eNewsletter
2014, First Quarter

MISSOURI-RTAP
Missouri Rural Transit Assistance Program
Located at Missouri University of Science and Technology

in this Issue

Need Training?

Call our office to schedule training at your agency.

1.573.341.6155

MoDOT

FTA
Federal Transit Administration

Missouri S&T

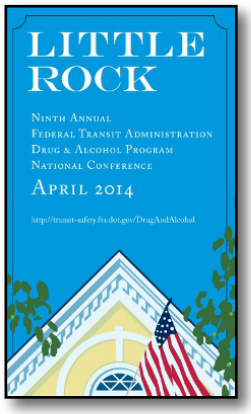
Training Opportunities

The following trainings are eligible for reimbursement through Missouri RTAP.

9th Annual Drug and Alcohol Program National Conference - *Free*

April 15-17, 2014 in Little Rock, Arkansas

The three-day conference will provide attendees with a substantial background on 49 CFR Part 40 and 49 CFR part 655. It will have sessions tailored to those both new and old to the transit industry.



Register Today

APTA Bus and Paratransit Conference

May 4-7, 2014 in Kansas City, Missouri

This conference is organized around eight themed tracks or "routes" that include:
Route 1: Technology,
Route 2: Operations & Maintenance,
Route 3: Safety & Security,
Route 4: Mobility Management & Accessibility,
Route 5: Planning, Sustainability & Finance,
Route 6: Capital Programs,
Route 7: Bus Rapid Transit (BRT), including a KCATA tour,
Route 8: Management, Workforce Development & Policy

Register Today

FTA Bus Safety Seminar Held in Rolla

Missouri RTAP hosted the free FTA Transit Bus Safety Oversight Program Orientation Seminar on February 25, 2014 in Rolla, MO on the Missouri S&T campus at the Havener Center. The full-day training started at 8:30 a.m. and finished about 4:00 p.m. Lunch was provided. The seminar covered the background, purpose, and mission of the Bus Safety Oversight Program. It gave an overview of part I and part II of the Safety Management System (SMS. It concluded with a demonstration of the Bus Program website (http://bussafety.fta.dot.gov). For more information, visit the program website.

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Missouri University of Science and Technology, Missouri RTAP Office

National RTAP
Rural Transit Assistance Program

About RTAP

National RTAP is a program of the Federal Transit Administration dedicated to creating rural transit solutions through technical assistance, partner collaboration and FREE training.

Letter from the Manager

Dear transit friends,

I hope 2014 is off to a great start for everyone. It's hard to believe we are already over two months into the New Year. How quickly time passes. Missouri RTAP kicked off the New Year with a few meetings to gather ideas and expand the offering of the program. On January 24, Steve Billings, Bryan Heckman and I met with Denny Ward and James Heller of SMTS to discuss other training and services that would be beneficial to their administrative staff and drivers. Several training ideas were discussed. On is the need for supervisory training, such as human resource related courses that cover hiring practices, disciplinary procedures, and the Family Medical Leave Act (FMLA). Other ideas included training on pre-trip and post-trip inspections, dealing with passengers who are unruly and diffusing confrontation, and sensitive training. It was also suggested that we create some interactive and hands-on training. On February 28, the three of us met with Pat Weaver of Kansas RTAP. Some of the discussion topics included the direction of the RTAP program at a national level, what types of training are being requested in Kansas and how the needs of rural transit providers are gathered, the structure of the advisory group in Kansas, and the success of NTI and TSI course offerings there. The intent of our meeting was to gather ideas for expanding the RTAP program in Missouri and making it as relavant as possible. We gathered good information on what has worked well in Kansas and contributed to their long-running success. We plan to meet with OATS in Columbia on March 19. We had the opportunity last spring and received several good suggestions on what we can do to broaden the scope of our services. If you would like for us to come to your agency, please let me know. It is our intent to continue to talk with local transit providers around the state as a means of gathering input in order to make the program more relevant and useful.

Please don't forget the additional training that we can provide beyond the classes that are taught by John Rice for RTAP. Some of these additional opportunities include National Training Institute (NTI) courses and Transportation Safety Institute (TSI) related courses. Please see the upcoming NTI and TSI training dates included in this issue. We hosted a FTA Transit Bus Safety Oversight Program Orientation Seminar on February 25. It was held in Rolla on the Missouri S&T campus. See the related article and photos on the front page.

