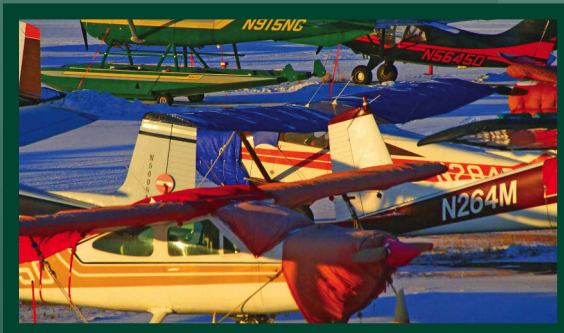


## FINDINGS FROM THE TRANSPORTATION RESEARCH BOARD'S 2010 STATE PARTNERSHIP VISITS PROGRAM



# Enhancing Customer Service Despite Cutbacks

Specialists in the Transportation Research Board's Technical Activities Division identify current issues, collect and generate information on the issues, and disseminate the information throughout the transportation community. The TRB Annual Meeting, TRB-sponsored conferences and workshops, standing committee meetings and communications, publications, and contact with thousands of organizations and individuals provide TRB staff with information from the public and private sectors on all modes of transportation.

A major source of this information is the TRB annual state partnership visits program. Transportation professionals from the TRB staff meet on site with representatives of state departments of transportation (DOTs) and with representatives of universities, transit and other modal agencies, and industry. In addition, TRB staff are involved with planning and delivering conferences, workshops, and meetings. This report summarizes what the TRB staff learned from visits and activities during the past year.

Although the nation's economic outlook improved slowly during 2010, state revenues and budgets lagged behind. The Fiscal Survey of States, released in late November 2010 by the National Governors Association (NGA) and the National Association of State Budget Officers, noted that states have reduced spending dramatically from \$687 billion in Fiscal Year (FY) 2008 to \$613 billion in FY 2010. According to NGA, 40 states made a total of \$22 billion in midyear budget cuts in FY 2010.

Many state departments of transportation (DOTs) and other transportation agencies were forced to reduce staffing levels, institute hiring freezes, furlough employees, curtail travel, and freeze or reduce salaries. The state partnership visits by TRB staff in 2010, however, witnessed a transportation workforce that is more determined than ever to provide value and service to their customers. Individually and collectively, transportation agency staffers are combining hard work, dedication, and innovation to enhance customer service. A sampling of their extraordinary efforts follows.

## Institutional Issues

### *Policy, Management, and Leadership*

Transportation agency staff are relying on strategic management to maximize system performance, efficiency, and customer service with available resources. In states such as California, Florida, Minnesota, Missouri, New Mexico, Virginia, and Washington, transportation professionals are instituting and monitoring performance measurement systems that include quantitative and qualitative tracking of maintenance and operation costs, safety and system performance, and customer satisfaction.

Florida DOT's performance measurement system features a central repository for data collection and storage. To reduce the potential for input errors, the



PHOTO: CHRIS ROSSMILLER, FHWA

Other planning initiatives under implementation in Montana include the rehabilitation of Glacier National Park's popular Going-to-the-Sun Road, scheduled to reopen in June 2011.

data are not entered manually and are loaded into secure folders, preventing changes or manipulation. Caltrans and Texas DOT also are using the software.

The system originally was designed for the Florida DOT Executive Board—unlike Virginia DOT's Dashboard performance reporting system, Florida's is not geared for public viewing. At first, five categories were monitored: safety, organization, system performance, production, and customer and market focus. This has expanded to 16, including transit, maintenance costs, right-of-way, and acquisition.

The measures are color-coded on the screen—green indicates a performance target reached, yellow indicates that the state is within 5 percent of meeting the target, and red indicates that the DOT is less than 95 percent of the way to meeting the target. Data can be viewed on a statewide or district basis.

The performance measurement effort at the Louisiana Department of Transportation and Development (DOTD) is called the Quality and Continuous Improvement Program. Now in operation for five years, the program generates reports to the governor monthly about each division's progress in meeting established performance measures. Strategic objectives are set every five years and adjusted every three years. Louisiana DOTD has developed a scorecard for departmental measures. Each executive's performance review examines the degree of success in meeting established performance goals.

### *Planning*

Several transportation reauthorization proposals have emphasized the connections between transportation and livability. After the November 2010 elections, however, the future of this focus is in question. Nonetheless, discussions about livability have been informative for transportation agencies—in some cases, changing the understanding of agency staff about what customers want from the transportation system.

