

# WSDOT Research Procedures Manual

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*January 2007*

*FINAL REVIEW DRAFT*

## **ORGANIZATION OF THE DOCUMENT**

**Section One: Overview** – Explains what constitutes WSDOT’s Research Program.

**Section Two: Roles and Responsibilities** – Describes research committee, project participant, and research staff roles and responsibilities in carrying out WSDOT research activities.

**Section Three: Procedures for Research Management** – Describes specific procedures and protocols to assist WSDOT staff, Federal Highway Administration (FHWA) staff, Principal Investigators and other interested parties with the directions they need to participate in a particular research program or aspect of a research project.

**Section Four: Research Implementation** – Identifies the specific project requirements, from proposal development to final reporting, that promote implementation of relevant findings upon completion of the research project.

**Section Five: Research Reports** – Defines the WSDOT requirements for preparing research reports funded by WSDOT.

**Section Six: Administration** – Describes processes used to administer the Research Program including information on report filing, web page management, TRIS and RiP maintenance, contracting, and financial management.

**Section Seven: Research Program Review** – Describes the Research Program peer exchange requirements and process.

**Section Eight: Research Resources** – Provides a quick reference to ongoing research, projects, research reports, and research program information.

## ***Acronym List for WSDOT Research Procedures Manual***

AASHTO	American Association of State Highway and Transportation Officials
ACRP	Airport Cooperative Research Program
CFR	Code of Federal Regulations
CMAQ	Congestion Mitigation and Air Quality
COTR	Contracting Officer's Technical Representative
CRP	Cooperative Research Program
CSR	Client Sponsored Research
CTBSSP	Commercial Truck & Bus Safety Synthesis Program
FAC	Federal Administrated Contracts
FAPA	Federal Aid Project Authorization
FFY	Federal Fiscal Year
FHWA	Federal Highway Administration
FMIS	Funds Management Information System
FTA	Federal Transit Administration
GCA	Governmental Contract
HMCRP	Hazardous Materials Cooperative Research Program
HRPD	FHWA Office of Program Development and Evaluation
HSIP	Highway Safety Improvement Program
IDEA	Innovations Deserving of Exploratory Analysis
IM	Interstate Maintenance
ITRD	International Transport Research Documentation
MG	Minimum Guarantee
NCFRP	National Cooperative Freight Research Program
NCHRP	National Cooperative Highway Research Program
NHS	National Highway System
NTIS	National Technical Information Service
NTL	National Transportation Library
OCLC	On-Line Computer Library Center
OFM	Office of Financial Management (State)

OMB	Office of Management and Budget (Federal)
ORLS	WSDOT Office of Research and Library Services
PI	Principal Investigator
PL	Metropolitan Planning
PR	Payment Request
PS&E	Plans, Specifications, and Estimates
RAC	Research Advisory Committee
RDT	Research, Development and Technology
REC	Research Executive Committee
RFQ	Request for Qualifications
RIP	Research in Progress
SCOR	Standing Committee on Research
SHRP	Strategic Highway Research Program
SPR	State Planning and Research
STEP	Surface Transportation Environmental and Planning Cooperative Research Program
STP	Surface Transportation Program
TAC	Technical Advisory Committee
TCRP	Transit Cooperative Research Program
TLCat	Transportation Libraries Catalog
TPF	Transportation Pooled Fund
TRAC	Washington Transportation Center
TRAINS	Transportation Information System (WSDOT's Accounting System)
TRB	Transportation Research Board
TRIS	Transportation Research Information Services
TransNow	Transportation Northwest
Transport	Bibliographic Databases combined into one application: Transportation Research information Services (TRIS) and International Transport Research Documentation (ITRD)
UTC	University Transportation Center
UW	University of Washington
WA-RD	Washington Research Document

WASHTO Washington Association of State Highway and Transportation Officials  
WSDOT Washington State Department of Transportation  
WSU Washington State University

## **SECTION ONE: OVERVIEW**

The WSDOT Research Program conducts research and development projects to better understand why certain problems occur and how to prevent or correct them through improved information or technology. The program uses systematic inquiry to improve the agency's ability to deliver transportation projects and operate a safe and efficient transportation system.

The WSDOT Research Program includes:

- State Planning and Research (SP&R)-funded projects
- Client Sponsored Research
- Student Studies Programs
- Transportation Pooled Fund Studies
- Experimental Features
- Federal Discretionary Funds
- Cooperative Research Program activities
- Synthesis Programs
- Strategic Highway Research Program II (SHRP II)
- Innovations Deserving of Exploratory Analysis (IDEA) activities
- University Transportation Centers
- Transportation Research Board Technical Committees

### **RESEARCH PROGRAM OVERVIEW**

A variety of transportation research programs are available to help transportation agencies address their research needs. Programs vary by intent, geographic coverage, and the degree of competitiveness. WSDOT's intent is to use each of the programs for the maximum benefit to the agency. This section summarizes the programs that WSDOT uses to fund transportation research.

#### ***State Planning and Research (SP&R)***

Title 23, U.S. Code Section 505 (b) (1) requires at least 25% of the State Planning and Research (SP&R) apportionment (or its equivalent from other authorized sources) be restricted to research activities. A 20% state match is required. The state match is provided from the Motor Vehicle Fund and the Multimodal Fund. The WSDOT Research Office manages WSDOT's SP&R research program.

The SP&R research funding can be used for research, development, and technology transfer activities. The funding is managed with input from the Research Executive Committee and four Research Advisory Committees (RACs): Project Delivery; Operations; Multimodal Transportation; and Information and Finance. Project investments are tracked in six program areas: Bridges & Structures; Environment; Highway Design & Safety; Mobility & Intermodal Planning; Construction, Materials, Maintenance, Highway Operations and Security.

States set aside 2 percent of the apportionments they receive from the Interstate Maintenance (IM), National Highway System (NHS), Surface Transportation Program (STP), Congestion Mitigation and Air Quality Improvement (CMAQ), Bridge programs, and the new Highway Safety Improvement Program (HSIP), and the Base Minimum Guarantee to fund the State Planning and Research Program.

The SP&R program provides ongoing funding for the WSDOT Research Program. Projects are selected on a biennial basis in the fall of even years.

### ***Client Sponsored Research Projects***

Some WSDOT Programs, Divisions, and Project Offices conduct research and experimental activities in addition to research funded by the SP&R program. For example, the Bridge Office has conducted research on specific bridge design elements to help identify the best method for retrofitting bridges. Traffic management activities are funded within Highway Operations program. Project Offices may test new designs or conduct research as part of a mitigation plan. These projects may be administered by the Research Office upon request and are referred to as Client Sponsored Research (CSR) projects.

Funds eligible to be used for research include: National Highway System (NHS), Surface Transportation Program (STP), Metropolitan Planning (PL), and Minimum Guarantee (MG). State funding can also be used for research if approved by the Legislature.

### ***Student Studies Program***

A new program was established in 2006 to provide funding for university students to conduct simple investigations. The WSDOT Research Office manages a program of research activities that are conducted by students at the University of Washington and Washington State University. These projects are of a narrow scope, limited time frame and also provide a learning opportunity for the student. Funding is used to provide a stipend for the student. The WSDOT Research Office provides limited funding for this program and also arranges for studies funded by other program offices.

The WSDOT Research Office works with the Washington Transportation Center (TRAC) Directors at both universities to connect students and WSDOT staff.

### ***WSDOT Graduate Fellowship Program***

The WSDOT Graduate Fellowship Program provides an opportunity for WSDOT employees to continue their education while employed by the agency. The program focuses on providing advanced training in technical disciplines required by the department. Employees approved for the program are provided full pay and benefits while attending school full time at an accredited institution. Students are encouraged to complete their graduate studies within nine months. The costs of tuition, books, and school fees are covered by the program. Students may opt to write a research paper as part of their studies. If this option is chosen, students are encouraged to contact the Research Office to discuss high priority research needs that fit with in their area of study.

WSDOT employees may also participate in the Fellowship Program on projects funded by the WSDOT Research Office or Transportation Northwest (TransNow). TransNow is a University Transportation Center lead by the University of Washington. The

Washington State University is a partner in TransNow and may also receive TransNow funding. To receive funding through TransNow, students must be accepted by a faculty member with a funded TransNow project (see the description of TransNow below). To receive funding from the Research Office, an employee must be accepted by the faculty member selected as the Principal Investigator for a funded research project. Sponsoring Offices must also provide the additional costs of the employee's salary and benefits in excess of the Research Assistant salary and benefits covered by the Research Office.

### ***Transportation Pooled Fund Program***

The Federal Highway Administration (FHWA) facilitates the management of the Transportation Pooled Fund Program as a means for interested States, FHWA, and other organizations to partner when significant or widespread interest is shown in solving transportation-related problems. Partners may pool funds, including SP&R funding, and when approved by FHWA SP&R funds may be used without matching state funds. Activities may include research, planning, or technology transfer activities and may be jointly funded by several federal, state, regional, and local transportation agencies, academic institutions, foundations, or private firms as a pooled fund study.

WSDOT estimates that for each dollar it contributes to TPF Studies, approximately nine dollars are gained from other contributors. More information about the federal Transportation Pooled Fund Program may be found at <http://www.tfsrc.gov/site/active.htm> or <http://www.pooledfund.org>.

### ***Experimental Features Program***

The Experimental Features program is sponsored by FHWA to allow state departments of transportation to innovatively use new materials, processes, methods, etc., with a relatively low investment and with a minimum of preconstruction planning. Experimental Features are incorporated into federal-aid highway construction projects to determine the suitability of the features as regular construction items. More information about the Experimental Features program can be found at: <http://www.fhwa.dot.gov/programadmin/contracts/expermnt.htm>.

### ***Federal Discretionary Funds***

Research activities may also be funded through federal discretionary programs, more commonly known as "earmarks" that are identified and approved by Congress. These projects are sponsored by one or more members of Congress and may be research oriented. Requests for possible earmarks may be made at the beginning of each year. Requests for Congressional support of proposed earmarks are approved by Executive Management prior to being submitted to individual Congressional members. Other transportation partners, such as the state's universities, may also request federal earmarks for research.

### ***Cooperative Research Program***

The Cooperative Research Programs are applied, contract research programs that develop near-term, practical solutions to problems facing transportation agencies. WSDOT may recommend problem statements for study and nominate employees for oversight panels. Cooperative Research Programs include:

- Airport Cooperative Research Program (ACRP). Problem statements are due March 31 of each year.
- National Freight Cooperative Research Program (FCRP)
- Hazardous Materials Cooperative Research Program (HMCRP)
- National Cooperative Highway Research Program (NCHRP). Problem statements are due September 15 of each year.
- Surface Transportation Environmental and Planning Cooperative Research Program (STEP)
- Transportation Cooperative Research Program (TCRP). Problem statements are due June 15 of each year.

All Cooperative Research Programs except STEP are managed by the Transportation Research Board (TRB). The STEP is managed by the Federal Highway Administration (FHWA). Due dates for some new programs have not yet been established and will be posted on the website when known.

### ***Strategic Highway Research Program II***

SHRP II is a targeted, short-term, results-oriented program of strategic highway research designed to advance highway performance and safety for U.S. highway users. SHRP II will focus on applied research in four areas in order to meet the following goals:

- Prevent or reduce the severity of highway crashes by understanding driver behavior (**Safety**)
- Address the aging infrastructure through rapid design and construction methods that cause minimal disruption and produce long-lived facilities (**Renewal**)
- Reduce congestion through incident reduction, management, response, and mitigation (**Reliability**)
- Integrate mobility, economic, environmental, and community needs in the planning and designing of new transportation capacity (**Capacity**)

The Program will distribute Requests for Proposals but the schedule has not yet been defined.

### ***Synthesis Programs***

The Synthesis Programs prepare summaries of current practice in four areas of transportation:

- Aviation Cooperative Research Program (ACRP). Topics are due March 31 of each year.
- Commercial Truck and Bus Safety Synthesis Program (CTBSSP). Topics are due May 31 of each year.
- National Cooperative Highway Research Synthesis (NCHRP) Synthesis. Topics are due January 31 of each year.
- Transit Cooperative Research Program (TCRP) Synthesis. Topics are due March 31 of each year.

The reports are prepared under the guidance of a technical panel, with the assistance of an expert in the topic area who serves as the project consultant.

WSDOT may submit proposals for synthesis studies and nominate employees for oversight panels.

### ***Innovations Deserving Exploratory Analysis***

Innovations Deserving Exploratory Analysis (IDEA) is a TRB program to fund investigations of promising but unproven innovations in four transportation areas. The program operates four categories:

- High-Speed Rail – aimed at helping attain the goal of cost-effective upgrading of current rail infrastructure for high-speed passenger travel and leading to a viable high-speed rail transportation system in the United States. Projects are selected based on their potential to support upgrading the existing U.S. rail system to accommodate operations of 125 mph and beyond. The program is funded by the Federal Railroad Administration.
- NCHRP Highway – seeks to introduce new technologies, methods, or processes for application to highways and intermodal surface transportation through the development and testing of nontraditional and innovative concepts, including application of those from other technology sectors that have not yet been tested in the highway sector. The program considers deserving innovations in any technology area for highway and intermodal surface transportation systems.
- Transit – focuses on transit security and bus rapid transit. The Transit IDEA Program is part of the Transit Cooperative Research Program, a cooperative effort of the Federal Transit Administration (FTA), the Transportation Research Board (TRB), and the Transit Development Corporation (a nonprofit educational and research organization of the American Public Transportation Association). The program is funded by the FTA.
- Safety – provides funding for projects that promote innovative approaches to improving railroad, intercity bus, and truck safety. The program encompasses vehicle improvements, operator performance, and alertness improvements; operational practices; and hazard reduction, among other interest areas. The program is jointly sponsored by the Federal Motor Carrier Safety Administration and the Federal Railroad Administration.

WSDOT may submit proposals for innovations to study. IDEA proposals are reviewed in March and September of each year.

### ***University Transportation Centers***

The United States Department of Transportation (USDOT) provides funding to advance U.S. technology and expertise in the many disciplines comprising transportation through the mechanisms of education, research and technology transfer at university-based centers of excellence. These centers each facilitate program of research in theme areas. It may be possible to partner with a university professor to submit your research problem statement for funding to a University Transportation Center (UTC). If you are successful in partnering with a professor to submit a proposal, you will likely be expected to provide match funding. To determine if your research idea is appropriate for a UTC, please contact the Research Manager responsible for research in your area of interest. <http://utc.dot.gov/>

## ***Transportation Research Board Technical Committees***

The Transportation Research Board (TRB) is a division of the National Academies, which includes the National Academy of Sciences, National Academy of Engineering, Institute of Medicine, and National Research Council. The Transportation Research Board's mission is to promote innovation and progress in transportation through research.

