

RAIL TRANSIT SIGNAL AND CONTROL SYSTEMS RESEARCH PROGRAM
POSITIVE TRAIN CONTROL FOR COMMUTER AND
REGIONAL RAIL SYSTEMS

AGENCY: Federal Transit Administration (FTA), DOT

ACTION: Notice for Request for Proposals (RFP)

SUMMARY: FTA is seeking research proposals to study the implementation of Positive Train Control (PTC) systems on a commuter rail or regional rail line. FTA's research activities are authorized by 49 USC 5312, Research, Development, Demonstration, and Deployment Projects. The goal of this research program is to promote the research and development of new technologies that will improve the safety and efficiency of rail transit system operation in the United States (US). The research will include the evaluation of current PTC technology, the documentation of implementation issues, and the needs for further research in Rail Transit Signal and Control Systems (RTSCS) for commuter and regional rail operations.

DATES: An applicant must electronically submit a proposal to <http://www.grants.gov> by January 19, 2011 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 to successful contractor(s) through a cooperative agreement by February 19, 2011. In the event of a system problem or technical difficulty with the application submittal process, the applicants shall contact the FTA Program Manager for delivery instructions (see FOR FURTHER INFORMATION, CONTACT section below).

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 1,000 Federal assistance programs administered by the 26 Federal agencies.

FOR FURTHER INFORMATION CONTACT: Technical, program management, and administrative questions shall be directed to Program Manager: Patrick Centolanzi, PE Office of Technology (TRI-20), E43-463, Federal Transit Administration, U.S. Department of Transportation, 1200 New Jersey Ave, SE, Washington, D.C. 20590; email address: Patrick.Centolanzi@dot.gov, or by phone at 202-366-0234.

SUPPLEMENTARY INFORMATION: There are a number of published reports on PTC, Communication-Based Train Control (CBTC), Commuter Rail and Regional Rail Systems, and the Shared Use of Rail Corridors between Freight and Passenger Trains. See a list of Technical References at the end of this announcement.

Objectives

The FTA's Office of Technology (TRI-20) is leading the research and development of new technologies for both bus and rail transit systems. One of FTA's Strategic Research Goals is to support improving the performance of US transit operations and systems. The focus of this research program is on PTC-related technologies and their implementation issues that directly impact the safety and efficiency of commuter rail and regional rail operations. The objective of this project grant is to evaluate the safety and reliability of PTC technology in commuter rail and regional rail operating environment, and to recommend the best practices in the implementation of PTC systems.

Background

The Rail Safety Improvement Act (RSIA) of 2008 requires Class I freight railroads and intercity passenger railroads to implement PTC systems by December 31, 2015. The Federal Railroad Administration (FRA) identified the need for PTC in Title 49 Code of Federal Regulations Part 236, Subparts H and I. Additionally, the National Transportation Safety Board (NTSB) has issued a recommendation (R-09-08) for FTA to facilitate implementation of positive train control on US rail transit systems (heavy and light rail, metro and subway).

PTC is a technology that is capable of preventing train-to-train collisions, over-speed derailments, and casualties or injuries to roadway workers operating within their limits of authority as a result of unauthorized incursion by a train. PTC technology can also prevent train movements through a switch left in the wrong position. PTC systems vary widely in complexity and sophistication based on the level of automation and functionality they implement, the system architecture utilized, the wayside system upon which they are based (i.e., non-signaled, block signal, cab signal, etc.), and the degree of train control they are capable of assuming.

In March of 2010, the Office of the Secretary of Transportation (OST) and FTA Office of Technology signed an Inter-Agency Agreement (IAA) to support the RTSCS Research Program. This IAA made a total of \$2,000,000 available to rail transit research, management, and consulting organizations to undertake a study of the implementation of PTC on US commuter railroads, rail transit systems, and shared-use rail operations. This announcement is under the RTSCS Research Program for a study of PTC system safety and reliability for US commuter and regional rail transit systems.

