



Project Summary Report 5-4565-01-S  
URL: [http://tti.tamu.edu/documents/5-4565-01-S .pdf](http://tti.tamu.edu/documents/5-4565-01-S.pdf)

February 2007

Project 5-4565-01: Implementing an Economic Model  
for Public-Private Rail Projects

Authors: Craig E. Roco, Leslie E. Olson, and Leslie P. Chady

## The TxDOT Public-Private Feasibility Analysis Model: Project Summary Report

### PROJECT SUMMARY REPORT

The development of transportation infrastructure through public-private partnerships should result in favorable economic returns for both the public and private sectors. With the Texas Legislature's passage of HB 3588 comes the responsibility of officials at the Texas Department of Transportation (TxDOT) to determine which projects will produce sufficient returns to all stakeholders through the creation of sustainable business ventures.

An economic analysis method that facilitates the equitable sharing of costs in public-private partnerships (see Figure 1) was proposed in TxDOT Project 0-4565, "Enhancing Intermodal Service through Public-Private Partnerships in Texas." This approach can identify the feasibility of cost-sharing strategies for

intermodal rail service by calculating economic gains to the public and private sectors as a function of public funding.

TxDOT funded Implementation Project 5-4565-01 as an extension of Project 0-4565 to provide an in-house economic model capable of analyzing public investments in railroad infrastructure using the approach shown in Figure 1.

### What We Did...

Development of a format for the economic model began by determining the needs of TxDOT's Multimodal Section, which now plays an expanded role in transportation planning as a result of state legislation that permits the state to invest public funds in railroad projects. TxDOT placed particular emphasis

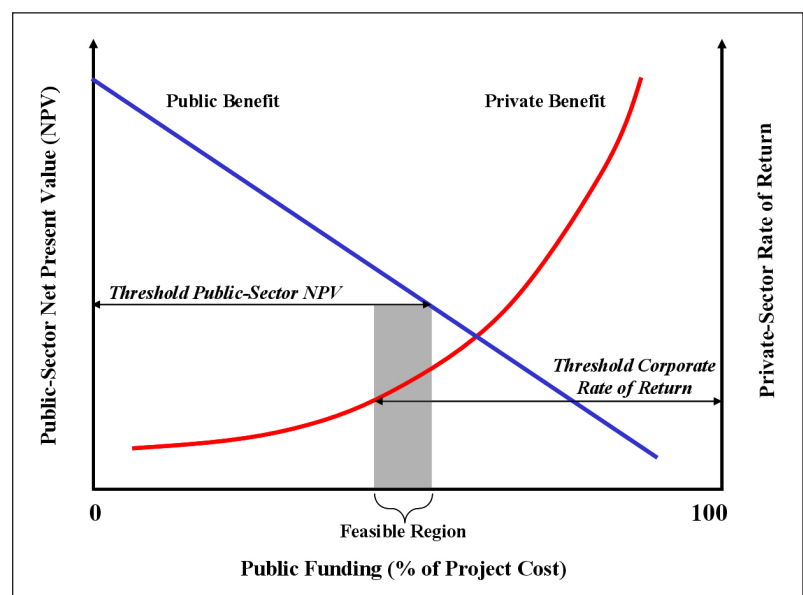


Figure 1. Recommended Approach to the Feasibility Analysis of Public-Private Partnerships.



on expanding the capabilities of the model beyond the analysis of intermodal rail projects to include other issues of interest to TxDOT, such as rail relocation projects and the implementation of passenger rail service in existing rail corridors.

The TxDOT Public-Private Feasibility Analysis Model was developed using Microsoft Excel® due to the regular use of this software within TxDOT, and due to the capacity of @RISK add-in decision tools to allow project risks to be included in the analyses. The model is a single Excel file with worksheets programmed to evaluate project economics for the public and private sectors, as shown in Figure 2.

## What We Found...

Transportation infrastructure projects that are candidates for public-private partnerships consist of the transfer of traffic from an existing corridor to an alternative corridor. For example, a rail relocation project involves the transfer of rail traffic between points A and B from existing track to a new rail line, as shown in Figure 3. Even the conversion of an existing public road to a toll road involves the transfer of traffic between points A and B to a new facility, though for accounting purposes only, as shown in Figure 4.

The economic model includes a help menu, shown in Figure 5, with pop-up windows that

explain which sections of the model are applicable to specific project types (i.e., new toll roads, tolling existing roads, rail relocations, new passenger rail, new passenger rail following freight rail relocation, and intermodal rail service). In this regard, the economic model has more widespread application to TxDOT issues than the original work in Project 0-4565. Also, worksheets in the Excel spreadsheet can be copied in cases where the public-private partnership consists of more than one public or private entity.