We welcome your input at any time. This quarter we are sharing photos of the new SMTS facility in Poplar Bluff. If you have a new facility, someone new on your staff or other news you would like to share, let us know, and we will include it in an upcoming issue. We want to hear from you and feel it is important to offer expanded services that are designed around best serving you our customers. Please feel free to contact me at pickerillh@mst.edu or by phone at 573-341-7637 with any questions, comments or suggestion you have. I hope you enjoy this fourth installment of the Missouri RTAP eNewsletter for 2013. If you know someone who would like to start receiving the newsletter, they can call our office or go to the Missouri RTAP website at www.mortap.com and sign up.

Sincerely,

Heath Pickerill
Missouri RTAP Manager

Transit Agency Safety Plans Mandated by MAP-21

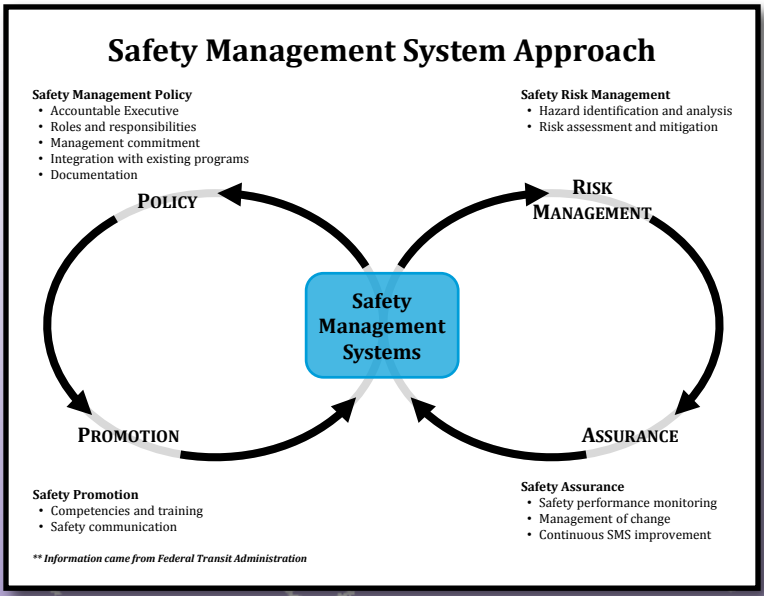
What does it mean for states?

By: James Decker

The Moving Ahead for Progress in the 21st Century Act (MAP-21) establishes several new public transportation requirements related to safety and safety performance. Specifically, the new Public Transportation Agency Safety Plan requirement states that recipients of federal transit funding need to establish a comprehensive safety plan and have it certified (either by their respective state DOT or self-certified). This requirement is intended to improve the safety and security of the Nation's public transportation systems by establishing and enforcing minimum federal safety standards.

While the Federal Transit Administration (FTA) has yet to formally establish the specific requirements for developing a safety plan, the general requirements outlined in MAP-21 are consistent with the Safety, Security, and Emergency Preparedness Plans (SSEPPs) adopted by many of the Nation's larger (and some rural) transit agencies. Transit agencies currently operating without an SSEPP or similar plan are encouraged to develop a comprehensive safety plan to improve the safety and security of its passengers and be in line to comply with the eventual FTA requirements.

This article will discuss some of the anticipated features of a Public Transportation Agency Safety Plan, discuss the importance of pro-actively adopting a SSEPP, and provide essential resources to help with developing a comprehensive safety plan.



Background

Since 1964 the FTA, the agency that administers federal assistance for the nation's transit systems, has been exercising safety authority over air, rail and oceangoing passenger vessels. Passengers travelling by these modes have had the assurance that their carriers are required to be in compliance with federal safety regulations. However, safety for public surface transportation has not been federally regulated. This gap in federal authority has resulted in a patchwork of state laws that do not provide seamless, consistent safety measures across transit systems in the United States.

Since 2004, the National Transportation Safety Board (NTSB) has reported on nine transit accidents that resulted in 15 fatalities, 297 injuries, and over $30 million in property damage (FTA-2013-0030). According to the NTSB, probable causes and contributing factors to the accidents were deficiencies in: 1) training and supervision of employees, 2) maintenance of equipment and infrastructure, and 3) safety oversight and management. The federal requirement to establish and certify a public transportation agency safety plan will establish a standard to better address these deficiencies and improve the safety of our Nation's public transportation systems.

