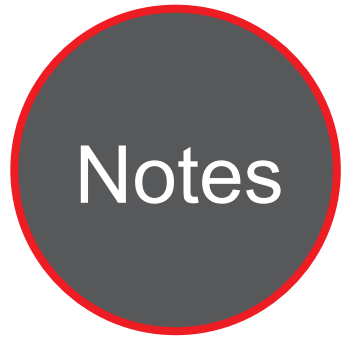




Caltrans Division of Research,
Innovation and System Information

Research



MAY 2020

Project Title:
Traffic Signal Systems Operations
and Management

Task Number: 3272

Start Date: January 1, 2018

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2021

Task Manager:
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Enhanced Traffic Signal Performance Measures - Pooled Fund Study- TPF-5(377)

Address the initiatives that complement and expand on the past work the multi-state team done around traffic signal performance measures.

WHAT IS THE NEED?

This is pooled fund study (PFS) led by Indiana Department of Transportation (DOT) and with participation from Federal Highway Administration and State DOTs from California, Georgia, Minnesota, Mississippi, New Hampshire, Pennsylvania, Texas, Utah, and Wisconsin. This group expressed interest in developing the project to address two needs that had emerged - Traffic Signal Data Logger Update and develop Probe Data.

Both initiatives would complement the previous work the multi-state team had done in traffic signal performance measures.

WHAT ARE WE DOING?

This is study oriented toward traffic signal operations and management that would engage a broad cross section of agencies on the leading edge of active traffic signal management. This research would create a multi-agency team charged with developing modern management practices for traffic signal operations. All participating agencies provide feedback and participate in finalizing the updated specification. A key component of this process is ensuring the specification is acceptable to multiple states and they are committed to procuring controllers with the updated data logger specification.

The first year of study would be devoted to updating the specification, and the second and third years would be focused on developing and documenting use cases that exercise the updated specification.



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WHAT IS OUR GOAL?

The project will address the following initiatives that complement and expand on the past work the multi-state team has done around traffic signal performance measures:

1. Traffic Signal Data Logger Update: Update the data logger specification to provide secure file transfer, incorporate new enumerations that have emerged, and logging new connected vehicle messages.
2. Probe Data: Current probe data tools are focused on freeway data. There is a need to build upon the work of Indiana and Pennsylvania DOTs to develop methodologies and tools for using high resolution vehicle trajectory data to compute traffic signal performance measures.

WHAT IS THE BENEFIT?

This study will provide guidelines for Caltrans and other agencies to improve signal system operations. The intent is that agencies adopting the resulting recommendations will achieve a 10-15% reduction on motorist delay and emissions.

WHAT IS THE PROGRESS TO DATE?

The pooled fund study continued work on two active projects:

- Traffic Signal Data Logger automation activities (Work performed by University of Alabama)
- Enhanced probe data activities with auto manufacturers (Work performed by Purdue University)

Potential Implementation: Traffic signal vendors will begin deploying the new enumerations in 2020.

Publications:
Indiana Traffic Signal Hi Resolution Data Logger Enumerations

<https://docs.lib.purdue.edu/jtrpdata/4/>

The website provides more detail about the pooled fund study:

<https://www.pooledfund.org/Details/Study/629>

IMAGE



Image 1: Photograph of NCHRP panel meeting on March 28, 2019 in West Lafayette, Indiana.