



# Project Summary

Texas Department of Transportation

## 0-5827: Alternatives Analysis for Initial & Future TxDOT Deployment of a Dual Mode, Automated Transportation System

### *Background*

The United States in general, and Texas in particular, have a transportation challenge which requires the simultaneous solution of four problems. Traffic congestion has resulted from road capacity additions not keeping pace with population growth. Vehicles continue to be a major source of air pollution which clouds the air in urban population centers. Safety is a concern with traffic accidents annually claiming over 42,000 lives, causing nearly 3 million injuries, and producing over 4 million property damage claims nationally. And finally, energy security is an issue with the transportation sector 97% dependent on oil with over 56% imported from foreign sources. Dual mode vehicles and infrastructure designs are one alternative which offers a potential answer. This technology can impact both freight and passenger transportation on both new construction and existing routes by adding significant capacity at a fraction of the cost for conventional capacity additions.

### *What the Researchers Did*

This study surveyed the dual mode technology alternatives currently under development. The researchers also assessed different paths for accelerating the maturing process for dual mode vehicles and supporting infrastructure. Finally, the research team listed a series of possible strategies for monitoring future progress as dual mode technologies mature.

### *What They Found*

- There are a variety of different dual mode technologies that potentially offer the travel time and privacy benefits of the automobile, the energy diversity and emissions reductions of transportation electrification, and the substantial capacity possibilities of a fully automated guideway system. These technologies range from those that have only been given engineering design feasibility review to a few that actually have existing test beds.

#### *Research Performed by:*

Texas Transportation Institute (TTI),  
The Texas A&M University System

#### **Research Supervisor:**

Christine Ehlig-Economides, TTI

#### **Researcher:**

James Longbottom, TTI

#### **Project Completed:**

8-31-07

- The U.S. Department of Defense *Technology Readiness Assessment Deskbook* (TRA), May 2005, provides an established and recognized series of protocols for assessing critical technology elements and readiness levels. The various dual mode technologies were evaluated using the TRA protocols by a panel of subject matter experts led by the research team. While none of the critical elements of the planned dual mode systems required any breakthroughs in science or engineering, neither were any at readiness levels sufficient to justify selection for test and development under TxDOT leadership.
- Various options are available to TxDOT for monitoring and influencing development. Each would involve collaborative development with the large array of stakeholders in a dual mode transportation network. Design standards must be set, and assessments of the impacts and developmental processes would need to be made.

## *What This Means*

Since no potential dual mode guideway systems are mature enough to move into immediate development, TxDOT will need to continue to monitor readiness in each of the developments.

### *For More Information:*

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