



September 15, 2003

Ms. Mary E. Peters
Administrator
Federal Highway Administration
Room 4218
400 7th Street, SW
Washington, D.C. 20590

Dear Administrator Peters:

The Research and Technology Coordinating Committee (FHWA) met on June 18–19, 2003, at the J. Erik Jonsson Woods Hole Center of the National Academies in Woods Hole, Massachusetts. The enclosed meeting roster indicates the members, liaisons, guests, and TRB staff in attendance. On behalf of the committee, I thank FHWA for its continuing interest in the work of RTCC. I also thank and commend the FHWA staff for their participation in the meeting. In particular, the committee recognizes the participation and contributions of the following individuals: Dennis Judycki, Michael Trentacoste, Peter Markle, and Tom Krylowski.

This letter is an intentionally brief summary of the meeting; information about the committee's future activities and meetings is also provided. The report is organized under four main topics: a summary of the committee's symposium on the national highway research and technology (R&T) program; the preparation of an annual committee operating plan and the selection of a topic for the committee's future activity; review of FHWA activities related to the agency's corporate master plan for highway R&T, including plans for its advanced research program; and review of the assessment of the Human Centered Systems Laboratories (HCSL) at FHWA's Turner-Fairbank Highway Research Center.

Summary of the RTCC Symposium on Highway R&T

The meeting opened with a review of the activities and results of the RTCC symposium on highway R&T held April 3–4, 2003, in Washington, D.C. The purpose of the symposium was to elicit stakeholder views on how well highway transportation R&T programs conducted by the federal government, state governments, universities, and the private sector are addressing the full range of national highway R&T priorities.

Symposium participants included a wide range of highway R&T stakeholders as well as several congressional committee staff members responsible for drafting material to be considered by Congress as it prepares to reauthorize the surface transportation legislation that determines federal support for highway R&T activities. A summary of the breakout group discussions and the symposium agenda are included in Appendix A of this report.

The symposium featured four invited presentations and panel discussions aimed at providing participants with updated information on topics related to surface transportation reauthorization and the national highway R&T program activities. Breakout groups—organized on the basis of key research topics—were asked to address the following issues: current research program mismatches, how stakeholder involvement in research planning and programming can be increased, how collaboration among program activities can be improved, and how more partnering (through cooperative research and development agreements involving both federal and nonfederal partners, etc.) can be achieved. Each breakout group noted that there are significant research needs in every technical category and insufficient resources for addressing them, thus reiterating the findings of the National Highway R&T Partnership and other similar efforts. Many participants reported the need for more information than is currently available on continuing and recently completed research as well as research on products ready for application. There was also agreement on the need for more research to evaluate the nation's national transportation programs and policies. The breakout groups agreed that stakeholder involvement requires a systematic, continuous process for including a broad range of stakeholders and affected parties. Several groups emphasized the need to involve more local transportation agency representatives.

Participants also noted the need for more research collaboration and partnering. Several participants urged FHWA to assert more leadership by increasing its collaboration and partnering with other federal agencies, developing incentives for more interagency (federal, state, and local) pooled-fund research, and strengthening existing systems for sharing information about ongoing and completed research. The National Strategic Safety R&T Process—currently under way with support from FHWA and AASHTO—involves considerable coordination and collaboration, including steps for targeting research funds, developing a research quality assurance methodology, and preparing a dissemination plan with user-friendly dissemination instruments. The process could prove to be a useful model for other research topic areas.

Insufficient information about successful research partnerships and alternative models for creating and financing partnerships and lack of detailed examples of good research partnership practice were identified as key barriers to more research partnering. In addition, several participants stated that streamlining the pooled-fund process and reducing legislative and administrative barriers to research partnering would encourage more partnering.

The committee plans to send the symposium summary to symposium participants via e-mail, post it on the TRB website, and publicize the posting through the TRB newsletter, which reaches nearly 10,000 recipients.

