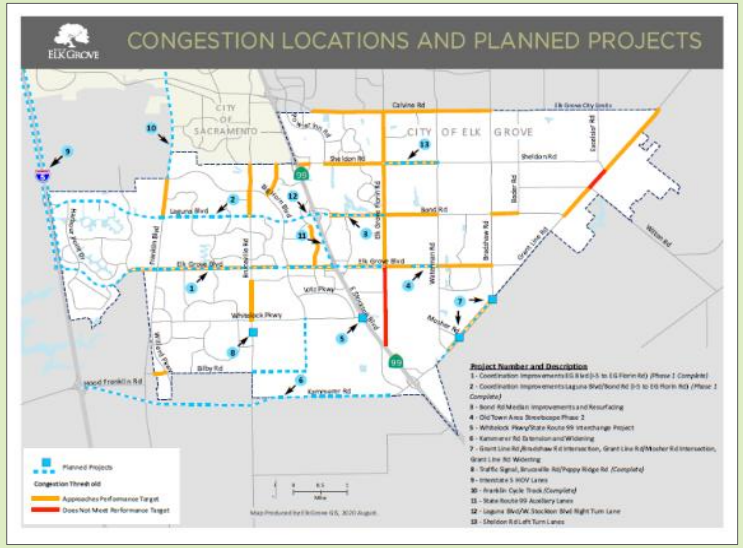
Complete streets: Consistent with state legislation, every city in Alameda County has adopted complete streets policies, which ensure that all projects, including basic street repaving, will look for opportunities to improve biking, walking and transit.

Multimodal Arterial Plan: The Countywide Multimodal Arterial Plan provides a roadmap for a future with improved mobility for all modes on a continuous and connected network, which can increase the efficiency and throughput of the entire transportation system.

Reducing conflict through design: Thoughtful facility design, operation, and maintenance can increase efficiency by reducing auto and transit delay and improve safety for all modes by reducing the severity of collisions. This promotes public health and creates vibrant local communities.

Advanced technologies: Emerging technologies can improve the operational efficiency of roadways while also supporting alternative





	MON	TUE	WED	THU	FRI	SAT	SUN	TOTAL
ight-3AM	55	32	36	43	57	91	86	400 [10.7%]
3-6AM	44	26	40	36	34	49	71	300 [8.0%]
6-9AM	38	59	53	59	58	39	38	344 [9.2%]
AM-Noon	53	58	49	57	50	85	81	433 [11.6%]
loon-3PM	66	54	46	66	86	101	100	519 [13.9%]
3-6PM	85	88	92	82	121	123	92	683 [18.3%]
6-9PM	74	73	84	80	96	72	89	568 [15.2%]
-Midnight	56	58	49	61	99	81	61	465 [12.4%]
Unknown	1	7	4	2	4	6	3	27 [0.7%]
TOTAL	472 [12.6%]	455 [12.2%]	453 [12.1%]	486 [13.0%]	605 [16.2%]	647 [17.3%]	621 [16.6%]	3,739 [100.0%]

FSI Num+% 1 - 38 39 - 54 55 - 66 67 - 86 87 - 123

Next Steps

- Present 2022 CMP document to MPO Board for adoption
- Progress update for MPO TAC/CAC
- Review planned projects and develop solutions for Top 10 corridors
- Develop corridor fact sheet layouts
- Present draft fact sheets and methodology for countywide O&D analysis at next CMC meeting

Upcoming 2022 CMC Meeting Topics	
May 18	• Draft Summaries with Potential Strategies for Top 10 Corridors • Methodology for Countywide O&D Analysis
July 20	• Countywide O&D Analysis Results • Top 10 Corridor Summary Fact Sheets

Other Upcoming 2022 Meetings	
March 28	MPO TAC/CAC Updates
April 8	MPO Board Update

Today's Requested Actions

For the Committee to:

- Endorse the preliminary congested corridor data results and approach for developing summary fact sheets based on review and discussion.

Contact

Wally Blain, AICP

Benesch Project Manager

813-224-8862

wblain@benesch.com

OR

Ian Debnam, AICP

954-641-5680

idebnam@benesch.com

Brandy Otero

MPO Project Manager

239-252-5859

Brandy.otero@colliercountyfl.gov

Congestion Management Process Update

Congestion Management Committee

March 16, 2022

Tindale Oliver is now benesch

Alameda County Highways, Arterials, and Major Roads

FACT SHEET

January 2020

ALAMEDA County Transportation Commission

Alameda County Roadways: Critical Connectivity for Every Mode

Highways, arterials, and major roads are important connectors for both goods and people making local and regional trips. Many of these roads serve multiple users, including bicycles, pedestrians, cars, public transit, trucks and emergency vehicles. They connect communities to employment, activity centers, and other important destinations.

IMPORTANCE OF HIGHWAYS, ARTERIALS, AND MAJOR ROADS

Support all transportation modes: Alameda County's roadway network provides critical connectivity for cyclists, pedestrians, transit riders, trucks and cars.

Provide direct access to housing, employment, and activity centers: Arterials and major roads are the critical link between the regional and local transportation networks. They provide connections to home, work and almost every other destination.

Support growth of jobs and housing: Highways, arterials and major roads support existing land uses, and can provide opportunities to support planned land uses.

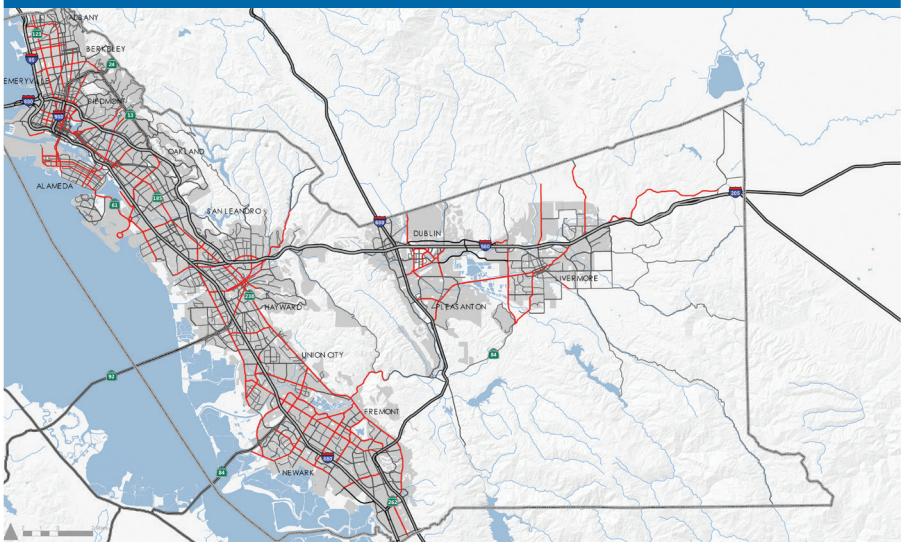
Continuous and connected network for all modes: Local governments, limited by the existing right-of-way, cannot increase vehicle capacity to keep pace with demand. Instead, cities are increasing overall person-throughput by designing streets to be safe and convenient for all modes, each of which should have a complete, continuous and connected network available.

At-a-Glance:

3,978 total miles of roadways in Alameda County include:

- **70 miles on 11 highways**
- **1,200 miles of arterials and 2,700 miles of major local roads**

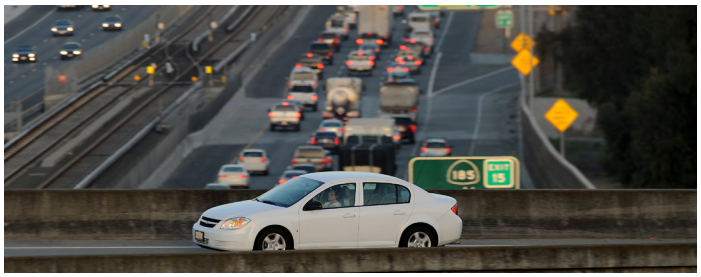
ALAMEDA COUNTY TRANSPORTATION NETWORK



Alameda County Highway Inventory

Highways	State Route	Cities	Direction	Highway Miles	Peak Daily Volume	Average AM Peak Period Auto Speed*	Average PM Peak Period Auto Speed*
Ashby Ave	**SR-13**	Berkeley	E/W	3.8	**30,500** at Domingo Ave	21.8	16.7
Doolittle Dr, Otis Dr, Broadway, Encinal Ave, Central Ave, Webster St	**SR-61**	Alameda	N/S	5.7	**41,500** at Alameda-San Leandro Bridge	22.3	22.6
42nd Ave	**SR-77**	Oakland	E/W	0.4	**21,800** at I-880	19.2	22.3
Niles Canyon, Thornton Ave, Fremont Ave, Peralta Ave, Mowry Ave	**SR-84**	Fremont/Pleasanton Livermore/ Unincorporated County	E/W	21.9	**71,000** at Thornton Ave/ Paseo Padre Pkwy	34.2	33.9
Foothill Ave, Jackson St	**SR-92**	Hayward	E/W	3.4	**48,000** at Santa Clara St	23.4	18.5
Davis St	**SR-112**	San Leandro	E/W	1.8	**55,000** at I-880	16.3	13.8
San Pablo Ave	**SR-123**	Albany/Berkeley Emeryville/Oakland	N/S	5.2	**27,500** at Alameda/ Contra Costa Line	18.4	15.3
International Blvd/ East 14th	**SR-185**	Oakland/San Leandro/ Hayward	N/S	9.7	**25,500** at 44th Ave	18.7	16.4
Mission Blvd	**SR-238**	Hayward/Union City/ Fremont	N/S	29.3	**32,500** at SR-84	27.1	24.9
Webster/Posey Tubes	**SR-260**	Alameda/Oakland	N/S	1.4	**30,000** on entire route	25.3	26.2
Mission Blvd	**SR-262**	Fremont	E/W	1.6	**78,000** at I-680	31.9	26.5

* Directional miles of LOS-F as defined in Alameda CTC 2018 LOS Monitoring Report page 18.



ARTERIALS AND MAJOR ROADS

Alameda CTC has a designated Congestion Management Program network, which evaluates roadway performance every two years. This information is reported in charts and graphs as part of this fact sheet.

LOCAL ROADS

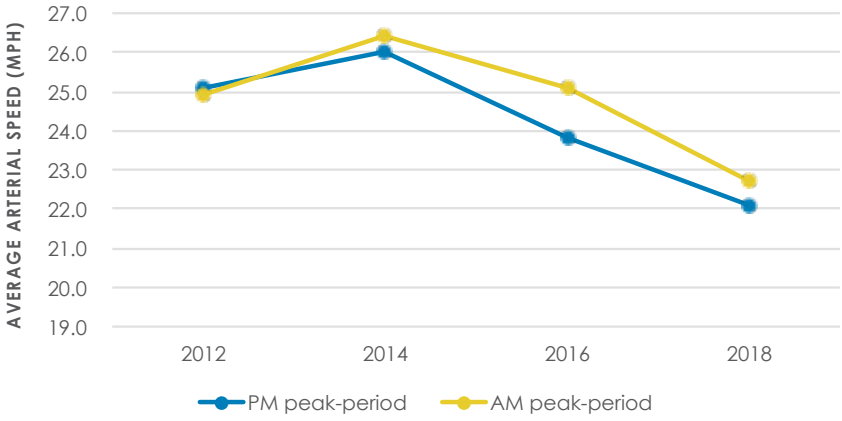
Local jurisdictions manage a network of about 3,500 miles of roads and report their condition to the Metropolitan Transportation Commission annually, which is captured in the Pavement Condition Index (PCI).

Arterial and Road Performance

In 2018, even as congestion on freeways stabilized, congestion on arterial roads continued to build. This may be the result of chronic congestion on freeways, as motorists seek out new routes using arterial roads.

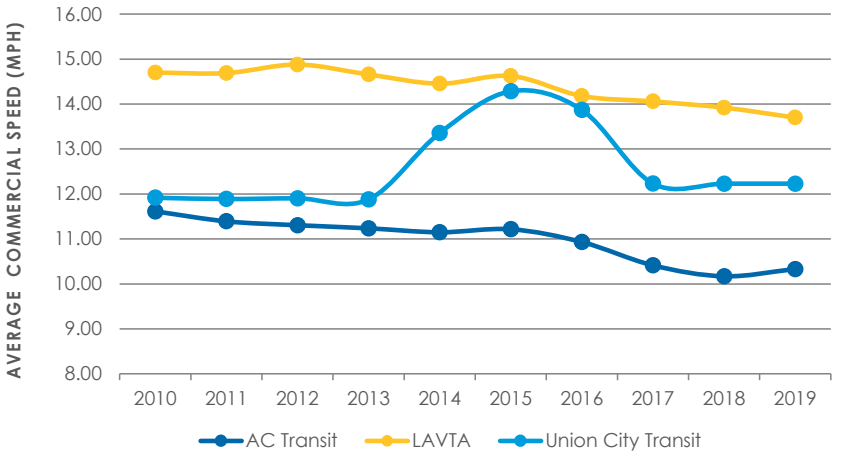
Auto travel speeds are declining.

