

**New Jersey Department of Transportation**  
**Bureau of Research**  
**RESEARCH PROJECT**  
**Scope and Request for Proposals**  
**2004-2005 Program**

**Date of RFP**  
**March 16, 2005**

**Closing Date**  
**May 2, 2005**

**Special Project 2005, Viability of Personal Rapid Transit (PRT) in New Jersey**

(All Proposals must be prepared in accordance with NJDOT's *Information and Instructions for Preparing Proposals*)

Proposals for this project will be based on the merit of the information contained in the proposal. Budgets will be evaluated separately. Please place three (3) copies the budget for this project in a separate sealed envelope.

**1. RESEARCH PROBLEM STATEMENT AND BACKGROUND**

[Clearly define the problem and provide any relevant Background]

As new technologies are made available, it is in the State's economic interest to investigate new types of service that may improve the usefulness and integration of existing platforms, provide fast, inexpensive travel options, reduce capital costs of projects, and reduce pollution. Personal Rapid Transit (PRT) is one such technology currently available. The PRT is a mass transit technology that blends some of the flexibility of car travel (on-demand, non-stop travel, from origin to destination) with the economic and environmental benefits of mass transit. The system consists of a fleet of small automated vehicles, each seating about 3 persons, that travel on overhead guideways linking many small stations scattered throughout an urban area or connecting remote parking facilities to the main segment of a transit line.

**2. OBJECTIVES**

[Provide a narrative and list of the objectives of the study]

The objective of this study is to:

- Evaluate the viability of integrating PRT as a supplement to NJ Transit's current project plans and future possibilities.
- Provide a complete and thorough description of the key criteria of PRT technology, and identify PRT components that are proven and those that are assumed to function with a PRT system.
- Identify providers of PRT service that can manufacture the vehicle and system themselves and those that just have patents and franchises to manufacture the cars and guideways once they get an order.
- Evaluate the extent to which PRT could be expected to reduce traffic congestion or impact regional traffic.
- Evaluate the cost and saving of PRT compared to the other NJ Transit public transportation options.
- Compare PRT to automobile (and dual mode vehicles) and NJ Transit's light and heavy rail, and bus transportation systems.

- Also compare:
  - Environmental concerns
  - visual impacts (and context sensitive design features)
  - smart growth objectives
  - safety concerns
  - serviceability issues
  - passenger safety
  - reliability of control system
  - switching system concerns
  - security issues
  - standardization of components
  - breakdown rate
  - ADA compliance
  - ROW needs
  - Land use impacts
  - utility impacts

of PRT to car and to other NJ Transit public transportation options.

**The University Partner is required to include an expert consultant firm as part of the Research Team.**

### 3. **Tasks**

[Provide a listing of appropriate general tasks divided into phases based on types of work (e.g., laboratory, field) or by year (e.g., year 1, year 2) or other appropriate milestones]

Accomplishment of the project objectives will require at least the following tasks.

*The following general task descriptions are intended to provide a framework for conducting the research. The NJDOT is seeking the insights of proposers on how best to achieve the research objectives. Proposers are expected to describe a research effort that can realistically be accomplished within the constraints of contract time. Proposals must present the proposers' current thinking in sufficient detail to demonstrate their understanding of the problem and the soundness of their approach for conducting the required research. The tasks that follow outline a general approach and should not limit the proposer's concepts.*

#### **PHASE I – Literature Search**

After the award of the project, conduct a comprehensive literature search of PRT technology. At the completion of this literature search, the Principal Investigator (PI) will make a presentation to the Research Project Selection and Implementation Panel (RPSIP) to discuss their findings and to discuss the appropriate research approach.

Based on the literature search and the discussion with the RPSIP, the PI will develop a detailed work plan to describe the research approach. This will be provided to the RPSIP for approval as a technical memorandum.

#### **PHASE II – Research Approach**

[Work may be divided into phases (e.g., Laboratory, Field or Year 1, Year 2) as necessary to clarify tasks]

*Task 1: Literature Search.* This is a more comprehensive and focused search. A technical memorandum will be issued providing a complete and thorough description of PRT technology and a comparison with automobiles and the State's current bus and light and heavy rail systems, including potential differences in capital and operating costs, ridership, and break-even fares, and any State subsidy that may be required. The literature search will be supplemented with conversations of current PRT or PRT-like systems with the owner-operator to determine actual costs and availability of other data. Data for NJ based transit operations (bus and rail) should be available from NJ Transit. A panel of experts will be assembled to review, guide, and provide credibility to the findings.