Planners for a state route improvement project in Montana accommodated a community's heavy use of snowmobiles.



PHOTO: VICKI ANDERSEN



The discussions revealed that livability means different things to different residents and communities. Tribal governments and transportation officials, for example, have heard an emphasis on protecting environmental and cultural resources. In Montana, plans to improve a state route that serves as a main street for a northern community included sidewalks, curbs, and gutters. The planners quickly learned, however, that sidewalks were not a livability feature in a community with heavy snowmobile use—the community's definition of livability valued business access for snowmobiles.

Although livability may not be a focus in the upcoming legislation, the information gained in preparation for this initiative will assist in guiding the development of transportation systems that are more responsive to residents' needs.

### Legal Issues

Funding limitations have raised challenges for new and ongoing contracts. Transportation agency lawyers are exploring innovative contracting methods to expedite construction, such as construction-manager-at-risk and design-build arrangements.

Other issues addressed by agency legal personnel in 2010 include the following:

- ◆ Employment law issues raised by staff cut-backs;
- ◆ The impact of furloughs, voluntary vacations, and retirements on state transportation workforces, projects, and infrastructure;
- ◆ Compliance with the recent amendments to the Americans with Disabilities Act;
- ◆ Challenges to outdoor advertising in the area around a right-of-way, questioning the constitutionality of outdoor advertising statutes and regulations—attorneys are researching the issue and informing government officials about how to avoid problems; and
- ◆ Concerns about the use of conservation easements to protect mitigation property—standard non-profit conservation easements, designed primarily for private parties and federal tax compliance, generally do not fully meet the federal standards.

In addition, the Federal Highway Administration's (FHWA's) 2009 *Manual on Uniform Traffic Control Devices* introduced many changes from the previous edition. To many state DOT engineers and attorneys, some of the revisions allow less flexibility in applying engineering judgment to address unique or unusual circumstances in highway systems. Others note that compliance with some of the new measures may require substantial expenditures by states and munic-



PHOTO: BP

Environmental damage caused by the *Deepwater Horizon* oil spill, which lasted nearly 4 months and released approximately 185 million gallons of oil, highlighted the need for safe ways to obtain oil and replacement energy sources.

ipalities—for example, for upgrading street signs. Some in the legal community and at state DOTs are seeking to have FHWA revisit these issues.

### Energy and Climate Change

Congress failed to pass a comprehensive carbon cap-and-trade bill in 2010 and is not expected to take up any far-reaching climate change legislation in 2011. The *Deepwater Horizon* oil spill in the Gulf of Mexico started on April 20 and eventually was capped on July 15, after the release of approximately 185 million gallons of oil. Safely obtaining oil, using oil in an environmentally safe manner, and developing new energy sources to replace petroleum appear to be intractable but critical problems.

Staff at transportation agencies across the country have taken actions to reduce government use of petroleum. Transportation agency operations are switching to alternative-fuel vehicles and to high-fuel-efficiency vehicles for construction, transit, and fleets. For example, Massachusetts DOT has procured efficient hybrid-electric and compressed natural gas vehicles for its fleet, has used funds from the American Recovery and Reinvestment Act (ARRA) to retrofit its on-road diesel light truck fleet with emission controls, and is pursuing a retrofit to make its hybrid-electric vehicles plug-in capable.

As part of a department-wide sustainability initiative, Massachusetts DOT has retrofitted four automobiles with plug-in capability.



PHOTO: MASSACHUSETTS DOT

A team from New York State DOT rehabilitated a culvert (left) near Labrador Hollow in Cortland County to protect salamanders crossing underneath the road. Using an old guide rail, the team built walls around the culvert to steer the salamanders safely through the passage (right).



PHOTOS: NEW YORK STATE DOT

In Connecticut, the Electric Vehicles Infrastructure Council has prepared recommendations for the state to accommodate the integration of electric vehicles. Operations personnel at agencies continue to improve the operation of transportation facilities to reduce energy consumption—measures include improved signal timing, managing travel lanes, reductions in idling, and providing commuters with alternatives to single-occupancy vehicle trips. Individually, these actions make a small difference, but combined across a region, a state, and the nation, they can have a major impact.

