



Committee on Implementing the Research Results of the Second Strategic Highway Research Program (SHRP 2) Letter Report: March 19, 2012

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TRANSPORTATION RESEARCH BOARD

OF THE NATIONAL ACADEMIES

March 19, 2012

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Federal Highway Administration
U.S. Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Mr. John Horsley
Executive Director
American Association of State Highway and
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Dear Mr. Mendez and Mr. Horsley:

This is the first letter report of the Committee on Implementing the Research Results of the Second Strategic Highway Research Program (SHRP 2). SHRP 2 is administered by the Transportation Research Board (TRB) under a cooperative agreement with the Federal Highway Administration (FHWA). The committee was established at the request of FHWA to provide policy and technical advice to the U.S. Department of Transportation (USDOT) and the American Association of State Highway and Transportation Officials (AASHTO) on recommended strategies for introducing the results of SHRP 2 into the knowledge base and the active practice of transportation engineers, planners, traffic managers, and other potential users. The committee will focus its recommendations on implementation plans and future actions by USDOT and the state departments of transportation. The committee membership has been drawn from the executive and senior professional levels of state highway agencies, a metropolitan planning organization, private industry, transportation-related associations, and academia. The members' expertise covers administration of state and local transportation agencies, highway planning and engineering, research management and implementation. A roster of the committee is provided in Attachment 1. The committee's formal charge, or statement of task, is provided in Attachment 2.

SHRP 2 is a focused program of research aimed at improving highway safety, the condition of infrastructure, and highway operations. The program was authorized in 2005 in the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). In January 2006, FHWA, the National Research Council (NRC), of which TRB is a part, and AASHTO signed a memorandum of understanding (MOU) laying out the governance of the program. Work began in March 2006 with the signing of the cooperative agreement. The research is organized in the following four focus areas:

- **Safety:** The largest-ever naturalistic driving study is being conducted to lay the foundation for significantly improved highway safety through more scientific knowledge of driver behavior.
- **Renewal:** A suite of methods is being developed to support transportation agencies in consistently renewing aging infrastructure in a way that is rapid, avoids disruption to users, and yields long-lasting facilities.

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- **Reliability:** Institutional, analytical, and design tools are being developed to reduce highway congestion and improve travel time reliability through effective highway systems operations management.
- **Capacity:** A framework has been established to facilitate and expedite decisions related to building new highway capacity. Economic analysis, visioning, ecological, and other tools are being developed to support this framework.

The MOU established a SHRP 2 Oversight Committee to guide the research program by providing strategic direction and making program and budget decisions. The Oversight Committee's guidance is limited to the activities of TRB's SHRP 2 staff and the other SHRP 2 committees established at the Oversight Committee's direction, as provided for in the MOU. The Oversight Committee does not have the authority to provide advice to entities outside of TRB and the NRC. In order to provide advice to FHWA and AASHTO, it was necessary to establish a committee that complies with Section 15 of the Federal Advisory Committee Act (FACA) Amendments of 1997. The Committee on Implementing the Research Results of SHRP 2, the committee transmitting this letter report, is that committee. Because the function of providing advice to FHWA and AASHTO is best carried out by the people who have been overseeing the program since its inception, the membership of the two committees is identical. They are distinguished by their scope and the documents governing their operations. The Oversight Committee's scope is limited to the work carried out through TRB and includes program and budget approval and contract award decisions; it is governed by the SHRP 2 MOU. The scope of the Committee on Implementing the Research Results of SHRP 2 is limited to providing advice to USDOT and AASHTO regarding their SHRP 2 implementation activities and is governed by FACA and related NRC policies.

As required by SAFETEA-LU, in 2009 TRB submitted to Congress a report on implementation of SHRP 2. TRB's Special Report 296, *Implementing the Results of the Second Strategic Highway Research Program: Saving Lives, Reducing Congestion, Improving Quality of Life*, assesses the potential benefits of the research, which was at a very early stage at that time, and lays out some general strategies and methods for implementing the results of SHRP 2. Among other recommendations, Special Report 296 identifies FHWA as an appropriate organization to play the role of "principal implementation agent." It is in light of this recommendation that the committee will provide its advice to FHWA. The committee will draw from Special Report 296, subsequent developments in SHRP 2 and related programs, and the input it receives from FHWA and others.

