# Research and Technology Coordinating Committee Letter Report: January 2015

## DETAILS

0 pages | 8.5 x 11 | PAPERBACK
ISBN 978-0-309-43282-5 | DOI 10.17226/22225



## AUTHORS

Research and Technology Coordinating Committee

TRB TRANSPORTATION RESEARCH BOARD
OF THE NATIONAL ACADEMIES

January 21, 2015

Gregory G. Nadeau
Acting Administrator
Federal Highway Administration
U.S. Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Mr. Nadeau:

On October 6 and 7, 2014, the Research and Technology Coordinating Committee (RTCC) met with staff of the Federal Highway Administration's (FHWA's) Office of Research, Development, and Technology (RD&T) at the Keck Center in Washington, D.C. The committee roster, which indicates the members in attendance, is included in Attachment 1. RTCC's charge is to monitor and review FHWA's research and technology activities and advise FHWA on (*a*) the setting of a research agenda and coordination of highway research with states, universities, and other partners; (*b*) strategies for accelerating the deployment and adoption of innovation; and (*c*) areas in which research may be needed. RTCC's review includes the process of setting the research agenda, stakeholder involvement, the conduct of research, peer review, and deployment. The committee's role is to provide strategic advice at the research policy level on topical priorities, processes, and strategies to accelerate the adoption of innovation.

At the October 2014 meeting, FHWA staff sought guidance on four topics:

- FHWA's essential roles in highway RD&T,
- Evaluation of RD&T projects,
- Communication of the value of RD&T, and
- Development of a strategic plan for FHWA's Turner–Fairbank Highway Research Center (TFHRC).

The committee's observations, findings, suggestions, and recommendations in these four areas are presented in this letter report. The recommendations indicate priority items for action by FHWA. The suggestions are items that RTCC would like FHWA to consider but that the committee did not discuss in sufficient detail to warrant formal recommendations. The report was developed in closed-session deliberations and through subsequent correspondence between the committee members and was then subject to the National Research Council's peer-review process.

The committee thanks the FHWA staff for their informative presentations (see Attachment 2) and the subsequent discussions during the meeting, both of which informed the development of this report.

## FHWA's ESSENTIAL ROLES IN HIGHWAY RD&T

FHWA faces the possibility of significant reductions in its RD&T budget when the surface transportation program is reauthorized in 2015, particularly if the bill approved in 2014 by the Senate Committee on Environment and Public Works becomes the basis of the legislation. Moreover, revenues from the Highway Trust Fund are insufficient to fund all the activities mandated by Congress, and political obstacles to increasing these revenues through increases in the fuel tax, together with multiple and competing demands on the General Fund, raise concerns about how and to what extent FHWA's current RD&T activities will continue to be funded. Hence, the agency staff asked RTCC to consider what FHWA's most important roles in RD&T would be in a severely budget-constrained environment.

This section of this letter report

- Summarizes earlier advice from RTCC about FHWA's role in the national highway RD&T enterprise;
- Provides examples of emerging areas in which FHWA's involvement will be crucial to the future success of highway innovation;
- Highlights the importance of presenting a persuasive case for FHWA's RD&T; and
- Discusses briefly the use of a risk management approach to help prepare for the possibility of major reductions in the agency's RD&T budget.

In the present context, risk management is defined as "a process of analytical and management activities that focus on identifying and responding to the inherent uncertainties of managing a complex organization and its assets" (*1*, p. 1). In the case of FHWA's RD&T, these uncertainties include unknown and potentially insufficient long-term funding.

### Earlier Advice from RTCC

Over a period of 25 years, reports from RTCC have consistently highlighted FHWA's essential role in several key areas of the national highway RD&T enterprise, including supporting fundamental, long-term research; facilitating technology transfer; and coordinating the nation's highway research. The following points highlight reasons why FHWA's role in each of these three areas continues to be important.

- **Supporting fundamental, long-term research.** RTCC reports have repeatedly emphasized FHWA's essential role in supporting fundamental, long-term research that goes beyond solving problems incrementally [see, for example, *Special Report 261: The Federal Role in Highway Research and Technology* (*2*)]. Such research has the potential to provide the innovative solutions needed to meet demands on the nation's highways as a result of increased global competition, the growth and aging of the U.S. population, the demand for energy, and ever-tighter constraints on environmental impacts (*3*). Fundamental research has the potential for high payoffs but is generally too risky and too long-term to attract state and private-sector support. As noted by RTCC, "only the federal government has the resources to undertake and sustain high-risk . . . research . . . and the incentives to invest in long-term fundamental research" (*2*, p. 6). FHWA's Exploratory Advanced Research Program,

established in 2005, funds longer-term and higher-risk breakthrough research with the potential for transformational improvements to transportation systems (*4*).

