

9. Implementing Research

The benefit of research is fully realized when cost-effective research results are utilized. Implementation is the process by which viable research results are put into practice. The feasibility and likelihood of implementing research results must begin in the proposal development phase. Implementation of intermediate results is encouraged throughout the research project. Typically full implementation is begun at the completion of the project when the final report and approved implementation plan is disseminated. While many individuals may be involved, in implementation, the designated PIM is ultimately responsible for the implementation of the research results.

Before a research project is completed, the PI must work with the SAC and in particular the PIM and research users to develop an implementation plan that will provide a cost-benefit to INDOT. The PI and SAC should work together to identify the PIM at the beginning of the project during the proposal development phase. This individual should be identified in the implementation section of the proposal. If necessary, other appropriate INDOT personnel should be identified for implementing research results. A close-out SAC meeting is required during the four-month report review period. This meeting is to include a review of the implementation recommendations suggested by the PI and to review and revise the implementation plan. At the meeting, the PI, working with the SAC, PIM, or other users, will complete the *INDOT Research Project Implementation Plan Form*. This form must be submitted by the PI to the JTRP Office with the approved final report. The form should contain sufficient information from the PIM and other individuals responsible for implementation detailing the planned implementation tasks.

The INDOT Office of Research and Development will send a copy of the approved *INDOT Research Project Implementation Plan* form with the final report to the PIM. Other individuals identified on the implementation plan, the Chairman of the JTRP Advisory Board, the JTRP Director, and other appropriate INDOT personnel will receive a copy of the implementation plan form. The PIM and any other individuals responsible for the implementation have direct responsibility for the implementation according to the implementation plan.

The Office of Research and Development and the JTRP Office are willing to provide reasonable and available support to the PIM at their request. Such support includes PI support, prototype equipment, training, seminars, and other technology transfer assistance. It is recommended that this additional support be discussed during the close-out SAC meeting when completing the implementation plan.

The PIM is responsible for ensuring that the items outlined in the implementation plan are implemented. This process may happen very quickly at the end of the research project if the deliverables are readily implementable. However, depending on the nature of the implementation tasks, the process may need to be done incrementally over a longer period of time.

INDOT Office of Research and Development may request that the PIM submit an annual update for inclusion into the *INDOT Annual Summaries of Implementation Projects* as explained later in this chapter. The Office of Research and Development will contact the PIMs at the appropriate time each year and designate the required format for submittal.

While business units and districts within INDOT have the final responsibility for implementation, the INDOT Office of Research and Development is willing to assist whenever possible. If changes to the implementation plan or early termination of the implementation process are needed during the implementation phase, the PIM should advise the INDOT Office of Research and Development.

Funding Implementation Activities

To encourage the implementation of viable research results, an implementation line item is available in the annual *Work Program and Cost Estimate* distributed by the INDOT Office of Research and Development. These funds are set aside specifically for implementation activities and projects. Accessing these funds should be done with the coordination of the PA and the INDOT Office of Research and Development.

Implementation Projects Utilizing Research Funds

Implementation projects are typically added to the approved *Work Program and Cost Estimate* via the Implementation Line Item. Thus, individual projects are not identified as part of the SRP process. Implementation projects which use research funds are managed in the same manner as standard research projects. Therefore, all the research project requirements outlined in the previous sections are applicable except as follows.

- Proposals - Unless otherwise requested, a formal final report will not be required. However, the products of the implementation should be clearly identified in the proposal. Additionally, a short summary of the implementation activities and implementation results is required and should be noted in the proposal. As there is no formal final report required, the four-month report review and revision period can be eliminated from the project timeline. However, an abbreviated period for the review of the research products may be requested. While not required for all implementation projects, a presentation of the implementation project proposal to the JTRP Advisory Board, either for information or approval, may be requested.
- During the implementation project SAC meetings should be held every six months as outlined in Chapter 5. However, the nature of the implementation may require more frequent SAC meetings.

- Final reports are not typically required for formal implementation projects. However, a short summary of the objectives, completed tasks, and the results of the implementation should be prepared by the PI and submitted to the JTRP Office to close out the project. If a report review period was included in the implementation proposal, the summary should be submitted to the JTRP office by the required date. The summary report will be distributed to the PIM and SAC members by the INDOT Office of Research and Development. If a review is to be conducted, the review will be conducted as outlined in Chapter 8. Unless expressly requested by the SAC, no close-out meeting will be required.

Annual Summaries of Implementation Projects

Annual progress reports are required for certain implementation projects. Annual progress reports are to be prepared by the PIM. The INDOT Office of Research and Development will identify appropriate implementation projects and request that the PIM submit an annual update. These updates will be included in the *INDOT Annual Summaries of Implementation Projects*. This summary is reviewed by the INDOT business unit leaders and the INDOT executive staff personnel. Consequently, complete, accurate progress reports are required.

The INDOT Office of Research and Development will designate the required format for submission. Submission of an annual summary will be required of the PIM until the implementation phase is complete. The information required in the annual implementation progress reports is as follows.

- Project Title and Project Number
- Offices/Divisions/Districts Responsible for Implementation
- Name and Contact Information of PIM
- Date Implementation Started
- Expected Completion Date of Implementation
- Status of Implementation
- Implementation Activities/Activities Planned for Next Year
- Problems Encountered
- Savings and Benefits Realized from Implementation

Benefit–Cost Analysis

Evaluating the benefit of an investment is good business practice. The value of INDOT's research investment is quantified, in part, using a benefit-cost analysis. In conjunction with the annual implementation summary request, the PIM should provide information regarding any cost savings that have been realized as a result of the

implementation. The JTRP Office will work with the PIM to obtain additional information regarding specific implementation benefits so that a project benefit-cost ratio will be calculated. Result of these analyses will be published through the JTRP Office and on the JTRP website under the “Research Pays Off” link: <http://www.purdue.edu/jtrp>.