

NEW MEXICO DEPARTMENT OF TRANSPORTATION

# RESEARCH BUREAU

Innovation in Transportation

**PEER EXCHANGE**  
**May 12-13, 2008**  
**Albuquerque, NM**

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MAY 12 – 13, 2008  
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### PARTICIPANTS

Colorado Department of Transportation

Oklahoma Department of Transportation  
Engineering Services (Research)

Texas Department of Transportation  
Research and Technology Implementation Office

Washington Department of Transportation  
Office of Research and Library Services

## Executive Summary

On behalf of the Research Bureau of the New Mexico Department of Transportation, it is my privilege to provide this Executive Summary on the recent Research Peer Exchange conducted May 12-13, 2008.

A Research Peer Exchange is required under FHWA guidelines every two to three years. It is intended to assist and support State DOTs by inviting states and their research personnel the opportunity to review, assess and provide feedback on the status of New Mexico's research activities under FHWA guidelines.

While this Peer Exchange was scheduled for 2007, the Bureau determined it would be in the best interest, given the recent reorganization and status of on-going research projects to delay the event until now.

Our Peer Exchange involved Research Bureau Staff from the states of Colorado, Oklahoma, Texas and Washington. The Peer Exchange Final Report includes their comments and feedback including strengths identified regarding the program and opportunities for improvement.

In this report readers will learn in more detail not only how these states assess the status of New Mexico's research activities but how these respective states approach the important task of research and activity for their perspective.

From this critique, the Research Bureau Staff and I have compiled an Action Plan offered to NMDOT Leadership as our next steps in the journey of performance excellence under the Research Bureau's responsibilities and activities.

It is my hope this final report provides interested readers with an update on the overall status of progress in place and asks for your comments, observations or other critiques as we continue to advance the program.

Scott McClure, P.E.  
Research Bureau Chief

## NMDOT / State Peer Exchange Summary

The NMDOT Peer Exchange focus was on Research Program Administration.

In 2006, the Research Program's managerial operations were significantly revised to create a new model for proposed research involving the Bureau. Previously, the Bureau conducted a less inclusive and more enclosed process when soliciting proposed research with potential proposers.

In this same year, the solicitation process involved a major revamp to include broader representation from potential proposers, the identification of nine broad research fields of study, active engagement from department personnel outside of the Research Bureau to serve as sponsors, advocates and as technical advisors, a clearly defined transparent five step sequence in the selection of research proposals and involvement from Executive Leadership in final selection of research selected.

Because of the changes and the short time frame they had been in place, the Peer Exchange normally scheduled for 2007 was delayed until now in order to provide a better indicator of progress and results that have taken place.

Given these circumstances, the identified topic for this exchange was Research Program Administration. The Bureau was interested in learning from more mature peer research programs their critique of our existing processes, operations and daily management involving program administration.

Posted below is a comprehensive listing of comments and notes categorized by topic from the two day exchange:

- Organizational Structure of Peer States.
  - Due to the nature of research, it is in the best interest of the Bureau to coordinate with every section
  - Level of commitment of management is an important aspect
  - Organization structure is flat and in the future management might consider a pyramid structure for promotion and succession planning within the Bureau

- Documentation of Procedures.
  - Work towards documenting procedures as a whole (i.e. project selections, peer exchanges, project prioritization); focus on high priority procedures that are not well documented
  - Summarizing procedures in a short pamphlet in a reader friendly format
  - Consider other states detailed procedures manual to use as a template and with an personnel assigned to update regularly
  
- Functional Areas of Research.
  - Design and Construction might be combined as one research area
  - Establish effective methods to involve research management committees/groups such as Administration, Environment, and Design with the guidance of upper management in each section
  - Continue to look at ways for identification, prioritization, and management of projects within the nine functional areas as identified by the Bureau
  - How should stakeholders be identified to be involved with the project selection process
  
- Project Solicitation and Prioritization.
  - Recommend equitable funding distribution among research areas be explored
  - Allow for changes in solicitation and prioritization when considering the RAC committee concept and roles by having middle management as a committee to eliminate the perception of favoritism
  - Opening up options for project idea collection sites (i.e. Equipment Road'eo, Paving Conference, Engineering Conference, and Open-House @ the G.O. concepts.
  - Communication and follow up on project process to agency personnel
  - Credibility of Research Bureau with current changes such as customer service, project solicitation etc.
  
