

# Products of



# Capacity Research



Delivering better highway projects faster—and reducing congestion related to highway capacity—begins with building consensus into early project phases. Capacity research in SHRP 2 is developing tools for systematically integrating environmental, economic, and community requirements into the analysis, planning, and design of new highway capacity so that projects align with community goals, decisions are carried forward, and delays that can arise from conflict are avoided. The products listed below supplement research reports that document each project and will be available online. Hardcopies of selected reports will be available through the TRB bookstore: <http://books.trbbookstore.org/>.

**PRODUCT NAME**

**IMPACT ON PRACTICE**

**STATUS OF RESEARCH PRODUCT**

**Collaborative Decision Making**

These tools comprise a system that practitioners can apply to their own transportation planning processes to ensure that the right people with the right information are involved in project decisions at the right time to make planning decisions that stick. The topics included in this section require the collaboration of many stakeholders as well as people with topic-specific expertise.

**Transportation for Communities—  
Advancing Projects through Partnerships  
(TCAPP)**

Web-based portal that describes planning, programming, and environmental review in terms of key decisions. This is the electronic delivery mechanism for 11 SHRP 2 projects.

Library of documents and case studies

TCAPP is a robust resource for *systematically* integrating environmental, economic, and community requirements into the analysis, planning, and design of highway capacity enhancements. This system can help build consensus throughout these processes and ultimately speed project delivery.

Research phase complete, integration and interface improvements ongoing. Beta version of TCAPP is available at <http://www.transportationforcommunities.com/>. Case Studies in Collaboration are integrated into TCAPP and are also available individually on the SHRP 2 website. (Project C01)

SHRP 2 contact:  
Stephen J. Andrie, [sandrie@nas.edu](mailto:sandrie@nas.edu)

**Performance Measures for Highway  
Capacity Decision Making**

Web tool

Performance measures checklist and database

Diagnostic tool

This web-based resource provides practitioners with a broad array of performance measures that can be used to evaluate alternative solutions, communicate results, and monitor performance. It includes a database of performance measures organized around the planning factors identified in five broad areas: transportation, environment, economics, community and cost.

Research complete. SHRP 2 Research Report S2-C02-RR: *Performance Measurement Framework for Highway Capacity Decision Making* is available online and in hardcopy through the TRB bookstore. The web-based library of performance measures is available at <http://shrp2webtool.camsys.com/>. The library can also be accessed through TCAPP. (Project C02)

SHRP 2 contact:  
Stephen J. Andrie, [sandrie@nas.edu](mailto:sandrie@nas.edu)

**Transportation Visioning in Communities  
(T-VIZ)**

T-VIZ website

Interactive web-based Vision Guide to support use of community visioning in transportation planning

T-VIZ identifies links between community needs and goals that have been clarified through visioning activities and transportation planning and project development processes. T-VIZ supports the use of visioning as a tool to build long-term, consensus frameworks for future decision making.

Research complete. Report available online in spring 2012. Interactive Vision Guide and T-VIZ available through TCAPP and at <http://shrp2visionguide.camsys.com/>. (Project C08)

SHRP 2 contact:  
David J. Plazak, [dplazak@nas.edu](mailto:dplazak@nas.edu)

**Expedited Project Delivery Techniques**

This report describes 24 strategies for expediting project delivery and evaluates them for: schedule implications, costs, risks, other benefits, applicability and transferability.

Case studies and self-assessment tool

Planners, engineers, environmental review staff, and others now have a concise source of information they can use to assess when and how to apply expedited project delivery techniques.

Research complete. Report with worksheets for each strategy available online and in the TRB bookstore in mid 2012. Additional case studies, links to decision points, and self-assessment tool are available now in TCAPP. (Project C19)

SHRP 2 contact:  
Stephen J. Andrie, [sandrie@nas.edu](mailto:sandrie@nas.edu)

**Guide to Public/Private Partnerships and  
Nonstandard Procurements**

Strategies for identifying public/private partnership opportunities in the planning and programming process

Case studies and interviews

This report provides insights into identifying public-private partnership opportunities from both the public and private side. It provides the benefits of experience to those considering nonstandard procurement methods. Strategies developed from successful case studies provide the basis for better-informed decisions related to public sector partnerships.

Research completes June 2012, report available online late 2012. (Project C12)

SHRP 2 contact:  
Stephen J. Andrie, [sandrie@nas.edu](mailto:sandrie@nas.edu)

**PRODUCT NAME****IMPACT ON PRACTICE****STATUS OF RESEARCH PRODUCT****Collaborative Decision Making** *(continued)***Operations Guide to Improving Highway Capacity**

Guide describes how to use stochastic capacity and simulation software to analyze traffic operational improvements on freeways and arterials.

Recommended simulation approaches

The Guide helps agencies select the most effective strategy to improve traffic operations and know when capacity enhancements are the best option. It improves the ability to test the impact of alternative traffic operations solutions and demonstrate whether or not they solve a problem.

Research complete. Operations Guide will be available online in mid 2012. (Project C05)

SHRP 2 contact:  
Stephen J. Andrie, sandrie@nas.edu

**Greenhouse Gas Analysis Guide for Transportation Planners**

Guide to considering greenhouse gas emissions at identified steps in transportation planning

Data on the effectiveness of strategies for reducing GHG emissions

Analytical tools for air quality analysis

Considering greenhouse gas emissions in transportation planning is a new issue. This guide provides in one place the data, methods, and other resources practitioners can use to more quickly meet demands to include greenhouse gas emissions in the analysis of transportation alternatives and help speed project delivery.

