



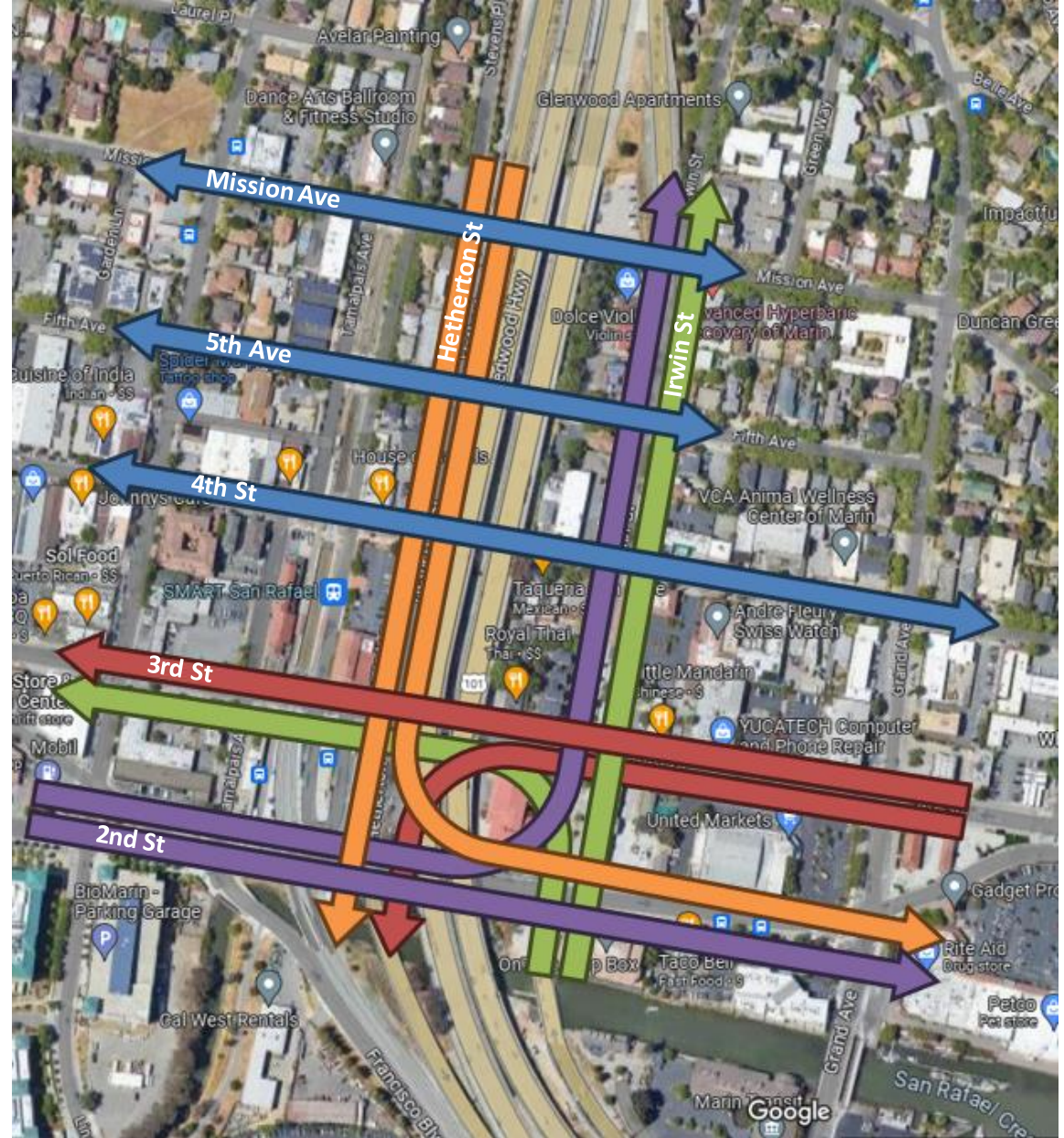
CITY OF SAN RAFAEL

TRAFFIC SIGNAL IMPROVEMENTS

April 3, 2024

Downtown Signal Coordination

- Help manage congestion
- Increase pedestrian safety
- Improve transit efficiency
- Reduce fuel consumption



Pedestrian Crossing Time

- 2009 MUTCD walking design speed is 3.5 feet per second for clearance
- Former value was 4.0 feet per second
- Clearance = Total time available after WALK and before cross street green light