MAP-21 Changes to Safety and Oversight

MAP-21 now grants the FTA the authority to establish and enforce a new comprehensive national transit safety and oversight framework. One of the new safety elements is the Public Transportation Agency Safety Plan mandate that requires each entity receiving federal transit funding to develop, implement, and certify a comprehensive agency safety plan.

Each recipient of federal funds from the Urbanized Area Formula Grants Program (5307) will be required to complete a comprehensive safety plan. An advanced notice of proposed rulemaking (FTA-2013-0030) has proposed that each state may opt to develop and certify plans for Section 5311 recipients.

Some of the requirements of the plan include:

- Risk identification, hazard mitigation strategies, and performance targets established by the FTA (pending);
- Comprehensive safety training for operations personnel;
- Identification of a transit agency safety officer;
- Annual review and update of the safety the plan.

Transit Agency Safety Plans Mandated by MAP-21 *(continued)*

The requirements for the transit agency safety plan are expected to be scaled to the size and operating environments of agencies.

A SSEPP is a Good Model

Every transit system, whether a large fixed-route bus system or a small rural paratransit service, has the duty to make safety, security, and emergency preparedness leaders expect public transit to be a safe and secure mode of transportation.

A comprehensive Safety, Security, and Emergency Preparedness Plan (SSEPP) establishes a basis for managing safety initiatives, improves communication and collaboration with emergency services, and helps promote a healthy safety culture within the agency. Components of a SSEPP match up well with the language of the Public Transportation Agency Safety Plan requirement in MAP-21 and should transition well to the requirement for such a plan.

Moving Forward and Applicable Resources

While the FTA has yet to issue a final rule to carry out the safety plan requirement, transit agencies should not put safety and security on hold. Many resources exist to help facilitate safety planning for both fixed route and paratransit bus service.

The FTA's Office of Safety and Oversight has a bus safety program at http://bussafety.fta.dot.gov. This website offers suggested guidance and resources to assist transit agencies in identifying practical strategies to implement and/or enhance effective safety, security, and emergency preparedness programs. The program offers guidelines, self-assessment tools, and case studies detailing the development and implementation of applicable programs and plans. It also offers detailed templates of working SSEPPs.

Another resource available is the newly-completed Transit Cooperative Research Program Report 160: Paratransit Emergency Preparedness and Operations Handbook. The purpose of the handbook is to provide paratransit service providers with guidance, strategies, tools, and resources to plan for, prepare for, respond to, and recover from a range of emergencies. The guidance in the handbook is applicable to urban, suburban, rural, and tribal paratransit operating environments.

Additional resources regarding MAP-21, the Public Transportation Agency Safety Plan requirement, and the development of a Safety, Security, and Emergency Preparedness Plan can be found in the Sources below.

Resource: Kansas TransReporter, January 2014

> *"**Transit systems vary widely, so a one-size-fits-all approach simply will not work.** There are huge multi-modal operations like MARTA in Atlanta... to small systems that might consist of a handful of shuttle vans. That's why we [at FTA] are working with our stakeholders, including transit operations themselves, to craft a safety program that makes sense for the various modes, geographic locations, and sizes of our nation's transit facilities."*
>
> - FTA MAP-21 Safety Oversight Q&A

Sources

- MAP-21: Moving Ahead for Progress in the 21st Century. FTA. http://www.fhwa.dot.gov/map21/.
- MAP-21 Fact Sheet. USDOT. http://www.fta.dot.gov/documents/MAP-21_Fact_Sheet_-_Transit_Safety_and_Oversight.pdf.
- MAP-21 Safety and Oversight Questions and Answers. FTA. http://www.fta.dot.gov/tso_15038.html.
- Advanced Notice of Proposed Rulemaking. FTA-2013-30. http://www.gpo.gov/fdsys/pkg/FR-2013-10-03/pdf/2013-23921.pdf.
- Safety, Security, and Emergency Preparedness Excellence – A Roadmap. FTA. http://bussafety.fta.dot.gov/Roadmap.pdf.
- Transit Bus Safety Program. FTA. http://bussafety.fta.dot.gov.
- TCRP Report 160: Paratransit Emergency Preparedness and Operations Handbook. Transportation Research Board. http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_160.pdf.

