

Washington State Department of Transportation
Research Office Peer Exchange

Summary Report

May 9 – 12, 2005
WSDOT Headquarters
Olympia, Washington

Introduction

The intent of the Peer Exchange was to provide an opportunity for state research programs to learn from each other about research program management practices in order to improve their programs.

As a condition for approval of FHWA planning and research funds for research activities, a state DOT must periodically conduct a peer exchange of its research program and participate in peer exchanges in other states. The current rules do not define 'periodic' but the interpretation was to conduct one approximately every three years. WSDOT's last Research Office Peer Exchange was in 1998.

Process of the Peer Exchange

A state selects the topics discussed at the Peer Exchange. WSDOT's Peer Exchange focused on two topics: Project Selection and Outreach/Technology Transfer.

The WSDOT Research Office selected these topics because a new project selection process was recently applied and this was an opportunity to review and refine the process. The Research Office had sent out information to agency employees in a variety of ways and wanted to better understand what was useful and what could be improved.

The Research Advisory Committees and university partners were asked to actively participate as a way to review and strengthen the WSDOT Research Program. In addition, a summary briefing to the Research Executive Committee (REC) provided an overview of the feedback received. This also provided an opportunity for the REC to ask additional questions of the participants. Feedback from the RACs and Peer Exchange members follows. The agenda for the Peer Exchange is in Appendix B.

Members of the Peer Exchange included:

Monique Evans, P.E.

Peer Exchange Chair
Administrator, Office of Research and Development
Ohio Department of Transportation

Frank Darmiento, P.E.

Manager, Arizona Transportation Research Center
Arizona Department of Transportation

Rick Collins, P.E.

Director, Research and Technology
Implementation Office
Texas Department of Transportation

Christopher David Abadie, P.E.

Materials Research Administrator
Louisiana Transportation Research Center

Timothy A. Klein
Senior Policy Advisor
Research and Innovative Technology Administration
US Department of Transportation

Matthew E. "Matt" Moore, M.A.
Research Program Manager
Idaho Transportation Department

One member, Elizabeth Deakin, Director, University of California Transportation Research Institute, Berkeley, was unable to attend due to illness.

Other participants are listed in Appendix A.

Research Advisory Committee Feedback

Each of the four RACs was asked to participate in separate two-hour meetings with the Peer Exchange Team to give feedback on the WSDOT Research Program. The meetings were organized as 'interview' sessions. The Peer Exchange Team asked questions of the RAC members related to Project Selection. The questions asked of RAC members were:

Project Selection Process

1. Is the Project Selection Process achieving the intended goals of:
 - Identifying research that is of strategic value to WSDOT?
 - Addressing priority WSDOT research needs?
 - Improving awareness and support by agency management?
 - Involving the right people, positions, and organizations in the process?
2. What worked well in the research project selection process used in 2004?
3. What could be improved?

Outreach and Technology Transfer

1. Is the WSDOT Research Office a main source for information about innovative practices? What other sources do you use to get information?
2. Are WSDOT research program activities and projects communicated consistently and with the appropriate level of detail required by research customers?
3. Is information about current transportation research and innovative methods getting shared with the right WSDOT customers?
4. Are the current mechanisms in use to share information as Tech Notes, folios, the Executive Monthly Report, TRAC Biennial Report, web newsletters, websites, T2 Newsletters, seminars, implementation reports, announcements, and informal means like phone or e-mail meeting your needs?
5. What methods are most useful?
6. What other ways could technology be shared than those currently in use?

In addition, a questionnaire on technology transfer and outreach activities currently in use was distributed for RAC members to complete and submit to the Research Office.

Information Exchange with University Partners

An Information Exchange session was held with WSDOT's university partners. The session began with feedback from the universities before it was opened up to broader topics.

Because the universities participated in the project selection process, this was one of the elements they recommend be considered as part of the Peer Exchange. Mark Hallenbeck, University of Washington (UW) Washington State Transportation Center (TRAC) Director, provided input from professors. Vicki Ruddick, Assistant to David McClean, TRAC Director at Washington State University (WSU), also provided a written summary of comments received from professors. A few of the issues identified by the universities included:

1. The connection with universities through the TRAC agreement forced WSDOT to be more aggressive and forward looking. It pushed university faculty to deliver reports and to make them implementable. It also encouraged WSDOT to remember that most work gets done in the summer due to the academic calendar. The cultures of the universities and WSDOT are different, and TRAC helps make the gears mesh. Continued collaboration was emphasized.
2. When university expertise was needed in areas not traditionally served by TRAC, such as a recent example regarding an archeology site excavated during a transportation project, issues were apparent. The expertise existed in the university, but the question was how to find it, and how to connect with the people who needed the research completed.
3. There was a lack of clarity in how Principal Investigators are selected. In the past, the process was understood well by PI's who had been involved but not to new researchers. In the new process, research topics were identified, but from that point the process was confusing. Different groups approached this in different ways. The process of bringing all the prospective university researchers together in a pre-proposal conference was confusing. A key question: was the Research Office trying to determine if the university had the capability to do the work, and was that the selection process? Do the RACs now determine what is to be researched and which projects should go to the universities? It was suggested the Research Office clarify this process.
4. Historically, the guidance to go to universities first was deliberate, in order to foster engineering research and to recruit students into the engineering field. This may no longer be the main consideration, but the process to identify who is going to do the research needs to be more clearly defined.
5. The linkage between TransNow [the U.S. DOT regional University Transportation Center (UTC) for Region X] and the Research Office, and how TransNow projects get funded, was confusing and needed clarification.
6. The potential for regional input to the Research Office and to the universities was identified as a question that needed defining.

Program Setting at the time of the Peer Exchange

Over the past two years, substantial changes were made to the Research Project Selection process for projects funded with State Planning and Research (SP&R) funds. The Peer Exchange

occurred just after the new process was applied for the first time, and just as researchers were being identified to work on the selected projects.

Project Selection

Recent changes in the project selection included:

Developing Standing Research Advisory Committees (RACs).

Prior to this selection cycle, *ad hoc* committees of technical experts were invited to participate and rate research proposals. These committees included executives, Office Managers, and technical specialists. The committees had no responsibility beyond project selection.

The RACs were formed around large programmatic functions of the agency, rather than focused research topic areas. The four RACs and research topic areas they addressed were:

Committee	Research Topic Areas
Project Delivery	Bridges and Structures; Construction and Materials; Design and Safety; Environment
Operations	Intelligent Transportation Systems; Maintenance; Traffic; Safety; Security
Multimodal Transportation	Aviation; Bicycle and Pedestrian; Ferries; Freight; Planning; Public Transportation; Rail
Information and Finance	Accountability; Contracting; Information Management; Facilities; Finance; Programming

Each committee included managers responsible for functional areas, such as the State Maintenance Engineer and the Public Transportation Program Manager. This level of management was selected in order to better include decision makers in selection and funding issues related to research project identification and implementation of research results. Committees all had a multimodal focus but because highway issues predominate, a separate Multimodal RAC was created to improve opportunities for competition by other modes. The Information and Finance RAC was a new research focus area created to help understand and promote research needs related to a number of administrative issues for the agency.

Until the Peer Exchange, the RACs had met twice and were still developing identity and function. This change has been deemed to be positive and will add substantial value over time.

Limiting Identification of Research Needs to WSDOT Employees.

Previously, research projects were identified through an open solicitation for problem statements. The solicitation letter identified priority topic areas for proposed problem statements. The priority topic areas were reviewed, scored and ranked against a set of criteria by WSDOT functional area managers and then recommended by the Research Office and approved by the Research Executive Committee (REC). During information interviews, some managers expressed concern that projects did not address the highest priority projects for the agency but rather reflected research interests of the professors. Additionally, the Secretary of Transportation directed the WSDOT Research Program to become more strategic.

The new process shifted to an identification of research needed by agency personnel. The intent was to then conduct workshops with interested professors to discuss research needs and potential research approaches. The initial run of the process displayed some weaknesses. No open solicitation was conducted within the agency to let employees know research topics were being sought. Instead, needs were identified through a brainstorming discussion with RAC members. While the RAC members represented issues well, there were varying levels of detail and preparedness. Concerns had been expressed that the process excluded cutting edge research opportunities by leaving out contributions from researchers. This process change did not work quite as well as hoped. Priority research needs or topic areas within the RACs should be identified early and proposals that address those needs also should be broadly solicited. A process to solicit input on research needs that will better support the RAC identification of priorities was also needed.

Timing

As the project selection process was updated, the time between project need identification and project initiation was compressed. This was in response to frustration expressed by some managers at the length of time between project selection and results. It was also intended to address the need for universities to have a decision on project selection in time to identify research students for the fall semester.

This change did not deliver added value. Research needs were brainstormed in April and the projects were selected at the very beginning of January. Some researchers had been selected in January, but for most projects, particularly in new topic areas, researchers were not determined.

Identification of Principal Investigators

One process that did not change, but where suggestions for improvement were needed, was the selection of the Principal Investigators. In the past, professors that had solicited proposals were told that acceptance of a proposal did not mean that they would necessarily be selected to conduct the project. For example, sometimes three similar proposals were combined into one and a dollar amount set for the combined project. The process for selection had been one in which the Technical Monitor and Research Manager recommended selection and reached agreement with the Research Director.

The PI selection process was similar to the former, but because new topic areas were included where there was no experience with some professors or topic areas, confusion existed as to

whether the selection was now competitive, and what were the selection criteria. This feedback has exposed some weaknesses in the process that need to be addressed.

The project selection process needed to be tweaked and the Peer Exchange was an opportunity to gather input in order to formulate options for change. A notebook with more detail on the selection process was provided to the Peer Exchange members.

Technology Transfer/Outreach

Technology transfer and outreach activities have not changed dramatically recently, nor were they topics that had been discussed with the RACs. This topic was selected because it was timely for the WSDOT Research Office to review and improve these important functions. Customers were unfamiliar with many of these activities. The Peer and RAC member input was helpful in defining steps to improve the effectiveness of technology transfer and outreach efforts.

Outreach activities discussed included:

- Research report distribution
- Project specific seminars
- Research Folios
- The Research Office website
- Technical Notes
- The biennial report
- Executive monthly report
- Implementation report
- A quarterly article in the LTAP newsletter
- Email announcements

The information provided from the Peer members about their programs was valuable. This information was a good foundation for the discussions and was shared with the RAC and REC members.

Summary of Feedback

The Peer Exchange Team members reflected on feedback received from the RACs and university representatives, and provided summary comments. While not a required element of the Peer Exchange Program, at the request of the WSDOT Research Director, the team also identified strengths and opportunities for improvement to the Research Project Selection process.

Change is seldom easy, and this change in the research project selection process was no different. Although some RAC members seemed to question the need for change, others did not see the full potential of research as an immediate asset to their group. The new process allowed for a wide distribution of topic areas and (for the most part) seemed to identify quality research needs. It was suggested several times that the process could have provided a better method of defining the individual problem at some point in the process prior to the RAC vote, as the members did not feel that they had enough data to judge or prioritize problems. The Research Office must identify available university expertise to meet the new breadth of priorities; ideally this would be done prior to the RAC meetings. The Research Office should also continue to

encourage the generation of needs and problems from all participants, including RACs, WSDOT staff and university researchers in order to insure a vibrant, yet diverse, program. Regardless of the need or reasons for change, the opportunity this change provided was one of awareness: awareness of the need for product-oriented research and an awareness of a larger goal than those in individual technical areas.

The future of research at WSDOT requires increased awareness and communication, broader education, strategic program direction, diversification of project types and products, and metrics to assess, select, and implement successful projects and programs. Project selection must be strategic in terms of leveraging limited funds, staff time, and operation in a dynamic environment. The RACs must bring new ideas to the process; continue to learn about interdisciplinary approaches, and work to continually improve the process. Supporting partners should have clear roles and responsibilities, along with support for education and investment in Washington's future. A key decision in the near-term was to evaluate whether the research program will undertake doing needed research in all areas, or support targeted areas of focus to narrow limited funds toward key assets that have short, medium and long-term value to the agency.

