

Kentucky Transportation Cabinet – Research and Innovation Program

Policy

It is the policy of the Kentucky Department of Highways (the Department) to implement and maintain a viable research and innovation program that is designed to meet both the short-term and long-term research and technology needs of the Kentucky Transportation Cabinet. The Department cooperates fully with the United States Department of Transportation, Federal Highway Administration (FHWA); the Kentucky Transportation Center (KTC) at the University of Kentucky; and other partners to achieve these research and development program objectives. The research and development program is both a process improvement effort and a problem-solving service for the Department as well as the entire Cabinet. It is the Department's intent that the results generated by research and development activities are implemented and produce substantial benefits for the Department, the Cabinet, and the citizens of the Commonwealth. The Department's research and development program is administered in accordance with the following procedures and guidelines.

KENTUCKY COOPERATIVE TRANSPORTATION RESEARCH PROGRAM

The Kentucky Cooperative Transportation Research Program (KCTRP) is carried out under an agreement between the Cabinet and the University of Kentucky Research Foundation (UKRF). The agreement was first established in December 1980. A revised memorandum of agreement (MOA) was executed in August of 2001. That MOA has been extended through a series of supplemental memoranda of agreement, the most recent of which extends the agreement through June of 2018. The purpose of the program, as stated in the 2001 MOA, is to “secure and analyze data and to develop facts and information which will define the governing principles and will advance the knowledge of transportation and transportation engineering for practical application in using, in the most effective and economical manner, the public monies now available for providing a comprehensive transportation system for the people of Kentucky.” To provide further clarification, the following specific purposes of the program are listed in the MOA:

- To meet the Cabinet’s basic need for a comprehensive transportation research program consisting of basic research, applied research, and special studies;
- To provide the necessary administrative and research facilities and to establish the necessary procedures for the proper planning, execution, and coordination of the individual cooperative transportation research studies under the program;
- To provide a medium for the exchange of pertinent information with other transportation and research agencies, and to provide methods for the prompt dissemination to practicing transportation professionals and executives in Kentucky of any useful knowledge acquired; and
- To provide a balanced and reasonably uniform program of cooperative transportation research studies on a continuing basis which permit proper scheduling and efficient use of University and Cabinet personnel, space, and equipment.

KTC operates as a non-academic department within the College of Engineering at the University of Kentucky. KTC staff researchers and designated faculty members conduct the majority of the KCTRP activities. When appropriate, in order to meet the needs of a particular research project, KTC partners

with academic units, other research centers, other universities, and other public or private entities. KYTC may also contract with other institutions to complete research and development activities when it is determined to be in the best interests of the Cabinet to do so.

A. Research and Innovation Executive Committee

The purpose of the Research and Innovation Executive Committee (RIEC) is to facilitate an orderly research and innovation program. The Committee consists of the following members:

- Secretary of Transportation
- State Highway Engineer
- Deputy State Highway Engineer, Project Development
- Deputy State Highway Engineer, Project Delivery and Preservation
- Research Coordinator
- FHWA Division Administrator (Advisory)
- FHWA Research Coordinator (Advisory)
- Director, Kentucky Transportation Center (Advisory)

The RIEC shall provide direction to the research and innovation programs. The Committee will meet at the direction of the State Highway Engineer or the Research Coordinator, who will determine the agenda and conduct the meetings. The primary responsibilities of the Committee include (1) project selection for the development of the annual research program and (2) promoting and facilitating the implementation of research recommendations. After consideration of ongoing studies, proposals for new studies, and the available funding, the State Highway Engineer is responsible for approving the annual program. With respect to research implementation, the RIEC shall review the recommendations of each project's Study Advisory Committee and determine whether to implement results and how to best do so.

