



Committee on Implementing the Research Results of the Second Strategic Highway Research Program (SHRP 2) Letter Report: February 20, 2014

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TRANSPORTATION RESEARCH BOARD

OF THE NATIONAL ACADEMIES

February 20, 2014

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Dear Mr. Nadeau and Mr. Wright:

This is the fifth letter report of the Committee on Implementing the Research Results of the Second Strategic Highway Research Program (SHRP 2). SHRP 2 is a major research program authorized by Congress and administered by the Transportation Research Board (TRB) under a cooperative agreement with the Federal Highway Administration (FHWA). The committee was established in October, 2011 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 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 is focusing 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.

Summary of December 9-10, 2013 Committee Meeting

The committee met in Washington, DC on December 9-10, 2013 and was briefed by chairs of the Technical Coordinating Committees and principal investigators of selected pilot projects on the status of research and development activities being conducted by TRB. Presentations were also made to the committee by FHWA and AASHTO staff and representatives from state DOTs on a number of implementation-related activities, including the following:

- A program-wide update was given on implementation, including organizational and staffing changes at FHWA and AASHTO to support implementation, the status of implementation planning workshops, progress to date and future plans for the FHWA Implementation Assistance Program, outreach and knowledge transfer activities including the SHRP 2 websites, and the status of funding and budget for SHRP 2 implementation. Briefings were also provided on planning for IT hosting, project management and tracking, and program evaluation.

- Updates were given on implementation activities completed to date in each of the four focus areas (Capacity, Renewal, Reliability, and Safety), as well as plans for future implementation activities for each focus area.
- Presentations were made on use of SHRP 2 products from the Renewal, Capacity and Reliability focus areas.
- Regarding the Safety focus area, briefings were provided on the Second Letter Report from the Committee on the Long-Term Stewardship of Safety Data from the Second Strategic Highway Research Program, plans for an FHWA Safety Analysis Center, the AASHTO/FHWA “Concept to Countermeasure” proposal for safety implementation, and TRB’s plans for Phase 1 of stewardship of the safety databases.

The committee would like to commend FHWA and AASHTO on the progress that has been made in implementation of SHRP 2 products in the past year. Considerable work has been done to move from planning for implementation to actual use of a number of products by state departments of transportation and other agencies. The quality and content of the joint presentations given by FHWA and AASHTO managers, including the Executive Directors, clearly demonstrated the cooperative nature of the implementation effort.

The committee also would like to recognize FHWA and AASHTO’s responsiveness to the recommendations contained in our last letter report.

- Users are clearly involved in helping develop the implementation program, thus helping to ensure that implementation is done in a way that is most responsive to users’ needs.
- FHWA and AASHTO are planning to implement a number of products as suites of interrelated products. The committee urges that this more strategic approach to interrelated products continue and be expanded to include related products outside SHRP 2 as recommended below.
- Outreach activities have significantly expanded, and the committee particularly commends the use of representatives from state DOTs in making presentations on the benefits from use of SHRP 2 products. It is important that work be done to evaluate the benefits from using products and that this information be incorporated into outreach activities, as recommended later in the report.
- The committee is gratified that 38 states and the District of Columbia have applied for and received Implementation Assistance Program awards from FHWA. In the first two rounds of the Implementation Assistance Program, FHWA made a total of 123 awards at a total value of \$13.4-14.4 million. The size of grants ranged from \$25,000 to \$500,000, and the average size grant was \$113,000. In addition several states received limited technical assistance. As indicated in our previous letter, efforts should continue to encourage the remaining 12 states to participate in the program. This may require outreach to determine why they have not participated to date. The committee particularly commends FHWA and AASHTO for the progress made in planning for deployment of Version 1.0 of Plan Works (formerly known as TCAPP - Transportation for Communities - Advancing Projects through Partnerships).

The committee remains concerned about lack of progress in three areas: (1) hosting of information technology (IT) products, (2) project management reports for the committee, and (3) planning for how knowledge transfer activities will proceed after the end of TRB's cooperative agreement. The committee has made recommendations regarding these issues later in this letter report.

Overall, the committee is pleased with the direction that implementation of SHRP 2 products is taking and recommends that the current approach continue. The recommendations contained in this letter report are made in the spirit of building on the excellent implementation work of FHWA and AASHTO during the past year.