- Project Cost Estimation.
  - In house project cost estimates are determined by time spent on project
  - Use historical data estimations to determine costs calculations
  - Consider an additional mitigation on project cost and time lines
  - RAC survey of other state processes
  -

- Survey Universities on cost calculations and estimations
  - Consider flexibility on the suggested project budget
- Consultant Selection.
  - The existing process of utilizing technical panel members is working well
- Project Management.
  - Development of project database by adding extensive information and conducting monthly meetings to review data
  - Systematic controls on database input from existing reports
  - Periodic meetings to review status of all projects with Project Managers
  - Contract enforcement
  - Practicing good project management
  - Consider payment percent retainage if contract completion becomes an issue
- Recordkeeping.
  - Centralized a in-house record center developed for all project management
- Project Implementation.
  - Consider project implementation along with problem statement
  - Project advocate should adhere with commitments in order to see implementation through
- Research Valuation.
  - Create a type of newsletter or pamphlet to advise the public on accomplishments on research projects and how it relates to everyday driving improvements
- Participation in Federal Programs - TRB, AASHTO, NCHRP
  - Strongly recommend participation with National Organizations
  - Learning opportunity by hands-on participation with current national issues
  - End results of participation would be informed on current trends, learn new information on issues that are specific state related and create a support network
  - Develop office guidelines for T2 transfers

- Washington DOT has a central office for T2 transfers and will provide guidance and other resources for information
- Product Evaluation.
  - Product testing and evaluation is under the Research Bureau section in Oklahoma, Texas, and Colorado to test products
- Other Issues.
  - Improve employee morale by creating a pyramid structure for chance to promote within Bureau
  - Interpretation and Compliance with Federal Regulations.
  - Problem Statements/ITP's
  - Library Services.
  - Interaction with FHWA.
  - Rollover Funding.

New Mexico Research Staff were also anxious to learn what we could incorporate, reflect on and actually deploy in some format in bureau activities. In that feedback, selected peer exchange comments of note and most relevant for further attention and consideration include:

- Procedure changes adopted are transparent and appear to be constructive having the intended programmatic effect
- Exploration of an intermediate level of participation between the ROC and the technical panel
- A dedicated and professional Research Staff Commitment was evident from Peer Exchange members
- Strong communication and good relationship with FHWA is noted
- Project implementation area needs to establish performance measures using NCHRP Tool Box or another tool
- The time frame of changes incorporated in the solicitation process is still new and it is unclear if they are having the intended outcome
- Continue developing a centralized and master project management database for research proposals.

The exchange did meet the objectives described earlier and what follows is:

- Peer Exchange Agenda
- Comments from each participating Peer Exchange State
- Final Action Plan for Deployment from Exchange Comments and Feedback

# 2008 Peer Exchange Agenda

Monday May 12 through Tuesday May 13

**Focus Area:**

**Research Program Administration: Monday, May 12**

8:30 AM-9:00 AM

Welcome & Introductions (Research Bureau Library)

Max Valerio, Chief Engineer

Don Martinez, FHWA

9:00 AM-10:00 AM

Scott McClure - Presentation: The NMDOT Transportation Research Program:  
Organizational Structure and Operational Procedures, Questions for the peer team.

- Organizational Structure of Peer States.
- Documentation of Procedures.
- Functional Areas of Research.
- Project Solicitation and Prioritization.
- Project Cost Estimation.
- Consultant Selection.
- Project Management.
- Recordkeeping.
- Project Implementation.
- Research Valuation.
- Interpretation and Compliance with Federal Regulations.
- Participation in Federal Programs - TRB, AASHTO, NCHRP
- Interaction with FHWA.
- Rollover Funding.
- Technology Transfer Guidelines and Activities.
- Product Evaluation.
- Library Services.
- Other Issues.