Summary of December 2011 Committee Meeting

At its December 1–2, 2011, meeting, the committee received updates on the status and results of SHRP 2 research and early implementation-related activities carried out through the TRB-administered program. SHRP 2 staff, Technical Coordinating Committee chairs, and selected contractors presented this material. In addition, FHWA and AASHTO presented their current SHRP 2 implementation-related activities and outlined their future plans in this area. At the conclusion of this open session, the committee met in closed session to deliberate on its initial findings and recommendations, which are presented in this letter report.

FHWA summarized the available resources for SHRP 2 research and implementation. To date, TRB has received \$218 million for SHRP 2, which is being used to perform research and begin developing the research results. This work is carried out through approximately 100 contracts with academic, private, and public research institutions. The majority of these contracts are still active; however, a number of promising research results have already been produced, and FHWA and AASHTO have begun planning for implementation of these results. In addition to the funds received by TRB, an additional \$71 million have been appropriated for the program. FHWA directly manages these funds, which can be used for further development of research results and to move the results into use by state and local transportation agencies. Special Report 296 recommended an implementation program focused on SHRP 2, which, if authorized in future highway legislation, will be a source of additional funds.

AASHTO stressed the importance of focusing implementation on the needs of prospective users in the state departments of transportation (SDOTs), as well as in other agencies and organizations. Both FHWA and AASHTO would like to be sure that a product's utility is established before a full-scale deployment effort is undertaken. Most SHRP 2 research projects are not yet complete, and the results of those that are complete are still in the development and field-testing stages. Therefore, the current focus in SHRP 2 implementation is on carrying out the development and testing work with the aim of making the results readily applicable and useful to SDOTs and other transportation agencies and organizations.

FHWA and AASHTO developed a short list of SHRP 2 products that they have identified as being ready for widespread deployment and as directly supportive of the priorities of both organizations. These products are the results of the following six SHRP 2 projects:

- **Project R04: Innovative Bridge Designs for Rapid Renewal.** The product of this project is a design tool kit that includes standard plans and details for designing bridges that are light, simple, and easier to design, fabricate, transport, and erect. The kit features concepts for innovative foundation systems, substructure and superstructure systems, subsystems, and components.
- **Project R15: Strategies for Integrating Utility and Transportation Agency Priorities in Renewal Projects.** Products from this project include a prototype utility conflict matrix database with analysis worksheets; a prototype scalable database to support conflict analyses, utility agreement development, construction letting, utility relocation scheduling, billings, and payments; and training materials for using the databases.
- **Project R16: Railroad-DOT Institutional Mitigation Strategies.** Products from this project include model legal agreements; successful practices in project coordination; a framework to support a community of interest; an online library of model agreements, contracts, standard guidelines; and web-based training modules and other materials for implementing institutional processes and model agreements.
- **Project R23: Using Existing Pavement in Place and Achieving Long Life.** The main product from this project is an interactive design scoping tool that includes treatment selection guidelines, a project assessment manual, model specifications, life-cycle cost analysis method, and emerging technologies.

- Project R26: Preservation Approaches for High-Traffic-Volume Roadways. Products from this project include guidelines and technical summaries of preservation treatments to help practitioners match pavement condition to treatment strategy.
- Project L31: Outreach on Operations and Reliability to CEOs, Chief Engineers, and Executive Management. This project developed workshops and materials aimed at leaders in transportation agencies to brief them on the value of highway system operations, on the usefulness of the concept of travel time reliability for these operations, and on business practices that support highway operations.

All three organizations—AASHTO, FHWA, and TRB—are working together on plans to advance the results of these projects into use.

