Strategic ITS Research and Development Plan
Purpose of the Plan

- Guide strategic research and development of ITS technologies and solutions
- Facilitate the development of ITS strategies and solutions that offer best benefits and financial effectiveness
- Improve operational efficiency and enhance safety and mobility of the state transportation system
MnDOT ITS Development Unit seeks for strategic directions to research, develop, test and support new ITS technology, products, methods and systems

Currently lack of a data-driven analysis to support ITS development investment decisions

Minnesota ITS Development Objectives reflect needs, but causes and impacts of such needs/problems/objectives are not sufficiently analyzed
Project Scope

- Analyze Previous Work
  - Summarize studies and reports describing problems relevant to ITS development objectives
  - Assess completeness of analysis of the problems
  - Recommend ITS objectives for further analysis

- Analyze Recommended Objectives
  - Identify performance measures to quantify benefits
  - Assemble descriptive statistics to identify causes
  - Identify emphasis areas for R&D

- Recommend ITS Strategies for Research and Development
Plan Development Process

- An Objective–Driven, Data–Driven Approach

1. ITS Development Objectives
2. Data
3. Objectives for Further Analysis
4. Identify Problems & Causes
5. Emphasis Areas
6. Performance Measures
7. Strategies & Countermeasures
8. Existing Studies & Reports
9. Candidate Performance Measures
10. Assess Completeness of Analysis
Significant Problem Areas

- Recurring Congestion and Delay
- Work Zone Delay
- Congestion and Delay Due to Incidents
- Travel Time Reliability
Emphasis Areas

- Traffic Management
- Traveler Information
- Incident Management
- Other Demand Management
- Safety (from Strategic Highway Safety Plan)
  - Intersections
  - Lane Departure
  - Inattentive Drivers
  - Speed
Performance Measures

- Key Performance Measures
  - Twin Cities Freeway Operating Speed
  - Peak Period Vehicle Hours of Delay
  - Peak Period Average Travel Time
  - Work Zone Associated Delay
  - Queue Lengths in Work Zones
  - Incident Associated Delay on Twin Cities Freeways
  - Travel Time Index
  - Number of Vehicle Crashes
  - Number of Fatal and Serious Injury Crashes

- Based on current data availability
- Can be expanded overtime when additional data become available
Recommended ITS Strategies

- 40 ITS strategies for R&D in 5 categories
  - Safety – 9 strategies
  - Work Zones – 6 strategies
  - Freeway Traffic Management – 12 strategies
  - Arterial Traffic Management – 6 strategies
  - Traveler Information/511 – 7 strategies

- Focus on “tried” and “experimental” strategies
  - Examples:
    - Dynamic Speed in Work Zones to Advise Drivers
    - Connected Vehicles: Speed Harmonization Application
    - Active Traffic Management on Selected Arterials

- Compliment other ITS R&D ideas such as the Innovative Idea Program
Contact Information

- Sue Sheehan
  - susan.sheehan@state.mn.us
  - 651–234–7061

- Ray Starr
  - Ray.starr@state.mn.us
  - 651–234–7050

- Cory Johnson
  - coryj.johnson@state.mn.us
  - 651–234–7062