

A7
Performance Based Planning/Scenario Planning

ASSESSING THE WIDER ECONOMIC IMPACTS OF TRANSPORTATION PROJECTS AT THE
MIDDLE-STAGE PLANNING

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The traditional framework of transportation project evaluation considers travel time, vehicle operating cost, and safety as the main benefits. However, it is now widely recognized that the impact of transportation projects goes beyond these standard travel benefits (STB). These efforts have become even more relevant because the evidence shows that wider economic benefits (W.E.B.) can be as large as 30% of the STB. This has the potential to influence current prioritization and programming of projects. In view of the above, a set of spreadsheet-based tools were developed under the Capacity program of the Strategic Highway Research Program (SHRP2) in an effort to evaluate W.E.B. related to reliability, market access, and intermodal connectivity. Currently, several state and local agencies, such as the Indiana Department of Transportation (INDOT) and a few Metropolitan Planning Organizations (MPOs) in Indiana, are undertaking efforts to expand their processes with respect to the assessment of the economic development potential of highway corridor improvements at the middle-stage or during scenario planning.

In an attempt to contribute to these efforts and assist practitioners in understanding the scope, data requirements, methodological assumptions, and limitations of these tools, this study presents an application of the EconWorks W.E.B. tools (formerly SHRP2 C11 tools) with particular focus on the input sources and the sensitivity of the outputs. After data inputs were retrieved from readily-available sources as well as from travel demand models, the tools' outputs using these two data sources were compared. Subsequently, the sensitivity of the tools' results in relation to certain critical input parameters was investigated. In specific, two of the EconWorks W.E.B. tools: the Reliability and Buyer-Supplier Market Access tool were examined through two case studies in Indiana. The Reliability tool aims to measure the benefits of reducing the variability in travel times. The tool was used in a case study in Marion County, IN where the project consisted of adding lanes on a 1.6-mile segment of the US 36 corridor. Results indicate that the reliability outcomes such as recurring and non-recurring delay costs increase rapidly with volume to capacity ratios greater than 0.85, while the incident delay costs decrease proportionally to the reduction in incident frequency and duration. The EconWorks Buyer-Supplier Market Access tool focuses on measuring economies of scale triggered by the expansion of the customer delivery market served from a certain business site and the expansion of supplier locations that can deliver to that business site in a day, due to a highway transportation improvement in the region. This tool was applied to estimate the total business productivity benefits associated with a proposed project that includes adding one lane per direction to a 36-mile segment of SR-3 between I-70 and I-74. It was found that the productivity benefits, due to market access expansion, highly depend on the assumed decay parameter and productivity elasticity.

This study demonstrates the significance, magnitude and tools that can be used to measure the W.E.B. of transportation projects and shows the processes needed to adapt these tools to local conditions. By integrating the estimation of these benefits in the decision-making process, agencies can improve their understanding of the expected impacts associated with transportation project alternatives at the middle stage planning processes and therefore, better-informed decisions can be reached.