Morning and afternoon peak travel speeds on arterials both decreased about 15 percent in the last four years. Travel speeds on arterial roads continued to fall in 2018 even as speeds on freeways and highways remained stable.



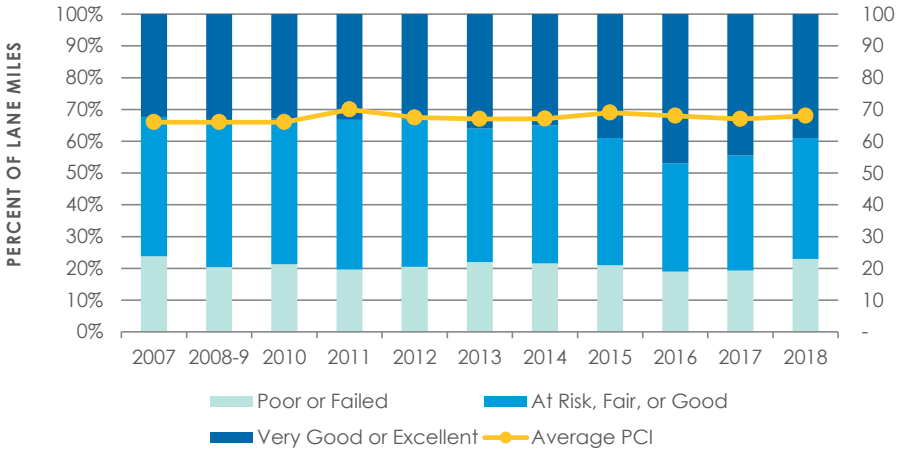
Bus transit speeds are falling.

Most bus operator' speeds dropped for the third consecutive year. Building congestion on arterial roads has slowed buses and trucks. This has contributed to rising operating costs. In 2019, commercial bus speeds improved for AC Transit for the first time since 2007. However, average speeds for AC Transit and LAVTA are down around 10 percent since 2010.



Road conditions are stable.

Countywide, PCI has remained stable over the last decade, matching the Bay Area average. In 2018, some of the worst performing jurisdictions, Berkeley and Oakland, improved the most.



Challenges and Opportunities for Major Roads

Highways, arterials, and major roads serve a unique role as a connector between the regional and local transportation systems and directly link to local land uses (commercial and residential corridors). They must facilitate throughput for all modes and support local land use.

Traffic Volume:

40 percent of daily trips on Alameda County roads

carried by 1,200 miles of arterials

Pavement Conditions:

Almost half of locally-managed roadways

rated **"excellent or very good"**

23 percent or almost 850 miles

rated **"poor, or failing"**

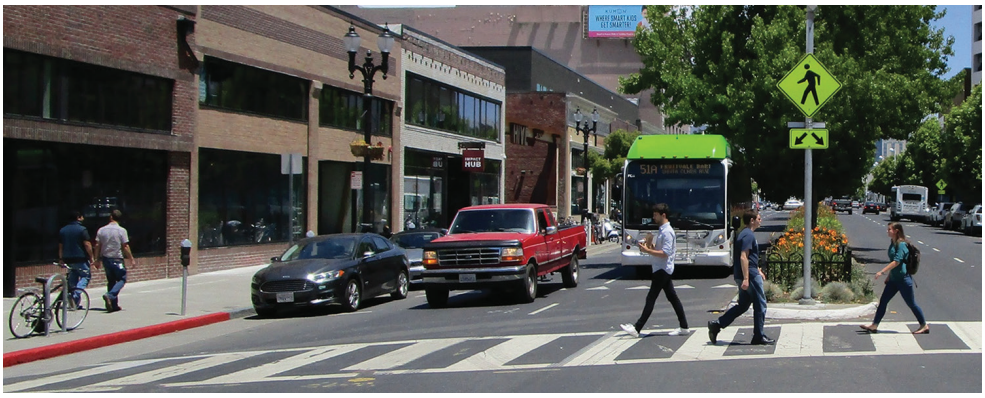
ALAMEDA County Transportation Commission

1111 Broadway
Suite 800
Oakland, CA 94607
(510) 208-7400
AlamedaCTC.org

CHALLENGES

Demand for roadway use is rising: Regional economic and population growth have increased demand for goods and services, and a variety of users, including cars, transit, bikes and trucks are competing to access the same roads.

Trip Diversion: Widespread congestion on freeways diverts trips onto adjacent arterials and local roads. The proliferation of wayfinding apps has exacerbated this problem, opening more local roads to cut-through traffic.



OPPORTUNITIES

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Multimodal Arterial Plan: The Countywide Multimodal Arterial Plan provides a roadmap for a future with improved mobility for all modes on a continuous and connected network, which can increase the efficiency and throughput of the entire transportation system.

Reducing conflict through design: Thoughtful facility design, operation, and maintenance can increase efficiency by reducing auto and transit delay and improve safety for all modes by reducing the severity of collisions. This promotes public health and creates vibrant local communities.

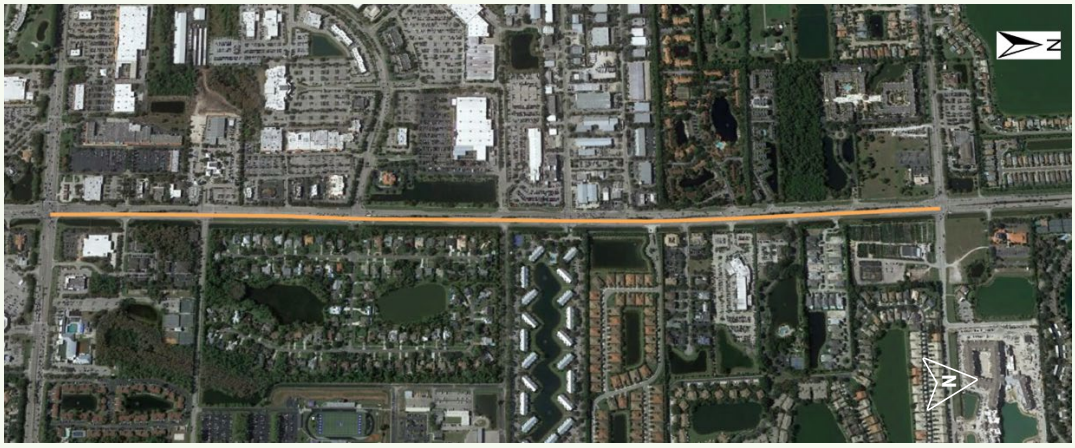
Advanced technologies: Emerging technologies can improve the operational efficiency of roadways while also supporting alternative

Data sources: 2016 Alameda Countywide Multimodal Arterial Plan, Countywide Travel Demand Model, 2012-2018 LOS Monitoring Reports, National Transit Database FY2007-08 through FY2015-16, Commercial Bus Speeds, Transit Operator Provided Provisional Data FY2016-17, Commercial Bus Speeds, Alameda CTC; MTC Vital Signs 2016, Pavement Condition Index, Metropolitan Transportation Commission; California Department of Transportation, 2016 Annual Average Daily Traffic Data Book.

Collier MPO – Congestion Management Process

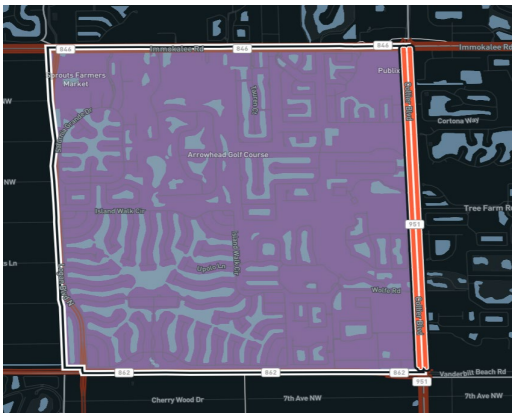
Congested Corridors Evaluation

Corridor #1: Airport-Pulling Rd from Pine Ridge Rd to Orange Blossom Dr

CORRIDOR INFORMATION			
			
Corridor Length (Miles)	1.4	**MPO CMP Tier Classification**	Tier 2
Posted Speed Limit	45 MPH	**Estimated Corridor Travel Time**	4-5 Min
AADT	40,500	**LOS**	C
RITIS DATA		**REPLICA DATA**	
Avg Weekday Travel Speed	NB- 33 MPH SB- 32 MPH	**Total Trips**	94,000
Avg Weekend Travel Speed	NB- 36 MPH SB- 36 MPH	**Avg Trip Length**	12. miles
Lowest Avg Weekday Travel Speed	26 MPH NB @ 2PM	**Avg Trip Duration**	18 min
Lowest Avg Weekend Travel Speed	30 MPH NB @ 12PM	**Private Automobile Mode Share**	88.6%
Total Estimated Delay Costs	$218,000	**Most Common Trip Purpose** (Other Than Home/Work)	Shopping
Total Vehicle-Hours of Delay	7,232	**Most Common Start Trip Time**	4PM
Most Severe Recurring Bottleneck		**Most Common Trip Origin/Destination**	
Direction & Location	SB @ Pine Ridge Rd	North of Pine Ridge Road between Goodlette Frank Road and Airport Pulling Road.	
Avg Queue Length (Miles)	2.21		
Avg Daily Duration	27 Min		
Trend(s)	Primarily PM Peak		
Most Severe Recurring Congestion Area			
Highest Avg Congestion	80% of free-flow speed		
Location	Pine Ridge Rd		
Direction & Time	SB @ 12 PM		
Other Notable Areas of Congestion	None	Other Common Origins / Destinations: South of Orange Blossom Dr. and east of Airport Pulling Rd.	

Congested Corridors Evaluation

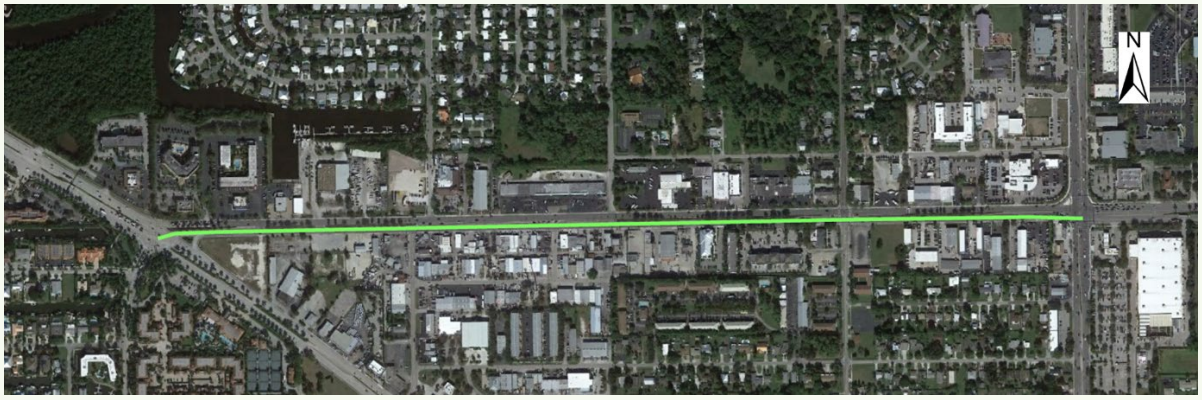
Corridor #2: Collier Blvd from Vanderbilt Beach Rd to Immokalee Rd

CORRIDOR INFORMATION			
			
Corridor Length (Miles)	2.01	**MPO CMP Tier Classification**	Tier 1
Posted Speed Limit	45	**Estimated Corridor Travel Time**	3-4 Min
AADT	34,000	**LOS**	D
RITIS DATA		**REPLICA DATA**	
Avg Weekday Travel Speed	NB- 38 MPH SB- 37 MPH	**Total Trips**	53,000
Avg Weekend Travel Speed	NB- 41 MPH SB- 40 MPH	**Avg Trip Length**	19 miles
Lowest Avg Weekday Travel Speed	29 MPH SB @ 8PM	**Avg Trip Duration**	28 min
Lowest Avg Weekend Travel Speed	31 MPH NB @ 12PM	**Private Automobile Mode Share**	89.5%
Total Estimated Delay Costs	$131,000	**Most Common Trip Purpose** (Other Than Home/Work)	Shopping
Total Vehicle-Hours of Delay	4,345	**Most Common Start Trip Time**	4PM
Most Severe Recurring Bottleneck		**Most Common Trip Origin/Destination**	
Direction & Location	SB @ Immokalee Rd	West of Collier Blvd between Vanderbilt Beach Rd and Immokalee Rd.	
Avg Queue Length (Miles)	0.03		
Avg Daily Duration	3 Hr 11 Min		
Trend(s)	Primarily AM/PM Peak		
Most Severe Recurring Congestion Area			
Highest Avg Congestion	82% of free-flow speed		
Location	Vanderbilt Beach Rd		
Direction & Time	SB @ 8AM		
Other Notable Areas of Congestion	None	Other Common Origins / Destinations: North of Vanderbilt Beach Rd and east of Collier Blvd.	

