# TRANSPORTATION POOLED FUND PROGRAM
# QUARTERLY PROGRESS REPORT

Lead Agency (FHWA or State DOT): ____IOWA DOT_____

**INSTRUCTIONS:**

*Project Managers and/or research project investigators should complete a quarterly progress report for each calendar quarter during which the projects are active. Please provide a project schedule status of the research activities tied to each task that is defined in the proposal; a percentage completion of each task; a concise discussion (2 or 3 sentences) of the current status, including accomplishments and problems encountered, if any. List all tasks, even if no work was done during this period.*

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|---|---|---|
| **Transportation Pooled Fund Program Project #**<br>*TPF-5(483)* | **Transportation Pooled Fund Program - Report Period:**<br>Quarter 1 (January 1 – March 31)<br>Quarter 2 (April 1 – June 30)<br>Quarter 3 (July 1 – September 30)<br>X Quarter 4 (October 4 – December 31) | |
| **Project Title:**<br>Implementation of New Traffic Signal Actuation Concepts using Enhanced Detector | | |
| **Project Manager:**<br>Chris Poole | **Phone:**<br>515-239-1513 | **E-mail:**<br>chris.poole@iowadot.us |
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| **Lead Agency Project ID:** | **Other Project ID (i.e., contract #):**<br>Addendum 791 | **Project Start Date:**<br>02/01/2022 |
| **Original Project End Date:**<br>02/28/2026 | **Project End Date:** | **Number of Extensions:** |

X On schedule ☐ On revised schedule ☐ Ahead of schedule ☐ Behind schedule

Overall Project Statistics:

| Total Project Budget | Total Cost to Date for Project | Total Percentage of Work Completed |
|---|---|---|
| $595,032 | $51,211 | %6 |

***Quarterly*** Project Statistics:

| Total Project Expenses This Quarter | Total Amount of Funds Expended This Quarter | Percentage of Work Completed This Quarter |
|---|---|---|
| $7,558 | | %2 |

**Project Description:** The objective of this research is to develop field-tested methods of integrating vehicle trajectory data into actuated signal control that can be directly implemented in traffic signal controllers. This research will identify the practical requirements and limitations of establishing trajectory-assisted actuated signal control, including requirements for acquisition, storage, and communication of vehicle trajectory data. The findings will be developed into a resource toolkit that will permit implementation and further development of the methods conceived during the course of the research.

**Progress this Quarter (includes meetings, work plan status, contract status, significant progress, etc.):**
The team worked on three tasks. One of these was to develop actuation concepts; this includes development of a working paper reviewing control concepts for isolated intersections (WP2), and another working paper that will contain the concept of operations for trajectory-based actuation methods proposed for future field study, as well as a sensitivity analysis to understand the envelope of performance for the methods (WP3). In addition, the team obtained some sample data from a few detection systems and have been developing a concept for evaluating their accuracy that depends on the functional output of the detection system (for example, how well they capture vehicle arrival patterns). This will be documented in another working paper (WP4).

**Anticipated work next quarter:** In the first quarter of 2023, the research team will complete WP2 and WP3 and make substantial progress on WP4. In addition, the team will prepare for future field testing of the control methods intended to take place in the summer of 2023.

**Significant Results:** WP2 identifies certain research gaps relevant to actuated control. The team produced a eight-phase signal controller (which duplicates most standard actuated controller features) that integrates with the VISSIM external controller API, which integrates vehicle trajectory data, maps it to an internal model of the intersection, and uses this to drive several trajectory-based actuation methods.