B. Research Coordinator

The State Highway Engineer shall name an engineer within the Department of Highways to serve as the Department's Research Coordinator. The Research Coordinator shall work with the KTC to develop an annual work program, monitor research progress, promote implementation of research results, oversee the administration of the research and innovation program, and serve as a liaison to organizations such as the American Association of State Highway and Transportation Officials (AASHTO), TRB, and FHWA on research- and innovation-oriented activities. The Research Coordinator shall approve the initiation of all new research studies, approve modifications to the budgets or schedules of existing studies, and give overall direction to the research program activities. The Research Coordinator is also responsible for tracking the progress of research implementation.

C. Research Study Advisory Committees

A Study Advisory Committee (SAC) shall oversee and monitor research activities for each major study. The SAC will be operational from the time of appointment until the final report for the study has been approved and an implementation plan has been submitted to the Research Coordinator and approved. The Research Coordinator will appoint a Chair for each SAC. The SAC Chair shall select SAC members including a Vice Chair to serve in the Chair's absence (if required). There is no mandatory number of members, and new members may be added as necessary as the project proceeds. Depending upon the scope and complexity of the study, it may be advisable to include representatives from multiple divisions, departments, districts, or even from other state or local government agencies. This will help ensure that a variety of views and perspectives are incorporated into the study, and it will increase the likelihood that a study's recommendations are implemented. Whenever possible, the SAC should include those who will be potential users of the findings and recommendations resulting from the study. For all Federal-aid studies, the team shall include representation from the FHWA Kentucky Division Office. The FHWA Research Coordinator will appoint the FHWA representative for each SAC. Also serving on the SAC will be the study's designated Principal Investigator (PI).

The SAC is responsible for reviewing the proposed work plan developed by the institution conducting the research to ensure that:

- The study has a clearly defined scope of work that includes preliminary implementation considerations
- The estimated cost is reasonable for the intended scope of work
- An activity timetable is included and adhered to
- Comments, recommended revisions, or approvals of the proposal have been furnished to the Research Coordinator

The SAC may change the scope and direction of the study when necessary with the approval of the Research Coordinator. The Research Coordinator must also approve any time extension or budget increase. The SAC shall monitor costs of the study to prevent overruns.

The SAC Chair will schedule meetings of the committee as necessary. Typically, a "kickoff" meeting will be held at the beginning of the study to define the study objectives and the scope of work. Subsequent meetings will be scheduled (normally at least two meetings per year) to update committee members on the study's progress. At each meeting, the Principal Investigator will give a presentation that reports on progress to-date, preliminary findings (if applicable), and any challenges that have been encountered. The SAC Chair should advise the Research Coordinator of the date, time, and location of all scheduled meetings. It is the SAC Chair's responsibility to ensure that minutes are taken and distributed to the SAC members and the Research Coordinator, however, preparation of meeting minutes is typically delegated to the Principal Investigator. For Federal-aid projects, the FHWA Research Coordinator must also be notified of all SAC meetings and be provided with meeting minutes. Any committee member (including the PI) may request a meeting through the SAC Chair, but the responsibility for calling meetings lies solely with the Chair.

The SAC Chair shall maintain a project file with all pertinent correspondence and project documents. The research institution is also required to maintain the official project file for each research study. When the Research Coordinator receives an invoice for work performed by the research institution on a given project, the Research Coordinator will obtain approval from the SAC Chair for payment of that invoice. The SAC Chair will be responsible for obtaining approvals from appropriate personnel responsible for the project funding. The Research Coordinator will be responsible for payment and tracking of the invoices.

The SAC Chair shall coordinate a review of all project deliverables (draft, interim and final) prepared by the research institution and provide comments and suggested revisions to the PI in a timely manner, usually within 15 working days of receipt of the report. When the SAC Chair approves the final report, the PI and the Research Coordinator should be promptly advised of that approval. For Federal-aid studies, FHWA concurrence must also be obtained prior to publication of any report. Upon approval of the final report, the SAC shall prepare an implementation plan and the SAC Chair shall provide that plan to the Research Coordinator for approval. The implementation plan should be prepared before the final report is printed. If there are no specific recommendations for implementation resulting from a given study, the SAC Chair shall document that the study was completed and that the findings are not recommended for implementation, along with reason(s) why implementation is not recommended. If there are special instructions or unusual needs for implementation activities, these should be discussed with the Research Coordinator.