#### Environment

All state DOTs are dealing with staff reductions and with attrition through retirement. Maintaining the institutional knowledge related to state and federal environmental documentation, in particular, has proved problematic. Workers in several states are now trying to document their processes to assist the next generation of state environmental planners, as well as staff who have inherited environmental responsibilities because of reductions.

Water quality remains a dominant issue, particularly the application of Municipal Separate Storm Sewer System permit requirements. Culvert management and passages for protected aquatic species—particularly in areas designated as critical habitats—

also are a water-related focus for states.

State environmental and construction personnel are working together to identify effective solutions for the recycling of construction and demolition materials. Potential changes in regulations may affect available options, such as using industrial fly ash in pavement construction.

Other environmental issues gaining attention include the management of aging bridges designated as historic properties; wildlife passages; tracking the spread and mitigation of invasive plant species along roadway corridors; and developing roadway management programs to accommodate changes in climate, particularly in coastal zones.

#### Data and Information Technologies

As the issues facing agencies increase in complexity, broader and more timely data are needed to support decision making. State information specialists are working to improve the quality and availability of data sources to support multiple customers and issues. In Minnesota and other states, for example, experts are developing formal business plans to assess the capability of available data sources to meet needs across the department and to ensure that data resource investments match the benefits.

Improving access to the data that serve multiple users within an organization and with partners is a continuing theme. Inventory data collection technologies are becoming more sophisticated. Collection activities can include extracting location features for referencing, including feature types, attributes, and condition.

Some systems integrate an array of business needs—such as transportation asset management, intelligent transportation systems, pavement management, bridge management, and system performance. Colorado has established a statewide traffic data committee to enhance sharing between the state and localities and to reduce duplication of collection activities.

Geographic information systems have been important tools for data sharing. Data professionals

Built in 1948, Bridge 5718 over the Kettle River in Minnesota is designated a historic bridge.



PHOTO: MINNESOTA DOT



in Kansas have developed the KGATE portal for the geographic analysis and display of key data throughout the department. Utah DOT has a similar application. The diversification of uses for spatial data is challenging the capabilities of the linear referencing systems developed a decade ago; some are working to reengineer these critical integration tools.

## Aviation

Personnel in the Federal Aviation Administration (FAA) worked on a record 16th budget extension without a formal reauthorization of funding or a clear indication of when the new Congress may approve a longer-term FAA budget. Many state DOTs are cutting back or eliminating their funding for airport improvements and staff management, increasing pressures on state aviation budgets and workforces.

Nevertheless, the rollout of continuous improvements and upgrades under the Next Generation air transportation system initiative is proceeding, along with related safety and environmental programs. These include safety improvements for runway areas; local air quality and climate change mitigation; and investigations of alternative aviation fuels for jets and general aviation.

The implementation of new aviation security measures has stirred debate, revealing a need for better communication among all parties, including the Department of Homeland Security, FAA, airports, and aircraft operators. Improved communication is needed to enhance security measures and to coordinate response in emergencies, such as the disruption of the aviation system after the Eyjafjallajökull volcano eruptions in Iceland earlier in the year.

## Freight Systems

Dramatically lower growth rates, tight credit markets, international trade and currency imbalances,

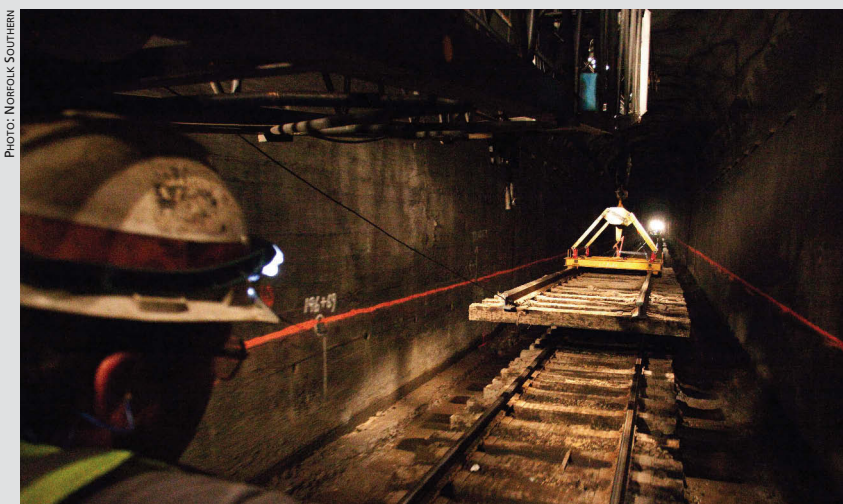


PHOTO: NORFOLK SOUTHERN

and uncertainty continued to affect manufacturers, homebuilders, financial institutions, the public sector, consumers, and other drivers of freight service demand. Most freight transportation sectors showed some improvement during 2010, but none has regained the levels achieved in 2007.

