



Project Summary

Texas Department of Transportation

0-6396: Pre-Determining Performance Based Operational and Toll Rate Setting Measures

Background

Over the past several decades, the Texas Department of Transportation (TxDOT) and its partnering agencies have implemented many transportation innovations to meet the mobility needs of a growing population and economy. These innovations have included high-occupancy vehicle (HOV) lanes, high-occupancy toll (HOT) lanes, managed lanes (ML), and toll roads. These types of projects are being considered or implemented in several urban areas of the state. Whenever these projects are considered there is a range of policy decisions that must be addressed, some of which can be controversial. Moreover, the operating characteristics of a project are likely to change over time, requiring additional policy decisions to adjust operating strategies to match the new operating characteristics.

Managed lanes, HOT lanes, and even HOV lanes are more complex, both from a policy and an operational standpoint, than traditional roads or toll roads. As more of these complex transportation facilities are planned and constructed throughout the state, there is a need to understand how these facilities may operate over time. Operations should be based on metrics that are agreed upon in advance, ideally before the opening of the facilities. An understanding of how changes in certain metrics impact the performance of a facility is important. By defining what metrics can most effectively and efficiently measure the performance of a facility and outlining what thresholds trigger a change in operation, policy-makers and the public can anticipate and appreciate how a facility's operation may change over time. The result is a facility where policy-makers and the public recognize that changes will be made to ensure the facility operates at its maximum efficiency to achieve the stated goals. This can be considered a "mobility pledge." This understanding enables facility operators to focus on the tasks of efficiently operating a smooth transportation network.

The purpose of this study was to provide a framework in which operating decisions for priced facilities can be made and can guide the changes in operational strategies for a facility over time.

What the Researchers Did

The research process began with a literature review and targeted interviews of toll and managed lane operators to assess the state-of-practice in performance measurement and management for pricing and other operational changes. The research team then developed guiding principles for identification, selection, and communication of performance measures and threshold targets. A conceptual framework was formulated and data collection infrastructure needs were documented. The conceptual framework was then expanded and converted to an easy to use web-based tool for users.

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What They Found

In conducting the state-of-practice review, researchers contacted many organizations around the country to ask for any performance promises they might have adopted on their facilities. Although many verbally expressed interest in the concept of proactive management using performance measures, only one had clearly defined triggers and actions to ensure performance. This was State Route 91 (SR-91) Express Lanes in California, where specific traffic volumes, and therefore congestion levels, result in specific price changes. Others, particularly the dynamically priced HOT lanes, had something similar where the toll rate rises every few minutes, if needed to ensure the smooth flow of traffic.

Similar to a mobility pledge is the federal legislation that requires traffic speed on HOT lanes to exceed 45 mph for 90 percent of the time during the peak periods. Frequently failing to meet this requirement may result in the removal of single-occupant vehicles (SOVs) from the facility.

What This Means

There is a clear need for performance measurement and management to ensure long-term, sustainable performance of priced facilities in Texas. This research provides a framework and a systematic process by which TxDOT and its partnering agencies can develop a performance plan for individual projects as well as systems of priced facilities. The study also provides communication tools to illustrate to the public and policy-makers what performance measures are, what performance management means, and how using performance practices results in better operation of the transportation system.

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