



Emeryville, CA

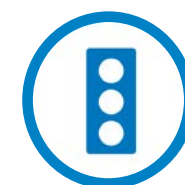
**Promoting Safer & Greener Modes of Transportation:
Virtual Bicycle Detection and Bicycle Signal Priority**



May 19, 2021



AGENDA



INTRODUCTION

Project Background

Econolite Solution

Bicycle Detection/Priority

DEMONSTRATION



Project Background

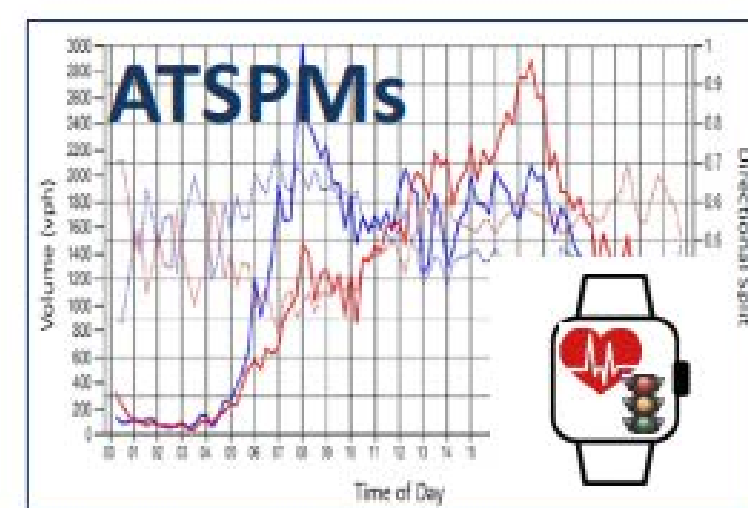
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Saving Lives Through Improved Mobility

Emeryville – Project Scope

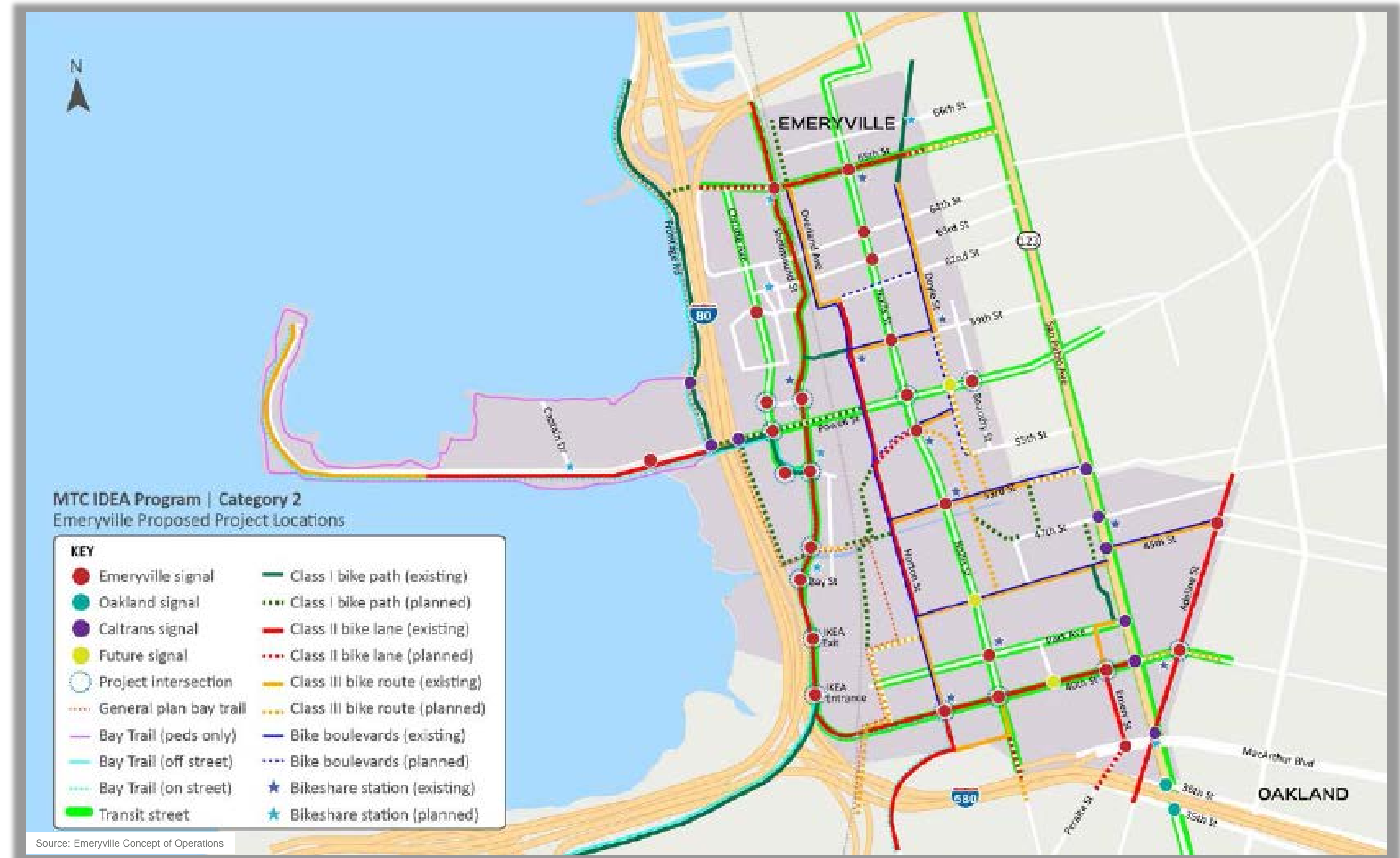
- Innovative Deployments to Enhance Arterials (IDEA) Project:
 - ✓ Improve travel time and travel time reliability for cyclists along corridor
 - ✓ Improve safety of motorists, cyclist, pedestrians
 - ✓ Reduce vehicle emissions and fuel consumption
 - ✓ Help to address congestion issues on local arterials
 - ✓ Test new technologies and develop knowledge base of multimodal safety

