DRISI
CALTRANS DIVISION OF RESEARCH, INNOVATION AND SYSTEM INFORMATION

Research Notes

Traffic Operations

Practical Performance Indices to Enable Ranking of Signalized Corridors.

An automated traffic signal performance measurement.

WHAT IS THE NEED?

Caltrans maintains and operates nearly 6,000 signals statewide along state-owned corridors. No formal performance measures are produced to assess the quality of signal timing and coordination along such major corridors. Undesirable travel delays, fuel consumption, and greenhouse emissions are not accounted for due to poor and uncoordinated signal timing. A signalized corridor synchronization performance assessment will lay a solid foundation for such corridor-based projects to be included in the Operational Improvement section of State Highway System Management Plan (SHSMP).

WHAT ARE WE DOING?

Automated Traffic Signal Performance Measures (ATSPM) aim to provide performance metrics using traffic controller and vehicle data at different resolution levels. These measures however do not currently include consideration for fuel consumption or greenhouse gases. We will rework indices on vehicle delay, pedestrian delay, greenhouse emissions, and fuel consumption for low-resolution controller data.

Software code derived from traffic simulation models will be used in the project along with other traffic signal control data whenever available. This data will be combined into a single score, which can then be used for ranking of corridors, to be used for the 2025 State Highway System Management Plan (SHSMP) prepared by Caltrans.

WHAT IS OUR GOAL?

The goal of this project is to create a computer simulation model that can generate a single compound performance index based on travel delays and greenhouse gas emissions. The tool will be used for comparison of two sample corridors and will help to

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better identify, prioritize, and invest to improve transportation improvement funds across the State.

WHAT IS THE BENEFIT?

The signalized corridor performance index will help practitioners to identify and develop the most beneficial corridors to invest in. The traffic signal simulations can help in reducing vehicle travel times and greenhouse emissions

WHAT IS THE PROGRESS TO DATE?

The research project began in March 2024 and is in the early stages. The kickoff meeting is scheduled to be held 05/15/2024.