



Research Project Statement 19-406 FY 2019 Annual Program

Title:	Implementation of Automated Traffic Signal Performance Measures
The Problem:	<p>There are estimated to be over 25,000 signalized intersections in Texas, with thousands of these traffic signals operated by TxDOT. However, TxDOT staff has limited budget and time to monitor and maintain these intersections and corridors. Further, when TxDOT staff and consultants conduct signal retiming projects, they rely on limited before and after travel-time data to demonstrate the effectiveness of optimization efforts. Typically, no ongoing performance measurement capability exists, and agencies rely on public feedback to reactively detect maintenance or operational deficiencies. This lack of active performance management compromises safety and efficiency and contributes to congestion. It also institutionalizes public dissatisfaction with the operation and maintenance of signalized intersections.</p> <p>The U.S. Department of Transportation (U.S. DOT) is promoting automated traffic signal performance measures (ATSPMs) under its Every Day Counts (EDC) program, Round 4, as a means to improve traffic signal performance. ATSPMs consist of high- resolution data-logging capability added to existing traffic signal infrastructure and data analysis techniques. This system provides transportation operating agencies with the information needed to proactively identify and adjust operation of their traffic signal systems and can help with increased safety, targeted maintenance and improved operations.</p> <p>The collaborative development of ATSPMs has produced a number of implementation options to fit a range of agency capabilities and resources with The Utah Department of Transportation (UDOT) offering a public version that competes among several proprietary options. TxDOT seeks to discover the optimal system requirements for software that will offer the benefits listed above and learn about any further data collection, analysis and visualization possibilities that may augment these systems for TxDOT use.</p>
Technical Objectives:	<ol style="list-style-type: none"> 1. Review EDC-suggested ATSPM analysis and comparison to TxDOT practice. 2. Review at least 3 ATSPM software suites (access provided by TxDOT), identifying features that should be recommended for any software TXDOT chooses to implement, and compile a benefits analysis. 3. Review the end-to-end collection system for ATSPM data. Consider security, hardware, and connectivity needs, and provide descriptions and cost analysis of a complete system. 4. Review the ecosystem of ATSPM data and identify any limitations that may be associated with proprietary data and/or non-universal data schema. 5. Using compiled information and University expertise; analyze collected data that is, or could be, collected via the ATSPM system and offer recommendations on data tools and analysis that could be used to further TxDOT's operations. 6. Compile an appropriate set of technical documentation that describes the data collected, the methodology of the analysis of the data, and the use cases of each analysis. <p>The expectation of this project is that the end product will obtain a TRL level 7</p>
Desired Deliverables:	<ol style="list-style-type: none"> 1. Technical memorandum for each task completed. 2. Monthly progress reports. 3. Value of Research (VoR) that includes both qualitative and economic benefits, to be included in the research report. 4. Research report documenting the findings of EDC recommendations in comparison with TxDOT standards, software feature analysis, appropriate technical documentation and other findings of the research. 5. Project Summary Report.



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Proposal Requirements:	<ol style="list-style-type: none">1. Utilize the "Proj/Agre" and "PA_Form" templates located at the TxDOT RTI website.2. Proposals will be considered non-responsive and will not be accepted for technical evaluation if they are not received by the deadline or do not meet the requirements stated in RTI's University Handbook, which is also located at the RTI website.3. Proposals should be submitted in PDF format, 1 PDF file per proposal. File name should include project name and university abbreviation.4. This project will be tracked during the life of the project using a Technology Readiness Level (TRL) scale. For more information about the use of a TRL, click.
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