

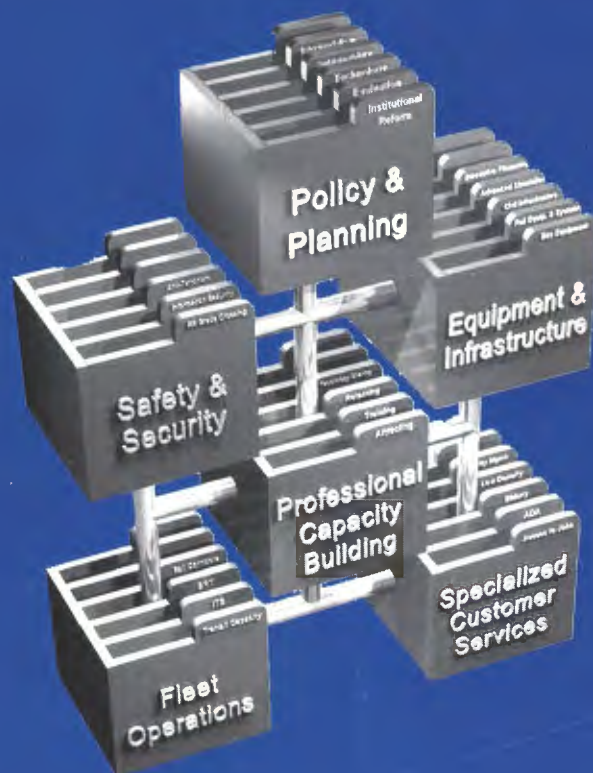


U.S. Department
of Transportation



Transit Research & Technology Programs

Fiscal Year 2000 Report



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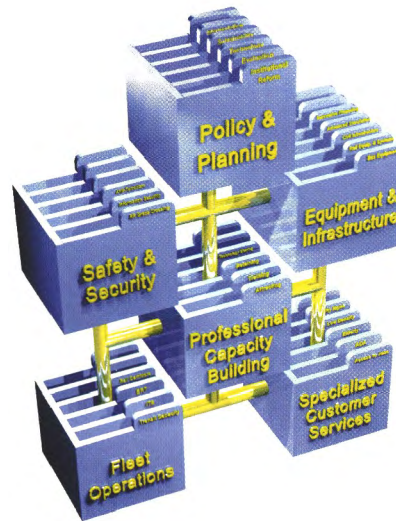
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Transit Research & Technology Programs FY 2000 Report

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Transit Research & Technology Programs FY 2000 Report

FOREWORD

Moving towards a safer, cleaner, and more efficient way of transporting the transit riding public through Technology is the highlight of this FY 2000 Report.

The U.S. Department of Transportation, through the Federal Transit Administration (FTA), is improving public transit services for all Americans through new concepts, innovative technologies and strategies. An ongoing effort within FTA to provide innovative transit services to all transit customers and to advance electric and hybrid electric technologies in transit applications is providing the foundation for moving towards a safer, cleaner, and more efficient way of transporting the transit riding public.

Transit Research & Technology Program FY 2000 Report is designed to help our customers better understand the FTA leadership role in coordinating the research and technology activities for public transit agencies and the private sector, promoting global competitiveness, exchanging information, and mainstreaming innovation. The report's content will increase public awareness of the importance of transportation research and innovation as a key means to save lives, reduce the risk of crashes, injuries, and property damage, as well as protect the environment and strengthen the nation's competitiveness in the global economy.

This report presents some of the major highlights for fiscal year 2000. It includes an overview of the FTA Transit Research & Technology Program—its mission, program areas, and project activities, as well as the progress made in achieving our goals. The report identifies the sources and uses of federal research and technology funds, highlights program allocations and accomplishments. The report includes summary descriptions of the projects undertaken during FY 2000 to improve transit security and safety, expand the range of mobility options, foster economic growth, protect the environment, and enable the Federal Transit Administration staff to provide a higher level of customer service.

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Transit Research & Technology Programs FY 2000 Report

Moving towards a safer, cleaner, and more efficient way of transporting the transit riding public through Technology is the highlight of this FY 2000 Report.

Introduction

The U.S. Department of Transportation, through the Federal Transit Administration (FTA), is improving public transit services for all Americans through new concepts, innovative technologies and strategies. An ongoing effort within FTA to provide innovative transit services to all transit customers and to advance electric and hybrid electric technologies in transit applications is providing the foundation for moving towards a safer, cleaner, and more secure and efficient way of transporting the transit riding public.

Transit Research & Technology Program FY 2000 Report is designed to help our customers better understand the FTA leadership role in coordinating the research and technology activities for public transit agencies and the private sector, promoting global competitiveness, exchanging information, and mainstreaming innovation. The report's content will increase public awareness of the importance of transportation research and innovation as a key means to save lives and reduce the risk of crashes, injuries, and property damage, as well as to protect the environment and to strengthen the nation's competitiveness in the global economy. The report will increase public awareness of the nature and scope of work underway to assist state and local agencies in improving all aspects of public transit service for transit customers, while enhancing air quality and community livability.

This report presents some of the major highlights for fiscal year 2000. It includes an overview of the FTA Transit Research & Technology Program—its mission, program areas, and project activities, as well as the progress made in achieving our goals. The report identifies the sources and uses of federal research and technology funds, highlights program allocations, and accomplishments. The report includes summary descriptions of the 92 projects undertaken during FY 2000. All project activities are aimed at making measured improvements in security, safety, mobility, fuel efficiency, clean air, and professional capacity building. Improvements are accomplished through research, demonstration, testing, deployment and information transfer of innovative transit technologies and strategies.

Transit Research & Technology Programs

FTA Research & Technology Program Background

In October 1999, the FTA Office of Research, Demonstration and Innovation completed the development and publication of a visionary plan for advancing innovations--the *Transit Research & Technology Five-Year Plan*--in response to the challenges and opportunities for public transportation. The Five-Year Plan provided the direction for 21st century transit research and technology deployment. This plan assisted transit agencies and private companies to establish priorities in providing innovative transit service to customers, and in developing products for the transit marketplace. Moreover, the Five-Year Plan established a framework for focusing FTA research and technology resources, and served as a model for other agencies within the Department of Transportation. The Five-Year Plan continues to serve as a government–industry roadmap leading the way to the development of a technologically advanced public transit system—providing the programmatic, policy, and management goals, and planned accomplishments for the FTA Transit Research & Technology Program.

Mission

The mission of the FTA Transit Research and Technology Program is to partner with the transportation industry in establishing preeminence in U.S. transit technology, institutions, and customer services toward increasing the quality and level of transit services. The program's core effort is to generate information and foster the deployment of technological innovation to enhance safety, minimize security threats, improve personal mobility, minimize fuel consumption and air pollution, increase efficiency and promote trade. Emphasis is placed on mainstreaming proven cost-effective technological innovation through the FTA planning and capital assistance programs. Primary target areas are safety and security systems for detecting terrorist threats and for railroad grade crossing protection; cost reduction from development and deployment of advanced bus technology, infrastructure enhancements, and asset management; and improved service from the demonstration and deployment of bus rapid transit.

Four Priority Areas

FTA is directing resources for research, development, demonstration and deployment activities associated with technology and other innovations in four priority areas:

1. Security and Safety Systems—to reduce terrorist threats, improve driver operations, minimize vehicular and pedestrian conflicts;
2. Transit Bus Innovation —to reduce operating and maintenance costs through improved materials research and energy efficiency research and advanced electrical subsystems; to introduce rapid bus operations; to foster trade opportunities; to deploy low emission vehicles; and to leverage the \$1.6 billion or more invested annually in buses through the FTA formula and capital investment programs;
3. Infrastructure—to support the \$4.9 billion annual FTA capital investment, to protect the integrity of Federally supported assets; and to facilitate the deployment of communication

Transit Research & Technology Programs

based control systems for expanding rail transit capacity and supporting shared track operations; and

4. Knowledge Management—dissemination of new knowledge to expand U.S. transit industry professional capacity and participation in global markets.

As a result of this government-industry research and technology plan, measurable accomplishments have occurred in program implementation.

ACCOMPLISHMENTS

A. Security and Safety

The FTA shares the Administration's belief that security and safety are top priorities of the nation's public transportation system. According to the National Safety Council, riding the bus is 47 times safer than car travel. By train, customers are 23 times safer than traveling by car.

The FTA goal is to promote public health and safety by working toward the elimination of transit-related deaths, injuries, and property damage, and the improvement of personal security and property protection. Toward that end, FTA directs its resources to security and safety research, technology demonstration, information sharing, and training activities.

New technologies are being demonstrated to minimize terrorist threats through chemical detection systems, and to improve driver safety and reduce pedestrian conflicts. FTA administers grants to maintain and improve the condition of the transit infrastructure and partners with states, local transit authorities and the transit industry to develop technology, deploy innovative approaches, provide training, and supply technical assistance that advances the secure and safe operation of public transit. FTA partners with the Federal Highway Administration and Federal Railroad Administration to develop light rail grade crossing standards and demonstrate new technologies to enhance safety at mixed traffic intersections. The FTA partners with the Department of Energy to address the threats of terrorists, by sharing information and exploring technological advances in the area of chemical detection systems, and first responder activities.

In FY 2000, the FTA sponsored both a trade mission and International Study Tour that set the framework for the development of a joint shared-track policy effort between FTA and the Federal Railroad Administration. FTA supported testing of innovative security and safety technologies, including a second-train-coming warning system, and advanced signal and gated technologies to improve safety at highway-rail grade crossings. FTA completed evaluations of the Boston commuter rail and Los Angeles light rail grade crossing protection demonstration projects and produced a final report. Through FTA sponsorship, the Transportation Safety Institute offered 25 different safety courses at 188 training sessions throughout the country. Approximately 4,000 transit professionals received training on a wide variety of subjects, including system security, bus and rail accident investigation, and fatigue awareness. Workplace Safety Training Program continued at the National Transit Institute.

Transit Research & Technology Programs

B. Transit Bus Innovations.

The last decade produced extraordinary gains in computer, sensing, propulsion, and communication technology. FTA has supported the adaptation of these new technologies to public transportation. Today transit agencies around the nation are deploying advance technology to combat crime, to reduce travel time, to provide more reliable service, to improve fuel efficiency, and to reduce air pollution.

The FTA Fleet Operations program of research and technology advances America's economic growth and competitiveness domestically and internationally through efficient and flexible transportation. Major elements of this program area include Intelligent Transportation Systems (ITS), Transit Mobility, Bus Rapid Transit Initiative, Transit Capacity and Quality of Service, and Mixed Rail Corridor Operations.

Intelligent Transportation Systems (ITS). A broad range of technologies, known collectively as Intelligent Transportation Systems, hold promise for improving the security and safety of the transit fleet through integrated and cost-effective transportation solutions. Improving mobility by reducing delay and travel time is a major goal of many Intelligent Transportation Systems components of the Department of Transportation, including the FTA transit ITS component.

Advanced Public Transportation Systems (APTS) is the FTA transit component of the Department's Intelligent Transportation Systems Program--the application of information technologies (computer, sensing, and communications) to surface transportation. APTS includes a number of ITS applications that help transit agencies increase the security and operational efficiency of the nation's transit system.

During 2000 and 2001, the FTA Advanced Public Transportation Systems (APTS) Mobile Showcase—a 48-foot expandable exhibition trailer demonstrating the latest ITS transit technologies--continued to tour the United States and provided education and training at conferences and meetings (20 events) on transit ITS technologies. The APTS Mobile Showcase was recognized by ITS America as one of the Best of ITS for 2001, in education and training.

In FY 2000, FTA provided leadership in advancing the deployment of integrated transportation systems. FTA was instrumental in assisting 52 metropolitan areas to deploy integrated Intelligent Transportation Systems; thus increasing the level of integration from 10 in 1999 to 15 in 2000. In FY 2000, FTA conducted a kick-off meeting of the Orlando Lynx operational test, which electronically integrates transit, parking and toll revenue systems. In addition, FTA published the APTS State-of-the-Art report and the APTS Benefits Assessment report—two widely used documents in the selection and implementation of transit ITS technologies.

Some of the most widely implemented APTS technologies that are improving mobility are the automated vehicle locator (AVL) and the computer aided dispatch (CAD) systems. At a moment's notice, the AVL technology enables a dispatcher to pinpoint the location of a specific vehicle and respond to an emergency situation, send a repair crew or notify passengers of a delay. The combined AVL/CAD technologies improve scheduling activities and schedule

Transit Research & Technology Programs

adherence. Results indicate significant improvements in on-time performance of transit systems that implemented them, such as Baltimore MD, Kansas City KS, and Portland OR, transit systems.

Another ITS program area widely deployed is electronic fare payment. Electronic fare payment tests, which address customer convenience and security, are ongoing in bus and rail systems. Results to date indicate increased convenience to customer, reduced travel time, and significant cost savings in administrative and money handling processes of the service providers. For example, Ventura County, California smart card system will save an estimated \$9.5 million per year in reduced fare evasion. In FY 2000, FTA developed plans for the kick-off meeting of the Delaware Valley Multimodal Electronic Payment System Demonstration project that will electronically integrate transit, toll, ferry, and parking payment systems statewide.

The Bus Rapid Transit (BRT) Demonstration Program is advancing the deployment of new model buses, implementing new and advancing other BRT projects, producing travel time benefits and offering urban environments cost-effective mobility. Advancements are being achieved through the bus technology deployment strategy, BRT workshops, and the BRT Vehicle Design Competition, which produced 27 technically feasible new designs. Other achievements to date include implementation of BRT projects in Boston, Las Vegas, Eugene and Miami, and advancement of Dulles Corridor, Cleveland, Hartford and Honolulu BRT projects into the New Starts program. BRT deployments produced travel time benefits in Los Angeles and Chicago (25 percent reduction in travel time), Honolulu (35 percent reduction), and Pittsburgh (50 percent).

Bus Vehicle Safety is progressing under the ITS Intelligent Vehicle Initiative. This initiative aims to accelerate the development and commercialization of safety enhancing vehicle-based driver assistance products. In FY 2000, FTA led the departmental Intelligent Vehicle Initiative in securing funding and demonstrating the integration of multiple driver assistance safety systems. Under the Intelligent Vehicle Initiative, FTA partners with the industry to advance the rapid deployment of new technologies on transit vehicles for improved safety. Collision warning systems are being developed to help the bus drivers operate their vehicles more safely and efficiently. In FY 2000, FTA Initiated a Lane-Change/Merge Collision Avoidance Project with Pennsylvania Department of Transportation, and a Forward Collision Avoidance Project in California. Other accomplishments under this program include:

- Completion of a Pedestrian Safety and Accidents Study—reviewing accident data, individual transit data, and project specific data for clusters, trends, and human factors;
- Analysis of transit accidents per passenger mile, comparing incidents of bus crashes to lighter vehicle crashes;
- Completion of Technology Assessment Report; and
- Completion of Small Business Innovative Research Project on *Feasibility of Heads-Up Display for Collision Warning Final Report*.

Transit Research & Technology Programs

C. Advanced Vehicle Technology.

The on-going efforts within FTA to advance fuel cells, alternative fuels and electric technology provide the foundation for moving towards a cleaner and more efficient way of transporting the transit riding public. In FY 2000, FTA continued to support the development, deployment, testing, and technical evaluation of ultra-low- or zero-emission buses, such as those using electric and hybrid electric and fuel cell technologies for bus propulsion. Advancements in electronics, electrical systems, propulsion technology, and lightweight materials are being applied to make transit buses smarter and cleaner. Electric and hybrid-electric drive vehicles are being developed to answer challenges faced by current transit operators—vehicle range, fuel economy, emissions, and safety.

The fuel cell, currently under development, is one of the most promising clean energy technologies of the 21st century--environmentally friendly, reliable, quiet, and highly efficient power system. The FTA Fuel Cell Transit Bus Program is the only viable U.S. fuel cell transportation program, critical to economic competitiveness. FTA supports the development of a domestically produced fuel cell propulsion system for transit buses. To date, six prototype fuel cell buses have been developed. In addition, FTA provided technical assistance to transit agencies in the demonstration and adoption of clean fuel vehicle technologies including clean diesel, natural gas, electric, hybrid electric and fuel cell. As a result, over 25 percent of all new buses purchased use low emission and fuel efficient technology.

The FTA New Model Bus Testing Program is improving the bus fleet. Testing to date has resulted in more than 4,000 reported malfunctions--ranging from minor problems to serious design deficiencies and safety-related failures. By identifying design problems before buses are placed in revenue service, many costly fleet failures and safety problems have been averted. Work is underway to expand the capacity of the Bus Testing Center to test bus rapid transit vehicles and other advanced technology vehicles, including electric and hybrid electric buses.

The *National Bus Industry Summit 2000: Ensuring a Healthy U.S. Bus Industry*, was held at the Ronald Reagan International Trade Center, Washington, DC, October 18-19, 2000. The Summit enabled FTA officials to successfully bring together, interface, and exchange ideas on a national level with the transit industry on a number of critical issues--vehicle standardization, information technology, technology advancements and partnerships for better procurement planning. The format was based on a results-oriented set of discussions that led to a set of key action items.

D. Mobility and Accessibility.

Job Access and Reverse Commute Program. In FY 2000, the program provided access to over 17,000 new job sites - 4 times original projection (Each site includes newly accessible employers within 1/4 mile of a stop). All grants created coordinated transportation/human service planning partnerships. All projects are integrated or coordinated with existing transit systems and most services are provided by existing transportation providers. Financial partnerships were extensively created using DOT Job Access funding combined with a variety of other Federal human service and employment fund resources. The Government Accounting Office review of

Transit Research & Technology Programs

FY 1999 projects found that 54 percent of recipients reviewed used Federal Temporary Assistance to Needy Families funds as a match.

Joblinks Demonstration and Technical Assistance. This program provided support to the Job Access program by implementing a technical assistance program to assist selected applicants in negotiating the grant making process and grantees in implementing services contained in their proposals. The technical assistance program established a “real time” learning network of Job Access grantees connected through the internet list serve. The program also provided a peer-to-peer network and expert resource system upon which to draw help. The program will involve working with the resources made available through several transportation professional associations, including the American Public Transportation Association, and others. FTA sponsored a series of ten regional technical assistance conferences for Job Access and Reverse Commute grantees. These sessions laid out the explanation of project selection criteria, grant requirements and reporting obligations. These sessions also provided a forum for sharing job access employment transportation experiences. Finally, the Joblinks program sponsored a series of transportation demonstration projects in the Department of Labor-sponsored One-Stop Centers. The intent was to provide transportation information to clients of the One-Stop Centers.

Transportation Coordination Actions. Under the auspices of the DOT/DHHS Coordinating Council, a brochure was developed and sent to the nation’s governors by the Secretaries of Transportation and Health and Human Services making states aware of the benefits of transit passes in Medicaid programs. This publication documented the benefits of this undertaking. Planning guidance on how to implement coordinated human services transportation was issued and planning case studies were produced.

E. Other Areas of Accomplishments

FTA initiated a safety risk assessment of the communication-based train control system being deployed at the San Francisco Bay Area Rapid Transit District and at the New York City Transit. This communication and control system offers transit agencies an opportunity to double rail transit passenger-carrying capacity and resolve key safety issues, without adding infrastructure.

In FY 2000, FTA developed and implemented an Adopt-A-University program which attracted FTA staff members to actively participate in the University Transportation Centers—a program jointly funded by FTA and Federal Highway Administration.

The FTA International Mass Transportation Program has significantly expanded its activities and has arranged trade missions to Thailand, Malaysia, Singapore, Nigeria, Vietnam, China and Hong Kong as well as scanning missions to Germany, Belgium and Brazil. In addition, the program has ensured effective FTA participation in a number of international activities and events, including developing the first-ever American Pavilion at the "City Transport 2001" exhibition in London in May 2001. In all these activities, FTA research materials and demonstration projects are emphasized to international counterpart agencies to share the FTA knowledgebase abroad. The International Mass Transportation Program will continue to highlight FTA's accomplishments through its international activities in 2002 with particular activities in Europe, Asia, Africa and South America.

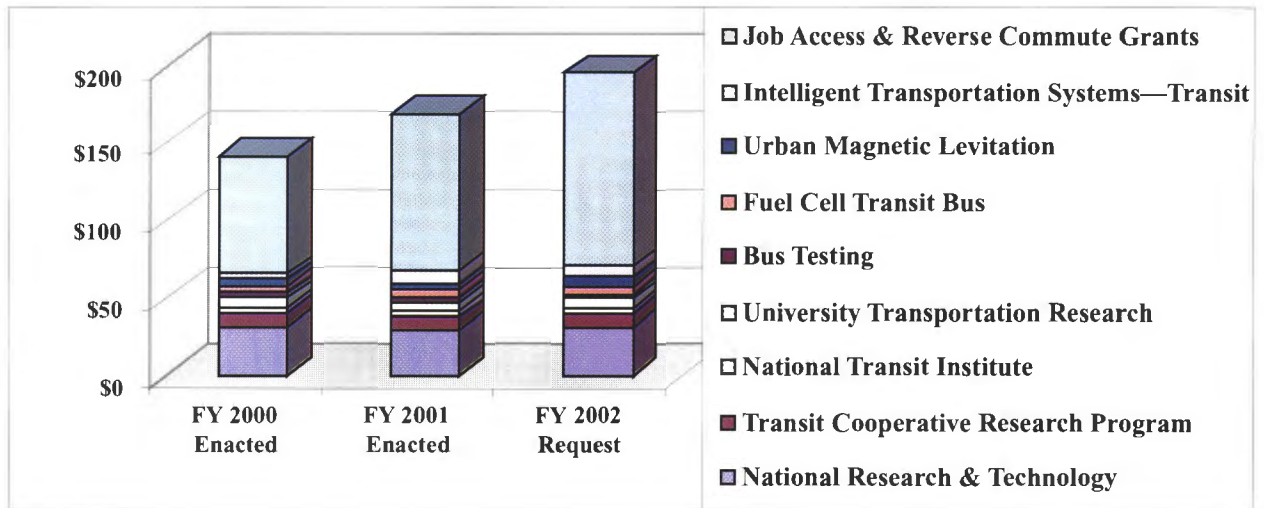
Transit Research & Technology Programs

F. Federal Funding for Transit Research and Technology

Federal funds for transit research and technology comprise several programs, with recent budget levels as indicated in the following table.

