

Announcement of Transit Research Projects November 2007

The 1991 Intermodal Surface Transportation Efficiency Act (ISTEA) established the Transit Cooperative Research Program (TCRP), and the Transportation Equity Act for the 21st Century (TEA-21) and the Safe, Accountable, Flexible, and Efficient Transportation Equity Act—A Legacy for Users (SAFETEA-LU) reauthorized it through 2009. The TCRP undertakes research and other technical activities in response to the needs of local transit service providers and suppliers on a variety of transit problems involving operations, service configuration, engineering, maintenance, human resources, administration, policy, and planning.

A memorandum agreement outlining operating procedures for the TCRP has been executed by the cooperating organizations: the Federal Transit Administration (FTA); the National Academies, acting through the Transportation Research Board (TRB); and the Transit Development Corporation, Inc. (TDC), a non-profit educational and research organization established by the American Public Transportation Association (APTA).

The TCRP Oversight and Project Selection (TOPS) Committee, the governing board for the program, recently selected projects for the Fiscal Year 2008 program. The purpose of this announcement is to inform the research community of these projects.

This announcement contains problem statements that are preliminary descriptions of the selected projects. Detailed project statements, formally soliciting proposals for these projects, are expected to be released starting in late March 2008.

TCRP project statements are available only on the World Wide Web. Each

project statement will be announced by Electronic Mail. A form to register for e-mail notification of project statements is available at TCRP's website, <http://www.trb.org/tcrp>. Research project statements will be posted at the same Internet address when they are active.

The TCRP is an applied, contract research program with the objective of developing near-term solutions to problems facing transit-operating agencies. Proposals should evidence strong capabilities gained through extensive, successful experiences. Any research agency interested in submitting a proposal should first make a frank and thorough self-appraisal to determine whether or not it possesses the capability and experience necessary to ensure successful completion of the project. The specifications for preparing proposals are quite strict and are set forth in the brochure entitled, *Information and Instructions for Preparing Proposals*, available on the Internet at the website referenced above. Proposals will be rejected if they are not prepared in strict conformance with the section entitled, "Instructions for Preparing and Submitting Proposals."

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**Transit Cooperative Research Program
Projects in the Fiscal Year 2008 Program**

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Summary of Approved Research Projects

■ Project A-32

Operation of Street-Running Light Rail Transit at Higher Speeds

Research Field: Operations
Allocation: \$295,000
TCRP Staff: Lawrence Goldstein

Current practice as defined in the *Manual of Uniform Traffic Control Devices* (MUTCD) Part X requires use of crossing gates for operation of light rail transit (LRT) trains through intersections at speeds of greater than 35 mph. Where LRT operates on-street or immediately adjacent to a street, there are segments where the parallel roadway traffic operates through the same intersections at significantly higher speeds. This puts public transport at a disadvantage in attracting ridership and in providing efficient utilization of investments.

This project will address the next steps identified as a result of the successful conclusion of TCRP Project J-6/Task 65, including:

- Functional Analysis
- Test Evaluation
- Industry Review
- Summary of Recommendations/
Proposed MUTCD Text

The objective of this research is to identify the safety and operational factors involved in traffic control using crossing gates versus traffic signals, possibly in conjunction with supplemental safety measures, and to define traffic control treatments that would potentially allow for faster than 35-mph operation without use of crossing gates. Finally, with the active participation of a sponsoring agency, the ultimate objective is to test higher-speed operation using identified traffic control provisions and to recommend potential revisions to MUTCD Part X.

Four major tasks are proposed:

- Task 1 – Functional Analysis: Develop a functional analysis of safety and operational considerations for traffic control at selected typical intersection configurations, taking into account human factors with respect to device compliance; postulate supplemental safety measures and/or operational procedures that will potentially support higher speed operation without use of crossing gates.
- Task 2 – Test Evaluation: A demonstration testing selected warning devices and other treatments would be developed for one or more transit operator sites. Elements of this effort would include:
 - Contact candidate transit operators and develop potential research designs that include specific sites, proposed intersection modifications, warning devices to be tested, and evaluation methodology.
 - Select site(s) and develop agreement for carrying out the test.
 - Coordinate with transit system(s) to design, implement, and evaluate the new warning devices (wayside or vehicle based) and/or intersection modifications.
 - Conduct focus group and/or survey research regarding the warning signs, signals, and other devices being tested. This component would establish the public perception and understanding of the proposed devices.