RTCC Annual Operating Plan and Selection of a Future Committee Study Topic

At the suggestion of several members, the committee prepared a draft annual operating plan for its activities. The purpose of this plan is to convey to new committee members, FHWA, AASHTO, and other interested parties the committee's plans and focus for a 1-year period. The committee will reexamine and revise the plan each year at its June meeting. (The committee usually meets in March, June, and November each year.) A copy of the plan adopted at the meeting is included as Appendix B of this report.

While preparing the plan, the committee deliberated on topics for its next major activity, focusing on issues that emerged from the symposium. After considerable discussion and consultation with FHWA and AASHTO representatives, the committee decided to examine the role of local (city and county) transportation agencies in implementing research results and how these agencies can be more effectively utilized as research program stakeholders. Staff were asked to prepare background material on the topic and organize a roundtable discussion involving representatives of these agencies at the committee's next meeting.

Review of Recent FHWA R&T Program Activities

FHWA staff, led by Dennis Judycki, described several key activities aimed at improving agency processes for R&T program planning and priority setting. Information was provided on the status of the agency's corporate master plan for highway R&T and efforts under way to develop a program of advanced research. The aim of the corporate master plan is to "improve [FHWA's] R&T leadership role, its program processes, and its effectiveness in working with its partners to deliver technology and innovation." It represents a multiyear effort in response to several stimuli, including the RTCC report, TRB Special Report 261, *The Federal Role in Highway Research and Technology*. The committee is pleased by the responsiveness of FHWA staff to the report's recommendations. We look forward to learning more about specific steps—for example, the development of multiyear R&T program plans and the involvement of research stakeholders—taken to implement the plan. We plan to invite members of the agency's R&T leadership team to discuss these steps at future meetings.

FHWA staff reported on efforts aimed at expanding its advanced research activities, which the committee recommended in Special Report 261. FHWA's current efforts aimed at identifying and documenting advanced research under way within the agency as well as in related programs and at other locations such as the National Science Foundation, the national laboratories, and the University Transportation Centers should help clarify future agency research opportunities and prospects for collaboration and partnering. Recognizing that advanced research is a relatively small component of FHWA's R&T program, the committee urges FHWA to be aggressive in drawing upon and leveraging other federal advanced research. The committee notes that the

administration's reauthorization proposal includes a specific program of exploratory, advanced research. FHWA should also ensure that its advanced research focus is consistent with the administration's definition of such research, i.e., that is convey "a more fundamental character, broader objectives, multi-disciplinary nature, and greater uncertainty in expected outcomes that found in problem-solving research." The committee acknowledges that the reauthorization process will determine the extent of congressional support—and federal funding—for advanced highway research.

Assessment of HCSL

Dennis Judycki presented the findings of an independent assessment of HCSL. Dr. Richard Pain of TRB, a member of the assessment panel, provided the panel's perspective on the assessment process and its conclusions. The assessment team found that HCSL is performing high-quality research and has a well-qualified research staff. The assessment provides suggestions for improvements on several topics including staffing, facilities and equipment, communications, and research implementation. The committee made the following suggestions on the basis of the assessment report and the meeting discussions:

- The agency should consider focusing on fewer research areas to help address the lack of staff depth in several technical areas.
- The agency must address the issues of aging laboratory equipment, inadequacy of some elementary human factors research tools, and researcher access to human factors literature if HCSL is to continue to perform high-quality, relevant research.
- Concerns about implementation and support of HCSL research products, such as highway design software, reported by assessment panel members should be addressed.
- To fulfill its proposed schedule of laboratory assessments with available resources, FHWA should consider two steps. First, find an alternative to using a consultant for facilitating and coordinating the assessment, such as using the assessment team to facilitate the meeting and using agency staff to coordinate the team activities. Second, reduce the amount of time that contract staff are scheduled for meeting with the assessment team. For example, some of the dialogue between the assessment team and the contract staff can take place during lunch meetings.

Future Meeting Plans

The committee's next meeting is scheduled for November 10 and 11, 2003 in Washington, D.C.

Final Remarks

In closing, the committee was gratified and encouraged by the responsiveness of FHWA staff to previous committee recommendations and the work under way to address them. The results are particularly evident in the research component of the administration's reauthorization proposal as well as in the agency's corporate master plan for highway R&T.