*Task 2: Technical Analysis.* Perform a detailed analysis of the PRT's capital, operating and maintenance costs and the extent PRT applications could be expected to reduce traffic congestion and increase public safety in various regions throughout the State. The analysis will be supported by an assessment of the estimated savings or costs of PRT applications, including the acquisition of property and right-of-way as well as comparing current cost estimates for future rail stations with that of locating such stations in less expensive easements and supplementing the stations with PRT. Determine locations where this technology can complement investment in NJ Transit's fixed guideway rail system

The study will also include an analysis of the stages needed to advance a PRT system through development from concept to commercial operation, including analysis of the technological risks, time required and development costs. Identify applicable codes and standards that would govern a PRT system in New Jersey and impact of compliance on system costs and development. Specifically address testing requirements needed to prove system reliability under all weather and load conditions and testing requirements needed to prove the safety and reliability of the automated control and switching (between Guideways) system.

Establish the threshold of what PRT technologies are proven and tested or just proposed. Distinguish between technologies that are proposed by companies that can manufacture the vehicles, etc. themselves and those that just have patents and franchises to manufacture the cars and guideways if they get an order. Determine who stands behind the cars and the guideways after they are constructed. Evaluate the technological design of the devices and method of permitting vehicles to change guideways/tracks that are integral to the successful operation of the system, in terms of safety and reliability.

*Task 3:* The Final Report will provide a complete description of the PRT technology and will make recommendation as to the viability of PRT's integration into New Jersey's transportation system. Also identify options that overall are most sensitive to environmental concerns as well as the feasibility and safety of traffic management and impact in the region. The PRT integration should be considered for locations such as Atlantic City, Long Branch, the Zanadu project, and other relevant areas where it can complement bus and fixed rail systems.

#### **4. Implementation and Training Plan**

[Include implementation requirements including specification development, demonstrations, and training]

The PI must meet with the Research Project Selection and Implementation Panel (RPSIP) and other NJDOT units to present the findings and train these personnel in the use the project results.

**5. Deliverables:** [List of minimum deliverables necessary to complete the project]

<i>Literature Search:</i>	Presentation of Summary of Literature Search Results Discussion to Support and Refine the Project Tasks. Project work plan
<i>Task 1</i>	Technical Memorandum detailing the literature search findings.
<i>Task 2</i>	Technical Memorandum Summary of the technical analysis.
<i>Task 3</i>	Final Report including the electronic decision process with flow chart print capability. Monthly progress reports, and final report with appropriate tables, graphs, and chart in hard copy version, pdf file format, Word, and on CD ROM. Two copies plus one per RPSIP member of each presentation, technical memorandum, draft final report and Final Report (plus 10 copies). The Final Report and Tech Brief are due November 1, 2005 to allow time for review by the Research Project Selection and Implementation Panel.

**6. Contract Time:** [Check one]

- Not to exceed 7 months, which includes 1 month for review and revision of the final report
- Not to exceed 24 months, which includes 3 months for review and revision of the final report

**7. Contacts:**

*During the period of RFP preparation, any questions should be directed to Nicholas Vitillo (Nick.Vitillo@dot.state.nj.us). Questions on this topic shall not be directed to the Research Project Manager, Research Customer, or any other NJDOT person. All questions and answers will be distributed to all NJDOT research partners for dissemination.*

*A meeting will be held on April 5, 2005 at 10 AM in the NJDOT Main Office Building room 2800, with interested parties to refine the objectives and deliverables and to promote a better understanding of the research needs. Contact Nicholas Vitillo (Nick.Vitillo@dot.state.nj.us) on or before April 4, 2005 to indicate your interest in attending this meeting.*

**Research Project Manager:** W. Lad Szalaj

**Research Customer:** Pat Snyder

**8. Authorization to Begin Work:** June 1(est.) and must be completed by December 1, 2005.

**9. Deadline**

<b>Proposals (10 single-bound copies) are due at NJDOT Bureau of Research not later than 12:00 noon on May 2, 2005.</b>
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This is a firm deadline, and extensions simply are not granted.

**10. Delivery Instructions:**

**For private, paid messenger services such as Federal Express, DHL, UPS, etc., or for hand-carried deliveries:**

Research Program 2004-2005 PROPOSAL-NJDOT  
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**For U.S. Postal Service mail:**

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