Enterprises that anticipated and made adjustments before the recession and those that had the flexibility to adjust during the recession may have fared better than others. Most are responding to the economic strains through efforts to cut costs and improve efficiency.

The focus has turned from capital investment to research, development, and implementation of new approaches to improve operations—particularly through technological enhancements—and to expand capacity. The goal is to make capital assets more productive instead of investing in new assets.

Nonetheless, the nation's freight infrastructure continues to be inadequate for demands, according to many analysts, who point to the need to improve capacity in anticipation of the economic recovery. Several initiatives are under way to address capacity issues. The Heartland Corridor commenced operations in fall 2010, and other major freight projects—such as the National Gateway Project and the Crescent Corridor—are making progress. In addition, U.S. DOT announced approximately \$1 billion in Transportation Investment Generating Economic Recovery (TIGER) and TIGER II grants in 2010 to fund freight and freight-related projects across the country.

## Highways

### Design

Design personnel in states are strategically meeting the challenges of designing new and improved transportation infrastructure by applying sustainable engineering practices to meet multiple design objectives—

Construction workers lay track in a newly completed tunnel in the Heartland Corridor, which provides a new, shorter route between Norfolk, Virginia, and Columbus, Ohio. The project, a public-private partnership between Norfolk Southern Corporation and the states of Ohio, West Virginia, and Virginia, opened in September 2010.

Small planes parked on the Merrill Field General Aviation Apron. When it opened in 1930, Merrill Field was the first official airport in Anchorage.



PHOTO: JEFF NICKERSON, GCPVD.ORG

Some state initiatives have emphasized multimodal connections. Since October 2010, the Interlink facility at T. F. Green International Airport in Providence, Rhode Island, has linked the airport with a rental car facility, intercity bus services, and a commuter train platform.



PHOTO: HARVEY DOUTHETT, ALASKA DOT & PF

such as environmental stewardship, durable and long-life infrastructure, and shorter durations for construction and rehabilitation projects. In most states, however, reduced budgets have meant fewer staff to deliver the programs.

In Indiana, staff have reported significant cost savings through the implementation of the *Mechanistic-Empirical Pavement Design Guide* (MEPDG) on several Interstates and U.S. highways. In some cases, pavement thicknesses were reduced by 10 to 15 percent but met standards; state DOT professionals project a savings of \$20 million per construction season on pavement rehabilitation projects. The MEPDG efficiency is promising, although the savings for state routes are less.

At Washington State DOT, experts have made progress in developing seismic connection specifications for accelerated bridge construction, which can reduce project costs and achieve environmental objectives. Oregon DOT staff have applied practical design principles to leverage asset management funds for the redesign of highway corridor projects—the flexible parameters allow the design teams to implement a solution that is sufficient. In Illinois, researchers in the Bureau of Materials and Physical Research have optimized the use of engineered materials in highway designs, increasing system sustainability.

### **Construction and Materials**

Many states will lose experienced construction personnel in the next few years because of retirements

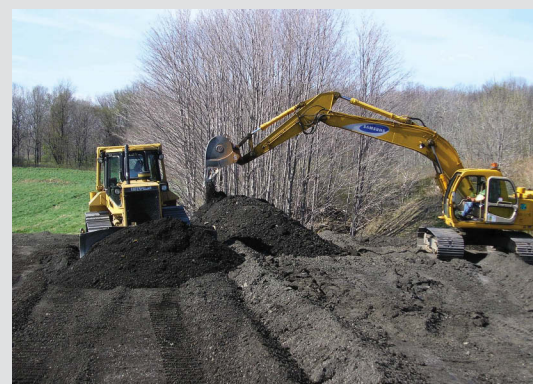


PHOTO: PENNSYLVANIA DOT

Equipment operators prepare recycled asphalt pavement millings to be fed into a crusher. Recycled asphalt—the most-used recycled pavement material—was used in the resurfacing of Raccoon Creek Road in Beaver County, Pennsylvania.

yet are hesitant to hire replacements because of the uncertainty of funding. Foreseeing this attrition of construction staff, many state DOTs are evaluating alternatives to design-bid-build agreements for delivering projects.

