

A photograph of a historic trolley on a cobblestone street. The trolley is green and red with floral decorations. The background shows a historic building and a street lamp. The image is overlaid with a blue semi-transparent rectangle and a yellow triangle on the right side.

Gateway Green Light: Signal and ITS Partnership Between MoDOT and St. Charles County

INTRODUCTIONS

**Jeff Baird**

Traffic Operations Engineer

MoDOT – St Louis District

Jacob Becher

Project Manager

St Charles County Roads & Traffic

AGENDA



Overview

- ▶ Partnership
- ▶ Advisory Board
- ▶ Objectives

Successes

- ▶ Unified ATMS
- ▶ Signal Controller Upgrades
- ▶ Multi-Jurisdiction Signal Coordination

History

- ▶ Formation
- ▶ Funding Breakdown

Current Projects

- ▶ Network Expansion
- ▶ Intersection Improvements
- ▶ Central Emergency Vehicle Preemption System

Challenges

- ▶ Agreement with Multiple Agencies
- ▶ Ongoing Agency Coordination
- ▶ Agency Network Security

Future Improvements

- ▶ Cabinet, Controller, Detection Upgrades
- ▶ Deploy Signal Performance Measures
- ▶ Updated ATMS

Gateway Green Light

ST. CHARLES COUNTY

OVERVIEW

How GGL works

GGL PARTNER MEMBERS



**EAST-WEST GATEWAY
Council of Governments**

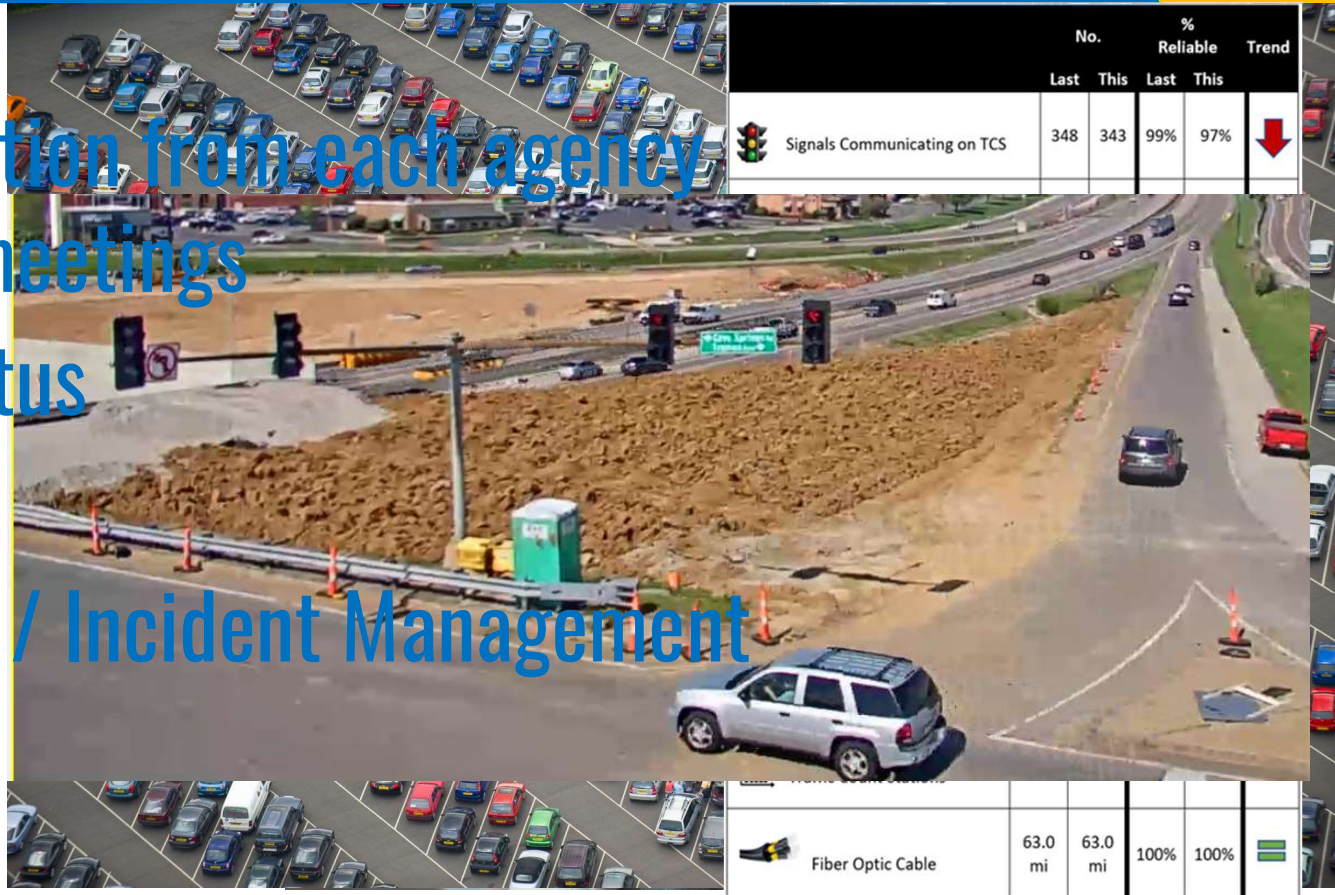
Creating Solutions Across Jurisdictional Boundaries



