

Adaptive Traffic Signal Systems

History of Adaptive Traffic Signal Control

Brea Adaptive Traffic Control System

LINSCOTT
LAW &
GREENSPAN

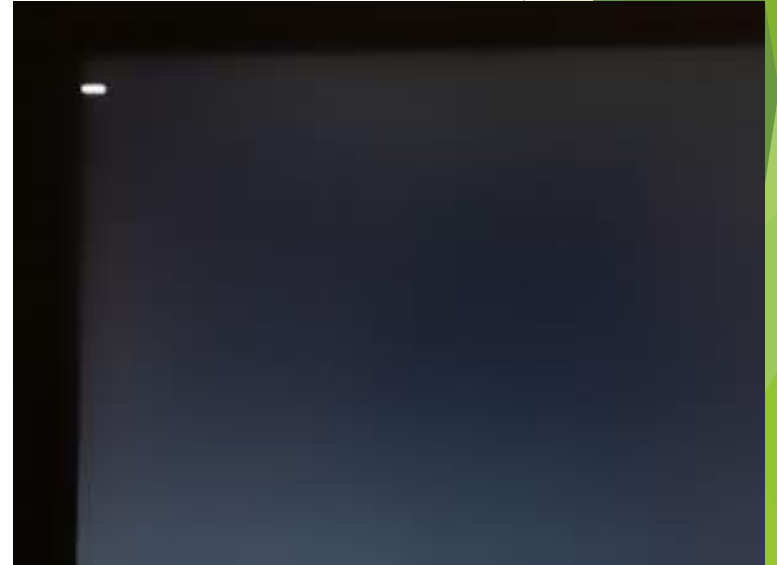
→
engineers

David Roseman

Associate Principal
LLG Engineers, Inc.

Adaptive Traffic Signal Systems

Urban Traffic Control System (UTCS)



