

# 2016 UDOT RESEARCH PROBLEM STATEMENT

\*\*\* Problem statement deadline is March 14, 2016. Submit statements to Tom Hales at [tahales@utah.gov](mailto:tahales@utah.gov). \*\*\*

**Title:** Incorporating Reliability Performance Measures into Transportation Planning **No. (office use):** 16.05.05

**Submitted By:** Cathy Liu

**Organization:** University of Utah

**Email:** cathy.liu@utah.edu

**Phone:** 801-587-8858

**UDOT Champion (suggested):** Jeff Harris

**Select One Subject Area**

Materials/Pavements

Maintenance

Traffic Mgmt/Safety

Preconstruction

Planning

Public Transportation

## 1. Describe the problem to be addressed.

Planning large-scale capacity improvement to transportation network has become increasingly difficult due to limited funding resources and challenges in satisfying different stakeholders. Therefore, many agencies are looking more closely at traffic-operations and related improvements, to get the most out of the existing transportation system. One critical aspect during this process is to understand how reliable the existing system is, evaluate reliability deficiencies, and use reliability performance measurement to inform investment decisions.

## 2. Explain why this research is important.

Virtually all transportation agencies have a strong customer orientation. An important concern of road users is congestion that is both recurring and nonrecurring. In the past decade, agencies have begun to measure reliability. The critical question is, how should agencies use limited funds to achieve more cost-effective outcomes, e.g. improved congestion, consequently reduce delay and less reliable travel time? Performance-based planning and programming is expected to address this issue by embracing measures and targets for travel time reliability along with safety, infrastructure condition, congestion reduction, and sustainability.

## 3. List the research objective(s):

1. Identify the tools and methods to track transportation system reliability
2. Incorporate reliability into the existing analysis tools and inform investment decisions

## 4. List the major tasks:

1. Review the SHRP 2 reliability data and analysis tool bundle (L02/L05/L07/L08/C11) and other relevant literature on achieving more consistent, predictable highway travel
2. Collect preliminary data from PeMS, UPLAN, Wavetronix HD sensors and relevant sources to provide a broad picture on the reliability of existing system, emphasizing on the major corridors within Wasatch Front region (Davis, Salt Lake, Weber, and Utah counties)
3. Meet with the project TAC to identify factors that significantly influence reliability based on literature review and initial data analysis
4. Develop a detailed work plan for identifying tools to monitor and evaluate reliability and key performance indicators for reliability.
5. Upon approval from the project TAC, execute the work plan

Document the entire research effort in a final research report. The Task 5 activities will follow the most current edition of UDOT Research Division's Final Report Process.

## 5. List the expected results:

1. A suite of tools/methods for tracking and evaluating the reliability of existing transportation system, and identifying reliability deficiencies.
2. Reliability data collected along major corridors from multiple data sources on the GIS platform that can be used for future analysis
3. Reliability analytical results using the data collected and tools developed.

**6. Describe how this research will be implemented.**

This research will provide a systematical approach for monitoring and evaluating the transportation system reliability. The analysis results will serve as a reference to inform investment decisions on the potential improvements of travel time reliability. The GIS products will also be integrated into the UPlan open data to assist with planning and programming process.

**7. Requested from UDOT: \$30,000**

**Other/Matching Funds: \$30,000**

**Total**

**Cost: \$60,000**

**(or UTA for Public Transportation)**

**8. Outline the proposed schedule, including start and major event dates.**

The following schedule is proposed to give a general idea of the relative timing of the major event dates. The University of Utah will work with the research manager, project champion, and TAC to finalize the scope and schedule.

- a) Proposed Start Date: September 1, 2016
- b) Task 2 TAC Meeting: December 31, 2016
- c) Submit Task 3 Detailed Work Plan: February 28, 2017
- d) Draft Final Report: October 30, 2017
- e) Final Report: December 31, 2017