Innovative Deployments to Enhance Arterials (IDEA) Grant Program



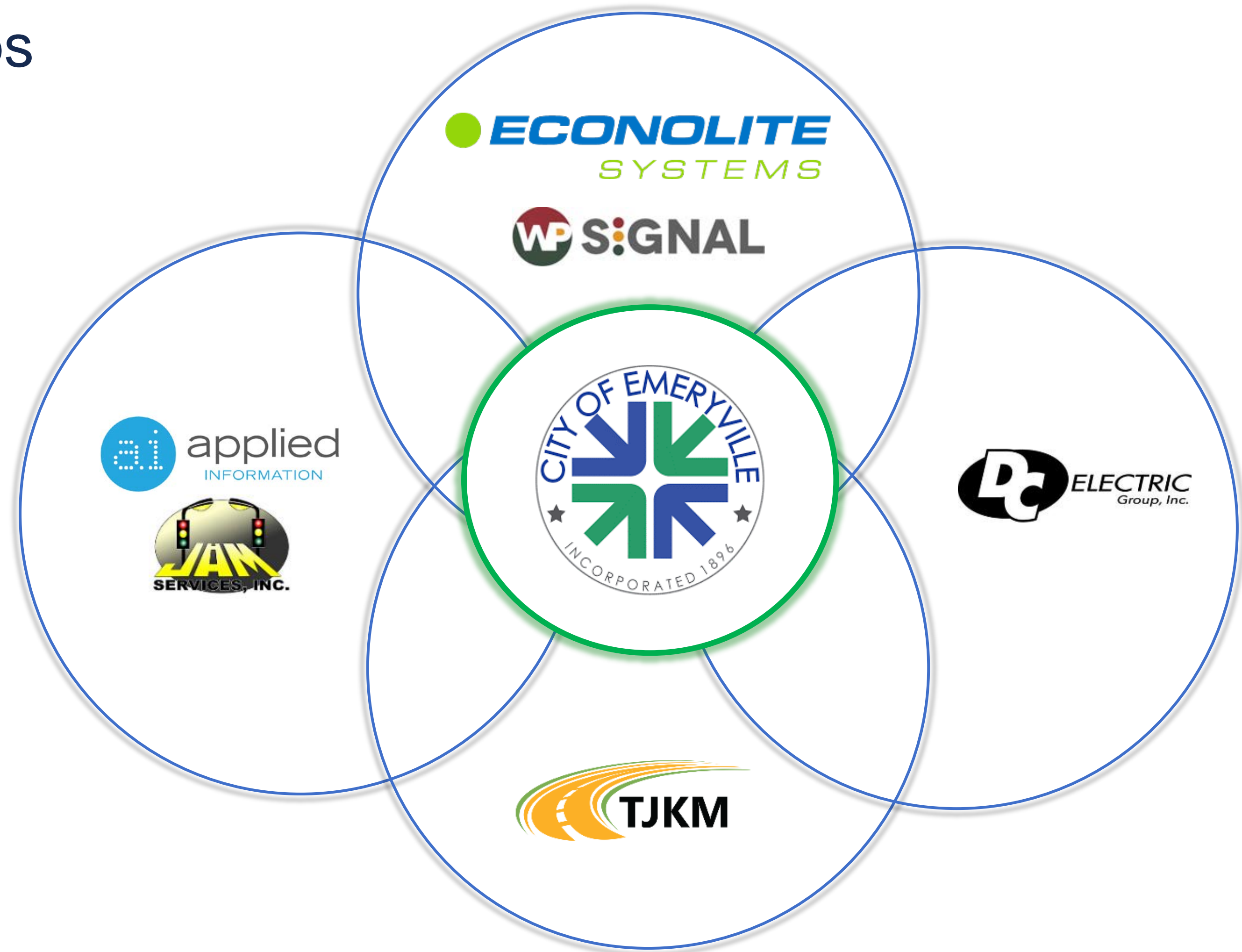
Emeryville - Proposed Deployment

- Utilize existing Ethernet communication system
- ATMS
 - 30 Intersection License
 - Database Conversion
 - Controller Replacement
 - Deploy and test
 - Training
- Signal Performance Measures
 - 17 Intersections
 - Setup/Configure
 - System Verification/Testing
 - Training
- Virtual Bike Detection and Bike Signal Priority
 - Furnish/Install Software and Hardware
 - System Verification/Testing
 - Training



Emeryville - Project Team

- Existing working relationships
- National and local partners



Emeryville - Project Implementation

Project Management

01



Hardware/Software

Servers
Controllers
ATMS

02



Installation/Integration

ATMS/SPM Setup
Database Conversions
Intersection Graphics

03



Field Installation

Controllers

04



Acceptance Testing

System Testing
30 Day Burn-In Test

05



Training/Documentation

System Operations
Administrative/Maintenance
Intersection Operations
Follow up

06



Warranty

3-year Warranty
Software Upgrades
On-going Support

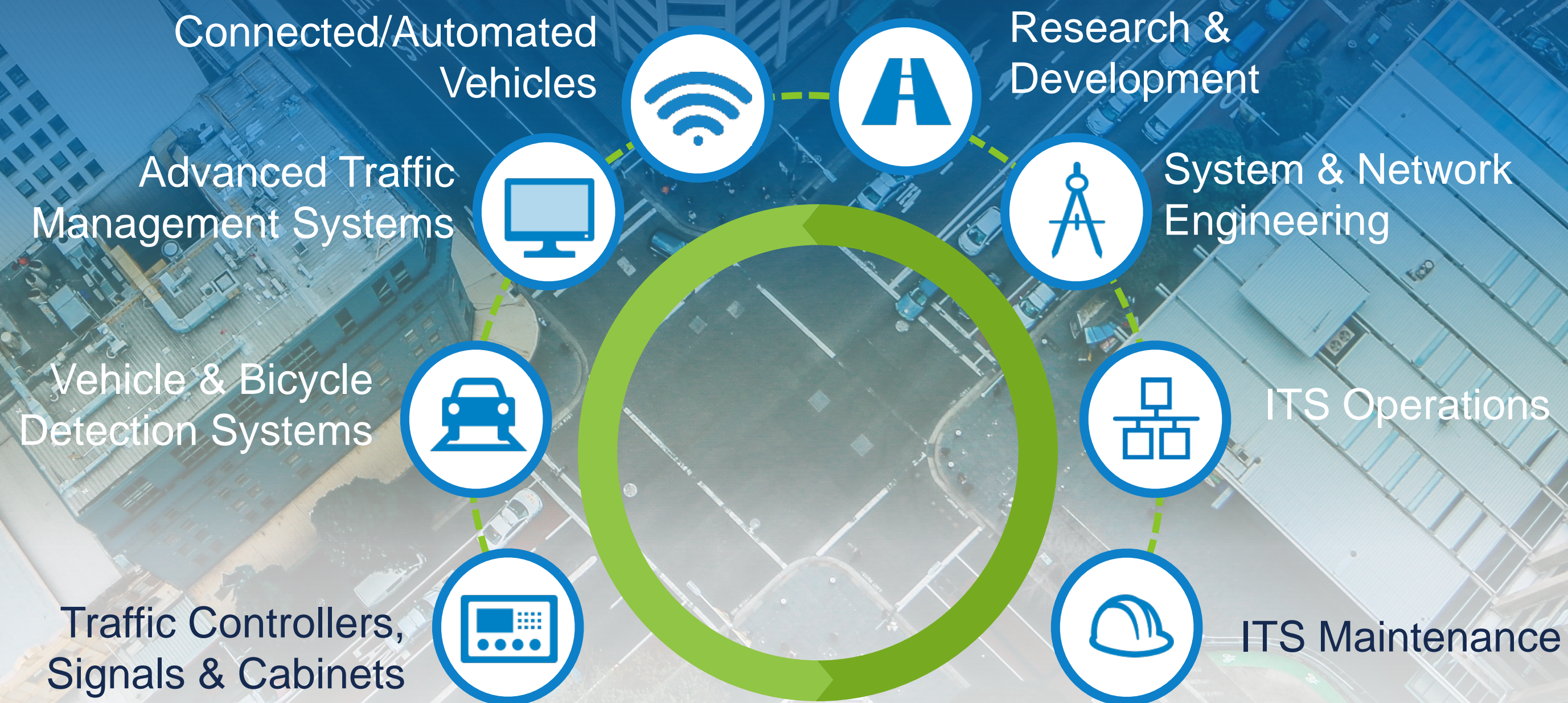


Project Solution

 ***ECONOLITE***

Saving Lives Through Improved Mobility

The Leader in One-Stop-Shop Traffic Management Solutions



Our Solution: A Solid Foundation

Safetran 2070 ATC

- Modular
- Preferred by Caltrans



Cobalt ATC

- It's essentially the 2070...
- Designed for Smart Cities
- And with better features