GGL ADVISORY BOARD



- ▶ Representation from each agency
- ▶ Quarterly meetings
- ▶ System status
- ▶ Projects
- ▶ Congestion / Incident Management
- ▶ Events



OBJECTIVES



To reduce travel times, delays, fuel consumption, greenhouse gas emissions and incidents, and to increase mobility and reliability of travel in St. Charles County

Gateway Green Light

ST. CHARLES COUNTY

HISTORY

How GGL was founded and funded

HISTORY



- ▶ 2009 - Periodic Stakeholder Meetings
- ▶ 2012 - Gateway Green Light Advisory Board Formed (MOU), Phase 1 CMAQ application submitted and approved
- ▶ 2015 - Technical Advisory Committees to the Board
- ▶ 2016 - Quarterly Performance Measure Reports, Citizen Surveys
- ▶ 2018 - Full-time County GGL Project Manager
- ▶ 2019 - Feasibility Study update
- ▶ 2020 - GGL Network expansion to connect additional County/City facilities, 2nd Full-time County GGL Project Manager/Operator

FUNDING



- ▶ The County's ½ cent transportation sales tax currently generates around \$36 million per year.
- ▶ Since 2011, \$20 million has been spent on GGL projects or around 6% per year of sales tax funds
- ▶ Major projects have been subsidized with Congestion Mitigation and Air Quality (CMAQ) funds

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CHALLENGES

Not every light can be green...

AGREEMENT



Executing an agreement between 10 agencies took some time. Each agency had concerns that had to be worked through before executing the agreement.



ONGOING AGENCY COORDINATION

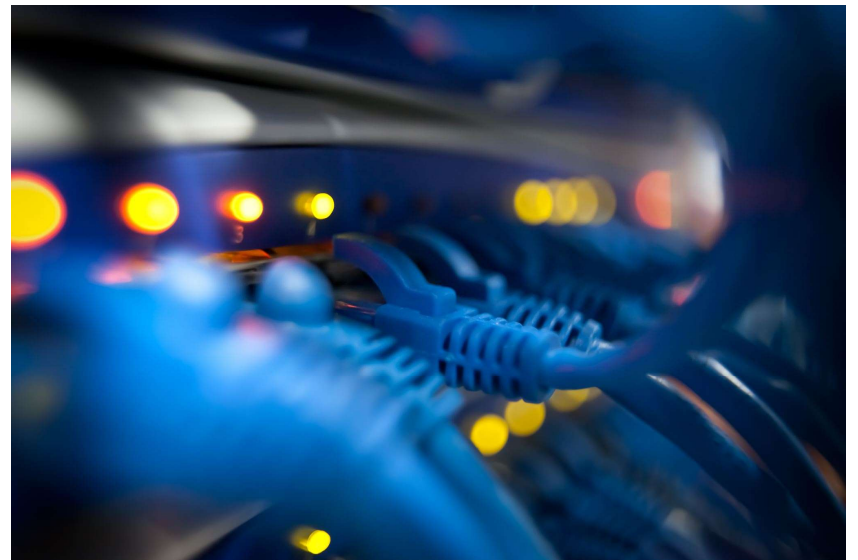
Keeping all partner agencies in the know of projects within the agreement area that could impact GGL facilities is vital to keep the network operating at its fullest potential and to avoid potential conflicts.



AGENCY NETWORK SECURITY



Partner agencies' networks may have to have their firewalls configured to allow GGL network traffic to pass through.



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The logo for Gateway Green Light, featuring a green lightbulb with a black top and a grey base, set against a yellow background.

