



OPERATION GREEN LIGHT: Regional Traffic Signal Performance Measures

Mid-America Regional Council (MARC)

PROJECT PARTNERS

University of Kansas Transportation Center (KUTC) City of Lenexa, KS FlowLabs
Missouri Department of Transportation (MoDOT) City of Overland Park, KS Inrix
Kansas Department of Transportation (KDOT) City of Kansas City, MO Iteris
City of Independence, MO City of Olathe, KS Olsson
City of Shawnee, KS Merge Midwest
City of Lee's Summit, MO StreetLight Data



PROJECT CHALLENGE

To address fiscal constraints, agencies are using technology to optimize traffic signal timings instead of expanding infrastructure. Signal performance measures (SPMs) are essential for improving operations, though data collection remains costly. The Mid-America Regional Council (MARC) and Operation Green Light (OGL) seek to enhance transport through data-driven adjustments, improving safety and reducing delays, especially for disadvantaged users. A year-long evaluation of traffic data vendors will guide corridor retiming in Kansas City.

IMPACT

The Kansas City metro region, home to about 2.2 million people, is launching Regional Traffic Signal Performance Measures to enhance safety and efficiency, particularly in Historically Disadvantaged Communities. Stage 1 will evaluate key corridors like Kaw Drive and Independence Avenue. Improved signal timing will reduce crashes, lower travel times for all users, enhance transit reliability, decrease emissions, and provide economic benefits, especially for underserved areas.

CURRENT STATE OF THE ISSUE

The existing transportation network's efficiency and safety are hindered by insufficient resources and real-time data. Current corridor signal retiming follows a traditional method, relying on just one or two days of traffic data, which may not represent annual conditions. Additionally, some corridors may be studied when conditions have stayed similar, while other corridors need more frequent attention.

Challenges in the current process include limited data collection, often just one or two days, which can't capture seasonal traffic patterns. Regular data from signalized intersections is lacking, and systemwide data complicates corridor prioritization. Multimodal data is scarce. Additionally, big data services face high costs, vendor variability, and the need for reliable, user-friendly software across jurisdictions.

POLICY QUESTIONS

1. Does the available data meet the requirements for developing new corridor signal timings enough to allow OGL to modify the current timing change process?
2. Does the available data give OGL staff the ability to know about and respond to unexpected events that require temporary modifications to signal timings better than with the current processes?
3. Does the data platform assist in creating reports that increase transparency by making traffic information available for decision making at the leadership level, and by making general system status information at the public level?

STAGE 1 OUTCOMES

The project aims to establish a cost-effective, region-wide signal performance measurement system that aligns with regional goals. A secondary outcome includes a year-long pilot of four advanced performance measurement systems to evaluate the Kansas City metro transportation network. This trial will guide future investments to enhance safety and efficiency.

STAGE 2 VISION

The project's Stage Two goals focus on safety, resiliency, equity, climate, partnerships, and integration. Improved signal timing will enhance safety by reducing stops and crashes, especially in high-pedestrian areas. Users will see shorter travel times and more efficient traffic flow for underserved areas. The system will also reduce CO2 emissions and strengthen regional partnerships.