- **Facilitating technology transfer.** The U.S. highway transportation system is "a complex and multilayered, public–private activity with many barriers to innovation, including a low tolerance for risk in the public sector" (*5*, p. 35). Hence, FHWA's technology delivery activities, which provide ongoing support to the many players in the highway community over an extended period (many years in some cases), are essential in ensuring that the nation benefits from its past investments in highway research. FHWA's technology transfer programs provide information tailored to different audiences, technical assistance, user training, and financial support for implementation (*6*). For example, FHWA provides guidance to states, counties, cities, and other units of local government through its technical training and assistance programs. These programs cover a range of topics, such as ways of increasing the cost-effectiveness of improvements to roads and bridges and strategies for implementing environmental regulations. The expertise, information, and resources that FHWA provides either do not exist elsewhere or are too difficult or expensive to obtain from other sources and are therefore essential in enabling the agency's clients to operate and maintain their highways efficiently and cost-effectively.

- **Coordinating the nation's highway research.** FHWA participates in a wide range of highway research programs, including the R&D programs of the 50 states, the National Cooperative Highway Research Program and other pooled-fund programs, and the University Transportation Centers program. Because of its active involvement in research programs across the United States, the agency is uniquely positioned to act as an informal coordinator of U.S. public-sector highway research. By gathering and disseminating information about research being conducted throughout the highway RD&T enterprise, FHWA is able to build links between organizations with common research interests and needs, thereby helping to maximize the return on research investments and avoid unnecessary duplication of research effort. The agency's informal coordination efforts also allow it to identify and fill gaps in research of national importance that is not being addressed in other highway RD&T programs.

## Looking to the Future

In addition to the important roles outlined above, RTCC identified two major emerging areas in which FHWA's involvement will be needed to maximize benefits for users of the nation's highway system:

- Implementation of the results of the second Strategic Highway Research Program (SHRP 2) and
- Standardization of vehicle-to-infrastructure (V2I) connectivity for connected and autonomous vehicles.

### *Implementation of SHRP 2 Results*

The nation has invested $223 million over the past 9 years in SHRP 2 research that has the potential to save many lives, rehabilitate aged facilities faster with less disruption, greatly reduce

unnecessary congestion associated with accidents and incidents, and speed the provision of new capacity while preserving the environment (*7*). These benefits will not be realized, however, unless the results are implemented. Given that the barriers to innovation in the highway sector are considerable, successful and widespread implementation of SHRP 2 products will depend on having a "strong principal implementation agent, that is, an organization that will lead and support SHRP 2 implementation" (*8*, p. 10). In light of the observations in earlier RTCC reports about FHWA's essential role in facilitating technology transfer across the highway community (see the section on "Earlier Advice from RTCC" above), and given the agency's extensive experience in this area, RTCC sees FHWA as being uniquely positioned to lead and support SHRP 2 implementation and thereby ensure that the nation reaps the full benefits from its investment in SHRP 2 research. While some small innovations offering short-term benefits may well be implemented fairly quickly, the realization of large, long-term benefits that require changes to standards, practices, and attitudes could well take years (*8*). In light of the aforementioned barriers to innovation, RTCC considers it unlikely that any group or organization other than the federal government, through FHWA, would step in to provide the necessary sustained technology push over an extended period.

*V2I Standardization*

The development of a wireless communications network linking vehicles, transportation infrastructure, and wireless devices (such as cell phones) has the potential to transform the U.S. transportation system in the areas of safety, mobility, and the environment. In particular, connected vehicle technology is expected to reduce or eliminate highway crashes through vehicle-to-vehicle (V2V) and V2I data transmission (*9*). In RTCC's judgment, FHWA is uniquely positioned to provide the national perspective needed to ensure standardization of V2I connectivity for highways. Such standardization would avoid a situation such as the one that currently exists for electronic toll payments, in which the E-ZPass that works in the Northeast cannot be used on toll roads in California. A similar lack of standardization would undermine the potentially transformative opportunities offered by V2I and V2V connectivity. FHWA is ideally positioned to provide the necessary national perspective because of its established relationships with groups involved in V2I-related research (e.g., university research centers) and organizations likely to be involved in V2I implementation (e.g., industries supplying technology for highway construction and maintenance, advocates for highway safety, and regulatory agencies).[1] However, were FHWA's RD&T budget to be cut by half, the agency could well lack the resources to carry out this new and vitally important leadership role at a critical time in the V2I effort.