TRB manages 200 Technical Committees on topics covering all modes and aspects of the transportation industry. The committees:

- Provide for a mutual exchange of information among committee and task force members on socioeconomic and technological developments
- Identify research needs
- Stimulate needed research
- Advise on research priorities and procedures
- Evaluate and interpret research findings
- Review papers for presentation at TRB meetings and for publication
- Encourage the adoption of appropriate research findings into practice
- Arrange special programs, conferences, and workshops

## ***SECTION TWO: ROLES AND RESPONSIBILITIES***

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The WSDOT Research Program relies on individuals and committees for the development of a strategic, multi-modal program of research activities. Anyone within the agency may submit a research need to the Director, Office of Research and Library Services. Research needs will be forwarded to Research Advisory Committees for consideration.

Roles are described for:

- WSDOT Office of Research and Library Services
- WSDOT Research Executive Committee
- Research Advisory Committees
- Technical Advisory Committee
- Assistant Secretary of Engineering and Regional Operations
- Director, Office of Research and Library Services
- Research Manager
- Technical Monitor
- Principal Investigator
- WSDOT Librarian
- Office Coordinator
- Contract and Finance Manager
- Implementation Manager

### ***WSDOT Office of Research and Library Services***

The WSDOT Office of Research and Library Services (ORLS) manages two program functions known as the Research Office and the WSDOT Library.

The Research Office organizes, manages, and disseminates the results of research conducted within the Department. It coordinates the process for identifying, selecting, and managing research projects funded through the Federal State Planning and Research Program. It helps develop and manage research funded by other agency programs or by legislative direction.

The WSDOT Library is an integral part of the ORLS. 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 information and additional sources, and obtaining articles and books through a state and national library network.

Some of the key functions that the ORLS performs are: giving approvals for new projects and research task agreements, making revisions to the program's projects, funding or schedules, setting priorities for research, and tracking implementation activities for research results.

**Review:** The ORLS reviews all approved research activities and obtains necessary authorization for each research project.

**Progress Reports:** The ORLS receives progress reports pertaining to each SP&R and Transportation Pooled Fund research project from Principal Investigators every six months. These reports are based on information obtained from the Research Manager, the Contract and Finance Manager, the Technical Monitor, the Federal Programs Manager and the Principal Investigators.

**Budget:** The Director, Office of Research and Library Services (ORLS) approves all research budgets and ensures that research activities are conducted within the constraints of available resources.

*Extensions/Revisions:* The Director of ORLS, hereafter referred to as Director, approves all revisions to approved research projects and any extensions required to complete the research within the limits of the approved work program. A budget change that involves an increase in the total federal funds authorized for the work program requires prior FHWA approval and authorization. Similarly, changes in the work program (adding a line item, contracting out etc.) as specified in 49 CFR 18.30(d) require prior FHWA approval.

### ***Research Executive Committee***

The Research Executive Committee (REC) provides a consultative oversight to the WSDOT ORLS and the WSDOT Research Program. The REC sets the strategic direction for the solicitation of project proposals.

The role of the Research Executive Committee includes:

- Defining research goals that are the basis for project selection
- Establishing the selection committees
- Approving the funded research program
- Reviewing key research findings
- Evaluating and finalizing recommendations for implementation of research findings

The REC includes:

- Assistant Secretary, Engineering and Regional Operations Division
- Director, Strategic Planning and Programming
- Director, Environmental and Engineering Programs
- Director, Maintenance and Operations Programs
- Chief of Staff, or designee
- Regional Administrator, Eastern Washington
- Regional Administrator, Western Washington

The term of service for members will be at the discretion of the Secretary's Office.

### ***Research Advisory Committees***

The Research Advisory Committees promote understanding of agency research needs, clarify priorities, and promote multi-modal results, where applicable.

Four Research Advisory Committees (RACs) provide input to the WSDOT Research Program: Project Delivery; Operations; Multimodal Transportation; and Information and Finance. Each committee is comprised of nine to twelve members. The RACs are chaired by members of the Research Executive Committee and supported by the staff of the ORLS. The role of the RACs includes:

- Providing input into the creation of research problem statements
- Prioritizing research needs in a manner that addresses critical agency issues and aligns with the strategic direction of the agency
- Recommending to the Research Executive Committee research projects to be funded
- Starting the implementation process by describing the desired outcomes and benefits expected of the recommended research
- Recommending technical monitors for the selected projects

- Receiving reports and presentations on research results, discussing the recommendations of technical monitors for implementation, and making recommendations on funding for implementation
- Provide input to the Research Manager on the research needs and priorities within their functional areas.
- Providing input for national research participation (i.e., NCHRP and TCRP problem statement submittal and ranking)
- Provide input and feedback to the WSDOT Research Office on research programs and procedures.

In selecting RAC members, consideration is given to both the level of expertise of the individuals and balanced representation among the interested functional areas. FHWA's Division Office is also represented on each RAC. Participants are expected to:

- Have an understanding of the agency goals, activities, and priority management issues in their Office and the agency.
- Be able to discuss knowledgeably the relative urgency of research and development needs across the agency.
- Be interested in research and development.
- Have time to proactively participate.
- Have the ability to influence budget decisions in support of implementation of research results where warranted.

Meetings will be held at least twice annually. In addition to meetings, committee members are expected to facilitate communication on the topics within their functional area.

### ***Technical Advisory Committees***

Each project is encouraged to develop a Technical Advisory Committee to provide additional perspective and advice for the research project. Technical Advisory Committee members may include the Technical Monitor, the Research Manager responsible for the subject area, agency representatives from other offices with a vested interest, FHWA representatives, and regional/local/or Tribal governments. Technical Advisory Committees will:

1. Finalize the project scope of work.
2. Receive updates on project progress.
3. Provide technical and policy guidance for the projects.

The Technical Advisory Committees are maintained for the life of the project. Meetings are scheduled to provide assistance at strategic milestones in the project.

### ***Assistant Secretary, Engineering and Regional Operations***

The Assistant Secretary supervises the Director, Office of Research and Library Services (ORLS) and approves all projects, budgets, and operations relating to the WSDOT research program. The Assistant Secretary chairs the Research Executive Committee.

## ***Director, Office of Research and Library Services***

The Director is responsible for the day-to-day management of the WSDOT Research Program. Research Management includes developing and conducting research activities within the strategic objectives and policies of the Department, developing policy and procedures, initiating specific projects, participating in research sponsored from non-WSDOT funding sources, and providing liaison with executive, university and legislative personnel. The priorities, policies, and direction of the research are recommended to the Research Executive Committee by the Director.

## ***Research Manager***

The Research Manager is a staff person in the ORLS and is responsible for managing the research topic areas and project process. The Research Manager ensures that project milestones are reached in a timely fashion.

1. Responsible for developing, administering, and marketing the research programs in his/her functional area.
2. Maintains knowledge of and understands research activities and needs in the functional areas assigned, including monitoring of national and international research for potential application within WSDOT.
3. Works with the Technical Monitor to develop research problem statements for research needs identified by the Research Advisory Committees.
4. Helps identify researchers with appropriate skills to conduct research.
5. Acts as a liaison between the Technical Monitor and the Principal Investigator on contracts.
6. Facilitates development of a scope of work and task agreement/contract for the research project.
7. Maintains contact with the Principal Investigator and Technical Monitor to ensure that project milestones are met and documented.
8. Reviews and approves invoices.
9. Manages research project budget.
10. Approves all contractual changes related to project scope, budget, and time extensions.
11. Coordinates meetings of advisory panels.
12. Reviews and comments on draft final reports and other products of the research.
13. Collaborates with the Technical Monitor to formulate strategies for implementing research results.

## ***Technical Monitor***

Technical Monitors are WSDOT staff with technical knowledge of the research subject. The Technical Monitor ensures that the research project addresses WSDOT business needs. The

Technical Monitors are assigned by the WSDOT Office Manager designated as the lead for a research need by the Research Advisory Committee.

1. Develops, in coordination with the Research Manager, research problem statements for research needs identified by the Research Advisory Committees.
2. Reviews and comments on the scope of work for the research project.
3. Identifies intended implementation outcome of the research project.
4. Identifies and provides a list to the Research Manager, before the scope is finalized, of WSDOT Offices and Regions that will be users of research findings, if appropriate, or will be affected by changes as a result of research findings.
5. Establishes and maintains communication with representatives of these user and customer groups to ensure research products achieve the most comprehensive outcome possible for the resources provided.
6. Remains in contact with the Research Principle Investigator and Research Manager throughout the project. Notifies the Principle Investigator and Research Manager of questions or concerns regarding project scope or work methods. This may include pre-proposal meetings with prospective PI(s), a project meeting soon after the official start, and in-progress reviews conducted on an as needed basis, but at least quarterly, as a minimum.
7. Provides a list to the Research Manager of users and customers that should be invited to Progress and Final Review Meetings.
8. Reviews and comments on interim, draft final and final reports and other products of the research.
9. Drafts a summary statement of how the research project finding will/could affect WSDOT business processes.
10. Works with the Research Implementation Manager to draft an Implementation Plan for the research findings including information on technology transfer and project marketing.
11. Reports on progress of the implementation plan at timeframes established in the implementation plan.

### ***Principal Investigator***

The Principal Investigator is a university professor, a consultant, or agency employee with expertise in the subject area to be studied. The Principal Investigator manages the day-to-day activity of the research project.

1. Develops a project work plan.
2. Develops a scope of work for the project.
3. Identifies/hires staff to carry out the work.
4. Implements research activities.
5. Provides progress and final reports.
6. Manages the project budget and schedule.
7. Maintains contact with the Technical Monitor, TRAC Director, and Research Manager.

8. Participates in outreach activities such as publication, presentation, and summary document development.

### ***WSDOT Librarian***

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

### ***Office Coordinator***

The Office Coordinator provides administrative support to the ORLS. Specific duties include:

1. Receive and document the receipt of research proposals, contracts, and reports.
2. Assign WA-RD Report numbers.
3. Facilitate the production and distribution of research reports.
4. Develop and maintain an electronic filing system for contracted research projects.
5. Manage mail services for the WSDOT ORLS.

### ***Contract and Finance Manager***

A Research Manager is assigned the task of Contract and Finance Manager in addition to other duties. The Contract and Finance Manager, with the assistance of the Fiscal Analyst performs the actions necessary to:

1. Prepare, execute and close research contracts.
2. Maintain research project accounts in compliance with standard audit and accounting practices.
3. Develop the ORLS biennial budget and federal aid work program.
4. Serve as a resource to other ORLS staff regarding WSDOT fiscal and contract procedures and maintain up to date records on all Office expenditures.
5. Ensure timely payment of all project invoices.
6. Provide a continuously updated database for all research projects.

These duties are more fully explained and detailed in Section Six of this Manual.

### ***Implementation Manager***

A Research Manager is assigned the task of Implementation Manager and is responsible for facilitating, evaluating and documenting office-wide implementation activities including:

1. Develop and maintain procedures for integrating implementation concepts into research proposal development.

2. Develop and maintain procedures for creating implementation plans and reporting.
3. Serve as a resource to other Research Managers about research implementation.
4. Oversee the development of research notes and implementation summaries.

## **RESEARCH PARTNERS**

### ***Washington State Transportation Center (TRAC)***

TRAC is a cooperative transportation research partnership. Its members include the University of Washington, Washington State University and the Washington State Department of Transportation. Member organizations support TRAC to coordinate transportation research efforts and to develop research opportunities nationally and locally.

TRAC's most important function is to provide a link between the state, university researchers and the private sector. Much of TRAC's research is funded by WSDOT. TRAC acts as a liaison, connecting those who need applied research at WSDOT with those best suited for conducting it at the universities. From its offices at the University of Washington in Seattle and Washington State University in Pullman, TRAC coordinates resources for the research, serves as a focal point for student involvement in transportation research, and provides resources such as report editing and graphics.

### ***Transportation Northwest (TransNow)***

TransNow ([www.transnow.org](http://www.transnow.org)) is the University Transportation Center for Federal Region 10 which consists of Alaska, Idaho, Oregon and Washington State. It is one of ten regional transportation research centers administered by the Research and Special Programs Administration (RSPA) of the USDOT. It is a consortium comprised of the University of Washington (UW) and Washington State University (WSU) and it is led by the UW.

The research theme of TransNow is Transportation Operations and Infrastructure. It includes the major theme areas of Traffic Operations, with a strong focus on Intelligent Transportation Systems (ITS), Freight and Logistics and Infrastructure Construction.

### ***Transportation Research Board***

The Transportation Research Board (TRB) is a division of the National Research Council, which serves as an independent adviser to the federal government and others on scientific and technical questions of national importance. The mission of the TRB is to promote innovation and progress in transportation through research. The Director serves as the TRB State Representative and acts as a liaison to represent 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 priorities for the National Cooperative Highway Research Program (NCHRP). The Research Advisory Committee (RAC) includes research

managers from each state department of transportation and provides input on research needs and priorities. In addition, RAC facilitates surveys that support research and provides a link between Research Directors. The WSDOT Director, ORLS serves on the AASHTO RAC.

### ***Other Partners in Research***

Other organizations that WSDOT partners with on research includes: research institutions (including universities and other government research labs); state and federal agencies; local governments; non-profit organizations; and private consultants and colleges. These partnerships currently occur on a project-by-project basis but may become programmatic partnerships on an as needed basis.

## ***SECTION THREE: PROCEDURES FOR RESEARCH MANAGEMENT***

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The process of developing the research program involves the collection of research needs and potential solutions from many sources including WSDOT employees, FHWA, FTA, university researchers, local agencies and members of private industry. This subsection outlines the specific actions that make up this process.

### **RESEARCH PROGRAM DEVELOPMENT**

The conceptual research needs and problem statements will be prioritized by the Research Advisory Committees. The Research Executive Committee will approve a final list of problem statements to be funded. Once priority problems are identified, the Research Office and technical staff will work with principal investigators to develop the research scope of work.