Congested Corridors Evaluation

Corridor #3: Davis Blvd from US 41 / Tamiami Trail to Airport-Pulling Rd

CORRIDOR INFORMATION



Corridor Length (Miles)	1.01	**MPO CMP Tier Classification**	Tier 2
Posted Speed Limit	45 MPH	**Estimated Corridor Travel Time**	2-3 Min
AADT	21,000	**LOS**	C

RITIS DATA		**REPLICA DATA**	
Avg Weekday Travel Speed	EB- 28 MPH WB- 31 MPH	**Total Trips**	32,000
Avg Weekend Travel Speed	EB- 30 MPH WB- 32 MPH	**Avg Trip Length**	15 miles
Lowest Avg Weekday Travel Speed	22 MPH EB @ 3 PM	**Avg Trip Duration**	21 min
Lowest Avg Weekend Travel Speed	26 MPH EB @ 12 PM	**Private Automobile Mode Share**	87.9%
Total Estimated Delay Costs	$34,000	**Most Common Trip Purpose** (Other Than Home/Work)	Shopping
Total Vehicle-Hours of Delay	1,147	**Most Common Start Trip Time**	4PM

Most Severe Recurring Bottleneck	
Direction & Location	EB @ Airport Rd
Avg Queue Length (Miles)	0.97
Avg Daily Duration	5 min
Trend(s)	Primarily PM Peak

Most Severe Recurring Congestion Area	
Highest Avg Congestion	82% of free-flow speed
Location	Airport Pulling Rd
Direction & Time	EB @ 3PM
Other Notable Areas of Congestion	WB approaching US-41 during AM

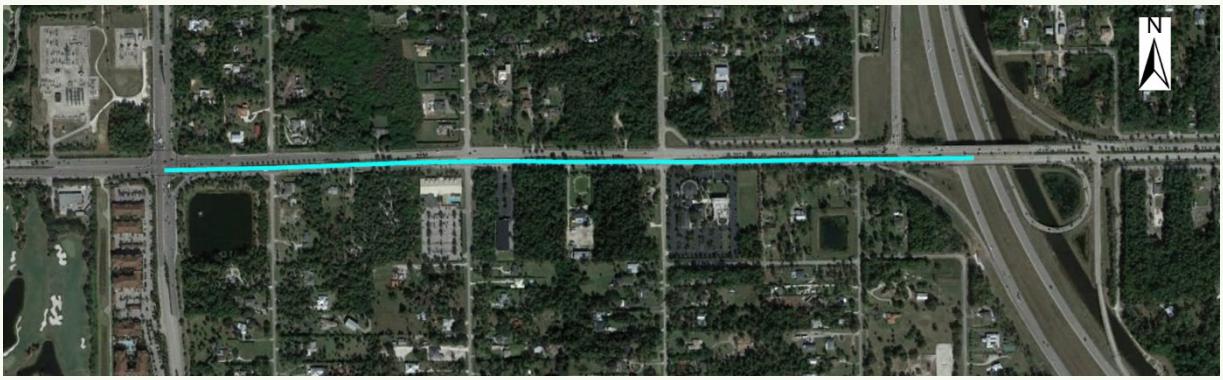
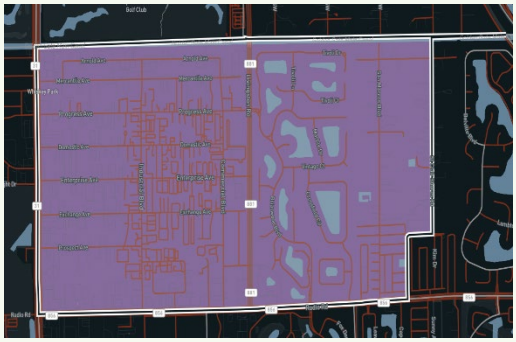
Most Common Trip Origin/Destination

North of Davis Blvd. between Airport Pulling Road and 5th Ave

Other Common Origins / Destinations: South of Davis Blvd between US 41 and Airport Pulling Road

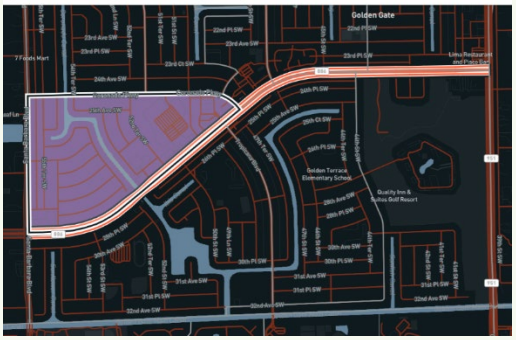
Congested Corridors Evaluation

Corridor #4: Golden Gate Pkwy from Livingston Rd to I-75

CORRIDOR INFORMATION			
			
Corridor Length (Miles)	1.03	**MPO CMP Tier Classification**	Tier 2
Posted Speed Limit	45 MPH	**Estimated Corridor Travel Time**	2-3 min
AADT	49,000	**LOS**	D
RITIS DATA		**REPLICA DATA**	
Avg Weekday Travel Speed	EB- 36 MPH WB- 35 MPH	**Total Trips**	110,000
Avg Weekend Travel Speed	EB- 40 MPH WB- 38 MPH	**Avg Trip Length**	27miles
Lowest Avg Weekday Travel Speed	27 MPH EB @ 4 PM	**Avg Trip Duration**	34 min
Lowest Avg Weekend Travel Speed	35 MPH WB @ 12 PM	**Private Automobile Mode Share**	91.8%
Total Estimated Delay Costs	$180,000	**Most Common Trip Purpose** (Other Than Home/Work)	Shopping
Total Vehicle-Hours of Delay	5,963	**Most Common Start Trip Time**	4PM
Most Severe Recurring Bottleneck		**Most Common Trip Origin/Destination**	
Direction & Location	WB @ Livingston Rd	North of Radio Rd between Airport Pulling Road and St. Clair Shores Rd  Other Common Origins / Destinations: South of Whippoorwill Way and East of Livingston Rd	
Avg Queue Length (Miles)	1.03		
Avg Daily Duration	14 Min		
Trend(s)	Primarily AM Peak		
Most Severe Recurring Congestion Area			
Highest Avg Congestion	76% of free-flow speed		
Location	Livingston Rd		
Direction & Time	WB @ 8AM		
Other Notable Areas of Congestion	EB Approaching I-75		

Congested Corridors Evaluation

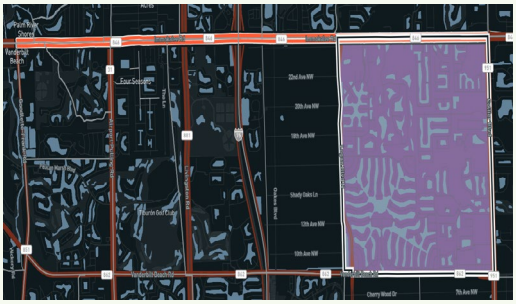
Corridor #5: Golden Gate Pkwy from Santa Barbara Blvd to Collier Blvd

CORRIDOR INFORMATION			
			
Corridor Length (Miles)	2.19	**MPO CMP Tier Classification**	Tier 1
Posted Speed Limit	35 MPH	**Estimated Corridor Travel Time**	4-7 Min
AADT	33,400	**LOS**	D
RITIS DATA		**REPLICA DATA**	
Avg Weekday Travel Speed	EB- 28 MPH WB- 27 MPH	**Total Trips**	70k
Avg Weekend Travel Speed	EB- 30 MPH WB- 29 MPH	**Avg Trip Length**	12.3 miles
Lowest Avg Weekday Travel Speed	21 MPH EB @ 4 PM	**Avg Trip Duration**	12 min
Lowest Avg Weekend Travel Speed	27 MPH WB @ 12 PM	**Private Automobile Mode Share**	88.8%
Total Estimated Delay Costs	$70,000	**Most Common Trip Purpose** (Other Than Home/Work)	Shopping
Total Vehicle-Hours of Delay	2,328	**Most Common Start Trip Time**	4PM
Most Severe Recurring Bottleneck		**Most Common Trip Origin/Destination**	
Direction & Location	EB @ Sunshine Blvd	East of Santa Barbara Blvd between Golden Gate Parkway and Coronado Pkwy 	
Avg Queue Length (Miles)	1.27		
Avg Daily Duration	5 Min		
Trend(s)	Primarily PM Peak		
Most Severe Recurring Congestion Area			
Highest Avg Congestion	78% of free-flow speed		
Location	Sunshine Blvd		
Direction & Time	EB @ 4PM		
Other Notable Areas of Congestion	None	Other Common Origins / Destinations: South of Golden Gate Pkwy West of Tropicana Blvd	

Congested Corridors Evaluation

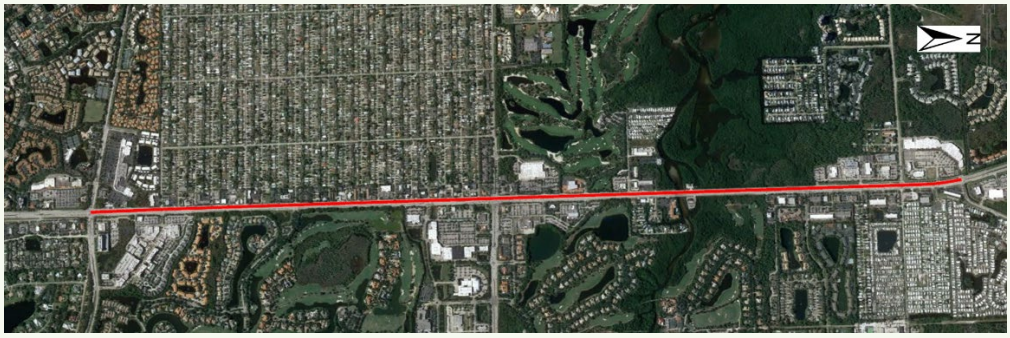
Corridor #6: Immokalee Rd from Goodlette Frank Rd to Collier Blvd

CORRIDOR INFORMATION

Corridor Length (Miles)	6.23	**MPO CMP Tier Classification**	Tier 1 & 2
Posted Speed Limit	45 MPH	**Estimated Corridor Travel Time**	12-13 min
AADT	54,500	**LOS**	C/D/E
RITIS DATA		**REPLICA DATA**	
Avg Weekday Travel Speed	EB- 33 MPH WB- 34 MPH	**Total Trips**	320,000
Avg Weekend Travel Speed	EB- 36 MPH WB- 37 MPH	**Avg Trip Length**	21 miles
Lowest Avg Weekday Travel Speed	26 MPH EB @ 5 PM	**Avg Trip Duration**	29 min
Lowest Avg Weekend Travel Speed	32 MPH EB @ 2 PM	**Private Automobile Mode Share**	90.0%
Total Estimated Delay Costs	$2.72M	**Most Common Trip Purpose** (Other Than Home/Work)	Shopping
Total Vehicle-Hours of Delay	90,246	**Most Common Start Trip Time**	4PM
Most Severe Recurring Bottleneck		**Most Common Trip Origin/Destination**	
Direction & Location	EB @ I-75	South of Immokalee Rd between Logan Blvd and Collier Blvd  Other Common Origins / Destinations: North of Immokalee Rd between I-75 and Collier Blvd	
Avg Queue Length (Miles)	1.84		
Avg Daily Duration	45 Min		
Trend(s)	Primarily PM Peak		
Most Severe Recurring Congestion Area			
Highest Avg Congestion	62% of free-flow speed		
Location	I-75		
Direction & Time	EB @ 5PM		
Other Notable Areas of Congestion	EB approaching Airport Rd		