Sincerely,

A handwritten signature in black ink, appearing to read "C. Michael Walton", with a long horizontal flourish extending to the right.

C. Michael Walton
Chair
Research and Technology Coordinating Committee (FHWA)

Enclosure

**Meeting Attendance: Committee, Liaisons, Guests, and Staff
June 18–19, 2003**

Committee

C. Michael Walton (NAE), Chair
Joel Anderson
Dean Carlson
John Conrad
Frank Danchetz
Reid Ewing

Irwin Feller
Timothy Neuman
Michael Ryan
David Spivey
Paul Wells
Kevin Womack

Liaisons and Guests

Tom Krylowski, FHWA
Peter Markle, FHWA
Barbara Harder, Consultant
Dennis Judycki, FHWA
Tony Kane, AASHTO
Michael Trentacoste, FHWA

TRB Staff

Ann Brach
Walter Diewald
Stephen Godwin
Neil Hawks
Richard Pain
Robert Reilly
Robert Skinner

Appendix A

Brief Summary of RTCC Symposium

Symposium Objective

The objective of the symposium was to determine how well highway transportation research and technology programs—conducted by the federal government, state governments, universities, and the private sector—are collectively addressing the full range of national highway R&T priorities. Symposium participants representing a broad range of stakeholders examined ways of improving the R&T process to achieve more complete coverage of national R&T priorities through greater collaboration and cooperation among the various programs.

The initial plenary session featured four invited presentations, each followed by a panel discussion. Following this session symposium participants were organized in breakout groups representing five technical areas: safety; pavements; structures; operations; and planning, environment, and policy. Thus the breakout groups roughly mirrored the National Highway R&T Partnership Forum working groups. The breakout groups were asked to consider the following issues on the basis of their collective experience: current research program mismatches, in particular research needs versus program resources, but also other topics as appropriate; how stakeholder involvement in research planning and programming can be increased; how collaboration among program activities can be improved; and how more partnering (through cooperative research and development agreements between federal and nonfederal partners, etc.) can be achieved. The breakout groups reported their results—findings, conclusions, and recommendations for future activity—in a final plenary session. These results were directed at FHWA, other highway research programs, and RTCC as it continues its work of reviewing and guiding highway R&T activities.

Topic Summaries of Breakout Group Discussions

Topic 1: Program Mismatches

The breakout groups noted that the report of the National Highway R&T Partnership Forum provides consensus statements of national research needs as well as estimates of the resources required to meet the needs. Some breakout groups compiled additional needs statements. Participants pointed to the inadequacy of funding as a key reason why research needs continue to increase. They also noted that several initiatives are under way to develop more coordinated research programs aimed at addressing current needs with available funds. In particular, the highway safety research community, with support from AASHTO and FHWA through the National Cooperative Highway Research Program, is developing a process for coordinating safety research program planning.

Several breakout groups concluded that the highway research community must develop a clearer message about the benefits of transportation research. This message

should encompass the direct benefits of improved performance and reduced costs as well as broader economic and social benefits. Consideration should also be given to documenting benefits that derive from the intersection of research results in related areas, such as safety and pavement research that leads to pavement design improvements that affect skid resistance. In cases where research in one area—for example, improved data analysis systems—benefits work in other areas, the full breadth of benefits should be accumulated over all actual applications. Better documentation of research benefits can help all affected parties, including stakeholders, decision makers, system owners, and users, to more fully understand the value of research results.

Participants noted the need for translating research results into user-friendly products, i.e., products that are more accessible to the full range of individuals and organizations responsible for implementing research results, in particular the state and local transportation agencies and private-sector companies and consultants who work for these agencies. Program owners and researchers need to know more about how these key research stakeholders become aware of research results, evaluate and accept them, and put them to use (see below).