#### ***Schedule***

##### *Even year*

April	Research Advisory Committees (RAC) meet to review current program and consider possible budget recommendations for ensuing biennium
May	Research needs solicitation initiated from RAC members for each functional area represented on the committee
June to September	RAC functional areas may hold workshops with interested parties to identify research needs
October 1	Functional area problem statements are submitted to ORLS
October/November	RAC meetings held to prioritize problem statements and develop recommendations for the REC
December	REC reviews recommendations and develops final project list

##### *Odd year*

January	Research Institutions identified and Principal Investigators selected
February to June	Project scopes developed
April	New research program and results from previous projects reviewed by RACs
July to September	Establish project contracts for new projects
August	RACs meet to discuss priorities for cooperative research programs, pooled fund projects, and federal discretionary requests

The research needs gathered through this process will provide information for other research in addition to the WSDOT research program. This includes the National Cooperative Highway Research Program (NCHRP), Transit Cooperative Research Program (TCRP), Transportation Pooled Fund Program, Federal earmark requests, Innovations Deserving Exploratory Analysis (IDEA), and other funding opportunities.

## ***Setting RAC Allocations***

The Research Executive Committee considers the Department's business needs and sets research goals and funding allocations for each RAC for the biennium. The Research Executive Committee will also review and update screening and selection criteria. The project selection process is posted on the Research Office website at:

<http://www.wsdot.wa.gov/Research/funding.htm#projectselection>.

## ***Identifying Research Needs***

Each Research Advisory Committee is divided into functional areas. Each functional area within a RAC is responsible for identifying their research needs. Each RAC member identifying research needs must ensure that identified needs align with identified agency and gubernatorial strategic directions for their functional area. It is up to the RAC member to define how they identify needs but it is anticipated that they may hold a research session with interested parties (Regions, Modes, Universities, federal and local partners, etc.) to identify research needs. Solicitations for input are to be inclusive.

## ***From Research Need to Proposed Research Project***

Research problem statements, modeled after the TRB Cooperative Research Program (CRP) format, will be developed for research needs by functional areas (Maintenance, Bridge and Structures, etc.). Input on priorities for funding may be made to the RAC member responsible for that function for consideration. Recommended Principal Investigators may be identified but no commitment will be made to the Principal Investigator at this time and RAC members are strongly encouraged to discuss research needs with at least both the University of Washington and Washington State University professors. Research Managers and TRAC Directors will help identify appropriate professors to contact if assistance is needed.

Out of these efforts, each RAC member responsible for their functional area will propose no more than three (3) fully developed research problem statements to the fall RAC meeting every even year. The RAC will rank problem statements for submission to the Research Executive Committee (REC) for funding from the SP&R research program.

For each research need recommended to the REC, the RAC will identify:

- Offices with interest in the topic
- A Lead Office

The Office Manager from the Lead Office will assign a Technical Monitor for the project in the event it is funded.

Each of the proposed projects and additional priorities identified by the RACs may be submitted to other applicable funding programs including but not limited to the CRP and the Transportation Pooled Fund program. Ideas should be captured in sufficient detail to propose as projects and a Technical Monitor assigned for follow through.

## **Role of the Universities:**

Professors may be involved in the functional area research sessions and contribute to the discussion of needs and innovations that may be of interest to WSDOT. Inclusion is at the discretion of the RAC member but involvement of academia is encouraged. If professors are invited, every attempt should be made to have representatives from both WSU and UW. Research Managers, working with the Washington Transportation Center (TRAC) Directors, will help functional area managers identify appropriate members to invite.

The WSDOT Research Program will give preference to principal investigators from Washington universities and colleges. This preference stems from the secondary benefit of increasing awareness and interest in fields related to transportation and the development of the future workforce. If, after discussion with faculty at both WSU and UW, expertise or availability does not exist at either university, problem statements will be solicited more broadly by the Research Office to identify a researcher.

The WSDOT Research Program is striving to balance the distribution of research projects to Washington's research institutions. The goal is to have no less than 1/3 of the research projects conducted at our state universities assigned to Principal Investigators at WSU and the remaining projects to the University of Washington. However, the balance may vary based on merit review and availability of expertise.

### ***Establishing the SP&R Research Work Program***

The Research Executive Committee retains final approval of the WSDOT Research Program. The Director compiles the prioritized and budget constrained RAC problem statements and presents the recommendations of the RACs to the Research Executive Committee.

The Research Executive Committee will review the RACs' proposed projects and recommended priorities and develop the final research plan for the SP&R Research Program. The Research Executive Committee will review the constrained program proposed by each RAC for their anticipated allocation and a list of the other committee interests.

In selecting projects for funding, the REC will also review the recommended Principal Investigators and assist in balancing the program between the UW and WSU.

Items that may be taken into consideration as a final research plan is prepared include:

- RAC recommended priorities
- Costs for proposed projects
- Balance of the program across functional areas
- Reasonable workloads
- How research activities support agency goals
- Urgency for results

An informational copy of the approved research statements is furnished to FHWA following Program approval. The Research Work Program includes SP&R Research and funded Transportation Pooled Fund projects. Research funded from sources other than SP&R, experimental features, federal earmarks and cooperative research program participation are not included in the Work Program. The FHWA work program approval process is described in Section 6.

## **RESEARCH MANAGEMENT**

Research Management provides direct management and supervision of specific research projects under the approved research program, including both SP&R funded research projects and research projects contracted through the ORLS using other funding sources. Research Management is responsible for coordinating the development of proposals to conduct research with Principal Investigators, the WSDOT Technical Monitor, Technical Advisory Committees, and the Contract and Finance Manager.

Research Management administers the conduct of the research by facilitating the proposal development; communicating regularly with the Principal Investigator, Technical Monitor, and Technical Advisory Committee; approving invoices; tracking project progress; reviewing and approving progress reports; conducting on-site visits; coordinating a review of the research, the final product, and/or report; supporting the role of the Technical Monitor in developing an Implementation Plan; and coordinating the reporting of project results to the Research Advisory Committee.

Each research project administered through the ORLS is assigned a Principal Investigator, Technical Monitor and Research Manager.

### ***SP&R Research Projects***

The Director of ORLS notifies the RACs and Research Managers when the research program is approved and assigns a Research Manager to a specific research task or project.

### **Identifying Technical Monitors**

The WSDOT Office Manager of the functional area that is the most direct potential beneficiary or user of the research findings assigns the Technical Monitor. The Technical Monitor will be provided information on their responsibilities and project contacts. Should other work duties prevent timely support of the research project, the Technical Monitor will notify the RAC member or Research Manager and request a replacement.

### **Selecting Principal Investigators**

After the research project list is finalized by the REC:

A. Continuing projects will continue with the same principal investigator unless the Technical Monitor requests otherwise.

B. For all other projects:

1. A Request for Qualifications will be distributed to the University of Washington and Washington State University. The RFQ will request the qualifications, resources, and a brief statement of research approach from interested parties. RFQs will be distributed in early January and be due within 2-3 weeks.

2. Research Managers and Technical Monitors will rate the proposals for: experience, qualifications (credentials), resources, and research approach and select the principal investigators. The top two candidates will be identified, provided that there are at least two candidates judged to be qualified.

3. The information will be compiled and reviewed as a program. The review will be conducted by the Director and the Research Managers. It will look for significant imbalances and workload concerns. The final program will be developed.
  4. A letter will be sent by the Director to the selected PI and TRAC Director notifying them of their selection, the earliest start date possible, and providing contact information for the Research Manager and Technical Monitor as well as requesting a full proposal.
  5. Letters will also be sent to the proposers not selected.
- C. If qualified researchers are not found through this solicitation, a RFQ will be distributed for proposals from other organizations.

The Research Manager responsible for the subject area and the assigned Technical Monitor determine if the project will be conducted through TRAC or through another university or consultant. Principal Investigators are selected based on recommendations of the Research Executive Committee, Research Advisory Committee, Research Managers and Technical Monitors.

1. For projects conducted through TRAC, criteria for selection include: area of expertise, quality of previous performance, knowledge of the specific problem area, and availability within the desired timeframe. Once the principal investigator has agreed to conduct the research, a proposed scope of work is developed and a task agreement is established.
2. For projects to be conducted by an organization other than TRAC, preferred principal investigators are identified in the same way except that contract requirements will be considered as well. Contract considerations include:
  - a. The type of agreement needed (government contract or personal services agreement)
  - b. Whether the preferred principal investigator can be contracted within the time frame desired (existence of an on-call agreement, appropriateness of a sole source agreement, or adequate time to conduct a request for proposal).

Research consultants, selected by the Technical Advisory Committee, provide their own Principal Investigator.

## **Developing Proposals**

The selected Principal Investigator, in cooperation with the Technical Monitor, prepares a draft research proposal according to the “Research Proposal Preparation Guide” (<http://depts.washington.edu/trac/projmgmnt/DOTprop.doc>). The proposal also must include how it will be implemented or used at WSDOT. The proposal will need to include a narrative describing how it meets the WSDOT Research Implementation Guidelines (see Section 4).

The draft proposal is forwarded to the assigned Research Manager. In most cases, a pre-proposal meeting is held with the Research Manager, the Principal Investigator and the Technical Monitor to determine the research approach, define the objectives of the draft research proposal, and create a Technical Advisory Committee. The Principal Investigator and the Technical Monitor are made aware of the Research in Progress and TRIS databases at this meeting.

Once the Principal Investigator, Technical Monitor and Research Manager agree on the draft proposal, an electronic version of the document is submitted to the TRAC Office at their

university or, for organizations not in TRAC, to the ORLS. If the document is submitted to the university TRAC office, it is reviewed and forwarded to the ORLS.

Research Management Reporting: The Research Manager notifies the Office Coordinator and Contract and Finance Manager of the draft proposal.

### **Proposal Review**

The Research Manager coordinates the review, modification and approval of the draft proposal.

The Research Manager works with the Technical Monitor to determine the appropriate technical review required to evaluate the draft proposal. It is intended that the affected offices within WSDOT will be provided the opportunity to review the proposal.

The Research Manager distributes copies of the draft proposal and a Proposal Review Form to the Technical Monitor and other appropriate reviewers, including the appropriate local federal office if the project includes federal funds.

Proposal reviewers complete the Proposal Review Form and return their comments to the Research Manager by the date indicated on the form. The Research Manager consolidates the review comments and provides them to the Principal Investigator.

The Principal Investigator incorporates the appropriate review comments into the draft proposal and submits a final proposal to the ORLS (an electronic version and two unbound paper copies). The final proposal is maintained by the Contract and Finance Manager, while copies of the final proposal and a Project Initiation Form are provided to the Research Manager to complete the review process. If the changes to the draft proposal were extensive, the Research Manager may elect to have the proposal reviewed again.

The Research Manager determines that the final proposal is ready for contract. The Research Manager signs and delivers the approved proposal documents to the Contract and Finance Manager. The Contract and Finance Manager prepares the appropriate research contract for the research task/project. The Proposal documents and research contract are approved by the Director.

### ***SP&R Project Management***

The Research Manager is the main point of contact for the Principal Investigator. The Research Manager strives to enhance the value of the research project by encouraging and, when necessary, facilitating open and meaningful communication between the Principal Investigator and the Technical Monitor from the functional area.

Research Managers provide direction and oversight for all active research projects. This requires continuous interaction between the Principal Investigator, Technical Monitor, and Research Manager.

The Research Manager ensures that the Principal Investigator is in compliance with all contract terms. High standards of excellence in the conduct of research are encouraged by the Research Manager.

Close project supervision is maintained with the Principal Investigator by the Research Manager to ensure that appropriate research techniques and methodologies are used, time schedules are met and that progress reports are received and reviewed. Meetings and on site visits with Principal Investigators and Technical Monitors are encouraged and may be arranged by the

Research Manager. There is a minimum of one on-site meeting for short-term projects (nine months or less). Long-term project on-site meetings are conducted every six to nine months, or more often, if needed.

The following items may be reviewed by the Research Manager and Technical Monitor at any meeting with the Principal Investigator or during the review of the Research Project Status Reports:

1. Project Status
2. Project Objectives
3. Project Scope
4. Personnel
5. Problems
6. Schedules
7. Equipment
8. Funding
9. Products
10. Findings
11. Implementation Expectations

If, through review, the Research Manager, the Technical Monitor, and/or the Principal Investigator determine that there is a need to make changes to the research project scope, term, funding or personnel, the Principal Investigator is directed to request a contract modification in writing.

The Research Manager, in conjunction with the Technical Monitor, maintains an on-going dialog with appropriate WSDOT offices, regions and other constituents to ensure that the research project is meeting identified needs.

## **Project Completion**

Upon completion of a research project, the Research Manager coordinates the review of the products and research results and works with the Principal Investigator, Technical Monitors, sponsoring RACs, Contract and Finance Manager and the Director to ensure that all required contractual terms and financial matters are completed.

The Technical Monitor develops the implementation plan and presents it to the sponsoring Research Advisory Committee. It is the responsibility of the Research Manager to ensure that the Technical Monitor clearly understands his/her role. Six months after the presentation, the Research Manager coordinates an evaluation of implementation. (Reference: Section 4, Implementation Management.)

Research projects are conducted according to the terms specified in the research contract. The following subsection outlines the process for completing a project.

1. Notification: When the draft final report for a research project is received by the Research Manager, they notify the Contract and Finance Manager who notifies other WSDOT personnel as required by the type of contract.

2. Final Presentation: The Research Manager may arrange a final conference with the Principal Investigator, Technical Monitor, sponsoring RAC, WSDOT Technical Staff, and other interested parties.
3. Final Invoice: On receipt of the camera-ready and electronic copy of the Final Report, the Research Manager notifies the Principal Investigator that final invoices should be submitted as soon as possible. The Research Manager notifies the Contract and Finance Manager, sponsoring RAC, Director ORLS and TRAC Directors that the project is complete. When the final invoice has been paid, the Research Manager notifies the Principal Investigator that the project is complete. (Reference: Section Six, Contract Management.)