In addition to the two major areas described above, FHWA will have an important role to play in RD&T activities aimed at maintaining the nation's aging highway infrastructure more efficiently and more cost-effectively. For example, information gathered with the agency's robot-assisted, remote-controlled RABIT™ bridge deck assessment tool is expected to help bridge managers around the country make data-driven decisions that will improve the efficiency, speed, and cost-effectiveness of maintenance and rehabilitation measures (*10*). FHWA is also investigating the

[1] RTCC envisages FHWA's activities in V2I standardization complementing the Intelligent Transportation Systems (ITS) Standards and Architecture Harmonization program through which the U.S. Department of Transportation's ITS Joint Program Office participates in efforts to harmonize international standards relating to connectivity between vehicles and between vehicles and infrastructure.

use of ultrahigh-performance concrete to create longer-lasting bridges and facilitate rapid infrastructure renewal through the use of new structural forms (*11*).

### Presenting a Persuasive Case for FHWA's RD&T

At the October 2014 meeting, FHWA provided RTCC with a document entitled "What Would Be Lost if FHWA Research and Technology Programs Were Cut in Half?" This document, which is aimed primarily at congressional staff, provides an inventory of the agency's RD&T activities and projected losses or reductions in capability. However, it neither explains why FHWA is best (or even uniquely) positioned to play certain roles nor provides compelling illustrative examples of benefits derived from the agency's activities. For example, the document states that FHWA's ability to respond to forensic research needs resulting from national emergencies would be significantly reduced but does not highlight FHWA's unique facilities and expertise in forensic analysis of infrastructure issues; nor does the document provide examples of the benefits derived from the agency's forensics capability in specific instances, such as the much publicized August 2007 collapse of the I-35W bridge in Minneapolis, Minnesota.

As discussed in more detail later in the section on communicating the value of RD&T, RTCC is concerned that, in its current form, the "What Would Be Lost" document is unlikely to be effective in convincing legislators and their staffs of the essential nature of FHWA's RD&T activities. As noted in the later discussion, communications experts could help FHWA revise the document to be more strategic by

- Giving examples of the roles that the agency plays in the nation's highway RD&T enterprise,
- Explaining how these roles specifically benefit stakeholders and clients in ways that other sources cannot easily duplicate, and
- Illustrating the resulting benefits with concrete examples.

In addition, a series of short documents is likely to be more effective in communicating the value of FHWA's RD&T than a single all-inclusive document. In the committee's judgment, one-page vignettes, each capturing a few simple messages related to the audience's interests and values, could be compelling for congressional staff and senior decision makers. To help spread the message about the value of its RD&T as widely as possible, FHWA may want to prepare separate products for communicating to different audiences, including

- Clients directly involved in the agency's RD&T activities (e.g., state highway or transportation agencies, university researchers, other research partners, and contractors);
- Stakeholders who benefit indirectly from FHWA's RD&T (e.g., highway industries, associations, and regulatory bodies); and
- The media, which is a major source of information for policy makers and the general public.

### A Risk-Based Plan for the Future

In the event that FHWA's RD&T budget is severely reduced, the agency would need to make difficult choices about its future role. For example, the Office of RD&T might have to become a leaner organization that provides high-quality support and services in a limited number of areas—such as key activities identified by RTCC—and withdraw from some of its current roles.

RTCC recognizes that exploring such options is difficult and unpleasant but urges FHWA to prepare for the possibility of a worst-case budget scenario nonetheless. By doing so, the agency will be better positioned to make informed decisions about cuts in its activities should the need arise. In addition, identifying activities that could not be done (or would be unlikely to be done) by others could help the agency develop a clearer vision of its unique role in the nation's highway RD&T enterprise. Armed with this vision, FHWA would be better able to communicate a clear, focused message to legislators and their staffs.

RTCC suggests that the Office of RD&T use a risk management approach to help identify its critical roles in the highway RD&T enterprise and to inform decisions about which activities it would pursue in a severely budget-constrained environment. Such an approach involves first identifying the risks likely to affect agency objectives—in this case, unknown and potentially insufficient future funding—and then defining the consequences, together with options for risk response and mitigation [see, for example, Curtis et al. (*1*)]. Thus, FHWA might consider the risks associated with not undertaking certain activities or not having certain areas of expertise in house as well as options for mitigating or transferring these risks. For example, are there other R&D laboratories that could substitute for some FHWA facilities? And could non-FHWA centers of excellence (with a critical mass of experts and researchers) provide the necessary breadth and depth of expertise in some subject areas, thereby allowing FHWA to withdraw from certain activities without the nation losing its research capability in these areas altogether? The ranking of comparative advantages generated by TFHRC staff for the center's strategic plan (discussed later in the section on developing a strategic plan for TFHRC) could also help establish the agency's RD&T priorities. RTCC notes that FHWA staff gave the center's national perspective, together with its partnership and leadership capabilities, the highest rank among a total of 14 comparative advantages.