Program	FY 2000	FY 2001	FY 2002
	<u>Enacted</u>	<u>Enacted</u>	<u>Request</u>
	(millions of dollars)		
National Research & Technology	\$31.7	\$29.4	\$31.5
Transit Cooperative Research Program	8.2	8.2	8.2
National Transit Institute	4.0	4.0	4.0
University Transportation Research	6.0	6.0	6.0
Bus Testing	3.0	3.0	3.0
Fuel Cell Transit Bus	4.8	4.8	4.8
Urban Magnetic Levitation	4.1	4.4	6.0
Intelligent Transportation Systems—Transit	3.7	8.6	7.0
Job Access & Reverse Commute Grants	75.0	99.8	125.0

The following chart depicts the growth of these programs during fiscal years 2000 – 2002. The largest program, Job Access and Reverse Commute Grants, is a transit welfare-to-work program assisting hundreds of communities nationwide in providing innovative transportation services enabling former welfare recipients entering the job market.



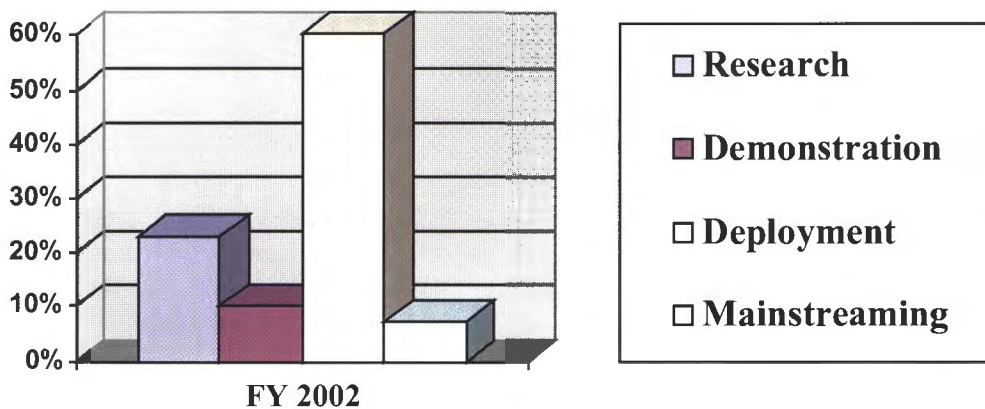
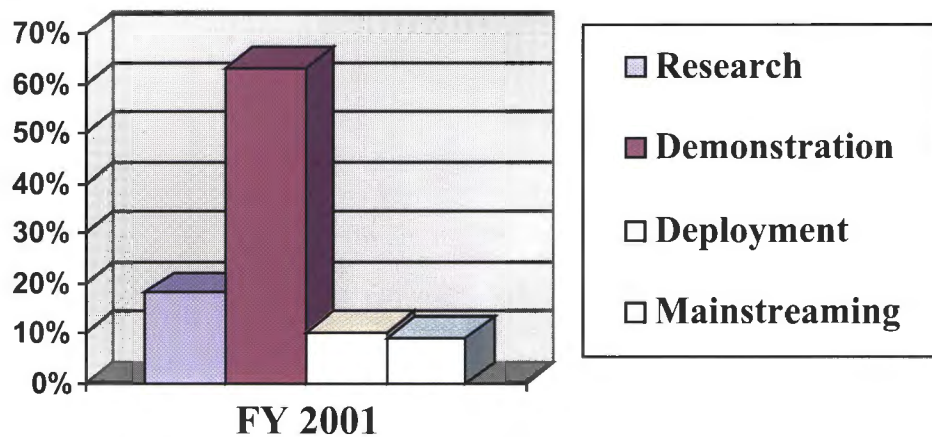
Transit Research & Technology Program Funds (millions of dollars).

Transit Research & Technology Programs

Increasing Emphasis on Deployment of Innovation and New Technology

FTA resources are directed to transforming concepts, innovative technologies and strategies into transit products and services through a four-step innovation process--Research, Demonstration/Testing, Deployment, and Mainstreaming. These charts describe the changing distribution of funding by stage of the four-step innovation process. FY 2001 focus is on the demonstration and testing of innovative technologies, such as fuel cell, advance electric and hybrid electric technologies in transit applications, as well as Intelligent Transportation Systems. FY 2002 focus will be on mainstreaming innovative technologies and services in transit applications.

Percentage of Transit Research & Technology Funds by Steps of Innovation Process



Transit Research & Technology Programs

Looking Ahead--The FTA research and technology program will direct its resources to the following activities:

- Advancing transit security research and deployment;
- Developing chemical and other detection systems to counter security threats;
- Defining research and technology issues for the reauthorization of the Transportation Equity Act for the 21st Century (TEA-21);
- Fostering a strong presence in both domestic and international markets;
- Promoting development of standards and best practices;
- Providing technical and innovative leadership; and
- Strengthening joint partnerships.

These activities recognize the importance of transit as an essential element of an efficient multi-modal transportation system. By providing basic mobility to millions of American workers, by contributing to the revitalization of neighborhoods, and by saving America approximately \$19 billion a year in the costs associated with traffic congestion, transit is proving itself to be a wise investment with multiple benefits to society.

Transit Research & Technology Programs

RESEARCH IN PROGRESS

The next section, *Research in Progress*, provides descriptive profiles of the 92 research projects undertaken during fiscal year 2000 by the Federal Transit Administration. The projects were undertaken to improve transit security and safety, expand the range of mobility options, foster economic growth, protect the environment, and enable the Federal Transit Administration staff to provide a higher level of customer service.

The projects are organized within the six emphasis areas of the *FTA Transit Research & Technology Five-Year Plan*—Security and Safety, Equipment and Infrastructure, Fleet Operations, Specialized Customer Services, Policy and Planning, and Professional Capacity Building. Each project entry is profiled separately and includes information on the project objective, funding, investigator, performing organization, and period of performance.

Our Vision –

Integrated Transportation Technology Producing High Quality Mobility into the 21st Century

Our Mission –

Partnering with Industry in Establishing Preeminence in U.S. Transit Technology, Institutions and Customer Services to Increase the Quality and Level of Transit Service

Our Goals –

Security & Safety

Mobility & Accessibility

Growth & Trade



Environmental Protection

Quality Workforce



Security & **S**afety

Top Transportation Priority



Alternative Fuels Safety Research

IMPROVING SECURITY & SAFETY Through Innovative Technologies & Strategies

FTA - Active Partner with State and Local Transit Agencies in Transit Security and Safety Improvements - Ongoing Activities aimed at making measured improvements in security and safety, alternative fuels, drug and alcohol testing, highway-rail grade crossing driver alertness, fire materials, and other projects and programs.

WORKING TO ELIMINATE transportation-related deaths, injuries, property damage, and to improve personal security and property protection.

SAVING LIVES – Reducing transit fatality & injury rates through innovative security and safety technologies and strategies, including grade crossing technologies.

FTA – Assesses security and safety data to determine target areas for technology enhancements; Initiates demonstrations, evaluations, and deployment of innovative grade crossings technologies and strategies that integrate highway-rail traffic control systems and roadway traffic management systems; and provide warnings of approaching trains to motorists and pedestrians.

Security & Safety

Alternative Fuels Safety Research & Technical Support

Project MA-26-7071/9070

Funding: \$150,000 *Schedule:* June 2000 – December 2001

Performer: Volpe National Transportation Systems Center
Kendall Square, Cambridge, Massachusetts 02142

Investigator: David Spiewak *Phone:* 617.494.2771 *Fax:* 617.494.2961

FTA Project Monitor: Jeffrey Mora, TRI *Phone:* 202.366.0215 *Fax:* 202.366.3765

Email: [jeffrey.mora@fta.dot.gov]

Description: This project supports the need to conduct alternative fuels safety research and to provide technical support to transit agencies operating alternative fuel buses. A number of serious incidents relating to compressed natural gas (CNG) buses have occurred in the past several years. These incidents involved buses, facilities, and fueling stations. Consequences and losses from these fuel-related hazards on transit buses and at facilities are serious concerns of the transit industry. Under this project, research will be conducted to identify alternative fuels safety issues and practices. Data will be collected for developing safety standards and updating the technical guidance documents on alternative fuels. Special studies will be conducted on the safety practices and use of alternative fuels in the transit industry. This project reaffirms safety as the top priority in the Department of Transportation.

Alternative Fuels Safety Research Technical Support & Oversight

Project MA-26-7020

Funding: \$100,000 *Schedule:* June 2000 – December 2001

Performer: Volpe National Transportation Systems Center
Kendall Square, Cambridge, Massachusetts 02142

Investigator: David Spiewak *Phone:* 617.494.2771 *Fax:* 617.494.2961

FTA Project Monitor: Jeffrey Mora, TRI *Phone:* 202.366.0215 *Fax:* 202.366.3765

Email: [jeffrey.mora@fta.dot.gov]

Description: This project supports the need to conduct alternative fuels safety research and to provide technical support and oversight to review safety-related incidents or potentially unsafe conditions at transit agencies operating alternative fuel buses. Expert technical support will be provided to assist FTA in overseeing the technical work being performed under the advanced bus technology programs, such as fuel cells using hydrogen gas and hybrid-electric subsystems. Oversight of technical work will help to ensure compliance with safety procedures, industry standards and practices, and to assess risks associated with demonstration and deployment of these advanced technologies. Information gathered from project activities will be used for developing industry guidance and standards. Adherence to safety procedures and other established safety practices minimizes transit system losses and improves overall passenger and employee safety.

Security & Safety

Chemical Release Detector System/Technology

Project DC-26-7108

Funding: \$450,000 *Schedule:* August 2000 - August 2002

Performer: U.S. Department of Energy, Argonne National Laboratory
1000 Independence Avenue, SW, Washington, DC 20585

Investigator: Dr. Anthony Policastro *Phone:* 630.252.3235 *Fax:* 630.252.3379

FTA Project Monitor: Rhonda Crawley, TRI *Phone:* 202.366.4047 *Fax:* 202.366.3765

Email: [rhonda.crawley@fta.dot.gov]

Description: The U.S. Departments of Energy and Transportation through their operating administrations, National Nuclear Security Administration (NNSA) and FTA, have a mutual interest in the development of a prototype chemical release detection system for use in underground transit environments, subway stations. The system will provide a first alarm in the event of a chemical agent release to evacuate people from the site, and indicate the type of threat to first responders. The chemical release detector system may also potentially be used in buildings, aircraft, trains, and any other enclosed space where large numbers of people congregate. Under this project, both NNSA and FTA have formed a partnership to initiate the first stage of a five-year effort to accomplish the objective of this interagency agreement, stated above. Both agencies are pooling resources and expertise to determine the effectiveness of chemical agent detection devices and systems, as part of integrated emergency preparedness response systems. Activities include an assessment of chemical agent detection methods and evaluation of state-of-the-art detection technologies in actual underground transit environments. Both activities will determine whether the detectors will function effectively in the event of an actual release of a chemical agent in a subway station. This research will build on lessons learned from the federally funded Urban Chemical Release Detector Testbed project, and related research activities currently underway on chemical and biological agent detection systems at DOE and Department of Defense. The project results will assist federal, state, and local governments, transportation security personnel, and first responders in combating domestic terrorism against the nation's transportation system. This project is Phase 1 of a 3-Phase program.

Development of Security & Safety Course Material

Project OH-26-5002

Funding: \$200,000 *Schedule:* June 2000 – September 2001

Performer: Battelle Memorial Institute Columbus Laboratories
505 King Avenue, Columbus, Ohio 43201-2693

Investigator: David P. Wagner *Phone:* 614.424.7381 *Fax:* 614.424.5069

FTA Project Monitor: Edith Rodano, TPM *Phone:* 202.366.0191 *Fax:* 202.366.7951

Email: [edith.rodano@fta.dot.gov]

Description: This project supports the development of new training courses, revisions to existing ones, and conduct of new safety and security workshops. Three new training courses will be developed under this project--Transit Bus System Safety, Crime Prevention Through Environmental Design, and Safety Evaluations of Alternative Fuels. Because of the constantly evolving nature of safety and security problems and priorities within the transit industry, it is

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necessary for FTA to constantly review the safety and security training program, update existing courses, and add new courses as needed. A pool of readily available experts to ensure continual delivery of high quality training to the transit industry sustains the quality of the safety and security training program. This project helps to ensure the quality and delivery of the FTA safety and security training program.

Drug & Alcohol Management Information System

Project MA-26-5010

Funding: \$850,000 *Schedule:* October 2000 – September 2001

Performer: Volpe National Transportation Systems Center
Kendall Square, Cambridge, Massachusetts 02142

Investigator: James A. Harrison *Phone:* 617.494.3450 *Fax:* 617.494.2902

FTA Project Monitor: Mark Snider, TPM *Phone:* 202.366.1080 *Fax:* 202.366.7951

Email: [mark.snider@fta.dot.gov]

Description This ongoing project supports the Omnibus Transportation Employee Testing Act of 1991. This law requires recipients of federal funds to establish and implement drug and alcohol testing programs for safety-sensitive employees, maintain records, and submit annual reports to FTA through the drug and alcohol management information system (DAMIS). Annual reports serve as a primary source for evaluating the effectiveness of federal regulations and for supporting future modifications. Test results are stored, analyzed, published, and distributed through DAMIS—a comprehensive and timely database and reporting system containing the results of transit agency drug and alcohol testing programs. Data collected under this program are used to meet information needs in planning for safe public transportation and in making policy decisions at all levels of government. FTA issued its implementation regulations in February 1994, requiring grantees to submit annual reports to FTA, summarizing their testing results. Recipients of Federal funds under Sections 5309, 5307, and 5311 or Chapter 53 of Title 49 of the United States Code are required to implement drug and alcohol testing programs and submit annual reports to FTA through DAMIS.

Drug & Alcohol Regulatory Guidance & Update

Project MA-26-5013

Funding: \$225,000 *Schedule:* October 1999 – December 2000

Performer: Volpe National Transportation Systems Center
Kendall Square, Cambridge, Massachusetts 02142

Investigator: James A. Harrison *Phone:* 617.494.3450 *Fax:* 617.494.2902

FTA Project Monitor: Mark Snider, TPM *Phone:* 202.366.1080 *Fax:* 202.366.7951

Email: [mark.snider@fta.dot.gov]

Description: In response to the Omnibus Transportation Employee Testing Act of 1991, FTA published two regulations prohibiting drug use and alcohol misuse by transit employees, requiring transit agencies to test for prohibited drugs and alcohol. The goal for the transit industry is to achieve a drug- and alcohol-free workforce in the interest of the health and safety of employees and the traveling public. To assist transit agencies in implementing these

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regulations, FTA developed and published *Implementation Guidelines for Drug and Alcohol Regulations in Mass Transit*, April 1994. Since the guidelines were published in 1994, there have been numerous amendments and clarifications to the drug and alcohol testing procedures and program requirements. To ensure that transit personnel are kept informed and aware of all such changes, the FTA Office of Safety and Security began quarterly publication of *FTA Drug and Alcohol Updates*. This project provides for continuing the publication and issuance of the quarterly updates, as well as for an updated edition of the Implementation Guidelines. Currently, more than 4,000 organizations receive these updates.

Drug & Alcohol Testing Compliance Audits

Project MA-90-5005-01

Funding: \$2,200,000 *Schedule:* October 1999 – September 2000

Performer: Volpe National Transportation Systems Center

Kendall Square, Cambridge, Massachusetts 02142

Investigator: James A. Harrison *Phone:* 617.494.3450 *Fax:* 617.494.2902

FTA Project Monitor: Mark Snider, TPM *Phone:* 202.366.1080 *Fax:* 202.366.7951

Email: [mark.snider@fta.dot.gov]

Description: Audits are conducted to assist transit agencies in achieving a drug- and alcohol-free workforce in the interest of the health and safety of transit employees and the traveling public. This project provides ongoing support for the Drug and Alcohol Testing Compliance Audits program to ensure grantees' compliance with federal drug and alcohol testing regulations. Compliance audits are conducted on sites of transit agencies receiving federal funds and are based on a comprehensive review process, covering every aspect of an agency's drug and alcohol testing program. Audit findings and lessons learned are summarized periodically, published, and distributed to the transit community. Additional activities include technical assistance and training which are conducted at various locations across the country. Under the Omnibus Transportation Employee Testing Act passed by Congress in 1991, FTA is required to establish regulations for drug and alcohol testing of transit employees performing safety-sensitive functions.

Fatigue Symposium – Alertness 2000

Project PA-26-5001

Funding: \$150,000 *Schedule:* July 2000 – July 2001

Performer: Milligan and Company, LLC

105 North 22nd Street, 2nd Floor, Philadelphia, Pennsylvania 19103

Investigator: M. Denise Bailey *Phone:* 215.496.0100 *Fax:* 215.496.0980

FTA Project Monitor: Edith Rodano, TPM *Phone:* 202.366.0191 *Fax:* 202.366.7951

Email: [edith.rodano@fta.dot.gov]

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Description: As a result of the 1995 New York City Transit accident on the Williamsburg Bridge, the FTA Office of Safety & Security in conjunction with the American Public Transportation Association sponsored a *Fatigue Symposium – Alertness 2000*. The National Transportation Safety Board identified fatigue as the cause of that accident and recommended, along with Congress, that FTA conduct training in fatigue awareness. Alertness 2000 symposium is a response to the Congressional directive requiring FTA to conduct training in fatigue awareness. The symposium brought together fatigue experts from around the country and those in the transit industry responsible for fitness-for-duty programs and training. The symposium focused on need-to-develop effective tools for managing fatigue in transit. *Alertness 2000* symposium is a follow-on to the 1998 symposium. The 2000 symposium was international in scope and included a scientific view of fatigue management, transit agency fatigue management practices, accident investigations, scheduling, medications, sleep disorders, and other factors.

Fire Safety Materials Testing

Project MA-26-5015.01

Funding: \$100,000 *Schedule:* October 2000 – September 2001

Performer: Volpe National Transportation Systems Center
Kendall Square, Cambridge, Massachusetts 02142

Investigator: James A. Harrison *Phone:* 617.494.3450 *Fax:* 617.494.2902

FTA Project Monitor: Roy Field, TPM *Phone:* 202.366.0197 *Fax:* 202.366.7951

Email: [roy.field@fta.dot.gov]

Description: As a result of the February 16, 1996, MARC commuter train accident, the National Transportation Safety Board recommended that DOT “review the testing protocols regarding the flammability and the smoke emissions characteristics of interior materials and coordinate the development and implementation of standards for materials performance and testing with FRA and FTA.” This research will evaluate the latest fire safety technology, update the *1984 Recommended Practices for Rail Transit Vehicle Materials Selection*, and the *1993 Recommended Practices for Transit Buses and Vans*. The project includes updating rail transit, bus, and van recommended practices for material selection, and developing fire safety standards for the performance and testing of interior materials for transit vehicles. This initiative supports the objective of the Interagency Fire and Materials Working Group of the federal government to produce uniform guidelines for fire performance of materials under consideration by government agencies and transportation providers. Results of fire safety testing of new composites will improve compliance with government regulations and standards, including FTA Fire Safety Guidelines. Use of these guidelines in the selection of materials for transit vehicles will reduce fire incidents and costly property damage and casualties.

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Grade Crossing Safety – Advanced Signal & Gated Technologies Tests

Project MA-26-7057

Funding: \$380,000 *Schedule:* August 2000 – December 2001

Performer: Massachusetts Bay Transportation Authority
10 Park Plaza, Boston, Massachusetts 02116

Investigator: Lorraine Pacocha *Phone:* 617.222.1668 *Fax:* 617.222.5995

FTA Project Monitor: Rhonda Crawley, TRI *Phone:* 202.366.4047 *Fax:* 202.366.3765

Email: [rhonda.crawley@fta.dot.gov]

Description: The Massachusetts Bay Transportation Authority (MBTA) will investigate advanced signal and gated technologies to improve safety at highway-rail intersections along its commuter rail lines. MBTA will conduct a two-phase demonstration project to evaluate innovative safety enhancements that incorporate signal warning systems and gated technologies. Phase one will assess maintenance and operational issues in the use of traffic signals and other enhancements to improve system safety at a high risk MBTA commuter rail grade crossing. The effectiveness of controlling traffic at grade crossings will be evaluated and compared to crossings using four-quadrant gates for traffic control. Traffic signals, including signal preemption and vehicle detection, will be integrated with the advanced signal and gated system. This project will aid the MBTA in assessing the performance and effectiveness of both gated technology and a traffic signal warning system to enhance safety at commuter rail intersections with heavy vehicular and pedestrian traffic. Results from this project will be shared with the US DOT Grade Crossing Safety Working Group, the US DOT Sharing Safety Technology Flagship Team, and external grade crossing safety partners.

Passenger Security Virtual Reality Training Model

Project MA-26-7073

Funding: \$200,000 *Schedule:* June 2001 – July 2002

Performer: Massachusetts Bay Transportation Authority
10 Park Plaza, Boston, Massachusetts 02116

Investigator: Ann M. McCall, Deputy Chief *Phone:* 617.222.1122 *Fax:* 617.222.1035
MBTA Police Department

FTA Project Monitor: Rhonda Crawley, TRI *Phone:* 202.366.4047 *Fax:* 202.366.3765

Email: [rhonda.crawley@fta.dot.gov]

Description: To increase transit security personnel responsiveness to deliberate acts of intentional harm in the transit environment, the Massachusetts Bay Transportation Authority (MBTA) will develop an innovative Passenger Security Virtual Reality Model (VR Model) for Law Enforcement Personnel. MBTA will develop this virtual reality-training model for first responders to terrorist incidents involving weapons of mass destruction, including chemical, biological, and radiological agents that result in major loss of human life and destruction of property. The VR Model will also prepare security personnel to effectively respond to catastrophic transportation incidents. The VR Model for Law Enforcement Personnel will use virtual reality technology to simulate the transit environment, design and enhance security countermeasures, and train security professionals to respond to acts of intentional harm to

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transit passengers and the infrastructure. The MBTA Police Department will demonstrate and evaluate the VR technology, and develop standards for an effective VR Model for transportation security personnel and law enforcement professionals. *Note:* Virtual reality is a medium composed of highly interactive computer simulations; it is defined as an artificial environment created with computer hardware and software, and presented to the user in such a way that it appears and feels like a real environment.

