Coordination of Highway Research with University Transportation Centers (UTCs)

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Associate Administrator for Research, Development, and Technology (RD&T)
Federal Highway Administration (FHWA)

Webinar on National Highway Research Priorities
May 10, 2012
Webinar Series Topics and Dates

• 1- State of Good Repair, March 28th
• 2- Economic Competitiveness, April 5th
• 3- Safety, May 8th
• 4- Livability and Sustainability, May 9th
• 5- Policy and Innovative Financing, May 10th

today
Invited Participants

• New UTCs
• State Research Managers
• FHWA Division Office Research Coordinators

Host and Presenters

• FHWA Research and Development (R&D) Offices and Program Offices
Webinar Purpose

- Provide FHWA perspectives on *national challenges and highway research priorities*
- Opportunity for UTCs to consider highway research priorities in their research plans and initiatives
- Inform State research managers on priorities
- Provide FHWA contacts for follow-up communications and coordination
Thanks for Your Participation

Thanks to Research and Innovative Technology Administration (RITA) for this Opportunity to Communicate Priorities to the UTCs

For more information about UTC participation, contact:
Debra Elston, 202-493-3181
www.fhwa.dot.gov/research
Visit our Web Site at www.fhwa.dot.gov/research
Crosscutting Policy Research

Mary Lynn Tischer, Ph.D., Director
Ross Crichton, Team Leader
Office of Transportation Policy Studies
Federal Highway Administration

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Topics to be Considered

• The Context: Public Policy
• FHWA Policy Office
• Research Roadmap Areas for Policy
• Condition and Performance Report
• Research Questions
• People to Contact
The Context: Public Policy Analysis

- **Public policy** is "courses of action, regulatory measures, laws, and funding priorities concerning a given topic promulgated by a governmental entity or its representatives."
- Policy Analysis involves identifying a problem that the government needs to solve; designing policy, legislation, regulation to solve the problem; and/or, asks the question: Are the policies doing what they are supposed to do?
- This concept refers not only to the result of policies, but more broadly to the decisionmaking and analysis of governmental decisions.
Associate Administrator for Policy and Governmental Affairs

- Office of Legislative Affairs and Policy Communications
- Office of International Programs
- Office of Highway Policy Information
- Office of Transportation Policy Studies
Challenges

- Anticipating issues
- Data availability
- Timeliness of the data
- Time provided to perform the analysis (e.g., size and weight)
- Interpreting causality correctly
- Concern with unintended consequences
Roadmap Areas, cont’d

• International Policy, Coordination, and Cooperation—learning from others
  – Coordinate exchanges with China on livability
  – Coordinate with Sweden on livability and sustainability
  – Lead PIARC safety activities; prepare white papers
  – Participate in technical workshop with Korea
Roadmap Areas

• National Transportation Data Collection, Reporting, and Processing
  – Collection Methodology:
    • Office of Transportation Policy Studies (HPTS)
    • National Household Travel Survey (NHTS)
    • Performance measures
    • Traffic Monitoring Guide
  – Technology:
    • License plate capture
    • Weigh in motion (WIM)
    • Unobtrusive measures
    • Interactive Web tools
Roadmap Areas, cont’d

• Comprehensive Utilization of Transportation Data
  – Improve travel estimates; forecast travel
  – Multimodal passenger origin destination model
  – Analysis of HPMS data (e.g., State indebtedness, fuel use, revenues, condition)
  – Safety- analysis of Strategic Highway Research Program 2 (SHRP 2) naturalistic data
Roadmap Areas, cont’d

- Policy Studies, Analysis, and Outreach
  - General policy analysis: cost allocation studies; State expenditures; truck size and weight issues
  - Futures: traveler of the future; uses of the right of way; future of rural America
  - Finances: revenue sources; tolling/pricing; technology issues; interoperability issues
Roadmap Areas, cont’d

• Performance Management
  – Strategic planning for the agency
  – Framework for the Federal Program
    • Review state of the practice
    • Develop performance measures and national targets
    • Develop tools and build capacity
Roadmap Areas, cont’d

• Impact of Investment on Transportation Performance and the Economy
  – Analyses of the impact of investment on the economy
  – Biennial Status of the Nation’s Highways, Bridges and Transit: (C&P report)
  – Refinements to National Bridge Investment Analysis System (NBIAS) and Highway Economic Requirements System (HERS)
C&P Report Question

• 23 USC 502(h)

“...the Secretary shall submit ...a report that describes --

(A) estimates of the future highway, transit, and bridge needs of the United States; and