Several breakout groups noted that highway research must be conducted to high standards of quality to ensure that it yields useful results and that limited resources are used effectively. Participants cited NRC studies and OMB reports stating that the best way to ensure research quality is to award research funds on the basis of open competition and subject the research to merit review. Every group agreed on the need for rigor in data collection, analysis, and evaluation as well as more evaluative research, echoing a major point made by the keynote speaker, Dr. Martin Wachs. He stated that “far too little is spent on evaluative research which might examine according to standard criteria of effectiveness, efficiency, and equity and in some depth the impacts of current programs or projects.” Participants agreed that more evaluative research should be undertaken to determine the effectiveness of transportation solutions and help guide future research direction. An example is research into the effects of highway safety countermeasures.

Finally, several groups noted the need for stronger links across education, training, and research.

Topic 2: Stakeholder Involvement

There was widespread agreement among the participants that highway research programs need stakeholder involvement based on a systematic, continuous process that includes early identification and inclusion of a broad group of stakeholders in program development and priority setting. Involving stakeholders goes beyond simply inviting them to participate; it includes having them become collaborators in the entire research and implementation process.

The experience of research program owners with stakeholder involvement varies widely. Moreover, some stakeholder groups have not been actively included in the past,

and others might find it difficult to participate as actively as they desire because of limited time and resources. Much needs to be learned about which stakeholders should be involved and when, and how they can be involved effectively.

Each breakout group recognized the need to involve a broader range of stakeholders than in the past; several groups concluded that the definition of affected parties has to be expanded because the effects of highway transportation are so widespread. Inclusion of major industry, trade, and professional organizations is critical, but expecting them to represent the wide range of stakeholders is inappropriate. The breakout group discussions agreed on three stages or levels of research program activity for key stakeholder involvement: the strategic level, where needs are identified and evaluated and research program plans are prepared; the project development level, where priority needs are translated into specific work task statements; and project oversight of research activity. Each breakout group agreed on the need for broad stakeholder involvement at the strategic level; however, as strategy is translated into programmatic goals and research tasks, stakeholder involvement must, of necessity, become more technical, narrowing potential input from nontechnical groups and individuals.

The National Strategic Safety R&T Process currently under development should yield useful information on how variations in stakeholder involvement at different levels can be achieved. On a related point, participants noted the need to recognize and address the variation in cultures (including researchers, technology transfer practitioners, users, and affected parties) across research areas and that stakeholder involvement activities may well vary accordingly.

Topic 3: Collaboration

The breakout groups offered a wide range of suggestions on this topic, possibly reflecting variations across technical areas and current states of practice in each. A common thread was recognition of the importance of leadership in collaboration efforts; participants urged FHWA to become a leader for national highway R&T, reflecting an RTCC recommendation in TRB Special Report 261. The National Strategic Safety R&T Process mentioned above includes significant attention to coordination and collaboration, as well as targeting research funds, developing quality assurance provisions, and preparing a dissemination plan with user-friendly dissemination instruments. The process could prove to be a useful model for other research topic areas as well.

Participants identified several mechanisms for improving program collaboration, including better interagency communications about research programs and projects, recognition and accommodation of the different cultures involved (see note above), development of incentives for more interagency pooled-fund research, and the strengthening of existing systems for sharing information about ongoing and completed research.

Participants supported current FHWA efforts aimed at strengthening and expanding its advanced research program.

Topic 4: Partnering

The breakout groups concurred that research partnerships can be advantageous and beneficial and that the hurdles involved can be addressed and mitigated. Key barriers to partnering include the lack of information about successful research partnerships, alternative models for creating and financing partnerships, and detailed examples of good research partnership practice. Several participants suggested that broader stakeholder involvement in the early stages of research program development might support the identification of potential research partners with common goals, inside and outside the traditional highway research community.

The breakout groups developed several other suggestions, including the following:

- Streamline the pooled-fund process to encourage more research partnering, including public–private partnering.
- Reduce the legislative and administrative barriers to research partnering, in part by providing relief from licensing and patent issues that can restrict participation by some groups.
- Improve partnering among agencies of the U.S. Department of Transportation.