Minimum Bicycle Timing

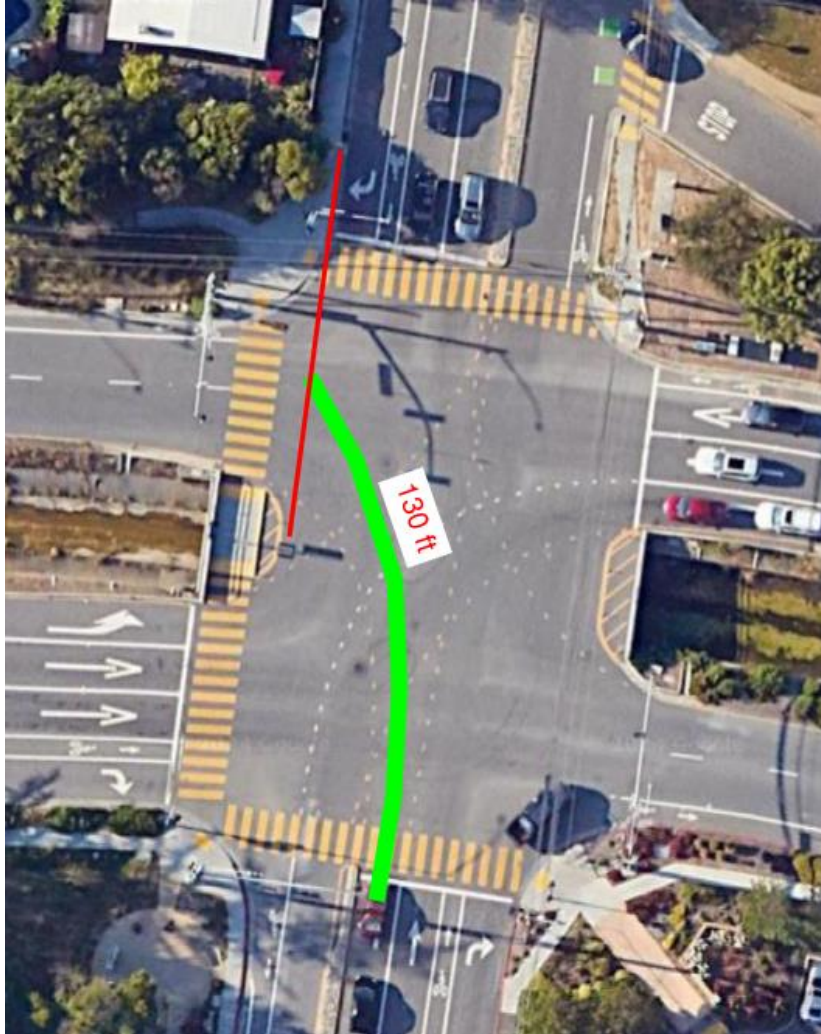


Table 4D-109 (CA). Signal Operations - Minimum Bicycle Timing

$$G_{\min} + Y + R_{\text{clear}} \geq 6 \text{ sec} + (w+6 \text{ ft})/14.7 \text{ ft/sec, where}$$

G_{\min} = Length of minimum green interval (sec)