Strengths

The changes in the WSDOT Research Program are headed in the right direction, but suffering some minor understandable growing pains. Some of the strengths identified through the meetings were:

Scope of the Program

1. The new selection process nurtured broader interest in research within the agency.
2. The interdisciplinary approach facilitated decisions in the best interest of WSDOT.
3. The Program funded innovative research.
4. The process promoted broader and more diverse identification of needs and problem statements.
5. Funding was distributed to meet agency priority needs.

Organization of the Process

1. The level of management involved in the whole program was good.
2. The relationship with universities was strong in some areas.
3. Inclusion of regional representation was good and key to implementation of research results.
4. The base level knowledge of RACs regarding the research program was varied and has improved, and the structure of the RACs promoted continued knowledge and use of the research program.
5. Expanding the program to include the full breadth of WSDOT groups was a valuable and essential element of the research program.

6. The experience of working together to develop problem needs then scoring and prioritizing them, challenged the new, diverse RACs.
7. The Research Office staff are committed, talented, passionate, innovative, and responsive to customer needs. This was important to provide leadership and development of the research program in WSDOT's dynamic environment.

Process

1. RAC members in new research areas appreciated the opportunity to participate and have their issues considered.
2. The process was more visible and open.
3. Opportunities to make suggestions were plentiful throughout the process.

Opportunities for improvement

Program Scope

1. The types of activities in which the Research Office should be involved needed better definition. What should the office focus on: basic or applied research, development activities, or technology transfer? On what topic areas should the Research Office focus?
2. Customer expectations related to available resources and timeliness of research results needs to be managed.
3. How the Research Office could better help the agency meet its goals needs to be determined.
4. The resources to meet short-term research needs must be identified and solicited. This might include programs such as the Student Studies where students are selected and given small grants to do research projects.
5. WSDOT management needed to clarify the desired direction of the Research Office through identification of strategic objectives for research.
6. The size of Research Office budget vs. the agency's research needs for better strategic alignment (demand exceeds capacity) must be assessed.
7. The types of products the Research Office provided needs to be identified and tied to expectations and outcomes with associated time requirements (See Research Activities/Products Table 2) for better customer awareness.
8. Funding should be scalable to context of business needs (see Research Activities/Products Table 2) and should focus on participation, development, education and outreach components.
9. Pooled fund investments should be used to maximize asset management and development.
10. Transferring the operating costs from inside the research budget to 25% SP&R funds, as a takedown to maximize available research funding should be considered.

11. The demand for research always exceeds the program’s capacity; this must be kept in mind.
12. “Other people’s” money, time, research and intellectual capital need to be used to maximize effectiveness and efficiency.

Organization

1. A chair for the Information and Finance RAC that can champion their needs must be identified.
2. Membership on REC needs to be reviewed to ensure appropriate representation of agency interests. Are all executives responsible for priority research areas on the committee?
3. Rotating the regional administrators on the REC/RAC needs to be considered for broader input and increased ownership.
4. Opportunities to better align the University Transportation Center (TransNow) program with WSDOT’s program research need to be evaluated.
5. The REC needs to stay abreast of research program issues and provide appropriate direction and guidance.
6. The RACs need to stay engaged with the research program through regular meetings (2-4 times a year) and by participating in research study activities.
7. The Table of Roles and Responsibilities with the WSDOT Research Process (Table 1), when completed, can serve as communication tool and a reference for all WSDOT staff on the research process and the specific requirements of participants.

Table 1. Roles and Responsibilities within the WSDOT Research Process

Individual/ Organization (Not in any particular order)	Research Development Roles and Responsibilities	Research Selection Roles and Responsibilities	Research Implementation Roles and Responsibilities	Technology Transfer and Outreach Roles and Responsibilities	Research Education Roles and Responsibilities
WSDOT Research Program Director WSDOT Research Program Manager WSDOT Technical Monitor WSDOT Technical Advisory Committee WSDOT RAC WSDOT REC Principal Investigator TransNow TRAC TRB AASHTO SCOR AASHTO RAC					

Note: The above table needs to be populated with bullet-point detail information from the Research Procedures Manual, with added detail from the folios that is not included in the manual. Where information is lacking, those areas need to be identified and completed with pertinent information and simplified wherever possible.

Process

1. The selection criteria need to be simplified and aligned with the level of detail provided in the research need statements.
2. Appropriate lead times needs to be factored in, while remaining aware of what research can do.
3. The information needed to make decisions at various points of the research process needed definition.
4. Presentations by the technical experts to RAC/REC to clarify research problems are needed.
5. The number of items passed to the REC for review needs to be reduced.
6. The university role in project selection needed to be reassessed.
7. The educational goals of the research program as a criterion for project or principal investigator selection needed clarification.
8. Agency technical expert committees needed to be used to identify and narrow research needs in their area of expertise.
9. The expertise of the Research Managers within the Research Office needed to be used to screen and develop research ideas.
10. A step in the process should be added to solicit for research needs from within the agency to better incorporate bottoms-up needs statements.
11. The Research Director needed more discretion to quickly meet emergent research needs within the agency.
12. The program needed to provide flexibility in programs/processes to meet different customer needs and respond in a timely manner (see Research Processes Table 2).
13. A process to deal with priorities across disciplines needed to be developed.
14. The seminars/workshops needed to be reconstituted to refine problems statements.
15. More information on how NCHRP, Pooled Fund, etc. fits into project selection process/Research Program needed to be provided.
16. It was essential to have top-down Business Directions/Washington Transportation Plan to guide the process alongside a bottom-up process to generate research problem statements, which allowed the RACs to determine priorities. A communication linkage between the RACs and the REC needed to be created.
17. Metrics such as cost-effectiveness are needed to assist in ranking research priorities (e.g., innovation-orientation, interdisciplinary/diversity of clients involved/affected, business needs fulfillment, ability to implement, etc.)
18. Clarify and define the metrics by which research projects should be selected.

19. The needs and selection process should focus on research as an investment in the past, present and future: short, medium and long-term (think short term problems to get at long term goals and principles/values).
20. Diversification of types of research (see Research Activities/Products, Table 2) should include the range of quick to basic research types, recognizing range of maturity of possible topical areas.
21. Problem statements that leverage value through other efforts are critical due to budget and time constraints.
22. The RAC makeup should allow rotation of regional and discipline experts to ensure continuing education about research process, timeframes and outcomes.
23. The narrowing/short listing of research projects should happen prior to RAC meetings.
24. The project selection process should narrow down the number of potential projects to a small enough number so that all the RACs have presentations and a dialogue on each proposed project during the final selection process.
25. The intent of new process to focus on openness and flexibility, combined with education and information dissemination in a dynamically changing work environment should be preserved.
26. Projects should “help me get the job done,” not do the jobs for me.
27. Define roles and responsibilities alongside areas of research expertise/interests for TRAC, TransNow and LTAP both from departmental and external perspectives.
28. Maintain a running list of research needs with quarterly RAC submittals.
29. Consider an annual solicitation process to replace biennial research program to reduce development to selection of research to implementation process timeframe.
30. Use RACs to evaluate new external research for value and applicability.

Marketing, Technology Transfer and Outreach

1. The RACs need to be educated on funding opportunities and tools across modes.
2. Explain the opportunities to address different needs in different ways (i.e., opportunities for flexibility).
3. Communicate various types of research activities (see Research Activities/ Products Table 2).
4. Make presentations to RACs on research progress and results.
5. Implementation plan component should address business needs, information/ technology transfer and training (e.g., utilize MNDOT Ten Questions approach).
6. Review the implementation process with the RACs and develop future strategies, including consequences of not following through on implementation plans and management for research.
7. Use unfunded problem statements to seek other funding opportunities.

8. Continue to implement and refine the office marketing plan.
9. Know and define when research changes to become a maintenance or ongoing activity where information/learning is not the primary outcome. A one-page summary of what research is, and is not, should be developed.
10. The Research Office should consider developing an ongoing demonstration of the benefits/outcomes of research.
11. RACs and Executive Management need to know the potential for other funding sources (e.g., Center for Disease Control, National Academy of Science, Gas-tax revenues for project-specific needs, Region IV Research Advisory Committee pooled funds, etc.).
12. A one-page summary of the available research types/approaches for development, selection, funding and implementation needed to be created.
13. The Table of Research Activities/Products (Table 2) is an example of the different types of research and the intended purpose, requirements, and use of each.

Table 2. Table of Research Activities/Products

Type	Time	Expectations	Outcomes	Complexity	Client Role Response	Document Requirements	Implementation Requirements
White Paper	0-6 mon	Staff research Low cost Tech memo	Information Additional directions	Brief overview Not specific	Recipient	Educational for reader/user Informs business needs	Circulation Discussion
Synthesis	3-18 mon	Literature review Connected to science	Opportunities and constraints Applicable case studies	Innovation/ case study documentation	Champion	Reference tool Educational Current info for reader/user	Circulation Discussion Framework for decision making
Applied Research	1-3 years	Problem solving orientation; Statistically supported	Field testing: products, methods, decisions	Very specific	Champion	Connects to future focus areas	Training Framework for decision making Apply technology
Basic	3+ years	Science Complex work plan	Path breaking Research and development	Broad and represents state of science	Champion	Peer review	Training Next steps research

Peer Exchange Benefits

The intent of the Peer Exchange was to provide a forum to share management practices amongst Research Programs. Each participant identified activities that they might take from the exchange and apply to their program. This section summarizes the take home items for each Peer Team Member.

*Ohio Department of Transportation
Monique Evans, P.E.*

Take home items:

1. The exchange emphasized the importance of having strategic direction even in an environment that needs to respond to issues quickly. This is especially critical when the potential research areas have been expanded but the funding to address them has not. Ohio's process provides strategic guidance from agency leaders in addition to critical input from technical experts and process owners. We will continue to foster this "top down" and "bottom up" approach to identify and address critical research needs for the department.
2. The matrix proposed by Idaho is a good one-page summary of research options that will be useful to our customers. It provides a clearly defined process for addressing short-term, mid-range and long-term research. We will utilize a similar summary to market options available to our customers.
3. Our ability to provide quick synthesis-type studies is not fully understood by all of our customers. We will highlight this in our marketing/communication plan.
4. Our project selection process encourages ideas from District offices, but requires co-sponsorship by the Central Office program area responsible for policy development related to the idea. I will investigate modifications to our process that permit research to be sponsored exclusively by a District when appropriate.
5. Since Ohio recently moved from an annual to a biennial program, a review of the timelines used in Louisiana and Washington will be done and then compared with Ohio's to identify opportunities to compress project delivery.

*Louisiana Transportation Research Center
Christopher David Abadie, P.E.*

It has truly been a pleasure to participate in this peer exchange. With this being my first visit to the Pacific Northwest, I must complement you on your beautiful city, rain and all. I also complement you, not only on your research team, but also on a vibrant and interesting group of managers, with diverse needs.

Take home items:

1. Research problem identification process: Louisiana currently operates in a bottom-up selection process with committees organized by expertise or topic area similar to WSDOT's old selection process. WSDOT's new process offers a width of technical expertise grouped together forming a unique product-focused group. This provided an interesting exchange and encouraged members to examine needs outside their personal technical expertise and also encouraged the team members to consider the Department's broader goals in the research selection process.
2. Optimization of Pooled fund process: WSDOT has been able to leverage the pooled fund process to effectively access technical abilities in other states and, in turn has provided a resource for many states through the pooled fund process. I would suggest the WSDOT

research group as a model state for such participation. Texas is also a source for many pooled fund projects.

3. Student programs: Arizona and Ohio have a small budget item program and set aside, nominally \$100,000 per year, for small projects worth approximately \$10,000 to \$15,000 each. This idea allows for quick turn around and direct student or Principal Investigator access to DOT user groups. Use of the RAC and REC meetings to identify problem statements that may be of national interest and well suited for NCHRP or FHWA study is yet another idea I will take home.

Texas Department of Transportation

Rick Collins, P.E.

Take home items:

1. While I am not going to consider “major” changes to our project selection process at this time, I am going to look at ways to more closely focus on projects that meet the priorities of TxDOT.
2. I will look at ways to accomplish “quick turnaround” projects (for example, set aside dollars specifically for this purpose).
3. I will be able to use some of the logistical things I saw here for a Texas Peer Exchange.
4. I will continue to look for ways to get research results “advertised” and implemented.
5. I will discuss our research program from a strategic viewpoint with our research oversight committee this July.
6. I will remember that the Research Office is there to help TxDOT meet the needs of the Transportation system in the most effective manner.