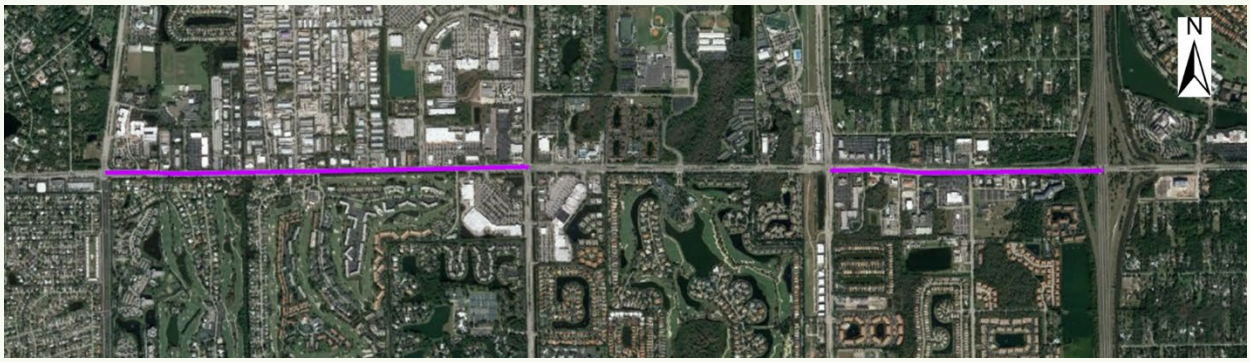
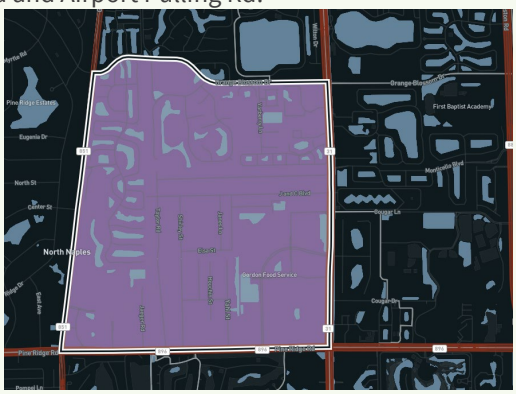
Congested Corridors Evaluation

Corridor #7: US 41 / Tamiami Trail from Vanderbilt Beach Rd to Old US 41

CORRIDOR INFORMATION			
			
Corridor Length (Miles)	3.25	**MPO CMP Tier Classification**	Tier 2
Posted Speed Limit	50-55 MPH	**Estimated Corridor Travel Time**	6-7 min
AADT	45,000	**LOS**	C/E
RITIS DATA		**REPLICA DATA**	
Avg Weekday Travel Speed	NB- 36 MPH SB- 36 MPH	**Total Trips**	140,000
Avg Weekend Travel Speed	NB- 39 MPH SB- 38 MPH	**Avg Trip Length**	18 miles
Lowest Avg Weekday Travel Speed	26 MPH NB @ 4 PM	**Avg Trip Duration**	26 min
Lowest Avg Weekend Travel Speed	33 MPH SB @ 12 PM	**Private Automobile Mode Share**	88.1%
Total Estimated Delay Costs	$2.62 M	**Most Common Trip Purpose** (Other Than Home/Work)	Shopping
Total Vehicle-Hours of Delay	86,886	**Most Common Start Trip Time**	4PM
Most Severe Recurring Bottleneck		**Most Common Trip Origin/Destination**	
Direction & Location	NB @ Vanderbilt Beach Rd	South of Immokalee Rd between US 41 and Goodlette Frank Rd  	
Avg Queue Length (Miles)	0.42		
Avg Daily Duration	3 Hr 9 Min		
Trend(s)	Primarily PM Peak		
Most Severe Recurring Congestion Area			
Highest Avg Congestion	44% of free-flow speed		
Location	Vanderbilt Beach Rd		
Direction & Time	NB @ 4PM		
Other Notable Areas of Congestion	NB approaching Immokalee Rd	Other Common Origins / Destinations: North of Immokalee Rd between US 41 and Cypress Way	

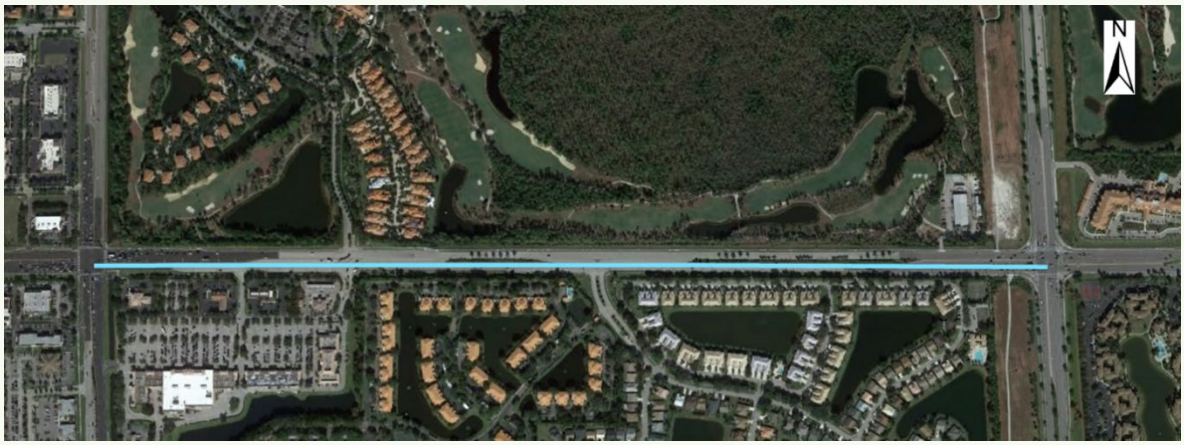
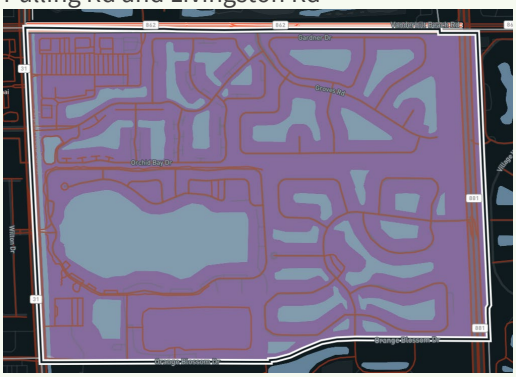
Congested Corridors Evaluation

Corridor #8: Pine Ridge Rd from Goodlette Frank Rd to I-75

CORRIDOR INFORMATION			
			
Corridor Length (Miles)	2.43	**MPO CMP Tier Classification**	Tier 1 & 2
Posted Speed Limit	40-45 MPH	**Estimated Corridor Travel Time**	5-6 min
AADT	48,000	**LOS**	C/D/F
RITIS DATA		**REPLICA DATA**	
Avg Weekday Travel Speed	EB- 30 MPH WB- 30 MPH	**Total Trips**	160,000
Avg Weekend Travel Speed	EB- 35 MPH WB- 34 MPH	**Avg Trip Length**	16 miles
Lowest Avg Weekday Travel Speed	21 MPH EB @ 4 PM	**Avg Trip Duration**	22 min
Lowest Avg Weekend Travel Speed	28 MPH WB @ 12 PM	**Private Automobile Mode Share**	87.8%
Total Estimated Delay Costs	$1.43M	**Most Common Trip Purpose** (Other Than Home/Work)	Shopping
Total Vehicle-Hours of Delay	47,584	**Most Common Start Trip Time**	4PM
Most Severe Recurring Bottleneck		**Most Common Trip Origin/Destination**	
Direction & Location	EB @ Livingston Rd	North of Pine Ridge Blvd between Goodlette Frank Rd and Airport Pulling Rd.	
Avg Queue Length (Miles)	1.84		
Avg Daily Duration	37 min		
Trend(s)	Primarily PM Peak		
Most Severe Recurring Congestion Area			
Highest Avg Congestion	58% of free-flow speed		
Location	Livingston Rd		
Direction & Time	EB @ 5PM		
Other Notable Areas of Congestion	EB Approaching I-75	Other Common Origins / Destinations: N and S of Pine Ridge between Livingston Rd and I-75.	

Congested Corridors Evaluation

Corridor #9: Vanderbilt Beach Rd from Airport-Pulling Rd to Livingston Rd

CORRIDOR INFORMATION			
			
Corridor Length (Miles)	1.01	**MPO CMP Tier Classification**	Tier 1
Posted Speed Limit	45 MPH	**Estimated Corridor Travel Time**	1-2 min
AADT	25,550	**LOS**	C
RITIS DATA		**REPLICA DATA**	
Avg Weekday Travel Speed	EB- 37 MPH WB- 37 MPH	**Total Trips**	20,000
Avg Weekend Travel Speed	EB- 39 MPH WB- 39 MPH	**Avg Trip Length**	11 miles
Lowest Avg Weekday Travel Speed	27 MPH EB @ 5 PM	**Avg Trip Duration**	17 min
Lowest Avg Weekend Travel Speed	29 MPH WB @ 11 AM	**Private Automobile Mode Share**	92.1%
Total Estimated Delay Costs	$52,000	**Most Common Trip Purpose** (Other Than Home/Work)	Shopping
Total Vehicle-Hours of Delay	1,728	**Most Common Start Trip Time**	8AM
Most Severe Recurring Bottleneck		**Most Common Trip Origin/Destination**	
Direction & Location	EB @ Livingston Rd	South of Vanderbilt Beach Rd between Airport Pulling Rd and Livingston Rd	
Avg Queue Length (Miles)	1.34		
Avg Daily Duration	5 Min		
Trend(s)	Primarily PM Peak		
Most Severe Recurring Congestion Area			
Highest Avg Congestion	82% of free-flow speed		
Location	Airport Rd		
Direction & Time	EB @ 5PM		
Other Notable Areas of Congestion	None	Other Common Origins / Destinations: North of Vanderbilt Beach Rd between Logan Blvd and Collier Blvd	

Congested Corridors Evaluation

Corridor #10: Vanderbilt Beach Rd from Vanderbilt Dr to US 41 / Tamiami Trail

CORRIDOR INFORMATION

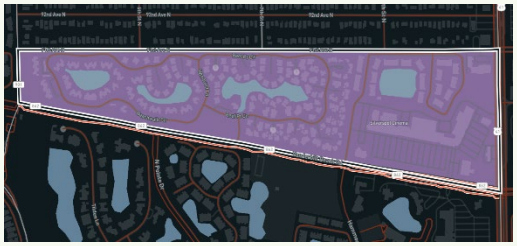
Corridor Length (Miles)	1.00	**MPO CMP Tier Classification**	Tier 2
Posted Speed Limit	35 MPH	**Estimated Corridor Travel Time**	3-4 min
AADT	11,100	**LOS**	C

RITIS DATA		**REPLICA DATA**	
Avg Weekday Travel Speed	EB- 26 MPH WB- 28 MPH	**Total Trips**	21,000
Avg Weekend Travel Speed	EB- 26 MPH WB- 28 MPH	**Avg Trip Length**	12 miles
Lowest Avg Weekday Travel Speed	22 MPH EB @ 12 PM	**Avg Trip Duration**	18 min
Lowest Avg Weekend Travel Speed	23 MPH WB @ 11 AM	**Private Automobile Mode Share**	86.3%
Total Estimated Delay Costs	$2,000k	**Most Common Trip Purpose** (Other Than Home/Work)	Shopping
Total Vehicle-Hours of Delay	881	**Most Common Start Trip Time**	4PM

Most Severe Recurring Bottleneck	
Direction & Location	WB @ US 41
Avg Queue Length (Miles)	0.9
Avg Daily Duration	1 Min
Trend(s)	Primarily PM Peak
Most Severe Recurring Congestion Area	
Highest Avg Congestion	85% of free-flow speed
Location	US 41
Direction & Time	WB @ 4PM
Other Notable Areas of Congestion	None

Most Common Trip Origin/Destination

North of Vanderbilt Beach Rd between Vanderbilt Drive and US 41



Other Common Origins / Destinations: Along the Gulf of Mexico between Vanderbilt Beach Drive and Clam Pass

EXECUTIVE SUMMARY
REPORTS & PRESENTATIONS
ITEM 8A

FDOT District 1 - US 41 FRAME Presentation

OBJECTIVE: For the committee to receive a presentation regarding the FDOT District 1 Florida's Regional Advanced Mobility Elements (FRAME) project on US 41 in Lee County.

CONSIDERATIONS: The Florida's Regional Advanced Mobility Elements (FRAME) project is part of FDOT's larger initiative to deploy Connected Vehicle (CV) technology on Florida's roadways to better manage, operate, and maintain the multi-modal system, create integrated corridor management solutions, and improve safety and mobility. Emerging technologies proposed in the FRAME program include Automated Traffic Signal Performance Measures and CV technologies such as Roadside Units and On-Board Units; Transit Signal Priority and Freight Signal Priority to facilitate the operation of Signal Phase and Timing; Traveler Information Messages; Emergency Vehicle Preemption; and other applications. The goal of the project is to improve existing facilities and promote a more effective and efficient transportation network.