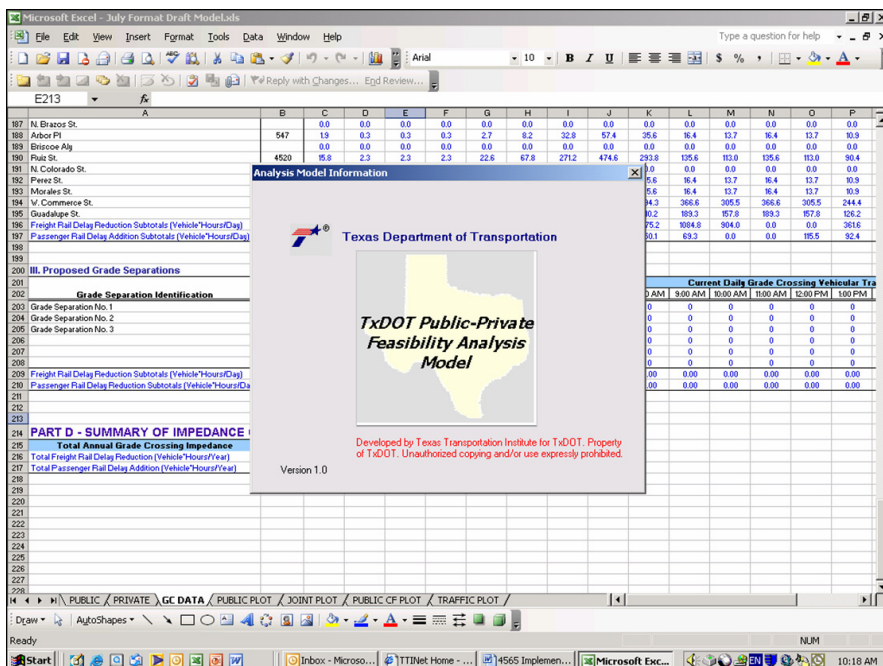


Figure 2. The Excel-Based Economic Model with Multiple Worksheets.

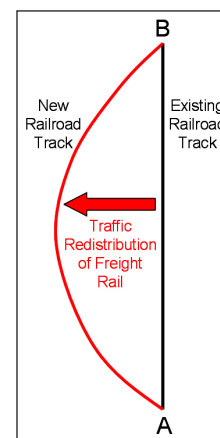


Figure 3. Rail Relocation Example.

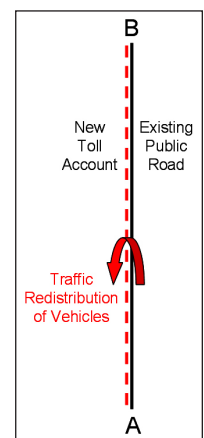


Figure 4. Toll Road Conversion Example.



The Researchers Recommend...

The versatility of the TxDOT Public-Private Feasibility Analysis Model requires the user of this spreadsheet to have some experience with Excel and, preferably, with the feasibility analysis of transportation projects. However, a user manual (see Figure 6) accompanies the economic model in order to assist the user in modeling public-private partnerships. This manual contains guidelines, definitions, and descriptions of internal calculations that may provide clarity on how the model generates results. Since this model is simply an Excel spreadsheet, anyone experienced with Excel can modify it so that more specific needs of the user can be met.

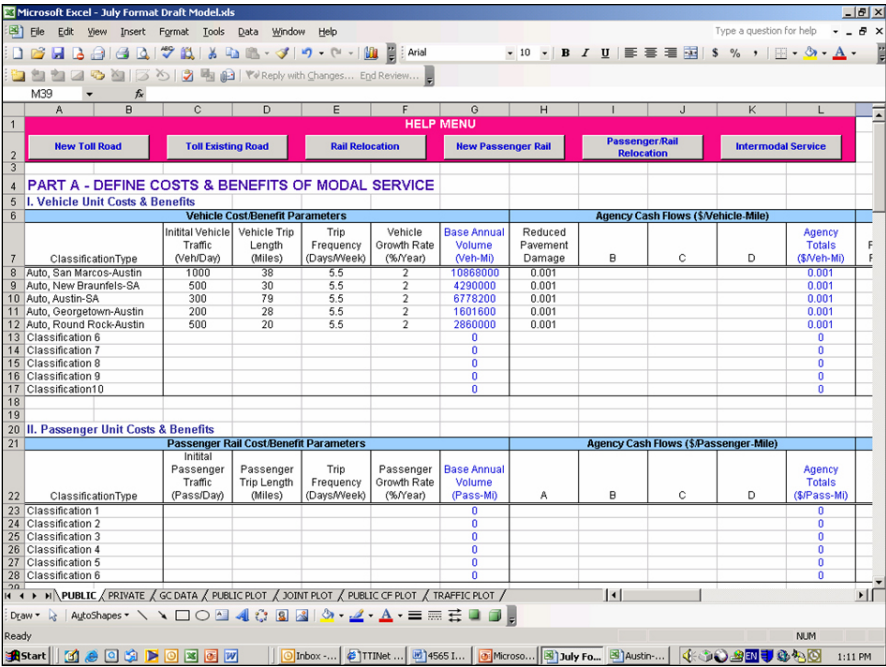


Figure 5. Help Menu Buttons by Project Type in the Economic Model.