The SAC Chair shall communicate and coordinate with the Research Coordinator throughout the research study. The Research Coordinator should be contacted as soon as possible in the event of any issue that cannot be readily resolved by the SAC. For some studies, the deliverables may include workshops or seminars that are to be provided for Cabinet personnel. These sessions should be directed toward application of the results of the research effort.

Contracting with Academic Institutions for Research

Definitions:

Cabinet – The Kentucky Transportation Cabinet

Proposal – The documented means through which the following information is communicated about a research study:

1. Study Title
2. Objective(s)
3. Work Plan

Research Contract - The legal instrument binding the Cabinet and the University and which specifies terms and conditions for the conduct of research for the Cabinet.

Study Agreement – An agreement executed by the Cabinet and a University to conduct a specific research study in accordance with a proposal that has been approved by the Cabinet.

Study Advisory Committee – A committee of selected representatives from the Cabinet (and other stakeholders, if applicable) that provides guidance and oversight for each research study. The committee will also include the key investigator(s) from the University.

University – Academic Institution which contracts with the Cabinet for the purpose of conducting research.

Work Plan – The document which outlines the general plan for conducting the study, states the significance of the study as it may add to needed knowledge or how the results may be applied in practice, provides statements of maximum cost and time required to complete the study, and specifies individual staff to be assigned to the study.

Cooperative investigational work on individual research studies may not begin until (1) the Cabinet and other funding agencies (where applicable) approve a proposal submitted by the University, and (2) a Study Agreement between the Cabinet and the University authorizing a particular study has been executed. The proposal must specify the duration of the Study Agreement. Once approved, the proposal will be integrated into the Study Agreement by reference. Study Agreements are transmitted in writing or electronically from an authorized Cabinet representative to the University. Both the Cabinet and the University will retain a copy of the approval on file. Each Study Agreement applies to the entire duration of the associated study. The Cabinet and University may jointly agree to extend a Study Agreement. An extension must either (1) conform with the terms set forth in the original Study Agreement or (2) establish new terms provided they do not conflict with any provisions of the research contract. The Cabinet

and other funding agencies (where applicable) must approve any changes in the staffing assignments of key personnel proposed by the University.

Performance Management

The Cabinet has identified a set of key performance measures to be used in the assessment of the research program. These measures are as follows:

Timely Completion of Projects

- Average time from project start date to delivery of project results
- Average time from project start date to approval of final report

Adherence to Schedule and Budget

- Percentage of projects completed on-time (per work plan)
- Percentage of projects requiring revision to work plan for schedule extension
- Percentage of projects requiring revision to work plan to add funds

Implementation

- Percentage of projects resulting in documented implementation
- Estimated benefits of documented implementation

National Contributions/Visibility/Exposure

- Number of KYTC research projects selected for national “High-Value Research” publications
- Number of papers selected for presentation and/or publication by TRB
- Number of papers selected for publication in other peer-reviewed journals
- Number of presentations of KYTC research at regional, national, or international conferences

In addition to developing the list of performance measures, the Cabinet has undertaken specific initiatives to enable these measures to be implemented. These initiatives include:

- Development of a web-based Research Project Tracking System (RPTS), with all active research studies entered into the system;
- Development of standardized quarterly progress reports (QPRs) for each SPR project, which may be produced directly from the RPTS;
- Development of templates for a preliminary “Implementation Assessment” and a final “Implementation Plan,” to be completed for each research study;

For each approved research study, the University will be responsible, in cooperation with the Study Advisory Committee, for completion and delivery of the preliminary implementation assessment and the final implementation plan. These documents will be developed using templates provided by the Cabinet. In addition, the University will provide quarterly progress reports on each active study, using the template provided by the Cabinet. Specific content of the quarterly progress report is addressed later in this document.