EOS Controller Software: Ideal for BSP and TSP



STATUS [MAN CRD P 1] 06/09/20|18:20:05

12345678 90123456 2 GRN HOLD
PH STAT .G...G... WALK HOLD
VEH CALL R.RRR.RR
PED CALL 6 GRN HOLD
VEH OVLP WALK HOLD

COORD LOC 114s/120 EVENT PL 1
CRD PTN 1 SYS 114s TIMING 1
SEQUENCE 1
12345678 90123456 DETECTOR PL 1
TSP/SCP SCP STR 1
PREEMPT SCP DET 1
LP FLAG SOURCE MAN
IP ADDR: 10.70.10.51 SYS CMD NONE

● ● ● ● ● ●
Pause Slow Real Fast Turbo Sync

► Phase Output

▼ Channel Output

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Red	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Yellow	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Green	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

▲ Sub Menu Main Menu

◀ ▶ 1 2 3

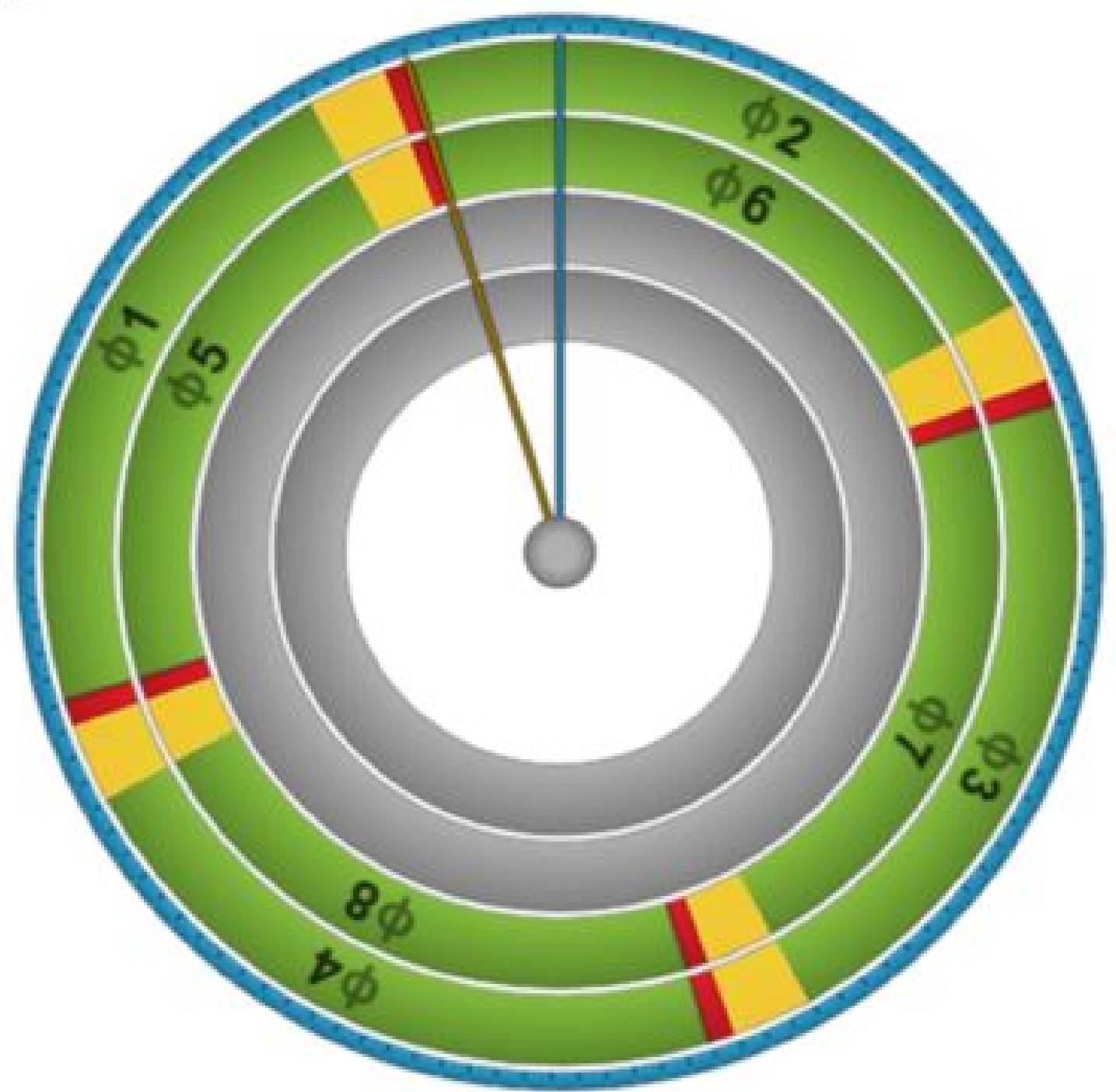
▼ 4 5 6

Status 7 8 - 9

Enter SpFn 0 + Clear

Help Next Screen Next Page Next Data

▼ Coordination Dial



▼ Detector Input

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

EOS - Signal PRIORITY



Centracs Mobility

- 330+ deployments of Centracs nationwide – 57,000+ intersections under control
- 40+ SPM and 20+ Edaptive deployments