Security & Safety Clearinghouse

Project MA-26-5012

Funding: \$ 100,000 *Schedule:* October 2000 – September 2001

Performer: Volpe National Transportation Systems Center
Kendall Square, Cambridge, Massachusetts 02142

Investigator: Alison Thompson *Phone:* 617.494.2108 *Fax:* 617.494.2902

FTA Project Monitor: Vicki Bellet, TPM *Phone:* 202.366.2896 *Fax:* 202.366.7951

Email: [Vicki.bellet@fta.dot.gov]

Description: The Security & Safety Clearinghouse serves as a storehouse of information and an ongoing focal point for published materials and resources currently available on the subject of transit security and safety and related technologies. The material is made available, upon request, to assist state and local transit agencies to measurably improve the safety of transit services. The clearinghouse function enables FTA to dialogue with transit safety and security customers, to better understand customer needs, as well as provide a quick response mechanism for information dissemination. Customer assistance is provided in the form of guidelines, technical publication, final research reports, and expert advice through referrals to other industry experts, simulation models, and state-of-the-art information resources.

Security & Safety Technical Support

Project VA-26-7027

Funding: \$250,000 *Schedule:* September 2000 – October 20002

Performer: Booz, Allen & Hamilton, Inc.
8283 Greensboro Drive, 3rd Floor, McLean, Virginia 22102-3838

Investigator: Nicholas Bahr, Albert Powell *Phone:* 703.377.0372 *Fax:* 703.902.3617

FTA Project Monitor: Rhonda Crawley, TRI *Phone:* 202.366.4047 *Fax:* 202.366.3765

Email: [rhonda.crawley@fta.dot.gov]

Description: To further the FTA strategic goal on Security & Safety, technical support is required to respond to a variety of transit industry needs, including evaluation and deployment of transit security and safety technologies and related activities. The FTA Research & Technology Program Plan (Program) includes a number of new security and safety initiatives, including the testing and demonstration of innovative technologies and strategies for the safe operation and maintenance of public transportation. The safety and security technology component of the

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program places special emphasis on mainstreaming state-of-the-art technologies and other innovative enhancements that promote public health and transit safety by working toward the elimination of transit-related deaths, injuries, property damage, and the improvement of personal security and property protection. The successful management of these activities requires special engineering analysis and expert professional services to ensure milestones are met and deliverables are produced in accordance with the overall stated objectives of the program.

Safety Management Information System

Project MA-26-5011-01

Funding: \$350,000 *Schedule:* October 2000 – September 2001

Performer: Volpe National Transportation Systems Center
Kendall Square, Cambridge, Massachusetts 02142

Investigator: James A. Harrison *Phone:* 617.494.3450 *Fax:* 617.494.2902

FTA Project Monitor: Carole Ferguson, TPM *Phone:* 202.366.0219 *Fax:* 202.366.7951

Email: [carole.Ferguson@fta.dot.gov]

Description: This project provides ongoing support for the maintenance, operation, and evolution of the Safety Management Information System (SAMIS)--a mandatory reporting requirement of the FTA National Transit Database. SAMIS data are uniformly collected from recipients of Urbanized Area Formula funds through the National Transit Database Reporting System. Recently, data collection has been expanded to include highway-rail grade crossing accidents, cost data, and security data. This project also supports annual publication of the SAMIS report, which disseminates normalized and trend data along with basic statistical information. The annual report compiles and analyzes transit accident, casualty, and crime statistics reported by more than 450 transit systems in the United States—illustrating the nation's mass transit incidents and their effects on people and property. SAMIS information is also used in reports to Congress, Office of the Secretary, and the Office of Management and Budget, as well as in assisting transit professionals in the development of system safety and security plans. In the year 2000, modifications were made to address the National Transportation Safety Board concern with accident causal factors, and to better define transit related safety and security issues, as well as improve data timeliness and accuracy. SAMIS is the FTA Safety and Security statistical database.

State Safety Oversight Compliance

Project: MA-90-5006

Funding: \$900,000 *Schedule:* October 2000 – October 2001

Performer: Volpe National Transportation Systems Center
Kendall Square, Cambridge, Massachusetts 02142

Investigator: James A. Harrison *Phone:* 617.494.3450 *Fax:* 617.494.2902

FTA Project Monitor: Roy Field, TPM *Phone:* 202.366.2197 *Fax:* 202.366.7951

Email: [roy.field@fta.dot.gov]

Description: Ongoing compliance monitoring will be used to document deficiencies, monitor corrective actions, and provide recommendations for improving submissions by the States, as required by 49 CFR Part 659, State Safety Oversight for Rail Fixed Guideway Systems (RFG Systems). This rule requires establishment of an oversight agency at the state level. Oversight

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agencies, in turn, must require RFG Systems to develop and implement System Safety and Security Program Plans, conduct three year reviews, identify and eliminate hazards, impose design requirements or management controls to prevent mishaps, and other safety and corrective actions. In addition, the state oversight agency must oversee accident investigations and determine causal factors. This project provides for refinement of the current audit process; continuation of field audits; analysis and policy formulation including FTA/FRA joint track issues, new starts, and causal data; documentation and technical information dissemination; and database development to track compliance and analysis activities. The automated compliance tracking system will be enhanced, thus enabling FTA to assess States' submissions such as annual reports and incident reports.

Transit Bus Safety Oversight Project

Project OH-26-5001

Funding: \$540,000 *Schedule:* August 2000 – August 2001

Performer: Battelle Memorial Institute Columbus Laboratories
505 King Avenue, Columbus, Ohio 43201-2693

Investigator: David P. Wagner *Phone:* 614.424.7381 *Fax:* 614.424.5069

FTA Project Monitor: Frank McCarron, TPM *Phone:* 202.366.1639 *Fax:* 202.366.7951

Email: [frank.mccarron@fta.dot.gov]

Description: The overall objective of this project is to foster a better understanding of the state-of-the-art in transit bus safety, and to disseminate technical assistance to the industry. This project is a response to Congressional, National Transportation Safety Board, and FTA concerns regarding States' oversight of public transit bus safety. Currently, State oversight of transit operations ranges from non-existent to perfected safety programs supported by State legislation and administered by State level agencies. There is no overall federal regulation requiring oversight for transit bus safety. Under this project, the research team will examine in detail the state of transit bus safety practices in the industry, and support FTA Office of Safety and Security in the development and implementation of a series of technical assistance projects to encourage States' adoption of uniform safety requirements and oversight of bus transit systems. The research will actively work with the industry to improve bus safety, and ultimately develop a model transit bus safety program inclusive of the oversight function.

Transit Security & Safety Survey

Project PA-26-5002

Funding: \$100,000 *Schedule:* September 2000 - March 2001

Performer: Milligan & Company, LLC
105-107 North 22nd Street, 2nd Floor, Philadelphia, Pennsylvania 19103

Investigator: Jim Buckley *Phone:* 410.732.4626 *Fax:* 410.732.7470

FTA Project Monitor: Iyon Lyles, TPM *Phone:* 202.366.2010 *Fax:* 202.366.7951

Email: [iyon.lyles@fta.dot.gov]

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Description: Ridership on public transportation systems is likely to decline if patrons lack a sense of safety and security. Transit agencies not only must be concerned with transit service, but also with crime and passenger safety. Under this project, surveys will be conducted of how transit customers and employees perceive the state of public safety and security on city buses, light rail and subway systems. Data will be collected and analyzed to provide a better understanding of the perceived state of safety and security concerns of transit riders and employees. The survey results will provide FTA and transit agencies with reliable and accurate information on the perceived condition of safety and security of local transit.

Transit Security & Safety Website

Project MA-26-5008.02

Funding: \$75,000 *Schedule:* October 2000 – September 2001

Performer: Volpe National Transportation Systems Center

Kendall Square, Cambridge, Massachusetts 02142

Investigator: Alison Thompson *Phone:* 617.494.2108 *Fax:* 617.494.2902

FTA Project Monitor: Iyon Lyles, TPM *Phone:* 202.366.2010 *Fax:* 202.366.7951

Email: [iyon.lyles@fta.dot.gov]

Description: Rapid and easy access to safety and security information on all types of transit is needed by planners, managers, and federal officials to assess safety and security programs and capital program requirements. This project supports the ongoing management and operation of the transit safety and security Internet website. The website is designed to provide the transit industry a central communication point for information on transit safety and security. The website has been undergoing significant enhancements. Information currently available to website users include: training opportunities, meetings, DOT and FTA hearings, regulations, research reports, and links to other resources. The FTA Safety & Security Website can be accessed at [<http://transit-safety.volpe.dot.gov>].

Transit Security Audits

Project PA-90-5004

Funding: \$200,000 *Schedule:* October 2000 – September 2001

Performer: Milligan and Company, LLC

105 North 22nd Street, 2nd Floor, Philadelphia, Pennsylvania 19103

Investigator: M. Denise Bailey *Phone:* 215.496.9100 *Fax:* 215.496.0980

FTA Project Monitor: Carole Ferguson, TPM *Phone:* 202.366.0219 *Fax:* 202.366.7951

Email: [carole.ferguson@fta.dot.gov]

Description: Crime prevention is primarily a local responsibility, regardless of whether the crime occurs in the street or on a transit system. The FTA role is to provide capital and technical assistance and training to transit agencies in support of mitigating crime. Under this ongoing program, voluntary audits are conducted to assess existing security practices of public transit agencies. Transit security audits are conducted to reduce the vulnerability of transit systems, including intentional harm to the system, employees, and users. Audits are voluntary and designed to assess and improve existing security practices of public transit agencies, as well as

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assist those systems manifesting serious adverse security problems. FTA invites requests from transit agencies for specific site reviews, and findings are shared as lessons learned with peer systems. Basically, audits help develop and improve system security, implement a security program tailored to agency needs, and prepare rail systems for state safety oversight reviews.

Transportation Safety Institute

Project OK.26.5002.02

Funding: \$1,200,000 *Schedule:* October 2000 – September 2001

Performer: Transportation Safety Institute

6500 South Macarthur Boulevard, Oklahoma City, Oklahoma 73125-5050

Investigator: James Lopez

Phone: 404.954.3682 *Fax:* 404.954.0367

FTA Project Monitor: Edith Rodano, TPM

Phone: 202.366.0191 *Fax:* 202.366.7951

Email: [edith.rodano@fta.dot.gov]

Description: The Transportation Safety Institute (TSI) conducts transit safety and security training to improve the operational safety of transit systems and personal security of the riding public and transit workforce. Since it began in 1976, TSI has trained over 60,000 students. Under this project, TSI will offer 22 different transit courses in more than 200 sessions, including--transit rail system safety, substance abuse management, managing transit emergencies, industrial safety management, rail and bus accident investigations, alternative fuels, system security, transit explosives incident management, fatigue awareness, system safety, bus casualty extrication, threat management and emergency response to bus hijacking, and response to chemical, biological, and nuclear transit incidents. These courses comprise the core curriculum of TSI transit safety and security training, attended annually by more than 4,000 transit industry employees. A professional Staff of Associates assists in the development and conduct of the courses. TSI curriculum supports the FTA mission in a cost effective way, advancing the state of the practice of safety and security by transit professionals. TSI Website URL [<http://www.tsi.dot.gov>].

Clean Fuel Technology Vehicles *New Technology for Energy Efficiency*



*Fuel Cell Transit Bus
SunLine Transit*

Low & Zero Emissions Bus

Environmentally – Friendly Transit Bus



*Electric Transit Bus – Chattanooga,
Tennessee*

Moving Towards a Cleaner and More Efficient Way of
Transporting People Through Technology.

Ongoing efforts within FTA Research & Technology Program to advance fuel cells, alternative fuels and electric technology provide the foundation for moving towards a cleaner and more efficient way of transporting the transit riding public.

Equipment & Infrastructure – Bus Equipment

Altoona Bus Testing Program

Project PA-03-7002.01

Funding: \$2,943,286 *Schedule:* October 2000 – October 2001

Performer: Pennsylvania Transportation Institute, The Pennsylvania State University
Research Office Building, University Park, Pennsylvania 16802-4710

Investigator: Bohdan T. Kulakowski *Phone:* 814.865.1891 *Fax:* 814.865.3039

FTA Project Monitor: Marcel Belanger, TRI *Phone:* 202.366.0725 *Fax:* 202.366.3765

Email: [marcel.belanger@fta.dot.gov]

Description: The FTA New Model Bus Testing Program is designed to promote production of better transit vehicles and components and to ensure that transit customers purchase safe vehicles able to withstand the rigors of transit service. The New Model Bus Testing Program aims to ensure that deficiencies in new bus models are corrected before entering revenue service, saving transit agencies and tax payers millions of dollars over the life of each bus model. The program is conducted at the Altoona Bus Testing and Research Center in Altoona, Pennsylvania. Staff at this Center is responsible for testing new model buses as required by federal law to be eligible for federal funding. The Penn State Bus Research and Testing Facility is also part of the Altoona Bus Testing and Research Center. Under this project, bus testing requirements will be carried out as defined in Bus Testing Regulations. The testing program is administered by the Vehicle Systems and Safety Program staff at the Altoona Bus Testing Center, and PTI in State College, Pennsylvania. The testing program provides bus manufacturers and transit agencies invaluable information that is used to improve the quality and safety of transit buses. Currently, the Center tests buses for safety, structural integrity, performance, maintainability, noise, and fuel economy. Two additions, emissions and brake testing, will be made. Test results are compiled in a comprehensive report available to the industry and the public. Testing to date has resulted in more than 4,000 reported malfunctions--ranging from minor problems to serious design deficiencies and safety-related failures. By identifying design problems before the buses are placed in revenue service, many costly fleet failures and safety problems have been averted. Website URL [<http://www.vss.psu.edu/fta>]

Advanced Electric Transit Bus Demonstration at MBTA

Project MA-26-7058

Funding: \$2,944,188 *Schedule:* December 2000 – June 2002

Performer: Massachusetts Bay Transportation Authority
10 Park Plaza, Boston, Massachusetts 02116

Investigator: James Burke *Phone:* 617.222.5000 *Fax:* 617.222.6180

FTA Project Monitor: Shang Q. Hsiung, TRI *Phone:* 202.366.0241 *Fax:* 202.366.3765

Email: [shang.hsiung@fta.dot.gov]

Description: This project supports the efforts of the Massachusetts Bay Transportation Authority (MBTA) to develop and demonstrate two pre-production prototype electric transit buses with low-floor platforms. Both buses will be tested on a prototype roadway charging installation from Dudley Square to Ruggles Station. A non-contacting inductive charging system is the key technology being demonstrated, allowing frequent replenishment of the energy storage system from the roadway, thus greatly reducing the need for batteries and off-line

Equipment & Infrastructure – Bus Equipment

recharging. An inductive charging system, with the charge unit built into the roadway at bus stops and layover points, will enable the battery transit bus to meet its service requirements without being limited by range. This inductive charging system is intended to recharge the electric vehicle battery quickly, easily, and without any intervention from the user. In effect, the charging system is an automatic bus refueling system. The demonstration project will provide a better understanding of the battery management process and battery performance, including battery life, reliability, and energy efficiency. The resulting vehicles are expected to have important economic and environmental advantages over the conventional diesel bus. This is a congressionally directed project.

Bus Industry Summit 2000: Ensuring a Healthy U.S. Bus Industry

Project DC-26-7052

Funding: \$50,000 *Schedule:* May 2000 – December 2001

Performer: Volpe National Transportation Systems Center

Kendall Square, Cambridge, Massachusetts 02142

Investigator: Dave Spiewak

Phone: 617.494.2771 *Fax:* 617.494.2961

FTA Project Monitor: Elaine Dezenski, TRI *Phone:* 202.493.2633 *Fax:* 202.366.3765

Email: [elaine.dezenski@fta.dot.gov]

Description: This project provided the resources necessary to plan and successfully convene the second National Bus Industry Summit 2000, held at the Ronald Reagan International Trade Center, Washington, DC, October 18-19, 2000. The Summit is one of FTA's primary opportunities to bring together, interact, and exchange ideas with the transit industry on a number of critical issues, such as vehicle standardization, information technology, technology advancements and partnerships for better procurement planning. The one-day session featured presentations from transit operators, manufacturers, suppliers, FTA officials, and labor organizations. The format was based on a results-oriented set of discussions that led to a set of key action items. Follow-up activities included a wrap-up of the proceedings, roundtable discussions and other activities identified by FTA and Summit participants. The report, *Proceeding of Bus Summit 2000: Ensuring a Healthy U.S. Bus Industry*, is available on the FTA Website [<http://www.fta.dot.gov/research/fleet/bussumpro.pdf>]

Electric & Hybrid Electric Vehicle Technology Transfer Program

Project DC-26-7110

Funding: \$741,370 *Schedule:* September 2000 – September 2002

Performer: Electric Vehicle Association of America (EVAA)

701 Pennsylvania Avenue, 4th Floor, Washington, DC 20004

Investigator: Gail Hendrickson, EVAA

Phone: 202.508.5995 *Fax:* 202.508.

FTA Project Monitor: Christina Gikakis, TRI *Phone:* 202.366.4035 *Fax:* 202.366.3765

Email: [christina.gikakis@fta.dot.gov]

Equipment & Infrastructure – Bus Equipment

Description: Electric and hybrid-electric drive vehicles are being developed to answer challenges faced by current transit operators—vehicle range, fuel economy, emissions, and safety. This cooperative agreement supports the efforts of a research team, composed of Electric Vehicle Association of America (EVAA), Electric Power Research Institute, and the Chattanooga Area Regional Transportation Authority-CARTA), to develop and implement a data collection program associated with the operation of electric and hybrid electric buses and infrastructure, and to share this vehicle information with the transit community-at-large. The research team will define and develop an electronic information system to collect information on electric and hybrid electric vehicles. This work will include development of protocols for data collection, and specifications of on-board vehicle collection hardware and methodologies. The system will undergo a trial operational test on an all-electric transit bus in service at CARTA. A technology transfer effort will be undertaken to familiarize and report to the transit industry on data collection technologies, as well as electric and hybrid electric vehicle technologies. The collection techniques and data elements defined under this program will be useful for data collection activities of other alternative fuel buses. This is a congressionally directed project.

Electric Transit Vehicle Institute (ETVI)

Project TN-26-7002

Funding: \$498,900

Schedule: February 2000 – March 2002

Performer: Electric Transit Vehicle Institute

1617B Wilcox Boulevard, Chattanooga, Tennessee 37406

Investigator: John Powell

Phone: 423.622.7021 *Fax:* 423.622.0744

FTA Project Monitor: Marcel Belanger, TRI

Phone: 202.366.0725 *Fax:* 202.366.3765

Email: [marcel.belanger@fta.dot.gov]

Description: The U.S. Department of Transportation, through FTA, has a significant interest in the advancement of electric and hybrid electric vehicle technology in transit applications. Ongoing efforts within FTA to advance fuel cells, alternative fuels and electric technology provide the foundation for moving towards a cleaner and more efficient way of transporting the transit riding public. One of the main challenges within FTA is to harness and transfer these results to industry more effectively. This project takes on the challenge. It supports federal efforts to encourage technology transfer, technical assistance, and increased communication and dissemination of information on electric and hybrid electric vehicles. The goals of this electric transit vehicle project are as follows: (1) to improve the understanding of, interest in, and use of electric and hybrid-electric buses through the implementation of a coordinated information and communications dissemination program; (2) to provide professional and technical assistance to Chattanooga Area Regional Transportation Authority in the deployment of electric vehicles and; (3) to develop a series of testing protocols for electric and hybrid-electric buses. Website URL: [<http://www.etvi.org/>]. This is a congressionally directed project.

Equipment & Infrastructure – Bus Equipment

Georgetown Fuel Cell Transit Bus Program

Project DC-26-7002.10

Funding: \$4,634,596 *Schedule:* February 2000 - December 2004

Performer: Georgetown University

2115 Wisconsin Avenue, NW, Suite 602, Washington, DC 20007

Investigator: Phone: James T. Larkin *Phone:* 202.687.7361 *Fax:* 202.687.4507

FTA Project Monitor: Shang Hsiung, TRI *Phone:* 202.366.0241 *Fax:* 202.366.3765

Email: [shang.hsiung@fta.dot.gov]

Description: Fuel Cell is one of the most promising clean energy technologies of the 21st century--environmentally friendly, reliable, quiet, and highly efficient power system. The FTA Fuel Cell Transit Bus Program is a major U.S. fuel cell transportation program, critical to economic competitiveness. This multi-year project supports Georgetown University's research program for the development of a domestically produced fuel cell propulsion system for transit buses. When completed, the program will provide the preliminary engineering and development activities necessary for the domestic, commercial production of a fuel cell powered, full-sized transit bus. Both phosphoric acid (PA) and proton exchange membrane (PEM) fuel cell technologies are currently being developed, tested and evaluated as power systems for transit bus propulsion systems operating on liquid fuels. Based on the tests performed on both the PA and PEM fuel cell powered 40-ft. transit buses, an assessment will determine whether sufficient operations and maintenance data are available to support selection of fuel cell technologies for transit bus applications. To date, six prototype fuel cell buses have been developed. This research will also evaluate alternative fuel processors capable of generating acceptable quantities of hydrogen rich gas from either diesel, JP-8, or light petroleum distillate fuels. Beginning in 2001, federal assistance will support construction of a transit facility for fuel cell buses, which will house three of Georgetown's fuel cell buses, and serve as a training and maintenance facility. This is a congressionally mandated project.