Project Description

The project shall study the current state of PTC technology and the decision-making process by the US rail transit authorities for implementing a PTC system in the commuter rail and regional rail operating environment. The grantee shall execute the following work items in support of this cooperative agreement:

1) Evaluate Development

The grantee shall assist a US rail transit authority to document the process of developing a PTC system for a commuter rail or regional rail transit system. This encompasses the entire life cycle of PTC system planning, requirement analysis, system design, testing, implementation, operation and maintenance. The research shall build on the research work carried out by Class I freight railroads and system vendors, and focus on the new functions required by passenger rail and freight-passenger system interoperability.

The project shall include a description of the rail property identified in order to be an ideal candidate for application of a PTC system. The rail property must be identified from a candidate list of potential sites and be fully on board with installation of a PTC system. If an existing commuter rail operation is selected which also coexists with other rail operations (e.g., freight), the evaluation shall take into account any preexisting signaling system or PTC system that is in operation or is in the process of being implemented. Interoperability is a key factor which shall be addressed in the evaluation process.

This evaluation shall include a thorough review of existing PTC systems that are available for installation, with supporting documentation to indicate which system is best suited for the selected rail property. The evaluation shall also contain a list of all supporting documentation required for the successful implementation.

2) Facilitate Implementation

The project shall provide a US rail transit authority with any assistance the grantee deems appropriate to provide a full body of knowledge to the research report. This assistance could be in policy guidelines and technical references on the development of a PTC Implementation Plan (PTCIP) that will meet Federal regulations on PTC System Certification and Type Approval specified by Title 49 Code of Federal Regulations Part 236 Subpart I. This plan shall include the steps to specify, acquire, install, test, and receive regulatory approval to operate a PTC system on a commuter rail or regional rail transit system. The plan shall document the details on functional requirements, budget and costs, and business agreements related to PTC implementation. This plan can be used as a template or practitioner's guide by other transit rail authorities to develop their own PTCIPs.

3) Evaluate PTC Performance and Capabilities

The grantee shall provide a measurement process to study the effectiveness of PTC when applied to a US commuter or regional rail system. The measurement process shall include at a minimum, a method to measure the effect PTC has on the safety, reliability, and efficiency of operations on the commuter rail or regional rail transit system. The project shall include a comprehensive assessment on current technologies designed for automatic train location determination, radio and wireless communications, integrated signaling systems, wayside interface units, dispatching and traffic control systems. The project shall publish a report on the state of the art of PTC in commuter rail and regional rail transit systems.

4) Identify Best Practices

The grantee shall collect those practices which have been shown to aid in the implementation of a PTC system on a commuter rail line. With several PTC test beds operating throughout the United States and past research projects completed, lessons learned from these experiences shall be transformed into techniques and methods that have been validated as best practices. These practices shall include but not be limited to:

- Acquisition approach;
- Partnerships with local authorities;
- Teaming agreements with other operators including cost-sharing agreements;
- Teaming methods with suppliers;
- Approval process by FRA and other regulatory authorities;
- PTC system selection, stand-alone or overlay;
- Interoperability; and
- Maintenance.

Project Schedule

The proposal must include a Project Schedule with detailed timetables on Task Number, Task Description, Start Date, and Period of Performance (POP). Separately, the proposal also needs to identify the Major Milestones with Task Number, Deliverable Name, and Date of the Delivery in a table or in Microsoft Project format. The Final Report shall be delivered to FTA for publication by June 15, 2013. The project shall be closed with a Final Progress Report by June 30, 2013.

Eligibility Information

This is an unrestricted solicitation. Any responsible source may submit a proposal concept paper for consideration, including, but not limited to, states or local governments, or organizations of state or local governments, universities or institutions of higher education, non-profit organizations, private individuals, corporations, and businesses or commercial organizations, except that any business owned in whole or in part by the Federal Government is not eligible. Although businesses owned in whole or in part by the Federal Government are not eligible for funding under the Program, they may contract with eligible participants. Cooperative arrangements (e.g., joint ventures, limited partnerships, teaming arrangements, or collaboration and consortium arrangements) are permitted and encouraged.