### **SPR Funded Research Project Review and Change Management**

The Research Manager is responsible for managing the delivery of the projects assigned to them according to the contracted scope, schedule and budget. However, adjustments to the projects are sometimes required for the reasons included, but not limited to:

- Products from other projects upon which the study is contingent have not yet been produced
- Similar research is being conducted by another organization and the project is delayed to determine relevance to WSDOT
- Data is not available due to either processing or difficulties providing researchers access
- Weather disruptions
- Equipment failure
- Lack of student availability

### **Biannual Reviews**

Funded research projects will be reviewed on a biannual basis at the Research Executive Committee meetings. Research Managers and Technical Monitors will provide information on the status of the projects. The project review will include:

1. Status of the project:
  - a. Is it under contract?
  - b. Is it on schedule?
  - c. Have any problems surfaced?
2. If the project has not started:
  - a. Is the planned start date passed and, if so, what is the cause of the delay?
  - b. Is the planned start date still feasible and if not what is the reason?
  - c. Has a similar project been funded through another source that is addressing, or potentially addressing, the needs identified in the problem statement?
  - d. Has a scope for the project been developed?
  - e. Is there an active project proponent/technical monitor?
  - f. Are the resources (data, prequel reports or activities) anticipated to be provided so the project can begin soon?
  - g. Are researchers still available to conduct the work in a timely fashion?

h. Is the funding amount still appropriate?

The Research Executive Committee can opt to withdraw funding from a project that has not yet begun. If a project is dropped, the funding originally intended for that project will return to the RAC from which it originated. The RAC Chair can decide to:

- Initiate another project from the list of biennial problem statements
- Solicit new problem statements from the whole committee
- Solicit new problem statements from the functional area of the dropped project.
- Or use funding for other high priority activities such as Quick Response Research, Student Research, or Transportation Pooled Fund contributions.

## ***CLIENT SPONSORED RESEARCH PROJECTS***

### **Program Development**

WSDOT Program and Project Offices develop research projects to address specific issues confronting them in their work. These projects may or may not reflect priorities identified by the RAC but are intended to address specific questions. Offices should notify the Research Manager for their topic of interest regarding research and experimental activities.

If offices seek external funding (such as FHWA Research Funds), they should consider the research priorities identified by the RACs when developing the proposal. The Director should receive a copy of the request for funding and be notified of whether funds are received or not.

Offices conducting research projects may request support for project administration from the ORLS. The office requesting support must complete a CS Research Support Request form (<http://www.wsdot.wa.gov/Research/>).

### **Client Sponsored Project Procedures**

Projects funded by other offices and administered by the ORLS include operational and research activities. Offices requesting assistance should complete the CS Project Management Form. This form requests information to clarify the level of contract management, project oversight and reporting requested. The Research Office may charge an overhead rate to cover the costs and efforts of contract management and project oversight.

When project oversight is requested, the procedures will be the same as those described under SP&R RESEARCH PROJECTS.

## ***Federal Discretionary Funds***

### **Program Development**

Federal funding may be requested to address priority research projects. Project proposals will be developed to address priority research needs identified by the WSDOT RACs. The forms to be completed for submitting proposals will be distributed by the Federal Liaison each winter. The ORLS will compile project proposals and forward them to the REC. The REC will approve the final list of projects that will be submitted to the Congressional Delegation.

When federal earmarks are received for research, the ORLS will administer the funds and provide project oversight.

## **Federal Discretionary Fund Project Procedures**

Procedures for projects funded with Federal Discretionary Funds are the same as those described under SP&R RESEARCH PROJECTS.

### ***TRANSPORTATION POOLED FUND PROGRAM***

To qualify as a pooled fund study, more than one state transportation agency, federal agency, other agency such as a municipality or metropolitan planning organization, college/university or a private company must find the subject important enough to commit funds or other resources.

A federal, state, regional, or local transportation agency may initiate pooled fund studies. Private companies, foundations, and colleges/universities may partner with any or all of the sponsoring agencies to conduct pooled fund projects.

If a subject has been studied previously, the new study should provide new information that will complement or advance previous investigations of the subject matter.

The Federal Highway Administration maintains a Transportation Pooled Fund (TPF) website that enables the states to commit to pooled fund projects, enter state-led pooled fund project information, and check the status of all of the active pooled fund projects. The TPF is accessible at the following link: <http://www.pooledfund.org/>.

### **Definitions**

There are three common words that have very specific meaning within the TPF Program. They are:

*Commitment* – A commitment is made when an agency posts an *intent* to provide funding for a specific project. At this time the contributing fund source may not be identified. Commitments may be made for one or more years. An agency commitment means the agency intends to provide funding, not necessarily ORLS.

*Cleared* – A TPF Project is cleared after sufficient commitments have been made to meet the required funding level set for the project. After the project is cleared, funds can be obligated to the project and the project can begin. It is important to note that a multi-year project should consider setting the required level of funding to cover initial tasks rather than the whole project. Because the process for determining which project to fund varies substantially between organizations and some may only to make one year commitments, a phased project may allow the project to get underway sooner.

*Obligation* – Once a commitment is made to a TPF Project and that project is cleared, the agency may obligate funds. At this point, the source of funding is identified.

### **Pooled Fund Program Management**

The FHWA administers the Transportation Pooled Fund Program on behalf of the states. The TPF website enables users to initiate a new pooled fund project, commit funds to a specific project, and check the status of all pooled fund projects. Within WSDOT, funding sources are either the ORLS or the office interested in the project (see below for more information on funding TPF projects). No matter the source of the funds, WSDOT's participation in the Transportation

Pooled Fund Program is managed by the ORLS. Research Managers will provide project tracking and management of Transportation Pooled Fund projects, if requested by the funding office.

### **Pooled Fund Project Funding**

In April of each year, recommendations for projects to be funded by SP&R funds through the ORLS will be forwarded to the Director and the Research Executive Committee for the next Federal Fiscal Year (FFY).

Priority projects for ORLS Funding are:

1. Ongoing and new TPF projects led by WSDOT.
2. Ongoing and new TPF projects led by other organizations. These projects will receive a maximum of \$20,000 per year for no more than three years.

A new project in FFY 07 will receive no more than three years of funding. A continuing project will receive no more than three additional years of funding. In addition, any office may fund a TPF project, either as a lead agency or a contributing state agency, as long as it aligns with WSDOT research priorities. Because of the limited funding available from ORLS, Offices requesting funds are encouraged to use other sources of funding if they are available.

### **Pooled Fund Project Procedures**

Project management for Pooled Fund projects is coordinated by the lead state. When participating as a contributing state, WSDOT may or may not be asked to serve on the technical advisory committee for the project.

#### ***Procedures for Pooled Fund Program projects led by WSDOT***

If a WSDOT Office desires to lead a pooled fund project, the procedures listed below describe the process that is to be followed.

##### Project Development

1. *Project Proposal Developed:* A problem statement is developed and includes a project title, project description, budget, project goal, estimated project duration, deliverables, and sponsor contact for further information. The project proposal is submitted to the responsible Research Manager.
2. *Solicitation for partners:* The proposed project is posted on the TPF website to solicit project partners. Concurrently, WSDOT submits the proposed project to FHWA requesting approval of a waiver of the non-federal match for SP&R funds, if desired. Projects may be posted at any time during a calendar year. Project solicitations include a deadline at which time solicitations will expire. The posting of the proposed project will activate the AASHTO Research Advisory Committee (RAC) Listserv with an alert that a new project is available for review.
3. *Commitment by Interested Parties:* Interested partners submit a commitment to the sponsoring agency through the Pooled Fund website indicating that they will formally obligate funding to the Pooled Fund project. Commitments include the intended amount of funding for one or more years.
4. *Ensure Project Viability:* As the deadline of the solicitation is reached, the sponsor of the proposed research project makes the determination, after consulting with other interested parties, if the project, as proposed, is viable based on the level of commitment that has

been indicated by the project partners. If the commitment from project partners is sufficient, the sponsoring agency staff may request FHWA to formally establish the project. If the level of commitment is not sufficient for the proposed project to be established, the sponsoring agency may choose to renew the project solicitation on the website or withdraw the project.

5. *Formal Project Commitment.* Once a project is formally established by the Research Manager, a formal project **commitment** is made. The commitment denotes intent to provide funding but does not obligate the funds or specify a funding source. Most WSDOT-led projects request a waiver of the SP&R match requirements.
  - a. *Approval of 100 Percent Federal Funds for a Project:* The normal match for SP&R funds is 80 percent federal and 20 percent non-federal funding, but the FHWA has the authority to approve the use of 100 percent federal SP&R funding for pooled fund projects at the request of a lead State if it is in the interest of the Federal-aid highway program. The lead State requests FHWA Office of Research, Development, and Technology (RDT's) approval of the waiver of the non-Federal match for SP&R funds used on the project. This request is forwarded to RDT through the FHWA Division office. The request is made as a memo from the Division office and includes a copy of the proposed project.

The Research Manager reviews the proposed project and identifies an FHWA project technical liaison. The technical liaison has two weeks to comment on the proposal. The technical liaison may be from the Turner-Fairbank Highway Research Center, FHWA Headquarters Program Office, FHWA Resource Center or FHWA Division office. Liaisons give initial feedback on the project from the context of the national research and technology program and participate in the activities of the Technical Advisory Committee. Additionally, the technical liaison will have the occasion to participate in the study activities and serve as a technical resource to the project as travel funds permit.

After comments are received from the technical liaison, a project number is assigned and the necessary documentation to approve the waiver of the non-Federal match is prepared. The memo approving 100% use of SP&R funds also includes the name and contact information for the technical liaison. Once the memo is signed, it is sent electronically to the Division office of the lead State, or COTR for FHWA-led projects. Copies of memos for State-led and FHWA-led projects are maintained in the FHWA Office of Program and Development and Evaluation (HRPD) files.

6. *Submission of Obligation Forms:* Each federal, state, regional, or local agency prepares the forms that are used to obligate funds for research, planning, or technology innovation projects using federal funding sources. This process is the official **obligation** of funds on behalf of the project partners, documents the funding source, and is the means by which these funds are made available for use for the pooled fund study. States obligate their Federal funds for pooled fund projects through their FHWA Division Offices. For private industry, foundations, and colleges/universities the obligation of funds will need to be handled on a case-by-case basis.
7. *Notification of Formal Commitment:* Partner funding commitments and obligations are posted on the TPF website by partners during the solicitation stage and FHWA FMIS reports showing obligated funds are periodically posted on the TPF website.

#### Project Management

1. *Establish Technical Advisory Committee:* Each contributing partner may appoint a technical expert to serve on the technical advisory committee (TAC). The TAC will serve for the duration of the project. The roles of the committee include drafting and approving the project work statement, selecting the best qualified researchers to conduct the project, review of project progress and annual reports, acceptance of project deliverables and final reports, and completing implementation activities. TAC members should expect to participate in all project-related meetings and briefings.
  - a. TRB may be asked to manage the project. When the TRB project management option is used, there will not be a TAC; TRB will select a panel of experts that may or may not include representatives from each of the project partners; TRB will solicit nominees for panel membership from Federal agencies, States, universities, relevant associations, and numerous other organizations then select the panel members on the basis of their expertise. These panels will typically have 8 to 10 members.
2. *Work Statement Development:* The lead agency will work with the TAC to develop a work statement. The work statement will be incorporated into a plan of work that should include the following elements: list of partners, statement of problem, work statement, research requirements, project performance timeline, estimated budget, project communications requirements, deliverables, and implementation plan.
3. *Investigator/Contractor Selection:* The lead agency will use the plan of work to initiate the investigator selection process. The contracting laws and regulations of the lead agency will drive and govern the actual selection process. The TAC member input will be considered to the greatest extent possible in the selection of the successful investigator.

Upon the successful selection of the best-qualified investigator, the project is initiated. The lead agency will usually include the members of the TAC in a project kick-off meeting.

4. *Quarterly Reports:* The lead state and/or the investigator will provide project status and progress reports quarterly. If necessary, the lead State or the TAC may request that these reports are issued more frequently. The quarterly reports are posted online at the TPF website. States handle the posting of documents for project for which they are the lead, and the FHWA TPF Coordinator handles this function for FHWA-led studies.
5. *Project Payments State-led Projects:* The lead agency requests reimbursement of payments through the standard invoicing process using the FHWA PR-20 form. Invoices are approved by the FHWA Division Office in the lead State, and sent to FHWA Finance for payment. Finance sends the invoice to the TPF Program Manager for verification of satisfactory program progress. The determination of satisfactory program progress is based on the quarterly reports that are on file. If quarterly reports are not posted on the website, satisfactory program progress cannot be certified and payment with federal funds will not be made.

If the quarterly reports are on file, the FHWA TPF Program Manager, citing satisfactory program progress, sends the invoice to the FHWA Finance office for payment. Based on an approved invoice from the lead agency, FHWA will make a payment for the costs indicated in the invoice. Reimbursement is made by FHWA from the project fund created by the project partners and is assessed in

proportion to the amounts contributed by project partners. Reimbursement may not exceed the funds that have been obligated for the project.

6. *Budget Review:* If the Project Manager/COTR identifies a discrepancy in the actual amount available in a pooled fund project, the FHWA Finance Office should be notified. FHWA will research missing payments and/or expenditure discrepancies.

#### Project Completion

1. *Deliverables Received:* The lead agency, working with the TAC members, needs to ensure that the plan of work includes the delivery of useful and usable products. The investigator is expected to deliver these products. The TAC approves the acceptance of the project deliverables. Deliverables may include reports, models, recommendations, software, new/improved products, etc. Where applicable, technology innovation sessions should be scheduled for the investigator to demonstrate, explain, or provide instruction on the project deliverables. Opportunities to showcase the project findings, recommendations and conclusions should be pursued by the TAC members.
2. *Final Report and Summary:* A final report of work processes, findings, and recommendations will be required for each project. An executive summary and Research Note will accompany each final report. The summary may be in a format proposed by the lead agency, e.g., short multi-page report, flyer, etc., but should always provide concise and useful information on the study and provide direction on how readers may easily gain access to the full report and to information on other individual deliverables. The lead agency and TAC members, consistent with the project plan of work, may request additional elements.
3. *Final Invoice Payment:* Based on the delivery and acceptance of the products and reports included in the plan of work, the final invoice will be paid to the investigator. FHWA will reimburse the lead agency for the remaining costs of the project up to the obligation limits of the project. At the discretion of the lead agency, an After Action Review may be conducted with the investigator to measure the projects processes and outcomes.
4. *Closing the Project:* The lead state Project Manager informs the Division Office of the completion of the project and provides written documentation that all bills have been paid and the project can be closed. The Division Office then provides this information to the FHWA TPF Coordinator. Once written documentation is received, the FHWA TPF Coordinator will prepare a memorandum to the Finance Office, advising that the project is complete and can be closed. Additionally, the status of the project will be updated on the TPF website, to indicate that the project is completed.

If there are funds remaining once the project is closed, the FHWA Finance office will advise the Division Offices of the remaining funds, and will work with the State to deobligate any remaining funds.