Hydrogen Fuel Cell Transit Bus – SunLine Transit Demonstration Project

Project CA-26-7022

Funding: \$1,988,492 *Schedule:* April 2000 - December 2003

Performer: SunLine Transit Agency

32-505 Harry Oliver Trail, Thousand Palms, California 92776

Investigator: Richard Cromwell, III Phone: 760.343.3456 *Fax:* 760.343.3845

FTA Project Monitor: Shang Q. Hsiung, TRI *Phone:* 202.366.0241 *Fax:* 202.366.3765

Email: [shang.hsiung@fta.dot.gov]

Description: SunLine Transit has become a trend setter in clean fuels. Currently, SunLine is helping to lead the effort to commercialize alternate fuel vehicles powered by fuel cells. In April 2000, SunLine became the first public transit agency to use hydrogen generated onsite (from renewable and reforming technologies) to power zero-emission fuel cell vehicles. The objective of this project is to provide support to SunLine Transit Agency to procure and road test a 40-foot transit bus powered by a direct hydrogen fuel cell propulsion system. Sunline Transit will demonstrate and test a fuel cell transit bus with a dbb P4 fuel cell propulsion system. The

Equipment & Infrastructure – Bus Equipment

test period includes 2 months of factory testing in Vancouver followed by 13 months of on road testing at SunLine Transit. The vehicle testing will provide transit agencies with information concerning the fuel cell transit bus performance, reliability, emissions, economy, efficiency, and safety. The demonstration will also provide critical information concerning the operations, maintenance, management, and training issues associated with operating a direct fuel cell hydrogen transit bus. Training manuals will be developed in conjunction with the fuel cell manufacturer in cooperation with the College of the Desert, Miramar College and Southwestern College. This demonstration will be coordinated with other SunLine hydrogen production and hydrogen fuel cell projects, including construction of a solar and wind powered hydrogen generation facility on the SunLine premises. This facility will include a Stuart Energy Systems P3 hydrogen generator funded through a Department of Energy grant. Moreover, SunLine Transit, Riverside Transit Agency, and Southern California Association of Governments are evaluating Intelligent Transportation Systems (ITS) needs, requirements, and specifications. This effort will identify data communications and automated vehicle location system needs, as well as funding to procure, install, and operate the selected ITS equipment. This transit bus project reflects the industry's ongoing effort to develop and implement more efficient power generation, lower maintenance costs, and low and zero-emission buses (ZEBus). See P3 fuel cell transit bus test report on Website [http://www.ballard.com/pdf/Xcellsis_Report_.pdf]. This is a congressionally mandated project.

Pittsfield Electric Transit Bus

Project MA-26-7050

Funding: \$1,334,465 *Schedule:* July 2000 - December 2002

Performer: Pioneer Valley Transit Authority

2808 Main Street, Springfield, Massachusetts 01107

Investigator: Gary Shepard

Phone: 413.732.6248 *Fax:* 413.737.2954

FTA Project Monitor: Shang Q. Hsiung, TRI *Phone:* 202.366.0241 *Fax:* 202.366.3765

Email: [shang.hsiung@fta.dot.gov]

Description: The Pioneer Valley Transit Authority (PVRTA) will conduct a Phase One study to develop the operational requirements of the Pittsfield Electric Transit Bus Project. The research will result in the design of a pre-production prototype, 22-foot battery-powered electric propulsion transit bus. The target weight for this 22-seat passenger capacity bus is 21,000 pounds gross vehicle weight. The Pittsfield electric transit bus will feature an advanced AC induction propulsion system, designed to ensure smooth operation over a broad spectrum of duty cycles with an advanced energy storage chemistry offering a lengthy, reliable cycle life and a body shell constructed of long lasting, lightweight structural composites featuring superior occupant safety and reliability. The bus design will be compliant with Americans with Disabilities Act (ADA) requirements and meet or exceed all applicable federal and state safety standards, including the Altoona Test Protocol of Electric Bus requirements. Computer modeling of crash simulations will be performed in lieu of actual crash testing. Operational range will be designed for 70 - 100 miles between charges. Overall, the bus will incorporate a high power charge capability and comply with all industry standards, including SAE J1772 for Conductive Interfaces, J2293 for Communication and Control, UL listing requirements and FCC compliance. This is a congressionally mandated project.

Equipment & Infrastructure – Bus Equipment

Santa Barbara Electric Transportation Institute

Project CA-26-7027

Funding: \$481,396 *Schedule:* September 2000 – December 2001

Performer: Santa Barbara Electric Transportation Institute

PO Box 957, Santa Barbara, California 93102-4794

Investigator: Paul Griffith *Phone:* 805.568.0985 *Fax:* 805.962.4794

FTA Project Monitor: Shang Hsiung, TRI *Phone:* 202.366.0241 *Fax:* 202.366.3765

Email: [shang.hsiung@fta.dot.gov]

Description: The Santa Barbara Electric Transportation Institute (SBETI) will develop and install a transit-compatible, fast chargeable electric propulsion system into a 30-foot, low-floor transit bus for testing, demonstration, and evaluation purposes. Previous demonstrations not only have shown that fast charging provides unlimited range for an all-electric bus, but also have revealed issues related to fast charging, such as charge system reliability, charger size and cost, and battery heating. This project will address these issues. It will also focus on the incorporation of safety features into the electric propulsion system of electric transit buses, and the proper charge management of parallel battery strings. The transit-compatible, fast chargeable electric propulsion system will include powertrain components that can function under environmentally and physically demanding conditions of transit service. The powertrain will be integrated into a new bus platform compatible with electric re-powering. The fast charge electric bus will be delivered to the Santa Barbara Metropolitan Transit District (MTD) for a six-month, real-world tests, demonstration, and evaluation period. SBETI is closely associated with Santa Barbara MTD, the operator of the largest electric bus fleet in North America. SBETI website URL is [<http://www.sbeti.com>]. This is a congressionally mandated project.

WestStart-Calstart Consortium Electric Vehicle Program

Project CA-26-7021

Funding: \$3,212,600 *Schedule:* April 2000 – January 2002

Performer: Weststart-Calstart

2181 East Foothill Blvd, Pasadena, California 91107

Investigator: *Phone:* Michael Gage *Phone:* 616.744.5600 *Fax:* 626.744.5610

FTA Project Monitor: Shang Q. Hsiung, TRI *Phone:* 202.366.0241 *Fax:* 202.366.3765

Email: [shang.hsiung@fta.dot.gov]

Description. Since 1992, FTA has partnered with WestStart-Calstart (WestStart) to develop, demonstrate, and deploy electric vehicle technologies and transit enhancing services to improve transportation services and operations. This project supports the WestStart's continuing drive for clean mobility, clean solutions and advanced technologies for transportation. WestStart is a nonprofit, advanced transportation organization and leader in developing programs and plans that foster clean fuel vehicle technology development and deployment. Under this project, WestStart continues to develop and demonstrate electric vehicle technologies that reduce emissions and improve transportation services. It serves as a catalyst for the development of a globally competitive, environmentally friendly, and United States-based advanced transportation

Equipment & Infrastructure – Bus Equipment

technology industry. WestStart continues to provide the transit industry with a variety of support, including technology assessment and assistance and strategic partnering, as well as programs and information dissemination that foster clean fuel vehicle technology development and deployment. This project includes support for cleaner bus technology in U.S. National Park Service areas and community electric vehicle (CEV) demonstration program in California. WestStart will partner with Santa Barbara Electric Transportation Institute to develop and disseminate credible data on the operation and maintenance of battery-electric buses, including Internet access to this information and Internet-based training for electric bus operators and maintenance personnel. Website URL [<http://www.weststart.org/>]. This is a congressionally mandated project.

Zinc-Air Battery Bus Demonstration Project – Phase II

Project NV-26-700.01

Funding: \$1,361,000 *Schedule:* September 2000 – March 2002

Performer: Electric Fuel Corporation

885 Third Avenue, Suite 2900, New York, New York 10022

Investigator: Julie Brokaw *Phone:* 972.539.8680 *Fax:* 972.355.1168

FTA Project Monitor: Christine Gikakis, TRI *Phone:* 202.366.2637 *Fax:* 202.366.3765

Email: [christine.gikakis@fta.dot.gov]

Description: Zinc-air battery technology offers a high-energy, cost-effective energy source as a viable alternative to existing lead-acid batteries, as well as longer vehicle performance range. The zinc-air battery is being tested in Europe on small and medium sized vehicles. The objective of this research project is to test, demonstrate, and evaluate zinc-air-battery propulsion technology for transit bus applications. Under Phase I of this project, an all-electric 40-foot transit bus was modified with a zinc-air battery propulsion system, tested, and assessed in terms of its performance, operating and maintenance costs, life-cycle costs, and commercialization potential. Phase II work focuses on additional testing and integrating ultracapacitor technology to maximize the energy and power capabilities of the bus. Following initial tests and integration drives, the bus is expected to undergo a limited on-road demonstration in Las Vegas, Nevada. The zinc-air battery project results will bear upon the development of other similar projects and public acceptance of zero-emission electric vehicles. The Zinc Air Battery Bus Demonstration Program was initiated in 1998 through a Cooperative Agreement between the FTA and the Center for Sustainable Technology (CST), Electric Fuel Corporation (EFC), and the Regional Transportation Commission of Clark County, Nevada. The program aim was to develop and demonstrate a full-sized all electric, zero-emissions transit bus utilizing zinc air battery technology, and to assess the applicability of this technology for transit. This is a congressionally mandated project.

Equipment & Infrastructure – Bus Equipment

Standard Bus Procurement Guidelines & Technical Specifications

Project DC-26-701.04

Funding: \$82,000

Schedule: August 2000 – August 2001

Performer: American Public Transportation Association

1666 K Street, NW, Suite 1100, Washington, DC 20006

Investigator: Kristen O’Grady

Phone: 202.898.4052

Fax: 202.898.4070

FTA Project Monitor: Jeffrey Mora, TRI

Phone: 202.366.0215

Fax: 202.366.3765

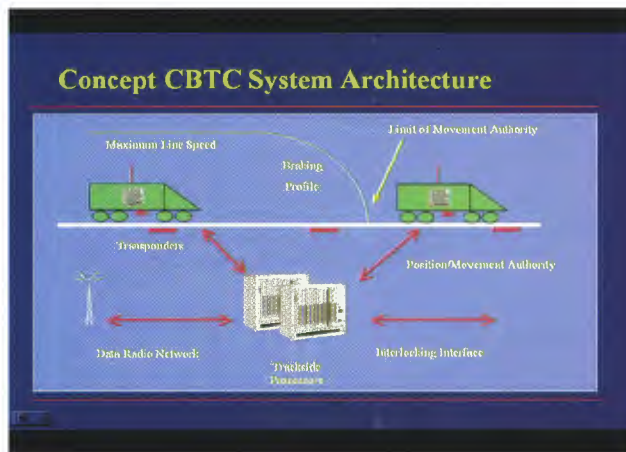
Email: [jeffrey.mora@fta.dot.gov]

Description: This amendment supports the American Public Transportation Association (APTA) effort in completing the *Standard Bus Procurement Guidelines*. It is also called the *APTA White Book*, i.e., industry-wide purchase standards consisting of both technical specifications and procurement guidelines for transit buses. Standard purchase specifications lower the cost of vehicles and streamline the bus procurement process--saving the industry both time and money. This amendment finalizes the project for the development of *Standard Bus Procurement Guidelines* and *Technical Specifications* for transit buses. Both documents are free and posted on the APTA Website [<http://www.apta.com/services/procurement/index.htm>].

Rail Equipment Systems

Moving Towards a Higher Level and Quality of Transit Service

Ongoing efforts to accelerate the innovative process and application of new technology, including communications-based train control and standards development are closing the gap between travel demand and system capacity, as well as creating a more efficient and cost-effective way of transporting the transit riding public.



Low-Cost & High Performance Train Tracking Communications System

Increase Rail Transit Passenger-Carrying Capacity without Building Additional Infrastructure

More Trains Run on Existing Systems

Communications-Based Train Control



Urban Maglev Program

Maglev -- a revolutionary approach for transportation. Trains are lifted and propelled by magnetic forces without wheels contacting the rail surfaces.

Objective - development of magnetic levitation technology that is cost effective, reliable, and environmentally sound transit option for urban mass transportation in the United States.

Work - currently underway on the Low-Speed Maglev Technology Development Project.

Equipment & Infrastructure – Rail Technology & Systems

Charleston Monobeam Elevated Guideway Rail Transit System - Oversight Support

Project MA-26-7069.01

Funding: \$100,000 *Schedule:* September 2000 – September 2004

Performer: Planners Collaborative, Inc.

273 Summer Street, Boston, Massachusetts 02210

Investigator: Christine Burr

Phone: 843.720.3961 *Fax:* 843.720.1985

FTA Project Monitor: Venkat Pindiprolu, TRI *Phone:* 202.366.8061 *Fax:* 202.366.3765

Email: [venkat.pindiprolu@fta.dot.gov]

Description: This project provides oversight support for the development and deployment of the Charleston Monobeam Elevated Guideway Rail Transit System.—a futuristic elevated urban transit system called System 21. Oversight support is needed so that the best effort is made to implement the technology in a manner supportable in the long term, compatible with as many associated technologies as possible, and upholds the expected safety performance of a public transit system. The monobeam rail transit system is currently under development at the Charleston Area Regional Transportation Authority in partnership with FUTREX Inc., the firm that is developing System 21 technology—a modular urban transit system that snaps together and resembles a monorail. The concept of System 21 is a single triangular beam elevated guideway with side-mounted (cantilevered), small vehicles that are operated automatically. Vehicles are 28 feet long, passenger load is 24 seated and 28 standing – 52 total. This grade separated, bi-directional, low capital and low operating cost monobeam transit system will be built incrementally, demonstrated and tested, to serve several communities in the Charleston area. The City of Charleston selected System 21 as the solution for a transit system in the Charleston area. This is a congressionally mandated project.

Low-Speed Urban Maglev Technology Development

Project CA-26-7025

Funding: \$7,968,586 *Schedule:* February 2000 – November 2001

Performer: General Atomics Corporation

3550 General Atomics Court, San Diego, California 92121

Investigator: Sam Gurol

Phone: 858.455.4113 *Fax:* 858.455.4341

FTA Project Monitor: Venkat Pindiprolu, TRI *Phone:* 202.366.8061 *Fax:* 202.366.3765

Email: [venkat.pindiprolu@fta.dot.gov] or [sam.gurol@gat.com]

Description: This project supports the efforts of the General Atomics Corporation (GA) to develop low-speed super conducting magnetic levitation (Maglev) technology. The overall objective of the FTA Low-speed Urban Maglev Program is to develop magnetic levitation technology that offers a cost effective, reliable, and environmentally friendly transit option for urban mass transportation in the United States. General Atomics will lead a team of experts to develop low speed magnetic levitation technology solution to urban and regional transportation problems, initially in the Pittsburgh, Pennsylvania area. Maglev is a revolutionary approach. Transit vehicles/trains are supported by magnetic forces without any contact between the wheels and rail surfaces. Section 3014 (c) of the Transportation Equity Act for the 21st Century (TEA-21) created the low speed magnetic levitation technology development project titled the *Advanced Technology Pilot Project*. This project enables FTA to support further development of magnetic levitation technologies to demonstrate energy efficiency, congestion mitigation and

Equipment & Infrastructure – Rail Technology & Systems

safety benefits. The Urban Maglev Program was initiated through a January 29, 1999 Federal Register Notice, to carry out this project and similar low speed maglev projects created under TEA-21 and titled the *Low Speed Project*. The General Atomics project is the first award under the FTA Urban Maglev Program. See progress report on Website [<http://faculty.washington.edu/jbs/itrans/urbmaglev.htm>]. This is a congressionally mandated project.

SERAPHIM Urban Magnetic Levitation Program

Project DC-26-7098

Funding: \$ 1,000,000 *Schedule:* April 2000 – April 2002

Performer: Department of Energy, Office of Heavy Vehicle Technology
1000 Independence Avenue, SW, Washington, DC 20585

Investigator: J. Bruce Kelly *Phone:* 505.845.3384 *Fax:* 505.845.9500

FTA Project Monitor: Venkat Pindiprolu, TRI *Phone:* 202.366.8061 *Fax:* 202.366.3765

Email: [venkat.pindiprolu@fta.dot.gov] or [jbkelle@sandia.gov].

Description: This interagency agreement provides financial support to the Department of Energy's congressionally directed SERAPHIM technology project (SEgmented RAil PHased Induction Motor). Sandia National Laboratory in New Mexico will lead a team of researchers to develop the SERAPHIM linear induction motor (LIM) for use on Maglev transportation system under development by the Colorado Department of Transportation and Colorado Intermountain Fixed Guideway Authority. For Colorado this SERAPHIM linear induction system appears to be the best choice for the curves and grades in a mountain route. The system runs off an electric charge in the track and can handle grades as steep as 8 percent--nearly three times as steep as conventional trains can climb. Although LIMs have been around for a long time, this LIM is a new and improved version of the motor. The SERAPHIM motor was originally designed to launch satellites into orbit. Today, it holds promise for transit applications. The SERAPHIM project is in its beginning stage and much technological work must be accomplished before the technology can be deployed in transit. This SERAPHIM project is identified and sponsored under the FTA Urban Magnetic Levitation Program. To learn more about the new *SERAPHIM Linear Induction Motor*, visit the Website [<http://www.sandia.gov/pulspowr/ppeng/seraphim.html>], or Maglift™ Technology Website [<http://www.nctransportation.com/index.htm>]. This is a congressionally mandated project.

Silverliner IV Propulsion System Upgrade

Project PA-26-7007.01

Funding: \$2,965,477 *Schedule:* September 2000 – July 2002

Performer: Southeastern Pennsylvania Transportation Authority
1234 Market Street, Philadelphia, Pennsylvania 19197

Investigator: Edward Murphy *Phone:* 215.580.8415 *Fax:* 215.580.8418

FTA Project Monitor: Jeffrey, Mora, TRI *Phone:* 202.366.0215 *Fax:* 202.366.3765

Email: [jeffrey.mora@fta.dot.gov]

Equipment & Infrastructure – Rail Technology & Systems

Description: The Southeastern Pennsylvania Transportation Authority (SEPTA) will design and contract for the engineering, manufacture, testing, and installation of a new microprocessor-based propulsion system for each railcar in the Silverliner IV fleet. The new system will retain the existing traction motors, power electronics, and signal inputs. Circuit boards in the propulsion, braking and wheel slip circuits will be replaced. A fault indicator and diagnostic system will be installed. Phase 1 includes prototype testing and evaluation of the new system in one railcar. Phase 2 involves the acquisition of equipment and the installation of the system in 77 cars. Phases 3 and 4 consist of installation of the system in the remaining 154 Silverliner IV cars. All phases of this research project will be documented in a final report. This is a congressionally mandated project.

Fleet Operations

Technology and Service Innovations



**Increasing
efficiency, speed
and throughput of
America's transit
fleets**

Transit Intelligent Transportation Systems (ITS).

Transit ITS is a comprehensive approach to applying advanced technologies to transit to improve customer service and reduce system operating costs. Transit ITS has three components: Metropolitan, Rural, and the Intelligent Vehicle Initiative.

Bus Rapid Transit Initiative (BRT)

The Bus Rapid Transit initiative seeks to demonstrate, in partnership with local entities, how a combination of ITS technology, traffic engineering, advanced technology buses, and urban design enhancements can significantly increase speed and ridership and reduce travel time, operating costs and emissions.

Transit Capacity and Quality of Service

The Transit Capacity and Quality of Service Program conducts research, empirical analysis, simulation model development, and testing activities to improve transit and High Occupancy Vehicle operations, provide consensus design standards, manage travel demand and offer demand and supply parameters for transportation planning.

Mixed Rail Corridor Operations

The demand for commuter rail and light rail transit in transportation corridors where freight rail operates is increasing. The different physical and operational requirements of freight rail and transit rail traffic present challenges and interoperability issues that are addressed in this program area.

Fleet Operations – Transit ITS

Advanced Public Transportation Systems Program -Technical Support

Project MA-26-7007.09

Funding: \$1,275,000

Schedule: August 2000 – August 2002

Performer: Volpe National Transportation Systems Center

Kendall Square, Cambridge, Massachusetts 02142

Investigator: Robert Ow

Phone: 617.494.2411 *Fax:* 617.494.3670

FTA Project Monitor: Ronald Boenau, TRI

Phone: 202.366.0195 *Fax:* 202.366.3765

Email: [ronald.boenau@fta.dot.gov]

Description: This project provides continuing technical support to the FTA Advanced Public Transportation Systems (APTS) Program—the transit component of the Department’s Intelligent Transportation Systems (ITS) Initiative. The program is designed to encourage development and implementation of innovative technologies and strategies to improve all aspects of public transportation and ridership using ITS technologies. APTS, also identified as Transit ITS, incorporates state-of-the-art computer, telecommunications, and navigational technologies to improve the service and safety of public transit. Under this project, technical support will cover development, deployment and management of several key APTS services and components, including: Fleet Management, Traveler Information Systems, Electronic Fare Payment, and Transportation Demand Management. These advanced systems offer great potential for the integration of multiple transit systems operations, information services, and fare payment. This project also provides technical assistance for the continued development of the Transit Vehicle Platform of the Intelligent Vehicle Initiative (IVI); ITS Standards Development; and ITS Rail technology research that encourages rail transit use and more effectively manages rail to bus and other intermodal connectivities. Technical staff support will include reviewing, analyzing and coordinating information in support of the APTS program, as well as updating reference material on the deployment and state-of-the-art in Transit ITS technology. Products and services delivered under this project assist transit agencies in the planning, procurement, and implementation of ITS Transit technologies. This project is funded under the National ITS Program, administered by Department’s ITS Joint Program Office. Website URL [<http://www.ornl.gov/fta/showcase>]

Fare Collection Oversight Program

Project MA-90-7021

Funding: \$200,000

Schedule: July 2000 – July 2001

Performer: Harvard Design and Mapping

39 Spinelli Place, Cambridge, Massachusetts 02138

Investigator: Kija Kim

Phone: 617.354.0100 *Fax:* 617.868.6855

FTA Project Monitor: Helen Tann, TRI

Phone: 202.366.0207 *Fax:* 202.366.3765

Email: [helen.tann@fta.dot.gov]

Description: The purpose of this project is to develop additional modules for the Fare Revenue Interactive Electronic Workbook (Fare RevIEW)—a software program developed to assist urban transit officials to internally evaluate fare revenue control measures, and reduce the potential for fare revenue loss through theft or employee abuse of the internal processes. This project will address concerns raised by the transit industry during onsite testing of Fare RevIEW Program.