- 1. The committee recommends that FHWA and AASHTO begin immediately to move products to implementation as they become available and not delay implementation due to concerns about "innovation overload." Products should be rolled out together with other related products, including related products from other innovation programs sponsored by FHWA and AASHTO. Remaining uncommitted funds of \$14 million should be programmed so implementation activities can proceed in a timely manner.**

The SHRP 2 program has produced a large number of products that are ready for implementation at this time or will be ready within the next year. These products are becoming available at the same time that several other innovation initiatives are producing new products outside of SHRP 2. Concerns have been expressed by FHWA regarding whether transportation agencies are experiencing "innovation overload," and the question was posed by the FHWA Executive Director during the meeting whether or not the method of rollout of SHRP 2 products should change as a result of the number of innovation initiatives under way.

The committee recommends that SHRP 2 products be delivered to users as soon as possible after they become available, so that users can benefit from use of the products and so that the products are delivered while they are still timely. The SHRP 2 program developed products that will be used in a number of different functional areas within a transportation agency, so there are not a large number of products that any single part of an agency would have the opportunity to implement. Moreover, it is expected that most transportation agencies will use only those SHRP 2 products that meet a business need within the agency, so the number of products being implemented will be only be as large or as small as the agency desires.

Now that the processes for rolling out products and providing assistance to implementing agencies are in place, they appear to be working well. The committee does not recommend major changes to these processes. To the extent that some related SHRP 2 products are being rolled out in the same time frame, consideration should be given to packaging these SHRP 2 products together or packaging SHRP 2 products with related products from other innovation programs, such as Every Day Counts, for implementation. The I-84 accelerated bridge construction project in New York State is a good example of

how several related innovation programs, including SHRP 2, were effectively used together on a single highway project. This project was a pilot for TRB's SHRP 2 accelerated bridge construction project (R04) and used resources from FHWA's Every Day Counts program and FHWA's Highways for Life program.

When the current SHRP 2 implementation budget was established, \$14 million of the \$169 million authorized was set aside as contingency funds. In order to ensure timely use of all funds that have been authorized for SHRP 2 implementation, the committee recommends that the remaining \$14 million of uncommitted funds be programmed this year.

2. The committee recommends that FHWA and AASHTO develop a plan by May 31, 2014 for keeping SHRP 2 products up to date.

A major focus of the SHRP 2 research program was to identify state of the art innovations and practices and to develop methods so they could be "mainstreamed" into everyday practice. A number of research projects evaluated state of the practice technologies to identify those most appropriate to meet the objectives of the program. Some research projects have now been complete for more than two years, and they need to be brought up to date. The nature of the products of SHRP 2 research require that the products be continually updated as new information becomes available or as products get used and needed refinements are identified. The committee recommends that implementation plans for the SHRP 2 program overall and for individual products identify the means by which products will be continually enhanced and updated after they are deployed. The Superpave product of the first Strategic Highway Research Program is a good example of a product that was continually refined, updated and enhanced for a period of more than 20 years after implementation first began.

3. The committee recommends that decisions regarding hosting and responsibility for ongoing maintenance, enhancement and technical support for all SHRP 2 information technology products be completed no later than May 31, 2014, and preferably earlier, so the transition of these products to the new host can occur prior to the expiration of TRB's support for these products at the end of 2014.

The SHRP 2 program is producing 37 information technology (IT) products that are associated with products in the FHWA/AASHTO SHRP 2 Implementation Plan. In many instances the principal SHRP 2 product being implemented is an IT product, and implementation cannot occur without the IT product being available and supported. With the exception of the safety databases, TRB's support for these products will end by December, 2014. It is critical that a host be identified for each of these IT products in the first half of 2014, so the new owners can take responsibility and have operational systems in place before TRB no longer has hosting responsibility. In many instances revisions will be required to meet the IT requirements of the new host; therefore these decisions need to be made far enough in advance of December, 2014 that these revisions can occur.

If this is not done, products that have been made available through the Implementation Assistance Program will no longer be available to those agencies that are using the products. As was stated in the FHWA presentation on IT hosting, the transition to the “permanent” hosting agent and associated software should ideally occur before the offering of implementation assistance for these products. At the committee’s June, 2014 meeting, the committee requests that FHWA and AASHTO produce a table that shows who the host will be for each of the 37 IT products, a schedule for when the product will be available for users on the new host’s servers, and the schedule for when the product will be offered for implementation assistance. If a decision has been made that an IT product will not be supported, this should be acknowledged in the table.