Small, Small Disadvantaged (SD), and Service Disabled Veteran Owned Business Concerns, and Veteran Owned (VO) and Woman-Owned (WO), and Historically Underutilized Business Zone (HUBZone) Small Business Concerns, and Historically Black Colleges and Universities (HBCU) and Minority Institutions (MIs) are encouraged to submit proposal concept papers on their own and/or in collaboration with others. However, no portion of this BAA will be set aside or reserved exclusively for Small, SD, or Service Disabled Veteran Owned Business Concerns, or for VO, WO, or HUBZone Small Business Concerns, or for HBCU and MIs.

Award Information

FTA will fund one application under this program. The total available funding is \$900,000. 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.

Proposal Content

This announcement includes all of the information that you need to apply. The following forms are available on [grants.gov](http://www.grants.gov) and are required to be completed:

1. SF 424 Mandatory
2. Other Attachments Form

SF 424 Mandatory

Most of SF 424 is self-explanatory. The application shall include the following items:

- 1a – Application
- 1b – Annual
- 4a – Leave blank
- 4b – 26

Other Attachments Form:

1. The application shall 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.

This pre-application shall also address the six criteria laid out below in the Application Review Information section. The project budget justification shall 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 shall attach information on the qualifications of key personnel, including biographies.

Anyone intending to apply shall initiate the process of registering on <http://www.grants.gov> by December 19, 2010 for consideration. All potential

applicants are advised to begin the online registration process immediately, if they have not previously submitted Federal assistance applications through <http://www.grants.gov>, in order 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 and or need for the research, and the expected results. Proposals shall explain how a particular practice or technology will improve rail operations. The proposed project must identify train control issues facing public transportation, why it is of national significance, the uniqueness or relationship of this project to other research, and how the proposed research will address the issue.
2. Qualifications of Key Personnel, which includes knowledge of and prior experience with train control technology.
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).
7. Existing positive relationship between grantee and rail transit agency.

Award Administration Information

Successful applicants will be notified of their grant award in February 2011. Following receipt of the notification letter, 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 through the FTA Transportation Electronic Award Management (TEAM) system website.

FTA will manage the cooperative agreement through the TEAM system website. 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. Since Federal fiscal year 1995, FTA has been consolidating 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 2010 Annual List of Certifications and Assurances for FTA Grants and Cooperative Agreements and guidelines is published in the Federal Register and posted on the FTA website at: http://www.fta.dot.gov/funding/apply/grants_financing_10736.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.html. This includes requirements on project management and administration including quarterly reporting, financial management, and payment.

Technical References:

- 1) FRA (2010). Positive Train Control <http://www.fra.dot.gov/Pages/784.shtml>.
- 2) FRA (2009). North American Joint Positive Train Control Project <http://www.fra.dot.gov/downloads/Research/rr0905.pdf>.
- 3) FRA/ Ansoldo-STS (2009). A Practical Risk Assessment Methodology for Safety-Critical Train Control Systems <http://www.fra.dot.gov/Downloads/Research/ord0915.pdf>
- 4) FRA (2009). Interoperable Communications-Based Signaling as a basis for Positive Train Control <http://www.fra.dot.gov/downloads/Research/rr0911.pdf>.
- 5) FRA (2008). Communication Timeout and Latency Effect on Positive Train Control System for the IDOT Corridor <http://www.fra.dot.gov/downloads/Research/rr0824.pdf>
- 6) NTSB (2005). National Transportation Safety Board Symposium on Positive Train Control Systems http://www.nts.gov/events/symp_ptc/symp_ptc.htm.
- 7) FRA/Volpe Center (2003). Human Reliability Analysis in Support of Risk Assessment for Positive Train Control <http://www.fra.dot.gov/downloads/Research/ord0315.pdf>.