Warranties and design-build agreements already are routine in a few states. Guidelines under development through a National Cooperative Highway Research Program (NCHRP) project may enhance the application of warranties.<sup>1</sup> A few states are piloting the construction-manager-at-risk contracting approach, and an NCHRP project is developing a guidebook.<sup>2</sup>

Automated machine guidance systems and intelligent compaction are subjects for research and pilot tests in several states. With the evolution of different methods to deliver projects, state construction professionals seek ways to evaluate alternative quality management systems that may be better suited to these new approaches than the traditional design-bid-build quality management system. NCHRP has launched a project to provide assistance.<sup>3</sup>

Materials and environmental personnel are working together at the state level for environmental stewardship with materials, particularly for the use of recycled materials and industrial byproducts in transportation applications. An NCHRP synthesis project is exploring the viability of many of these materials and byproducts for construction.<sup>4</sup>

Recycled asphalt pavement is still the most widely

<sup>1</sup> NCHRP Project 10-68: Guidelines for the Use of Highway Pavement Warranties.

<sup>2</sup> NCHRP Project 10-85: A Guidebook for Construction Manager-at-Risk Contracting for Highway Projects.

<sup>3</sup> NCHRP Project 10-83: Alternative Quality Management Systems for Highway Construction.

<sup>4</sup> NCHRP Synthesis 20-05, Topic 40-01: Recycled Materials and Byproducts in Highway Applications.



PHOTO: CHRISTINE GENCHER

The Penobscot Narrows Bridge Observatory (*right*) in Maine is the only bridge observatory in the United States. The bridge was planned and built in 42 months.



used recycled material. Experts in some state DOTs have tried warm-mix asphalt and are waiting for a recommended warm-mix design method in development through NCHRP.<sup>5</sup> In a few states, researchers are looking into applying photocatalytic compounds—such as titanium dioxide nanoparticles—to pavement surfaces to remove harmful air pollutants such as nitrogen oxides and volatile organic compounds.

### Geotechnical Engineering

In 2010, geotechnical engineers focused on the implementation of load and resistance factor design for foundations; the investigation and mitigation of landslides and rockfalls; the development of less expensive—yet effective—mitigation measures for slope failures; the characterization of aggregates to predict performance in pavements; pavement subsurface drainage; the use of recycled and waste materials in transportation infrastructure; and the study of soil stabilization.

Geotechnical asset management (GAM) is an emerging trend, raising awareness of the geotechnical engineering assets that a state DOT owns. Some states have initiated asset management approaches related to specific geotechnical assets.

To provide a forum for identifying needs and for disseminating information about GAM, TRB created a subcommittee of the Engineering Geology Committee. The subcommittee organized a program at the 61st Highway Geology Symposium in Oklahoma City in August 2010 to showcase GAM efforts. Presentations included management systems to address rockfalls and landslides; inventorying sources of aggregates; inventorying and assessing the condition of retaining walls; and evaluating buried structural components.

Continued dissemination of this information to practitioners should enhance awareness of a GAM system encompassing all geotechnical assets. The system could be assimilated into the transportation asset management efforts under way in most states.

### Highway Operations

With the ever-increasing focus on climate change, the imposition of emission targets, the reductions in revenue, and the need to improve system performance, operations professionals in DOTs point to a growing need to manage and make better use of the highway system. In addition, the ability of agencies to construct new capacity in congested urban corridors is increasingly restricted by funding, construction costs,

<sup>5</sup> NCHRP Project 09-43, Mix Design Practices for Warm-Mix Asphalt; findings are scheduled for publication as NCHRP Report 691 in 2011.

PHOTO: GEORGE HORNAL, TENNESSEE DOT



environmental constraints, and growth in travel.

Actively managing the design and operation of a freeway has become commonplace in many states. Agency personnel are deploying innovative design and operations treatments to optimize the use of the entire roadway cross section to improve the performance of specific lanes or of the entire freeway or highway.

Active traffic management (ATM) offers a toolbox of countermeasures that can be used in various combinations to manage congestion dynamically in response to prevailing traffic conditions by maximizing use of the road space. Operations experts in many states are pursuing ATM to mitigate congestion within highway corridors and to optimize the investment in the roadway infrastructure.