RTCC SYMPOSIUM ON HIGHWAY
RESEARCH & TECHNOLOGY
Advancing National Highway Research and Technology:
Opportunities, Benefits and Challenges

National Academies Building
500 5th Street, NW
Washington, D.C. 20001
April 3 and 4, 2003

SYMPOSIUM OBJECTIVE

The objective of the symposium is to examine how well highway transportation research and technology (R&T) programs—conducted by the federal government, state governments, universities, and the private sector—are collectively addressing the full range of national R&T priorities. Issues to be examined will be how well the sum of the programs matches the needs identified by the National Highway R&T Partnership. Participants will represent the full range of stakeholders; attention will be given to how the highway R&T program owners can more fully incorporate the R&T needs of all stakeholders. Participants will be asked to help identify ways of improving the R&T process to achieve more complete coverage of R&T priorities through greater collaboration and cooperation among the various programs.

FINAL PROGRAM

Thursday, April 3, 2003

8:00 - 8:30 am *Continental Breakfast*

8:30 - 8:45 am *Welcome to participants*

8:45 - 9:00 am *Statement of Symposium Objective (C. Michael Walton)*

9:00 -10:00 am *Keynote Session: Looking to the Future: Trends and Emerging Issues*

Keynote Speaker: Martin Wachs, University of California at Berkeley

Panel: Robert Puentes—Brookings Institution

Ken Baker—Altarum Institute

David Greene—Oak Ridge National Laboratory

Jose A. Gomez-Ibanez—Harvard University

David Burwell—Prague Institute for Global Urban Environment

10:00 -10:15 am *Break*

10:15 -11:15 am ***Reauthorization: R&T Proposals and Perspectives***

Speaker: Kevin Womack, Utah State University

Panel: Rick Capka—Federal Highway Administration
Dennis Christiansen—Texas Transportation Institute
Wes Lum, CALTRANS
Jonathan Upchurch—ASCE Congressional Fellow
Anne Canby—Surface Transportation Policy Project

11:15 am -12:15 pm ***Stakeholder Involvement Issues: Perspectives of the Stakeholders***

Speaker: Irwin Feller, American Association for the Advancement of Science

Panel: Anthony Kane—AASHTO
Peter Kissinger—AAA Foundation for Traffic Safety
Neil Schuster—ITS-America
Audrey Straight—American Association of Retired Persons
Barbara Harsha—Governors' Highway Safety Association

12:15 – 1:15 pm ***Box Lunch Available***

1:15-2:30 pm *Addressing Needs, Opportunities, and Resources*

Speaker: Stephen Lockwood, Parsons Brinckerhoff

Panel: Elizabeth Deakin—University of California at Berkeley
Leanna Depue—Central Missouri State University
Philip J. Tarnoff—University of Maryland
Frank Francois—Consultant
Alan Pisarski—Consultant

2:30-2:45 pm ***Break***

2:45-5:30pm ***Breakout Sessions***

Breakout groups will be asked to elaborate on the research program mismatches (needs vs. resources); how stakeholder involvement can be increased; how collaboration among program activities can be improved; and how more partnering (through cooperative research and development agreements, etc.) can be achieved.

Group 1: Pavements

Co-leaders: Michael Ryan, H.W. Lochner, Inc. and Gale Page, Florida Department of Transportation

- Group 2: Planning and Environment
Co-leaders: Sandra Rosenbloom, University of Arizona and Katie Turnbull, Texas Transportation Institute
- Group 3: Operations
Co-leaders: Dennis Christiansen, Texas Transportation Institute (TTI) and Phillip Tarnoff, University of Maryland
- Group 4: Structures
Co-leaders: Paul Wells, New York State Department of Transportation and David Beal, TRB
- Group 5: Safety
Co-leaders: Timothy Neuman, CH2M Hill and Barry Sweedler, Safety and Policy Analysis International

5:30-7:30 pm **Reception** (*4th Floor Lobby*)

Friday, April 4, 2003

8:00-8:30 am **Continental Breakfast**

8:30-10:00 am **Breakout Sessions-Continue**

10:00-10:15 am **Break**

10:15-11:15 am **Exploring the Opportunities for the National Highway R&T Program**
Reports from the breakout groups; general discussion

11:15-11:45 am **Symposium Wrap-up: C. Michael Walton**

11:45 am **Adjourn**

RTCC Annual Operating Plan June, 2003

RTCC Description

The Research and Technology Coordinating Committee (RTCC) is a continuing study committee organized in 1991 under the auspices of the Transportation Research Board (TRB) and the National Research Council (NRC) and funded by FHWA. Its membership is drawn from top officials in state DOTs as well as university and private-sector research organizations; highway suppliers, contractors, and consultants; local government officials; highway users; and environmental and highway safety specialists.