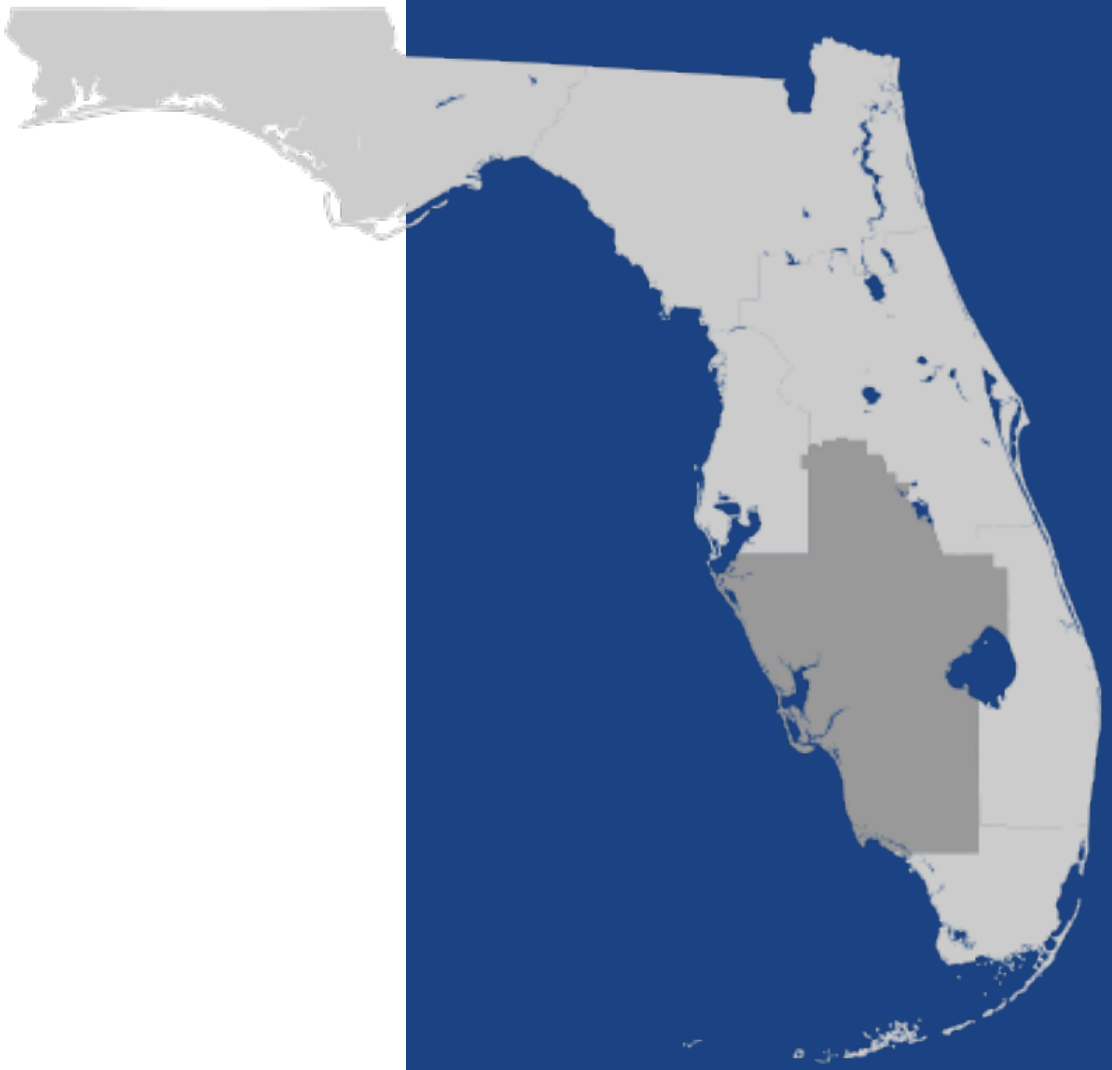
The US 41 FRAME project will deploy emerging safety and mobility solutions such as Automated Traffic Signal Performance Measures (ATSPM) and Connected and Automated Vehicles (CAV) solutions on US 41 in Lee County with the goal of improving safety and mobility along the corridor.

STAFF RECOMMENDATION: That the committee receive a presentation from FDOT on the FRAME project on US 41 in Lee County.

Prepared By: Scott Philips, Principal Planner

ATTACHMENT(S):

1. FDOT District 1 US 41 FRAME Presentation



PROJECT UPDATE

FDOT District One
US 41 FRAME

US 41 FRAME Project Details

- Part of Florida's Regional Advanced Mobility Elements (FRAME)
  - Deployment of CV Technology (RSUs, OBUs, LiDAR, CV Applications)
- Segment length: 6.44 miles in Lee County
- 25 signals
  - Interconnected & closely spaced, half-mile
  - Lee County has mostly ASC 3 (TS2, 1) and Cobalt's (ATC/TS2, 1)
- US 41 is parallel to I-75
  - Detour route for incident management

Project Approach

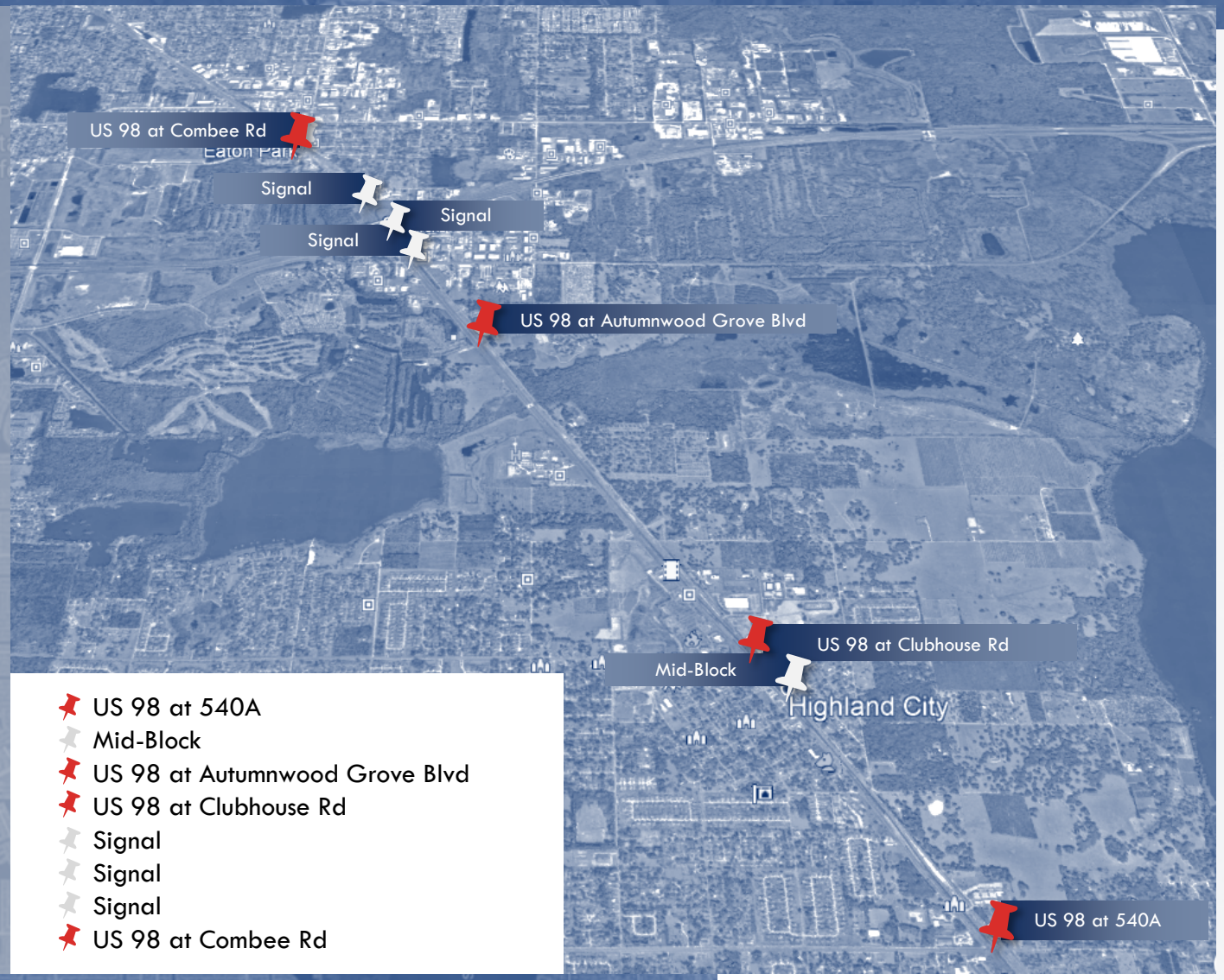
- Systems Manager uses the same consultant to:
  - Create all Systems Engineering documentation
  - Provide full design services
  - Assist with procurement as needed
  - Perform integration and testing
- The contractor installs all infrastructure
- This allows FDOT to have more flexibility in the choice of technology
- Lee County will operate and maintain

GOAL: IMPROVE SAFETY AND MOBILITY

Stakeholders

- FDOT District One
- Lee County
  - Sherriff's Department
  - Engineering Department
  - Department of Public Safety
- LeeTran
- Emergency Services Agencies
- Auto Dealers (15 within our project limits)
- City of Fort Myers
  - Fire Department
  - Police Department
  - Engineering Division

US 41 FRAME Project Details



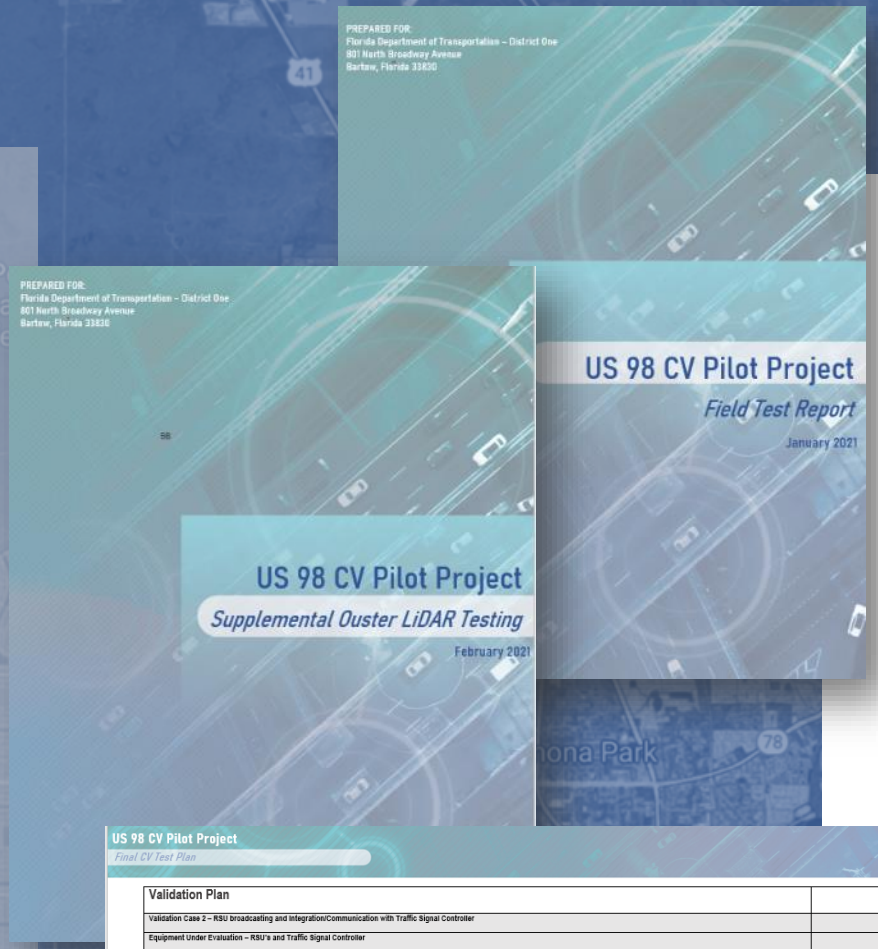
FOUR TESTED CV PILOT LOCATIONS

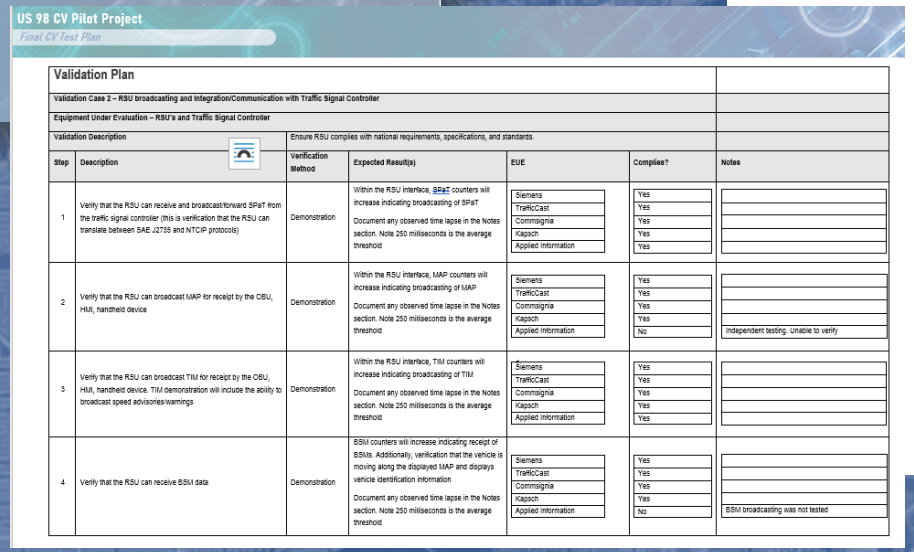
1. US 98 at CR 540A
2. US 98 at Clubhouse Rd
3. US 98 at Autumnwood Grove Blvd
4. US 98 at Combee Rd