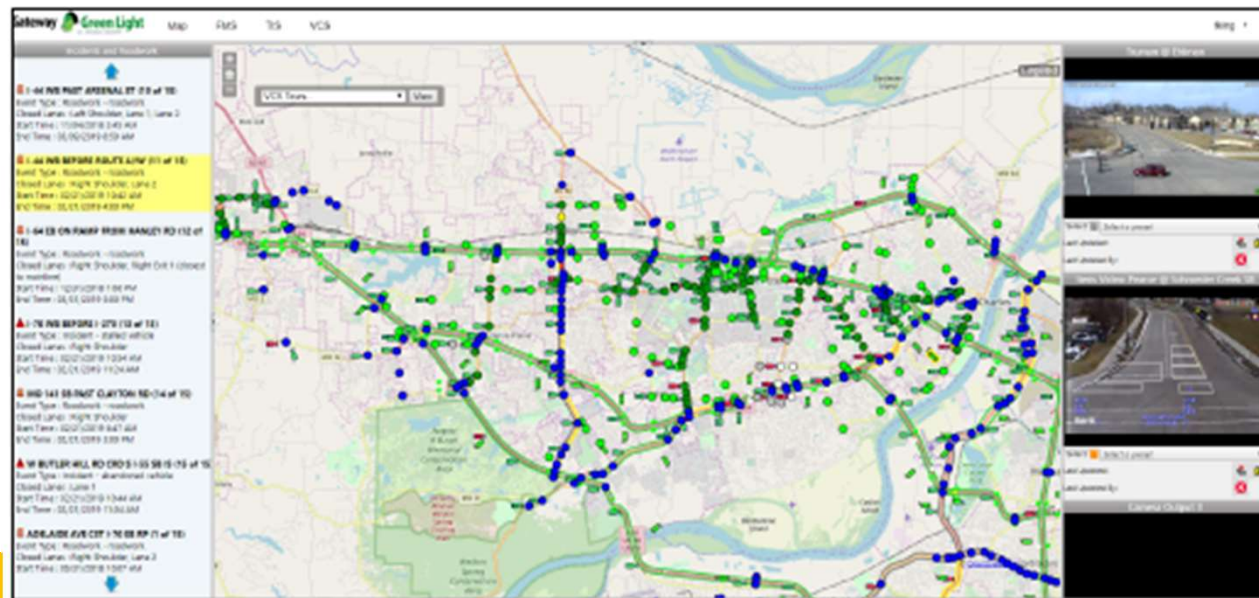
SUCCESSSES

How GGL has benefited the region

UNIFIED ATMS



- ▶ All Signals, CCTVs, DMSs, and Detectors into a single ATMS
- ▶ MoDOT preview and selection of ATMS for rest of SL District



SIGNAL CONTROLLER UPGRADES

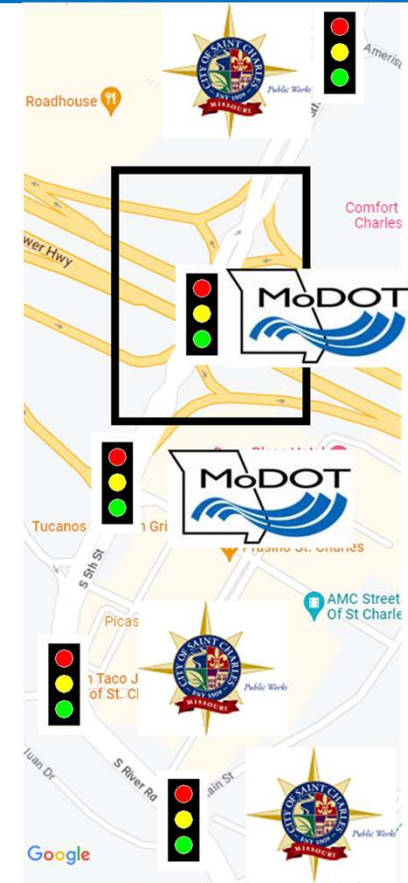
Required all traffic signal controllers to be updated to be NTCIP-compatible



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MULTI-JURISDICTIONAL SIGNAL COORDINATION

One of the greatest benefits is to have a universal platform to coordinate traffic signals across jurisdictional boundaries (State, City, County).