Arizona Department of Transportation

Frank Darmiento, P.E.

Take home items:

1. There may be benefits in increasing the dialogue between Arizona universities and ADOT with respect to research opportunities.
2. The implementation strategies for WSDOT and other participants in the Peer Exchange can be applied at ADOT.
3. The Exchange provided new ideas for improving the ADOT research project development and selection process.
4. The Exchange solidified my view of the importance of the ADOT library to the research program.
5. The Exchange reminded me that ADOT needed to update its research program procedures documentation.

USDOT/RITA

Tim Klein

Take home items:

1. I will pursue a better understanding of state transportation data needs.
2. I will pursue information channels between states and other federal agencies on key topics, e.g. EPA, Corps of Engineers, and Bureau of Land Management.
3. I will pursue state links to the national Geospatial One-stop System.
4. The Research program can provide direct support to state DOTs in developing/improving the University Transportation Center relationships.
5. There is a need to create/improve information “push” systems to provide Federal research results to states (and to help states know what each other is doing).
6. “National” research needs should be better defined so that states either do not fund, or fund projects in concert with the Federal government.
7. I will pursue the improvement of Pooled Fund processes and increased Federal involvement/funding.
8. There is a need to provide transportation systems assessments to inform state investment priorities.

Matthew E. “Matt” Moore, M.A.

Research Program Manager, Idaho Transportation Department

Take home items:

1. I will use the move toward “research as an asset that requires investment” philosophy, considering short, medium and long-term, alongside past, present and future needs.
2. The funding cycle needs flexibility as to time and content, as well as outputs
3. The demand for research products and outputs always exceeds the capacity.
4. Research needs to “help them get the job done, not do the job for them.”
5. The Minnesota Ten Questions for implementation-focused on measurable outcomes, focus areas, training, etc., are useful.
6. It is important to always remember to leverage Other People: money, time, research and intellectual property.
7. It is important to define roles and responsibilities, alongside a range of research options, to manage expectations.
8. Strategic direction comes from the top-down, while research needs come from the bottom-up; research gets done in the middle.
9. The University programs should be tailored to generate both functional work products and to develop good employees.
10. Know when research changes to become maintenance or another activity where information/learning is not the primary outcome.

Appendix A. Peer Exchange Attendees

Research Executive Committee (REC)

John Conrad, Chair, Assistant Secretary, Engineering and Regional Operations, WSDOT
Gummada Murthy, Director, Maintenance and Operations Programs, WSDOT
Don Nelson, Director, Environmental and Engineering Programs, WSDOT
Don Senn, North Central Regional Administrator, WSDOT
John Sibold, Director, Aviation Division, WSDOT

WSDOT Research Office Staff

Leni Oman, Director of Transportation Research, WSDOT
Doug Brodin, Traffic, ITS, and Freight Research Manager, WSDOT
Tom Hanson, Multimodal Research Manager, WSDOT
Rhonda Brooks, Environment, Design, and Security Research Manager, WSDOT
Kim Willoughby, Materials & Construction, Bridge & Structures, and Maintenance Research Manager, WSDOT
Kathy Lindquist, Information, Finance, and Planning Research Manager, WSDOT
Rebecca Christie, Acting WSDOT Librarian, Research Office, WSDOT
Sarah Smith, Research Assistant, Research Office, WSDOT
Stephanie Darnell, Office Assistant, Research Office, WSDOT
Wendy Harris, Peer Exchange Note Taker, Research Office, WSDOT

University Partners

Mark Hallenbeck, Director, Transportation Research Center (TRAC) University of Washington
Vicki Ruddick, Assistant to David McLean, Director, Transportation Research Center (TRAC) Washington State University.

Federal Highway Administration (FHWA) Washington State Division Office Staff

Gary Hughes, Team Leader, Regional Program Delivery, Washington State Division, FHWA
Mike Brower, Transportation Mobility Specialist and I-5 Reconstruction Mega-Project, Program Delivery Team, Washington State Division, FHWA
Sid Stecker, Statewide Transportation Planner, Washington State Division, FHWA

Information and Finance Research Advisory Committee (RAC)

Daniela Bremmer, Director, Strategic Assessment Office, WSDOT
Roger Horton, General Manager, Transportation Data Office, WSDOT
George Spencer, Director, Geographic Services Office, WSDOT
Rose This, Manager, Information Technology Office, WSDOT
Kermit Wooden, Director, Human Resources Office, WSDOT

Multimodal Research Advisory Committee (RAC)

John Sibold, Chair, Director, Aviation Division, WSDOT

Barbara Ivanov, Director, Freight Strategy and Policy Office, WSDOT

Ralph Wilhelmi, Regional Team Leader, Policy and Regional Coordination Office, WSDOT

Cathy Silins, Manager, Public Transportation and Commute Options Office, WSDOT

Kirk Fredericksen, Planning and Policy Coordinator, Rail Office, WSDOT

Paula Reeves, Local Planning Liaison, Highways and Local Programs Division, WSDOT

Project Delivery Research Advisory Committee (RAC)

Don Nelson, Chair and Director, Engineering and Regional Operations Division, WSDOT

Ron Panaanen, Assistant Region Administrator, Northwest Region, WSDOT

DeWayne Wilson, State Bridge Management Engineer, Bridge and Structures Office, WSDOT

Linda Pierce, State Pavements Engineer, Materials Laboratory, WSDOT

Ken Smith, Deputy State Design Engineer, Design Office, WSDOT

Ken Stone, Resource Programs Branch Manager, Environmental Services Office, WSDOT

Tom Bertucci, Terminal Maintenance Program Manager, Washington State Ferries, WSDOT

Operations Research Advisory Committee (RAC)

Gummada Murthy, Chair, Director, Maintenance and Operations Program, WSDOT

Nicole Patrick, Operations Program Development Manager, WA State Ferries, WSDOT

Chris Christopher, State Maintenance Engineer, Maintenance Office, WSDOT

Dave Olson, Program Manager, Safety Office, WSDOT

DeWayne Wilson, State Bridge Management Engineer, Bridge and Structures Office, WSDOT

Jugesh Kapur, State Bridge Design Engineer, Bridge and Structures Office, WSDOT

Pat Morin, Systems Analysis and Priority Programming Manager, Systems Analysis and Program Development Office, WSDOT

Dave McCormick, Assistant Regional Administrator, Maintenance, Northwest Region, WSDOT

Dan Floyd, Assistant Maintenance Engineer, South Central Region, WSDOT

Scott Zeller, Acting State Traffic Engineer, Traffic Office, WSDOT

Pete Briglia, Director, ITS, Seattle, WSDOT

Appendix B. Peer Exchange Agenda

Washington State Department of Transportation
Research Office - Peer Exchange Agenda
Tuesday, May 9-13, 2005
WSDOT Headquarters Bldg
310 Maple Park Ave. SE, Olympia, WA

Monday, May 9th
(2F22)

Shaman Conference Rm.

6:00 pm Dinner

Tuesday, May 10th

Rainier Conference Rm. (2F22)

8:00 Welcome

Leni Oman

Team Member Introductions

Monique Evans – Administrator, OH
Frank Darmiento – Manager, AZ
Elizabeth Deakin – Director, UCB, CA
Tim Klein – Senior Advisor, USDOT

All

Skip Paul – Assoc. Director, LA
Matt Moore – Manager, ID
Rick Collins – Director, TX

Exchange Overview and Topics

Leni Oman

Research Process
Outreach and Technology Transfer

Overview of State Research Programs

ODOT - Monique Evans
LTRC – Chris Abadie
ITD - Matt Moore

ADOT - Frank Darmiento
TXDOT - Rick Collins
WSDOT - Leni Oman

Rhonda Brooks, Environment, Design, Security
Kathy Lindquist, Information, Finance, Planning
Kim Willoughby, Materials, Construction, Bridge, Structures, Maintenance
Tom Hanson, Multimodal
Doug Brodin, Traffic ITS and Freight

10:00 Break

10:30 Multimodal RAC

John Sibold, Chair, Director, WSDOT Aviation
Elizabeth Robbins, System Planning
Mike Cummings, Urban Planning
Ray Deardorf, Washington State Ferries
Sid Stecker, FHWA

Barbara Ivanov, Freight
Cathy Silins, Transit
Ken Uznanski, Rail
Paula Reeves, Bike/Pedestrian

12:30 Lunch

2:00 Information and Finance RAC

Amy Arnis - Strategic Planning & Programming
Daniela Bremmer - Strategic Measurement
Greg Selstead - Project Control & Reporting
Rose This – Finance and Administration

Fred DeBolt - Communications, MOP
Azim Sheikh-Taheri - Northwest Region
Roger Horton - Transportation Data Office
George Spencer - GeoServices

4:00 Break

10:00	Break	
10:30	Discussion and Write Draft Report	All
12:30	Lunch	
2:00	Presentation to WSDOT Research Executive Committee (May move to Friday)	
	Doug MacDonald	John Conrad
	Don Nelson	Gummada Murthy
	John Sibold	Don Senn
	Don Wagner	
4:00	Adjourn	

Participant Research Program Descriptions

The following information describes the research programs of the participants involved in the Peer Exchange. This information was intended to help participants compare and contrast their programs. It was also intended to help research program customers interviewed understand the differences between the state programs and understand the context of input from all the Peer Exchange members.

Washington State Department of Transportation, Research Office.....	Page 22
Ohio Department of Transportation, Office of Research and Development	Page 29
Arizona Department of Transportation, Arizona Transportation Research Center.....	Page 42
Idaho Transportation Department, Research Program.....	Page 45
Louisiana Transportation Research Center.....	Page 46
USDOT Research and Innovative Technology Administration.....	Page 48
Texas Research and Technology Implementation.....	Page 51

WSDOT PEER EXCHANGE INFORMATION —WSDOT

Name: Leni Oman, Director, Transportation Research

Organization: Washington State Department of Transportation (WSDOT), Research Office

WSDOT's Research Program includes:

- SPR funded research projects – these projects are selected on a biennial basis with input from managers in the Department and are approved by the Research Executive Committee
- Transportation Pooled Fund projects - funded primarily with SPR funds but not exclusively. Project decisions are made by the Director of Transportation Research with input from content offices, the Research Manager, and the Executive responsible for the topic.
- Client Sponsored Research – the Research Office assists with contracting and managing projects as requested but many projects are also conducted by other Offices. Projects are identified at the discretion of the funding Office.
- Federal Participation – the Research Office facilitates submission of research problem statements and ratings for activities such as the Cooperative Research Programs managed by the Transportation Research Board and other federal program requests. The Research Office also manages research projects funded with federal earmarks.

Budget and funding sources:

- Federal SPR (2) - funds \$ 5,428,313 million biennially
- State match – approximately \$1,140,000 million biennially. Does not include in-kind services.
- Client sponsored research -The 2003-05 biennium contributions managed by the Research Office totaled over \$8.5 million. This includes projects from other WSDOT departments and includes federal earmark projects managed by the Research Office.

Number and types of staff:

1 Director of Transportation Research
1 Research Administrative Assistant
5 Research Managers
1 Senior Library Information Specialist
1 Part-time Library Associate

Temporary staff are hired as needed and funding allows. We will also hire an additional part time Library Information Specialist and a full time Fiscal Analyst in the next biennium.