Mission

The mission of RTCC is to provide advice and guidance to FHWA and, as appropriate, other organizations within the highway research community on the federal highway research and technology (R&T) program. The committee undertakes this mission on the basis of the collective knowledge and expertise of its members and seeks advice from others as appropriate.

Vision

The RTCC vision is a world class federal highway R&T program that responds to the needs of its customers and partners with a well-designed portfolio of research that addresses persistent problems, emerging issues, and advanced research topics. The committee believes that highway research should seek to improve productivity and safety and reduce costs in the nation's highway transportation system.

Plan Focus

This business plan identifies the highway R&T issues that RTCC—a voluntary advisory committee—believes it can effectively address in the next 12 to 24 months. Nevertheless, the committee focus can change on the basis of legislation, federal agency actions, stakeholder advice, and committee determination. The committee will revisit this business plan on an annual basis.

Program Issues Versus Management Issues

The plan recognizes that RTCC can provide advice and suggest programmatic changes for consideration by FHWA management. As appropriate, RTCC addresses how FHWA is managed and how FHWA manages its R&T program. When the committee observes fundamental gaps or mismatches in FHWA's management structure or activities, vis-à-vis FHWA's stated research program objectives, it will address them.

Situation Analysis

- ▶ Strengths
 - Commitment of staff and volunteer committee members
 - Commitment of FHWA management and staff
 - Connection to TRB and its activities and volunteers for technical assistance
 - Credibility of committee within the highway research community based on past reports
 - Private industry interest in federal R&T program activities
 - Stakeholder (users and affected parties) interest
 - Congressional interest in program and committee activities

- ▶ Weaknesses
 - Agencies other than FHWA do not seek RTCC advice
 - Resources limit the scope and duration of committee activities
 - Committee scope is limited to highway R&T issues

- ▶ Opportunities
 - Energize and focus the research community
 - Support long-term credibility for highway R&T programs
 - Develop sustained interest in stakeholder involvement
 - Increase rigor in highway R&T
 - Sustain a portfolio of highway R&T
 - Help establish credible estimates of the value of highway R&T
 - Examine methods of evaluation research

Independent Checks and Balances

As an NRC study committee, RTCC is subject to the NRC appointment process, member bias and conflict of interest reviews, and the NRC report review process. Our “client” is FHWA, and we periodically liaise with AASHTO. We invite other organizations and individuals to committee meetings as appropriate. Additional interactions with organizations are conducted on an ad hoc basis.

Strategic Initiatives

- ▶ **Next Major Committee Project. [Draft]** At its June 2003 meeting, the committee decided to examine the role of local (city, county, and regional) transportation agencies in implementing research results, as well as how they can be more effectively utilized as research program stakeholders.

- ▶ **FHWA Corporate Master Plan.** The committee will continue to monitor the FHWA initiative because it is the agency-wide response to the recent committee report, TRB Special Report 261.

- ▶ **Advanced Research Program Development.** The RTCC will continue to monitor FHWA's efforts to expand its program of advanced research, which were initiated in response to committee recommendations in TRB Special Report 261.
- ▶ **Stakeholder Involvement.** The committee will continue to review efforts aimed at more involvement of stakeholders in research program development and priority setting. It will also examine differences in approach and inclusion across different research program areas.
- ▶ **TFHRC Laboratory Assessments.** The committee will continue to work with FHWA in the planned assessments of the research laboratories at Turner-Fairbank Highway Research Center. This will involve providing advice regarding the laboratory assessment procedures and reviewing the potential assessment teams. Several committee members indicated their willingness to serve on the assessment teams, if their schedules permit.

Summary: The plan incorporates the elements of clear vision, goals and controls and initiatives directed at near- and long-term project activities appropriate to RTCC.

Dated: July 8, 2003