AASHTO has appointed a policy-level task force for SHRP 2 implementation, composed of SDOT members of the AASHTO committees that cover technical areas related to SHRP 2 products. This task force will develop AASHTO's recommendations for a comprehensive SHRP 2 implementation plan by May 2012. A prioritization process is envisioned that will involve assessing the readiness of SHRP 2 research results and choosing which results should be actively deployed.

In addition to identifying and assessing products, AASHTO, FHWA, and TRB are also addressing program-wide issues related to long-term stewardship of information technology (IT) products of SHRP 2, marketing and communications in support of implementation, and management of the implementation process through an implementation database. Two issues pose particular challenges. First, implementation of institutional or process-oriented innovations may require approaches that are different from those used for implementation of technologies. For example, implementing products that improve institutional effectiveness may require change-management expertise. Second, the prevalence of electronic methods for delivering the results of research was not anticipated when SHRP 2 began. These methods, integral to more than 30 potential SHRP 2 products, can be very effective and user-friendly. However, federal policies and regulations related to IT applications (such as requirements for certification and authorization of ITS systems, system security and access, and system configuration) could make federal stewardship of SHRP 2 IT products financially unsustainable.

Recommendations

The committee is pleased to see the coordination taking place among TRB, FHWA, and AASHTO and encourages continued coordination as the implementation process develops. In general, the plans put forward at the meeting seem to be reasonable first steps toward effective use of SHRP 2 results. At this early stage and in view of the limited information available to the committee at this time, the committee limits itself to a few overarching recommendations to guide further planning:

1. *FHWA, AASHTO, and TRB should clearly define their individual roles in SHRP 2 implementation by mutual consultation, as well as by reference to organizational documentation.* Certain roles for each organization may be determined by the documents establishing the organization, such as legislation in the case of FHWA. Other roles may

be appropriate due to history, experience, or access to particular stakeholder groups, and financial resources. The specific roles of each organization may vary across focus areas or product types.

2. *FHWA and TRB should work closely with the AASHTO task force on SHRP 2 implementation and other relevant AASHTO committees.* Among the many important potential users of SHRP 2 results, the state departments of transportation are the most critical. To ensure that the relevant AASHTO committees can effectively participate in SHRP 2 implementation, it will be important to provide them with timely and accurate information about the program and with the means for providing their input. In particular, SDOTs and metropolitan planning organizations, as appropriate, should be involved in developing and carrying out evaluations of priorities and assessment of trade-offs regarding SHRP 2 implementation.
3. *FHWA and AASHTO should initiate deployment of the products from the list of six projects as soon as possible. They should carry out these deployments in close coordination and cooperation with each other and in consultation with TRB. They should use deployment of these products as an opportunity to test the implementation processes under development.* Deployment of these products can test institutional roles, marketing approaches and communication methods, and identification and involvement of users and other stakeholders. FHWA and AASHTO will need to determine which organization will have primary responsibility for each product. Different products will require the engagement of different sets of stakeholders and different communication methods. For example, the results of the project on Strategies for Integrating Utility and Transportation Agency Priorities in Renewal Projects will require active involvement from utilities and the project on Railroad-DOT Institutional Mitigation Strategies will require active involvement from railroads. The project to provide Outreach on Operation and Reliability to CEOs, Chief Engineers, and Executive Management will address a communication scenario—convincing higher-level management of the value of using an innovative approach—that will arise frequently in SHRP 2 implementation.
4. *FHWA and AASHTO should carry out implementation activities, including prioritization, in the context of the overall strategic philosophy of each SHRP 2 focus area.* SHRP 2 is aimed at systemic improvements in each of the four areas the program addresses. Focusing almost exclusively on individual products that happen to be ready at a given time may misrepresent and undersell the benefits of the program. In many cases, an integrated approach, involving several products within a focus area or products from more than one focus area, and requiring involvement from several disciplines or offices of an SDOT, is critical to successful achievement of the intended benefits of SHRP 2. Such an approach will likely involve institutional change and therefore, as noted at the December committee meeting, change-management expertise.
5. *FHWA and AASHTO should cooperatively investigate models for long-term support for information technology products.* Addressing the challenges of maintaining SHRP 2 IT products will be critical to effective implementation of SHRP 2 objectives. The committee strongly encourages FHWA and AASHTO to work together, in consultation

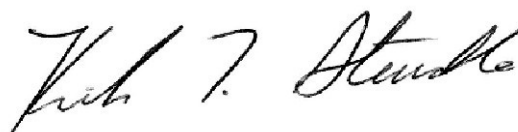
with TRB, to think creatively about ways of supporting IT products that will make them available to users at reasonable cost and with minimal bureaucratic burden.