Facilities and Administrative Rates

Facilities and Administrative (F&A) rates will be administered in accordance with applicable state and federal regulations. All research projects are selected by the Cabinet and overseen by representatives of the Cabinet to achieve specific objectives as determined by the Cabinet. Therefore, when conducting research for the Cabinet, the University is considered a vendor. The maximum F&A rate for research has been established by the Cabinet as 15% of direct costs as described below.

In accordance with the most current guidance that KYTC has received from the National Highway Traffic Safety Administration (NHTSA), KYTC excludes F&A for NHTSA-funded highway safety projects administered through the Kentucky Office of Highway Safety. Also, in accordance with federal regulations, KYTC excludes F&A for purchases of capital equipment.

The actual rate for each project type will be indicated in the final contract between the Cabinet and the University (not to exceed the maximum stated above). These final rates may be dictated by the sources of the funding within the Cabinet.

For research studies for which F&A is applied, it will only be applied to the following categories of direct costs:

- Salaries and Benefits
- Travel
- The first \$25,000 of any subcontract or individual project expense

Progress Reporting and Invoicing

The University will submit quarterly invoices to KYTC for all active research studies. Invoicing periods will align with the Cabinet's fiscal year, which begins on July 1. Periods are defined as follows:

- July 1 – September 30
- October 1 – December 31
- January 1 – March 31
- April 1 – June 30 (year-end)

The University will submit invoices within 30 days of the end of the quarter being invoiced. For example, invoices for the July 1 – September 30 period must be submitted no later than October 30. Year-end invoices are to be submitted within 45 days of the end of the fiscal year. All invoices must include the following items:

- KYTC Project Number
- University Account Number
- KYTC agreement number (e.g., PON number)
- KYTC Project Title
- Name of Study Advisory Committee Chair
- Name of Principal Investigator
- Project Beginning Date
- Project Scheduled End Date (or actual end date if project has ended)
- Total Project Budget Amount
- Invoice Number
- Invoice Period
- Date of Invoice
- Current Quarter Project Expenses (Invoice Amount) broken into the following categories:
 - Salaries
 - Travel
 - Other expenses
 - Equipment
 - Facilities and Administrative
- Cumulative Expenses (broken into the same categories as current quarter expenses)
- Contact information for billing questions

A Quarterly Progress Report will be submitted alongside each quarterly invoice. Each Quarterly Progress Report will contain the following information:

- KYTC Project Number
- KYTC Project Title
- Name of Study Advisory Committee Chair
- Name of Principal Investigator
- Name of Research Entity
- Project Beginning Date and Scheduled End Date
- Total Project Budget Amount
- Reporting Period
- Date of Report
- Status of Project Tasks
 - Task Number and Title

- Scheduled Completion Date
- Percent Complete
- Progressing According to Agreed-Upon Schedule (Y/N)
- Actual Completion Date (for completed tasks only)
- Status of Project Milestones / Deliverables
 - Milestone Description
 - Scheduled Completion Date
 - Milestone complete? (Yes/No)
 - Actual Completion Date (for completed milestones only)
- Project Financial Status
 - Funding by KYTC Fiscal Year
 - Budgeted
 - Expended
 - Remaining
 - Amount Billed this Quarter
- Narrative describing work accomplished during this quarter
- Narrative describing challenges encountered and explaining any tasks behind schedule

Incomplete or inaccurate invoicing or reporting will cause delays in payment of invoices.

Equipment Ownership

All special apparatus and capital equipment purchased and/or constructed by the University with funds provided by the Cabinet and which are of such nature that they may be used by the Cabinet in the conduct of its work shall remain the property of the Cabinet. Otherwise, the special apparatus and capital equipment shall become the property of the University. A decision on the disposition of such items will be made by the Cabinet upon completion of the particular study. The Cabinet will provide the University with equipment disposition instructions (written or electronic) no later than sixty (60) days after the completion of the particular study.

