

## KDOT Research Procedures and Research Implementation System



Iowa DOT  
Research Peer Exchange Meeting  
August 15, 2007

## KDOT Organization

- Secretary of Transportation
- Asst. Sec. Of Transportation and STE
- Director, Division of Operations
- Chief, Bureau of Materials and Research
- Engineer of Research

## Research Unit Organization

- Unit in Bureau of Materials and Research.
- 7 Sections.
- 26 FTE's plus temporary employees.
- Research staff oversees most internal agency RD&T activities including administration of university research program plus some planning and materials support functions.
- Staff from other bureaus also serve as project monitors on university research projects in their area of expertise.

## KDOT Research Oversight

- Our research committee structure and wide involvement of other agency staff in monitoring the research program contribute to our success:
  - Research Program Council
  - Research Technical Committee
  - 7 Area Panels
  - Project Monitors

## Research Committee Structure

- Research Program Council
  - Sets policy and approves annual K-TRAN program.
- Research Technical Committee
  - Based on input from APL's, evaluates proposed projects, prioritizes and recommends annual program.
  - Recommends policy.
- Area Panels (7)
  - Evaluates preproposals received and determines which to recommend and priority.

## Research Program Council

- Secretary of Transportation, Asst. Secretary and STE, KSU and KU Deans of Engineering, 3 private sector members, FHWA Division Administrator & Research Director.
- Set policy and approve annual K-TRAN university research program.
- Establishes awareness, creates involvement, provides communications opportunities, allows inputs on potential policy needs.

## Research Technical Committee

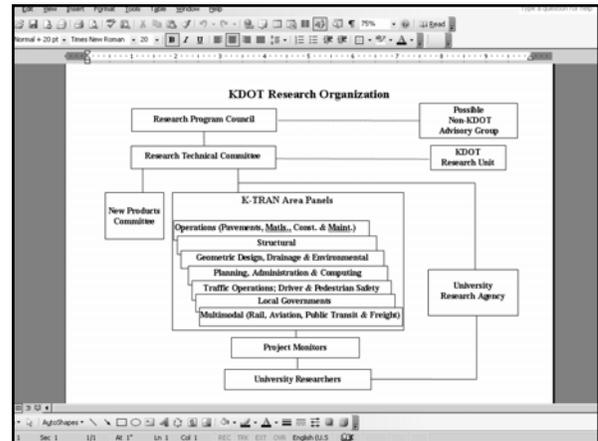
- 16 members: KDOT-6 bureau chiefs, 4 asst. bur. chiefs, T<sup>2</sup> Engineer, 4 faculty and 1 FHWA.
- 7 of 11 KDOT members are also Area Panel Leaders (APL).
- RTC develops list of prioritized candidate projects from APL recommendations
- Involves key staff interested research results that can be implemented

## Area Panels (7)

- 4 fixed members each (KDOT-APL, FHWA, KSU, KU).
- Review research project statements assigned to their area panel and recommend candidate projects for funding to RTC.
- APL's assign project monitors typically from their bureaus, approve final reports for publication and assist with implementation efforts.

## Area Panels

- Operations (Pavements, Materials, Construction & Maintenance)
- Structural
- Geometric Design, Drainage & Environmental
- Planning, Administration & Computing
- Traffic Operations; Driver & Pedestrian Safety
- Local Governments
- Multimodal (Rail, Aviation, Public Transit & Freight)



## Strategic Management Plan

- Strategic Goal 5: "KDOT will optimize its use of technology to improve the efficiency and effectiveness of the department's operations."
- Objective: "Continue the research and development of technological applications to improve transportation and transportation related processes in Kansas."
- Strategy: "K-TRAN Program: Implement improvement efforts offered through the use of the K-TRAN Program/Continue K-TRAN projects. Obtain a beneficial return."

## Strategic Management Plan

- Management Goal 5: "To preserve the condition of the SHS in its as-built or improved condition."
- Management Strategy--New Technologies and Techniques: "To research, review, evaluate and implement new technologies, techniques, and practices that continually improve transportation in Kansas."
- Output Measures: "Benefit to Cost ratio of K-TRAN projects"

### NCHRP Synthesis 280-Seven Keys to Building a Robust Research Program

1. *Found it on trust*
2. *Market boldly*
3. *Root it in economics*
4. *Make deals unabashedly*
5. *Insist on accountability*
6. *Embrace policy research*
7. *Empower the staff*

### Why is policy research important?

- Better factual information on policy issues available to top management
- Opens communications between top management and research director/staff
- Builds trust that can lead to support of traditional research

### How we get policy research included in our program “without really trying”

- Established a research policy committee with top level managers and include senior managers on other research committees
- Solicit ideas widely on all topics
- Adopted procedures that allow/encourage policy and soft-side research
- Established a research program with access to outside experts to complement in-house staff
- Produce usable results in timeframe needed on critical policy issues

### KDOT Keys

- Open communications policy and TQM principles overcome potential organizational issues
- Willingness to encourage and include all potential research topic areas
- Support of a university research program that provides access to experts as needed
- Research committee structure and university research administration policy increases number of persons involved with “research”

### KDOT Keys (cont.)

- Flexibility: Needs that arise later in the process can be included at any step up until the final K-TRAN program is approved and funded
- Fast track option: Policy, TPF or emergency needs that have management approval are funded on an ad hoc basis.

### Ad hoc University & Other Research

- In state university research projects are approved as needed for emergencies or special needs with approval of the Asst. Sec. and STE. (use interagency transfer funds)
- Out of state university, contractor and consultant research has to be funded from OOE budget. Much tougher to accomplish. Some OOE funds budgeted each year.

