Operational Issues in Transit (Rail and Bus)

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FTA Strategic Research Goals

• Provide Transit Research Leadership
• Increase Transit Ridership
• Improve Capital and Operating Efficiencies
• Improve Safety and Emergency Preparedness
• Protect the Environment and Promote Energy Independence
Outline

- Strategic Research Goals
- Rail Operations
- Bus Operations
- Role of Standards
- UTC Outreach
Rail Operational Improvements

- FTA advertised a Request for Applications on Grants.gov in Feb. 2007
- Objective: to identify solutions to control costs and identify methods and technologies to improve transit operational efficiencies.
- Received 5 proposals
- $300,000 budget
- Evaluation team will forward a recommendation this month
Rail Operational Research

- **Shared Track Research**
  - Joint research with FRA examining potential to have LRT and Freight share tracks

- **Communications Based Train Control**
  - Examining the effectiveness of these systems after years of application

- **Crash Energy Management**
  - Developed specifications to improve passenger survivability for commuter rail and light rail cars

- **Suicidology**
  - Examining the potential to measure and prevent suicides on rail systems
Development of Transit Standards

The standards to be developed will be based upon a business case analysis of a wide variety of potential standards including: communications based train control, automatic vehicle location, vehicle monitoring and diagnostics, and other rapidly developing transit technologies.
Rail Research Program Plan for FY 2007

Rail System Cost Containment & Operational Improvements

Research or demonstration proposals on technologies and practices that are most likely to reduce capital and operating costs or improve rail operations.
Safe Transit Operations in a Shared Track Environment

This project will fund the development of an equivalent safety analysis for up to three locations across the country that are proposing to implement rail shared track operations. Using the results, the project will also develop the parameters for conducting a rail shared use demonstration.
Rail Research Program Plan for FY 2007

**Rail Transit Street Running & Grade Crossing Technologies**
Identify, demonstrate and assess railroad grade crossing technologies that will improve the safe operation of light rail transit and streetcar systems.
Transit Operational Issues

- *How to use the automatically collected data to improve transit performance?*
  FTA will be examining how to better utilize automatic fare collection, and other data for greater operational efficiencies.

- *How is DOT addressing employee shortage/retention/motivation/work environment?*
  Industry wide issue. FTA works with the National Transit Institute to provide training to the industry. American Cities Foundation has an earmark and is working with Septa to address these issues.
Transit Operational Issues

- *What strategies are there to improve inter-connections to, and within transit systems?*
  Seamless transfers between bus and rail systems is very important. FTA produced a report in 2004 titled ‘Evaluation of Utah Transit Authority’s Connection Protection System’ that demonstrated improved reliability of bus to rail transfers.
Rail Operational Issues

• Why does the US DOT focus on crash worthiness of rail equipment as opposed to “collision avoidance”?

DOT is focused on both Crash worthiness of rail equipment and “collision avoidance” technologies. Safety is our no.1 priority and building stronger rail vehicles for passengers is vital. We are also working to develop collision avoidance technologies such as automatic train stop, positive train control, and automatic vehicle location (GPS)
Bus Operational Improvements

- Bus Rapid Transit (BRT) for faster, more comfortable service
  - Fewer stops
  - Enhanced stations
  - Pre-paid/off-board fare payment
  - Signal priority
  - Dedicated and/or limited-access busways
Bus Operational Improvements

- Intelligent Transportation Systems (ITS) to enhance service, increase safety, and improve system management
  - Automatic vehicle location
  - Automated passenger counting
  - Dynamic safety (e.g., collision detection/prevention)
  - Interactive security (e.g., real-time video)
  - Maintenance tracking and alerts
  - Lane guidance
  - Precision docking
  - Dynamic routing
Bus Operational Improvements

• National Fuel Cell Bus Program
  – $49 million multi-year program to develop and demonstrate commercially viable fuel cell bus technologies and related infrastructure.
  – 14 competitively-selected projects.
  – 7 of these projects will deliver new fuel cell buses, effectively doubling the current U.S. fleet.
FTA Standards Program

- **Vision:**
  - Well integrated U.S. public transportation systems
- **Goal:**
  - Identify, Develop and Maintain Transit Standards to:
    - Improve safety
    - Increase capital and operational efficiencies
    - Increase ridership
- **Objective:**
  - Work with transit industry (APTA) to develop needed voluntary consensus-based standards
Accomplishments To Date

• Identify FTA-APTA subject matter experts
• Specific Technical Areas Under Development
  – Crash Energy Management [procurement perf. spec.]
  – Commuter Rail Standards [safety appliances]
  – Bus Standards
    • Bus Fire Safety
    • Update of Standard Bus Procurement Guidelines
    • Procurement Standards
  – Accessibility Standards
  – Universal Transit Farecard Standards [ITS funded]
  – Transit Communications Interface Profiles [ITS funded]
Structuring UTC Projects to Meet National Needs

- Does the project fall within the FTA’s Strategic Research Goals?
- What are you hearing as priorities from potential clients?
- Is there an expressed interest from your Congressional Delegation?
- Is there alignment with a University Strategic Initiative?
Opportunities for Collaboration

- Select research that meets responds to a compelling public need
- Communicate your research results
- Explore success factors and barriers to multi-modal systems integration
- Congestion Reduction Initiative
Research Topics

- Utilizing modern marketing analyses and geographic information systems in planning public transportation routes and schedules.
- Coordination of public transportation service with transportation for elderly individuals and individuals with disabilities, especially in rural areas.
- How decisions allocating public funds to transportation are made by State, regional and local governments and what facts and analyses they need for sound decisions.
Research Topics

• Partnering with other public and private fleet owners to develop the high-tech maintenance capability needed for servicing vehicles with more computers and cleaner engines.

• What are the best techniques for public transportation providers to communicate with and work effectively with other responders in emergency situations?

• What are the most effective ways of disseminating new technical knowledge and research results to those who provide public transportation service? What has been the success of distance-learning and self-contained courses on CD-ROM in teaching technical skills? How could universities and community colleges participate in technical training and continuing education?
Research Topics

- Innovative ways for the private sector to share in the design, construction and financing of transit-related facilities, including joint-use and transit-oriented development. What are the best examples of successful partnerships and what are some emerging opportunities?

- What principles can guide State and local governments in estimating the value of effective public transportation service to businesses and to the quality of life of individuals? How can these economic considerations best be linked to decisions to provide public funding for transportation service?

- How can a rural area with severe financial limitations create a low-cost transportation service for those whose mobility depends upon it?
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