CV APPLICATIONS

- Signal Phase & Timing (SPaT)
- Map Data Message (MAP)
- Traveler Information Message (TIM)
- Personal Safety Message (PSM)
- Transit Signal Priority (TSP)
- Emergency Vehicle Pre-emption (EVP)

US 41 FRAME Project Details





US 98 CV PILOT TESTING RESULTS REPORT

- Documented observations of testing relative to performance, communication, vendor support – 2 Reports:
  - US 98 CV Pilot Test Report
  - Supplemental Ouster Report
- Includes summary matrices/validation plans
- Includes device deployment recommendations

US 98 CV PILOT TESTING RESULTS

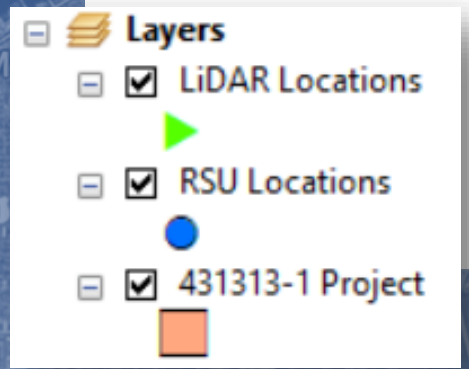
- ***Recommendation:***
  - Kapsch Dual-Mode RSUs – Qty 25
  - Kapsch C-V2X OBUs – Qty 11
  - Commsignia C-V2X OBU for interoperability – Qty 1
  - Connect:ITS In-cabinet processor – Qty 11
  - Ouster LiDAR – Qty 22

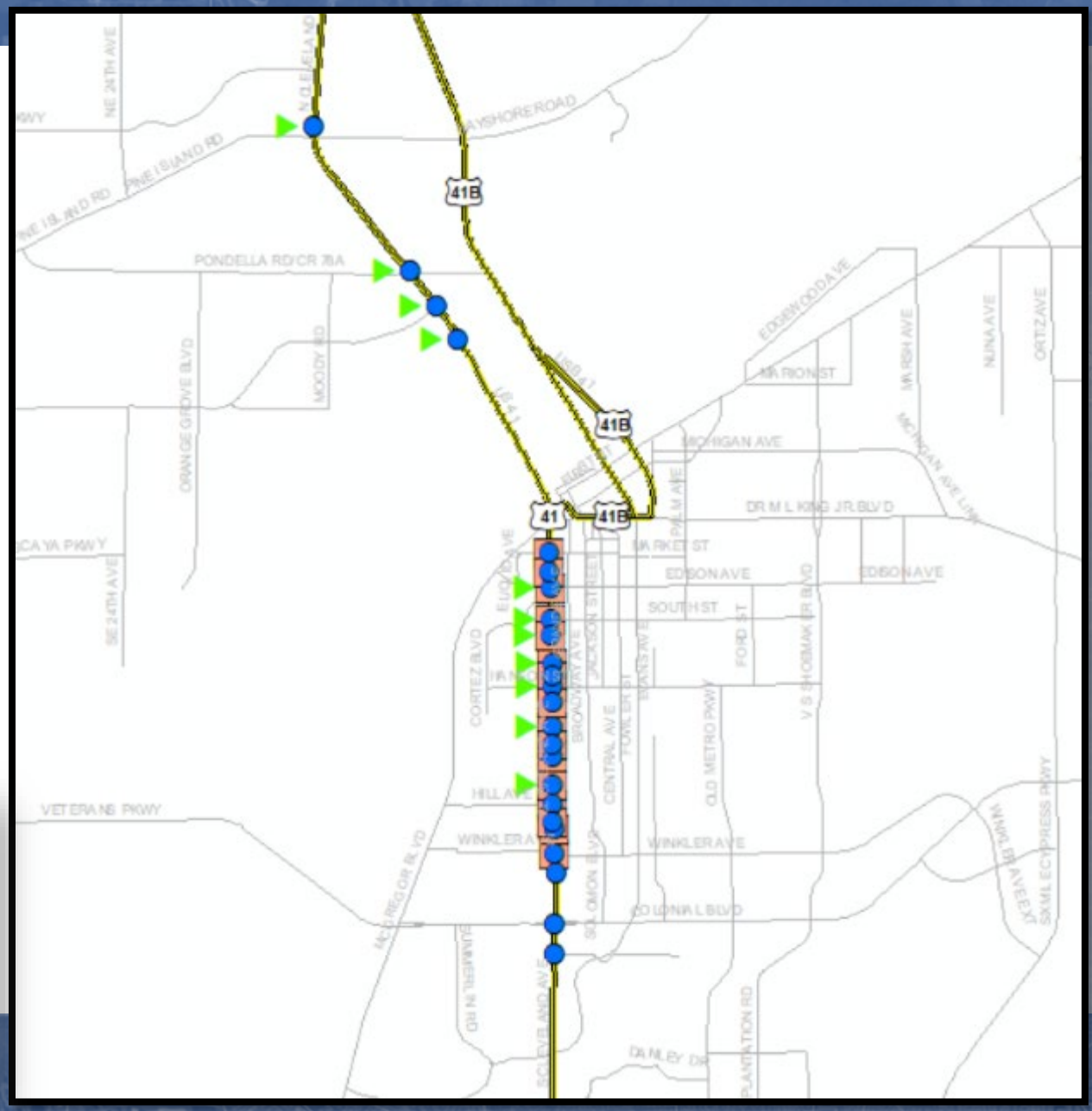
US 41 FRAME Project Details

- Project Details
- System Engineering
- Evaluation of CV
- Procurement Analysis
- Conclusion
- Next Steps

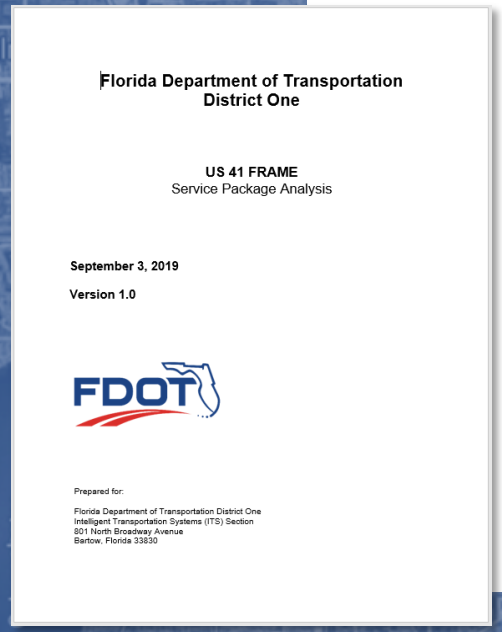
Plans Development

- Final S&S plans Completed in July 2021
- Coordinating with adjacent projects, specifically with project 431313-1. This project is installing infrastructure that will be used by our project





US 41 FRAME System Engineering



Florida Department of Transportation
District One

US 41 FRAME
Service Package Analysis

September 3, 2019

Version 1.0

FDOT

Prepared for:

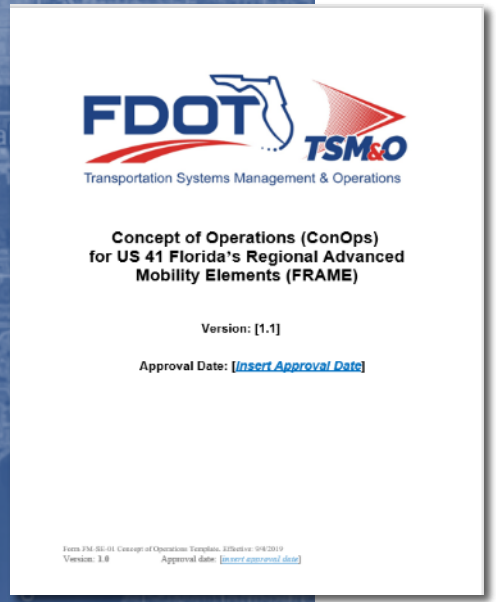
Florida Department of Transportation District One
Intelligent Transportation Systems (ITS) Section
801 North Broadway Avenue
Bartow, Florida 33830

Service Package Analysis

- Analyzed the Service Packages currently in use
  - FDOT District One
  - Lee County Government
- Recommended additional Service Packages
  - Increased safety benefits by CV technology

- AD1 - ITS Data Mart
- APTS07 - Multi-modal coordination
- APTS08 - Transit Traveler Information
- APTS11 - Multimodal Connection Protection
- ATIS02 - Interactive Traveler Information
- ATIS04 - Dynamic Route Guidance
- ATIS10 - Short Range Communications Traveler Information
- ATMS19 - Speed Warning and Enforcement
- ATMS24 - Dynamic Roadway Warning
- ATMS26 - Mixed Use Warning Systems
- AVSS01 - Vehicle Safety Monitoring
- AVSS02 - Driver Safety Monitoring
- AVSS03 - Longitudinal Safety Warning
- AVSS04 - Lateral Safety Warning
- AVSS05 - Intersection Safety Warning
- AVSS06 - Pre-Crash Restraint Deployment
- AVSS07 - Driver Visibility Improvement
- CVO08 - On-board CVO Safety

US 41 FRAME System Engineering



Concept of Operations

- Touches on new technologies and concepts related to CV and how these technologies can be used
  - Improves the information obtained for incidents and congestion along the roadway
  - Provides information to motorists
  - Provides safer and less congested route choices
  - Discusses the current system situation
  - Provides justification for changes to the existing system
  - Provides concepts for the proposed system
  - operational scenarios
  - Lists a summary of impacts and an analysis of the proposed system

US 41 FRAME System Engineering

System Validation Plan

- Essential to ensure that stakeholders' needs are identified
- Scope/Overview of Project
- Conducting the Validation
- Event Identification
  - Activities
  - Test Results
  - Results Report


FDOT TSM&O
Transportation Systems Management & Operations

Project Systems Engineering Management Plan (PSEMP) for US 41 Florida's Regional Advanced Mobility Elements (FRAME)

Version: [1.0]

Approval Date: [Insert Approval Date]

PSEMP

- The PSEMP is a plan that helps manage and control the project
- Utilizes Systems Engineering processes
  - ***Section 1*** *– Overview of the PSEMP document*
  - ***Section 2*** *– Systems Engineering Processes*
  - ***Section 3*** *– Project Management and Control*

US 41 FRAME Evaluation of CV Applications

USDOT Sponsored CV Applications Listing

V2I Safety

Red Light Violation Warning
Curve Speed Warning
Stop Sign Gap Assist
Spot Weather Impact Warning
Reduced Speed/Work Zone Warning
Pedestrian in Signalized Crosswalk Warning (Transit)

V2V Safety

Emergency Electronic Brake Lights (EEBL)
Forward Collision Warning (FCW)
Intersection Movement Assist (IMA)
Left Turn Assist (LTA)
Blind Spot/Lane Change Warning (BSW/LCW)
Do Not Pass Warning (DNPW)
Vehicle Turning Right in Front of Bus Warning (Transit)

Agency Data

Probe-based Pavement Maintenance
Probe-enabled Traffic Monitoring
Vehicle Classification-based Traffic Studies
CV-enabled Turning Movement & Intersection Analysis
CV-enabled Origin-Destination Studies
Work Zone Traveler Information

Environment

Eco-Approach and Departure at Signalized Intersections
Eco-Traffic Signal Timing
Eco-Traffic Signal Priority
Connected Eco-Driving
Wireless Inductive/Resonance Charging
Eco-Lanes Management
Eco-Speed Harmonization
Eco-Cooperative Adaptive Cruise Control
Eco-Traveler Information
Eco-Ramp Metering
Low Emissions Zone Management
AFV Charging / Fueling Information
Eco-Smart Parking
Dynamic Eco-Routing (light vehicle, transit, freight)
Eco-ICM Decision Support System

Road Weather

Motorist Advisories and Warnings (MAW)
Enhanced MDSS
Vehicle Data Translator (VDT)
Weather Response Traffic Information (WxTINFO)