MULTI-JURISDICTIONAL SIGNAL COORDINATION



In the history of GGL, this cross-jurisdictional coordination has resulted in the following benefits:

- ▶ Despite a 15% average increase in volumes,
- ▶ Travel Times have remained constant
- ▶ 15:4 B/C Ratio of signal optimizations to date



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CURRENT PROJECTS

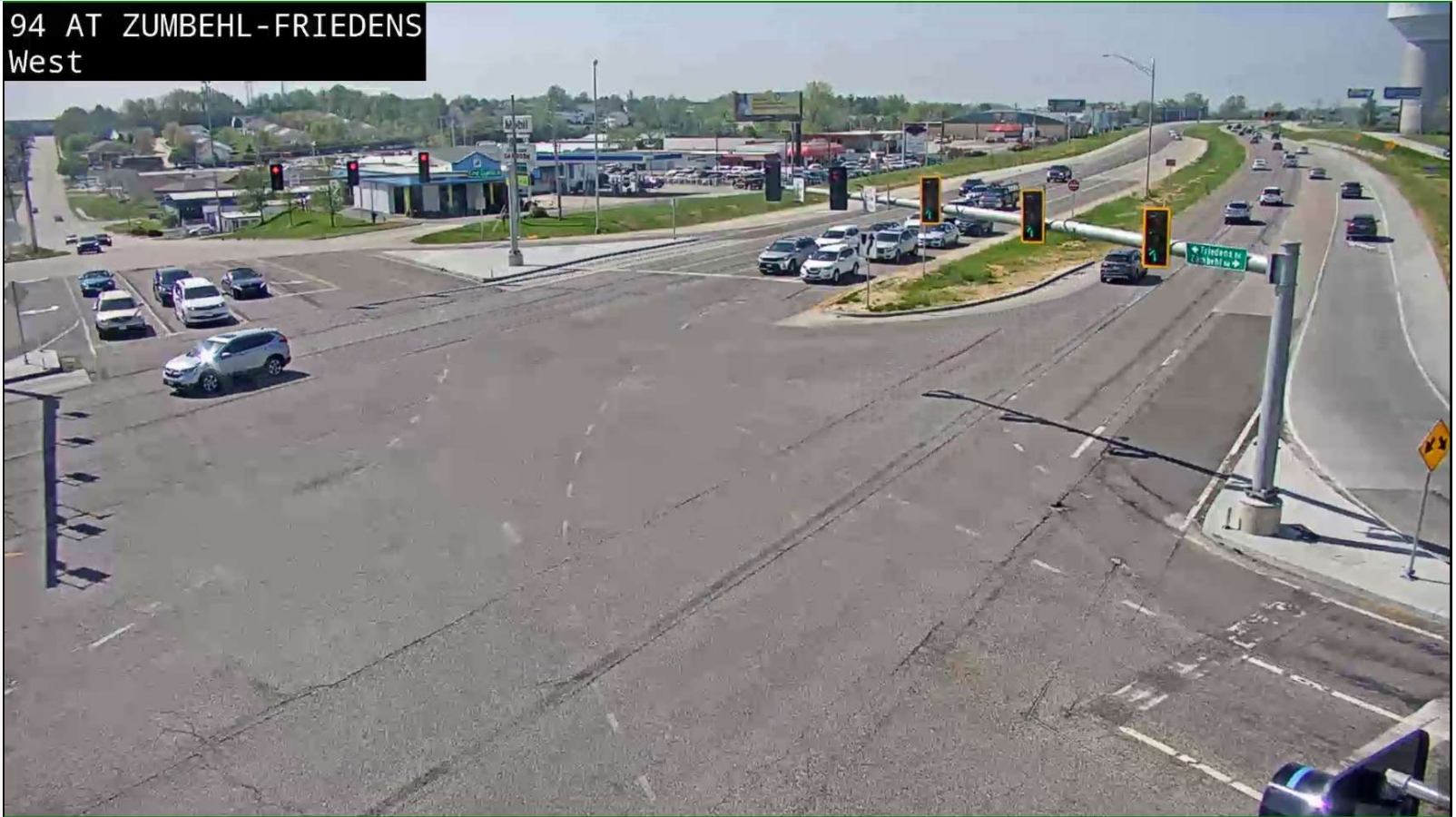
What Is GGL Up To Now?