Number and type of active projects:

Applied	68
Basic	13
Policy	19
Other	4

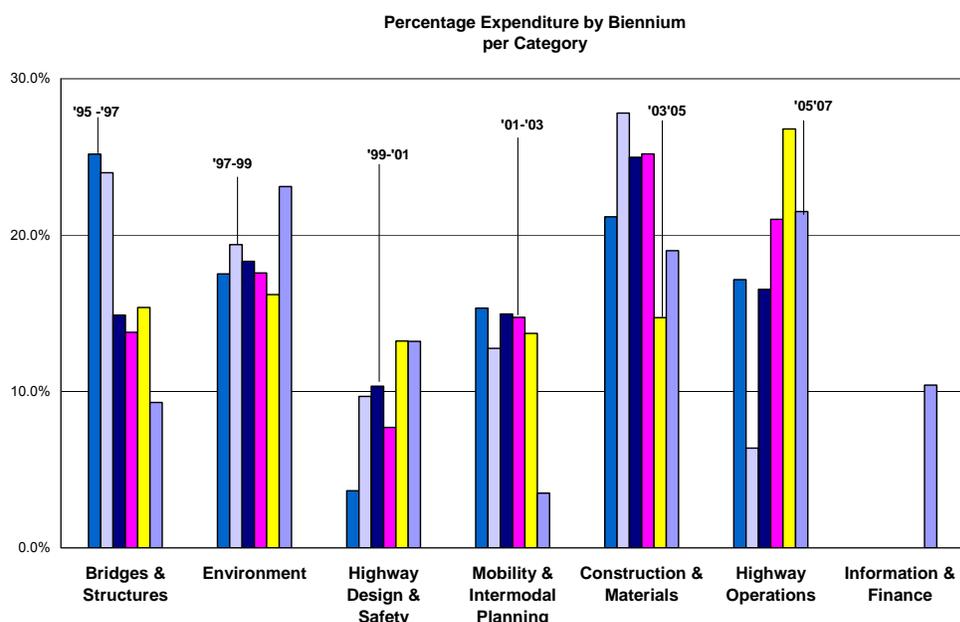
In the current biennium, the Research Program has managed approximately 104 projects SPR and Client Sponsored Research projects. In addition, WSDOT is participating in 26 Transportation Pooled Fund Projects.

Pooled Fund Studies

Pooled fund projects are supported by the WSDOT Research Office at about \$150,000 annually. The typical contribution is \$20,000 dollars annually. Each year the research managers review the list of obligated and committed pooled fund projects and made recommendations to the Director and the Research Advisory Committee on priorities for funding that year.

Project funding categories (i.e. pavements, planning, safety, multimodal, freight, bridge, etc.)

Project funding has been distributed to functional areas at the following comparative levels over the past six biennia:



The 05-07 SPR projects were selected by newly established Research Advisory Committees (RAC). Funding was allocated to committees based on the topics covered and the history of funds allocated to those topic areas. The following table summarizes the funding and number of projects per RAC:

Emphasis Area	Number of Projects	Budget
Multimodal Transportation	4	\$360,000
Project Delivery	9	\$1,035,000
Information and Finance	2	\$225,000
Operations	4	\$540,000

RESEARCH PARTNERS

WSDOT Research Executive Committee

The Research Executive Committee is a consultative oversight group for all of WSDOT's research. Its purpose is to set the strategic direction for the solicitation and funding of research proposals.

WSDOT Research Advisory Committees

The WSDOT Research Advisory Committees, of which there are four in the areas of Planning and Multimodal, Operations, Information and Finance, and Operations, are comprised of WSDOT managers and FHWA representatives. The Research Advisory Committees provide guidance to the Research Office and identifies, prioritizes and recommends research problem statements to be considered for funding.

Technical Monitors

Technical monitors are WSDOT technical experts who work closely with Research Managers to direct research project outcomes.

Technical Advisory Committees

Technical advisory committees include representatives from WSDOT, the FHWA, Universities, local governments and other interested individuals and may be created to advise on individual research projects.

Washington Transportation Center (TRAC)

Since 1983, WSDOT has had an agreement with the two research universities in the state which form the Washington Transportation Center (TRAC). The majority of WSDOT's research is conducted at these two universities through TRAC. A Master Research Agreement with each university provides the mechanism to develop Task Agreements for each research project, thereby streamlining the contracting process. TRAC acts as a liaison, connecting those who need applied research at WSDOT with those best suited to conduct it at the universities. Each university has a TRAC Director and the WSDOT Director of Transportation Research Serves as the Executive Director of TRAC.

Transportation Northwest (TransNow)

TransNow is one of ten regional research centers of the National Transportation Centers Program. A consortium of six universities from four northwest states cooperates in research and education efforts, with the University of Washington as the lead. The focus is on "Operations Management and Planning." TransNow and WSDOT frequently leverage each other's funding in order to augment research projects. The WSDOT Research Director is a member of the TransNow Board.

Transportation Research Board (TRB)

The TRB promotes innovation and progress through transportation research. The WSDOT Research Director serves as the state TRB State Representative and acts as a liaison to represent the interests of WSDOT.

AASHTO Standing Committee on Research and Research Advisory Committee

The AASHTO Standing Committee on Research (SCOR) provides oversight to the transportation research community and develops research for the National Cooperative Highway Research Program (NCHRP). The Research Advisory Committee (RAC), including

research managers from each state, provides input on research needs and priorities. The WSDOT Research Director serves on the RAC.

Others

Researchers include private consultants, university professors and students, other government agencies and occasionally WSDOT staff.

RESEARCH PROGRAM AREAS

Bridges and Structures
Construction and Materials
Design and Safety
Environment
Traffic and Intelligent Transportation Systems
Mobility and Intermodal Planning
Information and Finance

RESEARCH SELECTION PROCESS

See separate attachment

RESEARCH IMPLEMENTATION PROCESS

Research implementation within WSDOT is described in the Procedures Manual. WSDOT periodically publishes a Research Implementation Report, documenting research implementation provided by Technical Monitors. Research Project Managers collect research implementation reports from Technical Monitors upon completion of Research Projects in their respective emphasis area(s). One Research Manager is designated as Research Implementation Manager and compiles, edits, and documents research implementation activities into a report that is completed biennially. Research Implementation is also documented in the TRAC Annual Report as well as in the Monthly Executive Report.

Research must advance the state of knowledge or document new procedures. The research Implementation Plan must document how will the findings be fully implemented in the department. This could include further research, field tests, training programs, manual revisions, specification changes, policy recommendations, or the purchase of equipment and software.

The implementation report must also document the value added aspects of the research to WSDOT. It must describe the tangible benefits of the research to the department. Has it resulted in a new product or procedure that is more cost effective than current practice? Has it improved the capability of department staff? Has it advanced the state of practice in an emphasis area? Did it result in a measurable cost benefit?

In the 2003-05 biennium, the WSDOT Research Program began to incorporate research implementation questions into proposal development. These questions will be incorporated into proposal development for all SPR funded projects in the 2005-07 Research Program.

Technology transfer and outreach activities

- All Research Final Reports are distributed to all state research programs, national libraries, repositories and other interested entities. WSDOT publishes research findings in a consistent publication format and distributes to a wide audience of potential users.

The summary of project implementation is reported in the Monthly Executive Report as well as the Biennial Implementation Report.

- An Executive Monthly Report is prepared each month for the Chief of Staff and distributed to agency executives, the Federal Highway Administration Division contact for research, members of the Research Advisory Committees, and university TRAC Directors. The monthly report summarizes completed research projects, new starts, key project progress, program news, and library activity.
- The WSDOT Research web site is available at <http://www.wsdot.wa.gov/Research/>. It includes a description of the research program, copies of recent research reports (older reports are being digitized to load on the web site), a form for submitting research proposals, copies of the quarterly newsletters, information about the WSDOT library and access to the library catalogue. The web site includes the Research Procedures Manual, office newsletter and a collection of standard forms, white papers and links to a variety of useful sites and other information. The WSDOT librarian maintains the web site with assistance from the WSDOT Communications Office.
- A TRAC Biennial Report is prepared every two years and summarizes many of the research activities conducted at the University of Washington and Washington State University – primarily but not exclusively with funding from WSDOT.
- Research folios are prepared as a means to give a brief overview of aspects of the WSDOT Research Program. Folios have been prepared to describe Transportation Research, WSDOT Research Management, and Transportation Research Programs. Audiences vary for each folio but may include the Congressional Delegation, agency employees, university professors, and the public.
- An Implementation Report is compiled and submitted to the Research Executive Committee. The last report was completed in 2003. WSDOT research managers track implementation with project technical monitors and prepare an implementation report at the end of the project that is summarized and reported in the Executive Monthly Report.
- Workshops/Seminars: At the conclusion of selected research projects, a workshop or presentation may be conducted to explain the research and discuss the findings.
- LTAP Newsletter: The WSDOT Technology Transfer (T2) Center quarterly newsletter includes a section from the Research Office in each publication. The articles are prepared by Research Managers and Technical Monitors and focus on projects that may be of value to local government.
- Visual Media: Statewide teleconferences and videotapes are prepared and conducted on an as-needed basis. The WSDOT Research Program would like to begin video seminars to distribute research progress and results similar to those conducted by Caltrans.
- Conferences and Panels: Researchers and WSDOT staff attend conferences in Washington and other states to discuss results of the WSDOT research. Examples include: the annual Transportation Research Board meeting in Washington, D.C. Other WSDOT staff participate in NCHRP panels and committees.
- Research Outreach Efforts: University visits are scheduled periodically to allow active and potential investigators to showcase their work and facilities to WSDOT Research Staff and Technical Advisory Committees and for university professors to learn about the WSDOT Research Program.
- Emails to agency executives and members of the Research Advisory Committees are used to solicit program input such as submission of NCHRP problem statements or panel nominees.

Other items of interest

The WSDOT Research Office also manages the WSDOT Library. The library is managed by a full-time librarian with and two part-time assistants.