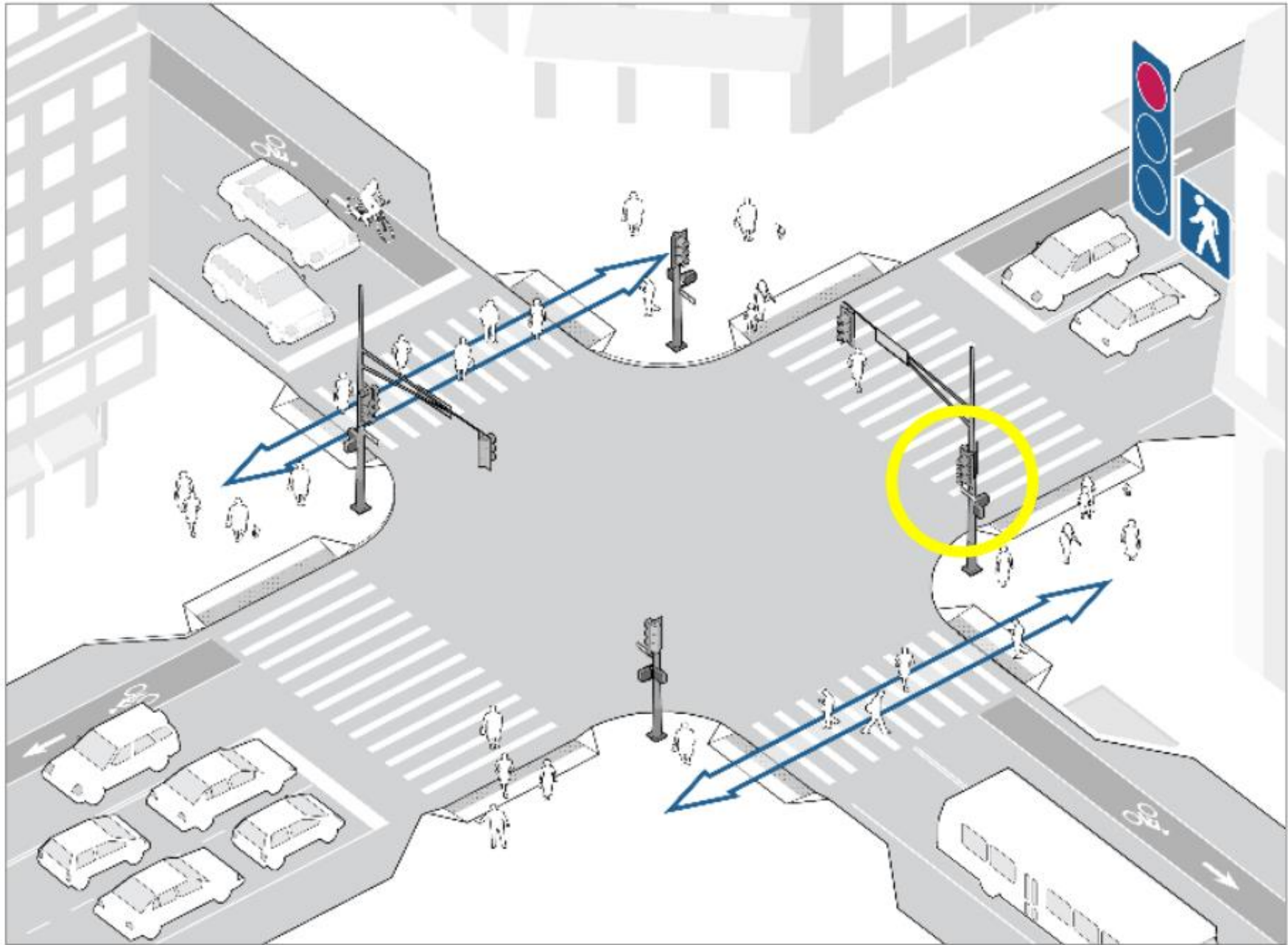
Y = Length of yellow interval (sec)

R_{clear} = Length of red clearance interval (sec)

W = distance from limit line to far side of last conflicting lane (ft)