Agency	SPM	Edaptive	Number of Intersections	Agency	SPM	Edaptive	Number of Intersections
Alaska DOT	✓		50	Los Gatos, CA	✓	✓	31
Boca Raton, FL	✓		8	Missouri City, TX	✓		65
Centennial, CO	✓	✓	57	Oakland County, MI	✓	✓	25
Cranberry Township, PA	✓	✓	23	Oakville, Canada	✓	✓	10
Elkhart County, IN	✓		25	Ohio DOT District 8	✓		22
Emeryville, CA	✓	✓	18	Pasco County, FL	✓		25
Enid, OK	✓		35	Pennsylvania DOT	✓	✓	25
Fairfield, OH	✓		27	Phoenix, AZ	✓		8
Fargo, ND	✓	✓	5	Pinellas County, FL	✓		12
Folsom, CA	✓		14	Post Falls, ID	✓	✓	7
Greenwood Village, CO	✓	✓	11	San Rafael, CA	✓		46
Gulf Shores, AL	✓	✓	19	Sharonville, OH	✓		12
Hackensack, NJ	✓		24	St. Albert, Canada	✓	✓	25
Harris County, TX	✓	✓	900	St. Lucie County, FL	✓	✓	13
Hawaii DOT	✓	✓	36	Toledo, OH	✓		25
Hoover, AL	✓	✓	25	Tustin, CA	✓		9
Irvine, CA	✓		14	TXDOT Houston	✓	✓	30
Kalamazoo, MI	✓		25	Upper Providence Township, PA	✓	✓	14
Las Cruces, NM	✓		5	Volusia County, FL	✓	✓	16
Lloydminster, Canada	✓	✓	20	Yorba Linda, CA	✓		14



Centracs Mobility

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Centracs – Traffic Operations & Monitoring

Centracs - Econolite User (Emeryville)

File View Monitoring Control Configuration Management Reports Window Help

Entity Tree

Search tree...

System City of Emeryville

Scrap Recycle

Asset and Inventory Trash

Signal Hollis St @ Powell St

Signal Christie Ave @ Powell St

Map Viewer

Offline Comm Fail Standby Flash Prog. Flash Preempt Transition Coord Free TA Manual

Cobalt Front Panel Hollis St @ Powell St - Hollis St @ Powell St

STATUS DISPLAY: [FREE-DEFAULT] 1 1 1

PHASE 1 2 3 4 5 6 7 8 9 0 1 2

4 EXT1 0.0 T/N . . . G . . . G - - -

MAX1 7 VEH M M M . M M M .

PED

8 EXT1 0.0

MAX1 7

CMD SRC TBC FREE ACT. PLAN 0

LOCAL CYC: 0/ 0s DAY PLAN 1

SYS CYL: 0s START:00:00 ---

PREEMPTOR

1 2 3 4 5 6 7 8 9 10

06/09/20 01:08:31

Next Data

Next Screen

Next Page

Sub Main

1 2 3

4 5 6

7 8 9

0

Clear

Status

Help

Spec Func

Enter

Hollis St @ Powell St - Hollis St @ Powell St (Cobalt) - Sys:City of Emeryville

Mode / Pattern	Coordination	Time	Preempt	Alarms			
Desired NON/NON	Current OTHER/FREE	Free Cycle Offset	Actual N/A N/A	Prog N/A N/A	Last Error: ?	?	
Phase	1 2 3 4	5 6 7 8	9 10 11 12	13 14 15 16			
Actual	14M 1 12M 20M	14M 1 12M 20M					
Prog	35 35 35 35	35 35 35 35					
On	Red Green	Red Green					
Ped	Red Green	Red Green					
Call	Blue	Blue					
Ped Call							
Next							
Overlap	A B C D	E F G H	I J K L	M N O P			
Time							
On							
Ped							
Controller running command free Unit control state is 'Other' Battery is low						Ring 1: Min Green Ring 2: Min Green	Comms 100.0%

Centracs - Complete ATSPM Library

VC 30104

Chart:
Purdue Coordination

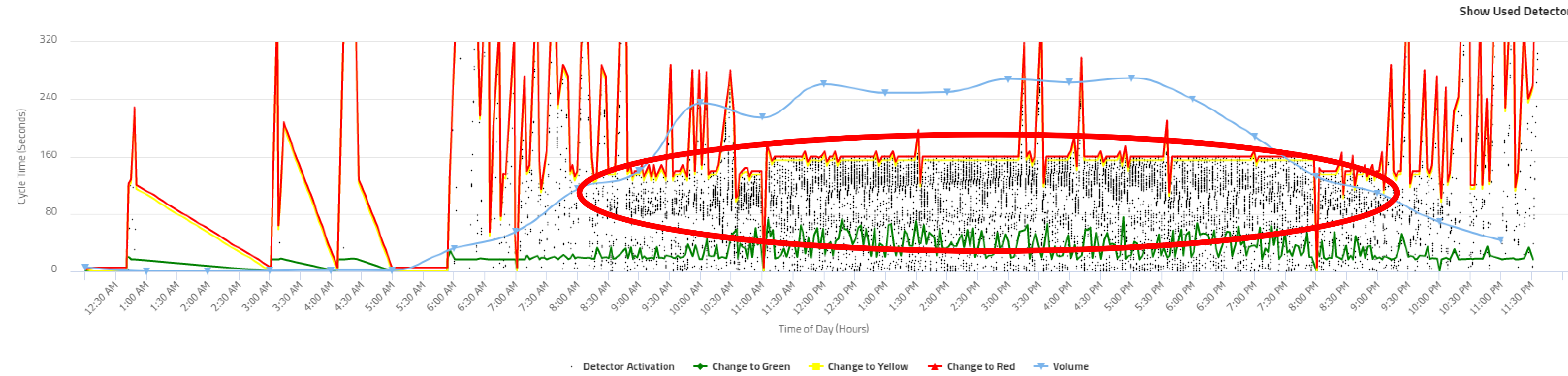
2(S) 6(N)