Fleet Operations – Transit ITS

The current Fare RevIEW program applies mainly to transit systems utilizing automated fare collection and ridership data equipment. Many systems with small fleets and delivery services, like demand-responsive mode, do not have the financial resources nor ridership to justify expensive automated equipment like that used in larger transit systems with large fleets. Under this project, modules will be developed that enhance and correct various areas of fiscal management identified as troublesome by the transit industry. Final project deliverables will include (1) refinement, testing and distribution of Fare RevIEW Program via CD-ROM, Internet, training workshops, and other activities, and (2) A Transit Revenue Management Internal Control Manual linked to the format and structure of the computerized Fare RevIEW workbook, suitable to smaller systems. This project is funded under the National ITS Program of the Department's ITS Joint Program Office.

Galveston ITS Demonstration Program

Project TX-26-7009

Funding: \$937,500 *Schedule:* May 2000 – May 2002

Performer: City of Galveston

PO Box 779, Galveston, Texas 77550

Investigator: Brent Riddle *Phone:* 409.797.3564 *Fax:* 409.797.3561

FTA Project Monitor: Terrell Williams, TRI *Phone:* 202.366.0232 *Fax:* 202.366.3765

Email: [terrell.williams@fta.dot.gov]

Description: The City of Galveston, Texas will develop and implement a new regional rail service and ITS traveler information system along the I-45 corridor to help reduce congestion and improve mobility. Heavy traffic volumes in general and during peak tourist season on the I-45 Causeway leading to Galveston Island generated the need for development of alternative means of public transportation to the island, as well as access to the mainland during hurricane season. To accomplish this, the City will purchase rail service on days that the Causeway is operating at heavy traffic levels/congestion, and utilize existing message signs along I-45 to alert motorists of the new regional rail service alternative to the island. By utilizing ITS technologies, the City of Galveston will demonstrate the benefits of integrating sub-regional passenger rail service with Galveston's existing public transportation system, thereby creating an efficient and comprehensive public transportation alternative to the automobile during peak periods of congestions or in the event of a weather emergency. The initial task for this ITS demonstration program includes development of a study design, including the connectivity aspects of the ITS rail project to the mainland regional transportation network (including Houston Metro) and island transportation network. Wherever possible, the project will use the ITS National Architecture as a deployment guide. Operational benefits and cost savings can be gained by using ITS Architecture as a guide. This is a congressionally mandated project.

Fleet Operations – Transit ITS

Gloucester Intelligent Transportation Systems Center

Project MA-26-7064

Funding: \$250,000

Schedule: January 2000 – February 2002

Performer: Massachusetts Bay Transportation Authority
10 Park Plaza, Boston, Massachusetts 02116

Investigator: Jim Burke, MBTA

Phone: 617.222.3365 *Fax:* 617.222.4286

FTA Project Monitor: Judy Molloy, TRO1

Phone: 617.494.3488 *Fax:* 617.494.2865

Email: [judy.molloy@fta.dot.gov]

Description: The Massachusetts Bay Transportation Authority (MBTA) in cooperation with the City of Gloucester and the Cape Ann Transit Authority will contract for professional services to undertake a feasibility analysis of the existing Gloucester Commuter Rail Station. Work will be undertaken (1) to determine site conditions/environmental analysis, and (2) to complete an adequate level of design for a construction estimate. The project scope will include: acquisition of a privately owned parcel of land across from the existing station platform and construction of a new low-level boarding platform and a new ADA-compliant accessible boarding platform; construction of an at-grade parking lot; ADA compliant pedestrian access from new parking lot to boarding platforms; installation of track and signal modifications; and application of ITS technology which includes the installation of a new train approach warning system that will be integrated with passenger communication systems to create a centralized patron information center located at the center of the platform. This new system will use a modified platform sign structure and will include the following items: system route maps (spider diagram); LED information signs; strobe train approach warning lights; speakers for verbal messaging; police call back boxes; pay telephone and TTY. This is a congressionally mandated project.

Independent Transportation Network

Project ME-26-7001

Funding: \$494,245

Schedule: March 2000 – March 2002

Performer: Independent Transportation Network

309 Cumberland Avenue, Portland, Maine 04101

Investigator: Katherine Freund

Phone: 207.854.0505 *Fax:* 207.854.1026

FTA Project Monitor: Stewart McKeown, TRI

Phone: 202.366.0244 *Fax:* 202.366.3765

Email: [stewart.mckeown@fta.dot.gov]

Description: This project enables the Independent Transportation Network to complete the deployment of the innovative Independent Transportation Network (ITN) in the Portland, Maine area. ITN is designed to be a financially self-sufficient transportation program, for the provision of transportation services for elderly citizens who can no longer safely drive their own automobiles. Designed to serve as a national model for communities planning for the specialized transportation needs of elderly citizens, ITN uses innovative methods to provide transportation services for elderly persons, including standard sedans and unique payment plans. In addition, the national program uses integrated computerized management systems with ITS technologies to provide safer, more efficient and accessible transportation services that can be easily replicated in communities across the nation. The program uses demand responsive automobiles

Fleet Operations – Transit ITS

to match the convenience of a personal vehicle, and offers several non-traditional payment methods. ITN uses automobiles and both paid and volunteer drivers to provide door-to-door service, seven days a week, 24 hours a day. With a cashless, pre-paid account system, seniors pay for their rides by the mile, earning discounts for advance planning and ridesharing. Community programs like the Adult Child Payment Program, Ride & Shop, Healthy Miles, Ride Services, and Car Trade not only help seniors pay for their rides, they connect the community in a web of support for mobility as a common good. ITN Website [<http://www.itninc.org/>]. This is a congressionally mandated project.

Integrated Traffic Management System - Columbus, Ohio

Project OH-26-7004

Funding: \$791,469 *Schedule:* September 2000 - December 2002

Performer/Recipient: Central Ohio Transit Authority
1600 McKinley Avenue, Columbus, Ohio 43222

Principal Investigator: Khaled Shammout *Phone:* 614.275.5837 *Fax:* 614.275.5933

FTA Project Monitor: Brian Cronin, TRI *Phone:* 202.366.8841 *Fax:* 202.366.3765

Email: [brian.cronin@fta.dot.gov]

Description: When Intelligent Transportation Systems (ITS) technologies are deployed in an integrated management approach and effectively linked to broader information systems environment of an agency, they create a powerful set of tools. Together ITS technologies make up for more than the sum of their parts. The purpose of this project is to integrate traffic signal prioritization, transit management, and incident management systems in the Columbus, Ohio metropolitan area. The project includes traffic signal priority systems on one corridor, and real-time traveler information systems on the downtown link and hotel circulator routes. The systems will be integrated with an automatic vehicle locator (AVL) system. This project is funded under the National ITS Program, administered by Department's ITS Joint Program Office.

ITS Advanced Vehicle Locator & Traveler Information System

Project MA-26-7056

Funding: \$395,735 *Schedule:* October 1999 - May 2001

Performer: Montachusets Regional Transit Authority
1427 Water Street, Fitchburg, Massachusetts 01420

Investigator: Elizabeth M. Falk *Phone:* 978.345.7711 *Fax:* 978.345.9867

FTA Project Monitor: William Wiggins, TRI *Phone:* 202.366.1077 *Fax:* 202.366.3765

Email: [William.wiggins@fta.dot.gov]

Description: This project enables the Montachusets Regional Transit Authority (RTA) to increase the quality and capacity of existing transit services throughout the RTA service area and beyond. To do this, RTA intends to enhance existing transit services by the addition of technology: (1) a Global Positioning System/Automated Vehicle Locator (AVL) and GIS mapping technologies to better track and deploy transit vehicles; and (2) Traveler Information System. The AVL system will be designed for integration with existing fleet operations and future regional ITS Architecture plans. These technologies will be supported by an updated

Fleet Operations – Transit ITS

communications infrastructure. The first phase of this project includes a needs assessment study. The second phase focuses on the design and deployment of ITS technologies. Currently, RTA uses a computerized booking system and a computer-aided dispatching (CAD) system to manage, schedule, and route demand responsive trips--three to four thousand daily in 17 communities in North Central Massachusetts. Trips are booked up to 24 hours in advance and manually assigned to drivers 12 hours ahead. By deploying AVL system and GIS mapping technologies, RTA will integrate and better plan, manage, schedule and increase these trips without increasing the number of vehicles or drivers. This project outcome is expected to increase passenger loads, decrease headways, and improve transit safety and operating efficiency. This is a congressionally mandated project.

ITS Location Referencing Guidebook

Project NJ-26-7044

Funding: \$140,000 *Schedule:* September 2000 - December 2001

Performer: Transit Standards Consortium
20 Chestnut Street, Suite 2, Tenafly, New Jersey 07670

Investigator: Richard Cox *Phone:* 724.772.4013 *Fax:* 724.776.0243

FTA Project Monitor: Brian Cronin, TRI *Phone:* 202.366.8841 *Fax:* 202.366.3765

Email: [brian.cronin@fta.dot.gov]

Description: Location referencing is a method used to tell someone where something is located, by referencing it to some other commonly known location. There are many ways to do this--location referencing methods. This is a multi-phase project to develop a guidebook on location referencing standards for Intelligent Transportation Systems. The Transit Standards Consortium will develop a Location Referencing Guidebook that will assist transit operators in implementing interoperable ITS and operational systems that require the exchange of spatial data. The first phase of program activities include a requirements analysis, and white papers on the scope of spatial data applications in transit and on the issues related to existing and emerging spatial data interoperability. The second phase of the program will include the actual development of the Location Referencing Guidebook, addressing issues defined in Phase I. When completed, the content of this guidebook will ensure that customers and operators receive the most accurate information available without propagating errors or requiring costly manual translations of location data sets. The guidebook will have the endorsement of the vendor and user communities. This project is funded under the National ITS Program, administered by Department's ITS Joint Program Office.

ITS National Architecture Oversight & Technical Assistance

Project NJ-26-7005

Funding: \$ 338,666 *Schedule:* April 2000 – December 2001

Performer: Palisades Consulting Inc.
24 West Railroad Avenue, Suite 161, Tenafly, New Jersey 07670

Investigator: Eva Lerner Lam *Phone:* 201.567.0088 *Fax:* 201.567.8066

FTA Project Monitor: Brian Cronin, TRI *Phone:* 202.366.8841 *Fax:* 202.366.3765

Email: [brian.cronin@fta.dot.gov]

Fleet Operations – Transit ITS

Description: This project provides oversight and technical assistance to transit agencies implementing Intelligent Transportation Systems (ITS). It includes contractor oversight support of the National ITS Architecture Consistency requirements of TEA-21. Oversight contractor will evaluate compliance with respect to the TEA-21 requirements for National ITS Architecture Consistency, and will assist “at-risk” or non-compliant grantees to become compliant with these requirements. The project is part of a multi-year program, which includes training in the National ITS Architecture requirements provided by the Department of Transportation. The National ITS Architecture provides a common framework for planning, defining, and integrating intelligent transportation systems. This project is funded under the National ITS Program, administered by Department’s ITS Joint Program Office.

ITS National Architecture Oversight & Technical Assistance

Project OH-26-7011

Funding: \$ 338,666 *Schedule:* April 2000 – December 2001

Performer: Battelle Memorial Institute Columbus Laboratories
505 King Avenue, Columbus, Ohio 43201

Principal Investigator: David Williams *Phone:* 614.424.3407 *Fax:* 614.424.5069

FTA Project Monitor: Brian Cronin *Phone:* 202.366.8841 *Fax:* 202.366.3765

Email: [brian.cronin@fta.dot.gov]

Description: This project provides oversight and technical assistance to transit agencies implementing ITS technologies. It includes contractor oversight support of the National ITS Architecture Consistency requirements. Oversight contractor will evaluate compliance with respect to the TEA-21 requirements for National ITS Architecture Consistency, and will assist “at-risk” or non-compliant grantees to become compliant with requirements. The project is part of a multi-year program, which includes training in the National ITS Architecture requirements and support in ITS architecture training provided by the Department of Transportation. This project is funded under the National ITS Program, administered by Department’s ITS Joint Program Office.

ITS National Architecture Oversight & Technical Assistance

Project VA-26-7024

Funding: \$ 338,666 *Schedule:* April. 2000 - December 2001

Performer: Booz, Allen & Hamilton, Inc.
8283 Greensboro Drive, 3rd Floor, McLean, Virginia 22102-3838

Principal Investigator: Donald Schneck *Phone:* 703.902.5472 *Fax:* 703.902.3617

FTA Project Monitor: Brian Cronin, TRI *Phone:* 202.366.8841 *Fax:* 202.366.3765

Email: [brian.cronin@fta.dot.gov]

Description: This project provides management oversight and technical assistance to transit agencies implementing Intelligent Transportation Systems (ITS). It includes contractor oversight support of the National ITS Architecture Consistency requirements of TEA-21.

Fleet Operations – Transit ITS

Oversight contractor will evaluate compliance with respect to the TEA-21 requirements for National ITS Architecture Consistency, and will assist “at-risk” or non-compliant grantees to become compliant with these requirements. The project is part of a multi-year program, which includes training in the National ITS Architecture requirements and support for ITS architecture training provided by the Department of Transportation. This project is funded under the National ITS Program, administered by Department’s ITS Joint Program Office.

ITS National Architecture Oversight of Salt Lake City Winter Olympics

Project VA-26-7024.02

Funding: \$100,000 *Schedule:* April 2000 – February 2002

Performer: Booz, Allen & Hamilton, Inc.

8283 Greensboro Drive, 3rd Floor, McLean, Virginia 22102-3838

Principal Investigator: Donald Schneck *Phone:* 703.902.5472 *Fax:* 703.902.3617

FTA Project Monitor: Brian Cronin, TRI *Phone:* 202.366.8841 *Fax:* 202.366.3765

Email: [brian.cronin@fta.dot.gov]

Description: Salt Lake City, Utah is preparing to host the world for the 2002 Winter Olympic Games. The Utah Transit Authority is focusing on implementing Intelligent Transportation Systems (ITS) to integrate and enhance delivery of public transportation services to accommodate the wave of international guests at the 2002 winter games. This project provides for contractor oversight activities relating to the deployment and integration of ITS systems at the 2002 Winter Olympic Games. The contractor will support the efforts of FTA and monitor the progress of the Salt Lake City Olympic Committee and the Utah Transit Authority in planning transportation enhancements for the 2002 winter games. Specific monitoring and assistance is planned for the shared-track rail initiative and the bus-rail ITS integration project. This project is funded under the National ITS Program, administered by Department’s ITS Joint Program Office.

ITS Transit Standards Education & Outreach

Project NJ-26-7043

Funding: \$315,801 *Schedule:* September 2000 – December 2001

Performer: Transit Standards Consortium

20 Chestnut Street, Suite 2, Tenafly, New Jersey 07670

Investigator: Richard Cox *Phone:* 724.772.4013 *Fax:* 724.776.0243

FTA Project Monitor: Brian Cronin, TRI *Phone:* 202.366.8841 *Fax:* 202.366.3765

Email: [brian.cronin@fta.dot.gov]

Description: The U.S. DOT has sponsored an extensive Intelligent Transportation Systems (ITS) standards outreach and training program to promote awareness and usage of ITS transit standards, including Transit Communication Interface Profiles (TCIP). The purpose of this project is to assist the Transit Standards Consortium (TSC) in the development of three training courses for transit ITS standards. The three training courses and training materials will be based on transit vehicle area networks, incorporating TCIP into legacy systems, and specifying ITS standards in procurement documents. Other activities include development of a detailed plan for training course objectives and delivery schedule, as well as walk-through component for each

Fleet Operations – Transit ITS

course. This project supports outreach and educational activities to ensure that transit ITS projects are compatible with the national architecture requirements. ITS standards define how various system technologies and components interconnect and interact within an overall framework (architecture). This project is funded under the National ITS Program, administered by Department's ITS Joint Program Office.

ITS Transit Technical Assistance

Project OH-26-7005

Funding: \$251,800 *Schedule:* September 2000 - December 2001

Performer: Battelle Memorial Institute Columbus Laboratories
505 King Avenue, Columbus, Ohio 43201

Principal Investigator: David Williams *Phone:* 614.424.3407 *Fax:* 614.424.5069

FTA Project Monitor: Brian Cronin *Phone:* 202.366.8841 *Fax:* 202.366.3765

Email: [brian.cronin@fta.dot.gov]

Description: This project provides continuing technical assistance to transit agencies for the planning, deployment, and procurement of transit intelligent transportation systems. Technical assistance activities will be based on agency needs related to the National ITS Architecture or Regional ITS Architecture. The contractor will provide concept papers on the findings and feedback from the technical assistance activities. A final report will be developed summarizing the activities conducted under the program. This project is funded under the National ITS Program, administered by Department's ITS Joint Program Office.

Regional Transportation Commission ITS Program

Project NV-26-7005

Funding: \$1,250,000 *Schedule:* September 2000 – July 2002

Performer: Regional Transportation Commission of Washoe County
2050 Villanova Drive, PO Box 30002, Reno, Nevada 89520-3002

Investigator: David Jickling *Phone:* 775.348.0400 *Fax:* 775.324.3503

FTA Project Monitor: Terrell Williams, TRI *Phone:* 202.366.0232 *Fax:* 202.366.3765

Email: [terrell.Williams@fta.dot.gov]

Description: Under this multi-year project, the Regional Transportation Commission (RTC) will employ Intelligent Transportation Systems (ITS) technologies to improve the comfort, safety, service quality, and cost effectiveness of both fixed-route bus and paratransit services. To do this, RTC will procure and install ITS technologies to existing fixed-route and paratransit fleet, including a Global Positioning System-based Automatic Vehicle Locator (AVL) system to better track and deploy transit vehicles. ITS is also known as Advanced Public Transportation Systems (APTS). A key component of APTS is the ability to provide automated vehicle location data for Citifare and CitiLift vehicles using GPS, linked through existing radio communications. This allows RTC to accurately track the location of every vehicle in its Citifare and CitiLift systems, including support vehicles. The ITS project will be coordinated with the Nevada DOT project to install dynamic message signs along the Reno freeways and also with a project to upgrade the

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traffic signal system. Various ITS technologies to be evaluated, in addition to AVL, include automatic passenger counters, smart cards, computer-aided dispatching, transit signal priority, real-time traveler information at bus stops and interactive ridesharing. This project will follow the ITS National Architecture requirements and use existing ITS standards. This is a congressionally mandated project.

Risk Assessment Study of Transportation Services at Summer Olympic Games

Project VA-26-7024.01

Funding: \$63,200 *Schedule:* August 2000 – January 2001

Performer: Booz, Allen & Hamilton, Inc.

8283 Greensboro Drive, 3rd Floor, McLean, Virginia 22102-3838

Investigator: Donald Schneck *Phone:* 703.902.5472 *Fax:* 703.902.3617

FTA Project Monitor: Brian Cronin, TRI *Phone:* 202.366.8841 *Fax:* 202.366.3765

Email: [brian.cronin@fta.dot.gov]

Description: This project provided for a transportation risk assessment study of the public transportation services at the 2000 Summer Olympic Games in Sydney, Australia. The purpose of the assessment was to gain a better understanding of transportation system issues and operations during the 2000 Summer Olympic Games and to transfer that learning to the transportation system planning for the 2002 Winter Olympics. The study identified issues and risks to be addressed by both the Utah Transit Authority and Salt Lake City Olympic Committee, as they prepare to host the world for the 2002 Winter Olympic Games in Salt Lake City. The research team completed a final report on the basic issues and operations of the transportation system, including the impact of intelligent transportation systems on transportation flow during the Summer Olympic Games. The report also provided a technical analysis of the major transportation risks that could be expected in Salt Lake City. This project is funded under the National ITS Program, administered by Department's ITS Joint Program Office.

Traveler Information Systems ADA Guidebook

Project VA-26-7026

Funding: \$180,000 *Schedule:* September 2000 – December 2001

Performer: Booz, Allen & Hamilton, Inc.

8283 Greensboro Drive, 3rd Floor, McLean, Virginia 22102-3838

Investigator: John Lovegrove *Phone:* 703.902.5606 *Fax:* 703-902-3617

FTA Project Monitor: Brian Cronin, TRI *Phone:* 202.366.8841 *Fax:* 202.366.3765

Email: [brian.cronin@fta.dot.gov]

Description: One of the most widely implemented ITS technologies in public transit today is the traveler information system. Traveler information system deployments have expanded from 49 operational systems in 1996 to 102 systems in 1999 (over 100 percent increase). This project supports research to develop a guidebook for advanced traveler information systems appropriate for persons with disabilities. The research team will perform a human factors assessment of bus signage in terms of meeting the requirements of the Americans With Disability Act (ADA). The project will be based on research learned in an earlier project, the *Bus Signage Guidelines for Persons with Visual Impairment*, and will include a literature review, telephone interviews, and a

Fleet Operations – Transit ITS

human factors study on the lighting and reactions to various types of bus signage. The project will conclude with recommended practices and a set of guidelines for the transit industry in designing and installing state-of-the-art traveler information systems. This project is funded under the National ITS Program, administered by Department's ITS Joint Program Office.