- Coordinate with transit agency to identify conclusions and prepare summary of results.
- Task 3 – Industry Review: Conduct a formal review of the proposed variance evaluation process described in Project J-6/Task 65. The draft evaluation process would be transmitted to a selected group of transit industry managers and consultants for their review and response to a survey. Follow-up interviews would also be conducted. The result would be a further refinement of the proposed process.
- Task 4 – Summary and Recommendations: The final element of the work plan would be to integrate the results of the two research components (Test Installation and Industry Review); prepare a research summary; and develop, if warranted based upon the Industry Review, recommended revisions to Part X of the MUTCD.

Where LRT speeds are restricted to 35 mph, operation along a 1-mile segment from station to station could require 2 minutes plus an additional 20 seconds for station dwell, taking into account acceleration and deceleration. At the same time, parallel highway traffic, if operating at 45+ mph with no stops for traffic signals could cover this same distance in about 1.5 minutes. In the event the LRT maximum speed could be increased to 45 mph, the station-to-station travel time would be about the same, resulting in a level playing field.

In the event it could be demonstrated that the marginal risk of slightly higher operational speeds could be mitigated by engineering and operational practices, development of higher-speed lines would benefit the public.

As the U.S. is making major investments in at-grade LRT systems, and as these systems are increasingly being implemented in a low-density urban and/or suburban-type roadway environment (e.g., Phoenix), this research is urgently needed both to improve the

competitiveness of LRT as well as obtain the maximum efficiency from the public investment.

The biggest barrier to implementing the results of this research is the potentially increased liability risk associated with participation in the project. However, by conducting the research as a sponsored demonstration project, these risks could be reduced.

Another factor is the willingness of officials and expert panels responsible for developing and administering codes and regulations regarding LRT operation to accept and incorporate the results of the research.

■ Project B-38

Parking and Feeder/Circulator Access to Public Transportation

Research Field: Service Configuration
 Allocation: \$500,000
 TCRP Staff: Dianne Schwager

Effective access is critical to the success of public transportation services. Many passengers access these services, in particular high-capacity public transportation services (e.g., heavy rail, light rail, commuter rail, and bus rapid transit) by automobile and by feeder/circulator transit services.

Some transit operators and local communities believe that feeder/circulator transit services are preferable and discourage access by private vehicles. Yet, many transit systems with new rail transit stations or transit lines built without parking provision, particularly in medium-density areas, have learned that, despite considerable feeder transit services, providing parking would build additional public transportation ridership. For some rail systems, limited station parking availability is seen as a major constraint to further ridership growth.

The objective of this project is to develop a guidebook for planning and implementing effective approaches to access public transportation through the provision of parking for private vehicles and feeder/circulator transit

services. The research should address past practices, best practices, cost and benefit

tradeoffs, and the pros and cons of these potentially complimentary or competing methods of accessing public transportation.

The research should include a literature search and may include case studies. The research should address important issues such as transit ridership, land use planning, traffic congestion, pricing practices, revenue generation, and other relevant concerns. The research should present methods for developing, evaluating, and selecting effective alternatives for accessing public transportation.

■ **Project F-14**

Recruitment, Performance and Retention of Quality Transit and Paratransit Managers -- Skills, Qualifications, Needs and Future Prospects

Research Field: Human Resources
Allocation: \$250,000
TCRP Staff: Dianne Schwager

There is an important need to explore the recruitment, training, retraining, and rewarding of transit and paratransit managers, with the goal of increasing the competency of transit and paratransit managers, as well as the effectiveness of their training. *TCRP Synthesis 71* documents the current state of paratransit managers' skills, qualifications, and needs. Further research is desirable, especially to gain greater insight into agency transit and paratransit managers' responsibilities and prospects, and to provide guidance to improve the future of the profession.