## In House Research

- Focused primarily on applied research, development and implementation.
- Primarily ad hoc addressing agency needs as they arise with re-prioritization as needed.
- Track experimental features, test sections.
- Address construction problems (brushfires).
- Provide materials and planning support functions.
- Provide T2, technical training, library, LTAP admin.
- Administrative functions-tech. panels, committees.

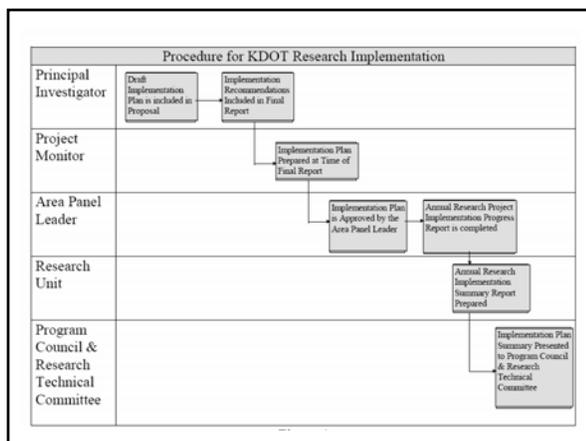
## Transportation Pooled Fund Projects

- Solicitation requests are evaluated as received by technical area Bureau Chief(s), myself, Chief of Transportation Planning and Asst. Sec. and STE.
- Typically reviews and approvals of funding are completed within a week or less of initial receipt.
- Annual set aside budget of \$700K.
- With KS as lead state: Work plan and overall cost estimate are prepared and posted on the TPF web site. Same approvals are required before solicitation is posted.

## Research Implementation System

## Implementation

- Implementation is now formally considered at each stage of project development.



## Benefits Reporting History

- Our formal implementation plan is only used K-TRAN Program projects.
- K-TRAN Annual Assessment and Implementation Reports used 1993 through 1997 (all projects).
- K-TRAN Research Implementation Plans and Annual Progress Reports: since 1998 (all completed projects).

## Research Implementation Plan

- A RIP is completed for each published K-TRAN project
- RIP is prepared by the Project Monitor with assistance from the PI and KDOT Technology Transfer Section staff
- Reality: Tough to get documentation from PM's since many findings are implemented before the final reporting stage

## Research Implementation Plan

- Topics addressed:
  - Description/ID information
  - Summary of research findings
  - Implementation potential
  - Strategies for implementation
  - Task schedule for implementation
  - Implementation cost estimate
  - Project assessment using multi-objective criteria

**KDOT RESEARCH PROJECT IMPLEMENTATION PLAN**

RESEARCH STUDY NO: K-TRAN KU-05-4      KDOT PROJECT NO: RE-0377-01

TITLE: History of Hydrologic & Hydraulic Design Criteria for Culverts and Bridges

PRINCIPAL INVESTIGATORS: McEnroe

PROJECT MONITOR: Richardson

AREA PANEL LEADER: Brewer

CONTRACTING AGENCY: University of Kansas

STUDY COST: \$30,000

**A. SUMMARY OF RESEARCH FINDINGS** - Enough detail should be given to provide a basic understanding of the project without necessitating reading the final report

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**B. IMPLEMENTATION POTENTIAL** - Explain how the research study solved the problem, specify the types of changes being recommended, and describe the expected benefits of implementation (see Part F of this Form). Determine if implementation is warranted or further research or development is needed.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**C. IMPLEMENTATION STRATEGIES** - The goals and scope of implementation, any potential problems or constraints, and the tools needed to achieve implementation. Include any approvals required.

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\_\_\_\_\_

\_\_\_\_\_

**D. TASK SCHEDULING** - Describe tasks and assign responsibilities to functional areas and a time schedule for completion of activities.

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\_\_\_\_\_

\_\_\_\_\_

**E. BUDGET ESTIMATING** - Detail the expected costs of implementation as well as the anticipated benefits arising from implementation (See Part F of this Form).

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**F. PROJECT ASSESSMENT USING MULTIOBJECTIVE CRITERIA** - In the following Table, rate the project on the basis of the extent to which the project, if implemented, would result in a benefit in each of the assessment categories. Rate from 1 to 10, with 10 being the most successful. Rating Code: N/A = factor does not apply to this project, 0 = absolutely no benefit, 1 = tentative finding that the project has some slight benefit, 2 = no clear evidence but strong subjective feeling that the project has a significant benefit, 10 = clear evidence of

Assessment Category	Subjective Rating	Triennial Benefit (\$)	Comments
Construction Savings (materials, labor, equipment, time, quality)			
Operation and Maintenance Savings (materials, labor, equipment, time)			
Increase Lifecycle			
Decrease Lifecycle Costs			
Safety (Reduction of crash frequency, Reduction of crash severity)			
Decrease Engr/Admin. Costs (Professional fees, engineering)			
Environmental Aspects (pollution, hazardous waste reduction, recycling)			
Technology (technology transfer, new materials, new methods)			
Value benefits (time, safety)			
Impact On KDOT Policy			

Prepared by: \_\_\_\_\_ K-TRAN Project Monitor      Date: \_\_\_\_\_

## Research Project Implementation Progress Report Form

- Adapted from OK DOT form
- Completed initially with RIP when project report is published, then annually by IM until implementation is completed
- Shows schedule and milestones completed
- Triennial benefits and costs listed with BCR (projected and actual)