10:00 AM-11:30 AM

Staff interviews

11:30 AM-12:45 PM

Lunch

12:45 PM-1:15 PM  
Texas DOT Research Program Presentation

1:15 PM-2:00 PM  
Oklahoma DOT Research Program Presentation

2:00 PM-2:30 PM  
Colorado DOT Research Program Presentation

2:30 PM-2:45 PM  
Break

2:45 PM-3:15 PM  
Washington DOT Research Program Presentation

3:15-4:15  
Group peer exchange discussion on program administration

4:00 PM-5:00 PM  
Preliminary work on Peer Exchange Report.

## **Tuesday, May 13**

8:00 AM-12:00 AM  
Group peer exchange discussion on organizational structure - what works and what does not.

Discussion on questions and issues we have posed and possible solutions. Best practices and management innovations.

One exchange idea that the Research Bureau commits to trying out.

Our strengths as well as potential opportunities for improvement.

12:00 AM-1:00 PM  
Lunch

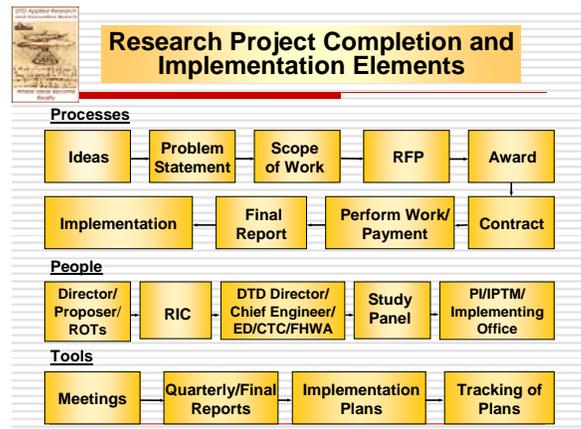
1:00 PM-3:30 PM  
Peer Exchange Team finishes exchange report. 23 CFR 420.209 (a)(7)

3:30 PM-4:30 PM  
Closeout meeting.

# State Participant Peer Exchange Meeting Comments



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## General Observations:

- The strategic location and dedication to research of a separate building with a good layout of offices around the library reflect the great respect and considerable importance that the Executive Management of the New Mexico Department of Transportation (NMDOT) places on its research program and the people behind it.
- The development and use of the “Information and Instructions” manual appears to be effective and helpful in administering the research program including the performance of successful Research Project Solicitation (RPS) process.
- The formal RPS process performed quarterly in the first three quarters of the year is a great technique to address the agency’s research needs on a timely manner and to increase the credibility of the Research Bureau to its customers and stakeholders.
- The existing NMDOT customized MS Access project management database that is used to manage and document all the research work schedule, budget, and activities seems to be relatively better on the basis of appearance, screen interface/layout, and structure than the current project research database that the Colorado Department of Transportation (CDOT) is using.

The Colorado Research staff shared with exchange participants the process of Research Project Implementation and how they measure success. This was a strong topic of interest to all participants and identified for further study and follow-up by New Mexico.

- The quarterly billing frequency which is synchronized with the quarterly submittal of progress reports facilitates checking the accuracy and payment of the completed work.
- The use of an independent selection committee to evaluate and choose the best proposal is a great tool to insure objectivity and to render unbiased decision in the award and contracting process.
- The National Highway Institute (NHI) training in the administration of Statewide Planning and Research (SP&R) funds taken by the appropriate Research Bureau staff is a useful program. The obviously close communication, coordination and relationship between NMDOT Research Bureau and the FHWA- New Mexico Division are very beneficial to the research program and should be maintained and continually pursued by both organizations at all times.