It is important to identify additional information regarding transit and paratransit managers as a professional category. The proposed research would provide that important "next step" to identify and quantify key information to improve recruitment, performance, and retention of transit and paratransit managerial personnel.

The demographics of the aging Baby Boomer population make it clear that the professional category of transit and paratransit manager needs particular enhancement.

It is envisioned that there would be larger and more extensive surveys than is possible for a synthesis project. These should be disaggregated between rural, suburban, and urban agencies, as well as agencies of different sizes. The research project should collect more details on how transit and paratransit managers fit into their agency organizations and cultures and what specific training needs are necessary to ensure success. The project should also investigate how to attract new entrants and how to improve job retention. Greater opportunities for local advisory committees' input would also be helpful.

Given the increasing demand for transit and paratransit service in a variety of operating settings, this project becomes increasingly important to ensure that managers of these systems are appropriately selected, trained, and retained. It is also necessary to maintain parity with evolving research and knowledge about key employees for whom these managers are responsible.

■ **Project F-15**

Outreach to Minorities for Executive Searches in Public Transportation

Research Field: Human Resources
Allocation: \$250,000
TCRP Staff: Gwen Chisholm Smith

In annual reviews of the makeup of executives within the nation's public transit systems, people of color do not emerge as the most senior leaders within the organizations. Because it is clear that the ridership of the nation's public transit systems is predominantly people of color, it seems regressive that the entities' leadership has not grown similarly diverse. For example, in urban areas, African Americans and Latinos comprise 62% of bus riders, 35% of subway riders, and 29% of commuters. Yet, in the top 20 public transit agencies, only three are lead by CEOs of color—all African American.

In addition, the U.S. Census estimates that neither the white population nor any other race will make up a majority of the country's population. In six out of eight of the largest metropolitan areas, minorities are the collective majority. When these realities are coupled with the results of reviews about increased diversity in the workplace creating greater productivity,

efficiency, and positive impact on the business environment, the business case for more diverse leadership is obvious.

With the nation's overall population trending to majority minority populations across multiple regions of the country, it is time that executive recruitment and positions within the nation's public transit industry count success as reversing the existing trend and comporting with the population's reflection of the communities they serve.

The goal of this research would be to create a set of guidelines for public transit search committees to use in conducting their work for executive openings at their entities. It would also serve to seek the input of search committee members and professional recruiters in the draft of these criteria. Once adopted, these criteria would also be disseminated to all human resource professionals working in the public transit recruitment arena.

The objectives of this research are to:

- Create a task force of search committee members and recruiters of public transit agency executives
- Develop a criteria for public transit agency search committees to guide their choice of executive recruiters
- Benchmark the use, value, and results of the criteria
- Publish a report of the process with a potential timetable for reviewing and updating the criteria for ensuring minority candidates are incorporated into executive recruitment in a meaningful way
- Create a management-level career presentation that public transit human resources professionals may use for internal and external public transit outreach to continue to grow the ranks of professional minority candidates.

The industry is overdue in its commitment to meaningful diversity in its executive ranks. This research would create effective ways to address the well-established lack of minority executives at the highest ranks with the input of minority candidates of color and the selection committees and processes in use. Many programs have been put forth with piecemeal approaches and

scattered results. This research will serve to devise a pervasive and lasting way to approach executive searches in the public transit arena in the near term and for the future. The business case for diversity at the highest levels of any organization, private and public, has been made time and again.

■ Project H-38

Tribal Transit Services, Training, and Funding Challenges

Research Field: Policy and Planning
Allocation: \$300,000
TCRP Staff: Stephan A. Parker

The integral relationship between access to transportation and quality of life is well known. Yet many citizens across the country struggle with access to health care, education, jobs, businesses, and entertainment. This is especially true of many Native American communities.