RTCC's suggestion recognizes risk management as the natural complement to FHWA's ongoing performance management efforts. Performance management is already leading the Office of RD&T to set goals and direct resources to achieve them, but all these goals face uncertainties and risks. In RTCC's judgment, the use of risk management could help FHWA identify, measure, manage, and mitigate those risks by bringing an open and realistic assessment of the uncertainties or impediments surrounding the agency's RD&T objectives and providing a systems approach to addressing them. More simply, risk management is a complementary framework that could help the Office of RD&T achieve some of its performance objectives if R&D resources were cut dramatically.

## EVALUATING RD&T PROJECTS

Memoranda from the White House Office of Management and Budget and Office of Science and Technology Policy direct federal agencies to engage in systematic evaluations of their research programs (*12*). Such evaluations not only help ensure that funds are used judiciously in pursuit of defined objectives but also help document and communicate the value of RD&T (*3*).

FHWA RD&T has led to important innovations in highway transportation. However, documenting success in a rigorous manner requires a deliberate and methodical approach, and FHWA requested RTCC's advice in this area. As noted in an earlier RTCC letter report, the topic

of performance measures "is a broad one, and there are multiple appropriate levels on which to measure performance" (*13*, p. 4).[2] Selected performance measures that tell the story of the effectiveness of research could be useful for FHWA in communicating the value of its RD&T activities to a variety of audiences. However, RTCC recommended earlier this year that FHWA's Office of RD&T step back from the broad and complex challenge of R&D program evaluation and focus instead on a small number of project evaluations (*14*). Even these project evaluations can be challenging, particularly as FHWA has multiple activities addressing different phases of the innovation process. Furthermore, some of these activities, such as technical assistance programs, are not research projects per se but are essential elements of the agency's RD&T portfolio nonetheless.

FHWA has made a good start in identifying a clear research and technology (R&T) evaluation framework, as illustrated in Figure 1. However, the agency's subsequent project evaluation