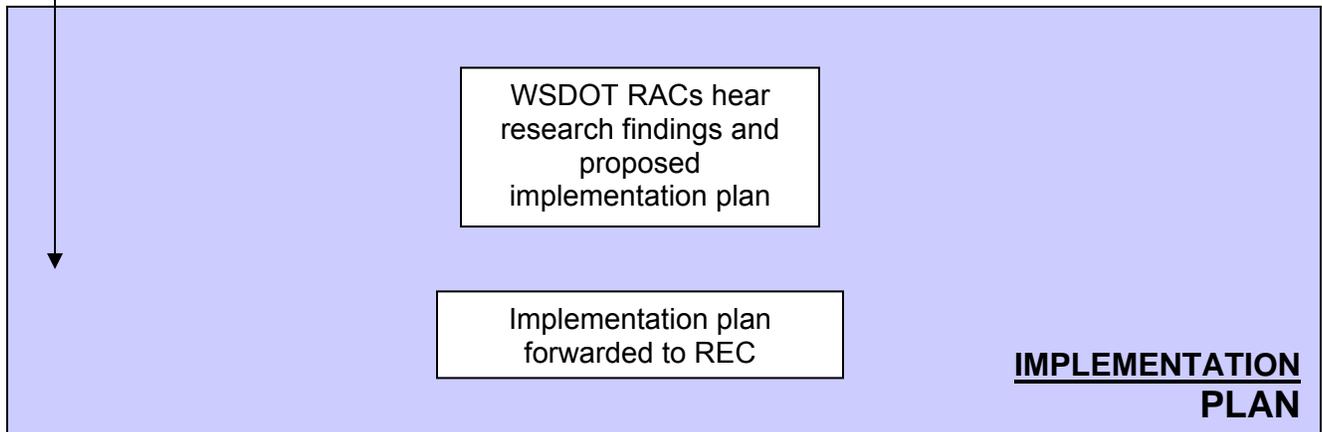
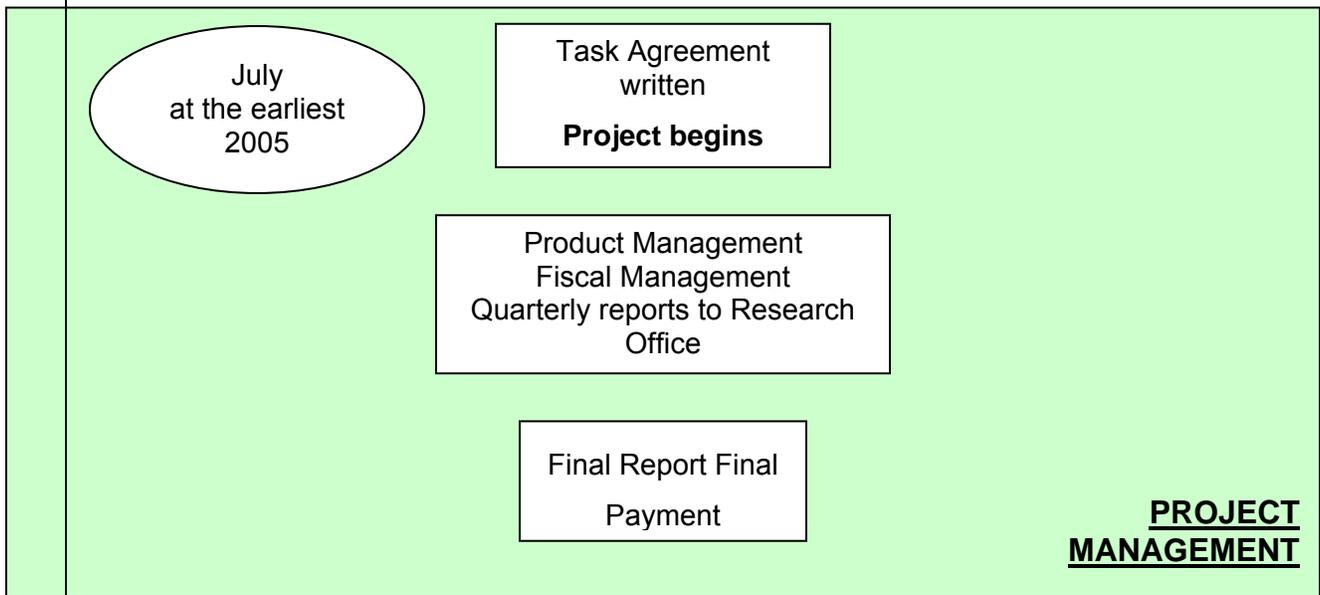
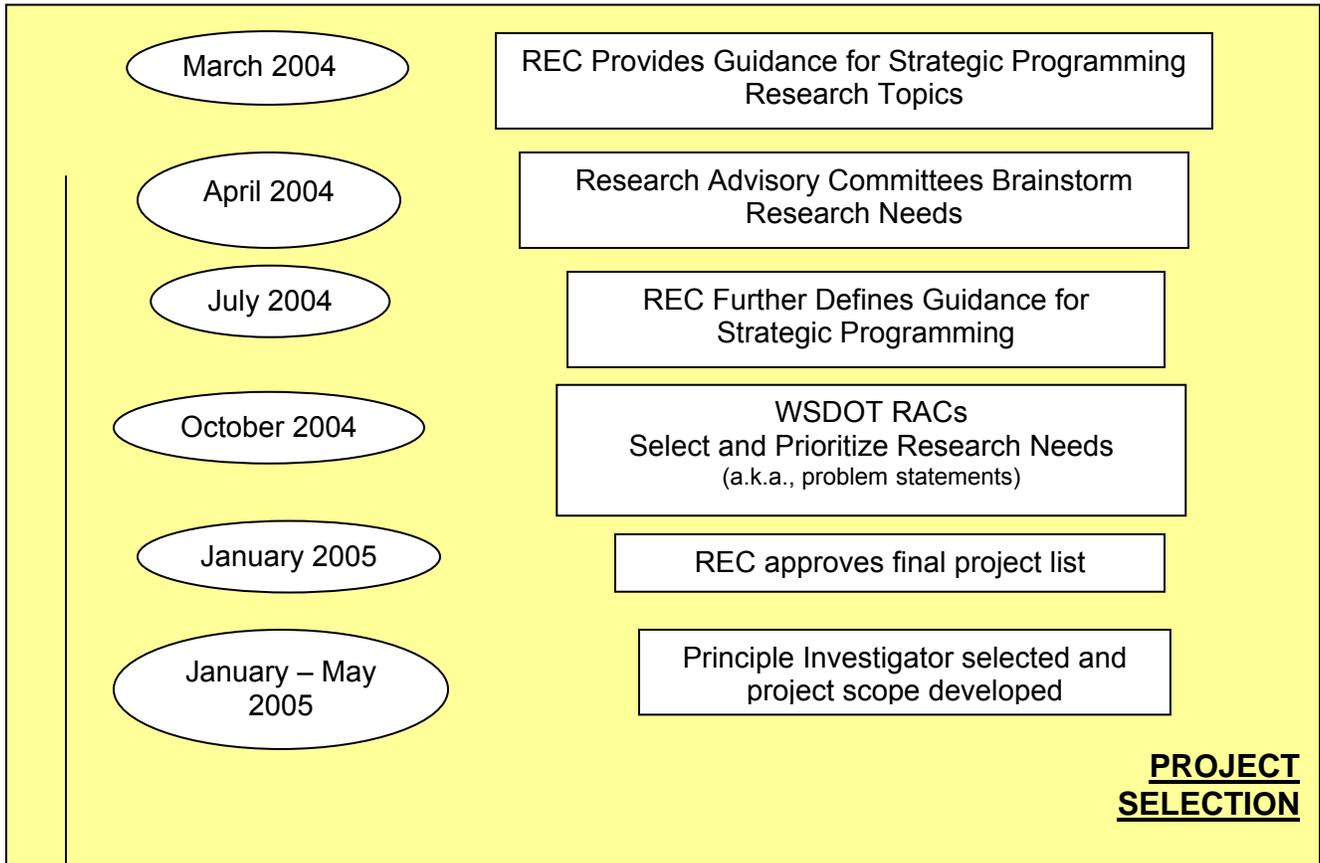
The WSDOT Library supports staff, consultants and contractors by finding information on a topic, developing search strategies, conducting literature searches, locating facts and statistics, identifying additional information sources and obtaining articles and books through inter-library borrowing.

- Agency publications are cataloged and entered into worldwide databases, making our publications accessible from anywhere on the globe.
- Resource sharing. WSDOT Library staff will locate, borrow, and deliver documents and media from other libraries in a timely and cost-effective manner.
- New acquisitions. On average, the WSDOT Library acquires 150 new print items each month. (Watch for new acquisitions lists in the future.)
- Information at your desktop. The WSDOT Library provides online desktop resources, such as full-text ASCE journals and (coming soon) a subscription to CivilENGINEERINGnetBASE that provides access to full-text books on a large number of engineering topics.
- Literature searches. WSDOT Library staff will work with you to devise research strategies, and can provide simple or detailed literature searches. The Library subscribes to several online databases, so that we can find and access many full-text documents to meet your needs.
- Track emerging issues. WSDOT Library staff can help you set up news alerts on specific topics, and provide instruction on how to improve your own information search skills.

More information on the WSDOT Library can be found at:

<http://www.wsdot.wa.gov/Research/library.htm>

CURRENT RESEARCH PROJECT SELECTION PROCESS



WSDOT Peer Member Program Information – Ohio DOT

Name: Monique R. Evans, P.E.

Organization: OhioDOT, Office of Research and Development

Budget And Funding Sources: \$7.5 million SPR(2) funds managed by the Office of R&D. An additional \$1.3 million SPR(1) funds are contributed to support NCHRP and LTAP. These funds are managed by the Division of Planning. Total research budget = \$8.8 million. (Based on FY05)

Number And Types Of Staff: 5 employees (3 engineers + 2 non-technical staff)

- Monique R. Evans, P.E. (Administrator)
Project Focus Areas: Safety, Environmental, Roadway, Aerial, Traffic, Planning & Policy
Other Duties: Leadership & Program Development/Management/Marketing
- Karen Pannell, P.E. (Research Project Engineer)
Project Focus Areas: Materials, Pavements, Geotechnical
Other Duties: Pooled Fund Project Coordinator, Newsletter Editor
- Omar Abu-Hajar, P.E. (Research Project Engineer)
Project Focus Areas: Structures and Hydraulics
Other Duties: Implementation Monitoring, Research Cost Estimates, Annual Project Review Coordinator, Web Site Manager
- Vicky Fout (Contract Manager)
Proposals, Contracts, Draft Final Reports, Office Management
- Jill Martindale (Administrative Assistant)
Purchase Orders, Invoices, Quarterly Reports, Final Reports, Inventory, Equipment Disposition

The primary roles of the Office of Research and Development are to:

- Develop and administer the biennial research program.
- Coordinate all research activities for the department.
- Facilitate the exchange of research information with others, especially TRB and AASHTO RAC.
- Develop strategies for technology transfer.
- Formulate strategies for implementing innovative technologies and procedures.
- Develop public/private research partnerships.
- Manage the research RFP, contracting and invoicing processes.
- Market the research program.

Number And Type Of Active Projects

Applied (104)

Basic (5)

Policy (5)

Other (3 Program Administrative Projects: Cooperative Research Seminar, Peer Exchange, and Marketing/Communications/Brushfires/etc.)

Project Funding Categories (i.e. pavements, planning, safety, multimodal, freight, bridge, etc.)

We do not establish budgets for specific program areas. Projects are prioritized based on departmental goals and general selection criteria and then they are funded accordingly. The process does take individual program priorities into consideration to give smaller program areas an opportunity to compete on a more level playing field for funds.

Our basic funding categories are as follows:

80% federal/20% state

100% state (1 project currently using this funding)

100% federal

This category is further subdivided into Pooled Funds Lead by Ohio, Pooled Funds Lead by Others with Ohio Participating, IBRC, FHWA funded, and Research Correlation Service (TRB-TRIS-RIP)

Some projects are supported by multiple funding sources.

I establish the overall research budget and determine the amount that will be allocated for each of the line items.

Your Research Partners

If you define partners as those who provide funding or in-kind support for research projects sponsored by ODOT, then our partners include: FHWA, USGS, MRUTC, MAUTC, Universities, and some private companies participating in OPREP projects and other special studies.

Research Program Areas

We use the following categories to classify ODOT research projects. The number in parentheses represents the number of active projects in each category. There are a total of 117 active projects valued at \$24.5 million.

- Administration (3)
- Aerial (5)
- Construction (0)
- Environmental (2)
- Geotechnical (6)
- Hydraulics (3)
- Maintenance (1)
- Materials (12)
- Pavements (28)
- Planning (9)
- Safety (10)
- Structures (29)
- Technology Transfer (0)
- Traffic (9)

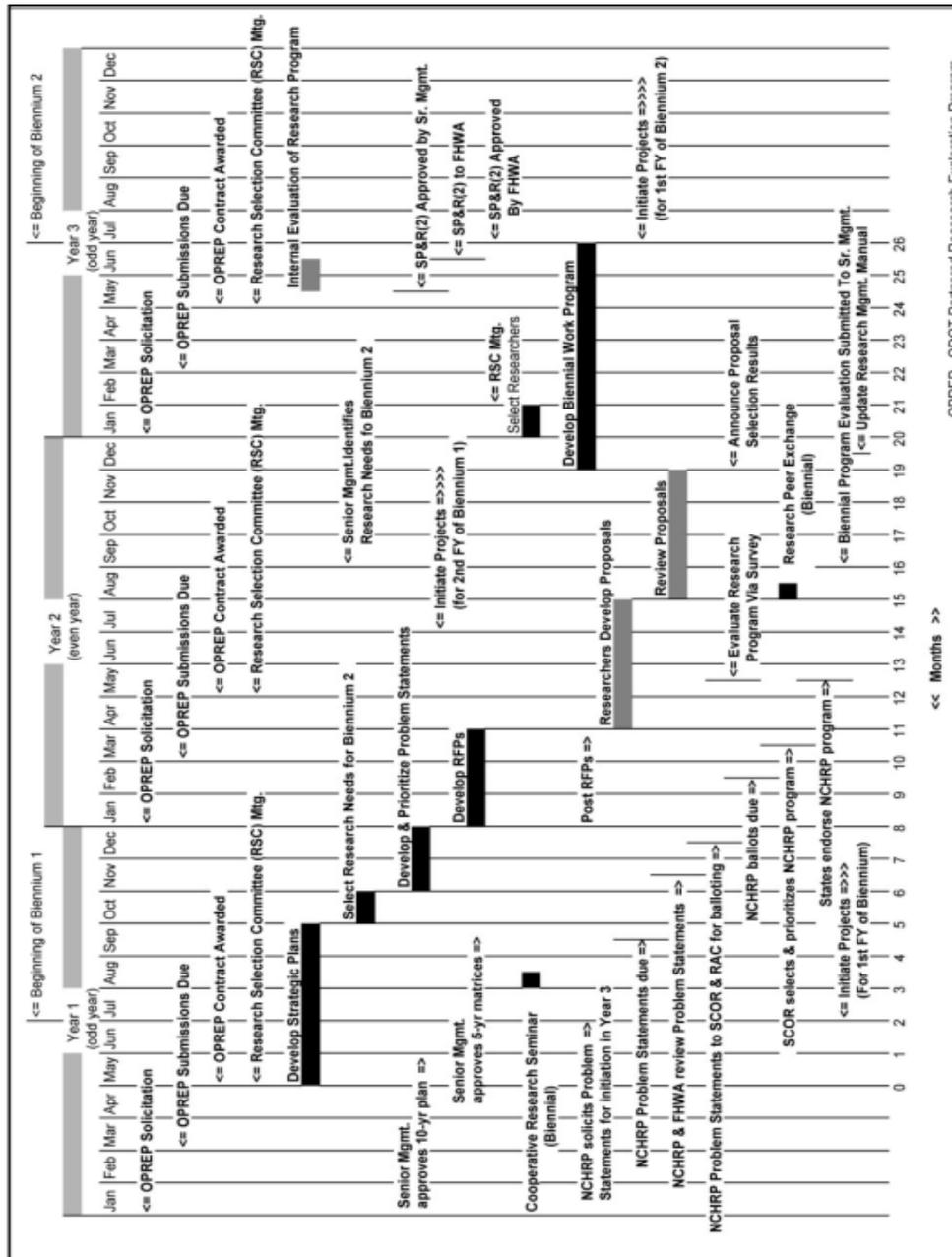
Research Selection Process

Basic Process:

- Biennial Program developed according to following timeline. All needs defined internally with the exception of OPREP solicitations.
- Contracts awarded throughout applicable State Fiscal Year. Non-state agencies require Controlling Board Approval.