Research complete. Report and Guide will be available online in summer 2012. Guide also available in TCAPP. (Project C09)

SHRP 2 contact:  
Stephen J. Andrie, sandrie@nas.edu

**Economic Impact Analysis**

Estimates of the economic impact of a highway or program of highways are usually based on econometric methods which require a lot of data and are not transparent to stakeholders and decision makers. TPICS uses a database of 100 case studies and a screening process to help a practitioner identify the likely economic impacts of a new highway based on experience in similar circumstances elsewhere.

**Transportation Project Impact Case Studies (T-PICS)**

Tool for estimating economic impacts, project cost, and traffic volume

Guide to using T-PICS with data dictionary

Database of 100 case studies of built transportation projects with pre/post-project economic data

Using T-PICS, practitioners can quickly, inexpensively, and realistically estimate the net changes in the economic systems of an area affected by a transportation capacity investment and better communicate those changes to stakeholders and the public.

Research complete. Report and guide available online and in print through the TRB bookstore in mid 2012. A beta version of T-PICS, the estimation tool, is available at <http://www.tpics.us> and through TCAPP. (Project C03)

SHRP 2 contact:  
David J. Plazak, dplazak@nas.edu

**Dynamic Integrated Models and Networks**

In transportation planning, assignment of trips from a travel demand model to a network has been a one-way process. There has been no feedback from a congested network to traveler decisions on departure time or route as there is in real life. SHRP 2 has developed this linkage to better reflect behavior in the models so planners can more directly test the effects of various alternatives on congestion. A shortcut tool for assessing the effects of smart growth on congestion is also available.

**Dynamic Integrated Travel Demand Model and Time Sensitive Network**

Application software in open source format

Jacksonville Dynamic Model and Network

Sacramento Dynamic Multi-Modal Model and Network

Pricing equations for use in models

For the first time, transportation agencies will be able to estimate travel demand in a way that integrates activities, networks, and environment. These advanced models are sensitive to the reciprocal interplay of traveler behavior and transportation network conditions, including mode choice options. The models support more informed decisions adding highway and transit capacity, improving traffic operations, introducing priced roads, and improving traveler information.

Research completes August 2012. Reports available online in early 2013. Software and models available through TCAPP in 2013. (Projects C10A and C10B)

SHRP 2 contact:  
Stephen J. Andrie, sandrie@nas.edu

**PRODUCT NAME****IMPACT ON PRACTICE****STATUS OF RESEARCH PRODUCT****Dynamic Integrated Models and Networks** *(continued)***The Effect of Smart-Growth Policies on Travel Demand**

Web-based suite of metrics and analytical tools to quantify the impact of land use plans on site-specific and regional travel demand.

Using this toolbox, practitioners can better integrate land use and transportation planning to improve level of service ratings, travel time, and congestion.

Research completes in March 2012. Report available on line in late 2012, suite of estimation tools will be available through TCAPP in summer 2012. (Project C16)

SHRP 2 contact:  
Jo Allen Gause, jagause@nas.edu

**The Effects of Pricing and Congestion on Highway Travel Demand**

Analysis models practitioners can use to assess the influence of variables such as the value of travel time and of reliability compared with pricing and congestion

These analysis models are the best known representation of traveler response that can be embedded in demand models. They will improve the ability of travel demand models to inform decisions on the ability of tolls and traffic operational improvements to achieve stated goals.

Research complete. Report including equations available online in late 2012. (Project C04)

SHRP 2 contact:  
Stephen J. Andrie, sandrie@nas.edu

**Integrating Conservation, Highway Planning, and Environmental Review**

This research describes a method for applying ecological principals espoused in the 2006 document Ecological. Sometimes called landscape, watershed, or habitat approaches, these products provide a guide to multiagency implementation of ecological principals.

**Integrating Ecosystem Conservation and Highway Planning**

Guidelines and model agreements to support integrating conservation, planning, and environmental permitting into an ecosystem approach

Web-based tools for conducting ecological assessments and developing ecosystem services crediting

Agencies can use this suite of tools to identify the ecological priorities within a region so they can accommodate and respond to the priorities early through avoidance or minimization. The ability to forecast impacts will improve project delivery, as mitigation obligations can be resolved before they become critical path issues, costs can be managed, and risks can be reduced.

Research complete for Project C06A. Report, guidelines and model agreements available online in mid 2012. Research complete for C06B. Report available online in mid 2012. Products of both projects will be available through TCAPP.

SHRP 2 contact:  
Stephen J. Andrie, sandrie@nas.edu

**Planning for Freight Demand**

Freight transport occupies a growing portion of the nation's highway capacity and the demand is expected to double in the next 30 years. Products from SHRP 2 will help integrate freight considerations into transportation planning and develop improved freight demand models to support better-informed decisions.

**Freight Planning Guide**

Guide to better methods of incorporating freight issues into highway capacity decision making

This guide will help integrate market-driven freight considerations into transportation planning.

Research completes in July 2012. Report and the Guide will be available online in early 2013. (Project C15)

SHRP 2 contact:  
David J. Plazak, dplazak@nas.edu

**Freight Data and Models Roadmap**

A strategic plan and roadmap that examines seven strategic objectives that serve as the basis for future innovation in freight travel demand forecasting and data

This strategic plan and "road map" can improve our abilities to model and forecast freight demand for highway and multimodal capacity planning. The plan promotes innovative solutions for freight analytical and data needs and encourages collaboration among stakeholders.

Research complete. Report and strategic plan will be available online and in print from the TRB bookstore in mid 2012. (Project C20)

SHRP 2 contact:  
David J. Plazak, dplazak@nas.edu