VC 30104, Phase: 2, Direction: S

Sunday, May 31, 2020

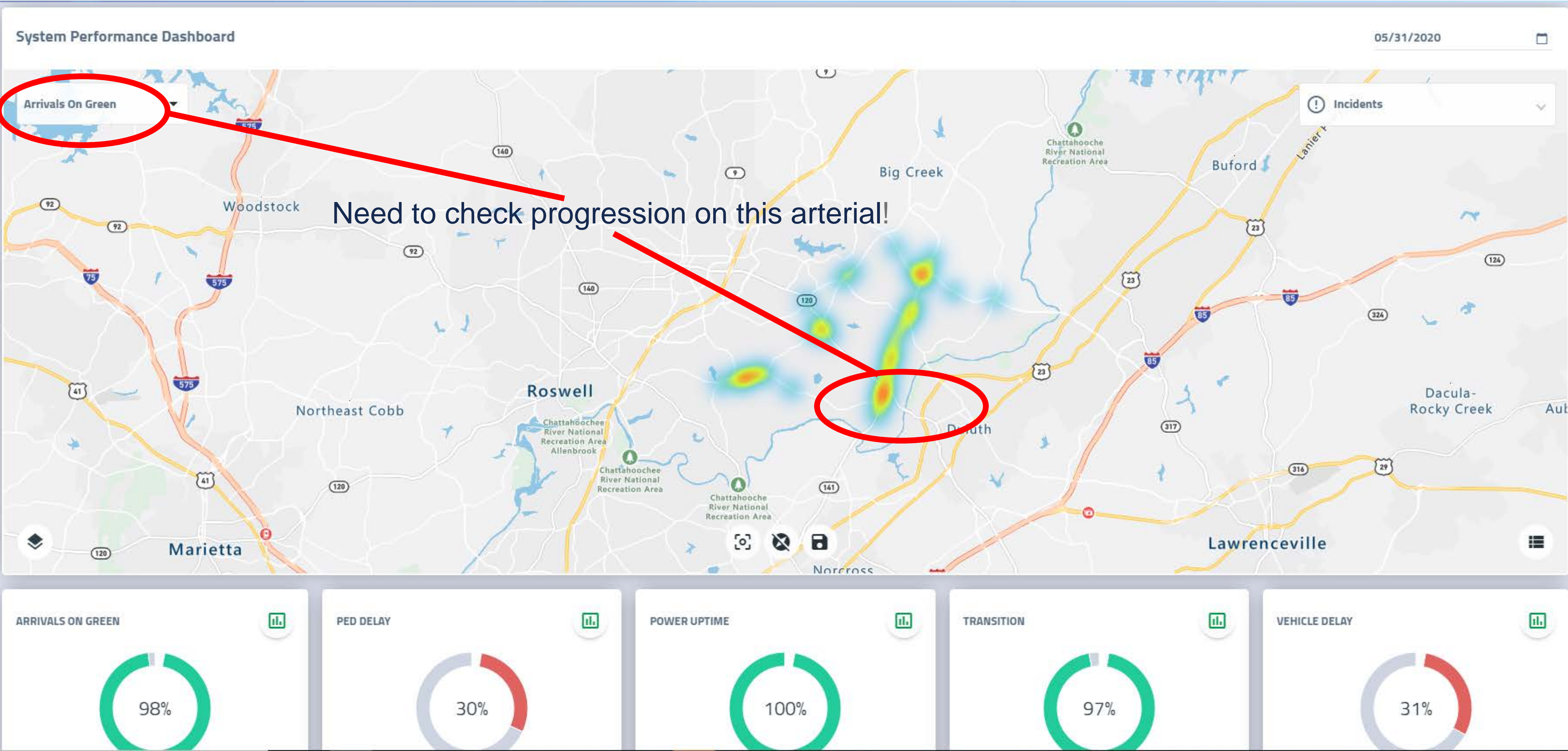
AoG: 89%

Things look good here!



Drag out a rectangle in the chart to zoom in.

Centracs: Proactively Identifies Problems...



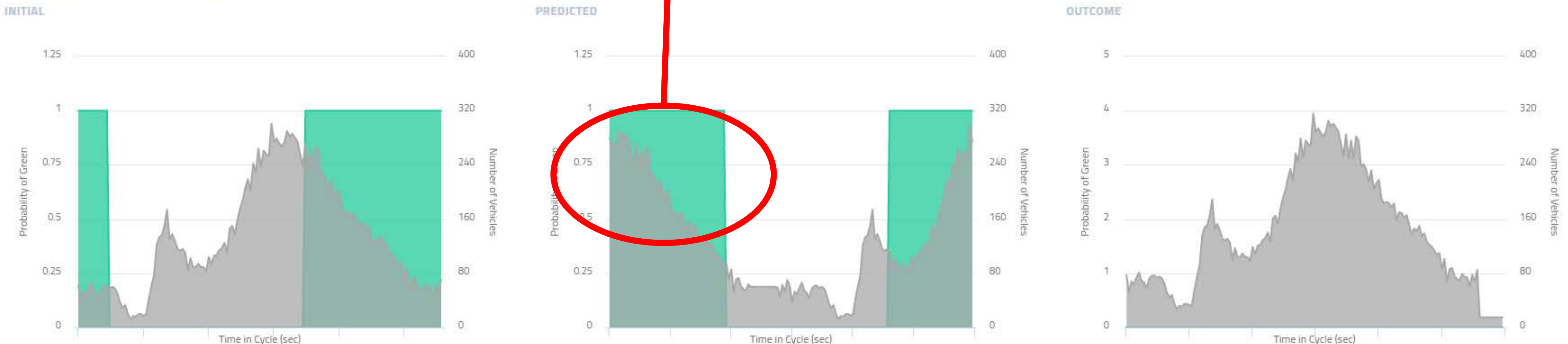
...And Recommends Solutions

Medlock Bridge Optimization / Pattern 25: Medlock Bridge Rd @ Medlock Bridge Pkwy

SETTING	INITIAL	RECOMMENDED																																
OFFSET	62	90																																
CYCLE LENGTH	140	150																																
SEQUENCE/SPLITS	<table><tr><td>Ø1</td><td>Ø2</td><td>C</td><td>Ø4</td></tr><tr><td></td><td>25</td><td>72</td><td>43</td></tr><tr><td>Ø6</td><td></td><td>C</td><td></td></tr><tr><td></td><td></td><td>97</td><td></td></tr></table>	Ø1	Ø2	C	Ø4		25	72	43	Ø6		C				97		<table><tr><td>Ø1</td><td>Ø2</td><td>C</td><td>Ø4</td></tr><tr><td></td><td>25</td><td>90</td><td>35</td></tr><tr><td>Ø6</td><td></td><td>C</td><td></td></tr><tr><td></td><td></td><td>115</td><td></td></tr></table>	Ø1	Ø2	C	Ø4		25	90	35	Ø6		C				115	
Ø1	Ø2	C	Ø4																															
	25	72	43																															
Ø6		C																																
		97																																
Ø1	Ø2	C	Ø4																															
	25	90	35																															
Ø6		C																																
		115																																

Understanding the basis of the recommendations!

PROGRAMMED GREEN TIME SOUTHBOUND





Virtual Bicycle Detection (VBD) & Bicycle Signal Priority (BSP)

