

002013

# SYMPOSIUM ON MILEAGE-BASED USER FEES: TECHNOLOGY WORKSHOP

## Session 1: Implementation Pathways: Research Initiatives and Demonstrations

*Speaker 2: Ray Starr, Minnesota DOT (MnDOT)*

*[“Minnesota Mileage-Based User Fee Test Results”](#)*

Ray A. Starr is the Assistant State Traffic Engineer for ITS with the Minnesota Department of Transportation.

### Slides 2-3

The Minnesota Department of Transportation’s project was the result of state legislation directing the DOT to conduct a mileage-based user fee technology demonstration. The first phase of the project was a policy study, as there was no policy guidance provided in the legislation. The report on this phase of the research is available online at <http://www.dot.state.mn.us/mileagebaseduserfee>.

The technology demonstration was built and operated by Battelle, SAIC was the evaluation contractor, and Mixon Hill was the support contractor in charge of developing the concept of operations and procurement documents. Through the demonstration MnDOT was able to get a better understanding of how an opt-in, discount-based approach to MBUF might work.

The demonstration included 500 participants who utilized smartphones equipped with a specialized app, which was offered as an opt-in addition to an odometer read. The smartphone app applied a discount formula to mileage assessed through the odometer read, and thus it was in the best interest of the driver to use the smartphone app as much as possible. Researchers found that 77 percent of the mileage assessed under the demonstration was recorded on the app. Odometer mileage not captured by the app was assessed at a rate of 3¢ per mile. Mileage recorded on the app during peak time in a metropolitan area was assessed at the same rate. Mileage accrued off peak or outside of a metro area was assessed a rate of 1¢ per mile, and mileage accrued outside of Minnesota was not assessed.

Participants were provided an initial stipend from which they paid their mileage fees. Several billing methods were tested, but participants were most accepting of modest monthly MBUF invoices. MnDOT collected just over \$32K in fees during the test.

The smartphones utilized in the demonstration were also used to test some connected vehicle applications including in-vehicle signing for work, speed, and school zones, curb warnings, and travel time applications using probe data.

### **Slides 4-17**

There were several noteworthy conclusions coming out of this second demonstration:

- Smartphones are viable as an MBUF assessment and communication device.
  - They have a good and familiar user interface.
  - Custom applications can be written for them.
- Smartphones suffer from GPS and other location-based issues.
  - Identical phones placed next to each other might now show the exact same location.
  - Placement of the phone in the vehicle could affect accuracy. Battelle found results varied with placement of the phone near a window or on the dash (most reliable), A/C vent, on the seat, or under the seat (least reliable).
- Simplicity in system design is important to participants.
  - Participants did not like having to continually remove and then reattach the smartphones from their vehicles.
  - Participants indicated a general preference for a device built in to the vehicle that would reduce their interaction with the system.
  - Drivers did not like the app's visual and audio notifications in response to various road conditions or driving behaviors. However, drivers generally altered driving behavior in response to the notifications.
- System administration was labor-intensive and required a significant level of one-on-one interaction with participants. MnDOT concluded that future deployment might be better centered administratively within the DMV – a unit with existing one-on-one relationships with drivers – rather than within MnDOT.
- The demonstration was judged a success in that it was able to
  - satisfy legislative directive;
  - determine that the technology worked (with some limitations);
  - prove participants could use the system;
  - prove that participants were willing to share their data; and
  - achieve customer payment on most bills.

### **Slide 18 - Summary**

MnDOT is currently in the process of sharing the results of the demonstration and is working to pass a bill in the state legislature that would keep various participant data from being publicly disclosed.

MnDOT is also working to establish a pooled fund project among the states to enable further research on this topic.