- Projects must be on Research Strategic Plan unless they address an emergency or emerging issue.
- Preliminary literature searches must be done before submitting problem statements.
- All projects must address implementation from cradle to grave.
- All require technical liaisons or expert panels to monitor the work.
- Office of R&D handles all administrative and some technical issues.
- Flexibility is built into the program to address emergencies.
- OPREP – ODOT Partnered Research Exploration Program: Solicitation of needs from external sources (even out-of-state). Opportunity to support basic research activities.

Research Program Development Time Line



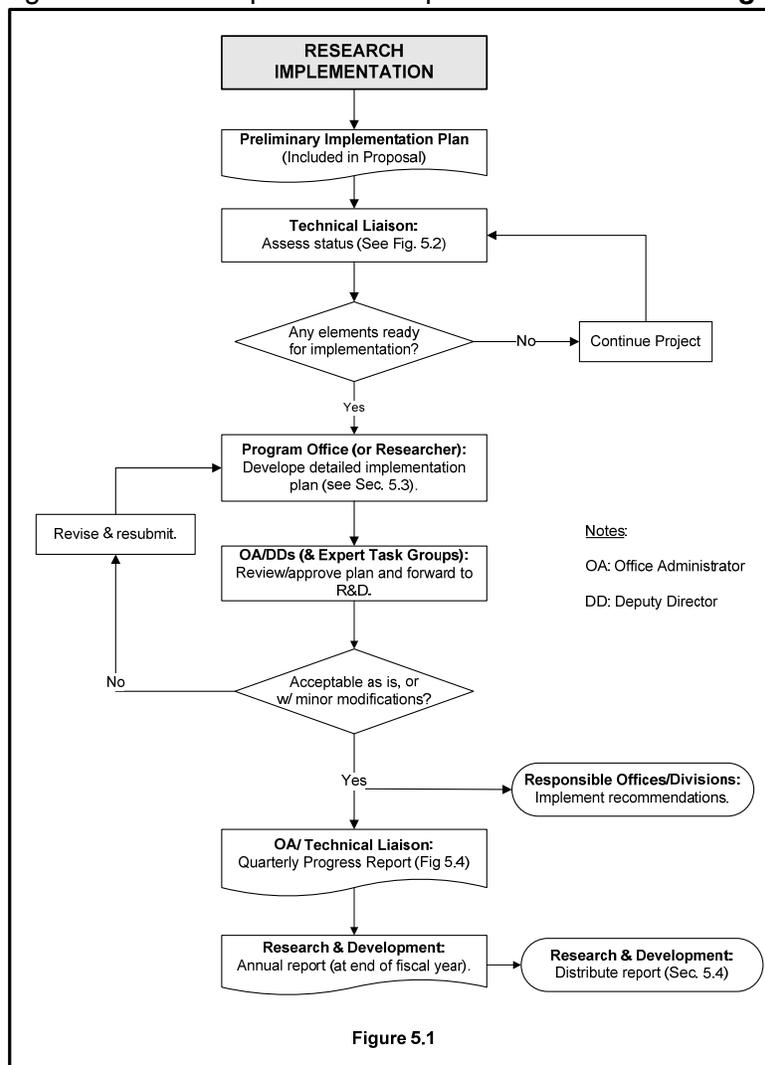
Research Implementation Process

A major goal of research is to provide results that can be implemented. Planning starts with the drafting of problem statements, which will have at least a conceptual implementation plan. Proposals are required to have preliminary implementation plans that address the requirements, limitations, benefits, and costs. Final reports include drafts of policy statements, specifications, standard drawings, test procedures, etc. needed for implementation.

Actual implementation does not need to be delayed until the research is totally complete nor the final report prepared. At any stage where a project is close to producing results, the Technical Liaison/Project Panel should evaluate any findings for possible early implementation. If deemed feasible, the Technical Liaison/Project Panel should work with the researcher and/or technical experts to prepare an implementation plan to ensure effective and timely application of the research results throughout ODOT.

Results of research projects will be monitored and evaluated by the Technical Liaison/Project Panel and Office Administrator. A record of implementation activities will also be made as activities occur. Progress reports will be provided to R&D, who in turn will inform interested parties.

A flow chart showing the research implementation process is included in **Figure 5.1**.



Proposal Stage

Each researcher's proposal will include a preliminary implementation plan that describes the activities anticipated to promote application of the results of the research. While actual implementation of the results is the responsibility of ODOT, each research project must include recommendations for how to facilitate implementation. It is expected that the implementation plan will evolve during the project; however, proposals must address at least the following:

- 1) identification of factors that will influence the decision to implement results (see **Figure 5.2** for benefits to be considered),
- 2) a list of the "products" expected from the research, e.g., a proposed specification, a design manual or guide, field or laboratory procedures, a training manual, hardware for demonstration, software and instructions for computer application, etc.,
- 3) the audience or "market" for this product, and
- 4) a realistic assessment of impediments to successful implementation.

The researcher should solicit ideas from the Technical Liaison(s) as the final proposal is being drafted. Failure to address these items may render the proposal non-responsive.

Implementation Plan

As a research project progresses, the Technical Liaison/Project Panel must periodically evaluate the research, the validity of the methods used, and the results achieved. The Technical Liaison/Project Panel should, before that time, adapt **Figure 5.2** to the specific project under review. Adaptation of the assessment form to a specific research project should detail exactly what improvement is expected. For example, instead of "Increased public safety", the assessment form might say "Accidents at intersections should be decreased by 50%." The assessment should take into consideration the end users and stakeholders. Some factors may not be applicable due to the nature of the research.

If the project recommendations, products, etc. are to be implemented, the Technical Liaison/Project Panel will determine if it would be best implemented by ODOT, or by the researcher. When it is determined that value may be achieved by implementing any of the results, be they interim or final, a detailed implementation plan should be developed. The format for a standard implementation plan is presented in **Figure 5.3**. If the implementation will be handled internally, the plan will be developed by the responsible Program Office(s). If the implementation will be part of the research contract, the researcher will develop the implementation plan. The plan will include the following:

- Project title
- The names of the research agency and PI
- The name of the Technical Liaison (and Project Panel members' names, if applicable)
- Anticipated applications or potential uses
- User group(s) and principal contact(s)
- A sponsor(s), e.g., Deputy Director or Assistant Director
- A narrative description of each step of the process and estimated time frame (i.e., changes in policy, procedures, practice, trial installations, pilot projects, etc.), and the responsible individual(s)
- Costs of labor, facilities, training, or other resources that need to be expended
- Funding source(s)
- Benefit(s)
- Risk(s)
- Anticipated barriers and strategies to overcome them
- Technology transfer methods to be used.

- Time frames and milestones to measure progress
- Evaluation time frames and reporting requirements.
- Other Offices who should be consulted on the changes

The implementation plan is to be reviewed and approved by the responsible program Office Administrator(s) and Deputy Director(s). It is the responsibility of the lead or sponsoring Office/Division to coordinate with all other affected offices and divisions for reviews and approvals. If an Expert Task Group or TAC is operative, the implementation plan should be forwarded by the Office Administrator to the Group for its review and recommendation.

Monitoring

Implementation activities are to be tracked by the responsible program Office Administrator(s) and the Technical Liaison/Project Panel. The Technical Liaison/Project Panel will submit a progress report to the Office Administrator and R&D quarterly. The report will list the approved implementation actions (step-by-step), the responsible parties, the status of each step, and date each action was completed. The format of an implementation progress report is presented in **Figure 5.4**.

Annual Summary

At the end of each fiscal year, R&D and the program Office Administrators will prepare a summary of implementation progress. This summary will include the last quarterly progress report for each project, and a commentary on:

- Accomplishments and the details of associated benefits (e.g., cost/time savings, improved performance, longer life, etc.)
- Problems (lack of progress, unexpected costs or results, etc.)

The annual summary will be distributed to the Assistant Directors, Deputy Directors, FHWA, Office Administrators, and researchers.

Annual summary reporting will continue for a minimum of three years after all changes have been accomplished to measure performance and determine if the implementation has achieved the anticipated goals.

**OHIO DEPARTMENT OF TRANSPORTATION
RESEARCH IMPLEMENTATION ASSESSMENT**

	Y/ N	SUPPORTING DATA	COMMENTS
BENEFITS			
Reduced overall cost			
Reduced cost/time ratio			
Increased performance/cost ratio			
Decreased cost/lifetime ratio			
Reduced overall time			
Increased overall performance			
Increased public safety			
Improved environmental conditions			
Supports ODOT's strategic initiatives			
Addresses customer's needs			
Wide scope of application			
Easily adaptable			
Supported by reliable, reproducible test data			
EFFECTS			
Changes needed with ODOT's existing structure			
Possible risks associated with the use or change in processes			
Departments or users that will be affected			
Legal or regulatory concerns			
Implementation costs for labor, materials, or overhead			
Funding sources			
OTHER			
Equipment from research project that should be retrieved for implementation			
Who should implement - internal staff or PI?			
FINAL IMPLEMENTATION CONCLUSION			

Figure 5.2

**OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF *(insert name)*
RESEARCH IMPLEMENTATION PLAN**

Title:

State Job Number:

PID Number:

Research Agency:

Researcher(s):

Technical Liaison(s):

Research Manager:

Sponsor(s):

Study Start Date:

Study Completion Date:

Study Duration:

Study Cost:

Study Funding Type:

STATEMENT OF NEED:

RESEARCH OBJECTIVES:

RESEARCH TASKS:

RESEARCH DELIVERABLES:

RESEARCH RECOMMENDATIONS:

PROJECT PANEL COMMENTS:

IMPLEMENTATION STEPS & TIME FRAME:

EXPECTED BENEFITS:

EXPECTED RISKS, OBSTACLES, & STRATEGIES TO OVERCOME THEM:

OTHER ODOT OFFICES AFFECTED BY THE CHANGE:

PROGRESS REPORTING & TIME FRAME:

TECHNOLOGY TRANSFER METHODS TO BE USED:

IMPLEMENTATION COST & SOURCE OF FUNDING:

Approved By: (attached additional sheets if necessary)

Office Administrator(s):

Signature: _____	Office: _____	Date: _____	_____
Signature: _____	Office: _____	Date: _____	_____

Division Deputy Director(s):

Signature: _____	Division: _____	Date: _____	_____
Signature: _____	Division: _____	Date: _____	_____

Figure 5.3

		Ohio Department of Transportation Research Implementation Progress Report			
SJN _____ Study Title _____		Date approved _____			
#	Implementation action to be taken	Responsible Division	Responsible Office	Action to Date	Date Completed
1.					
2.					
3.					