Although Native Americans living in "Indian Country" (on or near Indian reservations or designated Indian statistical areas) experienced marked improvement in real per capita income growth during the decade of the 1990s relative to the rest of the U.S. population (33% vs. 11%), even as the Native American population grew by more than 20%, this predominantly rural segment of the U.S. population lags substantially in economic resources behind mainstream America. While 79% of the U.S. population (2000 Census) is classified as urban, this statistic is reversed for Native American communities with about three-fourths of the population classified as rural. Even with the substantial improvements in Native American community economies since 1990 (e.g., poverty rate and unemployment improvements ten times higher than the U.S. as a whole), Native Americans still fall into poverty and are unemployed at triple the rate of the U.S. population.

Even with improvement of their economy, Native American families often still do not have the luxury of personal automobiles. In these cases, public transportation can literally be a life line for Native Americans to their jobs, school, health care, and other important aspects that define "quality of life." In fact, as their

economies improve, public transportation becomes more vital as people now have jobs to go to, money to buy groceries, and schools to attend. In the *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users* (SAFETEA-LU), Congress established a supplemental funding program to assist tribes in establishing and maintaining transit systems to address this issue. In order to provide sufficient levels of funding, training, and technical assistance to tribal transit agencies and to tribes establishing transit agencies, it is necessary to have clear, in-depth, and current information on the level of coverage and other statistics on tribal transit across the country. This need was also identified in NCHRP Synthesis Report 366 Tribal Transportation Programs, A Synthesis of Highway Practice. The report identified “operation and development of tribal transit services” as an area that needed further study. The time is ripe for an in-depth data collection and analysis of tribal transit statistics and characteristics.

The proposed research will gather information from the 562 Federally Recognized Native American Tribes and Alaskan Native Villages. The research will focus on gathering much needed data on the different transit systems serving these tribes. Specifically, tribes will be surveyed to determine the existence of tribal-owned and/or operated transit systems as well as other transportation services available to tribal members; the existence and extent of transportation planning in tribal transportation systems; in addition for those tribes with existing transit systems, statistics on the system (e.g., size, coverage area, etc.). In addition, researchers will identify those tribes without access to a local public transit system and attempt to determine the reasons behind these transportation gaps. The end result will be a substantive and detailed report on the level of transportation coverage available to American Indian Tribes and Alaskan Native Villages across the country. This information will be useful for federal and state governments (specifically departments of transportation); national, regional, state and local transportation providers and associations; research, training and technical assistance providers; and universities looking to serve tribal communities.

Analysis will include in-depth data collection on the existence of different levels of transit service available to tribes (with special focus on tribal-run systems); characteristics of identified tribal transit agencies and other systems serving tribes; coverage areas served; types of transit service provided; various funding sources for tribal transit agencies; existence and extent of transportation plans for tribes; and determination of areas with a lack of available transportation and reasons for said gaps in service. It is planned that this research will include a summary of the characteristics of federally funded tribal transit programs, and will develop a toolkit of strategies for coordination between state and tribal governments on transit projects and planning.

As the FTA Tribal Transit Grant program continues to fund tribal transit systems and national, regional, state and local systems and technical assistance providers are looking to assist a growing population of Tribal transit systems, it is imperative that a substantive data collection on the current “state of tribal transit” occur to provide all stakeholders with credible data in which to pursue the mutual goals of increased transportation opportunities for all Americans, especially Native Americans.

■ Project H-39

Methodology for Determining the Economic Development Impacts of Transit Projects

Research Field: Policy and Planning
Allocation: \$400,000
TCRP Staff: Lawrence Goldstein

Congress requires FTA to evaluate the economic development benefits (among other criteria) of proposed projects in order to determine the merits of those projects. To comply with this requirement, FTA needs a methodology that project sponsors can use to reliably estimate the development impacts and the benefits associated with those impacts for both New Starts and major investments in more mature transit systems. While much work has been done describing the relationship between transportation and economic development, it is not clear how an approach to reliably forecast economic development benefits of transit projects can be applied to all proposed projects.

The objective of this research is to develop a methodology that can be applied by sponsors of New Starts projects and projects that provide additional investment in mature transit systems, to reliably forecast the economic development impacts of those projects.