Best Practices & Planning Guidebook for Rural ITS Applications

Project MA-26-7025

Funding: \$200,000 *Schedule:* April 2000 – December 2001

Performer: Harvard Design & Mapping Company

30 Spinelli Place, Cambridge, Massachusetts 02138

Investigator: Thomas N. Harvey *Phone:* 978.371.0928 *Fax:* 978.369.1935

FTA Project Monitor: William Wiggins, TRI *Phone:* 202.366.1077 *Fax:* 202.366.3765

Email: [William.wiggins@fta.dot.gov]

Description: This research project will identify and build on existing best practices and develop a practical guidebook for development and deployment of Intelligent Transportation Systems (ITS) solutions for rural public transit in nonurban areas around the country. The planning guidebook will be designed as a single resource guide for ITS technology applications in rural public transit. It will serve both as an ITS resource guide for rural transit/human service decision makers, and a technical guide for developing Rural ITS deployment plans. The project includes matching ITS technology applications with the needs of transit providers, social service agencies and clients, and looking at how operations, institutions, and technology factor into the delivery of rural transit service, national welfare mobility, and health and human services coordination. This best practices guidebook covers all the major functional areas related to ITS applications in rural public transportation. The guidebook encourages service coordination, maintains a focus on ITS deployment, and ensures that ITS is intermodal. This project is coordinated with state DOTs, transit operators, regional planning organizations, and others. The project is funded under the National ITS Program, administered by the Department's ITS Joint Program Office.

Rear Impact Collision Warning System for Transit Buses

Project MI-26-7003

Funding: \$750,000 *Schedule:* July 2000 - December 2002

Performer: Ann Arbor Transportation Authority

2700 S. Industrial Highway, Ann Arbor, Michigan 48104

Investigator: Greg Cook *Phone:* 734.677.3902 *Fax:* 734.973.6338

FTA Project Monitor: Brian Cronin, TRI *Phone:* 202.366.8841 *Fax:* 202.366.3765

Email: [brian.cronin@fta.dot.gov]

Description: One of the most frequent type of accident in transit bus operations is when a vehicle collides with a bus from behind. Rear-end collisions comprise about 23 percent of all police reported crashes in the U.S. This crash avoidance project is a component of the Department's Intelligent Vehicle Initiative (IVI) Program and addresses one of the top three classes of transit bus collisions, rear end collision. The project aims to develop advanced safety systems for transit buses to help drivers operate vehicles more safely and effectively. Under this project, Ann Arbor Transportation Authority will develop performance specifications for a rear impact collision warning system—a warning system that will alert drivers following a bus of an

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impending hazardous condition. The performance specification will define system requirements and will be based on accident analysis, functional requirements development, and real world field testing. Crash avoidance systems technology, like this one, alleviate various crash problems and represent a priority within the IVI portion of the National ITS research program. The IVI program was launched in 1997 to research the ability of technology to help drivers operate vehicles more safely and efficiently. It is a multi-year national research effort to develop safety-oriented advanced vehicle systems, integrate them into vehicles and appropriate infrastructure, and evaluate their performance in real-world conditions. This project is funded under the National ITS Program, administered by Department's ITS Joint Program Office.

Transit IVI Program Technical Support

Project MA-26-7007.09

Funding: \$100,000 *Schedule: August 2000 – December 2001*

Performer: Volpe National Transportation Systems Center

Kendall Square, Cambridge, Massachusetts 02142

Investigator: Michael Jacobs

Phone: 617.494.2582 Fax: 617.494.3260

FTA Project Monitor: Brian Cronin, TRI

Phone: 202.366.8841 Fax: 202.366.3765

Email: [brian.cronin@fta.dot.gov]

Description: Through the National Intelligent Vehicle Initiative (IVI), the U.S. Department of Transportation (DOT) intends to reduce vehicle crashes by helping drivers avoid hazardous mistakes. Under this project, the Volpe Center will continue to provide technical support to the development of the Transit IVI Program. Technical support includes development and distribution of a quarterly newsletter on the status of Transit IVI research programs. The project also includes support for an analysis of the human factors concerns of Transit IVI warning systems, and an analysis of the transfer of systems from bus fleets to light rail vehicles. Transit IVI is designed to rapidly develop and deploy advanced safety systems that will help bus drivers operate buses and demand response vehicles more safely and efficiently. This project is funded under the National ITS Program, administered by Department's ITS Joint Program Office.



Bus Rapid Transit

Federal Transit Administration (FTA) has embarked on a **new program** to research, demonstrate and deploy efficient fast bus service—the BRT Demonstration Program or Bus Rapid Transit.

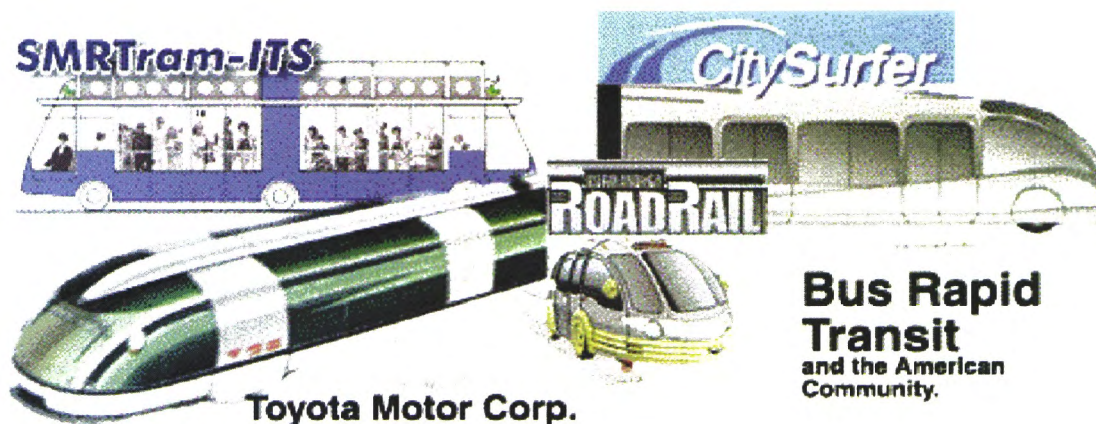
BRT – a flexible form of rapid transit that combines stations, vehicles, services, exclusive lanes and ITS technologies into an integrated system appropriate to the market it serves and its physical environment. BRT demonstrates an effective lower cost alternative to expensive new rail transit.

BRT established and funded in 1998 features:

- *Exclusive Lanes* – reduce congestion delay
- *Traffic Signal Priority* – reduce signal delay
- *Low Floor Bus & High Boarding Platform* – reduce boarding delay
- *Pre-Paid/Electronic Fare Payment* – reduce fare collection delay
- *Limited Stops* – to increase average speed.

BRT Demonstration Sites—Boston, MA; Charlotte, NC; Cleveland, OH; Dulles Corridor, VA; Eugene, OR; Hartford, CT; Honolulu, HI; Los Angeles, CA; Miami, FL; San Juan, PR; and Santa Clara, CA. [[Bus Rapid Transit Home Page](#)]

2001 Award Winners



[<http://brt.volpe.dot.gov/>]

Fleet Operations - Bus Rapid Transit

Bus Rapid Transit Program -Evaluation of LYNX Project

Project FL-26-7020

Funding: \$100,000 *Schedule:* September 2000 – September 2001

Performer: Florida Department of Transportation

605 Suwannee Street, Tallahassee, Florida 32399-4520

Investigator: Tara Bartee

Phone: 850.414.4520

FTA Project Monitor: Helen Tann, TRI

Phone: 202.366.0207 *Fax:* 202.366.3765

Email: [helen.tann@fta.dot.gov]

Description: The Florida Department of Transportation (DOT) is calling upon the Center for Urban Transportation Research (CUTR) of the University of South Florida to evaluate its new bus rapid transit project known as LYMMO. CUTR will conduct research to provide an objective evaluation of the (1) performance of the new, exclusive-lane bus rapid transit service known as LYMMO, and (2) realization of community goals since its inception. The Center will document the historical, organizational, and technological aspects of the project, and evaluate LYMMO in terms of customer service, technology, finance, and effectiveness in meeting or exceeding original objectives. Research results will be distributed to the transit industry. The Central Florida Regional Transportation Authority is known as LYNX. The Downtown Development Board, in partnership with the City of Orlando and LYNX, instituted this new exclusive bus lane service known as LYMMO. This service aims to provide a bus rapid transit application to accomplish a number of public purposes, including--downtown economic development, improved mobility, parking mitigation and a more friendly and aesthetic pedestrian/transit environment.

Bus Rapid Transit Program Evaluation Support

Project PA-26-7010

Funding: \$150,000 *Schedule:* October 1999 - 2001

Performer: Milligan & Company, LLC

105-107 North 22nd Street, Philadelphia, Pennsylvania 19103

Investigator: James Buckley

Phone: 410.732.4626

FTA Project Monitor: Stewart McKeown, TRI *Phone:* 202.366.0244 *Fax:* 202.366.3765

Email: [stewart.mckeown@fta.dot.gov]

Description: This project supports the evaluation of the Bus Rapid Transit (BRT) demonstration projects, including the ten national demonstration sites selected to participate in the FTA Bus Rapid Transit Program, and other BRT projects that may develop from cities not initially selected as a BRT demonstration site. The BRT Program is new program designed to research, demonstrate and introduce efficient and fast bus service to American cities by supporting the implementation and operation of BRT at a number of competitively selected sites. In order to do this and to gain maximum benefit in terms of transferable knowledge and experience gained from these demonstrations, a professional and experienced team is needed to conduct the BRT evaluations. Under this project, each selected BRT demonstration project will be professionally evaluated in terms of significant issues associated with the implementation and operation of bus rapid transit.

Fleet Operations - Bus Rapid Transit

Bus Rapid Transit Simulation & Evaluation Tools

Project CA-26-7020

Funding: \$200,000 *Schedule:* March 2000 – June 2001

Performer: California Partners for Advanced Transit and Highways (PATH)
1357 South 46th Street, Richmond Field Station, Bldg. 452
Richmond, California 94804-4648

Investigator: Jim Misener *Phone:* 510.231.5651 *Fax:* 510.231.9565

FTA Project Monitor: Stewart McKeown, TRI *Phone:* 202.366.0244 *Fax:* 202.366.3765

Email: [stewart.mckeown@fta.dot.gov]

Description: Bus Rapid Transit (BRT) is viewed as an ideal setting for application of advancements in intelligent transportation systems (ITS), bus vehicle technology, and other customer service innovations. Integration of these technological and operational innovations improve transit service and help attract commuters away from single occupancy vehicles to public transit. The objective of this project is to provide FTA project managers and local decision-makers with a rigorous BRT evaluation methodology, and a general purpose BRT simulator/communication tool. The project will develop a simulation and visualization tool capable of assessing and describing the benefits and viability of local BRT operational concepts in a virtual environment. In addition, the project will provide example applications of BRT concepts and document these applications in a “cookbook” type of format. A Los Angeles-based siting will be animated to illustrate the end-to-end process that Caltrans is developing. The project allows for the widest dissemination of the methodology to community practitioners. Project deliverables include a visualization tool for local decision makers; interfaces to conventional traffic modeling and planning tools; analytical tools for BRT concept developers and researchers; and short-term results for stakeholders.

Bus Rapid Transit Technical Assistance – Connecticut

Project CT-26-7001

Funding: \$50,000 *Schedule:* September 2000 – July 2001

Performer: Connecticut Department of Transportation
2800 Berlin Turnpike, PO Box 31746, Newington, Connecticut 06131-7546

Investigator: Sandra Bartenstein *Phone:* 860.594.2847 *Fax:* 860.594.2848

FTA Project Monitor: Charlene Wilder, TRI *Phone:* 202.366.1077 *Fax:* 202.366.3765

Email: [Charlene.wilder@fta.dot.gov]

Description: The FTA Bus Rapid Transit (BRT) Demonstration Program provides technical assistance supporting the development, implementation, and marketing of BRT innovations in American cities. For this purpose, the BRT *Consortium* (17 participants) was organized by FTA to be the focal point for technical assistance to program participants. The Connecticut Department of Transportation (DOT) has been selected as one of the ten national demonstration sites for the FTA BRT Demonstration Program. Under this project, the Connecticut DOT personnel will attend and participate in BRT Consortium specialty workshops, peer-to-peer

Fleet Operations - Bus Rapid Transit

program, technical committees, and other knowledge and skills building activities. BRT Consortium activities are designed to bring together demonstration site representatives, including planners and operations managers from transit agencies across the nation to discuss and exchange ideas, share common concerns and experiences relating to BRT issues and concept development. Overall, the Connecticut BRT project will demonstrate how combining planning and technological devices allows buses to operate with the speed, reliability, and efficiency of light rail vehicles at a fraction of the cost. Connecticut DOT has proposed a nine-mile, 12 station exclusive busway to be built on active and inactive rail right-of-way. By participating in BRT Consortium activities, the participants will gain insight on further planning and development of its BRT demonstration project.

Bus Rapid Transit Technical Assistance – Puerto Rico

Project PR-26-7001

Funding: \$50,000 *Schedule:* September 1999 – September 2000

Performer: Puerto Rico Highway & Transportation Authority
PO Box 41269, San Juan, Puerto Rico 00940-3909

Investigator: Freya Toledo *Phone:* 787.723.3760 *Fax:* 787.724.3750

FTA Project Monitor: Helen Tann, TRI *Phone:* 202.366.0207 *Fax:* 202.366.3765

Email: [helen.tann@fta.dot.gov]

Description: The Puerto Rico Highway & Transportation Authority (PRHTA) has been selected as one of the ten national demonstration sites for the FTA Bus Rapid Transit (BRT) Demonstration Program. This project provides technical assistance for PRHTA personnel to attend and participate in BRT Consortium specialty workshops, peer-to-peer program, technical committees, and other knowledge and skills building activities. It also supports BRT data collection and project evaluation studies. BRT Consortium activities are designed to bring together demonstration site representatives, including planners and operations managers from transit agencies across the nation to discuss and exchange ideas, share common concerns and experiences relating to BRT issues and concept development. For the BRT Demonstration Project, the PRHTA proposes the development of the Tren Urbano Plaza site at the terminus of the Rio Hondo Connector in the Municipality of Bayamon. Plans are underway to provide fast bus shuttle service on a new 2.5 mile Rio Hondo Connector linking the Bayamon Tren Urbano Station and the Rio Hondo Tren Urbano Plaza, which will serve as a prototype transit center with parking, kiss-and-ride facilities, as well as other convenient and commercial services. A range of technologies is under consideration as part of the project to improve travel times and service reliability: automated vehicle locator, traffic signal priority system, variable message signs, passenger information, and an integrated fare collection system with Tren Urbano.

Fleet Operations - Bus Rapid Transit

Visual Preference Survey of Bus Riders Perceptions of Personal Safety

Project MI-26-7004

Funding: \$45,000

Schedule: September 2000 – September 2001

Performer: Ann Arbor Transportation Authority

2700 South Industrial Highway, Ann Arbor, Michigan 48104

Investigator: Christopher White

Phone: 734.973.7500 *Fax:* 734.973.6338

FTA Project Monitor: Irving Chambers, TRI *Phone:* 202.366.0238 *Fax:* 202.366.3765

Email: [irving.chambers@fta.dot.gov]

Description: Visual preference surveys are becoming popular in visioning projects, design, and other physical planning activities in which intensive public involvement is desired. This project supports the continuing efforts of Ann Arbor Transportation Authority to conduct a visual preference survey of bus riders' perceptions of their personal safety with regard to crime. A visual (picture) preference survey will be conducted with focus group discussions related to photographs of buses and bus stops and their relation to perceptions of crime. Although crime cannot be prevented, perceptions of crime can be lessened with an environment that responds to the needs of the human being. The research aims to determine the bus stop and bus designs that would lessen the perception of crime based on the aesthetic or architectural features of the bus stop and bus. The research is based on a field of research called Crime Prevention Through Environmental Design, which studies environments to determine spaces that would make people feel safer. It is intended to increase ridership by creating a safer and more user friendly public transportation environment to which people will gravitate. The project will incorporate citizen input into the planning process, particularly with regard to bus design and enhancements to complement the new Bus Rapid Transit (BRT) system. It intends to improve the riding experience of bus riders, attract non-bus riders to the bus, and to promote a more favorable attitude of the non-bus rider about public transit and bus ridership. Phase One will document the findings of the Visual Preference Survey. Phase Two will develop and administer a worldwide bus and bus stop architectural design competition based on the results of this survey. This project's design competition will give bus manufacturers and transit operators a better understanding of what is expected of them as it relates to meeting the needs of the end-user.

S*pecialized Customer Services** ***Leaving Nobody Behind

The FTA Specialized Customer Services Program explores strategies and provides assistance to meet the needs of customer groups whose very lives are dependent upon obtaining meaningful public transportation services.



Paratransit vehicle picking up customer

Easter Seals Project Action

--Technical assistance and training to improve transit access for persons with disabilities

New Freedom Initiative

-- Piloting new strategies to overcome remaining transportation barriers



Job Access – Welfare to Work Transportation

--Building a new path to economic opportunity for low income persons by providing transportation connections to jobs, training and child care services



Independent Transportation Network

Older Americans and Public Transportation

--Developing new service alternatives for America's growing elderly population

***Meeting the Transportation
Challenges of Older Americans***

Specialized Customer Services

Easter Seals Project ACTION--Accessible Community Transportation in Our Nation Project DC-26-00

Funding: \$3,000,000 *Schedule:* March 2000 – March 2001

Performer: Project ACTION at Easter Seals
700 13th Street, NW, Suite 200, Washington, DC 20005

Investigator: Bryna Helfer *Phone:* 202.347.3066 *Fax:* 202.347.4157

FTA Project Monitor: Elizabeth Solomon, TRI *Phone:* 202.366.0242 *Fax:* 202.366.3765

Email: [elizabeth.solomon@fta.dot.gov]

Description: This project provides ongoing support to Easter Seals for the development and management of a national program—Easter Seals Project ACTION (Accessible Community Transportation in Our Nation). Project ACTION is a Congressionally created national technical assistance program for Americans with disabilities, authorized under the Intermodal Surface Transportation Efficiency Act (ISTEA). Project ACTION promotes cooperation between the disability community and transportation industry to create solutions. This work improves access to transportation for persons with disabilities and provides accurate and practical information to help transportation operators implement the Americans with Disabilities Act (ADA). This project enables Project ACTION to provide transit assistance, conduct local demonstration programs, research, public education, and undertake other activities to help transit providers achieve compliance and understanding of all aspects of ADA. The project also supports outreach and marketing activities, and innovative ways to use technology to improve transportation accessibility. Research will be conducted to determine cost impacts of various types of specialized services and modifications to regular services to meet ADA requirements. Project ACTION maintains a resource center with up-to-date information on transportation accessibility. Website URL: [<http://www.projectaction.org/>]

Hennepin County Community Works Program

Project MN-26-7002.05

Funding: \$1,000,000 *Schedule:* June 2000 – June 2002

Performer: Hennepin County Regional Railroad Authority
300 South Sixth Street, Minneapolis, Minnesota 55487

Investigator: Larry Blackstad *Phone:* 612.348.5859 *Fax:* 612.348.3832

FTA Project Monitor: Stewart McKeown, TRI *Phone:* 202.366.0244 *Fax:* 202.366.3765

Email: [stewart.mckeown@fta.dot.gov]

Description: Hennepin County, the City of Minneapolis, the Minneapolis Park and Recreation Board, the Suburban Hennepin Regional Park District, and the Minneapolis School District have developed an intergovernmental planning framework for infrastructure investment called Hennepin Community Works Program (HCWP). The program is a comprehensive planning tool available to all units of government, designed to assist in the coordination, planning, and

Specialized Customer Services

effective use of multi-jurisdictional transit-related infrastructure and economic investments. Projects are selected that will increase overall mobility and access to employment opportunities, encourage the creation of new jobs through business development, and improve the residential and commercial tax base by enhancing property values. This amendment will assist Hennepin County to continue to develop and apply the information generated through the Hennepin Community Works projects to the development of a model for transit-oriented infrastructure improvements. The model will serve as a guide for other communities in developing solutions to the growing problem of economic deterioration in urban neighborhoods and suburban municipalities. This is a congressionally mandated project.

Job Access & Reverse Commute Evaluation

Project MA-26-7072

Funding: \$150,000

Schedule: January 2000 – January 2001

Performer: Planners Collaborative, Inc.

273 Summer Street, Boston, Massachusetts 02210

FTA Project Monitor: Elizabeth Solomon, TRI *Phone:* 202.366.0242 *Fax:* 202.366.3765

Email: [elizabeth.Solomon@fta.dot.gov]

Description: The purpose of this project is to evaluate the project activities of the Job Access and Reverse Commute (JARC) Grant Program, document the results of the evaluation, and prepare a report for the U.S. Congress. The JARC grant program is designed to assist states and localities in developing new or expanded transportation services that connect welfare recipients, low income and unemployed persons to jobs and other employment related services. Job Access projects are targeted at developing new or expanded transportation services such as shuttles, vanpools, new bus routes, connector services to mass transit, and guaranteed ride home programs for welfare recipients and low income persons. Reverse Commute projects provide transportation services to suburban employment centers from urban, rural and other suburban locations for all populations. Collaborative partnerships are the heart of this program and the key to solving these welfare-to-work transportation challenges. The report is mandated.

Northern Tier Community Transportation Project

Project MA-26-7054

Funding: \$500,000

Schedule: November 1999 – November 2000

Performer: Commonwealth of Massachusetts/Northern Tier

10 Park Plaza, Room 3170, Boston, Massachusetts 02110-3969

Investigator: Joanna Champa

Phone: 617.973.7062 *Fax:* 617.523.6454

FTA Project Monitor: Pauline Dantignac, TRI *Phone:* 202.366.0234 *Fax:* 202.366.3765

Email: [pauline.dantignac@fta.dot.gov]

Specialized Customer Services

Description: Community transportation is the backbone of jobs and economic growth for communities like those in North Central Massachusetts. Many residents depend upon accessible transportation to get to jobs, educational centers, health and social services, and other activities. This project supports the continuing efforts of the Executive Office of Transportation and Construction to enhance community transportation in North Central Massachusetts, locally called the Northern Tier, including the communities of Orange, Athol, and Winchendon along with the more rural areas surrounding these locations. The project provides for the continuation of a Joblinks initiative to demonstrate the viability of a rural transit shuttle system that meets the needs of a low density area with a high percentage of elderly and unemployed residents, low-income households, and low automobile availability. The rural transit shuttle will service the needs of residents in the Northern Tier communities. Joblinks is a federal program that provides assistance to local communities to develop and implement strategies to connect low-income and unemployed people to centers of employment. The Northern Tier Project is one of three national Joblinks projects managed by the Community Transportation Association of America (CTAA). This is a congressionally mandated project.