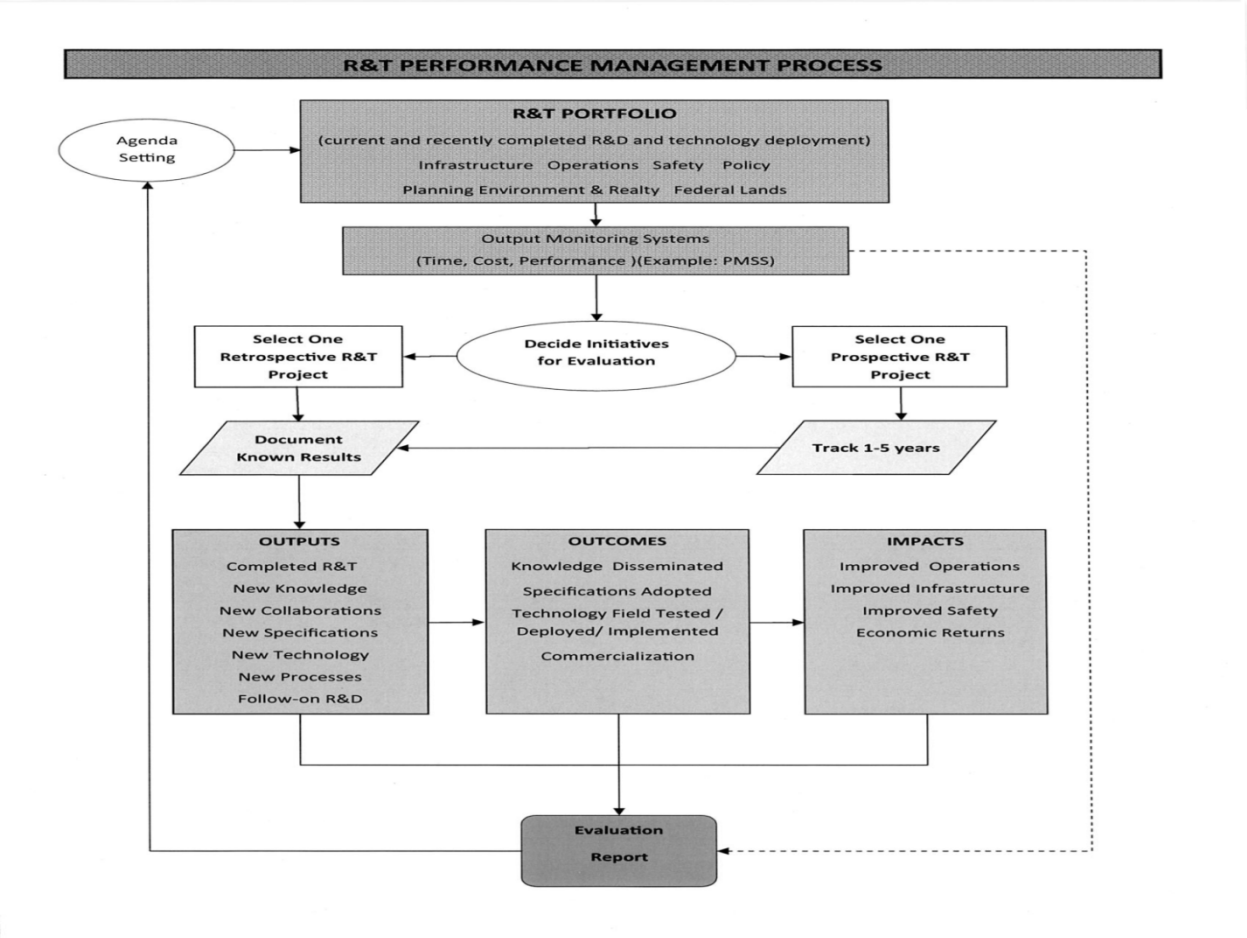



**FIGURE 1 FHWA's R&T performance management process (PMSS = program management support system).** (Source: Presentation to RTCC by John Moulden, FHWA, October 6, 2014.)

[2] The referenced letter report summarizes observations and suggestions provided by a program evaluation specialist at the RTCC meeting in June 2011.

efforts involving different staff across various program offices appear to have become stymied by a failure to define and use terms consistently and by a lack of good examples to guide the process. The resulting uncertainty and confusion, exacerbated by the challenges of evaluating widely differing projects, appear to have led to some projects becoming bogged down in excessive details and to others that are inconsistent with the framework. As a result, progress has been far slower than expected.

Given the aforementioned difficulties, RTCC previously identified the need for FHWA to take a modest step-by-step approach to build experience in RD&T project evaluation gradually. As a first step, FHWA could take a single project and demonstrate the project evaluation process in its entirety, taking care to avoid becoming overwhelmed by excessive detail. By choosing a relatively straightforward case for this initial evaluation, the agency could demonstrate its process and establish a model for more challenging project evaluations in the future.

> **RECOMMENDATION 1: FHWA should run one project all the way through the agency's project evaluation process to demonstrate its approach and develop a model for further project evaluations in the future.**

## COMMUNICATING THE VALUE OF RD&T

Convincing nonresearchers of the value of transportation research can be a tough sell, particularly when research and highway programs must compete for reduced funding and the projected benefits of R&D may not be realized for many years. As noted in a guidebook on communicating the value of transportation research, "the time is long past when the value of research will simply sell itself with no additional effort" (*15*, p. 1). In this context, FHWA requested RTCC's advice on messages and audiences it should be pursuing to build support for its RD&T. In anticipation of the forthcoming reauthorization of the surface transportation program, FHWA is particularly keen to reach members of Congress and their staffs. The aforementioned guidebook presents transportation case studies and explores the effectiveness of communication initiatives in securing support for a variety of research and implementation activities (*15*).

FHWA undertakes a variety of activities aimed at communicating the value of its research to diverse audiences. For example, the agency recently hosted tours of TFHRC for President Obama, for senior staff of the U.S. Department of Transportation, and for congressional staff. FHWA researchers have also prepared the following materials:

- The report *Telling the R&T Story*, which captures highlights of the agency's R&T achievements (*16*);
- A two-page briefing paper summarizing FHWA's successes in research, technology, and education; and
- The two-page document "What Would Be Lost if FHWA Research and Technology Programs Were Cut in Half?" that was discussed earlier in the section on presenting a persuasive case for FHWA's RD&T.

These last two documents are directed primarily to congressional staff in the context of reauthorization of the surface transportation program. Other FHWA communication materials include periodic publications such as *Public Roads,* a bimonthly magazine covering federal highway policies, programs, and research and technology, and *R&T Now,* a newsletter containing information and updates about RD&T.

The challenge in communicating the value of transportation research is to "tell the story of how society can benefit from the research in ways that decision makers, elected and appointed officials, the media, and society as a whole can understand and appreciate" (*17*, p. 1). Hence, effective communication requires a strategic approach that considers the target audience and tailors the messages and communication channels accordingly. As discussed in the following paragraphs, RTCC found FHWA's communication to be lacking in these respects and is concerned that the agency is missing important opportunities to build support for its RD&T at a time when the federal highway research budget is under severe pressure.

*Telling the R&T Story* and the two-pagers on successes and on what would be lost are technically substantive. They are, however, comprehensive rather than strategic, and as such are likely to overwhelm audiences with limited time and a limited attention span. Senior decision makers and congressional staffers alike have to juggle many demands on their time and attention as they address a wide range of issues on a daily basis. Thus, good communication practices suggest that a more effective approach would be to select a small number of key messages likely to resonate with the interests and values of each target audience (*15*). A less-is-more approach that presents a few ideas people can appreciate and remember is more likely to influence an audience than an exhaustive list of RD&T achievements.