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VBD & BSP



Cyclist Arrives on a Green Traffic Signal

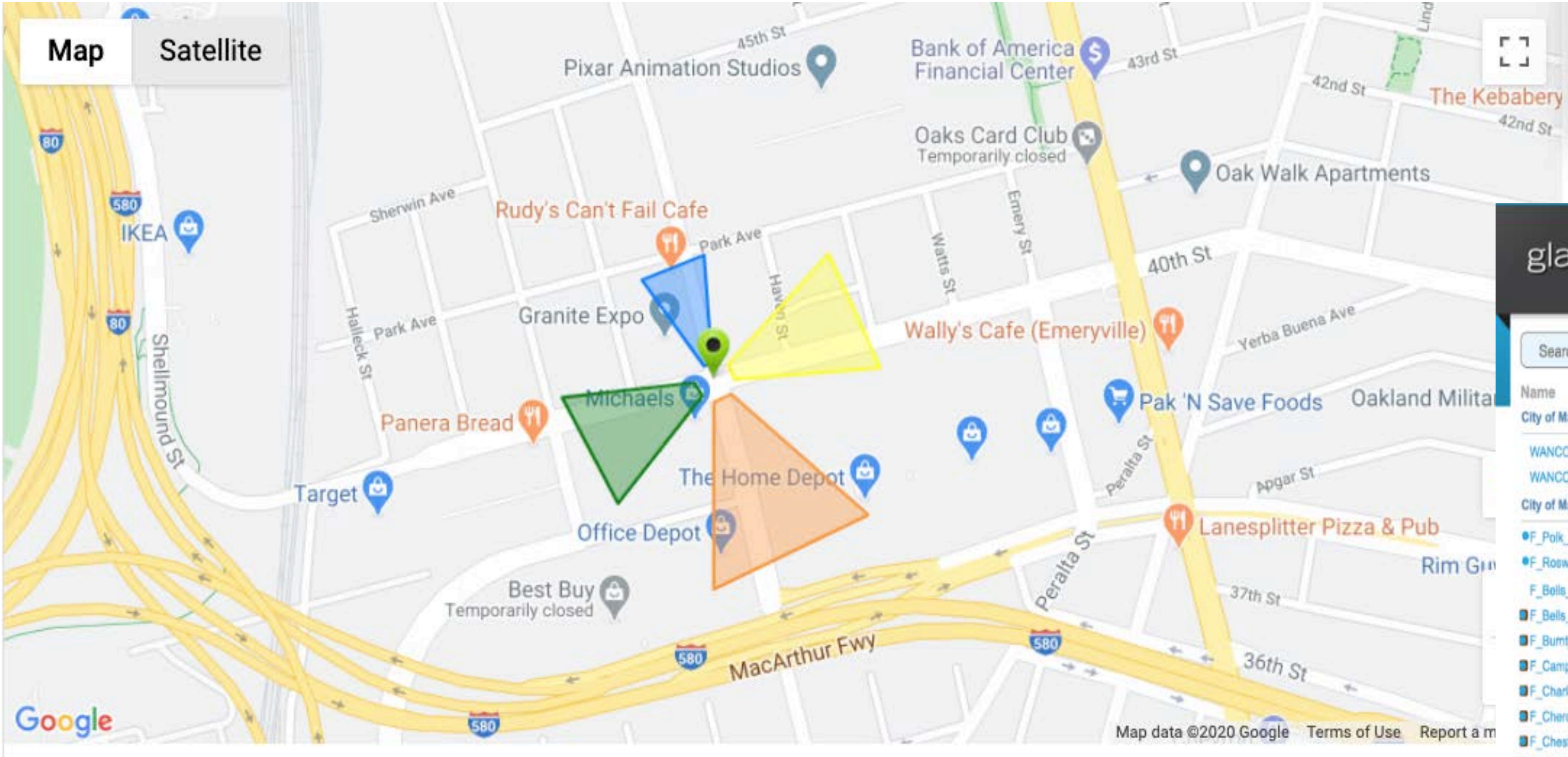


VBD System: How it Works

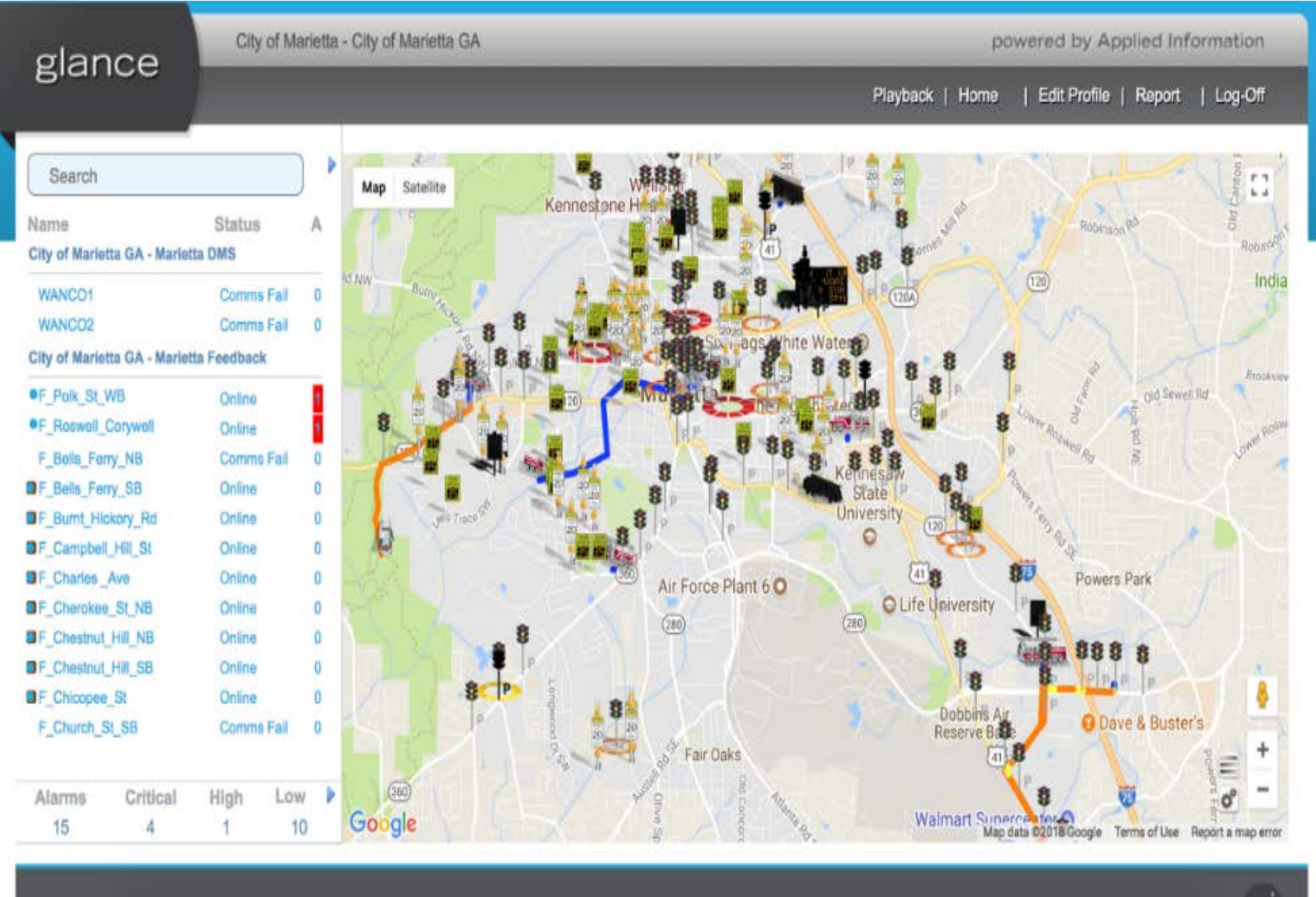


- TravelSafely smartphone app communicates with Glance server
- Bike(s) identified to be in detection zone of approaching intersection
- Glance notifies Field Monitoring Unit (FMU) of approaching/waiting bike
- FMU initiates relevant phase call through the detector card
- When multiple bikes arrive, a priority call is made
- Bikes are given green

