

## **COLLISION SAFETY IMPROVEMENT FOR LIGHT RAIL VEHICLES OPERATING IN SHARED RIGHT OF WAY STREET ENVIRONMENTS**

**AGENCY:** Federal Transit Administration (FTA), DOT  
**ACTION:** Notice for Request for Applications (RFA)

**SUMMARY:** Improving Safety and Emergency Preparedness of Public Transportation is one of FTA's five Strategic Research Goals. Under this goal, FTA has set forth objectives to improve crash energy management (CEM) for the existing fleet of light rail vehicles (LRV); identify designs and technologies to minimize the damage to motor vehicles and injury to motor vehicle occupants and pedestrians involved in LRV collisions; and improve the crashworthiness of LRV body panels and bumper designs. FTA seeks applications for research on innovative technologies or designs that will support the achievement of these objectives.

**DATES:** An applicant must submit a proposal electronically to <http://www.grants.gov> by April 11, 2008 for consideration. All potential applicants are advised to begin the <http://www.grants.gov> registration process immediately, if they have not previously submitted Federal assistance applications through <http://www.grants.gov>, in order to be able to meet the deadline. FTA expects to award funds through a cooperative agreement in September 2008. In the event of a system problem or technical difficulty with the application submittal, the applicants should contact the FTA Project Manager for delivery instructions.

**ADDRESSES:** The website <http://www.grants.gov> allows applicant organizations to electronically find and apply for competitive opportunities from all Federal agencies that award Federal assistance. This website is the single access point for over 1000 Federal assistance programs administered by 26 Federal agencies.

**FOR FURTHER INFORMATION CONTACT:** Technical, program management and administrative questions should be directed to Roy Chen, Office of Technology (TRI-20), Room E43-440, Federal Transit Administration, U.S. Department of Transportation, 1200 New Jersey Avenue, SE, Washington, D.C. 20590; email address: RoyWeiShun.Chen@dot.gov, or by phone at 202-366-0462.

### **SUPPLEMENTARY INFORMATION:**

#### **Background**

FTA's research activities are authorized by 49 USC 5312, Research, Development, Demonstration, and Deployment Projects. Improving Safety and Emergency Preparedness of Public Transportation is one of FTA's five Strategic Research Goals. Under this goal, FTA has set forth objectives to identify solutions to improve the crashworthiness of existing fleets of LRVs; to identify designs and technologies to minimize the damage to motor vehicles and injury to motor vehicle occupants and pedestrians, and to improve the crashworthiness of LRV body panels and bumper designs. While rail transit is one of the safest modes of transportation, there are still an unacceptable number of collisions, injuries and fatalities each year. According to the

U.S. Bureau of Transportation Statistics, in 2005 there were a total of 625 accidents, 268 injuries and 15 fatalities on Light Rail Transit (LRT) systems in the United States.

## **Objectives**

This RFA seeks applications to identify and develop innovative structural or CEM designs and associated technologies that can be retrofitted into existing LRVs such that in the event of a collision, injuries to pedestrians and passengers of street vehicles are minimized and the potential for LRV derailment in such a collision is reduced.

## **Project Description**

LRT systems in most cities operate on city streets or median alignments in city streets. Multiple safety features have been deployed at LRT grade crossings and in the vicinity of stations to increase the safety of motorists, cyclists, and pedestrians. However, LRV collisions with automobiles and pedestrians still occur. According to data reported to the Transit Cooperative Research Program (TCRP Report 69 report, 2001), 62% of LRV collisions involved motor vehicles and 38% of the cases involved cyclists or pedestrians. More fatalities were recorded for cyclists or pedestrians than occupants of motor vehicles. A more “collision-friendly” leading end design or Crash Energy Management system can reduce the severity of injuries, prevent fatalities, reduce the likelihood of a subsequent derailment, and lower the LRV repair cost for transit agencies.

The proposed system should be designed as a retrofit kit for existing LRVs and must consider how proposed vehicle design factors affect or are constrained by LRV operation, including cab-end length restrictions, vertical track curvature, coupling height, operator visibility, and ease of component replacement, among others. The system or device should mitigate the impact of a collision by absorbing energy; redistributing collision contact across a larger area to minimize intrusion into the vehicle interior (which will require consideration of exposed couplers); lowering the collision impact site more in line with stronger parts of the street vehicle to reduce street vehicle penetration and to prevent entrapment of the street vehicle under the light rail vehicle; and by deflecting objects out of the path of the LRV. The proposed system should be designed for “medium severity impact” scenarios or collisions below 20 mph. Also, the proposed system should be designed with ease of service and maintenance in mind.

The proposed project must identify and characterize the effectiveness of current systems, designs and technologies to mitigate collision severity between LRVs and motor vehicles. The proposer must clearly define the uniqueness of the proposed project and define how the project would be integrated with other research studies, including current standards development work of the Rail Transit Standards Committee of the American Society of Mechanical Engineers (a summary of preliminary results of the draft report from TCRP project C-17 is attached to this RFA). The proposer must also clearly define how success will be evaluated, which may include development and application of performance criteria. Eligible activities for the project include research, development, demonstrations, or evaluations of CEM systems that can be retrofitted into existing LRVs and that will significantly minimize injuries and reduce fatalities in the event of a collision.