UTCS - 1967 / 1972 / 1984

Second-by-Second Control

Advance Vehicle Detection Loops

Volume / Occupancy

Speed / Stops / Queues / Delay

Traffic Responsive Algorithms

Cycle Length / Splits / Offsets

Critical Intersection Control

V+kO



Lessons Learned

Traffic Control Basics Haven't Changed

Adaptive is Educated Labor Intensive

Traffic Control Equipment / Communications

Accurate Vehicle Detection is Critical

Maintenance / Maintenance / Maintenance





BACK TO THE FUTURE

City of Brea Adaptive Traffic Signal Control System

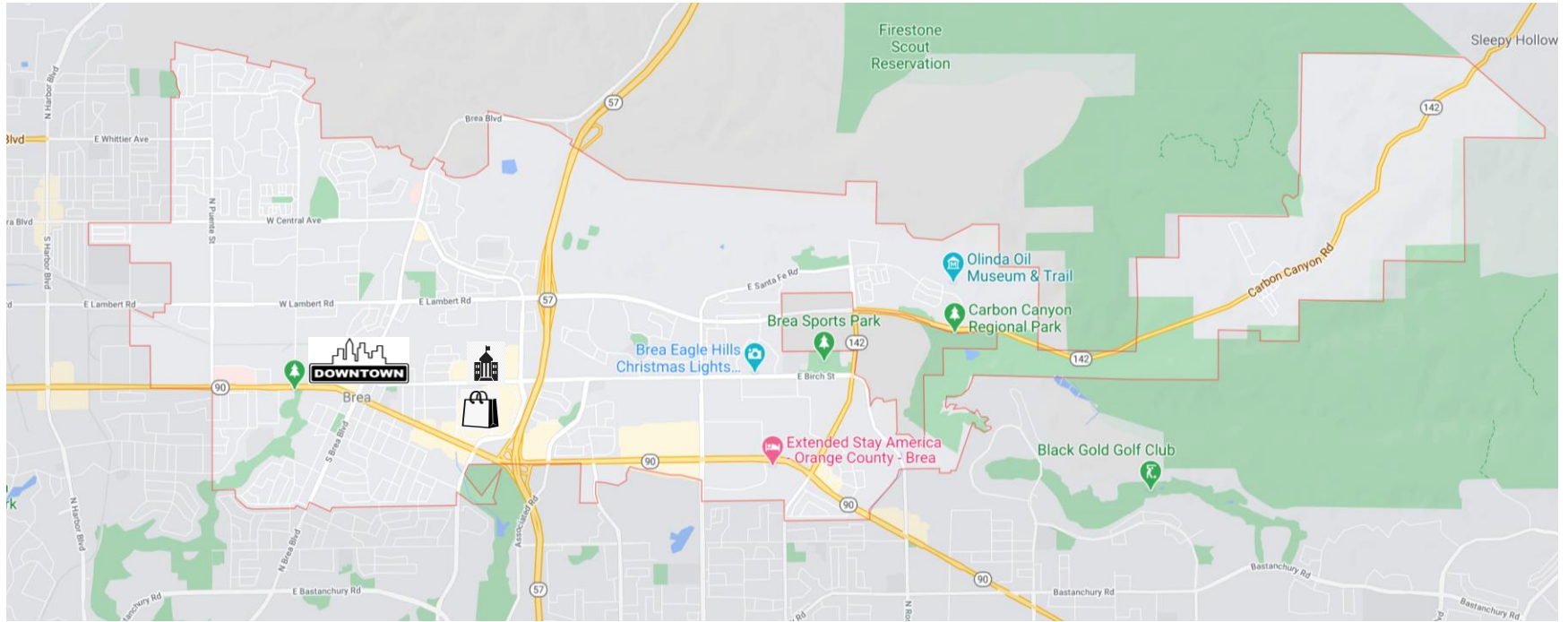
David Roseman

City Traffic Engineer

City of Brea

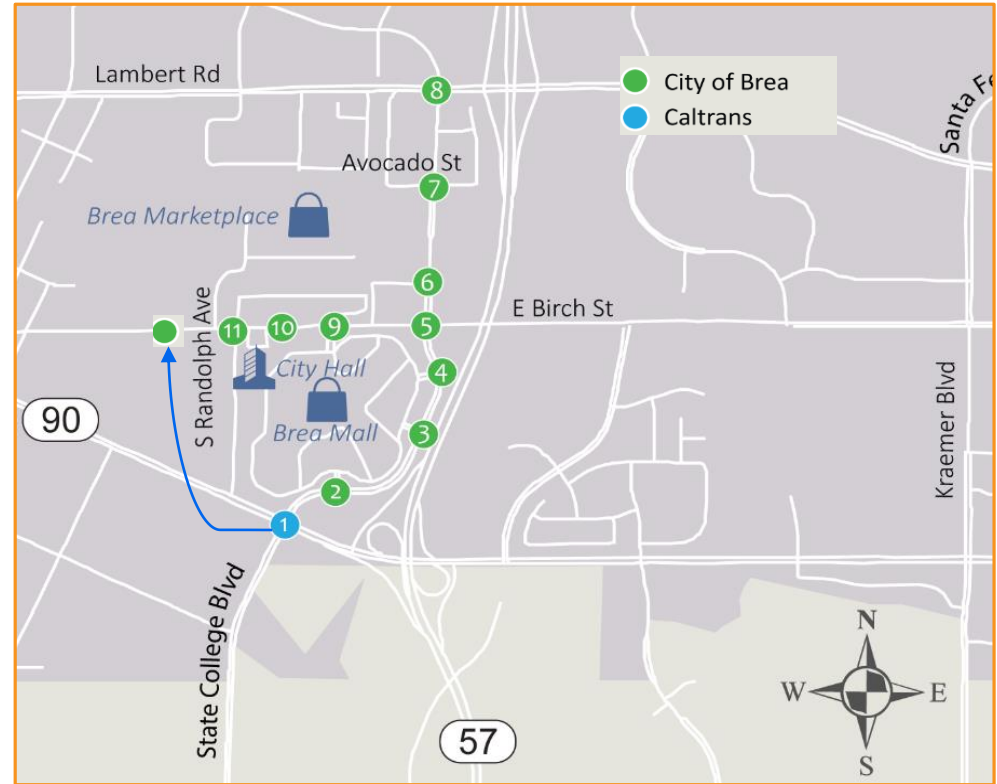
September 23, 2020

City of Brea



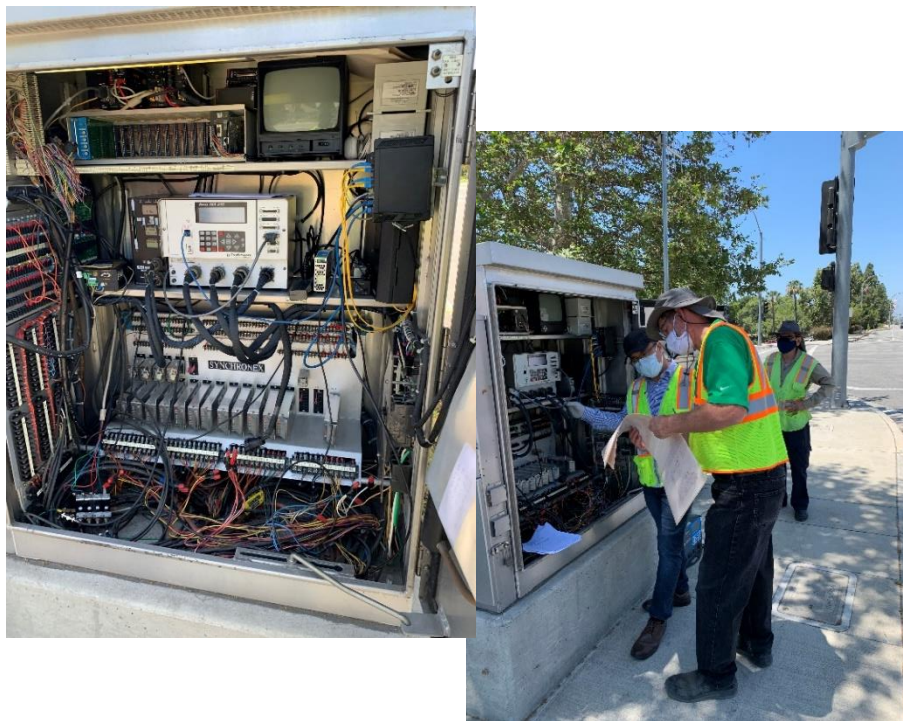
Adaptive System Overview

- Developer Deployed
- Automated Traffic Cop
- Trafficware's SynchroGreen
- 11 Signalized Intersections
- 100% Video Detection
- Blue Toad Roadside Units
- 4+ Years of Support
- 4+ Years of Quarterly Reports