The VBD System Tools

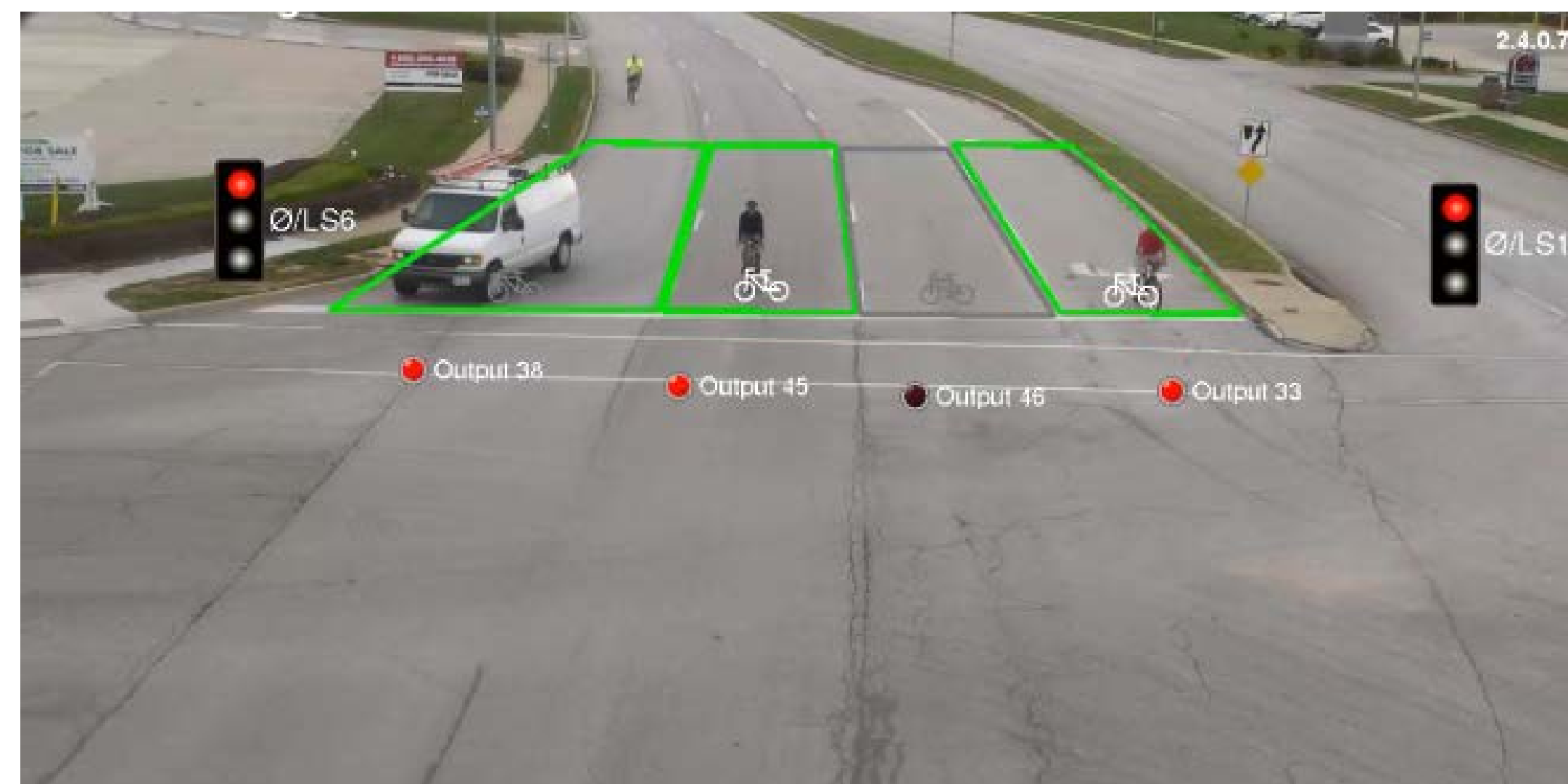
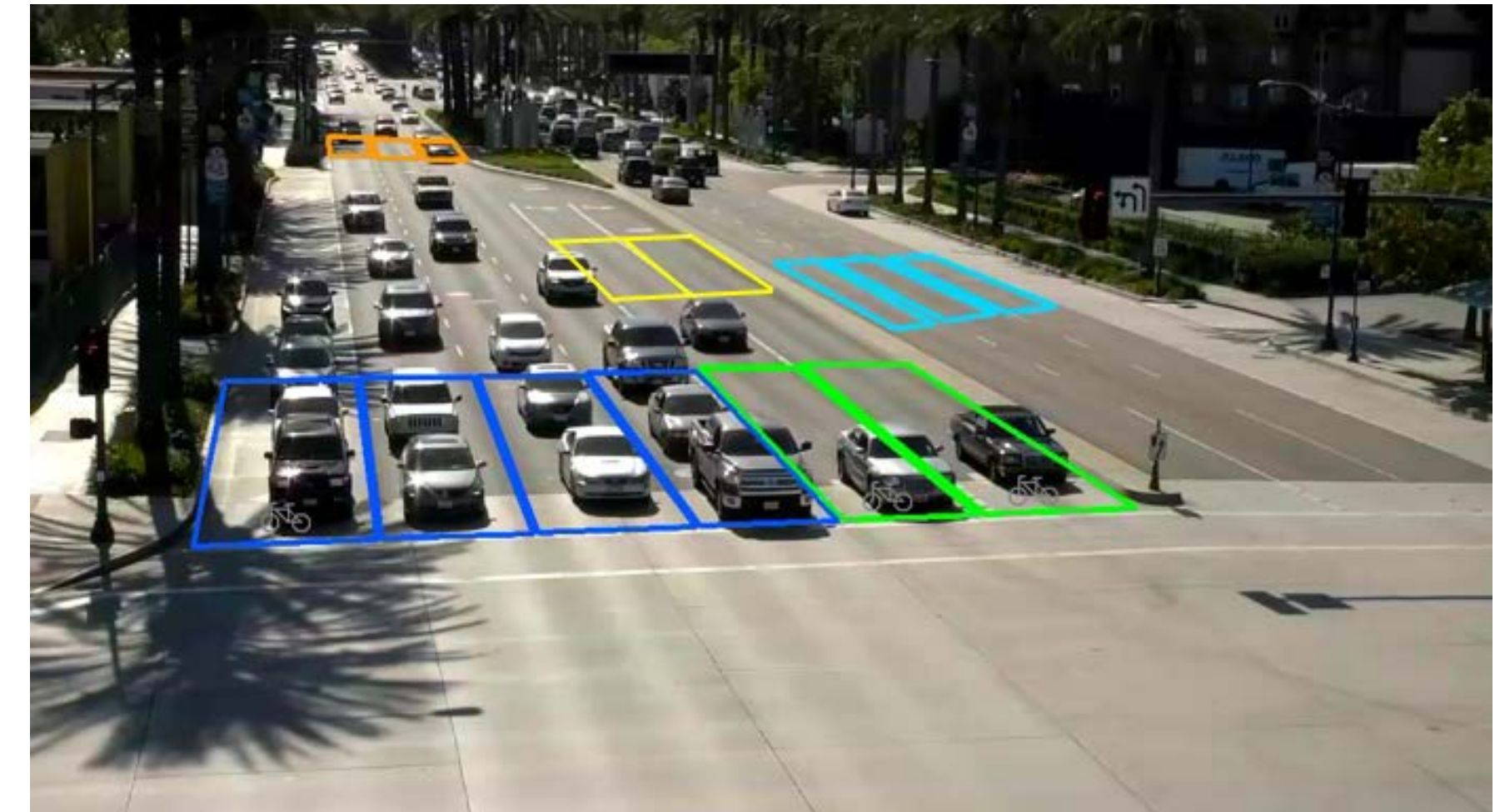