5. *Report and Summary Distribution:* States are encouraged to distribute the project report and all or some of the project deliverables to TRIS, NTIS, and interested organizations the project partners.

### ***Procedures for Participating as a Contributing State***

1. WSDOT managers interested in participating in a solicited pooled fund project should notify the Research Manager responsible for the topic of interest and complete an application form (<http://www.wsdot.wa.gov/Research/xxxxx>). These projects will be considered for funding in the spring of each year. If funds remain available throughout the year, ORLS project obligations will be made in a manner consistent with the TPF prioritization process and with input from RAC and REC members.
2. The Research Manager will be notified when a pooled fund study has been cleared to receive funds from the participating states through the TPF website. Once this notice is received, transfer of the funds may proceed.

### ***Cooperative Research Programs***

WSDOT participates in research projects sponsored by the TRB's Cooperative Research Program (CRP). These projects are of national scope and interest. Problem statements are submitted annually as noted in Section 1. The process for TRB's Cooperative Research Programs is very similar. However, selection committees vary. More detail on the selection process can be found at the CRP website <http://www4.trb.org/trb/crp.nsf>.

The National Cooperative Highway Research Program project selection process is largely directed by the state departments of transportation as the sole sponsors of the program. Support is voluntary and funds are drawn from the state's Federal Aid Highway apportionment of the State Planning and Research funds. Each state's allocation amounts to 5.5% of its SPR apportionment. Funds can only be spent for projects approved by at least two-thirds of the states.

Research findings of the Cooperative Research Program are published by TRB and are available to WSDOT employees through the WSDOT Library. If an office copy is needed it may be requested through the WSDOT Library. Copies are currently free to employees of sponsoring agencies.

### ***Submitting Problem Statements***

Each year the ORLS distributes the solicitation to WSDOT Executives and Office Managers with an invitation to submit problem statements. The timing of the solicitation varies for each program. WSDOT proposed problem statements are submitted to the ORLS. Projects are reviewed and recommendations may be made to strengthen the proposal and merge topics. WSDOT supported problem statements may also be submitted through the AASHTO Committees. The ORLS appreciates a copy of these proposals in order to document the WSDOT interest in the project. As well, research problem statement may be developed by a TRB Committee. These projects require a state DOT, AASHTO Committee, or FHWA sponsor for submittal so, if WSDOT employees are members of TRB Committees that have developed proposals, it is beneficial to submit the proposal to the ORLS and to note whether WSDOT is willing to sponsor the project or not.

The CRPs are very competitive programs and only about one in five projects are selected for funding. To improve the probability of success, problem statements should address issues of national significance, include a review of literature and ongoing research activities. In addition, it is helpful to have the interest and even joint sponsorship of other states and transportation organizations. AASHTO and TRB Committees are an excellent way to solicit interest. The ORLS can help you identify contacts. The solicitation notice will include current forms and

procedures. However, the format for agency problem statements closely parallels the CRP process and can be used to begin shaping problem statements.

### ***Response to Comments***

Once TRB receives the problem statements, they are reviewed and comments are sent to the author. Authors may choose how to respond to the comments and are offered the opportunity to submit an updated proposal.

### ***Rating Problem Statements***

Each CRP is reviewed by committees of technical experts. The membership of the committees varies for each CRP program. State DOTs rate the NCHRP problem statements. The other CRP problem statements are not distributed to state DOTs for ratings. Additional information can be found on the TRB CRP website.

The ORLS facilitates the rating of NCHRP problem statements by WSDOT employees. Final NCHRP problem statements are distributed to AASHTO Standing Committee on Research (SCOR) and the AASHTO Research Advisory Committee for rating. The problem statements are received by the ORLS in January and distributed to subject area experts in the agency for rating. Ratings are compiled and submitted. The NCHRP staff compiles ratings from all states, organizes them into a ranked list, and forwards this information to the AASHTO (SCOR). These meetings are held annually in late March. SCOR reviews the list, identifies priorities and formulates a recommended program that meets the constraints of the anticipated NCHRP revenue. The recommended program is submitted to the AASHTO Board of Directors for final approval. At least two thirds of the state DOTs must approve a problem statement for funding.

An Announcement of Research Projects is prepared each year in April. This Announcement details the preliminary scopes of work that will be considered in requests for proposals. A list of these projects is also available at <http://www4.nas.edu/trb/crp.nsf/upcoming/>.

### **CRP Project Management**

Each CRP project is assigned to a panel, appointed by the Transportation Research Board, which provides technical guidance and counsel throughout the life of the project. Panels include experienced practitioners and research specialists; heavy emphasis is placed on including members representing the intended consumers of the research product. The panels prepare project statements and select contractors based on evaluation of the proposals received. As in other TRB activities, TCRP project panels serve voluntarily without compensation.

### ***Technical Panel Formation, Solicitation of Proposals, and Selection of Contractors***

Once projects are selected, the Cooperative Research Program solicits nominations for individuals to participate in technical panels that provide oversight to the selected CRP projects. Individuals may be self nominated or nominated by co-workers or managers. Nominations are to be sent to the ORLS to be compiled and submitted to the Cooperative Research Program staff. Nominations are also made by AASHTO Committees and individuals. The ORLS appreciates notice of WSDOT nominees in order to help endorse employee participants and to track agency interest and involvement.

The author of the problem statement or their designated Project Monitor is typically asked to participate in the panel but not as the Chair of the panel. Panel composition usually includes representatives from public agencies, academia, and private industry

If employees are selected to participate in a panel, travel costs will be covered by the CRP project. Employees should submit standard agency Travel Request forms for sponsored trips. Panels typically meet three times over the life of the project.

### **Selecting the Researcher**

For each funded problem statement, TRB solicits research proposals from private and public research organizations that can demonstrate capability and experience in the problem area to be researched. These organizations include universities, nonprofit institutions, consulting and commercial firms, and individual consultants. WSDOT may send letters of support for a proposal or be identified as a technical resource within a proposal. However, be alert for potential conflict of interest when determining what role you would like to play in a project. You cannot be both a panel member and a participant in the proposal. Contact the ORLS if you would like additional information.

Guidance for the preparation of proposals is included in the NCHRP brochure, [Information and Instructions for Preparing Proposals \(Updated October 2007\)](#).

The technical panels review the proposals, recommend contract awards, monitor research in progress, provide technical guidance, and review reports for acceptability and for accomplishment of the agency's research plan. They also provide counsel to TRB staff in matters of overall project administration. Selected agencies perform research under contract to the National Academies, guided by a [Procedural Manual for Agencies Conducting Research in the National Cooperative Highway Research Program](#). Guidance for the preparation of final reports for submission to the NCHRP can be found in the brochure [Instructions for Preparation of Cooperative Research Programs Reports](#).

## ***Synthesis Programs***

### **Synthesis Program Management**

TRB manages Synthesis Studies for four programs:

- Aviation Cooperative Research Program (ACRP). Topics are due March 31 of each year.
- Commercial Truck and Bus Safety Synthesis Program (CTBSSP). Topics are due May 31 of each year.
- National Cooperative Highway Research Synthesis (NCHRP) Synthesis. Topics are due January 31 of each year.
- Transit Cooperative Research Program (TCRP) Synthesis. Topics are due March 31 of each year.

The programs prepare syntheses of current practice in the aviation, commercial truck and bus, highway, and transit fields. The Cooperative Research Program of the Transportation Research Board solicits for synthesis topics. Proposals may be submitted at any time but to be considered, at different times for different programs. The cut off date for consideration is noted with the program above. WSDOT employees should submit their proposals through the ORLS. Forms for Synthesis study submissions are available on the ORLS website <http://www.wsdot.wa.gov/Research/>.

### **Synthesis Project Management**

Synthesis projects are assigned a panel, appointed by the Transportation Research Board, which provides technical guidance and counsel throughout the life of the project. The Cooperative Research Program does not formally solicit for panel members for Synthesis projects. WSDOT employees interested in participating in a Synthesis project panel should contact the Director, ORLS.

### ***Innovations Deserving of Exploratory Analysis (IDEA Program)***

IDEA programs fund research into promising but unproven innovations in four transportation areas: Highways, High-Speed Rail, Safety, and Transit. Information about all four programs, including program goals, proposal format, and selection criteria, is provided in an annual Program Announcement. Proposals for all programs are accepted until March 1st and September 1st.

[High-Speed Rail IDEA](#) projects are selected for funding based on their potential to advance the Federal Railroad Administration's goals for the Next-Generation HSR Technology Development Program, which are described in this link.

[NCHRP Highway IDEA](#) projects foster innovative concepts for highway design and construction, materials, operations, maintenance, and other areas of highway systems.

[Transit IDEA](#) projects are selected for their potential to enhance security, increase ridership, and improve efficiency for transit agencies.

[Safety IDEA](#) projects promote innovative approaches to reducing fatalities and injuries by improving motor carrier safety and railroad safety.

WSDOT staff may submit proposals for innovations to study. Directions for submission to each of the program areas are available at: [http://www4.trb.org/trb/dive.nsf/web/idea\\_programs](http://www4.trb.org/trb/dive.nsf/web/idea_programs).

### ***Experimental Features***

The Experimental Features program is sponsored by FHWA to allow state highway/transportation departments to innovatively use new materials, processes, methods, etc., with a relatively low investment and with a minimum of preconstruction planning. An experimental feature is defined as a material, process, method, equipment item, traffic operation device, or other feature that meets the following criteria:

1. Has not been sufficiently tested under actual service conditions to merit acceptance, without reservation, for normal transportation construction; or
2. Has already been accepted but needs to be compared with alternative acceptable features for determining their relative merits and cost-effectiveness.

Experimental Features are incorporated into federal-aid highway construction projects to determine the suitability of the features as regular construction items.

### **Experimental Features Project Management**

Headquarters or Regions originate an experimental features project by deciding to construct, install, or otherwise incorporate an experimental feature into an existing construction contract.

The initiating Region or Headquarters office notifies Program Management of its intent to develop such a project.

1. The Research Manager within the Research Office works with the Regional or Headquarters office manager to develop a work plan for the proposed experimental feature. The work plan should include the following items:
  - Introduction
  - Study Plan
  - Scope of Work
  - Layout (includes Control Section and Experimental Feature)
  - Staffing
  - Testing
  - Reporting
  - Cost Estimate
  - Schedule
2. The Region or Headquarters office submits a final work plan to the Research Manager.
3. The Research Manager submits the work plan to FHWA for approval. FHWA will not approve plans, specifications, or estimates (PS&E) for a project that incorporates an experimental feature until a work plan is submitted and approved. The Research Manager assigns and includes the Experimental Feature number in the letter requesting approval.
4. Construction project funds are used for incorporating an experimental feature into a Federal-aid highway construction project. SP&R funds cannot be used for constructing experimental features.
5. The Principal Investigator is responsible for all inspections and reporting requirements as set forth in the approved work plan during the active phase of the experimental project.
6. The Research Manager may request the FHWA Division Administrator to terminate a project if it becomes evident that no additional valuable information is likely to develop. The FHWA may also terminate a project for this reason or for failure to submit a final report.

## ***SECTION FOUR: IMPLEMENTATION MANAGEMENT***

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The objective of WSDOT research program is to produce findings that significantly enhance the operations of the Department. In many cases, research reports include specific recommendations for altering the procedures or methods of a functional area. In other cases, the findings contribute to the body of knowledge that serves as the basis for daily operational decisions, planning decisions and/or the prioritizing of future research options. In any case, the research process is not complete until the implementation of applicable results has been accomplished.

### **Responsibility**

Implementation Manager: A Research Manager within the Research Office is designated Implementation Manager and is responsible for facilitating, evaluating and documenting research implementation activities.

Research Manager: Each Research Manager is responsible for working with the Principle Investigators and Technical Monitors to develop an Implementation Plan for SP & R projects in their subject area.

Technical Monitor: Because successful implementation is dependent upon relevant findings, preparation for implementation begins with the research problem statement and, if funded, with the proposal. The probability of relevant findings increases greatly when the users are involved in the research process. As a representative of the functional area, it is the Technical Monitor's responsibility to ensure that the research project team continuously considers the unique requirements of the functional area throughout the active stages of a project. It is the responsibility of the Research Manager to not only ensure that the Technical Monitor clearly understands this aspect of his/her role from the outset, but also to create a working format in which this is possible. The Technical Monitor is also responsible for communicating intended uses of research results and helping to manage the research to meet those needs. This is not to be construed with presupposing the outcome of research but is intended to include such fundamental issues as agency information technology requirements (if applicable to the project).

Principal Investigator: While the Principal Investigator will not be responsible for implementation of research results, the research approach and products influence the ability to implement the findings of a research project. Therefore, Principal Investigators are encouraged to understand how research results are intended to be used at completion of the project. For example: will the results be incorporated into an agency policy, procedure, manual or existing data system? Will the product be use by agency staff in one program only, throughout the agency, or by users outside of WSDOT as well. The Principal Investigator will work with the Technical Monitor to understand these intended uses and prepare recommendations for appropriate use of research results at the completion of the project.

### **Procedures for Implementation**

#### *Guidelines*

The role of the Technical Monitor and the functions of the Implementation Plan will depend greatly upon the nature of the research project. To help direct the research project, the following items should be considered when developing the research proposal.

1. Think about the end results: Know what you hope to gain from your project when you're done. Work with your committee to spell it out in concrete terms.
2. Understand the Environment: No project exists in a vacuum. Gather as much information as possible about steps that will need to be taken to implement results. Ask questions such as: Will the project require specialized computer software or hardware? Who has to approve a decision to implement a result? What will the costs of implementation be?
3. Describe the potential benefits: Work with the Technical Advisory Committee established for the project to identify the potential benefits and how this will help address the need.
4. Know the customers: List everyone who might benefit from the project and include others who may influence those who benefit. Divide the list into two categories – those who benefit most and others. You'll want to spend more time reaching out to the first category.
5. Involve the right players: Don't go too far without making sure that you've got the right team. You'll want to have representatives of the groups who benefit the most helping you plan your course of action. If they aren't on your committee, you might want to expand your group, or figure out another way to gather their ideas.
6. Explore the most appropriate method for technology transfer: The methods of technology transfer may include the development of formal training programs, workshops, publications and one-on-one outreach efforts. Steps 1-5 help you in gathering information about what tool might be most effective for the project.
7. Define implementation: Be specific. As much as possible, write down your expectations of how you anticipate using research results, which documents a finding might need to be included in, whether software deployment will be needed, etc. Define what needs to happen to get there, how it will happen, when it will happen, and who will be involved.