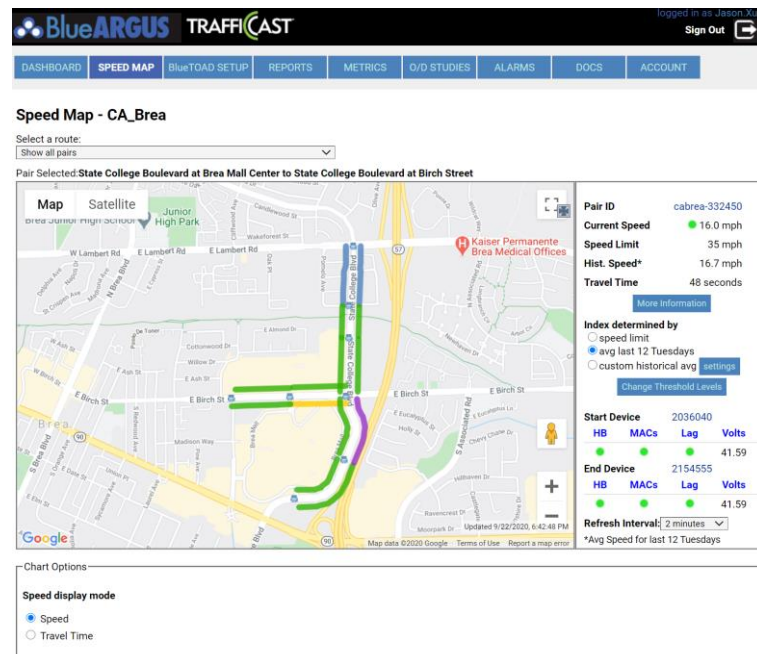


SynchroGreen System Deployment

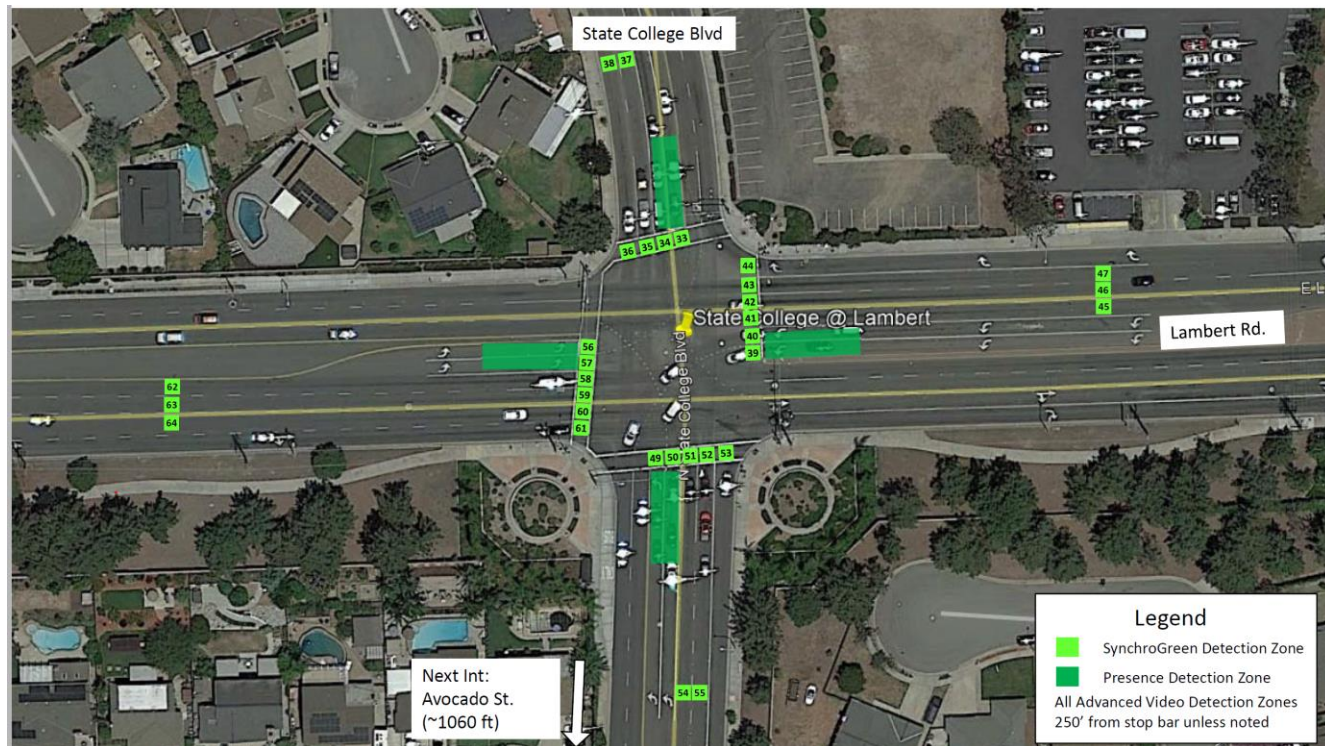
- Covid-19 Friendly!
- Fiber Optic / Twisted Pair
- Naztec 980 ATC Controllers
- Video Detection Upgrades
- Central Server:
ATMS.now / SynchroGreen
- Training / Training / Training



Blue Toad RSU Deployment



SynchroGreen Detection Zones



Signal Timing Optimization With No Transitions!

Phase Allocation (Split)