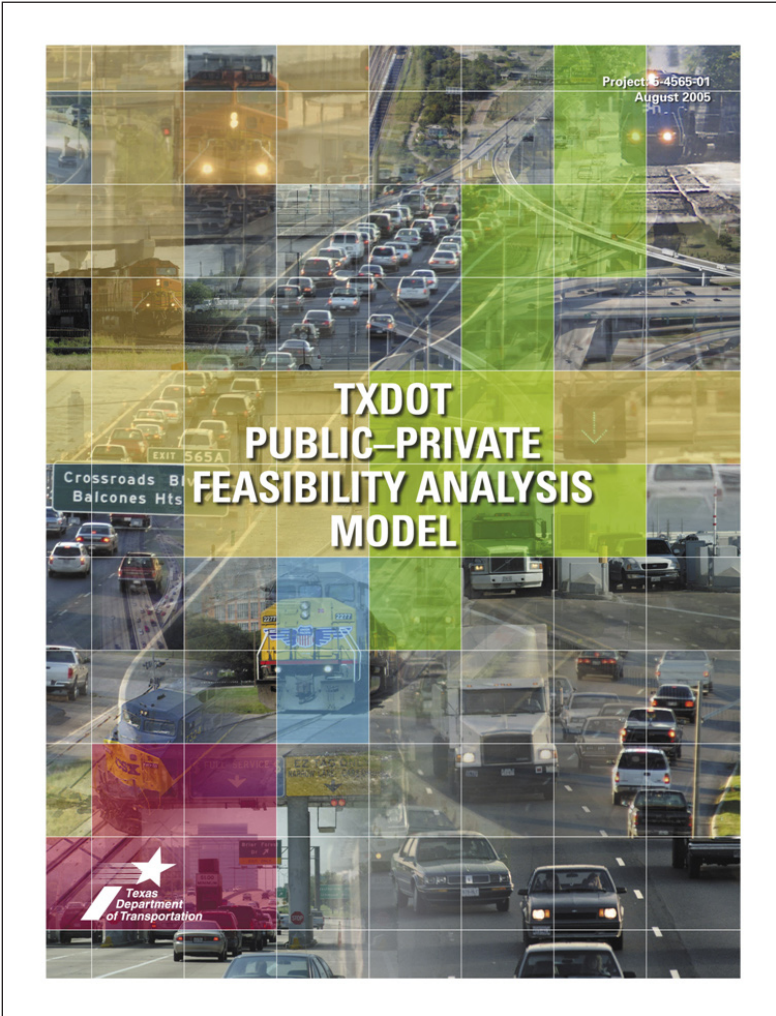


Figure 6. User Manual for the Economic Model.



## For More Details...

The project resulted in an Excel-based economic model (TxDOT Product 5-4565-01-P1) and a user manual (TxDOT Product 5-4565-01-P2).

**Research Supervisor:** Craig E. Roco, TTI, c-roco@ttimail.tamu.edu, (979) 845-5817

**Key Researchers:** Leslie E. Olson, TTI, l-olson@ttimail.tamu.edu, (979) 845-5817  
Leslie P. Chady, TTI, l-chady@ttimail.tamu.edu, (979) 845-5817

**TxDOT Project Director:** Ron Hagquist, rhagquis@dot.state.tx.us, (512) 416-2343

**TxDOT Research Engineer:** Duncan Stewart, P.E., Research and Technology Implementation Office, dstewart@dot.state.tx.us, (512) 465-7403

**To obtain copies of reports, contact Nancy Pippin, Texas Transportation Institute, TTI Communications, at (979) 458-0481 or n-pippin@ttimail.tamu.edu. See our online catalog at <http://tti.tamu.edu>.**

## YOUR INVOLVEMENT IS WELCOME!

## Disclaimer

This research was performed in cooperation with the Texas Department of Transportation (TxDOT) and the U.S. Department of Transportation, Federal Highway Administration (FHWA). 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 researcher in charge of this project was Craig E. Roco.