### **Opportunities for Improvement:**

- Reorganize the flat organizational structure of the Research Bureau to provide efficient succession and training plan for a smooth and productive transition in the event of vacancies. Assign appropriate number, type and size of projects to individual managers based on their experiences and areas of expertise and compensate them accordingly.
- Group the existing nine (9) functional areas (Administration, Environmental, Design, Maintenance, Material Science, Construction, Multimodal, Safety and Structures) into three (3) major categories and assign a Research Manager to head each of these categories. The Research Manager will be responsible in assembling a research oversight team (a layer between the ROC and technical panel) with a maximum membership of 10 NMDOT personnel to be approved by the NMDOT Research Oversight Committee (ROC). These teams will supplement the functions of the ROC whose members generally have very busy schedule to be able to perform detailed evaluation and prioritization of research needs.
- Use the research oversight teams to identify and prioritize research needs including the solicitation/brainstorming of research ideas, the development and prioritization of problem statements to be presented to the ROC during the 4<sup>th</sup> quarter of the year for another round of prioritization and funding approval.
- Use historical project completion time and cost data if available from previous studies and current salary rates of university professors, graduate students and research assistants, and information on indirect costs to develop reasonable project cost estimates. Start collecting data on actual cost of previous research projects and time of completion to be used as baseline information.
- Consider the use of the technical panel for consultant selection process. The technical panel is usually familiar with the scope of work and has the necessary expertise to evaluate the qualifications and experiences of the consultants or principal investigators submitting the proposals. The technical panel is typically different from project to project and this should eliminate favoritism and bias in the

consultant selection process. There could be a potential problem if there is only one set of consultant selection committee that is sanctioned to evaluate and select proposals for all research projects.

- Consider the use of private consultants or contractors as appropriate to get the best value and to increase competition if permissible by state laws.
- For the next round of peer exchange meeting, solicit participation from other NMDOT Division and/or Regional personnel and representatives from state universities.

**Take Home Items:**

- The NMDOT MS Access project management database appears to be working well for the Research Bureau. CDOT will examine its benefit and suitability for use in its project management program to either complement or supplement its current Access database application.
- The concept of negotiating the indirect costs with the universities or letting the universities to shoulder portion of the indirect costs is a great idea that we can try to pursue in CDOT.
- On a trial basis, CDOT can require consultants to submit quarterly invoices for some research projects instead of following either a regular monthly billing schedule or irregular billing frequency to facilitate the verification of the actual amount of work completed prior to approving invoice payment.

Again, I would like to thank the entire staff of the NMDOT Research Bureau, representatives from other states and the FHWA for the genuine hospitality, openness, and support during the peer exchange meeting. Indeed, it was quite a pleasant and a very productive experience.

**Oklahoma**



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 Oklahoma DOT  
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The screenshot shows the website for the State Planning & Research Program (SPR). It includes a navigation bar with links to 'HOME', 'Central Office', 'Planning & Research', and 'Research Program'. The main content area is titled 'Research, Development and Technology Transfer Program' and contains several sections: '2007 Program', 'Problem Statements', 'Submission guidelines for Research Proposals', 'Problem Titles (PDF)', 'Problem Statements (PDF)', 'FY06 Request for RRD Problem Statements', 'FY2008 State Planning & Research (SPR) Program', and 'Get a Quick Reader'. On the right side, there is a 'Contact Planning & Research' section with an 'OTC Oklahoma Transportation Center' logo and a list of affiliations including the Federal Highway Admin., Oklahoma Office, Washington, D.C., and the United States Department of Transportation. A 'Previous FY' section lists 'FY2007 State (SPR) Program', 'FY2006 State (SPR) Program', and 'FY2005 State (SPR) Program'.

Oklahoma Research Office contains thorough on-line resources and information. New Mexico will explore how our website and electronic resources can further communicate the work of the Bureau using this approach.

This focus area was well chosen since the bureau was restructured since the 2004 Peer

Exchange. Oklahoma's involvement in the 2008 Peer Exchange was important since they also have been recently restructured.

The New Mexico Research Bureau and the leadership of the Planning Division are commended for the following elements of their restructuring:

- Use of detailed forms and summary during project solicitation.
- Use of an independent selection committee in the competitive bidding process.
- Requirement of formal implementation plan in each contract.
- Use of project relevant committees and technical panels in maintaining the respective budgets and goals.
- Requirement of multi-media report as a contract deliverable.
- Tracking of all project details in a project management database.
- Requirement of quarterly detailed reports by consultants.
- Reporting of program performance to FHWA with only approved changes being submitted for reimbursement.