- 4. The committee recommends that FHWA and AASHTO develop a plan by May 31, 2014 for how knowledge transfer activities that are currently supported by TRB will continue after the end of 2014.**

An activity that is critical to successful implementation of SHRP 2 products is the effective transfer of the knowledge that TRB’s staff and contractors have about SHRP 2 products to those persons at FHWA and AASHTO who will be managing implementation and to those persons in implementing agencies who will be the end users of the products. This is currently being done through webinars, workshops, speaking engagements, written documents, and technical assistance, as well as other means. The magnitude of the support being provided by TRB staff and contractors necessitated that the SHRP 2 Oversight Committee increase funding for the knowledge transfer support contracts (R55, C55, L55) to ensure sufficient resources are available through the end of 2014. Little or no knowledge transfer contractual support will be available after the end of 2014 as contracts must be closed out and TRB’s program shut down. With a number of products scheduled for implementation in 2015, there will likely be a need for continued support from TRB’s principal investigators for those products that are rolled out for implementation after TRB’s knowledge transfer support contracts are no longer available. Plans for how this will occur should be made at this time, so there will be no gap in the availability of the experts who can assist in knowledge transfer activities.

- 5. The committee recommends that by May 31, 2014 FHWA and AASHTO create a list of “persons knowledgeable about SHRP 2 products” that individuals in agencies interested in using SHRP 2 products can call on for advice and information about experience in use of the products.**

Potential users of new products, such as those that are coming out of the SHRP 2 program, tend to most value the advice and experience of peers when trying to make decisions about whether to use a new product. They rely both on the technical knowledge and lessons learned from use of the products by peers. It would be helpful for potential users of SHRP 2 products to have lists of individuals who are knowledgeable about the products and who have gained experience, either through piloting the product for TRB, using the product through the Implementation Assistance Program, or using the product on their own, and who are willing to serve as advisors for new users.

- 6. The committee recommends that as soon as possible FHWA and AASHTO utilize a robust project management system and produce regular reports for FHWA, AASHTO, and TRB management and for the committee on progress of all activities versus schedule and on expenditures versus budget.**

In previous letter reports the committee cited the importance of having in place a sound project management system for a program of the size and complexity of SHRP 2. The committee indicated that it looked forward to receiving summary reports from the project management system in future meetings of the committee. Although the committee received a report on the process being implemented for project management and saw a sample screen shot for one project, no reports from the project management system on overall schedule and resource allocation/availability were provided. With the substantial funding allocated by both Congress and the state departments of transportation for SHRP 2 implementation, appropriate management reports will be expected to ensure accountability, including schedule adherence, resource allocation, and obligation of funds. While the funding is substantial, the task of nationwide implementation is large and resources must be used efficiently. The committee recommends that administrative costs for FHWA and AASHTO be kept to a minimum and that duplicative administrative costs be avoided to the extent possible. While the committee appreciates the information presented on the schedule for the implementation assistance program, there are many other important activities associated with implementation at both a program and project level, and the committee is interested in seeing reports from FHWA at each of its meetings on progress and expenditures for the full range of activities related to SHRP 2 implementation in order to ensure accountability regarding schedules and expenditures.

- 7. The committee recommends that by April 30, 2014 FHWA and AASHTO put in place a sound evaluation system that documents the benefits and added costs, if any, resulting from use of SHRP 2 products.**

An investment of over \$400 million is being made in SHRP 2 research and implementation by Congress, USDOT, the state departments of transportation, and taxpayers. There is considerable interest in understanding what the return on investment will be from the SHRP 2 program. Developing return on investment information will require a well thought out evaluation program that collects both before and after data or control data to use as a basis of comparison. The evaluation phase for most products will need to begin prior to implementation, so that good baseline data are collected. Because so many SHRP 2 products involve process changes rather than adoption of a new technology, evaluation will be more challenging than it is for many types of technology deployment. Benefits will in many cases be indirect, and it will take longer before results become evident, but it is still critical that these benefits be documented. In addition to demonstrating what the costs, benefits, and return on investment have been, the evaluation program should develop information that will be useful in demonstrating to potential implementing agencies why they should consider adoption of SHRP 2 products. The committee is interested in getting a more detailed briefing on the SHRP 2 evaluation program at its June meeting.