Under an ATM scenario, as traffic congestion increases, various countermeasures are put into effect—although not necessarily at the same time—to manage the congestion. These countermeasures could include improved detection, dynamic speed limits, motorist information through electronic variable message and lane control signs, temporary shoulder use, ramp metering, priced and managed lanes, and dynamic rerouting.



A landslide caused by major floods in May 2010 destroyed SR-7 in Maury County, Tennessee. In 2010, landslides and rockfalls were a much-studied topic for geotechnical engineers.

New federal requirements for sign reflectivity, established in 2008, require that signs must either be illuminated or made with retroreflective sheeting materials.

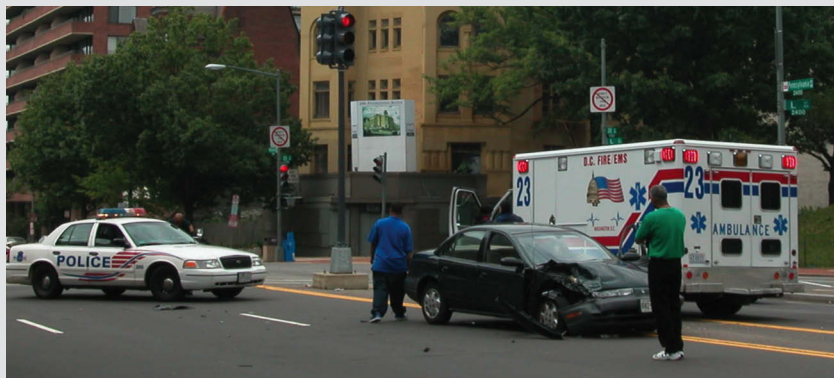


PHOTO: AAA FOUNDATION FOR TRAFFIC SAFETY

Fatalities from highway crashes dropped to a 61-year low of 33,808 in 2009, according to National Highway Traffic Safety Administration data.

### Infrastructure Preservation

Safety for the traveling public and for roadway workers in work zones remains a paramount concern for transportation agencies. Many DOT staffs are addressing work zone safety and mobility requirements and are exploring new technologies to provide real-time information to drivers approaching and moving through work zones. Agencies are struggling to find funds to implement the new national requirement to manage and maintain minimum levels of sign reflectivity.

State DOTs have noted that succession planning for maintenance employees at all levels is critical. Several state DOTs have started summer employment programs to attract graduate engineers. Other agencies are supplementing their workforces through outsourcing, citing limited in-house resources, the need for specialized expertise or equipment, statutory requirements, seasonal work, and contractor availability.

The procurement models for outsourcing include short-term input models with payments for labor, equipment, and materials; one- to five-year area or roadway corridor output models with payments for accomplishments such as acres mowed; and longer-term, lump-sum corridor or network outcome models measuring a level of service such as pavement smoothness and friction.

DOTs are integrating their legacy management systems—designed for traditional engineering concerns such as pavements, bridges, and maintenance—into agencywide asset management approaches, with performance measures to monitor progress toward established goals. This approach supports infrastructure preservation by maintaining a functional condition through cost-effective preventive actions that safeguard structural integrity and extend performance life. Personnel in several agencies expressed a need for a preservation terminology that is consistent for all infrastructure assets and for extensive workforce training to promote understanding of the preservation approach.

### Highway Safety

Highway crash fatalities declined again in 2009. The nationwide total in 2007 was 41,259 deaths; in 2008, 37,423; and in 2009, 33,808.<sup>6</sup>

The American Association of State Highway and Transportation Officials published the TRB-developed *Highway Safety Manual* (HSM) in 2010, and states are applying the approaches. A lead state program funded through FHWA and NCHRP began in 13 states in 2010. NCHRP and FHWA have developed training for implementation of the manual.

The safety professionals at state DOTs and partner agencies who are developing and updating Strategic Highway Safety Plans are relying on analyses of systems instead of unsafe hot spots. NCHRP published a CD-ROM tool, *PLANSafe: Forecasting the Safety Impacts of Socio-Demographic Changes and Safety Countermeasures* (CRP-CD-78), to assist planners at state DOTs and metropolitan planning organizations (MPOs) to include safety in the long-range planning process.<sup>7</sup> Additional pilot testing of PLANSafe continues at Florida DOT and several MPOs.