Oklahoma recommends the following items for consideration:

- Host an annual Transportation Research Day in cooperation with the universities to highlight successful research and provide opportunities for discussing future research needs.
- Include an optional step of requesting letters of interest for research subject areas which have historically generated numerous proposals. This may facilitate a reduction in the number of proposals being submitted by the less experienced, less qualified researchers.
- Resolve similar research subject areas into four groupings/committees with an executive oversight committee to approve the final distribution of funds in the annual work plan. Washington State DOT offered a good example of how this has been accomplished.

Oklahoma appreciates the opportunity to participate in this peer exchange and looks forward to future exchanges with New Mexico.

# Texas



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The Texas DOT "Eye on Research" newsletter features updates on recent completed work from their Office. It was one recommendation offered on how the New Mexico Research Bureau can improve communication with stakeholders.

The New Mexico Department of Transportation is to be commended for looking at the research program from top to bottom. While it is still too early to tell how the procedural changes will "shake out", I believe they are on the right track. I note the following, in addition to what was noted in group discussion during the meeting.

- The staff in the Research Bureau appears to be committed and enthusiastic.
- There appears to be a good relationship with the Federal Highway Administration.
- The use of the Research Oversight Committee, Selection Committees, and the Technical Panels is good.
- Solicitation from the New Mexico DOT organizational units should provide a lot of opportunity for input, resulting in projects which can assist the DOT in its work.
- The data base which has been developed should simplify program and contract management.
- The deliverables requirements are good (reference particularly the requirement for a multimedia document).
- The library is well stocked and organized.

I would recommend the following:

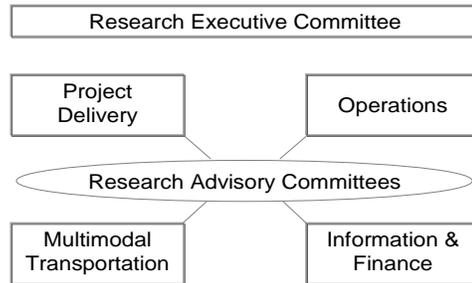
- Continue to involve DOT management, with particular emphasis on researching areas that will support the goals of the agency. The benefits of research should also be communicated.
- While the DOT "drives" the program, continue to work with universities as partners, while also recognizing that they are "hired" to perform in accordance with the contract.

- Consider ways to reduce the contract processing time.
- Consider the amount of work that goes into the Request for Proposal by New Mexico DOT. Is too much of the proposal being written for the universities, perhaps stifling some creativity on their part?
- Document complete procedures from start to finish, including responsibility of all parties and committees, in a Manual.
- The Research Bureau should participate in the AASHTO Research Advisory Committee as much as possible. This provides an excellent forum to keep up with what other states are doing.



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### WSDOT Research Management



The Washington DOT Selection Process incorporates use of a mid-level committee or Research Advisory Committee to select projects. This was one model that New Mexico was impressed with and will propose to use with our solicitation process.

The May 2008 New Mexico Department of Transportation (NMDOT) Peer Exchange was very useful and well planned. Both the hosting state and the guest states received valuable information during this exchange.

There were several items discussed which Washington State Department of Transportation (WSDOT) will review for possible adaptation.

The NMDOT offers their final research reports in multi-media format. In addition to having written reports available, they have the option of video format, voice-over presentation, and pdf format, in addition to html format for the internet. While the nature of the research project may dictate the report format in some cases, I believe it would be useful for WSDOT to explore other format options for some research reports.

The NMDOT utilizes boilerplates for the contract language when preparing contracts with universities. The items that change within the boilerplate format are the deliverables, scope, budget, and milestones. In the past they utilized a master agreement with individual task orders, but they have moved away from this in favor of individual contracts for each research project. WSDOT utilizes the master agreement concept for most university research projects with a good deal of success. However, it

would be useful for WSDOT to spend time developing a boilerplate language for consultant agreements and contracts with organizations not under a master agreement.

The NMDOT has a project management database which was reviewed at the peer exchange. They reviewed some screen samples from the system. WSDOT does not currently have a research project management database, but is partnering with some other states through the Transportation Pooled Fund program to adapt California Department of Transportation (CALTRANS) for use within WSDOT.