Figure 5.4

Technology Transfer Efforts, such as newsletters, web-sites, seminars, etc

- The ODOT Research web site is available at <http://www.dot.state.oh.us/divplan/research/>
We include information on all active and proposed projects on this site as well as copies of all research reports completed since January 2000. The Research Management Manual, office newsletter and a collection of standard forms are available in addition to links to a variety of useful websites.
- Newsletters: R&D publishes a quarterly newsletter entitled, "Moving Forward." Each issue highlights an active project or major event. Current issues and areas of concern are addressed and a calendar of upcoming events is included. Implementation achievements are presented as they develop. Copies of the newsletter are available on the R&D web site. Quarterly Newsletter available at <http://www.dot.state.oh.us/divplan/research/newsletter/newsletters.htm>
- Workshops: At the conclusion of selected studies, a workshop may be conducted to explain the research and discuss the findings.
- Report Distribution: Reports are distributed to national libraries and repositories. Executive summaries are sent to all state DOTs and others on R&D's mailing list. Many documents are also available on the R&D website.
- News Releases: Newspaper articles and the Department-wide newsletter may be used to distribute information regarding successful research projects.
- Visual Media: Statewide teleconferences and videotapes may be appropriate for studies of widespread interest.
- Conferences: Researchers and ODOT staff attend conferences in Ohio and other states to discuss results of the ODOT research program. Examples include: the annual Transportation Research Board meeting in Washington, D.C. and the Ohio Transportation Engineering Conference (OTEC) held each fall in Columbus. The OTEC conference is one of the primary vehicles for showcasing the results of the research program. For more information on this conference see <http://www.otecohio.org>. Researchers may request reimbursement for travel expenses to present a paper at a conference if the topic is a result of an active ODOT research project and the paper is shown on the official conference program.
- Local Technical Assistance Program (LTAP): LTAP is a national network of technology transfer centers that provides training, technical information, workshops, and problem solving assistance to improve safety and efficiency. LTAP also maintains a video library and publishes a newsletter to keep agencies informed of legislative and regulatory news, training opportunities, and other technical information. Research results of local interest are shared with LTAP for distribution to their target audience.
- Project Deliverables: Each research project proposal is required to list project deliverables. Many of the deliverables will contain elements of technology transfer necessary for implementation of the research results. Examples include, but are not limited to: training for direct users, presentations, and train-the-trainer programs.
- Synthesis and Assessment: R&D attempts to maximize the resources available from other agencies as well as the sharing of resources and experiences with others. This is done by participating in pooled fund studies, being a host to and participating in research

Peer Exchanges, sending and responding to questionnaires from other State DOTs, and participating in the AASHTO RAC listserv. These opportunities allow ODOT to more efficiently access the limited resources available and reduce the possibility of duplicating the efforts of other agencies.

- **Technical Training:** R&D staff, Technical Liaisons, and Project Panels should participate in training opportunities that enhance their technical capabilities. Examples include National Highway Institute courses, the annual TRB meeting, local and regional seminars and workshops, and the Technical Liaison training offered by the Office of Research & Development.

Technology transfer is more art than science. For it to be effective, a variety of activities or mechanisms need to be established. No one activity will reach all groups of potential users. Progressive individuals may be willing to attend workshops or read technical publications while others may require a short informative announcement that piques their interest. Even then, differences in educational backgrounds, interests, motivation, and goals may require totally different presentations of the same information.

As a research project develops and is completed, it is ODOT's desire to present the findings in a user-friendly format and to distribute them to as wide an audience of potential users as practical. If everyone is aware of this goal from the time the proposal is being reviewed and it is discussed throughout the life of each project, this should be relatively easy to accomplish.

Research Outreach Efforts

A **Cooperative Research Seminar** is held every two years to solicit and obtain a wider range of input on the department's strategic research plan. This one-day event is open to anyone interested in transportation research and is a forum for the presentation and exchange of ideas and comments on the proposed research program. This is also one way we can ensure that traditionally under-represented groups such as Historically Black Colleges and Universities have an opportunity to learn more about and participate in ODOT's research program. Michigan DOT has been hosting similar meetings for several years and would be another good source for information on this topic.

University visits are scheduled periodically to allow active and potential investigators to showcase their work and facilities for R&D staff.

While the bulk of ODOT's research projects are based on internally identified needs there is a mechanism available for funding research identified by external sources called the **ODOT Partnered Research Exploration Program (OPREP)**. OPREP was loosely patterned after the NCHRP IDEA Program to do the following:

- Consider relevant research needs that may not have been identified by ODOT and included in our Strategic Research Plan.
- Encourage genuine partnerships within the research community.
- Recognize that while ODOT research needs are primarily of an applied nature, support of some basic research is critical to the long-term success of transportation research.
- Provide an opportunity to demonstrate the viability of innovative concepts and their potential to address long-range transportation needs.
- Leverage research funds and resources.

Approximately \$100,000 will be available from ODOT each fiscal year. Funds can be awarded to one or more projects, depending on the estimated budgets. (Available funds may be adjusted in response to fluctuations in the overall research budget.)

Each project must be completed within 12 months. Time extensions can be granted, under special conditions, but no funding extensions will be approved.

A formal solicitation will be distributed annually in January; however, unsolicited problem statements will be accepted throughout the year. Problem statements are due in March and evaluation and selection will occur in May.

The proposing research agency is required to provide a minimum 50/50 match of the funds requested from ODOT. No more than one-half of the matching funds can come from in-kind donations from the proposing agency. Tuition and fees for graduate students cannot be used as a cash match; however, salaries, stipends and benefits paid to these students can be used as cash matching funds. Salaries, wages, and benefits for all other research personnel and their subcontractors are considered in-kind matching funds. Overhead/indirect costs and fees are considered in-kind contributions. Discounts on purchases are considered in-kind contributions. Expenses incurred prior to the start date of the contract are ineligible for consideration as matching funds. Depreciation on equipment, etc. is ineligible for consideration as matching funds.

At least one other partner unaffiliated with the proposing agency must agree to support the project. All partnership agreements and funding commitments need to be established before a problem statement is submitted.

Projects are selected by the Research Selection Committee (RSC).

The Department reserves the right to reject any or all submittals.

All proposals become the property of the department.

(Note: We have some issues with the matching funds requirements that need to be re-examined and clarified.)

Other Items Of Interest

Strategic Planning

ODOT uses five-year focus areas to drive strategic research plan but maintain flexibility to respond to emerging needs and take advantage of timely opportunities. There is a strong commitment to addressing the department's strategic initiatives first and then examining more specific division or programmatic concerns.

The purpose of the Strategic Research Plan is to ensure that:

- Research is focused on Departmental needs,
- Long and short-range goals are identified,
- Research results are timely, and
- Projects are sequenced logically.

The Strategic Plan is a living document that guides the program. It is formally modified every 2 years, but informally it is adjusted on a continual basis.

Student Studies

The Department occasionally has the need to conduct small research studies that provide solutions to immediate problems. Being of limited scope, these studies do not warrant the time and expense required for typical research projects. When these problems would be amenable to the development of a graduate thesis, funds are made available to provide a stipend and tuition supplement for qualified students to solve these problems. The following criteria apply:

- Limited to \$10,000 and 12-month duration.
- Must address an ODOT need.

- The university must certify that the student is a U.S citizen or permanent resident, a State of Ohio resident for at least 1 year, employed by the university, and enrolled full time in graduate school.

It is unlikely that \$10,000 will be adequate to provide full tuition, a reasonable stipend, and funds for publication of a thesis without some contribution from the university, such as a waiver of overhead charges and/or matching funds for specific line item expenses. Advisors for graduate students performing these studies will serve as Principal Investigators, but charges for their time are ineligible for reimbursement.

These are typically sole sourced projects focused on very specific tasks. They may or may not be included on the strategic plan since they are often done in response to a new issue. Problems are typically identified by ODOT, but can be initiated by a university as long as ODOT determines the proposal addresses an agency need.

Limitations Or Challenges

Lack of staff to run the program prevents us from pursuing many process improvements as quickly as we would prefer.

Inadequacies with our program management database and lack of on-staff expertise to fix them are resulting in inefficiencies.

Quantitative measurement of program performance is difficult. Qualitative measures are currently in place, but we hope to have more with the conclusion of NCHRP Project 20-63.

Decentralized process relies on continued commitment from many people at a lot of different levels. When the program is running well it is sometimes difficult to get the feedback from senior leadership that is needed. (There are many demands on their time and when confronted with a schedule conflict, there is a strong tendency to focus more on solving problems than on maintaining momentum in high performing areas.)

It is hard for many people to think strategically. It takes some training and regular monitoring.

WSDOT PEER EXCHANGE STATE INFORMATION—ADOT

Name: Frank T. Darmiento, Director, Transportation Research

Organization: Arizona Department of Transportation (ADOT), Arizona Transportation Research Center (ATRC)

Budget and funding sources:

- Federal State Planning & Research (SPR) funds – approx. \$2.5 million per year
- State match (salaries & in-kind services) – approx. \$400,000
- Limited contributions (approx. \$100,000/year) from other sources (other ADOT departments and entities outside ADOT)

Number and types of staff:

1 manager (also coordinates the Product Evaluation Program)
5 research project managers
1 librarian
1 field technician for the Long Term Pavement Performance program
1 part-time library assistant
1 part-time Product Evaluation program assistant
(See copies of ADOT and ATRC organization charts attached.)

Number and type of active projects:

Applied
Basic
Policy
Other

The research program currently manages approximately 70 active projects. They all focus on applied research.

Project funding categories (**i.e. pavements, planning, safety, multimodal, freight, bridge, etc.**)

All funds are grouped together each year. Projects in all research emphasis areas are evaluated together with the highest rated projects obtaining funding.

The program is grouped into seven emphasis areas. The approximate project distributions (as of September 2004) are:

Emphasis Area	Number of Projects	Budget
Environment	11	\$1,131,649
Intelligent Transportation Systems	9	598,538
Maintenance	7	472,960
Materials & Construction	13	706,138
Planning & Administration	20	578,178
Structures	5	501,114
Traffic & Safety	7	504,395

Research partners

The ADOT research Steering Committee is made up of seven members of executive management and a Federal Highway Administration (FHWA) representative. The Steering Committee oversees the policy matters related to the research program.

The ADOT Research Council is comprised of 19 ADOT managers and one FHWA representative. The Research Council provides guidance to ATRC and evaluates research proposals being considered for funding.

Technical advisory committees include representatives from ADOT, the FHWA, Universities, local governments and other interested individuals.

Researchers include private consultants, university professors and students, other government agencies and ADOT staff.

Research program areas

See the discussion above on Project Funding Categories

Research selection process

MAIN RESEARCH PROGRAM

1. Research proposals or ideas are solicited throughout the year. In addition to accepting proposals submitted directly to research project managers, the ATRC web site provides a form for anyone to submit a research proposal for consideration.
2. Near the beginning of each calendar year the ATRC project managers notify their contact lists that they are soliciting research proposals for the next fiscal year program.
3. Each project manager either holds a workshop for the emphasis area they coordinate, or meets directly with key individuals in that emphasis area (if there are only a few people affected). If workshops are held anyone with an interest is invited to attend. However, beginning this year the workshop voting is structured and ballots weighted. The weights are assigned by each project manager for a specific emphasis area. All major workshop participants are given votes, e.g., ADOT departments, FHWA, universities, consultants, other government agencies, etc. However, the weighting favors ADOT departments.
4. After completion of the workshops or individual screening meetings each emphasis area is to have a maximum of five proposed projects. Each project includes a detailed proposal and budget. The proposed projects are then submitted to the ATRC manager for review.
5. If there are more than three proposed projects in an emphasis area the proposals are sent to the ADOT Research Council for an e-mail evaluation. A maximum of three proposals in each of the seven emphasis areas are then presented to the Research Council at a meeting during the end of June. The Council evaluates all proposals as a group. Based on the Research Council evaluations the proposals are ranked. The proposals are funded beginning with the highest ranked proposal and continuing until the research funds are allocated.

SUPPLEMENTAL RESEARCH PROGRAMS

Small Budget Program: Each year \$100,000 in the research budget is set aside to fund “small budget” projects—projects with a maximum budget of \$15,000. Proposals may be submitted at any time during the year (this is new in FY2005). Proposals are reviewed by the Research Council, either in a meeting or through e-mail. Proposals scoring above a threshold value are funded until the budget is exhausted. These projects are often performed by university students, small consulting firms, or larger firms that have a developed technology that can be applied to a specific ADOT need.