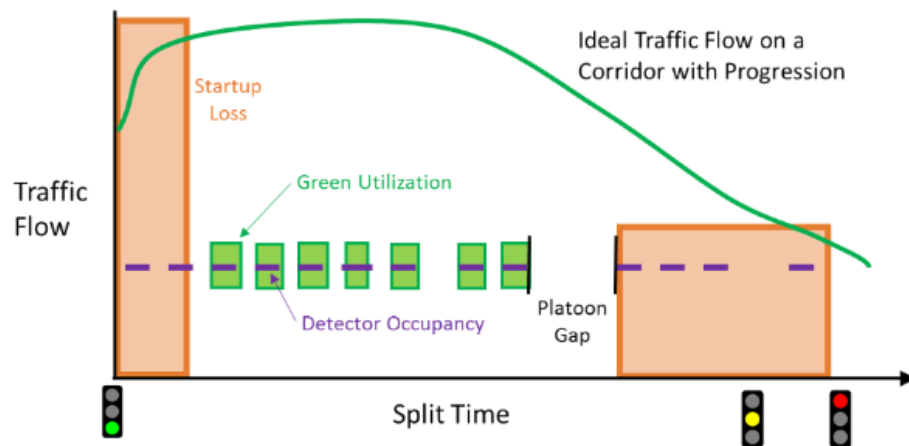
- ✓ Based on green utilization of stop bar detectors
- ✓ User-defined detector calibration factors

Period (Cycle)

- ✓ Sum of target phase allocations
- ✓ Intersection with highest target period

Start Time (Offset)

- ✓ Lag Time – relative offset
- ✓ Travel Path – user defined priority platoons





That's Cool But Does it Work?

It's early, but I'm thinking:

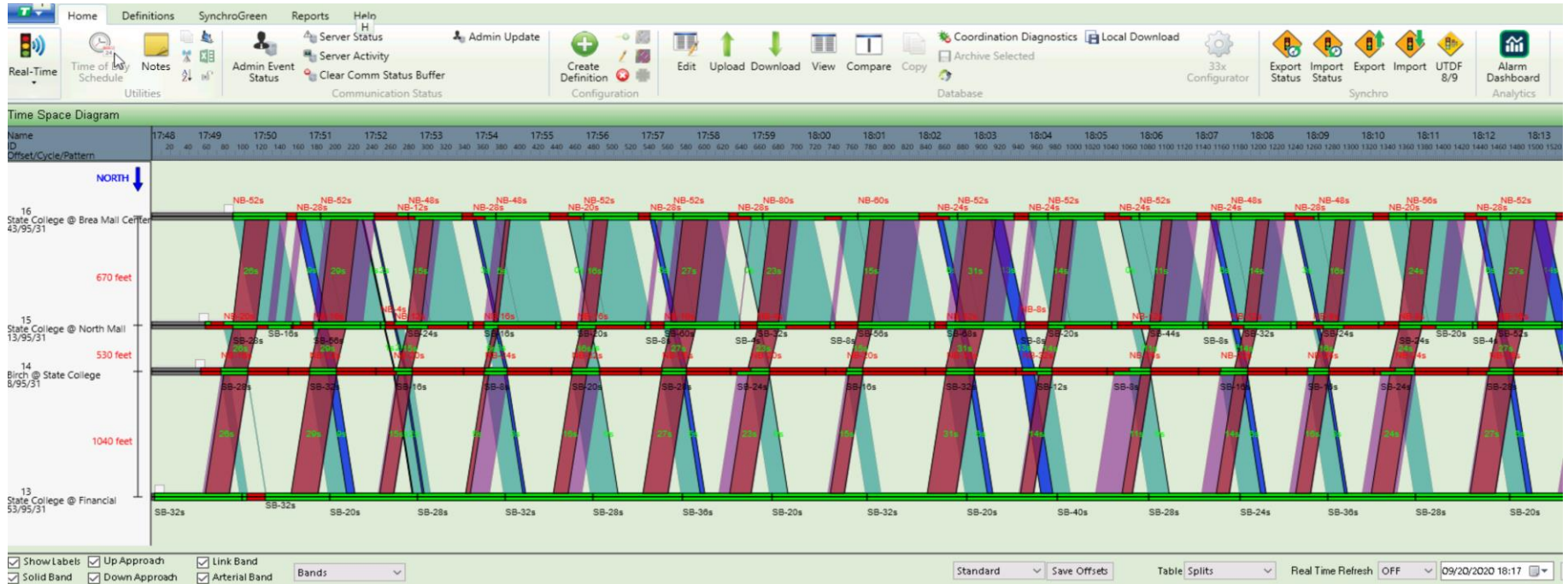
Public Complaints None

System Failures None

Do I get to City Hall Quicker?..... Definitely!

So MaybeYes?

Real-Time Time-Space Diagram



Questions?