### *Implementation Plan*

When an SP& R project is nearing completion and a draft report is available, the Technical Monitor will complete an Implementation Plan containing the following information:

- *Project Title:*
- *Project WA-RD #:*
- *Principal Investigator(s):*
- *Technical Monitor:*
- *Research Manager:*
- *Brief Description of Problem:* What important problem or opportunity was this research intended to solve and why is it a priority?
- *Major Discovery:* What new information, procedure or knowledge was gained from this research? Did this research solve the identified problem or advance the state of knowledge?

- *How the Information will be used in WSDOT:* Who in the department as regional materials engineers, department engineers and planners or metropolitan planning organization staff will use this information? 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.
- *Value Added to WSDOT:* What are the tangible benefits of this 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?
- *Implementation Plan Checklist:* What are the results achieved through this research and what action is needed to implement the results?

Results achieved through this research (check all that apply)		Items/Actions needed to implement results (check all that apply)	
<input type="checkbox"/>	Knowledge to assist WSDOT	<input type="checkbox"/>	Management decision
<input type="checkbox"/>	Manual change	<input type="checkbox"/>	Funding
<input type="checkbox"/>	Policy development or change	<input type="checkbox"/>	Training
<input type="checkbox"/>	Development of software/computer application	<input type="checkbox"/>	Information technology deployment
<input type="checkbox"/>	Development of new process	<input type="checkbox"/>	Information sharing
<input type="checkbox"/>	Additional research needed	<input type="checkbox"/>	Other (specify)
<input type="checkbox"/>	Project produced no usable results		
<input type="checkbox"/>	Other (describe)		

The Implementation Plan will be incorporated into a Research Note (see below), posted on the ORLS web site and updated periodically, if appropriate, to quantify the benefits of the research.

#### *Research Notes*

Research Managers will work with the Principal Investigator and Technical Monitor to develop a Research Note for most SP&R Projects and select CSR and TPF projects. Research Notes are a two to four page communication and marketing tool for the purpose of disseminating information gained through research to a broad audience. Much of the information in the Implementation Plan will be used in the Research Note. The Research Note is organized under the following headings:

- Background
- The problem
- What we did
- What we learned
- What the researcher's recommend
- How WSDOT plans to use the results
- Contact information for the Principal Investigator, Technical Monitor, and Research Manager

### Research Advisory Committee(s)

Research Notes and/or Implementation Plans will be circulated to members of the sponsoring RAC. The RAC may make recommendations to address resources or decisions needed for implementation and priority of implementation actions.

### On-going Evaluation of Implementation

The Implementation Manager, in collaboration with the Research Managers and Technical Monitors, will evaluate ongoing results of research for selective high value projects. If appropriate, the results will be submitted to TRB as a proposed “Research Pays Off” article.

### Implementation Reporting

The Implementation Manager is responsible for collecting and formatting short narrative summaries of implementation activities for each SP&R research project completed. This information will be included in each TRAC Biennial Report (see Section Five).

## ***SECTION FIVE: RESEARCH REPORTS***

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Research project reports are required from all Principal Investigators conducting SP&R and WSDOT-led Pooled Fund research projects. Each Principal Investigator is required to submit Monthly or Semi-Annual Progress Reports, Draft Reports and Final Reports. Final Reports are published as Washington Research Documents (WA-RD). Additional information on reporting requirements is specified in the research contract.

Client Sponsored Research projects are encouraged to produce reports. At the discretion of the project sponsor, they may or may not be published as WA-RD reports. The decision about whether or not to produce a WA-RD report is identified in the CSR Research Support Request and included in Task Agreements with contracted research organizations.

In addition to the WA-RD report, a combination of other reports will be expected from the Principal Investigator or Technical Monitor. These reports include:

- Monthly Progress Reports
- Semi-Annual Project Status Reports
- Draft and Final WA-RD Reports
- Research Note

In addition, the ORLS works through the Washington State Transportation Center (TRAC) to produce a TRAC Biennial Report of active and completed projects.

### *Monthly Project Progress Reports*

Principal Investigators conducting research projects that will be completed within a nine-month term may be required to submit Monthly Progress Reports to the Research Manager. The reporting requirements for short-term research projects are specified in the research contract.

### *Semi-Annual Project Status Reports*

Research projects with a term of more than nine months require Semi-Annual Project Progress Reports unless otherwise specified. WSDOT seeks to manage projects within the planned time, scope and budget. These reports document the status of the project and deviations from the contracted scope or work plan. The progress reports are one of the tools WSDOT uses to manage projects and to anticipate necessary changes to scope, schedule and budget. Principal Investigators should include information relevant to potential changes in order to minimize unexpected contract extensions.

These web-based reports are due on January 31 and July 31 of every year. The University of Washington (UW) TRAC Office will notify Principal Investigators of the due date and direct them to the website for completion of the reports. The Principal Investigator completes the Project Status Report online and notifies the UW TRAC Office. The Progress Report will include:

*Project Progress* – describe concisely, the work accomplished on work tasks planned for the reporting period. The progress report will also include actual expenditures to date compared with planned expenditures to date.

*New Period Proposed Activity* – identify tasks elements planned for the next reporting period and any proposed changes in the scope and schedule.

*Problems/Changes* – describe concisely problems encountered and those that will affect scope, schedule, and budget

#### *Other Relevant Information*

After a review for completion, the UW TRAC Office notifies Research Managers that the progress report is ready for review. If Research Managers have revisions, they will contact the Principal Investigator and request the report be updated. After final acceptance, the Research Managers will notify the Director, the Technical Monitor and, if federal funds are involved, the appropriate local federal office. The Semi-Annual Progress report can be accessed at: <http://trac29.trac.washington.edu/projects/>.

#### *Draft and Final Research Reports*

Principal Investigators usually submit a draft and final report upon completing a research project. Approved final reports must be submitted before the contract end date. Final invoices will not be paid until completion of final reports. All research reports, including those prepared by universities and consultants other than UW and WSU shall be prepared using the Research Report Guidelines found at <http://depts.washington.edu/trac/projmgmnt/wsdotRptGuide.html>.

1. The responsible TRAC Office requests a WA-RD report number from the Office Coordinator and submits an electronic version and six paper copies of the draft final report to the Research Manager. Project schedules should include two months between submission of the Draft Report and Final Report to accommodate review and editing.
2. The Research Manager distributes the draft report to the Director, Technical Monitors, and other interested parties for comment. For projects funded with federal funds, the appropriate federal agency(ies) is included in the review process. Unless other arrangements are made by the Research Manager, 10 working days are allowed for the federal agency review.
3. Report reviewers return their comments on the draft to the Research Manager by the completion date provided.
4. A meeting may be scheduled by the Research Manager with the Principal Investigator to discuss the comments received by the report reviewers. At the meeting, or if no meeting is required, the Research Manager furnishes the comments to the Principal Investigator by email documenting the completion of the review. A copy of this email is sent to the Director and retained in the ORLS electronic project file.
5. The Principal Investigator incorporates the appropriate review comments and provides a camera-ready final report and an electronic copy (in PDF format) to the Office Coordinator and Research Manager with a completed Technical Report Standard Page <http://depts.washington.edu/trac/projmgmnt/templates/FHWA.doc> . The Research Manager reviews the final report to ensure that the review comments have been addressed. If comments have not been adequately addressed, the Research Manager will contact the Principal Investigator for additional editing.

#### *Report Production*

The Office Coordinator works with the Research Manager to determine what media is most suitable for distribution (print or CD/DVD) and provides the Research Manager with a Report Distribution Form to complete. The Research Manager completes and delivers the approved

Report Distribution Form and notifies the Office Coordinator that the report is ready for distribution. The Office Coordinator arranges for the report to be prepared for distribution. Upon receipt of the report copies, the Office Coordinator distributes the report as indicated on the Report Distribution form.

All final Research Reports are distributed to project participants, the UW TRAC Office, the WSDOT Library, the Washington State Library, the Transportation Research Information Service, the National Transportation Information Service, federal and state transportation libraries, and others as identified by the Research Manager.

### *ORLS Monthly Report*

The Office of Research and Library Services also produces a monthly report to summarize program changes and activities, as well as specific project actions. The report is distributed to WSDOT Executives, Research Advisory Committee members, ORLS employees, TRAC Directors, TransNow Directors, and other interested parties.

### *Implementation Plans*

When an SP& R project is nearing completion and a draft report is available, the Technical Monitor will complete an Implementation Plan. Implementation results are included in the TRAC Biennial Report. The plans are also placed on the Research Web Site, organized by RAC, and are included in the Director's Monthly Report to the WSDOT Executives. Where appropriate, the Research Implementation Manager and Research Manager follow up on research implementation activities to document qualitative and quantitative results over time.

### *Research Notes*

Research Notes are a two to four page communication and marketing tool for the purpose of disseminating information gained through research to a broad audience. They are intended to provide a non-technical overview of the research project to attract broader awareness.

Most SP&R Projects and select CSR and TPF projects will be developed into a Research Note. The research note should be drafted to include the following information:

- Background
- The problem
- What we did
- What we learned
- What the researcher's recommend
- How WSDOT plans to use the results
- Contact information for the Principal Investigator, Technical Monitor, and Research Manager

Research Notes are distributed to the WSDOT Executives, members of the sponsoring Research Advisory Committee, relevant technical specialists within WSDOT, the FHWA Division Office, the Principal Investigator, the TRAC Directors, the AASHTO Research Advisory Committee, and others identified by the Technical Monitor and Research Manager. Recipients of the Research

Note may download a copy of the final report or request a paper copy from the Office Coordinator.

*TRAC Biennial Report*

The Washington State Transportation Center (TRAC) produces a biennial report summarizing projects that were active or completed during the biennium being reported on. Any transportation-related research project may be included if it was conducted or funded by the University of Washington, Washington State University, or the Washington State Department of Transportation.

For each active project, the report includes a brief description of the problem statement, research activities conducted, and the how the project results may be used. Completed project descriptions include the problem statement, the findings, and how the results will be used.

The TRAC Biennial Report is distributed to state and federal transportation agency research programs, transportation libraries, Washington Legislature Joint Transportation Committee, WSDOT Executives, University Transportation Centers, Principal Investigators, and other interested parties.

## ***SECTION SIX: ADMINISTRATION***

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Administration of research activities includes Contract Management, Equipment Management, Financial Management, Document Management, and Web Page Management.

### **CONTRACT MANAGEMENT**

The type of contract executed depends on the type of project, the research organization and the type of funding available for the project. This section outlines the process of initiating and executing the appropriate contract between WSDOT and the research organization.

#### ***Responsibility***

The Research Office Contract and Finance Manager performs the actions necessary to prepare, execute and close out research contracts. The Contract and Finance Manager is responsible for determining the appropriate contract for contracted research, providing appropriate documents for contract initiation, modification, and maintaining equipment inventories purchased with contract funds. The Fiscal Analyst is responsible for the preparation of transmittal letters and routing of all financial documents for the projects. The Office Coordinator is responsible for transmittal of documents and maintenance of project files.

#### ***Procedures for Contracting***

##### ***Research Contract Initiation***

1. *Approved Proposal:* The Contract and Finance Manager receives the final research proposal from the Research Manager. The Contract and Finance Manager prepares the appropriate contract or task order and obtains necessary signatures on the Research Project Initiation Form and the research contract document.
2. *Types of Contracts:* The following contracts are executed depending on the research organization and the scope of work to be completed.
  - a. *Basic Agreement:* An agreement between WSDOT and a state research organization when more than one project is to be conducted by the organization and a predetermined term and budget have been established. Numbering of these agreements and any other with governmental agencies or organizations is established by the WSDOT Accounting Office. (Appendices 2.1 and 2.2)
  - b. *Research Task Order:* This document is used to authorize projects conducted under a Basic Agreement. The Research Task Order establishes the start and end dates of the project, the amount of funding allowed for the project, the invoice frequency and the dates for interim progress reports, draft final report and final report. Numbering of Research Task Orders is assigned by the Research Contract and Finance Manager. (Appendix 2.5)
  - c. *Governmental Agency Agreements:* This form of agreement is used for projects that are limited in scope of work and budget and are conducted by

state or other governmental organizations. Preparation of the agreements will be handled by the Contract and Finance Manager with the assistance of the Fiscal Analyst if needed. NOTE: This includes authorization for travel by employees of agencies that are partners in pooled-fund research projects. No document example is included in the appendices as each agreement has unique circumstances to be addressed.

- d. *Consultant or Personal Services Contracting:* The Consultant Services Office provides all contracting documents and selection processes when research is conducted by private sector organizations. Consultant selection and contract management will be in accordance with WSDOT Directive D 27-5. Unique contract numbers are assigned by the Consultant Services Office. Boilerplate documents for the various contracting processes can be found at the Consultant Services website – [www.wsdot.wa.gov/Consulting/boilerplateagreements.htm](http://www.wsdot.wa.gov/Consulting/boilerplateagreements.htm)
  - e. *Interdepartmental Agreement:* The “Research Project Letter of Understanding is used by the Research Office for research conducted internally to WSDOT. This agreement outlines the responsibilities of each office involved in the research.
3. *Funding:* The Contract and Finance Manager ensures that appropriate funding has been approved and is available for the research. Consultation with the Program Manager in Division Services may be necessary. In the case of funding from outside sources or not anticipated as part of the normal WSDOT budget process it may be necessary to coordinate with both the Program Manager in Division Services and the Program Budget Analyst in the Budget Office to receive approval of an Unanticipated Receipt.
  4. *Approval:* Director recommends approval of contracts that are established. The Contract and Finance Manager ensures that the contract and the completed and signed Project Initiation form are submitted to the Division Services Program Manager for concurrence and returned for the Director’s signature. The Contract and Finance Manager submits the contract to the research organization to obtain the required signatures. When the research organization returns the approved contract, the Director finalizes the approval then the Contract and Finance Manager prepares an Agreement Edit Information Form for submittal to the Program Manager in Division Services.
  5. *Distribution:* The executed contracts are distributed by the Office Coordinator according to the following Research Contract Distribution Procedure and the Contract Distribution List:
    - a. The original signed contract is sent to WSDOT Accounting Office through the Division Services Program Manager with an Agreement Edit Information Form (Pink) and, in the case of a governmental agency agreement (GCA), the Agreement Review Transmittal (Blue).
    - b. Copies of the executed contract are distributed in accordance with the Research Office’s Contract Distribution List.
      - i. Research Manager (include project initiation sheet)
      - ii. FHWA Division Office (three copies)

- iii. Project Principal Investigator (if the PI is new to the process the Research Manager will arrange a meeting to deliver the contract and to explain administrative procedures and other contractual requirements).
- iv. Technical Monitor
- v. TRAC Office
- vi. Research Office Project File

***Research Contract Modification***

Modifications to research contracts are required when the scope of work, budget expenditures, or term is changed on a research project. The need for modifications should be minimized as much as possible. Project Progress Reports should identify circumstances that may require a modification to a contract at a later date.