Cameras Can Help Eliminate Blind Zones

By: Clifton Hall

A set of mirrors is a standard safety device for transit vehicles for viewing objects to the rear and side. One common and universal shortcoming of mirrors is their inability to show the complete space surrounding the vehicle, producing what is commonly known as a blind zone. According to a National Transit Database's 2002 figure, 46 percent of all transit collisions occur on the side of transit vehicles. "Blind zones" have been identified as the primary culprit, and secondarily, the reduced visibility of objects in the mirrors during inclement weather.

This article explores side-mounted cameras as a possible solution to increase visibility in areas mirrors may miss. It also describes the use of cameras in completely replacing side-view mirrors, and estimated costs of implementing a mirror-camera hybrid system. This article will provide information to managers to assist with decision-making for using side-view cameras in their transit operations.

Vision-Based Systems

A number of technologies have been developed to improve safety and avoid collision. Generally, these technologies are as vision-based or sensor-based. For this article, we'll discuss vision-based systems; their primary advantage over sensors is that they give drivers exact visual information, instantly.

A set of mirrors is the most common and inexpensive form of a vision-based system, and allow the driver to see large areas to the side and rear of the vehicle. Two types of mirrors are typically used in transit vehicles: flat mirrors and convex mirrors. Flat mirrors provide an undistorted, reversed image while convex mirrors provide a wider-than-normal visual range that is also reversed and is distorted depending on the angle of the mirror's shape.

Camera-based systems feature either normal or wide-angle lenses, which deliver video to monitors with a reversed image that mimics the effect of mirrors. These systems can be used as a stand-alone replacement for mirrors, or can be used with traditional mirrors as a supplement that enables the driver to see the blind zone. When using cameras instead of flat mirrors, 64.4 percent of the blind zone is reduced, compared with a 43 percent reduction for a flat-convex combination mirrors. Using a camera with wide-angle lens, 100 percent of the blind zone is eliminated, according to the National Center for Transit Research (NCTR). Just like convex mirrors, wide-angle cameras present a distorted image. However, mirrors stick out from the vehicle's profile, and can collide with objects or people close to the side of the bus, including infrastructure, signs, pedestrians, and bicyclists, where cameras do not pose this concern.

With these benefits, why aren't camera-only systems the standard vision system for large vehicles? The first reason is price. They are typically at least 10 times the price of mirrors. Another significant reason is how remarkably different it is to drive without mirrors; some drivers are uncomfortable with them. A reasonable compromise for the problems of either mirrors or cameras being used alone is to use a traditional mirror in combination with a side-view camera to monitor the blind zone. This "hybrid" approach, plus traditional mirror systems and stand-alone camera systems were all evaluated for effectiveness by the NCTR.

National Center for Transit Research

Comparative Testing

The NCTR study was done in two phases. Phase I was done with traditional mirrors as the baseline, and replaced mirrors with cameras to test their detection enhancement capabilities. For Phase II, mirror-camera hybrids were tested against mirrors in a stationary position and then deployed in an actual transit system to evaluate real-world performance. Phase I surveyed drivers' opinions on using the system on a closed course, while surveys were used in Phase II to evaluate drivers' opinions on the systems' performance on actual transit routes.

In addition to a significant reduction in blind spots, a lane change test showed that the cameras were at least as dependable as mirrors when the other vehicle's reaction time was taken into account. The potential sideswipe scenario yielded several examples of the camera systems giving a longer visual than the mirrors.

In further testing, drivers were given a chance to become familiar with the system by driving around a closed course, then, once parked, they were timed on how quickly they spotted objects' locations. Drivers identified objects correctly more often, and significantly faster, when using camerahybrid systems as opposed to mirrors alone. Even though there were more objects to scan with a mirror-hybrid system, it did not decrease performance in reaction time or visibility. The identification time for several of the harder-to-see objects was significantly reduced when cameras were used.

Cameras Can Help Eliminate Blind Zones *(continued)*

These results suggest that using camera-hybrid systems can reduce the time it takes to see and identify an object, while also minimizing blind zones. Commonly cited problems with the system were that they did not work better in inclement weather than mirrors, that they should be adjustable, and that using them at night, when cars' headlights pass the field of-vision, can be distracting.