(B) the backlog of current highway, transit, and bridge needs ...”
## Latest C&P Report Answers

### Average Annual Spending ($B 2008) for 2009 to 2028

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustain Current Spending Scenario</td>
<td>$ 91.1</td>
</tr>
<tr>
<td>Maintain Conditions and Performance Scenario</td>
<td>$101.0</td>
</tr>
<tr>
<td>Intermediate Improvement Scenario</td>
<td>$133.5</td>
</tr>
<tr>
<td>Improve Conditions and Performance Scenario</td>
<td>$170.1</td>
</tr>
</tbody>
</table>

Amounts shown represent combined investment by all levels of government not just the Federal portion.
Arriving at the C&P Answers

• FHWA has been refining its approach since 1968.
• Current generation of tools attempt to apply benefit-cost analysis to the problem.
  – HERS and NBIAS
• Refinements involve many different lines of research.
• UTCs have a potential role in many of these lines of inquiry!
Background: HERS

- Utilizes HPMS sample section data (100,000+ samples)
- Identifies deficient sections based on engineering criteria
- Evaluates potential improvements to deficient sections using benefit-cost analysis
- Considers impacts of deployments of operations strategies and intelligent transportation systems (ITS)
- Considers impacts of future changes in user costs of travel on demand (VMT)
Background: Benefits and Costs

• Benefits
  – Reductions in user costs (such as travel time costs, vehicle operating costs, and crash costs)
  – Reductions in agency costs (such as routine maintenance costs)
  – Reductions in societal costs (such as emissions)

• Costs
  – Direct costs of implementing a project
Research Questions: General

• How valid is the overall approach of building up from section level analysis to develop a national estimate?

• How well does the HPMS sample support this type of analysis? Representation of non-State roads?

• What are the differences between current practice and the modeled approach? Are differences due to modeling error, or inefficiencies in typical real world practices?

• What new tools and techniques could be developed to expand the scope of the analysis?
Research Questions: Travel Demand

• What factors (besides price) are likely to influence long-term highway travel demand?

• How is travel behavior affected by changes in user costs (congestion, operating costs, crash risk) or user fees?

• How well do drivers perceive different components of the generalized price of travel?

• How elastic is travel demand relative to price? Do elasticities vary by price component? Do elasticities differ for significant price changes versus smaller ones?
Research Questions: Capital

- What are the typical costs associated with different types of capital improvements to different types of roads?
- What are tradeoffs among initial cost, expected life, and future maintenance costs for different strategies?
- What are typical practices regarding mitigation of delays, noise, emissions, etc. during construction?
- How are typical costs, strategies, and practices likely to change over the next 20 years?
Research Questions: Travel Time

• How should travel time be valued in general?
• Is it appropriate to recognize heterogeneity among travelers in value of travel time? (Equity concerns?)
• What are the implications of recurring delay vs. nonrecurring (incident) delay?
• What impacts can different types of investments be expected to have on different types of delay?
• What are the impacts of poor infrastructure conditions on vehicle speeds?
Research Questions: Operating Cost

- How are changes in technology and driver behavior affecting typical operating costs associated with driving?
- How are changes in Corporate Average Fuel Economy (CAFE) standards likely to impact vehicle fleet turnover rates?
- What are the impacts of poor infrastructure conditions on vehicle operational costs?
- How accurately do travelers estimate their total operating costs when making travel-related decisions?
Research Questions: Crash Costs

• What statistical values should be placed on fatal and non-fatal crashes?

• What are the typical relationships among system characteristics, system conditions, and crashes for different types of roadways? How are such relationships affected by changes in driver behavior over time?

• How well do drivers generally perceive crash risks when making travel-related decisions?
Research Questions: Agency Costs

• What are the typical routine maintenance costs associated with different types of roadways over time?
• What are the impacts on users and society of different types of maintenance actions?
• What are the implications of deferring maintenance in terms of long term infrastructure performance?
• How can aggressive preventative maintenance actions be expected to impact asset life?
• At what point does it make sense to abandon an asset?
Research Questions: Societal Costs

• How should one value emissions, greenhouse gases, noise, etc.?
• How are emissions affected by changes in speed cycles under different operating conditions?
• How can other environmental impacts be estimated?
• How can the benefits associated with improved livability or sustainability be quantified most accurately?
• How can system access benefits be quantified? Indirect economic impacts?
Policy Roadmap Contacts

- Data Collection and Utilization – Tianjia Tang 202-366-2236
- International Policy – Ian Saunders 202-366-0111
- Policy Studies – Heather Contrino 202-366-5060 or Max Azizi 202-366-9237
- Performance Management – Rabinder Bains 202-366-2073
- Impact of Investment – Ross Crichton 202-366-5027
- Strategic Management – Woody Stanley 202-366-9070
Any questions?