The items selected will, of course, vary according to the target audience. Different groups have different interests and perspectives, and a one-size-fits-all approach that attempts to use a single product to engage and influence all audiences is unlikely to be successful. For example, executives in state departments of transportation may be interested in learning about the performance and financial benefits offered by an innovative interchange design, whereas members of Congress and their staffs may want to know more about FHWA's unique RD&T capacities (as opposed to everything the agency does) to help inform budget decisions. In general, topics with a strong human interest (e.g., improving mobility for those with disabilities, including veterans and the elderly) are likely to engage audiences by appealing to their emotions. Zmud et al. provide advice about crafting "sticky ideas" likely to resonate with different audiences (*15*). These authors also note the importance of keeping audience characteristics in mind when selecting a channel of communication. For example, younger, technology-savvy audiences are likely to prefer social media to more traditional channels of communication.

RTCC also found the style (i.e., the format and language) of the two-pagers ill suited to communicating with audiences with limited technical knowledge. The advice to explain research the way you would explain it to your mother [see, for example, "Leading in Lean Times: The Value of Research to Transportation Executives" (*18*)] may be worth remembering in this context. The densely packed and word-heavy two-pagers ignore the advice of communications experts to make use of white space and avoid the pressure to "fill every inch of a document or fact sheet with something" (*15*, p. 23). In addition, the documents lack the clear, concrete, and

specific examples likely to appeal to a nontechnical audience. Comparison of the description of FHWA's research on connected and automated vehicles in the two-pager on successes with President Obama's description of the same activities illustrates this point (Box 1).

---

**BOX 1**

**Telling the Story: FHWA's Research on Connected and Automated Vehicles**

FHWA two-pager on successes in research, technology & education:

> FHWA research into radio connectivity between highway infrastructure, vehicles, and other highway users will help reduce up to 80 percent of non-impaired crashes and enable improved traffic flow capabilities. In partnership with the Virginia DOT, FHWA will be demonstrating how connected vehicle technology can improve traffic streams and reduce the effects of bottlenecks, thereby increasing reliability and environmental benefits while improving safety and providing additional travel comfort and convenience.[a]

President Obama, after his July 15, 2014, tour of TFHRC:

> I just got a tour of a lab where automakers and government researchers team up to create new technologies that help cars communicate with the world around them and each other. They can tell you if an oncoming vehicle is about to run a red light, or if a car's coming around a blind corner, or if a detour will help you save some time and gas.[b]

[a]Provided to RTCC by FHWA, October 6, 2014.
[b]As reported in FHWA's *Transportation Operations Research and Development* newsletter, Fall 2014 Update, http://www.fhwa.dot.gov/publications/transopsupdate/14oct/15010.pdf.

---

In RTCC's view, FHWA has a strong message to share about the value of its RD&T but needs help in doing so. *Telling the R&T Story*, for example, contains good information that could be used to develop more appealing communication materials; in its current format, however, it is too much like an annual report to capture the attention of many audiences. Trained professional communicators could help make FHWA's considerable RD&T efforts and successes compelling to nontechnical audiences.

Zmud et al. identify involving communications professionals as a sign of good communication practice (*15*). In RTCC's judgment, FHWA would benefit greatly from engaging expert help in developing strategic messages tailored to the audiences it hopes to influence. Experts with knowledge of the latest communication strategies and technologies could also help FHWA as it explores videos, RSS feeds, and other alternatives to the more traditional channels of communication such as reports, briefing papers, and poster boards. RTCC encourages FHWA to demonstrate its commitment to innovation by adopting channels of communication consistent

with its role as a technology leader. Engaging professional communications specialists would require expenditures from FHWA's RD&T budget, but RTCC sees the potential benefits as essential to countering the risk of losing RD&T funding.

> **RECOMMENDATION 2: FHWA should take a more strategic approach to its communication efforts by targeting information to the interests and concerns of specific audiences. It should follow good communication practices as described in the literature and should seek the advice of communications experts to help create effective communication materials for a variety of audiences.**

## DEVELOPING A STRATEGIC PLAN FOR TFHRC

FHWA's TFHRC is developing a strategic plan for responding to highway research needs in the long term (more than 20 years from now). FHWA's chief scientist, Jonathan Porter, presented the latest version of this strategic plan to RTCC at the October 2014 meeting. Porter outlined the approach taken to develop the plan so far, its strategic goals, and plans for its implementation. RTCC found the current plan to be a good start and commends Dr. Porter on completing important first steps in its development.