Considerations and Conclusion

Based on this study, the NCTR has issued general recommended requirements for transit providers considering adding camera-based systems to their vehicles. The added field of vision should be maximized without causing unnecessary distortion, which can distract the driver and increase reaction time. Cameras should also be equipped with technology to filter bright lights such as headlights and streetlamps, which reduces direct glare and "blooming" that make camera images unusable or distracting.

A color display is much preferred since it allows objects to be more easily identified, although black and white images may have a higher resolution when infrared illumination is used.

Camera housings should be rugged and waterproof. For externally mounted cameras, measures such as clearing condensation from the housing, avoiding collection of snow, dust, and debris, and preventing camera vibration should all be taken into account.

Camera monitors should not disrupt a driver's normal field-of-view, and should be mounted on pillars, doors, or the dashboard to minimize obstruction.

The NCTR's standard recommendations are for full-size transit buses to use right and left side cameras with independent housings, attached to mirror posts within the mirror's extension, a camera angle of 60-65 degrees with the field-of-view defined by the vehicle's edge, along with a 7-inch monitor on the left A-pillar and an 8-inch monitor on the top center of the dashboard.

For cutaway buses, NCTR recommends an integrated mirror/ camera housing, with a view of 60- 65 degrees defined by the edge of the vehicle. It recommends a 7-inch monitor on the left A-pillar, with a 7-inch right view monitor mounted either on the right A-pillar, the top of the dashboard, or high on the right A-pillar.

It is important to reverse the image received by the monitor to match the perspective of the bus's mirrors.

Ideally, monitors should automatically power up when the ignition is started, and shut down when the ignition is turned off. On/ off switches located on the monitors should allow the driver to turn monitors off and on by choice while the ignition is running.

While camera systems have been shown to be safe and effective supplements to the standard mirror systems, it is clear that implementing them will take some adjustment by transit drivers. The camera systems very much change the driving experience.

Price, as always, is a consideration when deciding to invest in new systems and utilities. A Kansas City-area truck dealer quoted parts and installation for a side-view camera system between $3000-4000, including two Velvac brand integrated camera-mirrors, two monitors (capable of receiving two additional inputs), necessary cabling, and installation labor.

Safety is an obvious benefit, but it is up to each transit provider to decide if side-view cameras are worth the cost of improving safety for the agency.

Resource: Kansas TransReporter, January 2014

Sources

- Evaluation of Camera-Based Systems to Reduce Transit Bus Side Collisions-Phase II. (2012). Accessed October 8, 2013. http://www.nctr.usf.edu/2012/12/evaluation-of-camera-based-systems-to-reduce-transit-bus-side-collisions-phase-ii/
- Evaluation of Camera-Based Systems to Reduce Transit Bus Side Collisions. (2010). Accessed October 8, 2013. http://www.nctr.usf.edu/2011/08/evaluation-of-camera-based-systems-to-reduce-transit-bus-side-collisions-2/.
- Diamond International, Kansas City, MO. Telephone Interview.

Available Training Programs

The following is a list of the training programs and a course description of each that are currently available to rural transit providers through Missouri RTAP. Requests for training can be made by contacting Doreen Harkins, MO-RTAP Program Specialist, at harkinsd@mst.edu or 573-341-6155.

Defensive Driving

Makes sure all your drivers know how to develop safe, defensive driving habits and attitudes. This program covers essential defensive driving techniques that can reduce collision-related injuries and fatalities and can help you reduce insurance claims, lost work time and vehicle repairs by decreasing the number of collisions. This program also includes student course guides with a certificate of completion.

Passenger Assistance/Mobility Aid Securement

Provides classroom and hands-on training to demonstrate proper assistance techniques and mobility aid securement.

Emergency Procedures

Discusses how transit drivers should handle emergency situations such as breakdowns, collisions and transit passenger vehicle evacuations.

Drug Abuse Awareness in Rural Transit

Educates transit drivers about the hazards of both illegal and legal drugs and alcohol. Various drug-testing regulations are also discussed.

Blood Borne Pathogens

Covers various problems that may be encountered when having to deal with a body fluid spill on the bus and stresses protection for the driver and other passengers.

Operation Lifesaver – *Highway-Rail Crossing Safety*

Covers the importance of safety when utilizing a highway rail crossing. Laws and regulations for commercial drivers are emphasized.