For more information, contact: Mary Lynn Tischer, 202-366-9232
ML.Tischer@dot.gov
Visit our Web Site at
www.fhwa.dot.gov/research
Delivering Transportation Services: Innovative Financing, Revenue Generation, and Procurement Strategies

Regina McElroy
Office of Innovative Program Delivery
Federal Highway Administration

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May 10, 2012
Office of Innovative Program Delivery (OIPD)

- Established October 2008
- Brought together expert staff from across the Agency
  - Resource Center
  - Transportation Infrastructure Finance and Innovation Act (TIFIA)
  - Major Projects
  - Tolling and Pricing
Why OIPD?

• The challenges facing the transportation industry are enormous – it can not be business as usual
  – Increasing investment requirements
  – Mounting budget pressures
  – Efficient operation of system more important, but difficult to financially sustain
  – Traditional ways of paying for and procuring projects are not fully up to the challenge
Why Project Finance?

- Brings future revenues into present use and achieves economic, safety, and congestion reduction benefits, NOW, while avoiding potential inflation costs and providing opportunities for economies of scale.
- Specifically, refers to assembling the capital to deliver a project and the revenue needed to repay it.
- Project finance tools can:
  - Overcome project, market access, and institutional challenges.
  - Spread out payment for an asset over the life cycle of the asset (instead of only the first few years).
  - Enable new funding sources.
  - Facilitate capital flow to transportation from various classes of investors.
  - Provide innovation and asset management benefits.
What is Innovative Project Finance?

Well, it is not traditional . . .


TRADITIONAL
- State DOTs only
- Pay-as-you-go; no borrowing; revenue through fuel taxes and general government appropriations
- No outside lending to projects
- Tolling restricted
- Limited private involvement

INNOVATIVE

P3s = Public-Private Partnerships
GARVEEs = Grant Anticipation Revenue Vehicles
TIFIA = Transportation Infrastructure Finance and Innovation Act
PABs = Private Activity Bonds
BABs = Build America Bonds

* Now expired.
Why OIPD?

• What tools (and business practices) are we talking about?
  – Revenue generation strategies to include tolling and pricing
  – Procurement strategies to include public-private partnerships
  – Project finance strategies to include GARVEEs, SIBs (State Infrastructure Banks), Section 129 loans, and TIFIA

• Stewardship is important
  – Major project cost reviews, finance plans, and project management plans
  – Implementation of revenue, procurement, and finance strategies
  – Are the strategies are good value for the public?
Roadmap Development

- Where are we?
- Where do we want to be?
- How will we get there?
Where Are We Today?

- Limited experience
- Various State models
- Uncertain public acceptance
- Policy/legislative issues and constraints
- Technical capacity issues
- Lack of performance information
- Etcetera
Where Do We Want to Be?

- **It is simple.** We want everyone using (or thinking about using) innovative revenue, procurement, and financing strategies to be smarter. We want to see the efficient and effective use of these strategies in a way that makes sense for the public.
How Do We Get There?

- What topics should we focus on?
- What delivery mechanisms work best?
- What tools should be provide?
- How should we define our target audience(s)?
- How should we allocate our limited resources?
Products and Services
- Policy Development
- Analytical Tools
- Stewardship
- Capacity Building/Training/Outreach/Awareness/Technical Assistance

Stakeholders/Customers

Roadmaps

Fiscal resources
Roadmap Development

• **Topics**
  – P3s, revenue, capacity building

• **How**
  – Small group discussions
  – Diverse participants
  – Feedback page on Web site

• **What**
  – Issue papers identifying research ripe for pursuit
  – FHWA roadmap
  – Related deliverables: E.g., - P3 Leaders Group; P3 Guide for New Practitioners
What Are We Looking At Now?

- Statutory Issues
- Financial Market Issues
- Organizational Issues (Including Technical Capacity)
- Decisionmaking Processes
- Revenue Options and Debt Capacity
- Performance Management Issues
- Stewardship Issues
Getting Involved?

- OIPD Comment Page
- Researchers Group
- Check Out Our Roadmaps
- Contact Us
- Your ideas?
Please visit our Web site for more information on the Office of Innovative Program Delivery and innovative finance tools

www.fhwa.dot.gov/ipd
Any questions?

For more information, contact:
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