

## **Strategies for Airport Accessibility: Project Summary Report**

### **PROJECT SUMMARY REPORT**

#### ***Purpose and Scope***

In 1999, the Center for Transportation Research initiated a study for the Texas Department of Transportation (TxDOT) to examine short-term and long-term strategies for the effective management of landside access congestion at Texas airports. The major objective of this project was to develop a comprehensive framework for the evaluation of current needs and the outcomes of proposed alternatives that would be applicable at various Texas airports. This framework includes an approach for understanding the airport access decisions made by air travelers, as well as a basis for utilizing planning and forecasting software for the evaluation of intermodal access alternatives.

Airports and air transportation will continue to play a vital and growing role in Texas' economic health and development. It is projected that air traffic (passenger and freight) will continue to

increase considerably at the State's largest airports. While such an increase is important to the economy, it could have crippling effects on ground access to the airports. Congestion problems affecting airport access are in some instances reaching unacceptable proportions with negative impacts on air quality and other environmental considerations, and hence require concerted action to meet projected needs.

#### ***What We Did...***

To be effective, planning for airport ground access must be multimodal and intermodal, consider operational, regulatory, and capital-intensive infrastructure provision issues, consider multiple levels of scale and resolution, and recognize the unique dynamic aspects of air traffic demand: i.e., its temporal patterns. Using as a starting point the Federal Aviation Administration's (FAA) *Intermodal Ground Access to Airports: A Plan-*

*ning Guide*, this project expands the set of solution options to consider airport access in its strategic regional context, and further addresses specific issues encountered at Texas airports.

In an effort to customize a state-of-the-art methodological approach for Texas airports, understanding users' behavior and likely responses is critical. To this end, mode choice models help predict how much curbside space must be allocated to public transportation buses, courtesy shuttles, and taxi stands. These models, in conjunction with stated preferences regarding departure time and arrival time at the airport, can provide useful insight into route decisions and the total trip experience of travelers. The use of new methodologies to simulate traffic congestion at and around airports can also be insightful, especially to evaluate the effect of new technologies. In particular, using DYNASMART-IP, a dynamic traffic assignment



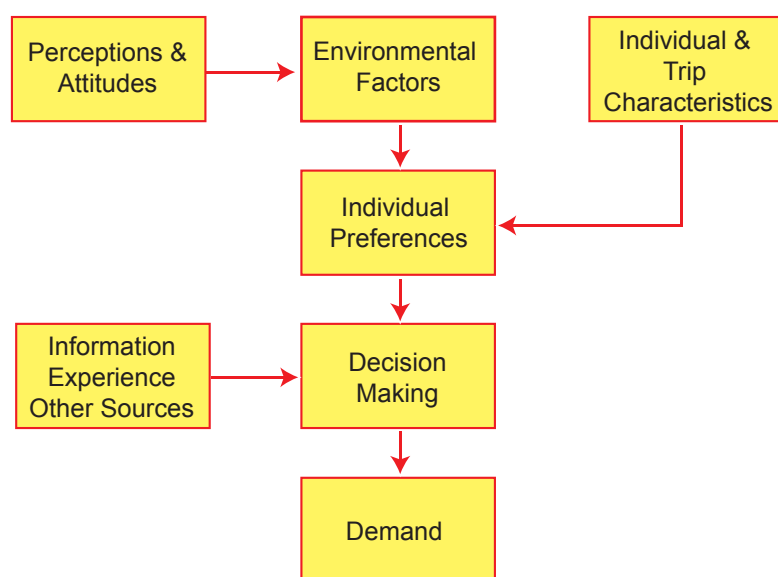


Figure 1: Factors and characteristics leading to demand for airport access

simulation tool initially developed for the Federal Highway Administration, it is possible to simulate traffic flows after the implementation of improvement scenarios including transit and off-airport terminals.

### What We Found...

In developing the framework for a comprehensive understanding of the airport congestion problem facing Texas airports, previous studies and several national and international best practice cases were synthesized. The intermodal and multimodal access alternatives that these cases presented were studied in the context of Texas airports, through a survey administered to air travelers at three Texas airports (Dallas-Fort Worth, Austin, and George Bush Intercontinental Airport in Houston). From these surveys, a better understanding of the factors influencing a traveler's demand for airport access was formulated. Figure 1 represents

the method by which these factors ultimately affect user demand. Finally, based on the survey respondents' reaction to alternative access modes, several cases were designed for further evaluation at the network level.

More specifically, it was found that travelers' behavior is affected by various individual attributes (demographic, psychological, and social) that interact with features of the surrounding environment to produce specific activity-travel behaviors. One set of models was concerned with the propensity to use different access modes for travelers from three of Texas' major airports. The results from the surveys indicate that travelers claim some willingness to use the new airport access modes.

To develop a methodological approach for the understanding, evaluation, and alleviation of the airport access problem, Dallas-Fort Worth International Airport was used as an illustrative exam-

ple. Based on an understanding of the airport access problems faced at DFW, several alternative airport access recommendations were made.

These recommendations were tested using the DYNASMART-IP simulation-assignment methodology. The recommendations were shown to improve the overall network performance, as well as shared ride mode share. The methodology used to test these alternatives may be seen in Figure 2.

