



## Updating Capacity Research in SHRP 2

The objective of Capacity Research in SHRP 2 is to develop tools for systematically integrating environmental, economic, and community requirements into the analysis, planning, and design of new highway capacity. The flagship product of the Capacity focus area will be a web-based collaborative decision-making framework (CDMF) that will ensure that the right people are involved in decision making at the right times with the right information. The objective is to arrive at better transportation solutions faster.

### Current Capacity Projects

Those tools are taking shape as the seven currently active research projects mature and three others are expected to begin soon. A chart that begins on page 3 lists all the projects in the current Capacity research plan. Complete project descriptions are available on the SHRP 2 Website at <http://www.trb.org/shrp2/ProjectDescriptions.asp?AID=80>.

### Environmental Capacity Projects

A critical component of the Capacity program is addressing environmental impacts. That component was initiated in 2007 and three projects are now under contract: C06A – Integration of Conservation, Highway Planning, and Environmental Permitting Using an Outcome-Based, Ecosystem Approach; C06B – Development of an Ecological Assessment Process and Credits System for Enhancements to Highway Capacity; and C09 – Incorporating Greenhouse Gas Emissions into the Collaborative Decision-Making Process.

#### Projects C06A & C06B

The C06 series is creating an ecological framework for making decisions about transportation capacity enhancements and the surface environment across key decision points and geographic scales of the collaborative transportation decision-making process. The ecological framework will propose scientifically sound methods to address impacts at watershed and habitat levels, develop a business model that addresses credits, and address relationships with resource agencies. The results of these projects will be an integrated, ecological approach to environmental mitigation and strategies for conducting analysis steps in parallel to deliver highway projects faster with superior environmental protection. This is potentially ground-breaking research.

#### Project C09

Climate change has emerged in the last few years as the number one environmental issue. Project C09 will develop a strategy or strategies for addressing greenhouse gas emissions (GHG) at relevant key decision points in the CDMF. It will identify relevant material already produced by the normal planning process for addressing GHG and prepare a freestanding handbook that is

intended to specify what practitioners need to know about GHG at key decision points in the CDMF; identify the audiences at those key points; and identify the most critical gaps and needs.

## **Opportunities for Public Agency Involvement**

Two projects coming up in 2009 provide opportunities for public agency involvement in improving demand models and field testing SHRP 2 products.

### **C10: Partnership to Develop an Integrated, Advanced Travel Demand Model and a Fine-Grained, Time-Sensitive Network**

*Projected RFP Date: March 2009*

Highway capacity may be added by managing facilities to achieve greater throughput or by adding lanes. Managing freeway capacity implies inducing motorists to change driving behavior – change in time of day, change in route, and change in mode. If management techniques are successful, throughput actually increases compared to congested conditions. Highway agencies need to be able to analyze the capacity, reliability, and greenhouse gas effects of management strategies, such as variable road pricing, ramp metering, ITS strategies, variable speed limits, and policies affecting the time of travel. In order to fully model the impact of such strategies, travel models must be able to reflect changes in traffic operations and how these changes affect underlying behavior (e.g., time of day of travel, mode choice, and destination choice).

National Research Council *Special Report 288* identified fundamental problems with trip-based, 4-step, static assignment travel demands now in use. The NRC report states that we cannot analyze the capacity-related policies that cities and states are considering with the current models and networks. The goal of Project C10 is to improve modeling and network processes and procedures in order to address policy and investment questions identified in *Special Report 288* that cannot be addressed yet – and to facilitate further development, deployment, and application of these procedures. Two awards are anticipated, one to a large metropolitan area and another to a smaller metropolitan urban area (population of approximately 750,000 or less).

Products of this project will include: a functioning travel demand model sensitive to time of day and a network capable of displaying volumes at suitable temporal and spatial resolution; test of performance; a report on the results; and the scripts, annotated source code, metadata, demonstration data, and documentation of the model in clear language.

### **Project C19: Pilot Test the Collaborative Decision-Making Framework at Three Sites, Including a Self-Assessment Method**

*Projected RFP Date: July 2009*

Project C01 is developing a web-based, collaborative decision-making framework for additions to highway capacity. The framework is a systematic approach to implementing good practices in planning, community involvement, and environmental mitigation that have been emerging since ISTEA but are not standard practice. The intent is to support better transportation decisions, ensure that work and consensus building do not have to be repeated, and that legal challenges are minimized. It is imperative to field test the framework to see if its objectives are achieved and to allow states or metropolitan planning organizations (MPOs) that follow it to determine if they are better off for it. SHRP 2 will be seeking expressions of interest in 2009 from states and MPOs and will issue a request for proposals in July 2009.

## SHRP 2 Capacity Research Projects

Project No.	Project Title	Budget (\$ Million)
<b>2006 Funding</b>		<b>3.425</b>
C01	A Framework for Collaborative Decision Making on Additions to Highway Capacity (Includes concepts of watershed and habitat preservation and environmental stewardship)	2.6
C02	Systems-Based Performance Measurement Framework for Highway Capacity Decision Making	0.825
<b>2007 Funding</b>		<b>3.75</b>
C03	Interactions between Transportation Capacity, Economic Systems, and Land Use Merged with Integrated Economic Considerations in Project Development	1.75
C04	Improving Our Understanding of Highway Users and the Factors Affecting Travel Demand (Emphasis on Pricing and Congestion)	1.0
C05	Understanding the Contributions of Operations, Technology, and Design to Meeting Highway Capacity Needs	1.0
<b>2008 Funding</b>		<b>4.75</b>
C06A	Integration of Conservation, Highway Planning, and Environmental Permitting Using an Outcome-Based Ecosystem Approach	0.7
C06B	Development of an Ecological Assessment Process and Credits System for Enhancements to Highway Capacity	0.8
C07	Integrating SHRP 2 Products into the Collaborative Decision-Making Process	1.65
C08	Linking Community Visions and Highway Capacity Planning	0.8
C09	Incorporating Greenhouse Gas Emissions into the Collaborative Decision-Making Process	0.8
<b>2009 Funding</b>		<b>6.1</b>
C10	Partnership to Develop an Integrated, Advanced Travel Demand Model and a Fine-Grained, Time-Sensitive Network	4.0
C18	Pilot Test the Collaborative Decision-Making Framework with Three Sites, Including a Self-Assessment Method	1.25
C19	Add Expedited-Schedule Case Studies to the Collaborative Decision Making Framework Database	0.3
C20	Freight Demand Modeling and Data Improvement Strategic Plan	0.55
<b>2010 Funding</b>		<b>3.475</b>
C11	Development of Improved Economic Analysis Tools	1.0

C12	The Effect of Public-Private Partnerships and Nontraditional Procurement Processes on Highway Planning, Environmental Review, and Collaborative Decision Making	0.3
C15	Integrating Freight Considerations into Collaborative Decision Making for Additions to Highway Capacity	0.3
C16	The Effect of Smart Growth Policies on Travel Demand	0.425
C21	Pilot Test the C06A&B Ecological Approach to Environmental Protection	1.25
C22	Prepare a Decision-Making Guide to Collaborative Decision-Making Framework (includes resource agency decision makers)	0.2
<b>TOTAL</b>		<b>21.5</b>

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