Basic First Aid

Stresses the importance of calling 911. It is a program by the Red Cross that is a refresher course for CPR and rescue breathing.

Backing Safety

Reduce the number of backing collisions. The program is designed by the National Safety Council.

Reversing the Trend – *Backing Safety*

Emphasizes components of the Smith System Defensive Driving Institute defensive driving strategies to reduce backing collisions.

Winter Driving Safety

Covers safety tips and techniques for handling the hazards of winter driving. Topics cover pre-season preparation, pre-trip procedures, and on-the-road issues such as anti-lock brakes and obstructed views.

Fatigue Awareness for Drivers

This program covers: fatigue, signs and symptoms, factors that affect it, sleep, effect on family and social life and strategies and countermeasures.

Driven to Extremes

Covers the myths and realities of aggressive driving.

Entry Level CDL Driver Training

Meets DOT requirements for new CDL Drivers.

Diversity & Awareness Training - *Providing Quality Customer Service for Transportation Passengers who have Disabilities*

Learn how to provide quality customer service and support for passengers with disabilities. As a result of this training you will have an enhanced understanding of disability and diversity, improved ability to communicate respectfully and effectively with people with disabilities and increased ability to provide needed transportation accommodations.

Safe & Secure Proper Infant and Child Seat Installation

Provides information for safely installing and securing a car seat for children.

National Transit Institute

The National Transit Institute is pleased to announce the following upcoming training sessions. Click on each course title for more information on the course or to register. For more information,please contact NTI Program Coordinator Myrna Sirleaf at 732-932-1700, ext. 228 or at msirleaf@nti.rutgers.edu

Procurement Series I - Orientation to Transit Procurement
- March 11-14, 2014 - St. Petersburg, FL
- March 25-28, 2014 - Salt Lake City, UT

Comprehensive ADA Paratransit Eligibility
- March 18-19, 2014 - New York, NY
- April 30-May 1, 2014 - Salt Lake City, UT

National Transit Database
- March 19-20, 2014 - Newark, NJ

Managing Community Mobility
- April 1-2, 2014 - Carson City, NV

Understanding ADA
- April 11, 2014 - Oklahoma City, OK

Disadvantaged Business Enterprise
- April 22-24, 2014 - North Little Rock, AR

Paratransit Management and Operations
- April 29-30, 2014 - Portland, OR

Comprehensive ADA Paratransit Eligibility
- April 30-May 1, 2014 Salt Lake City, UT
- June 18-19, 2014 Chicago, IL

Procurement for Small and Medium Transit Systems
- April 30-May 1, 2014 - Columbia, SC

Risk Assessment for Transit Capital Projects
- May 1-2, 2014 - Denver, CO

Transit Academy
- May 19-23, 2014 - Dallas, TX

Quality Assurance and Quality Control in Transit
- June 3-4, 2014 - Oceanside, CA

Resources

Links

National RTAP – Rural Transit Assistance Program
http://www.nationalrtap.org/

National Transit Institute
http://www.ntionline.com/

Transportation Safety Institute – Transit Safety & Security Training Division
https://www.tsi.dot.gov/Transit.aspx

Federal Transit Administration – Rural Transit Assistance Program Page
http://www.fta.dot.gov/funding/grants/grants_financing_3554.html

Kansas RTAP – Kansas University Transportation Center
http://www.kutc.ku.edu/cgiwrap/kutc/rtap/index.php/index.html

Transportation Research Board's (TRB) Transit Cooperative Research Program (TCRP)
http://www.tcrponline.org/

Upcoming Events

CUTR Webinar: Cost Benefit Analysis of Rural and Small Urban Transit
Mar. 20 @ 12PM

NTI: Transit Trainers' Workshop
Mar. 30 -Apr. 1; Long Beach, CA

FTA: 9th Annual Drug and Alcohol Program National Conference
Apr. 15-17; Little Rock, AR
see front page for more information

APTA: Bus & Paratransit Conference
May 4-7; Kansas City, MO
http://www.apta.com/mc/bus/program/Pages/default.aspx

CTAA Expo
Jun. 8-13; St. Paul, MN

RIBTC: 21st National Conference on Rural Public and Intercity Bus Transportation
Oct. 26-29; Monterey, CA