The current version of the plan is essentially generic. For example, Goal 1 (the right research) addresses the need to identify and conduct R&D of national significance in a strategic manner, and Goal 2 identifies the potential value of strategic partnerships in helping accomplish TFHRC's research objectives. FHWA will need to add more specificity to these high-level goals as it develops the plan. For example, items under Goal 1 could include research to help address the impacts of climate change on highway transportation. Actions to achieve Goal 2 might include forming strategic partnerships with other federal agencies, such as the Department of Defense, which conducts research on pavements, construction materials, and automated vehicles. As noted in Dr. Porter's presentation, successful partnerships depend not only on identifying research areas of mutual interest, but also on establishing effective mechanisms for sharing knowledge.

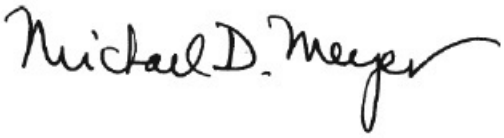
Despite these promising first steps, RTCC was concerned about the apparent lack of external input to the plan. The effort has clearly been effective in engaging TFHRC staff through a variety of mechanisms, but FHWA's clients and stakeholders appear to have been only minimally involved, if at all. Going forward, the Research Oversight Committee (ROC) established under the strategic plan will be responsible for identifying the right research, that is, research that aligns the work of TFHRC with the mission and vision of the strategic plan and with FHWA's goals and objectives. However, current ROC membership is limited to FHWA staff and thus appears too internally focused to represent adequately the interests and concerns of FHWA's many customers and stakeholders. As noted in an earlier RTCC letter report, FHWA's role in the national highway program has implications for RD&T strategic planning "because so much of the FHWA portfolio is responsive to the needs of other levels of government with regard to designing, building, maintaining, and operating highways, rather than simply supportive of federal policy and regulation" (*13*, p. 2). Hence, buy-in from FHWA's customers and stakeholders is essential if the plan is to be effective. Therefore, RTCC encourages FHWA

to share the TFHRC strategic plan with its customers and stakeholders and elicit their feedback to inform the critical next steps in plan development. These steps include making the current generic version of the plan more specific and aligning it with the center's RD&T budget.

## CLOSING REMARKS

The committee very much appreciated the opportunity to meet with FHWA staff and discuss some of the issues facing the agency as it prepares for reauthorization of the surface transportation program. On behalf of RTCC, I offer my thanks to Michael Trentacoste and his staff for their time and efforts. I hope you find this letter report to be useful as FHWA seeks to manage the uncertainties surrounding its RD&T activities and communicate the value of these activities to various audiences.

Sincerely,



Michael Meyer, *Chair*

Attachment 1: Participants
Attachment 2: Presentations

## REFERENCES


1. Curtis, J. A., J. S. Dailey, D. D'Angelo, S. D. DeWitt, M. J. Graf, T. A. Henkel, J. B. Miller, J. C. Milton, K. R. Molenaar, D. M. Richardson, and R. E. Rocco. *Transportation Risk Management: International Practices for Program Development and Project Delivery.* Report FHWA-PL-12-029. FHWA, U.S. Department of Transportation, 2012. http://international.fhwa.dot.gov/scan/12029report/12029report.pdf.
2. *Special Report 261: The Federal Role in Highway Research and Technology*. TRB, National Research Council, Washington, D.C., 2001. http://onlinepubs.trb.org/onlinepubs/sr/sr261.pdf.
3. *Special Report 313: Framing Surface Transportation Research for the Nation's Future.* Transportation Research Board of the National Academies, Washington, D.C., 2014. http://onlinepubs.trb.org/onlinepubs/sr/sr313.pdf.
4. Exploratory Advanced Research Program. FHWA. http://www.fhwa.dot.gov/advancedresearch/about.cfm#gen.
5. Diewald, W. E. Assessing Highway Research and Development Priorities. *TR News*, No. 292, May–June 2014, pp. 34–35.
6. *Special Report 256: Managing Technology Transfer: A Strategy for the Federal Highway Administration*. TRB, National Research Council, Washington, D.C., 1999. http://onlinepubs.trb.org/onlinepubs/sr/sr256.pdf.
7. Strategic Highway Research Program 2. TRB. http://www.trb.org/AboutTRB/SHRP2.aspx.