NETWORK EXPANSION

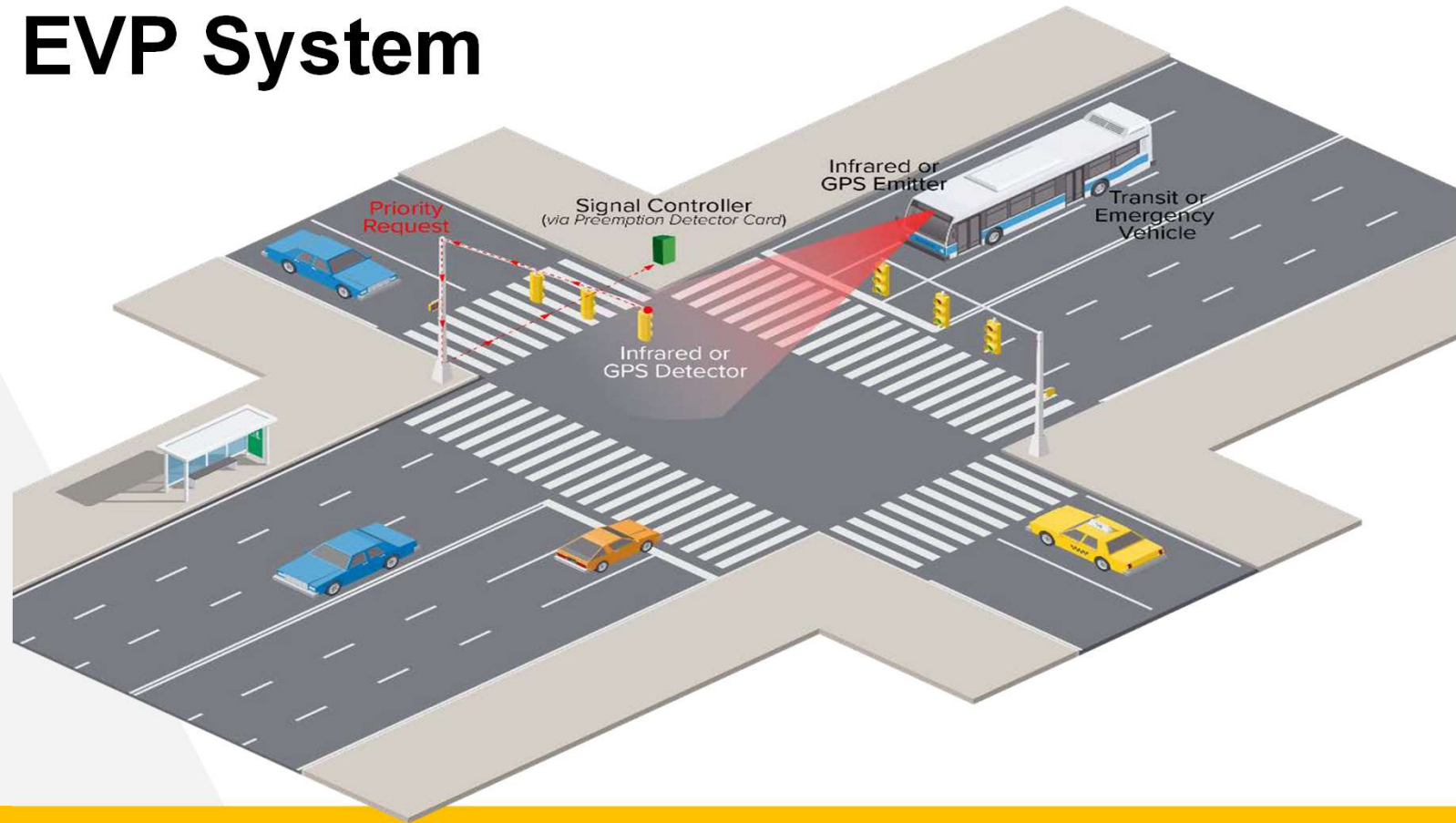


ROADWAY PROJECTS

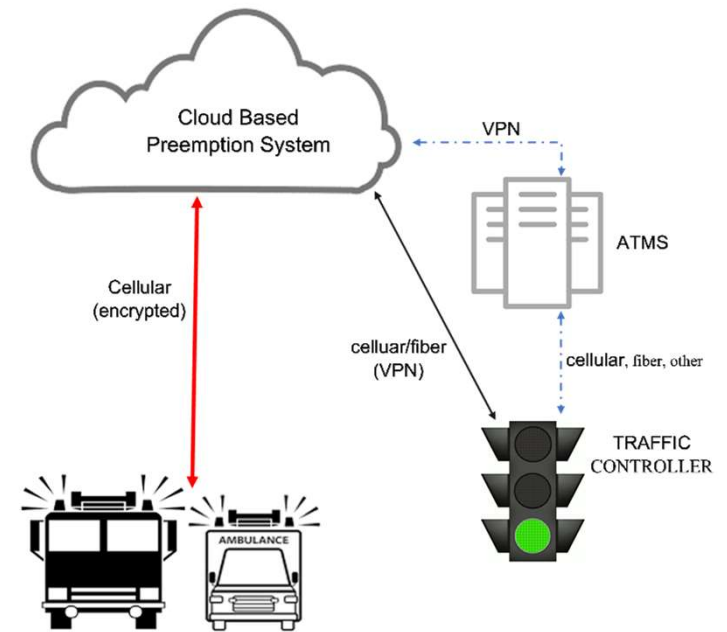
94 AT ZUMBEHL - FRIEDENS
West



Traditional EVP System



Basic CEVP Components



← Preferred method.

← - - - - - Alternate method – due to loss of communication

CENTRAL EMERGENCY VEHICLE PREEMPT SYSTEM



Traditional EVP

- Hardware based
- Higher installation costs
- Requires field maintenance
- Ongoing maintenance cost
- Subject to interference, weather, unauthorized calls
- Typical 5-year warranty for hardware

vs.

CEVP

- GPS/ software based
- Lower deployment costs
- Recurring licensing costs
- No maintenance
- Subject to network latency
- Easily scalable for both vehicles and intersections
- Automatic software updates, firmware updates when needed – all remote

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The logo for Gateway Green Light consists of a green circle with a white dotted pattern, a black arc above it, and a grey arc below it.