Mobility

Advanced Traveler Information System
Intelligent Traffic Signal System (I-SIG)
Signal Priority (transit, freight)
Mobile Accessible Pedestrian Signal System (PED-SIG)
Emergency Vehicle Preemption (PREEMPT)
Dynamic Speed Harmonization (SPD-HARM)
Queue Warning (Q-WARN)
Cooperative Adaptive Cruise Control (CACC)
Incident Scene Pre-Arrival Staging Guidance for Emergency Responders (RESP-STG)
Incident Scene Work Zone Alerts for Drivers and Workers (INC-ZONE)
Emergency Communications and Evacuation (EVAC)
Connection Protection (T-CONNECT)
Dynamic Transit Operations (T-DISP)
Dynamic Ridesharing (D-RIDE)
Freight-Specific Dynamic Travel Planning and Performance
Drayage Optimization

Smart Roadside

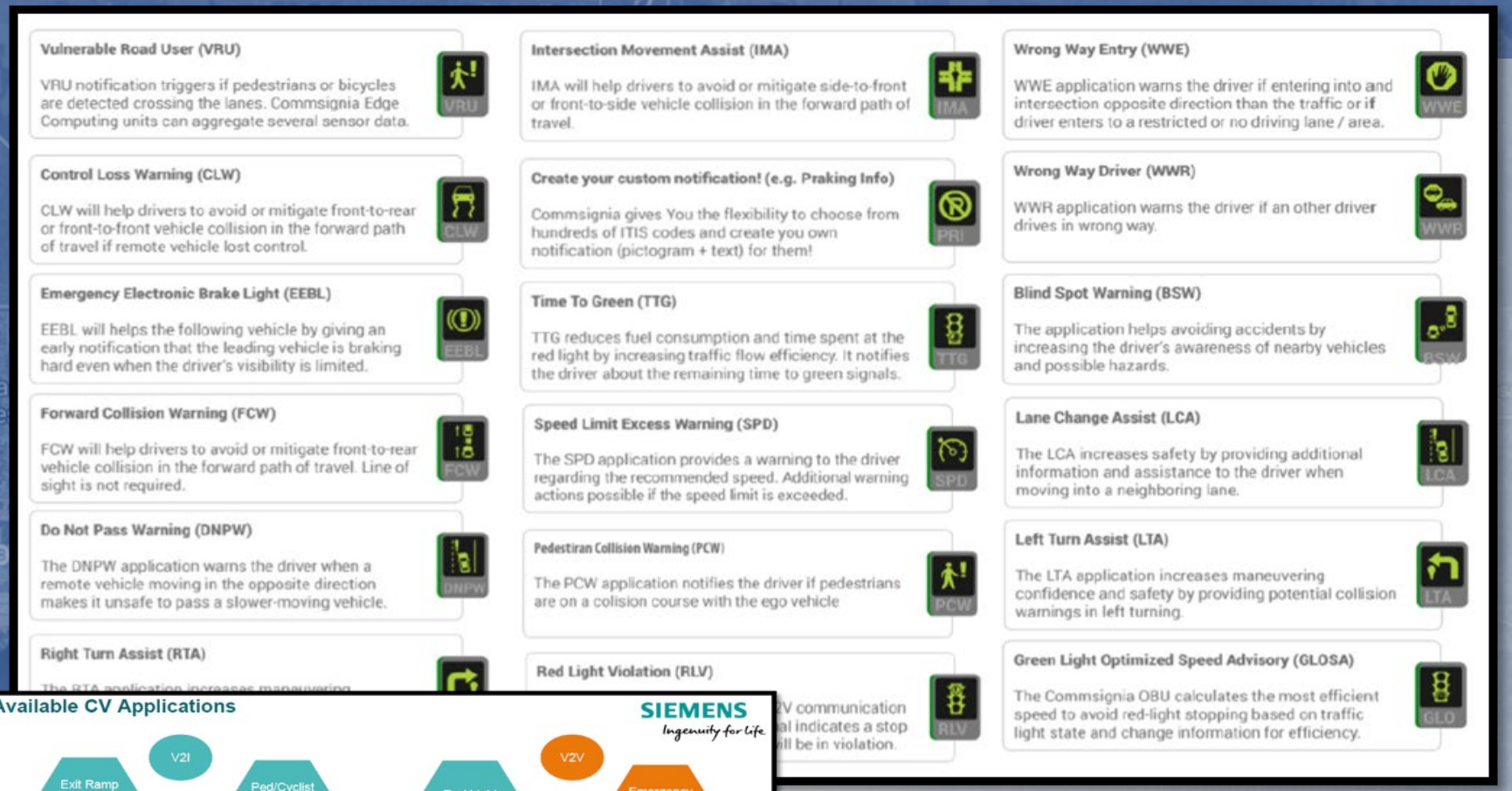
Wireless Inspection
Smart Truck Parking

CV Applications

- Vehicle-to-Infrastructure (V2I)
- Vehicle-to-Vehicle (V2V)
- Vehicle-to-Pedestrians (V2P) & Passive Pedestrian Protection/Detection

US 41 FRAME Evaluation of CV – V2X

- **Signal time to change and Red-Light Violation warning applications:**
  - SPaT and MAP signal actuation by lane
  - Advanced vehicle detection by lane
- **Priority and preemption applications:**
  - EVP
  - TSP and mobility efficiency
- **Safety Messaging:**
  - TIM creation and broadcast via RSU, OBU and Personal Safety Device (mobile application)
  - Pedestrian & Bicycle mobility and safety notifications via RSU, OBU and Personal Safety Device (mobile application)
- **Intelligent Transportation Systems Operational Data Environment (ITS ODE):**
  - SPaT, MAP, BSM and TIM data collection, management, and distribution/sharing cloud-based system



US 41 FRAME Evaluation of CV

IVP Hubs

- Solution 1 – TrafficCast
- Solution 2 – Cisco (with Quanergy LiDAR)
- Solution 3 – MH Corbin (with Cepton LiDAR, subsequent Ouster LiDAR)
- Solution 4 – Applied Information

RSUs

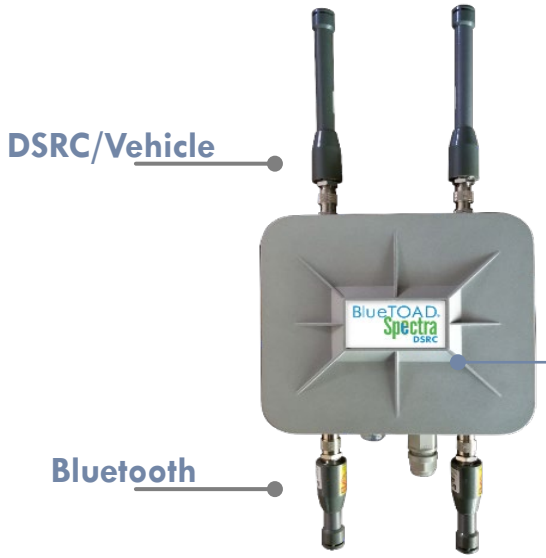
- TrafficCast DSRC (with OBU)
- Commsignia Dual-Mode (with OBU)
- Kapsch Dual-Mode (with OBU)
- Siemens Dual-Mode

Key Objectives

- CV Technology capabilities/demonstrations

US 41 FRAME Evaluation of CV

ROADSIDE UNITS (RSUs)



Commsignia (DSRC, C-V2X)

TrafficCast (DSRC)

Siemens (DSRC, C-V2X)

Kapsch (DSRC, C-V2X)

US 41 FRAME Evaluation of CV

ONBOARD UNITS (OBUs)

Commsignia ITS OB-4 (DSRC, C-V2X)

Kapsch CBX 9360 (C-V2X)

TrafficCast DENSO (DSRC)

US 41 FRAME Evaluation of CV

SENSORS – LiDAR and Camera

Quanergy M8

Cepton Vista P60

Ouster OS1

Iteris RZ4

FLIR TrafiSense 2

US 41 FRAME Evaluation of CV

INTEGRATED V2I PROTOTYPE (IVP) HUB (Industrial Computer)