Because FTA already considers the mobility benefits of proposed projects, this new methodology must clearly distinguish development benefits derived from mobility changes from development benefits derived from other project impacts to avoid double-counting mobility benefits. A panel of experts recently convened by FTA suggested that the most effective way to identify the value of economic development benefits in the near term is to examine the impact of projects on property values and use this information to estimate the benefits associated with additional economic development. This TCRP project would:

- 1) Collect data on property value changes in metropolitan areas that have built significant rail transit systems.
- 2) Develop a method to predict property value changes caused by proposed transit projects that:
 - a) Allows the separation of benefits that double count mobility benefits from the additional agglomeration and efficiency benefits,
 - b) Addresses the changes in property values at a regional scale rather than focusing only on station area impacts, and
 - c) Addresses the problem of spatial autocorrelation in property values.
- 3) Develop procedures and technical tools required to implement this type of analysis for projects across the country.

There is a great deal of interest in the transit community and in Congress in crediting transit projects with their economic development benefits within FTA's project evaluations. Having the capability to reliably forecast the economic development benefits of transit projects would improve FTA's evaluation and rating process and help decision-makers direct FTA's annual funding to the most deserving projects.

■ Project H-40

A National Study on Ferry Passenger/Car Transit Services

Research Field: Policy and Planning
Allocation: \$200,000
TCRP Staff: Lawrence Goldstein

Congestion on America's roads and railways presents a serious national problem. In fact, in 2003, Americans lost 3.7 billion hours and 2.3 billion gallons of fuel sitting in traffic jams. Overall, congestion costs America an estimated \$200 billion a year, and it continues to grow.

In addition to significant existing congestion, we are facing exponential growth in trade and even more demand on our capacity to move freight and people through an already strained system. Future growth projections indicate that the problem will rapidly escalate. With limited land available and the extremely high cost associated with expanding or building our roads and rails, especially in the heavily populated areas that surround most U.S. cities, we need to rapidly develop alternatives to shift some of this growing burden off the roads and railways and on to less congested corridors such as America's navigable waterways or the marine highway. Today, there are many ferries operating throughout the U.S. moving passengers and freight off roadways and onto the water.

The ferry is an alternative that can play a significant role in relieving congestion, improving the environment, and improving quality of life. With increased economic and population growth in numerous geographical areas throughout the United States, a feasibility study that identifies specific opportunities for using ferries on waterways running parallel or in close proximity of a major highway or rail system to efficiently transport freight and passengers is urgently needed. This study should be broken down by geographical area (e.g., Northeast, Southeast, etc.) and identify cities or congestion bottlenecks within areas where ferry services would be a congestion mitigation alternative and solution for capacity constraints.

The objective of this project is to produce a clear and concise report that illustrates best practices (best rate structure, best vessel/terminal arrangements, best vessel types, etc.); benefits (increased capacity, reduced congestion, environmental improvements, and improved quality of life, etc.); and impediments to the creation of a transit system. It will pinpoint opportunities in various geographical areas where ferry services may be a solution to our growing congestion problem. Thus ferry services must be explored to relieve the coming storm of freight and passengers.

This research should also identify any environmental, economic, safety, and mobility and connectivity factors leading to the success of this type of transit/marine highway operation. Further, the final report should also propose a transit ferry system size, business plan, scope, and operational description as well as a forecast of benefits.

The best practices and benefits and impediments realized by passenger and car services identified by this study will assist in planning an efficient transportation system to mitigate congestion and increase capacity on the national transit system. This will reduce transportation costs, including fuel costs, and emissions, while improving the overall quality of life for the transportation consumer.

The research envisioned would include a survey of a broad range of transit facilities and ferry systems/operations, to determine viable areas throughout the U.S. for new and improved passenger and car ferry transit services. The research would further provide the geographical benefits and impediments and best practices related to ferry facilities and port infrastructure, highway and rail access, improving safety and security, increasing mobility and connectivity, and effective transit between transportation modes.