Standards for Data Collection, Maintenance of Records, Publications, and Publicity

23 CFR 420.209(6) directs state DOTs to adopt procedures for documenting research development and technology transfer activities. In accordance with this statute, the Cabinet establishes the following provisions related to documentation, data collection, and publication of research undertaken with federal funding:

1. All data collected under the Study Agreement, along with summaries, charts, and other representations of data will be the property of the University and the Cabinet. Original copies of data will be kept on file at the University. Data must be furnished to the Cabinet upon request.

2. The University may publish the results of any research investigation as long as the document is submitted to the Cabinet before publication and all preconditions listed in Provision 3 (see

below) are met. For active projects for which a final report has not been submitted to and accepted by the Cabinet, the University will supply the Cabinet with a copy of any proposed publication at least 60 days before the expected publication date for review and comment. Any revisions to a manuscript requested by the Cabinet must be based on reasonable grounds and stated in writing. Publications describing the results of a Cabinet-funded investigation must contain an acknowledgement on their title page that recognizes: (1) the investigators, (2), the authors, (3) author affiliations, and (4) the project's cooperative nature.

3. If the Cabinet requests changes to a manuscript, and if following revision the Cabinet and the University disagree over whether the new manuscript is satisfactory, the University may publish the manuscript following a mutually agreed upon period. The University may publish such a manuscript only if it does not attribute publication to the Cabinet. If another cooperating funding agency objects to publication, the University may publish the manuscript, but only if the University does not attribute publication to that agency.

4. The Cabinet retains the right to incorporate the University's data, results, and conclusions into its publications. The Cabinet must recognize the investigator's contributions in publications, and include the University's disclaimer where appropriate.

5. Project deliverables (including reports) will typically be distributed electronically; however, the Cabinet may require printed deliverables for selected projects at its discretion.

6. The University may copyright reports, forms, and other materials generated by work funded by the Cabinet. For any such materials, pursuant to 23 CFR 420.121(b), the University grants an irrevocable, nonexclusive, nontransferable, and royalty-free right to reproduce and publish all copyrighted material to the Cabinet, to other state transportation agencies, and to the United States Government. The University grants the United States Government authority to sanction the reproduction and/or publication of copyrighted material if in doing so the public interest is properly protected. Any material whose reproduction or publication is done or authorized by the United States Government will include a statement on the copyright page affirming protection of the public interest. The University is the exclusive recipient of any royalties generated by publications.

7. Neither the University nor the Cabinet may release information developed under a Study Agreement before publication, or completion of the study if there are no plans to publish its findings, without the written consent of the other party, except as provided for in Provision 8 (see below).

8. (a) The University and Cabinet may discuss an ongoing study with technical groups and offer lectures to students, employees, and other groups. These activities do not constitute publication. (b) If there is not sufficient time to review a complete report before a paper is presented that contains information from a study, an abstract can serve as notification of intent to present study findings. Any presentation and/or paper must protect the interests of the other party, and other

cooperating funding agencies, by including a statement that the material has not been reviewed by the Cabinet, other cooperating funding agencies, or both.

Patentable Discoveries

For any research projects conducted by the University for the Cabinet, the results of experimental work, including patentable discoveries, developed under the direction of the staff of the University belong to the University, shall be used in the public interest as determined by the University, and may be patented by the University in accordance with the University's policies on patents. However, the University must grant to the Cabinet, to other state transportation agencies, and to the United States Government (provided any federal funds were used to support the investigation) an irrevocable, nonexclusive, nontransferable, and royalty-free license to practice each invention in the manufacture, use, and disposition, according to law, of any article or material and in the use of any method that may be developed as a part of the work on any study under the Research Contract. Any income generated by a patented discovery shall inure solely to the University. All patented rights on projects funded by the United States Government shall be in accordance with 37 CFR 401.