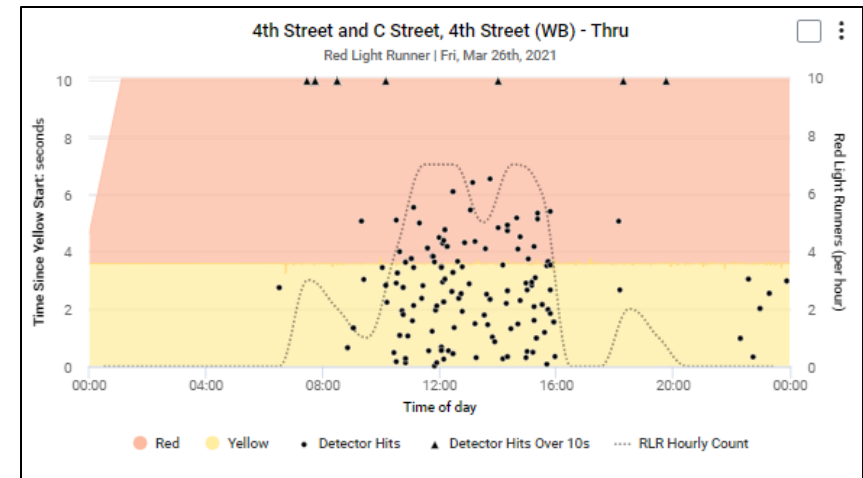
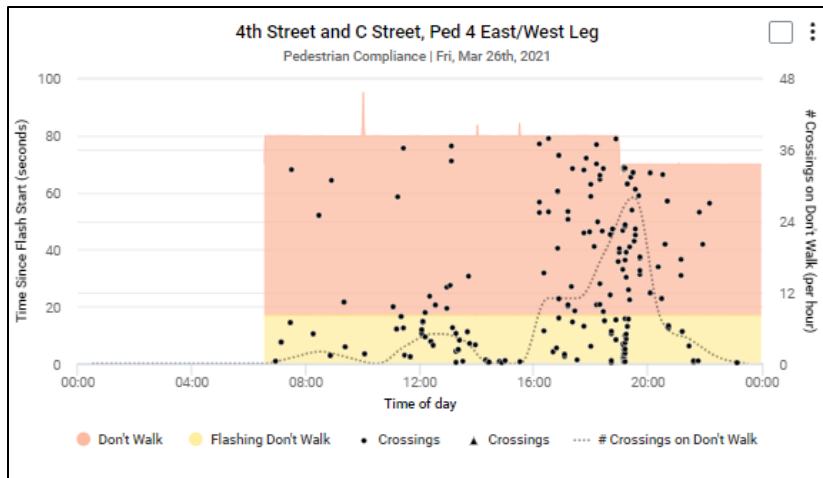
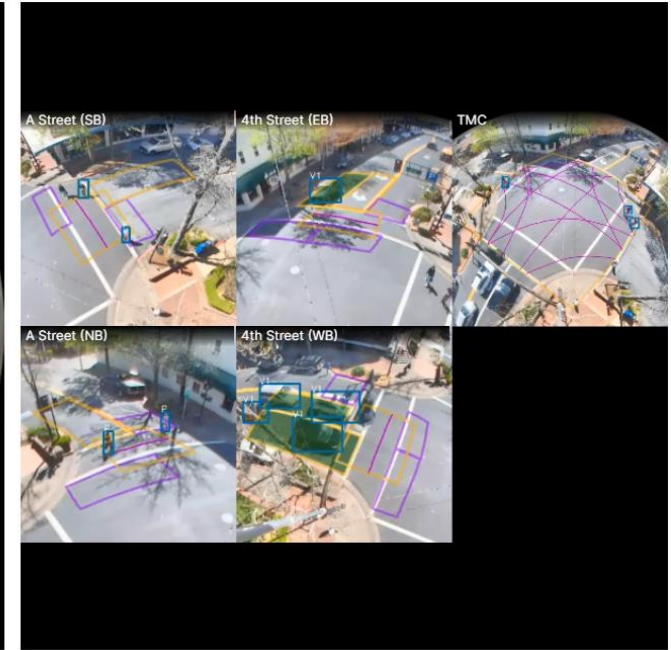
Distance from limit line to far side of last conflicting lane	Minimum phase length (minimum green plus yellow plus red clearance)
Feet	Seconds
40	9.1
50	9.8
60	10.5
70	11.2
80	11.9
90	12.5
100	13.2
110	13.9
120	14.6
130	15.3
140	15.9
150	16.6
160	17.3
170	18.0
180	18.7

Leading Pedestrian Intervals (LPIs)



Miovision SPM – Video Detection

- 59 intersections connected on Miovision SPM
- Vehicle and pedestrian video detection
- Intersection monitoring
- SPM provides insight into vehicle and pedestrian behavior



Miovision SPM – Turning Movement Counts



4th Street and A Street
37.97315283, -122.52819718

Date Range: 04/01/2024
Time Of Day: 00:00 - 24:00
Percentile: [dropdown]
[EXPORT](#)

Total Vehicles

10,144

24 Hour Total

Total Pedestrians

2,797

24 Hour Total

Total Bicycles BETA

174

24 Hour Total

Truck Pct(%)