Transportation Research Quick Study (TRQS) Program: This is a new program initiated during FY2005. The concept is that any ADOT group can submit a request for up to \$2,500 in research work that would assist or support a project. The ATRC manager determines TRQS project selection. There is one TRQS study underway.

Pooled Fund Studies: Pooled fund contributions of \$10,000 or greater require review by the Research Council. Decisions on amounts under \$10,000 are made by ATRC unless the ATRC manager elects to elevate the decision to the Research Council.

Research implementation process

Research implementation within ADOT has not been put into a formal structure. ATRC recently published its third annual Research Implementation Report, documenting any research implementation the ATRC staff could identify. ATRC project managers are tasked to provide a quarterly update on any research implementation in their respective emphasis area(s). The Research Council is also kept informed of research implementation.

Technology transfer and outreach activities

1. We publish a 2-page, quarterly newsletter. It is in its third year of publication. It is now distributed electronically throughout all ADOT and to the RAC mailing list.
2. All final reports are distributed to all state research programs and other interested entities. A 4-page research notes summary of each final report is also published and distributed.
3. An annual research implementation report is published. The third annual report was published in March 2005. Each report reviews research implementation that occurred during the previous calendar year.
4. ATRC maintains a web page (see: <http://www.azdot.gov/ABOUT/atrc/Index.htm>) that includes a description of the research program, copies of recent research reports (older reports are being digitized to load on the web site), a form for submitting research proposals, copies of the quarterly newsletters, information about the ATRC library and access to the library catalogue, and information about the ADOT product evaluation program. The ATRC librarian maintains the web site with assistance from the ADOT Information Technology Group.
5. We don't have any organized strategies regarding disseminating research results. We have been tracking implementation with project champions in an informal manner. With respect to internal program outreach we continue to meet with interested ADOT groups and Districts throughout the state to solicit comments on the research program and research proposals.

Other items of interest

ATRC also manages two other programs, the ADOT library and the product evaluation program. The library is managed by a full-time librarian with part-time assistance from temporary staff. The Product Resource Investment Deployment and Evaluation (PRIDE) program is directed by the ATRC manager with help from a part-time engineering student. The PRIDE program incorporates two internal product evaluation committees, one for materials products and another for traffic control products. The PRIDE program uses two contractors to assist with product evaluations.

WSDOT PEER Exchange Program Information – Idaho Transportation Department

Matthew E. “Matt” Moore, M.A.
Research Program Manager
Idaho Transportation Department

\$1.4 million total budget

1 program manager, 1 staff analyst

37 current research projects

Pavements, planning, safety, right-of-way, design, bridge, geotechnical, information services, alternative fuels, environment

University of Idaho-National Institute for Advanced Transportation Technology/University
Transportation Center/T2 Center
Boise State University
Idaho State University

Currently reevaluating research program areas, selection process, committee makeup and partnerships as part of transformation from materials lab focus to department-wide research program, covering all business functions and related research needs

WSDOT Peer Member Program Information –LTRC

Name: Chris Abadie, P.E., Materials Research Administrator

Organization: Louisiana Transportation Research Center

Budget and funding sources: SPR, State of Louisiana DOTD, and Outside

Number and types of staff (see power point presentation; org chart)

LSU Personnel	17	6
DOTD Personnel	24	14
TOTAL	41	20

Number and type of active projects (see power point presentation)

38 ongoing projects
Applied - 72%
Basic - 10%
Policy - 2%
Other - 1%

Project funding categories (i.e. pavements, planning, safety, multimodal, freight, bridge, etc.)

Research partners:

- 8 Louisiana universities with PhD civil engineering programs.
- Contracting community
- DOTD Districts and Section Heads
- Material Suppliers

Research program areas: General.

Geotech, Pavements, Asphalt, Concrete, Structures, Environmental, Traffic/Safety.

Research selection process: In Powerpoint presentation.

Biannual Research Problem Identification committees rank problem statements.

The committee consists of DOTD and University personnel (about 15 per committee by area). Problem statements are collected at all times, but a general solicitation letter is sent about two months prior to the panel review. Ranking is 1-3 on importance of problem; and 1-3 on potential of implementation. Multiply technical ranking x implantation ranking.

Final panel is selected to review top three projects from each committee; projects selected by funding available and distributed for RFP.

Sponsor; Directorates of Design, Materials, Construction and Maintenance can request in-house research at any time as long as project gets secretary's approval.

Implementation process:

- Each project must be signed by a DOTD directorate and each directorate guarantees the implementation of successful research.
- Implementation Engineer sits on each project review panel
- Administrators at LTRC charged with implementing key projects.

Other items of interest:

LADOTD/ LTRC Research Office

Funding : Research Funding in 04- 05 Annual

Activity	SPR	State Match
LTRC Research 04-05	\$4,879,504	20%
LTRC 100% State Funded	\$2,772,675	100%
NCHRP 04-05	\$435,000	0
TRB Correlation Services 04-05	\$105,730	0
Pooled Fund Studies	\$120,000	0

LTRC: Technology Transfer Program Budget Recap 04-05.

	STP	State Match
Technology Transfer	\$570,000	20%
Education and Training	\$470,000	20%
Implementation of Research	\$47,000	20%
Tech Transfer Contracts	\$1,413,000	20%
Total =	\$2,500,000	State Match= \$500K

WSDOT Peer Member Program Information – RITA, USDOT

Name: **Timothy A. Klein**

Organization: **USDOT/Research and Innovative Technology Administration**

Budget and funding sources: (FY05) \$6.1M: Research, Development and Technology – direct appropriations
\$30.0M: Bureau of Transportation Statistics – Highway Trust Fund
\$32.5M: University Transportation Centers – Highway Trust Fund (FHWA and FTA accounts)
\$12.6M: Transportation Safety Institute – fee-for-service, multiple sources (private/public)
\$210.3M: Volpe National Transportation Systems Center – fee-for-service, DOT/other Federal sources

Number and types of staff: RD&T: 12 engineers
BTS: 90 government, 100 contract – statisticians and analysts; also National Transportation Library and Geospatial Information Services staff.
TSI: 49 training/administrative staff.
Volpe: 550 government, 500+ contract – all technical and administrative fields.

Number and type of active projects:

Applied: 200+ at any given time.

Basic: None.

Policy: None.

Other: TSI training – 100+ courses, over 20,000 students/year.

Project funding categories (i.e. pavements, planning, safety, multimodal, freight, bridge):

As above.

Your research partners:

- All DOT modal administrations, Office of the Secretary
- 26 University Transportation Centers
- California Fuel Cell Partnership; California Hydrogen Highways
- Transportation Research Board, AASHTO, etc.

Research program areas:

- Volpe and UTCs cover all fields of transportation activities.
- RD&T currently includes hydrogen program, remote sensing program, climate change program, and DOT RD&T coordination.
- Intermodalism and freight.

Research selection process (brief summary):

- As a fee-for-service organization, Volpe performs tasks assigned by sponsors.
- RD&T competes all programs via Broad Agency Announcement or similar procurement process.
- UTCs: some competed, some earmarked. All UTCs are required to have research advisory boards, including external stakeholders, defining research programs and annual project selection.

Research implementation process (brief summary):

Currently, internally focused on technical paper publication and conferences. UTCs have technology transfer requirement, leading to broader implementation opportunities.

Outreach Process:

RITA outreach focuses on the other DOT modal administrations, seeking to coordinate RD&T activities across DOT, and with major external stakeholder groups (TRB, AASHTO, APTA, and their committee structures).

Specific research interests (e.g., hydrogen) reach into a broader interagency and external community, as they tend to reach beyond the tradition boundaries of transportation research.

Each research program requires a board of experts to: create the research plan, evaluate research process and results, and encourage dissemination of results.

Technology Transfer:

Currently, focused on technical paper publication and conferences.

Other items of interest:

The Research and Innovative Technology Administration (RITA) was created under the Norman Y. Mineta Research and Special Programs Improvement Act (Public Law 108-426). The establishment of RITA will enable the Department to more effectively coordinate and manage the Department's research portfolio and expedite implementation of cross-cutting innovative technologies.

Under the reorganization, RITA's resources will be used to:

- coordinate and advance transportation research efforts within DOT;
- support transportation professionals in their research efforts through grants and consulting services, as well as professional development through training centers; and
- inform transportation decision-makers on intermodal and multi-modal transportation topics through the release of statistics, research reports, and a variety of information products via the Internet, publications, and in-person venues such as conferences.

RITA draws together the following USDOT elements:

- Office of Research, Development and Technology
- Transportation Safety Institute (Oklahoma City, OK)
- Volpe National Transportation Systems Center (Cambridge, MA)
- Office of Intermodalism
- Bureau of Transportation Statistics

WSDOT Peer Member Program Information – RTI, TxDOT

Name: Rick Collins, Director

Organization: Research and Technology Implementation Office (RTI)
Texas Department of Transportation

Budget and funding sources: Federal SP&R funds (approximately 80%) (See brochure)
State appropriations
(approximately 20%) (See brochure)

Number and types of staff: 18 total

	1 Director
	1 Financial and Business
Operations	
	1 Program Operations
	10 Research Committee Operations
(5 engineering, 5 contracting)	
technical position)	1 Technology Transfer (non-
	4 Support

Number and type of active projects (excluding Pooled fund projects led by other states):

Applied (Research):	158
Basic:	
Policy:	4
Other (Implementation):	46
Other (Support):	<u>9</u>
Total	217

Project funding categories (i.e. pavements, planning, safety, multimodal, freight, bridge, etc.):

- Pavements
- Transportation Planning
- Geometric Design
- Right-of-Way
- Environmental
- Hydraulics
- Traffic Operations
- Structures
- Policy

Your research partners:

- Lamar University
- Stephen F. Austin University
- Texas Tech University
- Texas A&M University System
- Prairie View A&M University
- Texas A&M University Galveston
- Texas A&M University Kingsville
- Texas Engineering Extension Service
- Texas Transportation Institute
- Texas Southern University
- Texas State University-San Marcos
- University of Houston

University of North Texas
University of Texas System
Center for Transportation Research, UT Austin
UT Arlington
UT Brownsville
UT El Paso
UT San Antonio
West Texas A&M

Research program areas: [see Project funding categories]

Research selection process (brief summary):

Oversight in each program area is provided by a Research Management Committee (RMC) made up of District Engineers and TxDOT district and division subject matter experts. Each technical RMC has an advisory committee to assist in project selection - a Technical Assistance Panel (TAP), made up of TxDOT and university members. Project (problem) statements are solicited annually, and go through the process outlined below:

- Developed and submitted by TxDOT field personnel and TAP members
- Reviewed, refined, and prioritized by the responsible TAP committee
- Projects selected by the TAP are presented to their RMC for funding
- Discussed and prioritized for funding by the RMC responsible for that program area, based on the funding allocated to that RMC
- Competitive proposals are requested from our research partners for those project statements selected for funding by each RMC.

Research implementation process (brief summary):

TxDOT's research program focuses on applied research. The final development of each project statement includes an assessment of how the research results are expected to be implemented in TxDOT operations, and the definition of research "products" to facilitate that. As each research project is nearing completion, a final assessment is made of how best to incorporate the research results into operations. Those results / products which are ready to be implemented are moved into operations through the division responsible for that operational area in TxDOT. Results / products which need some final development and /or financial assistance to move into operations are referred to TxDOT's Implementation Program, managed by RTI. Projects in this program are selected for funding by TxDOT's Research Oversight Committee, made up of TxDOT's Administration and technical division directors. Typical projects in this program include: development of training courses, manuals, field guides, initial purchases of innovative equipment, and the incremental cost of the initial application of new techniques and technologies on construction projects.

Other items of interest:

- Approximately 600 TxDOT employees are involved in the research program, including all district engineers, and most division directors.
- TxDOT's Research Library has been outsourced to the Center for Transportation Research
- TxDOT's entire "Research and Implementation Manual" can be accessed at this web address - <http://manuals.dot.state.tx.us/dynaweb/colresea/rtt>