- 8. The committee recommends that FHWA and AASHTO work with the new Phase 1 safety data oversight committee and TRB staff shortly after the committee is established to clarify the roles, responsibilities, and relationships of the various entities involved in safety implementation, in particular how FHWA and AASHTO activities fit into a cohesive safety implementation strategy in a manner that makes most effective and efficient use of available implementation resources.**

At its meeting the committee was briefed on Phase 1 of stewardship of the safety databases by TRB. Phase 1 will begin on January 1, 2015, and will continue for a period of up to five years. The goals of Phase 1 are to make the safety data available to users during Phase 1 and to gain knowledge and experience to inform decisions about future phases of SHRP 2 safety data implementation and oversight. It is anticipated that the National Research Council (NRC) will name a Phase 1 safety data oversight committee to provide policy direction regarding the stewardship of, access to, and use of the databases, and that TRB will contract both for centralized maintenance and support services for the databases, as well as for remote data centers where users will be able to obtain access to the data and obtain technical support services. The committee was briefed on FHWA's plans for a safety data center, which will provide consulting advice to state departments of transportation and others and will perform safety data analyses for the U.S. Department of Transportation. In addition, the committee was briefed on AASHTO's and FHWA's plans for supporting several safety data analysis studies and implementation of countermeasures emanating from these studies.

The SHRP 2 safety databases are the result of a nearly \$70 million public investment in making the nation's roads and highways safer. The databases are large, rich, complex, and difficult to use in their raw state. Available funds to store, manage, reduce, and use the databases are quite small in comparison to the work that needs to be done to make the data available in more usable and reasonably convenient forms. It is critical that SHRP 2 implementation funds be used in a strategic and cost-effective manner to advance the goals of Phase 1, which are to make the data available in the shorter term and to build a foundation for longer-term technical and financial sustainability of the databases.

The yet-to-be-established Phase 1 safety data oversight committee will be responsible for policies on data use and access; for overseeing the contractors who will house the data and make it available during Phase 1; and for assessing potential options for future phases of safety implementation. This SHRP 2 Implementation Advisory Committee is responsible for advising FHWA and AASHTO on implementation strategies in general. In the area of Safety implementation, this committee is particularly interested in ensuring that all proposed safety implementation activities are strategically aligned and that scarce resources are effectively used. To achieve strategic alignment this committee recommends that all of the activities proposed by FHWA and AASHTO be part of an overall plan for SHRP 2 safety implementation that is reviewed by the NRC oversight committee for stewardship of the safety databases.

In support of a cohesive and focused implementation strategy and to ensure the most effective use of implementation resources, this committee recommends that FHWA and AASHTO work with the new Phase 1 safety data oversight committee and TRB staff to define the roles and responsibilities of each entity involved in Safety implementation (TRB, FHWA, AASHTO, committees, contractors, etc.). In particular, the relationship

of FHWA and AASHTO efforts to the Phase 1 activities overseen by TRB and the new Phase 1 safety data oversight committee should be defined. A key issue is the appropriate role of the FHWA data center relative to the remote centers that are to be established by TRB. In order to ensure the maximum likelihood of being able to develop financially feasible remote data centers, it is important that the FHWA data center complement and not compete with the Phase 1 remote data centers for providing services. Another key issue is how the analysis studies to be sponsored by AASHTO and FHWA will access the data through the remote data access centers. The committee recommends that an evaluation of the FHWA data center and the AASHTO/FHWA Concept to Countermeasure program be completed by December 31, 2015.

The goal of the collective Safety program implementation efforts of TRB, FHWA, and AASHTO should be to have usable safety data available to safety professionals in state DOTs, universities, and private organizations as widely and quickly as possible. Every effort should be made to avoid making access to the data difficult, cumbersome, or bureaucratic. It is important that the data be made available in a timely manner, so studies can be done while the data are fresh.

The committee commends FHWA and AASHTO for their responsiveness to the recommendations contained in our last letter report and the considerable progress that has been made in the implementation phase of SHRP 2. The committee looks forward to working with both FHWA and AASHTO in further discussing the recommendations contained in this letter report.

Sincerely,



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

Attachment

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
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¹ Did not attend December 9-10, 2013, committee meeting

² Attended December 9, 2013, the first day committee meeting