3%

% of Vehicle Traffic

AM Peak

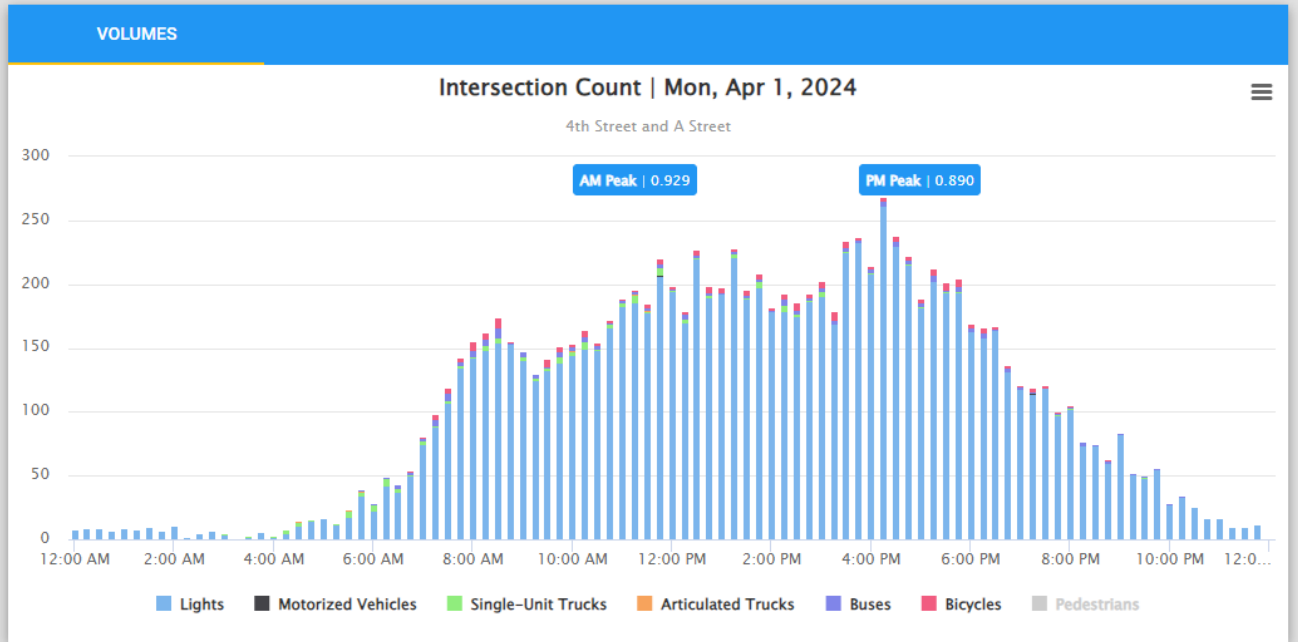
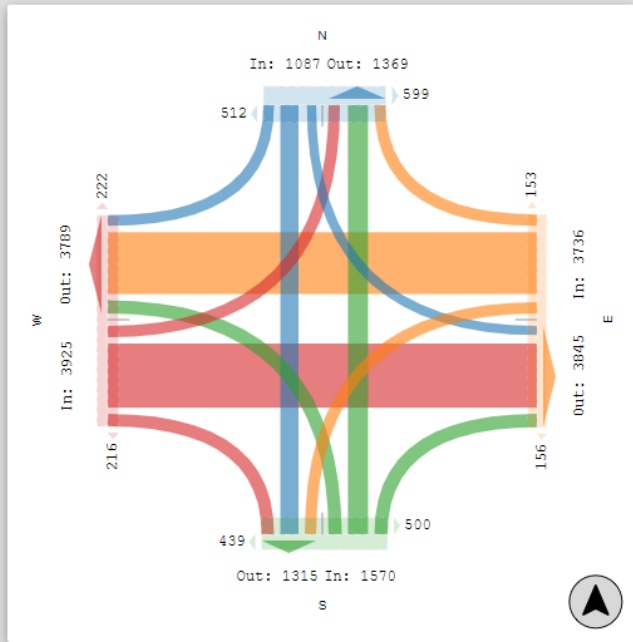
632