### The Researchers Recommend...

The results from the stated preference models gave an indication of the type of passenger that is likely to use the service. Therefore, plans for designing new transit or rail access services should take into account the needs of such travelers.

The survey responses helped to identify means through which passengers preferred to obtain information. The most popular information medium was the Internet. Such a medium could be used to market the service through targeted campaigns not only to residents of the area but also to non-residents. Using Advanced Traveler Information Systems (ATIS) to disseminate information about the new services would give travelers a means of knowing about the transit options available.

Finally, to successfully compete for federal funding and better meet the long-distance needs of their communities, airport plan-



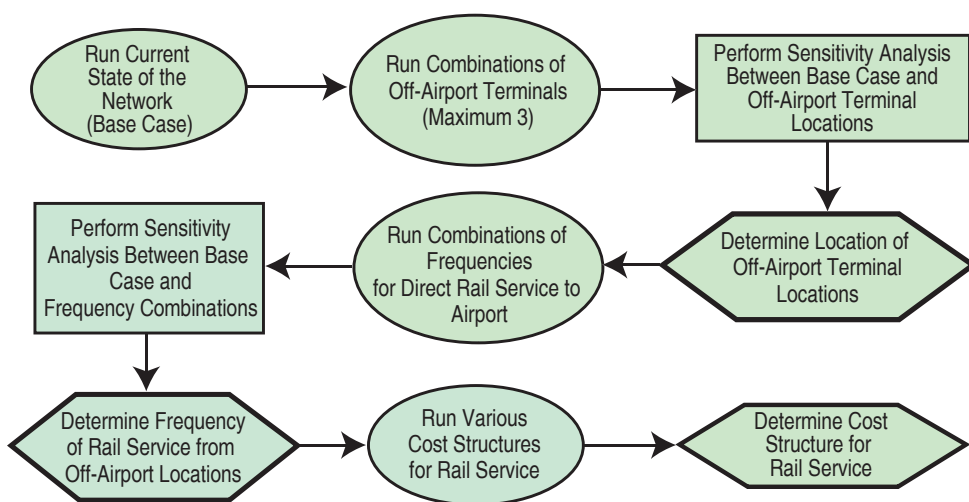


Figure 2: Framework for testing scenarios using DYNASmart-IP

ners must have a basic understanding of the federally mandated transportation planning and programming process to successfully integrate their access plans with other transportation plans and programs and compete for federal funding of airport access improvements. The respective roles of the agencies involved are described in Table 1. The table pinpoints the specific roles of the planning organization for airport access needs. The planning organizations often need guidance

regarding analysis techniques, rules of thumb, and other data that is useful for planning airport access needs. Furthermore, methodologies presently in use to support a region's strategic transportation planning process often fail to take proper account of airport-related and airport-induced traffic. The approach presented and illustrated in the present study can serve as a platform to better integrate planning and decision-making for a balanced regional transportation system

that serves the requirements of airport-related demand.

Table 1: State and Local Agencies' Roles in Airport Ground Access Planning

Organization	Role
<i>Texas Department of Transportation</i>	<ul style="list-style-type: none"> <li>-Distribute Federal Funds</li> <li>-Provide State aid to local airport authorities</li> <li>-Plan state airport systems</li> <li>-Design, construct, and maintain highways that provide ground access to airports</li> </ul>
<i>Metropolitan Planning Organizations</i>	<ul style="list-style-type: none"> <li>-Develop regional transportation plans and coordinate efforts of municipalities</li> </ul>
<i>Municipalities and Local Jurisdictions</i>	<ul style="list-style-type: none"> <li>-Plan, design, construct, and maintain transportation facilities and services outside airport boundaries</li> </ul>
<i>Rail Providers</i>	<ul style="list-style-type: none"> <li>-Provide rail access to airport</li> </ul>



## For More Details...

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The research is documented in the following reports:

1849-1    *Synthesis of Literature and Application to Texas Airports*, unpublished  
1849-2    *Domestic and International Best Practice Case Studies*, February 2001  
1849-3    *Assessment of Intermodal Strategies for Airport Access*, April 2002

To obtain copies of a report: CTR Library, Center for Transportation Research,  
(512) 232-3138, email: [ctrlib@uts.cc.utexas.edu](mailto:ctrlib@uts.cc.utexas.edu)

## TxDOT Implementation Status April 2003

In addition to the research reports, the researchers developed a methodology for *assessing intermodal strategies for airport access*. The methodology is intended to assist planners from TxDOT, airport authorities, and Metropolitan Planning Organizations (MPOs) in developing short- and long-term strategies to address airport landslide access issues. The methodology considers key elements that have direct and indirect implications for airport access, as well as the local and regional impacts of airport access congestion. The methodology can be obtained, upon request, from TxDOT's Research and Technology Implementation Office.

**Your Involvement Is Welcome!**

## Disclaimer

This research was performed in cooperation with the Texas Department of Transportation and the U. S. Department of Transportation, Federal Highway Administration. The contents of this report reflect the views of the authors, who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official view or policies of the FHWA or TxDOT. This report does not constitute a standard, specification, or regulation, nor is it intended for construction, bidding, or permit purposes. Trade names were used solely for information and not for product endorsement. The engineer in charge was Dr. Hani S. Mahmassani (Texas No. 57545).



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