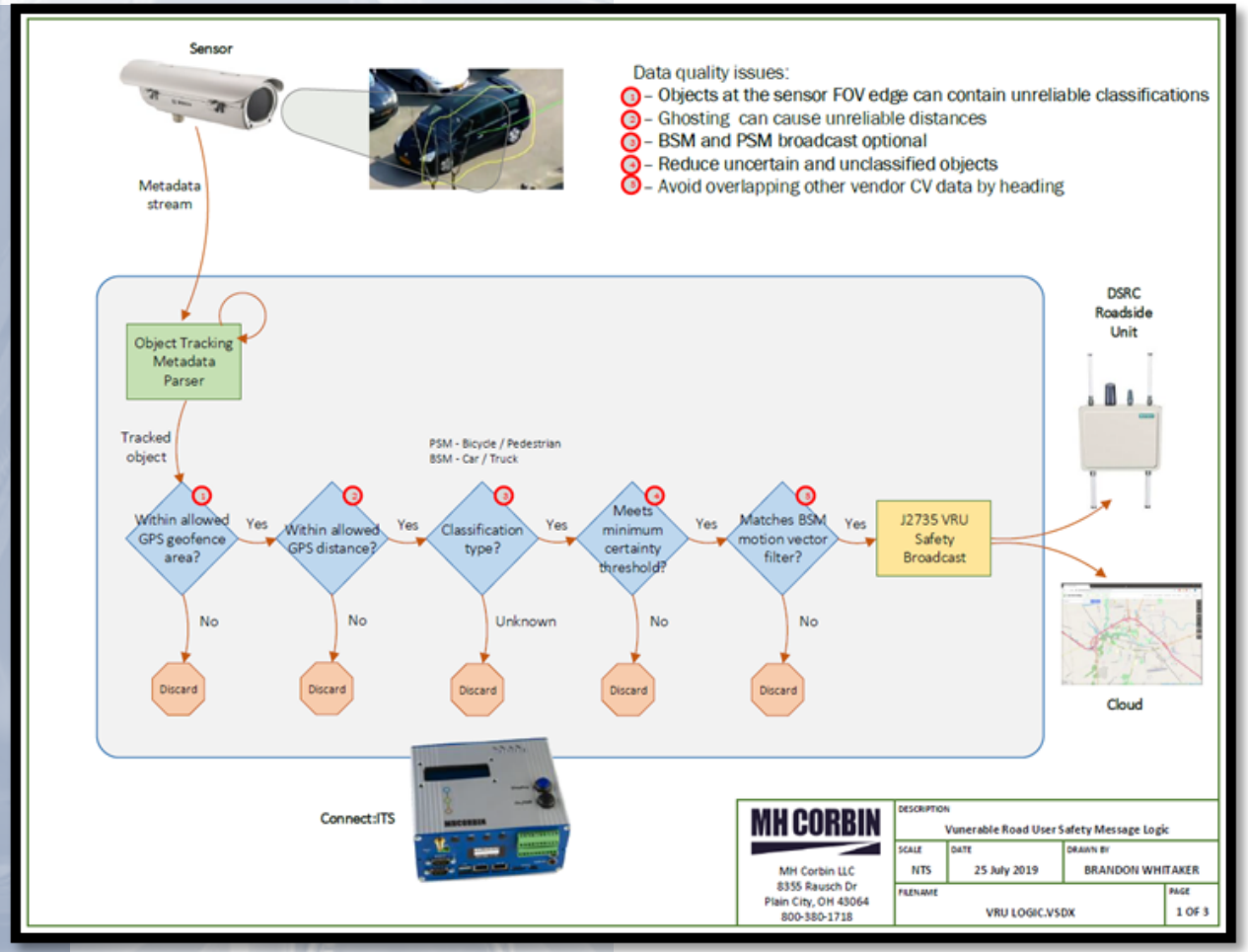
Applied Information (AI) AI-500-085

MH Corbin Connect:ITS

TrafficCast In-Cabinet Processor

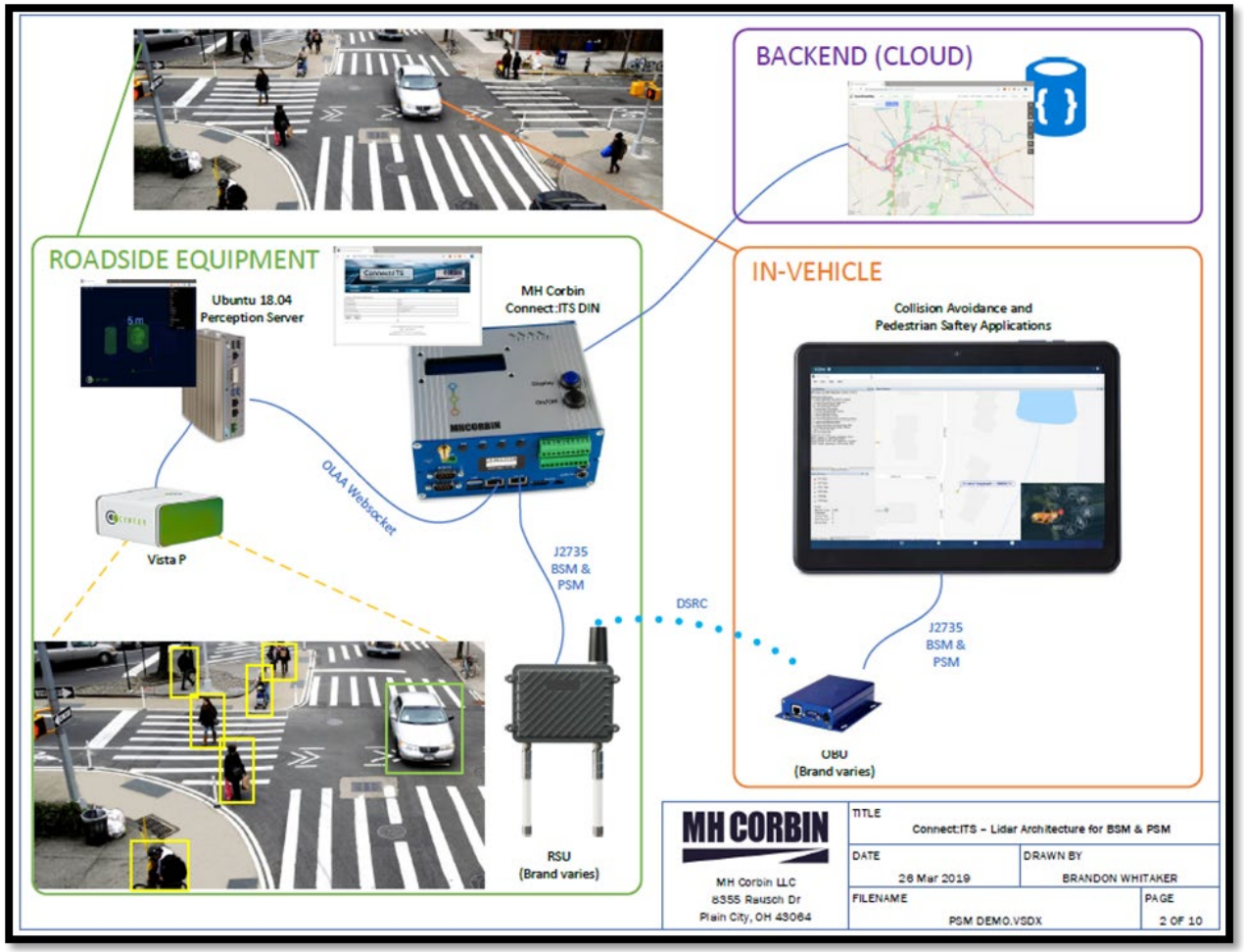
Cisco IC3000

US 41 FRAME Evaluation of CV – V2P



MH Corbin's Safety Message Broadcast Five-Step Methodology

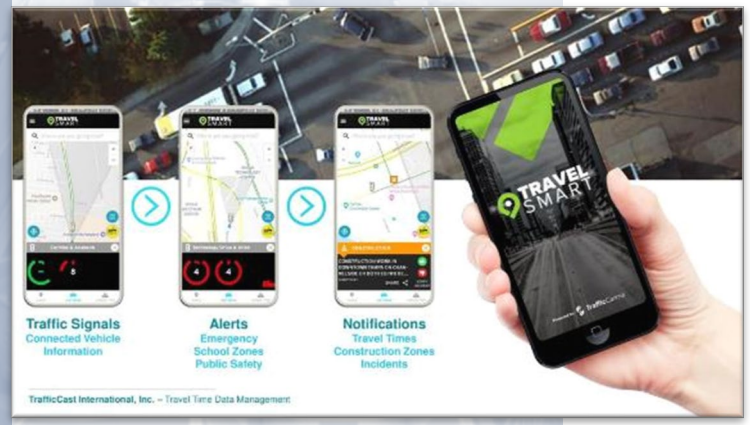
MH Corbin Connect:ITS

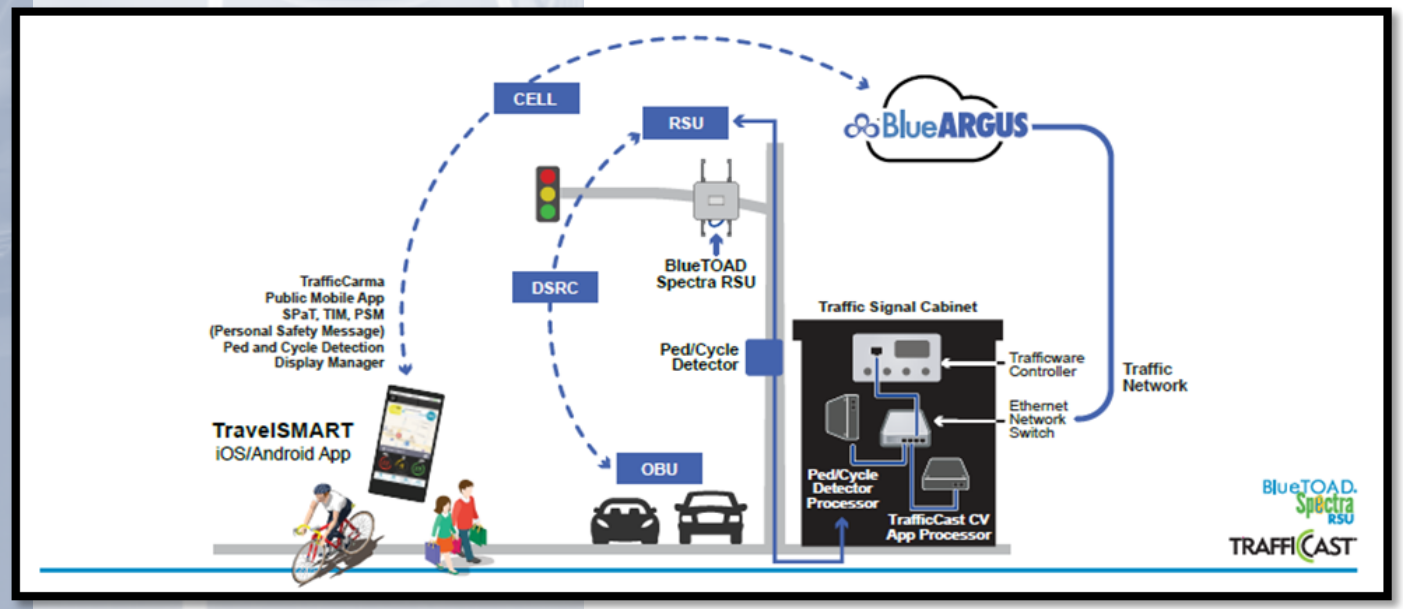


Pedestrian Detection Roadside Equipment and Communication

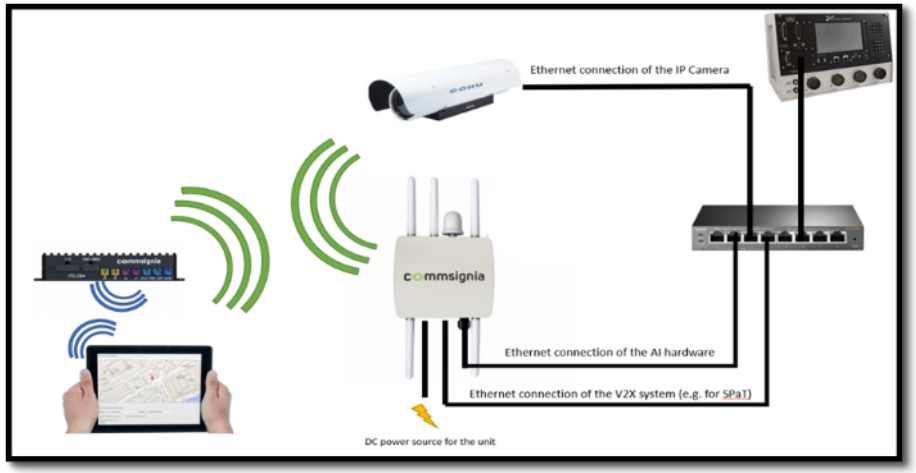
US 41 FRAME Evaluation of CV

TrafficCast TravelSMART





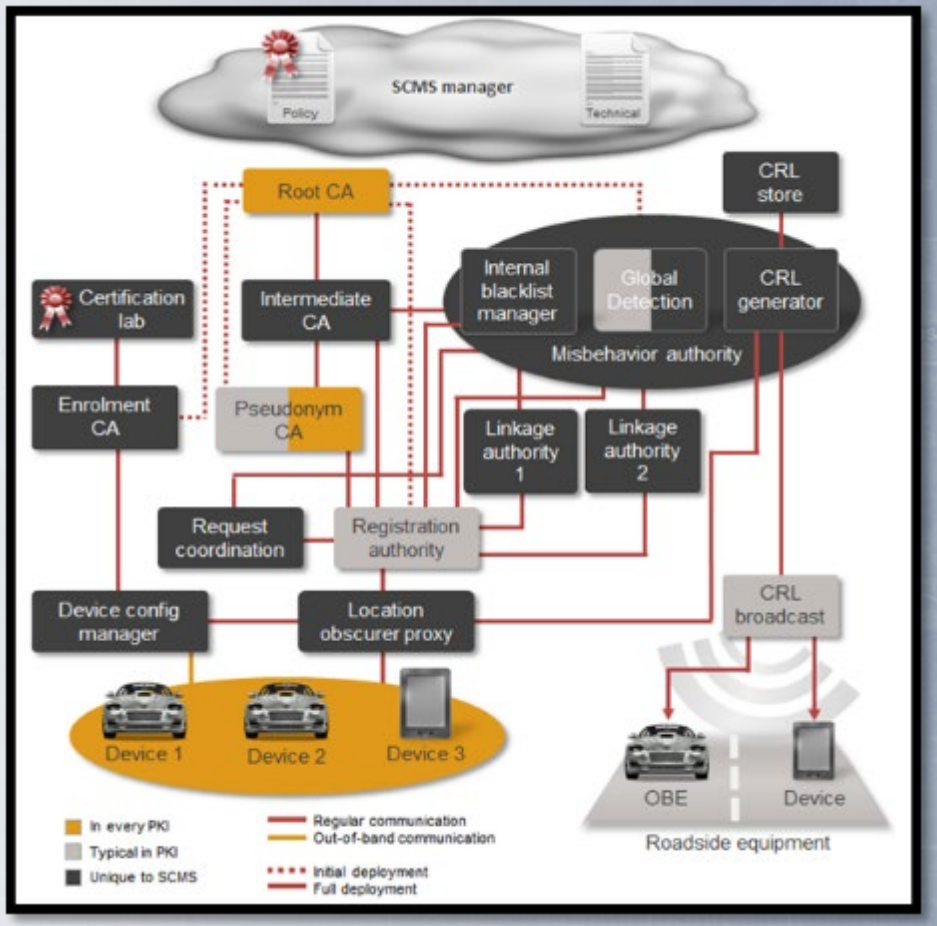
Applied Information TravelSAFELY



US 41 FRAME Evaluation of CV

SCMS

- Allows for the management of security certificates
- Ensures data is validated and secure
- SCMS Vendor
  - Integrity Security Services (ISS) – *a Greenhill Company*



SCMS Communication Architecture

US 41 FRAME Procurement Analysis

Procurement Analysis

- Procurement of Contractor Design-Bid-Build (D-B-B)

  Recommendation: Use the existing ITS Maintenance Contractor to install required infrastructure items requiring above ground and overhead work

- Procurement of Devices (D-B-B)

  Recommendation: ITS Maintenance Contractor purchase equipment as recommended by the System Manager and approved by the Department

- Procurement of Materials (D-B-B)
  - ITS Maintenance Contractor purchases and is reimbursed purchase price + 5%

US 41 FRAME Conclusion

Timeframes for Construction & Implementation

- (FPID 431313-1) Active Construction Project
  - Expected Finish Late 2023
- US 41 FRAME Project Procurement of Some Devices in First Quarter of 2022
- Installation of devices for 8 Intersections (not affected by construction project) - First half of 2022
- Remaining Devices to be Installed once (FPID 431313-1) is Completed

Next Steps

- Construction/Procurement of devices, software, and hardware
- Integration and Testing
- Near Miss Detection
- CV Deployment
- Coordinate with auto dealers along the corridor
- Bike/Ped - TSM&O / CV Applications

Safety Message

FDOT

TARGET ZERO
FATALITIES & SERIOUS INJURIES

Questions?