from 10:00AM to 11:00AM

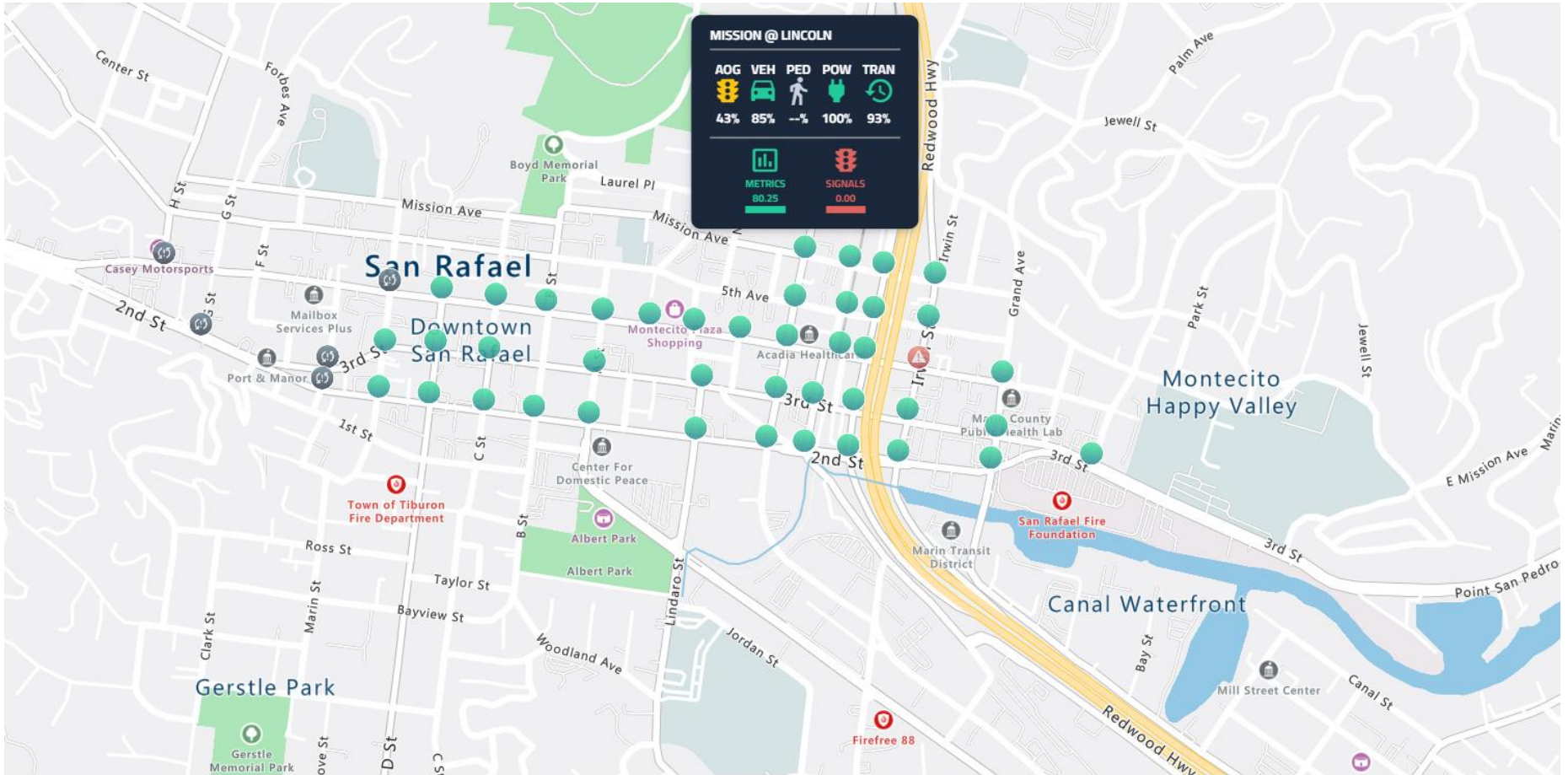
PM Peak

947

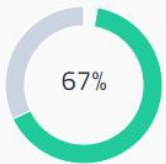
from 3:45PM to 4:45PM



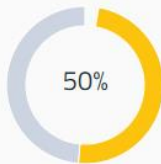
Centrac Mobility



SYSTEM ARRIVALS ON GREEN



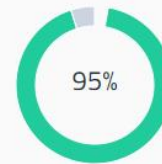
SYSTEM PED DELAY



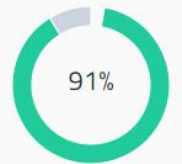
SYSTEM POWER UPTIME



SYSTEM TRANSITION



SYSTEM CONTROL DELAY



Manuel Freitas & Las Gallinas Safety Improvement



Irwin St & Mission Ave Safety Improvement