Detection Zone



Glance Supervisory System

Autoscope Vision – Bicycle Detection & Differentiation





Demonstration

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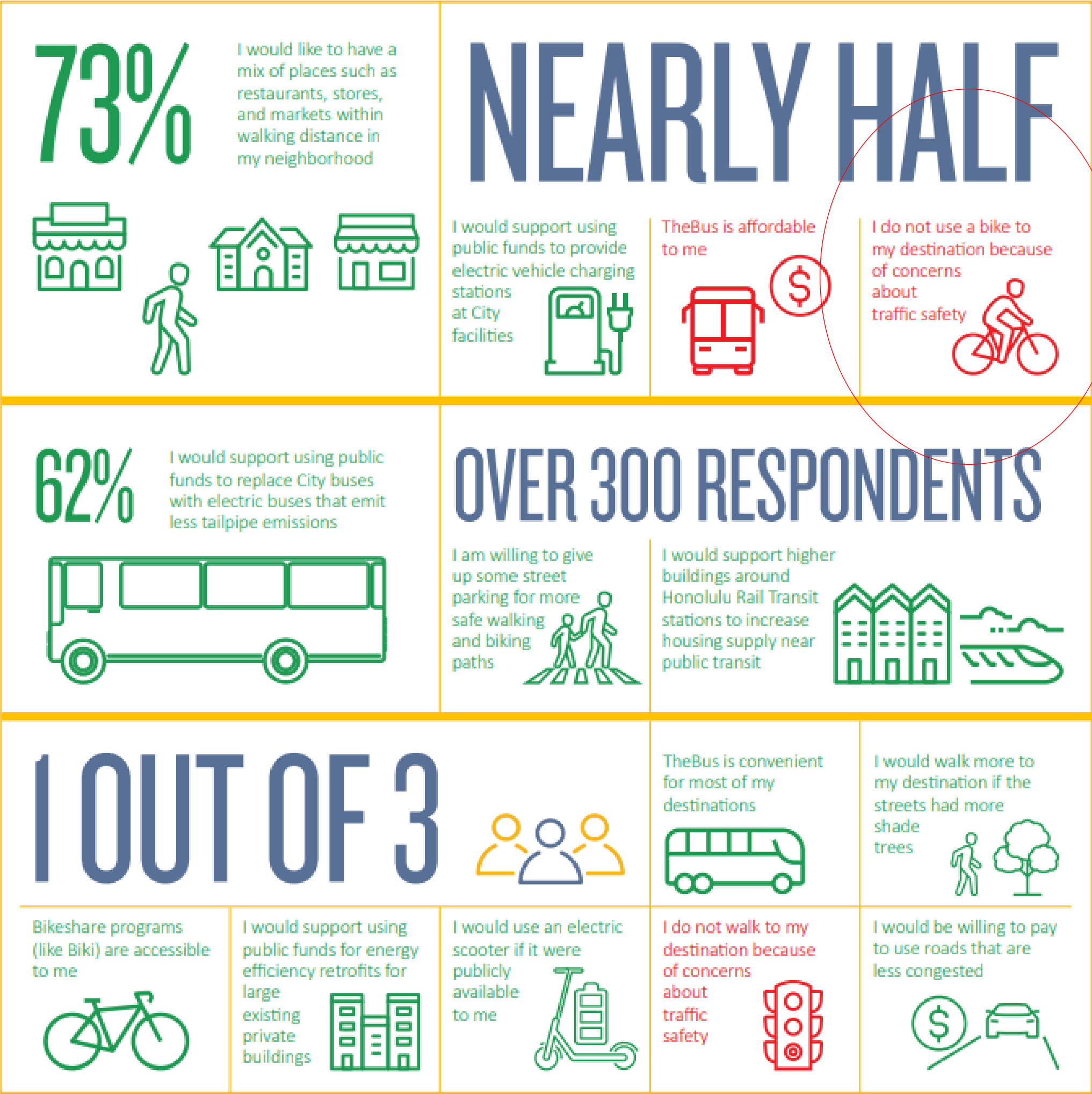
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C&C of Honolulu Climate Action Plan

2020 Island-wide Representative Survey Responses

April 2020, 760 respondents

“The Climate Action Plan lays out a detailed list of programs, policies, and actions that our island can take, alongside state and federal actions, to **reduce greenhouse gas (GHG) emissions by 45 percent over the next five years and put us on the path to carbon neutrality by 2045.**”



Make Biking and Walking Safe and Readily Available. Bike and pedestrian safety surfaced as an important issue in the open house; this is consistent with the island-wide survey where 32% and 47% of respondents said that they do not walk or bike to their destinations, respectively, because of concerns about traffic safety. Acknowledging that current bike path improvements like the King Street cycle track could help, there was a broader call to create a more interconnected grid of safe bike infrastructure, particularly among major destinations within the urban core.

How are bike and pedestrian safety considered? Actions related to multimodal transportation are a major component of this CAP. Safety will be improved through investing in separated (and connected) bike lanes, establishing car-free streets, and providing street amenities like widened sidewalks and improved crosswalks.

O'ahu Bike Plan



Vision Statement:

O'ahu is a bicycle-friendly community where bicycling is a safe, viable, and popular travel choice for residents and visitors of all ages and abilities.

GOALS

- | | |
|---|---|
| 1 | To encourage and promote bicycling as a safe, convenient, and pleasurable means of travel |
| 2 | To enhance cooperation between roadway users |
| 3 | To increase the mode share of bicycle trips |
| 4 | To be recognized by the League of American Bicyclists as a <i>gold level</i> Bicycle-Friendly Community |

Solution Recap



Saving Lives Through Improved Mobility

Solution Recap

2070 / Cobalt / EOS

- Caltrans
- Smart City Ready
- Hi Res Data
- Ideal for VBD/BSP

Centracs ATMS

- Bike-specific features
- Remote Front Panel
- Smart alerts

Centracs SPM

- Visually Rich
- Proactive
- Optimizes Transitions
- 3rd Party Data
- Metrics that Matter

TravelSafely VBD/BSP

- Easy to setup
- Fully integrated
- Anyone with smartphone app



Q & A

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Thank You!

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Michael Villafuerte – mvillafuerte@econolite.com