Policy & Planning

Mobility - Accessibility - Livable Communities



***Transportation Decisionmaking
Consensus Building
Citizen Involvement
Transit Condition & Performance***

Transit policy studies analyze the health of the U.S. transit industry, assess transit investment needs, and help develop national policy. They contribute to reports to the U.S. Congress on the condition and performance of American transit systems and estimates of funding needed to maintain or improve service levels.

New Starts – The FTA Capital Investment Program

-- Funding allocation recommendations made in the “Annual Report on New Starts” to Congress, include funds for construction of new fixed guideway systems or extensions to existing fixed guideway systems such as—light rail, rapid rail, commuter rail, monorail, people movers, busways, or high occupancy vehicle facilities.

Commuter Choice – Tax-Free Benefit Travel to Work Program

--National program to encourage employers to offer employees alternatives to single occupancy vehicle commuting to work, such as—tax-free transit or vanpool passes or vouchers, teleworking, alternative work schedules, bike and walking programs, and guaranteed ride home programs.

New & Innovative Financing Techniques

--Techniques include certificates of participation, cross border leases, domestic leases, joint development, turnkey, and state infrastructure banks.

Building Livable Communities with Transit

--With intelligent land use planning, pedestrian access, urban design, and citizen participation.

Livable Communities

Policy & Planning

Metropolitan/Rural Policy Development

Benefits of Transit Investments

Project MA-26-6004

Funding: \$200,000 *Schedule:* October 2000 – July 2001

Performer: Charles River Associates, Inc.

D-3139, Boston, Massachusetts 02241-3139

Investigator: David Lewis

Phone: 301.565.0391 *Fax:* 301.565.0394

FTA Project Monitor: Paul Marx, TBP

Phone: 202.366.1675 *Fax:* 202.366.7116

Email: [paul.marx@fta.dot.gov]

Description: This is a congressionally mandated study to compare the net benefits of transit New Starts investments (either new, greenfields projects, or new extensions of existing systems) against the benefits of rebuilding or rehabilitating existing infrastructure. The important issue in this “Newbuild versus Rebuild” study is the involvement of older and more complex transit systems with infrastructures that may be 100 years old, e.g., New York, Chicago, and Philadelphia. The study will use a benefits assessment methodology based on a benefits framework for public transit service, which categorizes benefits according to the three public policy roles of transit: basic mobility, congestion relief, and quality of life. The critical question that will be addressed is whether the benefits of New Starts investments can be compared, one-on-one, with the benefits of rebuilding or rehabilitating existing infrastructure. The analysis will take place on two levels: macro level, using aggregate National Transit Data; and micro level, involving discussions with selected older transit systems.

Transit Performance Monitoring System

Project DC-26-6022

Funding: \$200,000 *Schedule:* February 1999 – February 2000

Performer: American Public Transportation Association

1201 New York Avenue, NW, Washington, DC 20005

Investigator: Richard Weaver

Phone: 510.869.2415 *Fax:* 510.287.4777

FTA Project Monitor: Matthew Welbes, TBP

Phone: 202.366.1668 *Fax:* 202.366.7116

Email: [matthew.welbes@fta.dot.gov]

Description: The purpose of this research project is to develop and test the Transit Performance Monitoring System (TPMS), a method for measuring how well transit is performing three principal public policy roles: basic mobility, transit oriented development, and traffic congestion management. To create the TPMS measures, information about passenger travel patterns, transit service quality, and transit costs and benefits will be obtained from various sources, such as onboard passenger surveys, telephone surveys, literature reviews, route level collection of economic data, and other sources. When fully developed, the TPMS will be integrated into the FTA National Transit Database. The goal is to provide information annually on transit user travel and transit service quality from the customers’ perspective. These resources will help assess transit conditions, connections, and transit coverage at both local and national levels.

Policy & Planning

Commuter Choice Initiative Roll-Out – America’s Way to Work

Project DC-26-4003

Funding: \$170,000 *Schedule:* January 2000 – February 2000

Performer: Community Transportation Association of America
1341 G Street, NW, Suite 600, Washington, DC 20005

FTA Project Monitor: Jacqueline Bennett, TOA *Phone:* 202.366.4319 *Fax:* 202.366.3765

Email: [jacqueline.Bennett@fta.dot.gov]

Description: The Commuter Choice Program is a tax free benefits program that offers commuters a real choice about traveling to work. Recent changes to the Internal Revenue Code make it easier for all employers, including the Federal government, to offer public transportation benefits to their employees. This project enabled the Community Transportation Association of America (CTAA) to develop and coordinate the national roll-out of the Commuter Choice Initiative in three selected cities: San Francisco, Chicago, and Atlanta. Planning the national event included management of logistics, development and roll-out of a series of commuter choice promotional activities to explain the value of this commuter tax-free benefits program for companies, employees, and other interested organizations. Outreach programs were designed to dialogue with, and encourage both employees and employers to reap the benefits offered by taking public transportation alternatives to work. U.S. employers spend \$36 billion annually on employee parking. Nearly all those eligible for free parking drive to work alone, and that is the problem. Now commuters have a tax-free benefits program and real choice about traveling to work. Website URL [<http://www.fta.dot.gov/library/policy/cc/fab.htm>]

Policy & Planning

Planning & Project Development

Creating Livable Communities Through Light Rail Transit

Project MO-26-0007

Funding: \$ 296,548 *Schedule:* July 2000 – July 2001

Performer: East-West Gateway Coordinating Council
10 Stadium Plaza, St. Louis, Missouri 63102-1714

Investigator: Royce Bauer *Phone:* 314.421.4220 *Fax:* 314.982.1560

FTA Project Monitor: Mark Bechtel, Region VII *Phone:* 816.329.3937 *Fax:* 816.329.3921

Email: [mark.bechtel@fta.dot.gov]

Description: The Citizens for Modern Transit (CMT) will conduct baseline attitudinal research of the perceptions of St. Louis community residents towards the public transit system, including both MetroLink and the bus system, and the system's ability/connection to develop more livable communities. Currently, the area residents do not see the bus and MetroLink as an integrated transit system with the ability to reshape the region over many years. Under this project, CMT will develop and administer a survey to assess the residents knowledge and perceptions of the linkage between livable communities and transit-oriented development; develop and distribute educational materials; and heighten public awareness of livable communities and the benefits of transit-oriented-developments through targeted public meetings. The attitudinal research will assist in developing a public awareness campaign that ties the transit system together, promotes its connection with better land use decisions, and highlights the benefits of developing livable communities with light rail transit. Research results will be used to engage the public in the merits of an integrated transit system and transit-oriented-developments. The campaign will work on promoting the basics of a transit system, as well as tying into the benefits of developing livable communities with light rail transit.

Evaluation of Day Care Centers at Transit Facilities

Project DC-26-1002

Funding: \$89,000 *Schedule:* June 2000 – December 2001

Performer: National Council of Negro Women, Inc.
633 Pennsylvania Avenue, NW, Washington, DC

Investigator: Jane E. Smith/Fannie Munlin *Phone:* 202.737.0121

FTA Project Monitor: Effie Stallsmith, TPL *Phone:* 202.366.5653 *Fax:* 202.493.2478

Email: [effie.stallsmith@fta.dot.gov]

Description: The objective of this cooperative agreement is to support the efforts of the National Council of Negro Women (Council) to examine FTA-assisted facilities that provide or will provide safe, secure, and transit convenient day care services in designated areas. The project will document best practices and model facilities that provide day care and Head Start services at both fixed guideway transit, bus and intermodal centers. The Council will assess at least six

Policy & Planning

selected FTA sponsored day care centers. This study will focus on factors used to determine day care needs, the barriers to meeting those needs, and factors that influence site selection and partnerships needed for success. The study will also look at various funding and leasing methods; federal, state, and local requirements; public involvement in the planning process; and the impact of these centers on transit ridership. The project outcome will help simplify the expansion and replication of community-sensitive services at transportation centers. The proposed target sites for this day care project are the following: Columbus and Cleveland, Ohio; Baltimore, Maryland; Tucson, Arizona; San Jose and Oakland, California. The study will be conducted through site visits, telephone and website interviews. The Council has been working for more than 25 years to help improve access to day care services for working mothers. The Council sponsors more than ten such facilities locally and works closely with Child Welfare agencies to make sure that safe and affordable day care services are available to all working families.

Implementing TEA-21 Metropolitan & Statewide Planning Provisions

Project DC-26-1003

Funding: \$100,000 *Schedule:* August 2000 – August 2001

Performer: Federal Highway Administration

U.S. Department of Transportation, Washington, DC 20590

FTA Project Monitor: Ken Lord, TPL *Phone:* 202.366.6385 *Fax:* 202.493.2478

Email: [ken.lord@fta.dot.gov]

Description: This intra-agency agreement supports the Department's ongoing efforts in implementing the requirements of TEA-21 Metropolitan and Statewide Planning provisions. The planning provisions of TEA-21 and implementation regulations provide new requirements and opportunities for both streamlining and expanding stakeholder involvement in transportation investment decision-making. Federal efforts currently underway include support for stakeholder analysis and policy-oriented public outreach activities/meetings, which are focused on TEA-21 revisions of key transportation planning factors. Key TEA-21 changes include--strengthened linkages between planning and project development; increased emphasis on environmental justice and attention to Title VI of the Civil Rights Act; and integration of Intelligent Transportation Systems (ITS) strategies into local and state planning processes. This project will assist the federal stewardship role by laying the groundwork and providing MPOs, State DOTs, and transit agencies with the training and technical assistance necessary to meet federal transportation planning requirements. Products from this effort support the joint FTA/FHWA program effort for the development of TEA-21 guidance and outreach activities.

New Starts Annual Report – Technical Support

Project MA-26-1002

Funding: \$75,000 *Schedule:* August 2000 – August 2002

Performer: Harvard Design & Mapping Company

30 Spinelli Place, Cambridge, Massachusetts 02138

Investigator: Judy Lyman *Phone:* 617.354.0100

FTA Project Monitor: Dwayne Weeks, TPL *Phone:* 202.366.5653 *Fax:* 202.493.2478

Email: [dwayne.weeks@fta.dot.gov]

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Description: The objective of this project is to support the Office of Planning in the development of the *Annual Report on New Starts* to the U.S. Congress. The Report to Congress provides the U.S. Department of Transportation's recommendations for allocation of funds to be made available under 49 U.S.C. 5309 (o) (1) for the construction of new fixed guideway systems and/or extensions to existing fixed guideway systems (new starts or major capital investments) for the fiscal year 2002. Under this project, the contractor will continue to perform data entry and quality control for the New Starts database, provide electronic and paper copies of maps of individual New Starts projects digitized in a Transcad compatible GIS system, as well as all project maps, and prepare the New Starts report in a format suitable for electronic publishing on the FTA Internet Home Page.

New Starts Roundtable Support Services

Project MA-26-100.01

Funding: \$75,000

Schedule: October 2000 – October 2002

Performer: Planners Collaborative, Inc.

273 Summer Street, Boston, Massachusetts 02210

FTA Project Monitor: Dwayne Weeks, TPL *Phone:* 202.366.5653 *Fax:* 202.493.2478

Email: [dwayne.weeks@fta.dot.gov]

Description: This project provided for contractor services to support the planning and hosting of the FY 2000 New Starts Roundtables series. The Office of Planning conducts the New Starts Roundtable series to facilitate communication, discussion, and information sharing among the various parties involved in the FTA New Starts Program, namely--FTA Headquarters, FTA Regional Offices, and sponsors of transit projects authorized in TEA-21 for New Starts funding. Support services included the management of logistics, development of Roundtable resources, and drafting of New Starts Roundtable proceedings. This Roundtable activity enabled FTA to clarify and discuss the major issues faced by local transit agencies seeking to qualify for Section 5309 capital funding under the New Starts project development process. At the same time, the Roundtable provided a forum for local agencies to discuss their concerns and to share lessons learned and other information with members. The mission of the New Starts Roundtable includes: strengthening the partnership between FTA and local providers of public transit, providing an ongoing forum for training, information exchange, and open discussion of lessons learned, and soliciting ideas to help improve the planning and project development process for major transit capital projects.

Professional Capacity Building

Attract - Train - Retain a Quality Transit Workforce

T FTA Professional Capacity Building Program assists the transit industry in the development of a highly skilled, multi-disciplinary, and diverse transit workforce for the 21st century--equipped with the knowledge, skills, and abilities required to deploy, operate, and manage the technologically advanced national public transportation network.



National Transit Institute

Train & Retain a Quality Transit Workforce

- New methods and techniques to improve transit workforce performance and increase productivity in the workplace
- Training in Areas related to federal programs and industry needs for federal, state, and local transit employees



Educate & Recruit Future Transit Professionals

- A Vital source of leaders to meet the nation's need for safe, efficient and environmentally sound movement of people and goods



Addressing the Needs of the Transit Industry

- Through innovative Research, Education, and Information Sharing

Transit Cooperative Research Program

Transportation Research Board

American Public Transportation Association

Federal Transit Administration

Professional Capacity Building

National Transit Institute

Project NJ-26-7006

Funding: \$4,000,000 *Schedule:* September 2000 – September 2001

Performer: Rutgers, The State University of New Jersey
120 Albany Street, Suite 705, New Brunswick, New Jersey 08901

Investigator: Paul Larrouse *Phone:* 732.932.1700 *Fax:* 732.932.1707

FTA Project Monitor: Lewis P. Clopton, TRI *Phone:* 202.366.9157 *Fax:* 202.366.3765

Email: [lewis.clopton@fta.dot.gov]

Description: This project provides ongoing support to the National Transit Institute (NTI), established in 1992 at Rutgers The State University of New Jersey, to meet the training and development needs of the transit industry workforce. Its mission is to provide training, education and clearinghouse services in support of public transportation and quality of life in the United States. Under its expanded mission pursuant to TEA-21, NTI provides free health and safety training to transit workers. The institute develops and teaches new and advanced methods and techniques for assuring transit system security and safety, improving workforce performance, and increasing productivity in the workplace. Training is conducted for federal, state and local transit employees in areas related to federal programs and industry needs. Courses are conducted locally at sites nationwide on a broad range of subjects, from transit security and workplace safety, advanced technology and multimodal planning to management development and training effectiveness. This project also supports the annual NTI Transit Trainers Awards Workshop, Transit Academy, Transit Fellows Program, and Clearinghouse activities. It also includes support for cooperative programs with the National Highway Institute on subjects of mutual interest, and dialogue with organized labor relative to worker safety and technical skill development. NTI is a major component of FTA's Professional Capacity Building Program, serving as a major resource to FTA in support of the implementation of regulations and policy initiatives, as well as implementation of new technology. NTI Website URL [<http://www.policy.rutgers.edu/nti>].

Transit Cooperative Research Program

Project DC-26-7106

Funding: \$7,150,000 *Schedule:* September 2000 – September 2001

Performer: National Academy of Sciences, Transportation Research Board
2101 Constitution Avenue, NW, Washington, DC 20418

Manager: Christopher W. Jenks *Phone:* 202.334.3502 *Fax:* 202.334.2006

FTA Project Monitor: Joel Washington, TRI *Phone:* 202.366.5646 *Fax:* 202.366.3765

Email: [joel.washington@fta.dot.gov]

Description: This project provides ongoing support to the Transit Cooperative Research Program (TCRP). The program promotes transit operating effectiveness and efficiency by assisting the industry in developing and applying the latest technology and operating techniques to improve mobility and accessibility. TCRP serves as the principal means by which the transit industry can develop innovative near-term solutions to meet the demands placed on it. The

Professional Capacity Building

program is guided by the TCRP Oversight and Project Selection Committee, representing all aspects of the transit industry. A major focus area of the program is professional capacity building--addressing the needs of the transit workforce through innovative research, education, and information exchange. TCRP products, such as new transit paradigms, transit industry best practices, and new planning and management tools, as well as forums for the exchange of ideas, are being used to develop and equip a quality transit workforce with the resources necessary to deploy, operate, and maintain the newly developed and developing innovative technologies and services. The Transportation Research Board (TRB), which administers the TCRP, maintains a publications list and description of all TCRP projects on its Website at [<http://www4.trb.org/trb/crp.nsf>]. TCRP also conducts the International Transportation Studies Program designed to assist the professional development of transit managers, public officials, and others charged with public transportation responsibilities. This is a congressionally mandated program.

Research problem statements are solicited annually, but may be submitted to the Transportation Research Board (TRB) by anyone at anytime. TRB awards competitive contracts for research and synthesis studies of current best practices. To submit a research problem statement or to request additional information on TCRP, contact *Christopher W. Jenks, Manager, Transit Cooperative Research Program, Transportation Research Board, 2101 Constitution Avenue, NW, Washington, DC 20418. [202.334.3502].* Program information and requests for proposals are available on the TRB Website [<http://www4.nationalacademies.org/trb/crp.nsf>]. The American Public Transportation Association disseminates TCRP products and information on its Website [<http://www.apta.com/tcrp>].

University Transportation Centers Program

Project DC-11-1110

Funding: \$6,000,000

Schedule: September 2000 – September 2001

Performer: Research and Special Programs Administration

U.S. Department of Transportation, Washington, DC 20590

FTA Project Monitor: Lisa Colbert, TRI *Phone:* 202.366.9261 *Fax:* 202.366.3765

Email: [lisa.colbert@fta.dot.gov]

Description. This project provides continued support for the U.S. Department of Transportation's University Transportation Centers Program (Centers). It is the only program in the United States that provides higher education for the next generation of transportation professionals and connects them to career opportunities in the industry. The mission of these 33 University Centers of Excellence is to advance U.S. technology and expertise in the many disciplines comprising transportation through education, research, and technology transfer. The Centers program focuses on the transfer of knowledge relevant to national, state, and local issues, and builds professional capacity in the next generation of transportation professionals. The Centers address transportation management, research and development matters with special emphasis to increasing the number of highly skilled individuals entering the field of transportation. Currently, FTA efforts are broadening the focus of the Centers to better encompass transit industry research needs and to link the program with undergraduate and graduate elements of the other educational institutions, as well as with initiatives in the Department of Transportation.

Professional Capacity Building

Small Business Innovation Research Program

Project MA-26-7065

Funding: \$400,000 *Schedule:* November 1999 – December 2000

Performer: Volpe National Transportation Systems Center

Kendall Square, Cambridge, Massachusetts 02142

Investigator: Joseph Henebury *Phone:* 617.494.2051 *Fax:* 617.494.2370

FTA Project Monitor: Stewart McKeown, TRI *Phone:* 202.366.0244 *Fax:* 202.366.3765

Email: [stewart.mckeown@fta.dot.gov]

Description: The Department's Small Business Innovative Research (SBIR) program seeks to utilize the entrepreneurial initiative of small high technology firms in meeting federal research and development objectives. Annually, the Department solicits research proposals from small businesses that address high priority research needs of its individual agencies and that have potential for commercialization. FTA looks for projects that respond to its transit research needs and that, at the same time, can enhance the innovative capacity and global competitiveness of small high-tech businesses. Projects are selected through a competitive process. The SBIR program has three phases. Phase I projects are designed to determine the feasibility of a particular product or concept and may be funded up to \$100,000 for a performance period up to six months. Phase I research firms are eligible to participate in Phase II based on results of Phase I efforts, potential for commercialization, and availability of appropriated funds to support Phase II. Phase II is the principal research effort designed to develop the product or concept to the point where it is commercially viable. Phase II projects have a period of performance up to 2 years and may have a dollar value of \$500,000. Phase III projects use private sector assistance and funding for pursuing commercial applications of R&D funded in Phases I and II. Overall the program provides FTA with valuable research assistance and stimulates technological innovation and growth of small high-tech research firms. Visit the SBIR Website at [<http://www.volpe.dot.gov/sbir>].

ITS Information Management Training Course

Project NJ-26-7007

Funding: \$ 100,000 *Schedule:* January 2000 – December 2001

Performer: Palisades Consulting Group, Inc.

24 West Railroad Avenue, Suite 161, Tenafly, New Jersey 07670

Investigator: Eva Lerner-Lam *Phone:* 201.567.0088 *Fax:* 201.384.6779

FTA Project Monitor: Helen Tann, TRI *Phone:* 202.366.0207 *Fax:* 202.366.3765

Email: [helen.tann@fta.dot.gov]

Description: The purpose of this project is to develop a training course that will assist the transit industry in developing the knowledge and skills required for information management. Although the focus is on managing Intelligent Transportation Systems (ITS) information, the approach to be taken will consider ITS information management in the context of the total agency information system. Successful implementation of this program will increase grantees' and industry's awareness of the importance of information management, and how the application of advanced technologies and techniques result in safer, integrated, and more efficient transit operations. This is the first phase of a multi-phase program. The project is funded under the National ITS Program, administered by Department's ITS Joint Program Office.

Professional Capacity Building

ITS Professional Capacity Building

Project NJ-26-7042

Funding: \$170,000 *Schedule:* January 2000 – January 2001

Performer: Rutgers, The State University of New Jersey
120 Albany Street, Suite 705, New Brunswick, New Jersey 08901

Investigator: Fred Fuller *Phone:* 732.932.1700 *Fax:* 732.932.1707

FTA Project Monitor: Helen Tann, TRI *Phone:* 202.366.0207 *Fax:* 202.366.3765

Email: [helen.tann@fta.dot.gov]

Description: Changing technology and the increasing demand for a skilled and diverse workforce put a premium on training and education at both the entry level and career development level in the transit industry. The National Transit Institute plays a significant role in support of FTA's Professional Capacity Building Program—a program designed to assist transit professionals in developing the knowledge, skills, and abilities required to deploy, operate and manage ITS projects. The objective of this cooperative agreement is to support the ongoing efforts of the National Transit Institute to meet the training and development needs of transit professionals and practitioners in the application of ITS technologies. The project will examine, update, and revise existing ITS Professional Capacity Building course materials and techniques. Emphasis is on delivering quality training that upgrades the skills and knowledge required of ITS professionals to provide service effectively in the field of transportation. This project fosters and supports the transit component of the Department of Transportation's ITS Professional Capacity Building Program. The project is funded under the National ITS Program, administered by Department's ITS Joint Program Office.