1. *Notification:* The Principal Investigator requests in writing or by email a contract or task order modification from the Research Manager.
2. *Approval:* The Research Manager for the project approves modification requests.
3. *Modification:* The Research Office Contract and Finance Manager prepares the appropriate research modification documentation. There are three types:
  - a. Research Task Order: The Research Task Order Form is used for approved Basic Agreement task order modifications. (Appendix 2.5)
  - b. Standard Supplemental Agreement: This form is used for all standard research agreement modifications. (Appendix 2.4)
  - c. Consultant Supplemental Agreement: The appropriate form is selected from the Consultant Services Office website for Consultant or Personal Service Contracts modifications.
4. *Execution:* A completed project Modification Approval Form and the Task Order or Supplemental Agreement is prepared by the Contract and Finance Manager and the Division Services Work Program Manager. The Contract and Finance Manager coordinates with the Division Services Work Program Manager to ensure that the appropriate budget modifications and funding approvals are obtained. The Director signs contract modifications. The Research Manager is authorized to approve and sign no cost time extensions for contract and task order modifications. The Contract and Finance Manager transmits the approved agreement modification to the research organization for signature. The research organization returns the signed agreement modification to the Research Office, and then the Research Manager (in the case of no-cost time extensions) or Director signs finalizing the agreement. In the case of Consultant or Personal Service contracts the Research Contract and Finance Manager will coordinate the terms of the modification with the Consultant Services Office. All such contractual modifications are developed, approved and distributed by the Consultant Services Office.
5. *Distribution:* Copies of the agreement modification are distributed the same as the Research Project Contract and in accordance with the current “Research Contract Distribution Procedure” except as noted in 4 above. (Research Contract Initiation, 5.b.).

### ***Contract Completion***

This subsection identifies the process of completing/terminating a contract between the WSDOT and a research organization.

1. *Documentation:* When the draft final report is received by the Office Coordinator a notation is made in the Administrative Log Book. The report is then forwarded to the Research Manager for agency review.
2. *Letter to the Principal Investigator:* The Research Manager sends a letter or email to the Principal Investigator acknowledging receipt and review of the draft report. Review comments and information on distribution of the report are also included.
3. *Final Report:* When the final camera-ready report is received, the Research Manager notifies the Principal Investigator that the final invoice is due, in order to complete the terms and conditions of the contract. The Research Manager also notifies the Contract and Finance Manager indicating that the terms of the contract have been met.
4. *Final Invoice:* When the final invoice from the research organization is received, the Fiscal Analyst indicates final payment on the invoice to notify the WSDOT accounting office and notifies the Contract and Finance Manager. The Contract and Finance Manager will notify the Program Manager in Division Services that the project can be closed out. Payment of the final invoice documents the completion of the project and the termination of the contract.

## **EQUIPMENT MANAGEMENT**

### ***Research Equipment/Property Inventory***

This procedure outlines the process and documentation required for the inventory and control of equipment/property (other than real property) acquired with funds made available by research project contracts. Non-expendable equipment purchased with research funds must be inventoried and managed in accordance with the *WSDOT Capital Assets Inventory Manual* and relevant OFM directives.

1. *Approval of Research Project Equipment:* In their research proposal, Principal Investigators provide a list of nonexpendable equipment to be purchased or manufactured during the research process. The Director approves all proposed equipment identified by the Principal Investigator. The proposed list of approved items is specified in the research project contract and/or scope of work and is maintained in the research project file.
2. *Inspection and Inventory:* The Contract and Finance Manager maintains research equipment inventories and reports on the inventory status as required by the WSDOT or another funding agency. The Research Manager monitors the project equipment inventory through the term of the project. Any discrepancies or changes in utilization or need must be verified and reported to the Contract and Finance Manager. A physical inventory of WSDOT owned capitalized assets or small and attractive assets are required every two years. Capitalized assets have a purchase price equal to or greater than \$5,000 and a useful life of greater than one year. Small and attractive assets have a purchase price of \$300 to \$4,999.

3. *Termination*: Upon completion of the contract agreement, or if the equipment is no longer needed for the research project, the Research Manager notifies the Contract and Finance Manager. A determination of the disposition of the research equipment is made by the Contract and Finance Manager and approved by the Director in accordance with WSDOT policy and procedures as noted below.

### ***Research Equipment/Property Disposition***

An equipment purchased or manufactured as a part of a research project will be processed as follows at the completion of the project:

1. *Final Inventory*: The research agency submits a final inventory list with the research project draft final report as specified in the Research Project Contract. The Contract and Finance Manager compares the final inventory with the research contract and Research Agency invoices to account for all items.
2. *Final Inspection and Documentation*: The Contract and Finance Manager arranges a final inspection of the research equipment inventory. The Contract and Finance Manager completes a Research Equipment Disposition Form to identify the equipment's quantity, original total cost, location, age, and fair market value. The form also identifies the condition and recommended disposition of all items.
3. *Determining Value*: If, as a result of the inspection, it is determined that the fair market value cannot be arrived at through straight-line depreciation using the life table included in *WSDOT's Capital Assets Inventory Manual*, the reason will be documented for the adjustment. Reasons could include condition of the item, obsolescence, excessive age, etc. Items that are determined to be expendable are identified only and not assigned a value. As determined by the Director, it may be necessary to employ the services of an expert (appraiser) to arrive at a fair market value of high cost items.
4. *Approval of Disposition*: The Director approves of all items on the Research Equipment Disposition Form. Standard A.1 02 Attachment N, Property Management Standards. Authorization by the Director is required for the disposition of all research equipment.
5. *Funding Agency Approval of Disposition*: The funding agency is notified and must approve the disposition of all the research equipment according to specific agency guidelines and procedures. Equipment purchased with FHWA funding will be disposed of as follows:
  - a. *Transferred Equipment*: The equipment may be transferred from one research project inventory to another without reimbursement.
  - b. *Equipment Maintained by WSDOT*: If the equipment is funded by a federal agency with a fair market value of less than \$5,000, WSDOT may use the property for other activities without reimbursement to the federal government or sell the property and retain the proceeds (Reference: OMB A.I02 Attachment N, p. 5). If the equipment is funded by FHWA and the current fair market value is more ~ than \$5,000, documentation of the method of disposition is required and retained with no reimbursement to the program. The FHWA is informed of the action of disposition with supporting documents.

- c. **Equipment to be Sold:** If the equipment is to be sold, upon approval by the funding agency, the Contract and Finance Manager bills the appropriate party to recover the fair market values identified for each item. When the equipment is sold through public sale, it shall be in a manner that maximizes competition and thus return from the sale. If the selling price varies from the determined Fair Market Value, the selling price prevails as the Fair Market Value.
6. **Revision of Inventory:** When the receiving agency has provided payment for the disposed property, the equipment is officially transferred to said agency. (Reference: OMB A.I02 Attachment N, Property Management Standards or WSDOT Capital Assets Inventory Manual. M72-89) Research equipment/property that is disposed of will be removed from the project or agency inventory at the next scheduled revision of the inventory.

## **FINANCIAL MANAGEMENT**

The Research Office Contract and Finance Manager administers the overall budget process of the research program, payment of invoices from Research Agencies for specific research projects, tracking the financial resources and expenditures of the research program, and providing financial information to the Director, Research Managers, and the Division Services Work Program Manager. The basis for all financial elements of the SP&R Research Program is the federally approved Work Program. The financial management processes described below are applied to all research projects being managed by the Research Office not just those in the Work Program.

### *Responsibility*

The Research Contract and Finance Manager is responsible to the Director for managing the fiscal resources of the Research Office. The Research Contract and Finance Manager is responsible for maintaining research project accounts in compliance with standard audit and accounting practices. Procedures of the financial management function are consistent with accounting practices as identified by the Division Services Work Program Manager and also comply with the FHWA or other funding agency requirements.

## ***Procedures for Financial Management***

### ***Research Budget & Work Plan Development***

This subsection describes the process for developing the research program biennial budget.

1. **Draft budget:** A draft work program including expenditure estimates is compiled by Program Management and approved by the Research Executive Committee. The approved work program includes cost estimates for projects that will carry-over from the previous biennium with new start projects and administrative costs. The Contract and Finance Manager prepares the draft budget based on the work program.
2. **Approval:** The draft research budget is sent to the Division Services Work Program Manager who reviews the budget request and incorporates the budget request into the WSDOT budget development process.

3. *Final Budget:* The Division Services Work Program Manager and the Research Contract and Finance Manager adjust the Research Office budget to reflect the approved funding levels. The final budget is incorporated into the total Department Work Program and is submitted to FHWA.
4. *Review:* The FHWA conducts a program review meeting to discuss the funding levels in the biennial final budget. Based on recommendations and discussion during the program review, Division Services Work Program Manager, Director and Contract and Finance Manager revise the research Work Program.
5. *Work Program Approval:* The Director of Strategic Planning & Programming approves the Work Program and submits the final Work Program to FHWA for approval. The FHWA notifies the WSDOT Secretary of Transportation when the final Work Program is approved.
6. *Notification:* The Division Services Work Program Manager notifies the Research Contract and Finance Manager when the FHWA approval is received, who, in turn, notifies the Director,, the Research Manager, and Research Administrator.

### ***Work Program Modifications***

Each biennial quarter, December and June of each year, the fiscal work program may be adjusted as needed. This subsection outlines the process of modifying the fiscal work program.

1. *Work Program Revision:* The Contract and Finance Manager completes a quarterly summary report that describes the adjusted funding levels for the biennial work program. The Director reviews the report before it is submitted to the Division Services Work Program Manager.
2. *Approval:* The Division Services Work Program Manager reviews the quarterly summary report and submits a final report to the Director of Strategic Planning & Programming for approval. The Director submits the quarterly summary reports to the FHWA for approval.
3. *Notification:* The Division Services Work Program Manager notifies the Contract and Finance Manager when the FHWA approval is received. The Research Contract and Finance Manager notifies the Director, Research Managers, and Office Coordinator.

### ***Fiscal Administration of Projects***

This section describes the process for the financial/fiscal administration of research projects.

1. *Project Entry Into Accounting System:* The Research Fiscal Analyst enters the project into the research database. The Contract and Finance Manager prepares and submits an Agreement Edit Form to the Division Services Work Program Manager to appropriate funds for the project. A copy of the resulting Work Order Authorization Form is provided to the Contract and Finance Manager by the Division Services Work Program Manager upon approval. The Contract and Finance Manager enters the work order number into the research database. This action is needed before any invoices can be processed.
2. *Invoices:* The research organization submits an invoice to the Office of Research and Library Services identifying expenditures that have been incurred on a project.

The invoices are routed to the Research Fiscal Analyst for processing. NOTE: In the case of travel related to a pooled-fund research project there needs to be a letter on file prior to the travel approving the travel. A copy of the letter should be attached to the invoice so that payment can occur.

3. *Review:* The Fiscal Analyst checks the accuracy of the invoice based on the information contained in the research project contract, assures availability of funding, and assigns a project charge code.
4. *Approval:* The invoice is submitted to the Research Manager for approval. The Research Manager is responsible for ensuring that the items on the invoices are authorized expenditures based on the research project agreement and within approved annual budget levels for the project. The Research Manager notifies the Principal Investigators and the Contract and Finance Manager if any discrepancies exist on the invoice. The Research Manager and the Principal Investigator resolve any discrepancy. The Research Manager approves payment for the invoice and returns the invoice to the Fiscal Analyst.
5. *Payment Processing:* The Fiscal Analyst enters the invoice in TRAINS for payment. The invoice information is entered into the research database. After data entry, a copy of the invoice is given to the Office Coordinator for filing in the project file.
6. *Ledgers:* The Department's Accounting Office issues ledgers of project expenditures once a month indicating payment of the invoice. The Fiscal Analyst prepares and distributes the ledgers to the Research Contract and Finance Manager. The Research Contract and Finance Manager reviews these ledgers to ensure that payment has been made and resolves any errors.
7. *Revisions:* If a project requires additional funds or a time extension, a revised Agreement Edit form is prepared by the Fiscal Analyst and reviewed and approved by the Contract and Finance Manager and submitted to the Division Services Work Program Manager for and preparation and transmittal of a revised Work Order Authorization form.
8. *Project Completion:* Upon verification of payment of a final invoice the Contract and Finance Manager will notify the Division Services Program Manager that the agreement and work order for that project can be closed out.
9. *Closing a Project:* When closing a standard research project the Division Services Program Manager will close the agreement, task order and/or work order based on the type of agreement that created the project. Closure of Transportation Pooled Fund Projects will be dealt with separately below.

#### ***Fiscal Administration of Transportation Pooled Fund Program Projects led by WSDOT***

This section describes the process for the financial/fiscal administration of transportation pooled fund program research projects for which WSDOT is the lead state.

1. *Pooled Fund Project Commitment.* Individual state, federal agency or private partners make funding commitments to the project through the Pooled Fund website. This task is coordinated by the appropriate Research Manager.
2. *Pooled Fund Project Funding Contributions.* Once sufficient financial commitments have been obtained, FHWA "clears" the project allowing the lead

state or agency to request formal transfer of funds from the member states and agencies and to begin the project. The fund transfer is accomplished by each contributor completing a Federal Aid Project Authorization (FAPA) and having that transaction approved by FHWA.