FUTURE PROJECTS

Where Is GGL Heading Next?

CABINET, CONTROLLER, AND DETECTION UPGRADES



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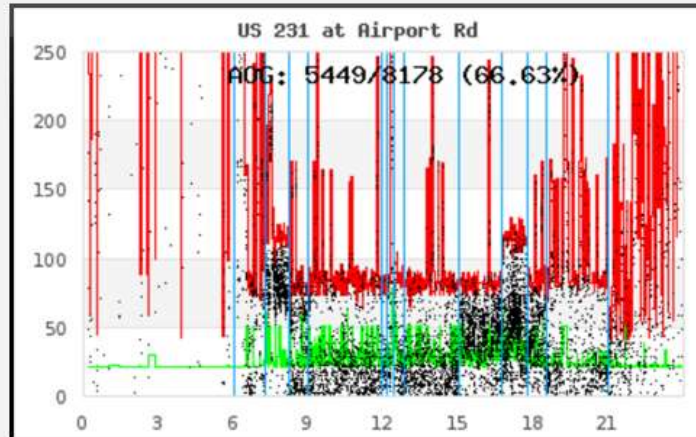
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In order to facilitate...

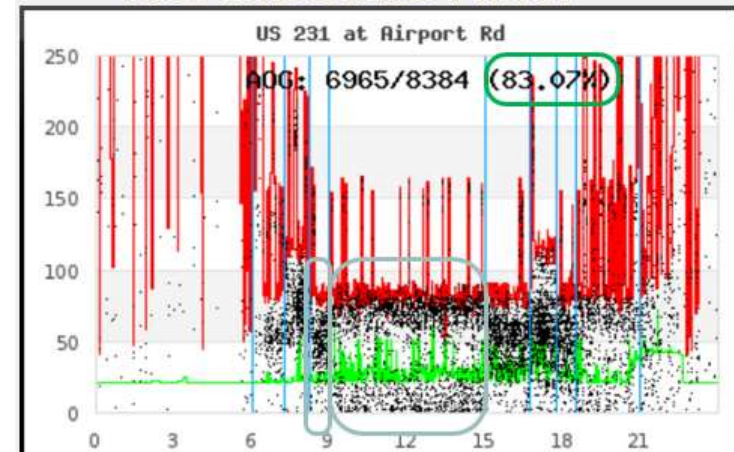
SIGNAL PERFORMANCE MEASURES

Having the signal control infrastructure up to date gives GGL and MoDOT the ability to implement Signal Performance Measures (SPMs).

Northbound Before



Northbound After



ATMS UPDATES

MoDOT is currently in the process of updating their ATMS system. GGL is in the planning phases of determining what their next ATMS might look like.



Special thanks to:

- ▶ Jacob Becher
- ▶ St Charles County Department of Roads and Traffic

Without his insight, perspective, and partnership; this presentation would not have been possible.

THANKS!

Any questions?

Contacts:

Jeff Baird

jeffery.baird@modot.mo.gov

Jacob Becher

jbecher@sccmo.org