Southeast Asia Trade Mission

Project DC-26-7102

Funding: \$36,000 *Schedule:* February 2000 – July 2000

Performer: U.S. & Foreign Commercial Service – U.S. Department of Commerce
Washington, DC 20230

FTA Project Monitor: Bruce, Robinson, TRI *Phone:* 202.366.4209 *Fax:* 202.366.3765

Email: [bruce.robinson@fta.dot.gov]

Description: The U.S. & Foreign Commercial Service provided support for the FTA Southeast Asia trade mission to Bangkok, Thailand; Singapore; and Kuala Lumpur, Malaysia, which was held from July 19-28, 2000. This support included providing professional working arrangements such as meetings and conferences between members of the delegation and foreign officials, marketing the mission, briefings, site visits and other activities to facilitate the operation of the mission. The goal of the mission was to promote the exports of U.S. transit-related goods and services to these countries by introducing U.S. suppliers to foreign purchasers.

Professional Capacity Building

Training Program for Transit Professionals from Developing Countries

Project MA-26-7070

Funding: \$74,250

Schedule: March 2000 – September 2000

Performer: Boston University

25 Buick Street, Boston, Massachusetts 02215

Investigator: Dr. T.R. Lakshmanan

Phone: 617.353.7551 *Fax:* 617.353.6660

FTA Project Monitor: Bruce, Robinson, TRI *Phone:* 202.366.4209 *Fax:* 202.366.3765

Email: [bruce.robinson@fta.dot.gov]

Description: Under this project, the Boston University Center for Transportation Studies developed a four-week training module and undertook a pilot course for transit professionals from developing countries. The module included short term courses using a case study approach on transit, urban form, and metropolitan planning; economic aspects of transit planning and management demand analysis; financing transit systems; transit routing, scheduling, and operations; ITS; community involvement; and risk analysis, safety, and environmental aspects of transit. It also included site visits to transit operations in Boston; Portland, Oregon; and Washington, DC. The goal of the program was to introduce developing countries to U.S. practices that will benefit them and also to improve the U.S. international competitive position in transit goods and services.

Professional Capacity Building – Human Resources

ADA Key Rail Station Compliance Assessment

Project MA-90-8015

Funding: \$420,939

Schedule: September 2000 – September 2002

Performer: Planners Collaborative, Inc.

273 Summer Street, Boston, Massachusetts 02210

Investigator: Donald Kidston

Phone: 617.338.0018 *Fax:* 617.338.4228

FTA Project Monitor: Clarissa Swann, TCR

Phone: 202.366.0800 *Fax:* 202.366.3475

Email: [clarissa.swann@fta.dot.gov]

Description: Transportation is vital in maintaining mobility for persons with disabilities—provides links to employment, health care centers, community affairs, and improves the overall quality of life. The Americans with Disabilities Act (ADA) requires that public transportation services and facilities, including trains and rail stations, be accessible to persons with disabilities. New rail stations, those designated as key stations and where substantial station facility alterations have occurred, must be made accessible. To be eligible for Federal funding, the grant recipient must self-certify compliance with ADA requirements. Key station compliance assessment is one of the most important aspects of ADA rail oversight. The objective of this continuing project is to assist the FTA staff in implementing its ADA rail oversight responsibility. The compliance assessment includes onsite evaluation of 150 additional existing and new key stations at 33 rail systems. The contractor will assess the selected key and new rail stations, prepare a final report and follow-up activity with transit systems to ensure that recommended actions are taken to correct deficiencies noted in the compliance assessment. Key rail station assessments have facilitated a significant increase in the number of fully compliant key rail stations over the last several years. Assessments assure that stations certified as ADA compliant remain in actual compliance with current standards. The FTA Office of Civil Rights selects key rail stations for review.

Cardozo High School TransTech Academy

Project DC-26-2009.07

Funding: \$ 125,000

Schedule: January 2000 –January 2001

Performer: District of Columbia Public Schools

13th and Clifton Streets, NW, Washington, DC 20009

Investigator: Shirley McCall

Phone: 202.673.7753 *Fax:* 202.673.7754

FTA Project Monitor: Michael Virts, TCR

Phone: 202.366.0809 *Fax:* 202.366.3465

Email: [michael.virts@fta.dot.gov]

Description: This project provides ongoing support to the Transportation Technical (TransTech) Academy at Cardozo Senior High School—the first transportation studies academy in the Washington, DC area. The academy is designed to provide high school students with a well-rounded academic and technological program that exposes them to career opportunities in the field of transportation. Educational resources offered to students include internships, mentoring programs, summer work programs, field trips, and college visits. The TransTech Academy

Professional Capacity Building – Human Resources

curriculum for the 2000-2001 school term provides for student activities: after school work study internships at DOT and the transportation industry, field trips, transit courses, counseling and other resources relevant to career and educational opportunities in transit. This project reaffirms FTA support of the November 1993 Declaration of Partnership and Memorandum of Understanding between the U.S. Department of Transportation, FTA, FHWA, and the Superintendent of D.C. Public Schools (DCPS). The partnership alliance was formed by DCPS to obtain financial, technical, and staffing resources to aid and support the continued operation of the DCPS system's first transportation studies academy—TransTech Academy.

Compliance Assessments – Fixed Route & ADA Complementary Paratransit

Project MA-90-8014

Funding: \$501,696 *Schedule:* September 2000 – September 2002

Performer: Planners Collaborative, Inc.

273 Summer Street, Boston, Massachusetts 02210

Investigator: Donald Kidston *Phone:* 617.338.0018 *Fax:* 617.338.4228

FTA Project Monitor: Cheryl Hershey, TCR *Phone:* 202.366.0808 *Fax:* 202.366.3475

Email: [cheryl.hershey@fta.dot.gov]

Description: The Americans with Disabilities Act (ADA) requires that public transportation services and facilities be accessible to persons with disabilities, including bus and bus facilities. The objective of this project activity is to assist the FTA staff in implementing its oversight responsibility. Compliance review is an ongoing civil rights effort that, in this case, includes onsite ADA compliance assessments of seven ADA complementary paratransit and ten fixed route bus services of selected grantees. The contractor will conduct the compliance reviews, prepare a final report and follow-up action with the transit agency to ensure that recommended actions are taken to correct deficiencies identified in the compliance review within an established timeframe. These assessments not only ensure compliance with the DOT ADA regulation, they also provide valuable technical assistance to transit agencies. FTA provides information and technical assistance to transit providers regarding the requirements of ADA and U.S. Department of Transportation ADA regulations.

Compliance Reviews – Title VI, EEO, and DBE Programs

Project PA-90-8002

Funding: \$814,407 *Schedule:* September 2000 – September 2002

Performer: John Milligan & Company, Inc.

105-107 North 22nd Street, 2nd Floor, Philadelphia, Pennsylvania 19103

Investigator: Maxine Marshall *Phone:* 504.282.7949 *Fax:* 215.496.4980

FTA Project Monitor: Beverly Phipps, TCR *Phone:* 202.366.0809 *Fax:* 202.366.3465

Email: [beverely.Phipps@fta.dot.gov]

Professional Capacity Building – Information & Communication

Advanced Public Transportation Systems Information Exchange

Project DC-26-7080-01

Funding: \$ 75,000 *Schedule:* August 2000 – August 2001

Performer: American Public Transportation Association
1666 K Street, NW, 11th Floor, Washington, DC 20006

Investigator: Lou Sanders *Phone:* 202.898.4086 *Fax:* 202.898.4070

FTA Project Monitor: Helen Tann, TRI *Phone:* 202.366.0207 *Fax:* 202.366.3765

Email: [helen.tann@fta.dot.gov]

Description: The objective of this amendment is to provide the resources necessary for the American Public Transportation Association (APTA) to continue support for the transit element of the Department's Intelligent Transportation Systems (ITS) program and the FTA International Mass Transportation Program. Under this project, APTA will conduct regional workshops, promote information exchange activities, and increase public awareness of the benefits of Transit ITS products and services at both the national and international levels. Workshops will highlight ITS Best Practices, deployment of Traveler Information Systems and other Transit ITS applications in Bus Rapid Transit.

FTA Internet Website Support Services

Project VA-26-6006

Funding: \$100,000 *Schedule:* March 2000 – September 2001

Performer: Micro Information Systems
1021 Eden Way North, Suite 123, Chesapeake, Virginia 23320

FTA Project Monitor: Robert Owens, TBP *Phone:* 202.366.1689 *Fax:* 202.366.7116

Email: [robert.owens@fta.dot.gov]

Description: This project furthers the development of the FTA public website on the Internet World-Wide-Web. The website is a comprehensive and customer-oriented service providing users with an extensive amount of information and knowledge about FTA and its programs, products, policy, partnerships, and future role in transit. The website has become a key tool for customer service, communications, knowledge management, and outreach activities. It provides rapid and easy access to timely transportation information, products and services, including FTA's national research and technology program, strategic plan, performance indicators, grants, legislation, and publications. The website serves as a port of entry to a large array of electronic resources, including online databases, electronic document libraries, education and training centers, international programs, cooperative research programs, specialized transportation, and employment centers. The website provides links and portals to public transportation systems and resources. Grantees, the general public, researchers, practitioners, consultants, congressional staff and the transportation community-at-large all make routine use of the electronic global storehouse of information available on the FTA website.

Professional Capacity Building – Information & Communication

National Transit Database Revision

Project VA-26-5004.1

Funding: \$675,000 *Schedule:* July 2000 – January 2001

Performer: Peat Marwick Main Company
8150 Leesburg Pike, Vienna, Virginia 22180

FTA Project Monitor: Gary DeLorme, TPM *Phone:* 202.366.1652 *Fax:* 202.366.7951

Email: [gary.delorme@fta.dot.gov]

Description: The FTA has significant interest in revising and improving the congressionally mandated National Transit Database (NTD). It is the FTA official and national database of statistics for the transit industry--the only comprehensive source of domestic transit data, including safety and performance data. Each year, approximately 600 transit operators report to FTA on transit activities in more than 400 urbanized areas. NTD data are reported to Congress, used for transit services planning, to apportion billions of dollars in Urbanized Area Formula funds back to reporting transit agencies, and to provide benchmarks for FTA's Strategic Plan. This project aims to better serve NTD stakeholders as well as those agencies supplying and collecting safety data. It is based on the congressional mandate that authorized this study, including the requirement that NTD safety data collection procedures be re-examined and upgraded. This Phase 2 project will review and evaluate the current NTD reporting system; improve the accuracy, consistency, and timeliness of transit data; and develop a revised and improved NTD, including a new safety data reporting module. NTD improvements will be based on stakeholders' concerns, namely those raised by National Transportation Safety Board. This is a congressionally mandated project.

National Transit Database Technical Support

Project VA-26-5005

Funding: \$43,000 *Schedule:* September 2000 – September 20001

Performer: Signal Corporation
3040 Williams Drive, Suite 20, Fairfax, Virginia 22031

FTA Project Monitor: Gary DeLorme, TPM *Phone:* 202.366.1652 *Fax:* 202.366.7951

Email: [gary.delorme@fta.dot.gov]

Description: Under this project, Signal Corporation will provide professional technical support services to the National Transit Database, which is managed by the FTA Office of Oversight. The contractor is responsible for designing and implementing major upgrades to the NTD software system and other systems components. Project activities include major improvements to the NTD process and products, including--annual reporting manual and forms, reporting software, Software User's Guide, and annual workshops for NTD reporters. The National Transit Database is a reporting system for the collection and dissemination of public mass transportation financial and operating data by uniform categories. This data are reported to Congress, used for transit service planning, and used to apportion \$4 billion in Urbanized Area Formula funds back to NTD reporting transit agencies. The significance of the National Transit Database data is reflected in its use by federal, state, and local governments, and the transit industry and academic community.

Professional Capacity Building – Information & Communication

Transportation Research Board Core Program

Project DC-26-7099

Funding: \$150,000

Schedule: September 2000 – October 2001

Performer: National Academy of Sciences, Transportation Research Board

2101 Constitution Avenue, NW, Washington, DC 20418

FTA Project Monitor: Lisa Colbert, TRI

Phone: 202.366.9261 *Fax:* 202.366.3765

Email: [lisa.Colbert@fta.dot.gov]

Description: This project provides ongoing support to the core activities of the Transportation Research Board (TRB)—a unique source of independent expertise that develops and disseminates innovative research information addressing transit issues. Core activities are designed to generate information, share ideas, and transfer knowledge about FTA's Research and Technology programs and projects with partners in the transportation community and with the general public. Core program support enables TRB to maintain an extensive network of transit experts in research, operations, and academia to work together on commonly held critical transit needs, and to resolve these issues through transit research, discussion, and dissemination. Under this project, activities of the TRB core research program and FTA Research & Technology Program areas are published and communicated in various formats--information packets, journals, brochures, best practices manual, annotated bibliographies, journal articles, and other materials that will create public awareness of the benefits of transit. Another core activity supported under this project is the TRB Transportation Research Information Service (TRIS) online bibliographic database—the world's most comprehensive source of surface transportation information in the world. The TRIS database is available worldwide and contains both (1) summary descriptions of *unpublished research* in progress, and (2) document abstracts of *published literature* on highway research, rural, urban, and intercity transit research, highway safety research, railroad research and maritime research. The web version of the TRIS Database is available on the Internet as TRIS Online [<http://www.ntl.bts.gov/tris>].

Appendix – Research & Innovation Websites

U.S. DEPARTMENT OF TRANSPORTATION [<http://www.dot.gov/>]

- Bureau of Transportation Statistics/BTS [<http://www.bts.gov/>]
- DOT Intelligent Transportation Systems/ITS [<http://www.its.dot.gov/>]
- DOT Library [<http://isweb.tasc.dot.gov/Library/library.htm>]
- DOT Science & Technology [<http://scitech.dot.gov/>]
- DOT Technology & Innovation [<http://t2.dot.gov/>]
- DOT Transporter Newsletter [<http://www.tfhr.gov/trnspr/mar01/mar01.pdf>]
- FTA National Transit Database [<http://www.ntdprogram.com/>]
- FTA National Transit Library [<http://www.fta.dot.gov/ntl/index.html>]
- FTA Research Program Areas [<http://www.fta.dot.gov/ntl/research/index.html>]
- National Transportation Library [<http://ntl.bts.gov/>]
- TRIS-On-Line Database [<http://ntl.bts.gov/tris>]

SAFETY & SECURITY

- FTA Safety & Security [<http://transit-safety.volpe.dot.gov/>]
- Grade Crossings: A Look to the Future [http://www.rtands.com/jun00/grade_crossings.html]
- ITS Projects to Improve Mobility & Safety at Grade Crossings [http://www.nawgits.com/icdn/its_hri.html]
- Responder Safety [<http://www.respondersafety.com/>]
- Traffic Control for Highway-Rail Transit [<http://muted.fhwa.dot.gov/>]
- Transportation Safety Institute [<http://www.tsi.dot.gov/>]

EQUIPMENT & INFRASTRUCTURE

- Altoona Bus Testing & Research Center [<http://www.vss.psu.edu/fta/>]
- California Fuel Cell Partnership [<http://www.drivingthefuture.org/>]
- CalStart-WestStart [<http://www.calstart.org/calindex3.html>]
- Cleaner Bus Technology [<http://www.navc.org/emissionsreport.html>]
- Department of Energy/DOE National Library [<http://www.energy.gov/library>]
- Electric Buses in Service & Manufacturers/Transit OPS [<http://www.calstart.org/calindex3.html>]
- Electro-Drive Future Technologies [http://www.sce.com/electrodrive/004g11_future_tech.shtml]
- FTA Low Speed Urban Maglev Program [<http://www.fta.dot.gov/research/equip/raileq/umag/umag.htm>]
- FTA Transit Noise Guidance Manual [<http://www.hmmh.com/rail05.html>]
- Fuel Cell Information Center [<http://www.fuelcells.org/>]
- Glossary Electro-Drive [http://www.sce.com/electrodrive/004g3d_gloss.shtml]
- Innovative Transportation Technologies [<http://faculty.washington.edu/jbs/itrans/>]
- Natural Gas Buses in Service & Manufacturers/Transit OPS [<http://www.calstart.org/calindex3.html>]
- Northeast Advanced Vehicle Consortium [<http://www.navc.org/index.html>]

Appendix – Research & Innovation Websites

- Office of Transportation Technologies [<http://www.ott.doe.gov/>]

FLEET OPERATIONS

- APTS Map Database [<http://www.bts.gov/gis/reference/aps.html> - Section2.1]
- APTS Mobile Showcase [<http://www.oml.gov/fta/showcase/>]
- Adelaide O-Bahn [<http://www.adelaidemetro.com.au/guides/obahn.html>]
- BRT – FTA Bus Rapid Transit [<http://brt.volpe.dot.gov/>]
- BRT 2001 Award Winners [<http://www.calstart.org/calindex3.html>]
- Fleet Operations [<http://www.fta.dot.gov/research/fleet/fleet.htm>]
- Intelligent Transportation Systems/ITS America [<http://www.itsa.org/>]
- ITS Electronic Document Library [<http://www.its.dot.gov/welcome.htm>]
- ITS Resource Guide 2001 [<http://www.its.dot.gov/itsweb/guide.html>]
- Manual on Uniform Traffic Control Devices [<http://mutcd.fhwa.dot.gov/>]
- PATH – Partners for Advanced Transit & Highways [<http://www.path.berkeley.edu/>]
- Transit ITS [<http://www.itsdocs.fhwa.dot.gov/edldocs/13464/application.htm>]

SPECIALIZED CUSTOMER SERVICES

- Access Board – A Federal Agency Committed to Accessible Design [<http://www.access-board.gov/>]
- CTAA National Transit Resource Center [<http://www.ctaa.org/ntrc/>]
- National Center for the Dissemination of Disability Research [<http://www.ncddr.org/>]
- Easter Seals PROJECT ACTION [<http://www.projectaction.org/>]
- RTAP – Rural Transit Assistance Program [<http://www.ctaa.org/ntrc/rtap/>]
- Welfare to Work Website [<http://www.fta.dot.gov/wtw/>]

POLICY & PLANNING

- Center for Livable Communities [<http://www.lgc.org/center/>]
- Citizen’s Guide to Transportation Decisionmaking [<http://www.fhwa.dot.gov/planning/citizen/index.htm>]
- Flexible Funds Transfers to FTA by State (1992-2000) [<http://www.fta.dot.gov/library/reference/flex/ffts.html>]
- FTA Planning Publications [<http://www.fta.dot.gov/nt/plan.html>]
- New Starts [<http://www.fta.dot.gov/library/policy/ns/ns.htm>]
- New Suburb [http://www.nationalgeographic.com/earthpulse/sprawl/index_flash.html]
- Public Involvement Techniques [<http://www.fhwa.dot.gov/reports/pittd/cover.htm>]
- Transit Planning & Policy Publications at BTS [<http://webntl.bts.gov/display.cfm?sub=111&cat=12>]
- Urban Quality Indicators [<http://people.mw.mediaone.net/cyoakam/index.html>]
- Urban Transportation Planning Links [<http://www.ar.utexas.edu/cadlab/handyweb/UTPLinks.html>]

Appendix – Research & Innovation Websites

PROFESSIONAL CAPACITY BUILDING

- APTA – American Public Transportation Association [<http://www.apta.com/>]
- APTA/Transit Cooperative Research Program [<http://www.tcrponline.org/>]
- International Mass Transportation Program [<http://sites.usatrade.gov/imtp/>]
- National Transit Institute [<http://www.ntionline.com/>]
- TCRP at Transportation Research Board/TRB [<http://www4.trb.org/trb/crp.nsf>]
- Transit Bookshelf 2000 [<http://www.fta.dot.gov/research/info/bksf/bkscov.html>]
- Transit Related Educational Sites [<http://www.fta.dot.gov/library/edu.htm>]
- TRB – Transportation Research Board Services [<http://www.trb.org/>]
- University Transportation Centers Program [<http://utc.dot.gov/>]

DATABASES & STATISTICS

- Department of Energy Online Databases [<http://www.energy.gov/library/sub/databases.html>]
- FARS – Fatality Analysis Reporting System [<http://www-fars.nhtsa.dot.gov/main.cfm>]
- FTA Grants Management One-Stop [<http://www.fta.dot.gov/library/program/grantprog.html>]
- FTA National Transit Database [<http://www.ntdprogram.com/>]
- FTA Research in Progress [<http://www.fta.dot.gov/>]
- Intermodal Transportation Database [<http://www.itdb.bts.gov/>]
- Internet Sources for Statistics [<http://www.trb.org/trb/publications/links/TransportStats.pdf>]
- ITS Benefits Database and Unit Costs Database [<http://www.mitrectk.org/its/bcencost.nsf>]
- Rail-Highway Grade Crossings Database [<http://www.jeng.com/florida/web/Statewide/elements/445.htm>]
- SAMIS – Safety Management Information Statistics [<http://transit-safety.volpe.dot.gov/publications/default.asp#SAMIS>]
- Research in Progress [<http://www.dcddata.com/trip/tripnoww.htm>]
- TRIS-On-Line Database [<http://ntl.bts.gov/tris>]

REFERENCES & RESOURCES

- AASHTO Quality Clearinghouse [<http://tti.tamu.edu/quality/Files/links.htm>]
- Buy America Regulations [<http://www.fta.dot.gov/library/legal/buyamer/>]
- Catalog of Federal Domestic Assistance – 20.514 Transit Planning & Research [<http://www.cfda.gov/public/viewprog.asp?progid=645>]
- Defense Advanced Research Projects Agency [<http://www.darpa.mil/>]
- FTA Program Guidance Circulars [<http://www.fta.dot.gov/library/admin/checklist/circulars.htm>]
- FirstGov [<http://www.firstgov.gov/>]
- ITS Turner Fairbank Highway Resource Center [<http://www.tfhrc.gov/its/its.htm>]
- Library of Congress [<http://www.loc.gov/>]