3. *Contributions by WSDOT.* Once FHWA approval of a WSDOT contribution has been obtained by the Project Control and Reporting Office a copy of the FAPA is distributed to the Contract and Finance Manager, Division Support Program Manager and the Project Support Services Supervisor in Accounting. Contributions are not required by lead states.
4. *Contributions by Pooled Fund Project Partners.* The Contract and Finance Manager will monitor the FHWA Funds Management Information System (FMIS) for project contributions from other states. Authority to expend contributions can be obtained through the regular WSDOT biennial budget process or by request for approval of an unanticipated receipt. The request is prepared by the Contract and Finance Manager and reviewed by Division Services and the T Program Budget Manager before approval by the Director, Research and Library Services and forwarded to the Director of Strategic Planning and Programming. Once approved by the Director, SP&P the request is forwarded to the WSDOT Budget Director to be transmitted to the Office of Financial Management. ***No agreement to conduct research can be processed prior to OFM approval if an unanticipated receipt is needed. When processing such an agreement the value of the agreement cannot exceed the amount of funding approved. Multiple unanticipated receipts may be necessary on any given project as states or agencies continue to contribute.***
5. *Setting up a Pooled Fund Project in the WSDOT accounting system.* Upon approval from OFM the Division Services Program Manager will coordinate with Contract and Finance Manager to set up work orders and agreements as needed. The Project Support Services Supervisor will also receive information as to the approved level of funding to set up the Federal aid agreement in TRAINS.
6. *Additional Pooled Fund Project Contributions.* When additional contributions are posted in FMIS the Contract and Finance Manager will notify the Division Services Program Manager, the Project Support Services Supervisor and T Budget Manager, in order to increase the federal authorization, process the unanticipated receipt or otherwise increase the amount of funds available to the project.
7. *Closing the Pooled Fund Project.* When the project is completed the Contract and Finance Manager will notify the Division Services Program Manager who will in turn notify the Project Support Services Supervisor. The Division Services Program Manager will close the agreement and associated work order while the Project Support Services Supervisor will obtain final payment from the federal aid project and close the project in the federal accounting system. FHWA will provide notification to participating states of the release of any unused funding from the project.

***Fiscal Administration of Transportation Pooled Fund Program Projects led by an agency other than WSDOT***

1. Once the Director has approved funding for participation in a Transportation Pooled Fund project led by another state or agency and it is posted on the TPF website, a Federal Aid Project Authorization (FAPA) is completed and the transaction approved by FHWA Division Office.
2. Once FHWA approval of a WSDOT contribution has been obtained by the Project Control and Reporting Office a copy of the FAPA is distributed to the Contract and Finance Manager, Division Support Program Manager and the Project Support Services Supervisor in Accounting.

### ***Monthly Expenditure Report***

The Monthly Expenditure Report provides Program and Project Management with fiscal and accumulative financial information on all research projects.

1. **Preparation:** The monthly expenditure report is prepared by the Division Services Work Program Manager after the closing of the accounting system for the most recent month.
2. **Budget Elements:** Each line item of the Work Program will be included in the Monthly Expenditure Report. Expenditure information for each research project includes the item number, project title, total estimated costs, current fiscal year estimated, current month actual expenditures, biennium to date total expenditures and a calculation of the percentage of actual expenditure compared to the budget expenditure for the entire biennium.

## **DOCUMENT MANAGEMENT**

### ***Paper Files***

The Office Coordinator manages the correspondence, reports, contracts and other information relating to the research program are maintained in the Research Office. This subsection outlines the process.

1. **Correspondence:** All original incoming correspondence and copies of outgoing correspondence are maintained on file by the Office Coordinator.
2. **File Organization:** Materials filed should be fastened in the file folder. Only bulky drafts, reports, or background material should be left loose. General correspondence is filed on the right side of the file folder. This would include contracts, work plans, letters of approval, and other items pertinent to the research project. Project status reports, accounting ledgers, and budget summaries for specific research projects are filed in separate sections of the project file.
3. **Categories:** There are four categories of active research project files. Each of the following types of projects is arranged separately and each project within the category is alphabetized.
  - a. **Active Project Files:** These are files of ongoing research tasks/projects. They are arranged by agreement type and number.
  - b. **Federal Administrated Contracts (FAC):** These projects are conducted by WSDOT for FHWA. They are filed by the project name.

- c. *Pooled Fund Projects*: These are the projects that the Department is participating in with other states or governmental agencies. They are filed by project number and “Pooled Fund” is indicated on the file folder.
  - d. *Experimental Feature Projects*. These are the projects that the Department is participating in through the construction program. They do not have funding from either WSDOT or FHWA. They are filed by project name.
4. *Setting Up Files*: When a research project is proposed, a file is set up and maintained by the Contract and Finance Manager. When the proposal becomes a project, then the file is integrated into other files by the Office Coordinator.
  5. *Completed Projects*: When a research project has been completed, the project file is moved to a holding file cabinet for two years before being processed for archives as required in General Records Retention Schedules, Agencies of Washington State Government, Section #GS 09006.
  6. *Follow up or Implementation Documents*: Because implementation activities often continue well after research projects are completed and the files sent to archives, implementation documents, such as plans, evaluations and summaries, are maintained separately. Like the project files, these files are identified and organized by agreement number.
  7. *Final Reports*: Research final reports are filed separately in numerical order by the Office Coordinator. Copies may be loaned to persons by following a simple checkout procedure. Extra copies may also be available upon request or from the library.
  8. *Miscellaneous*: A separate group of files is maintained by the Office Coordinator pertaining to administrative matters, national committees, personnel and travel. All materials are filed by name and in chronological order.

## ***Electronic Files***

The Office Coordinator is responsible for managing electronic files of the ORLS.

1. Electronic files are reviewed, organized, and maintained by subject title, e.g., correspondence, research projects, PDFs, etc.
2. Research project files are created by project name or number, depending upon the funding, and organized in the projects folder.
3. Electronic files are reviewed, on a regular basis of not less than a year, created and organized for year-end closeout and upcoming year.

## **Research Office Mail Distribution**

This subsection outlines the process for logging and distributing all incoming and outgoing Research mail.

1. The Office Coordinator reviews all mail and completes the distribution slip indicating the appropriate person to receive the item or the action required.
2. An electronic log is maintained on all mail items that require action. For example, this could include a response to a concern and/or the processing of a research

proposal, a project report or a contract. The mail log identifies the sender, the item, date of receipt, the recipient, and a due date for any action or required response.

3. The person indicated on the distribution slip is responsible for the required action or response in a timely manner. The Office Coordinator is responsible for maintaining the log and reporting any overdue action to the Director.
4. All original incoming correspondence is maintained by the Office Coordinator in the Research files. The Office Coordinator ensures that copies of all outgoing correspondence are distributed to the appropriate personnel and files.

### **Research Program Web Site Management**

The Office Coordinator manages the Research website. The primary objective of the website is to distribute findings and information related to research projects results, report and publication distributions, library and reference centers, training courses, promotion of seminars, conferences, exhibits, and much more. The website involves research information from FHWA, TRB, AASHTO, UW, WSU, other state agencies, private business as well as colleagues within our organization.

The Office Coordinator is responsible to ensure that the website is associated to the agency's business needs and strategic direction. As projects progress from phase to phase, the Office Coordinator provides professional oversight and guidance to ensure the website is managed effectively.

## ***SECTION SEVEN: RESEARCH PROGRAM REVIEW***

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The Research Office is responsible for monitoring the progress of WSDOT research activities and evaluating the effectiveness of the research program. The following reports and forums provide a summary of program performance.

### **Biennial Report**

The Research Office ensures and coordinates a biennial report of activities to be conducted by the Washington Transportation Center (TRAC) each biennium. The report is developed following the end of the biennium is published no later than December. The biennial report summarizes research projects conducted under the TRAC agreement within the previous two years. The review focuses on, but is not limited to:

- Relationship of research activities to agency strategic goals
- The research problem statements for each project
- The intended use of research results for each project
- Summarizes implementation plans and actions needed to implement for each project

The Biennial Report will summarize implementation plans for each of the reports completed within the previous two years and implementation actions for previous projects. Implementation activities will include cost benefit when available. It will also include list types of results achieved and actions needed to implement research. This information will be obtained from the implementation checklists.

### **Peer Exchange**

Peer Exchanges are intended to help state transportation agencies to identify and share successful research program policies and practices. States are required to conduct periodic Peer Exchanges. The program is designed for representatives from research organizations to travel to the host agency to discuss and review its research, development, and technology transfer management process. Peer exchanges are intended to benefit all participants through an open exchange of ideas, knowledge, and brainstorming.

At a minimum, the peer exchange team shall include two members of the American Association of State Highway and Transportation Officials Research Advisory Committee (RAC) who have previously participated in a Peer Exchange. States are encouraged to include a representative from FHWA.

It is the State's responsibility to initiate its peer exchange. The composition of the peer exchange team, the breadth of the issues covered, the duration of the peer exchange, and other issues are at the States' discretion.

Guidance for conducting Peer Exchanges can be found on the Turner-Fairbank Highway Research Center web site at: <http://www.tfsrc.gov/services/guidelines.htm>. Additional information can be found in 23 CFR 209(a)(7) and NCHRP Report "Guide for Developing a State Transportation Research Manual."

## **Federal Review**

The FHWA Division Administrator is required to periodically review the State DOT's management process to determine if the State is in compliance with federal requirements for research, development, and technology transfer. The FHWA Division Office must also approve the State's Research Procedures Manual and may conduct a compliance review. Normally, however, program compliance will be evaluated through routine involvement and report reviews. (23 CFR 209(d)).

The FHWA Division Administrator also reviews and approves the State Planning and Research Work Program. The Work Program is produced at the beginning of each biennium and provides a summary of administrative and project activities of the ORLS. It is updated every six months.

## **Performance Measures**

The ORLS is piloting the use of a data application developed under the NCHRP Project 20-63 *Performance Measures for Research*. This application is intended to document the value of research projects and the return on investment. Effort is also underway to better document the implementation of research findings.

Also, the ORLS tracks the amount of external funding leveraged for research activities, the number of employees involved with national and state research activities, the distribution of research across functional areas and research institutions, and the number of projects conducted.

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## ***SECTION EIGHT: RESEARCH RESOURCES***

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### **Transportation Research Resources**

It is important to use existing knowledge when planning research activities. The information listed below provides resources where you can find out about ongoing and published research.

#### ***WSDOT Research Web Site***

The WSDOT Research web site provides information on:

- WSDOT Research Reports
- Research Results and future research needs
- Current research projects
- Research funding sources
- Search tools for national research projects and reports
- Research partners

The web site is at <http://www.wsdot.wa.gov/research>.

#### ***WSDOT Library***

The WSDOT Library holds the largest collection of transportation related information in the state. 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. Portions of the collection that are particularly relevant to researchers include:

- WSDOT publications, including research reports and project documents
- Transportation Research Board Publications
- Some publications from other state DOTs, USDOT, and FHWA.
- Online resources. Permissions to access these resources vary. Some may be accessed by librarians only, while others allow WSDOT employee access or public access.

The WSDOT Library Catalog is part of the Washington State Library Online Catalog and is accessible at <http://www.secstate.wa.gov/library/catalog.aspx>.

In addition, the WSDOT Library networks with transportation libraries throughout the nation and may be able to access other relevant information.

#### ***Online Research Citation Databases***

##### ***TRANSPORT***

Through a WSDOT Library subscription, WSDOT employees also have access to TRANSPORT. TRANSPORT comprises two bibliographic databases, Transportation Research Information Services database (TRIS), and the International Transport Research Documentation (ITRD) database produced by the Organization for Economic Cooperation and Development. The TRANSPORT interface is web-based, and accessible through this URL:

<http://web5s.silverplatter.com/webspirs/start.ws?customer=c79224&databases=TS>

This service is authenticated by IP address, so it can only be accessed this way from Internet workstations located within the WSDOT.

ITRD database (<http://www.stn-international.de/stndatabases/databases/itrd.html>)

is a bibliographic database containing citations to worldwide literature, current research projects, and computer programs on all aspects of road research, transport, and traffic planning. Records contain bibliographic data, abstracts, and indexing information. The file is in English, with some abstracts and keywords in German, French or Spanish. Sources include approximately 850 journals from 40 countries as well as books, reports, dissertations, patents, standards and specifications, conference proceedings. The main subjects covered are design of roads and related structures; materials, soil and rock mechanics; earthworks, drainage of soils; construction of pavements, bridges, and tunnels; road maintenance, traffic and transport; vehicles, accident studies; economies and administration.

### ***Research in Progress***

The Research in Progress (RiP) database contains over 7,800 records of current or recently completed transportation research projects. Each month about 100 new RiP projects are added to the database and another 150 RiP records are updated. Most of the RiP records are projects funded by federal and state Departments of Transportation. University transportation research is also included. In 1998, the Transportation Association of Canada began supplying records from its Canadian Surface Transportation Research Database for RiP. International research projects from the TRIP file of the [International Transport Research Documentation Database](#) are now included in the RiP database.

The database can be searched by subject area, by organization conducting the research, by persons involved in conducting the research, and a number of other ways. Current research projects can be submitted to the database, and you can subscribe to receive subject-specific monthly e-mails on new RiP records.

The RiP database is an excellent resource for emerging technologies and can be accessed at <http://rip.trb.org/>.

### ***Transportation Research Information Services***

The Transportation Research Information Services (TRIS) Database is the world's largest and most comprehensive bibliographic resource on transportation information, containing 522,452 records of published transportation research as of 02/2006. Abstracts and citations are standard, and many (but by no means all) records contain either HTML or PDF links. TRIS is produced and maintained by the Transportation Research Board at the National Academy of Sciences. This resource provides an important first step in understanding the current baseline of events and recent innovations. TRIS also provides a gateway to the International Transport Research Documentation (ITRD) Database (<http://trisonline.bts.gov/search.cfm>).

### ***TLCat***

Coordinated by the National Transportation Library (NTL), the Transportation Libraries Catalog (TLCat) enables users to simultaneously search multiple transportation library collections held in the Online Computer Library Center's (OCLC) database. This union catalog reflects the

collections of over 20 transportation libraries nationwide, and more are being added on a quarterly basis.

TLCat provides access to a customized union catalog of transportation libraries' bibliographic records. Researchers may search the collections of participating libraries in a single click, or they may limit their search to a specific group of transportation libraries: Government Transportation Libraries, University Transportation Libraries, and Midwest Transportation Libraries. Search results show which participant libraries hold the various materials found. Searches can be structured to limit results by format – type of material – and a single click will expand your search to WorldCat – OCLC's catalog of the holdings of over 35,000 libraries worldwide. A growing number of the catalog records found

Guest Access to TLCat is available at <http://ntl.bts.gov/link.html>.

Contact the WSDOT Librarian for assistance with any database or information access issue. The library can be reached via e-mail at [library@wsdot.wa.gov](mailto:library@wsdot.wa.gov).

More information on the WSDOT Library can be found at <http://www.wsdot.wa.gov/library.htm>.