The Texas Department of Transportation (TXDOT) has prepared a small procedures manual that outlines the research office procedures that are necessary to be followed by customers of the TXDOT Research Office. It looked to be easy to read and easy for a user to follow. I believe this would be a useful tool for the WSDOT Research Office to develop and distribute to our users.

The NMDOT had questions regarding technology transfer. I will provide NMDOT Research Office with contact names within the WSDOT Technology Transfer Office to provide information.

The NMDOT Office discussed issues they have regarding their research project selection process. We discussed the Research Advisory Committee (RAC) process utilized within WSDOT for review and selection of approved projects. It appears that NMDOT could benefit from a similar type of project selection system.

WSDOT appreciates the opportunity to have been a part of the New Mexico Peer Exchange. We look forward to continued communication with NMDOT, TXDOT, Oklahoma Department of Transportation, and Colorado Department of Transportation in the future.

# Action Plan Deployment

From the above comments and observations an Action Plan has been created identifying the most important items for the Research Bureau. It describes,

- Opportunities for Improvement,
- Discussion Items and
- Further Action & Follow-Up Items to be pursued

Opportunities for Improvement	Discussion	Further Action / Follow-up
<p>Consider providing an intermediate level of management participation before the ROC</p>	<ul style="list-style-type: none"> <li>• In discussion with Peer Exchange Members, the topic of a mid-level advisory or Research Advisory Panel emerged. This panel could serve as trusted source to the ROC. It would provide the ROC and leadership with a level of assurance that projects being recommended for consideration are a fair representation of department's research needs. It may also serve as an improved alternative to the existing expectation that the ROC has the time and resources available to review the numerous proposals being submitted.</li> <li>• From this discussion, the concept of new step in the formal selection of some form of mid-level management or Research Advisory Committee is added. Their involvement would</li> </ul>	<p>Information on the organizational structure of NMDOT and the identification of social networks containing a level of expertise and interest will be prepared.</p>

	<p>be to serve as both a managerial advisory resource and technical capacity on research proposals.</p> <ul style="list-style-type: none"> <li>• Projects selected by this advisory group would provide final recommendations to Research Oversight Committee for final approval.</li> </ul>	<p>A formal proposal to Executive Management will be explored further.</p>
<p>Assess the possibility of allocating percentages of funding available for the nine different areas of research topics now listed.</p>	<ul style="list-style-type: none"> <li>• Discussion explored the possibility of allocating percentages of funding as a tool to engage bureau chiefs and other mid-level managers in the process. Results of this research could then benefit their programs and the department in general, engaging more attention and support for the research solicitation process.</li> </ul>	<p>Explore process further and possibly incorporate it into the Research Advisory Committee recommendation above.</p>
<p>The success of project implementation after research is completed and aligning it to performance measurement was identified as a topic that would provide further improvement.</p>	<ul style="list-style-type: none"> <li>• The need to establish a more rigorous performance implementation measure had also been identified prior to the peer exchange. The recommendation by the Peer Exchange Group provided further evidence of this need.</li> <li>• Review of the NCHRP Tool Box and other tools that offer this application will be examined.</li> </ul>	<p>Project Implementation is one performance measure for consideration in the FY09 Work Plan.</p> <p>Implementation could be monitored as a test case to understand more fully successes and opportunities for improvement.</p>

From this exchange and report, the Research Bureau will re-assess the next steps to take in order to most wisely use the information and knowledge provided from the Peer Exchange Meeting.

The New Mexico DOT and Research Bureau Staff in particular thank all of the participating states and look forward to reporting on the follow-up activities and results in our next peer exchange.



2008 Peer Exchange Participants

Back Row Left to Right, Virgil Valdez- NMDOT, Robert Fijol- NMFHWA, Amy Estelle- NMDOT, Ron Curb- Oklahoma DOT, Scott McClure- NMDOT, Jon Woodland- NMDOT, Tim Carlile- Washington State DOT, Nick Mandel- NMDOT  
Front Row- Roberto E. DeDios- Colorado DOT, Rick Collins- Texas DOT, Mara Matteson, -NMDOT, Missing, Dee Billingsley, Office Manger



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