6. *FHWA, AASHTO, and TRB should work together to prepare options for strategic approaches to SHRP 2 implementation planning and resource allocation.* FHWA requested input on the question of how the limited resources available at this time can be most effectively used so that the greatest possible benefit can be gained from them if no additional funds are provided, while at the same time providing a foundation for continued implementation work if additional funds become available. FHWA should work with AASHTO and TRB to develop strategic approaches for discussion at the committee's June 2012 meeting. These approaches should build on the first five recommendations: define institutional roles, obtain the input of AASHTO committees and SDOTs, gain experience from implementing the first products, capitalize on the integrated context of SHRP 2 focus areas, and explore alternative models for supporting IT products.

Closing

The committee commends FHWA and AASHTO for the work they have done to date in preparation for SHRP 2 implementation. Much is yet to be done, but a strong foundation is being established. We look forward to continuing our dialogue with FHWA and AASHTO on this important national endeavor. Please let us know if there are specific issues you would like the committee to address, in addition to those raised in this letter, so that they can be used to plan the committee's work and future meetings.

Sincerely,



Kirk T. Steudle
Chair, Committee on Implementing
the Research Results of SHRP 2

Attachment 1

TRB Committee on Implementing the Research Results of the Second Strategic Highway Research Program

Kirk T. Steudle, *Chair*, Director, Michigan Department of Transportation
H. Norman Abramson, Executive Vice President (Retired), Southwest Research Institute
Alan C. Clark, MPO Director, Houston-Galveston Area Council
Frank L. Danchetz, Vice President, ARCADIS-US, Inc.
Stanley Gee, Executive Deputy Commissioner, New York State Department of Transportation
Michael P. Lewis, Director, Rhode Island Department of Transportation
Susan Martinovich, Director, Nevada Department of Transportation
John R. Njord, Executive Director, Utah Department of Transportation
Charles F. Potts, Chief Executive Officer, Heritage Construction and Materials¹
Ananth K. Prasad, Secretary, Florida Department of Transportation
Gerald Ross, Chief Engineer, Georgia Department of Transportation
George E. Schoener, Executive Director, I-95 Corridor Coalition
Kumares C. Sinha, Olson Distinguished Professor of Civil Engineering, Purdue University

Liaisons

Victor M. Mendez, Administrator, Federal Highway Administration
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John C. Horsley, Executive Director, American Association of State Highway and
Transportation Officials (AASHTO)

TRB Staff

Ann M. Brach, Director of Strategic Highway Research Program 2, Transportation Research
Board
Stephen J. Andrie, Deputy Director of Strategic Highway Research Program 2, Transportation
Research Board

¹ Did not attend December 1-2, 2011, committee meeting.

Attachment 2

TRB Committee on Implementing the Research Results of the Second Strategic Highway Research Program

Statement of Task

An ad hoc committee will examine the research results from the second Strategic Highway Research Program (SHRP 2) and will provide policy and technical advice, in the form of written reports, to the U.S. Department of Transportation (USDOT) on recommended strategies for introducing these results into the knowledge base and the active practice of transportation engineers, planners, traffic managers, and other potential users. The committee will focus its recommendations on plans and future actions by the USDOT and the various state departments of transportation as these agencies develop product implementation plans, including technology transfer and training of prospective users of specific products. The committee is expected to provide recommendations concerning the following: resource requirements, including specific federal budget requirements, to administer the program; strategies suitable for the implementation of specific products or groups of related products; and administrative, delivery, and oversight structures, including institutional arrangements.