The proposed system should be evaluated (computer modeling, impact testing, etc), and at a minimum including the following collision scenarios in design performance evaluation.

1. Collision between LRVs and motor vehicles (cars, vans, buses and trucks)
2. Two impact scenarios (90 degree side impact and 45 degree front corner impact)
3. Various collision speeds up to “medium severity impact” (5 mph, 10 mph, 15 mph and 20 mph)

### **Award Information**

FTA may fund one or multiple applications under this program. Funding for each cooperative agreement under this program will range from \$50,000 to \$250,000. The total available funding is \$250,000. Future funding will depend on Appropriations. FTA will participate in activities by attending review meetings, commenting on technical reports, maintaining frequent contact with the project manager and approving key decisions and activities, including redirecting activities if needed.

### **Cost Sharing or Matching**

Federal transit funds are available to research projects at up to 100 percent of the project cost. However, cost sharing will be an evaluation criterion.

### **Eligibility Information**

Eligible recipients include State and local government agencies, public and private transit agencies, universities, non-profit organizations, consultants, legally constituted public agencies, operators of public transportation services, and private for-profit organizations.

### **Proposal Content**

This announcement includes all of the information that you need to apply. The following form is available in grants.gov and is required to be completed:

1. SF 424 Mandatory

SF 424 Mandatory

Most of SF424 is self explanatory. The application should answer the following items as follows:

- 1a – application
- 1b – annual
- 4a – Leave blank
- 4b – 26

#### Other Attachments Form:

1. The application should attach a pre-application (not more than 15 pages in length) as outlined in Chapter II (Item 9.b) of FTA Circular 6100.C: Transit Research and Technology Programs: Application Instructions and Program Management Guidelines. [http://www.fta.dot.gov/laws/circulars/leg\\_reg\\_4121.html](http://www.fta.dot.gov/laws/circulars/leg_reg_4121.html)

This pre-application should also address the six criteria laid out below in the Application Review Information section. The project budget justification should include identification of any matching funds and their source. The Formal Application described in the Circular is not being requested at this time.

2. The application should attach information on the qualifications of key personnel, including biographies.

Anyone intending to apply should initiate the process of registering on <http://www.grants.gov> by April 11, 2008 for consideration. All potential applicants are advised to begin the <http://www.grants.gov> registration process immediately, if they have not previously submitted Federal assistance applications through <http://www.grants.gov>, in order to be able to meet the deadline.

#### **Application Review Information**

A review panel will be convened to review each proposal. Project proposals will be evaluated based on the following criteria;

1. Proposed Research, which includes the applicability of the proposed research to the requirements, the uniqueness of the research approach or the need for the research, and the expected results. Projects should be narrowly defined to explain how a particular design, technology or system will improve the collision safety of the existing fleet of LRVs. The proposed project must identify the current and proposed designs and technologies, such as CEM for LRVs and how the proposed research will lead to a minimization of injuries and damage in the event of a collision.
2. Qualifications of Key Personnel, which includes knowledge of and prior experience with LRV designs and LRT operations.
3. Technical Management Plan, which includes the management approach for planning, scheduling, administering, coordinating and conducting the work effort.
4. Past Performance on activities relevant to the proposed work.
5. Cost and Cost Sharing.
6. Plan for evaluation and data collection. The proposal must address how success will be measured (e.g., before and after studies).

## **Award Administration Information**

The notification date for successful applications is expected to be during the summer of 2008. Following receipt of the notification letters, the successful entities will be required to submit the Formal Application as outlined in Chapter II (Items 10-25) of FTA Circular 6100.C: Transit Research and Technology Programs: Application Instructions and Program Management Guidelines [http://www.fta.dot.gov/laws/circulars/leg\\_reg\\_4121.html](http://www.fta.dot.gov/laws/circulars/leg_reg_4121.html) through the FTA Transportation Electronic Award Management (TEAM) system website.

FTA will manage the cooperative agreement through the TEAM system. Before FTA may award Federal financial assistance through a Federal grant or cooperative agreement, the entity must submit all certifications and assurances pertaining to itself and its project as required by Federal laws and regulations. FTA has consolidated the various certifications and assurances that may be required of its awardees and the projects into a single document published in the Federal Register. Fiscal year 2008 Annual List of Certifications and Assurances for FTA Grants and Cooperative Agreements and guidelines was published in the Federal Register and posted on the FTA Web site at: [http://www.fta.dot.gov/funding/apply/grants\\_financing\\_7411.html](http://www.fta.dot.gov/funding/apply/grants_financing_7411.html) .

Recipients will be required to manage their projects in accordance with FTA Circular 6100.C: Transit Research and Technology Programs: Application Instructions and Program Management Guidelines: [http://www.fta.dot.gov/laws/circulars/leg\\_reg\\_4121](http://www.fta.dot.gov/laws/circulars/leg_reg_4121) . This includes requirements for project management and administration, including quarterly reporting, financial management, and payments.