8. *Special Report 296: Implementing the Results of the Second Strategic Highway Research Program: Saving Lives, Reducing Congestion, Improving Quality of Life*. Transportation Research Board of the National Academies, Washington, D.C. 2009. http://onlinepubs.trb.org/onlinepubs/sr/sr296.pdf.
9. Connected Vehicle Research in the United States. FHWA. http://www.its.dot.gov/connected_vehicle/connected_vehicle_research.htm.
10. RABIT™ Bridge Deck Assessment Tool. FHWA. http://www.fhwa.dot.gov/research/tfhrc/programs/infrastructure/structures/ltbp/ltbpresearch/rabit/index.cfm.
11. Ultra High Performance Concrete: Taking Concrete to New Levels. In *Focus: Accelerating Infrastructure Innovations*. FHWA-HRT-10-015. FHWA, U.S. Department of Transportation, July 2010. http://www.fhwa.dot.gov/publications/focus/10jul/05.cfm.
12. M-14-11 Memorandum for the Heads of Executive Departments and Agencies: Science and Technology Priorities for the FY 2016 Budget, July 18, 2014. http://www.whitehouse.gov/sites/default/files/omb/memoranda/2014/m-14-11.pdf.
13. Letter report to Victor M. Mendez, Administrator, Federal Highway Administration, from the Research and Technology Coordinating Committee of the National Academies, July 13, 2013. http://onlinepubs.trb.org/onlinepubs/reports/rtcc_july_2013.pdf.
14. Letter report to Victor M. Mendez, Administrator, Federal Highway Administration, from the Research and Technology Coordinating Committee of the National Academies, March 24, 2014. http://onlinepubs.trb.org/onlinepubs/reports/rtcc_March_2014.pdf.
15. Zmud, J. P., J. L. Paasche, M. Zmud, T. J. Lomax, J. L. Schofer, and J. A. Meyer. *NCHRP Report 610: Communication Matters: Communicating the Value of Transportation Research—Guidebook*. Transportation Research Board of the National Academies, Washington, D.C., 2009. http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_610.pdf.
16. *Telling the R&T Story*. FHWA-HRT-11-053. FHWA, U.S. Department of Transportation, 2011. http://www.fhwa.dot.gov/publications/research/general/11053/11053.pdf.
17. Zmud, J. P., J. L. Paasche, M. Zmud, T. J. Lomax, J. L. Schofer, and J. A. Meyer. *Communication Matters: Communicating the Value of Transportation Research—Guidebook Overview*. Summary of NCHRP Report 610. Transportation Research Board of the National Academies, Washington, D.C., 2009. http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_610overview.pdf.
18. Leading in Lean Times: The Value of Research to Transportation Executives. *Proc., 2011 AASHTO Annual Meeting*, Detroit, Mich., October 13–17.

Attachment 1

**PARTICIPANTS**

**Research and Technology Coordinating Committee**

**Michael Meyer**, Modern Transport Solutions, LLC, Atlanta, Georgia, *Chair*
**Kevin Chesnik**, Applied Research Associates, Madison, Wisconsin
**Karen Dixon**, Texas A&M Transportation Institute, College Station
Patricia Gillette, Colorado Motor Carriers Association, Denver
**Timothy Henkel**, Minnesota Department of Transportation, Saint Paul
**Wayne Kittelson**, Kittelson & Associates, Inc., Portland, Oregon
**Michael Morris**, North Central Texas Council of Governments, Arlington
Ronaldo Nicholson, District Department of Transportation, Washington, D.C.
**Harold Paul**, Louisiana Transportation Research Center, Baton Rouge
**David Roessner**, SRI International, Washington, D.C.
**Robert Sack**, New York State Department of Transportation, Albany
**Kumares Sinha**, Purdue University, West Lafayette, Indiana
**Stephanie Wiggins**, Los Angeles County Metropolitan Transportation Authority (Metro), California
**James Winford**, **Jr.**, Prairie Contractors, Inc., Opelousas, Louisiana

**FHWA Staff**

**Michael Trentacoste**
**Debra Elston**
**Jack Jernigan**
**David Kuehn**
**John Moulden**
**Lucia Olivera**
**Jonathan Porter**

**Additional Participant**

**Lee Biernbaum**, Volpe National Transportation Systems Center, Cambridge, Massachusetts

**TRB Staff**

**Robert Skinner**
**Steve Godwin**
**Jill Wilson**
**Timothy Devlin**

The names of those who attended the meeting are shown in bold.

Attachment 2

**PRESENTATIONS**

Legislative Update, *Lucia Olivera, FHWA*

Communicating the Value of Research, *Debra Elston, FHWA*

Exemplar FHWA-Funded Research, *David Kuehn and Lucia Olivera, FHWA*

FHWA R&T Performance Evaluation, *John Moulden, FHWA*

Turner–Fairbank Highway Research Center Strategic Planning, *Jonathan Porter, FHWA*

Suggested Topics for Future RTCC Inquiry, *Jack Jernigan, FHWA*

FHWA's Essential Roles in RD&T, *Michael Trentacoste, FHWA*