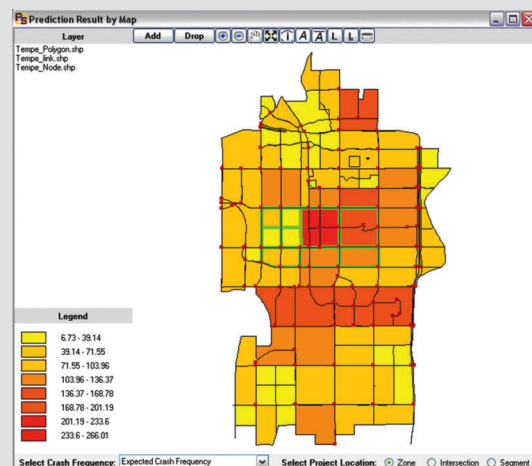
Louisiana was one of three pilot test sites for NCHRP's Model Curriculum for Highway Safety Core Competencies, published as NCHRP Report 667.<sup>8</sup> The course attracted interest and attendance from the traffic law enforcement community; Louisiana DODT has scheduled additional course presentations to accommodate the interest.

Several nations have made significant advances in highway safety and are reducing annual traffic fatalities.

<sup>6</sup> [www.nrd.nhtsa.dot.gov/Pubs/811403.pdf](http://www.nrd.nhtsa.dot.gov/Pubs/811403.pdf), Table 1.

<sup>7</sup> [www.trb.org/Main/Blurbs/PLANSafe\\_Forecasting\\_the\\_Safety\\_Impacts\\_of\\_SocioDe\\_163790.aspx](http://www.trb.org/Main/Blurbs/PLANSafe_Forecasting_the_Safety_Impacts_of_SocioDe_163790.aspx).

<sup>8</sup> [http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp\\_rpt\\_667.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_667.pdf).



Users of the CD-ROM tool PLANSafe can select one of three types of crash frequency and can view prediction results in map form. Evaluation results then can be printed into a report document.



ties and fatality rates faster than is the United States. To learn from these successes, TRB has produced a study, Special Report 300, *Achieving Traffic Safety Goals in the United States: Lessons from Other Nations*.<sup>9</sup>

## Ports and Waterways

The nation's ports and waterways continue to face environmental and funding challenges, but several examples show the progress made in the past year. The At-Berth Clean Fuels program in the Port of Seattle, Washington, encourages shipping and cruise lines to burn cleaner fuels while at berth and has eliminated more than 340 metric tons of sulfur dioxide emissions. The program is a partnership that includes ocean carriers and the Puget Sound Clean Air Agency.

In November, officials from the Port of Long Beach, California, and from other ports and state and federal agencies launched a five-year, \$950 million project to replace the Gerald Desmond Bridge. This joint project of the California DOT and the Port of Long Beach received additional funding from U.S. DOT and the Los Angeles County Metropolitan Transportation Authority.

Earlier in 2010, Florida Governor Charles Crist led the groundbreaking for the Interstate 4–Selmon Expressway Connector project that will include an elevated truck bypass linking the Port of Tampa's main access directly with the Interstate Highway System. The bypass will shift a significant amount of truck traffic away from the city's historic Ybor City district. The project is a coordinated effort of Florida DOT, Florida's Turnpike Enterprise, and the Tampa–Hillsborough Expressway Authority.

Several waterways were designated part of America's Marine Highway program; one, the M-40 Connector, includes the McClellan-Kerr Arkansas River Navigation System and will stretch from Oklahoma's Tulsa Port of Catoosa to the Mississippi River.

## Rail

### Passenger Rail

The Passenger Rail Investment and Improvement Act of 2008 and the ARRA renewed interest in passenger rail in 2010. The ARRA provided \$8 billion in federal assistance to jump-start intercity and high-speed passenger rail service; an annual appropriation made an additional \$2.5 billion available during 2010.

Utilization of the federal funds, however, has been slower than expected. Administration of the program has challenged the capacity of the Federal Railroad Administration (FRA) and has presented new issues, such as compliance with the National Envi-

<sup>9</sup> <http://onlinepubs.trb.org/onlinepubs/sr/sr300.pdf>.

See article in this issue, page 30.

PHOTO: PORT OF LONG BEACH



ronmental Protection Act (NEPA). Historically, rail projects have been financed without federal funds and therefore have been exempt from NEPA; FRA is developing a process for categorical exclusions and an inventory of projects that would qualify.

In addition, many of the passenger rail projects entail development on rights-of-way owned and operated by freight railroads. Freight rail representatives have expressed concerns about the capacity of these rights-of-way to accommodate increases in freight and in passenger service, including high-speed rail, and about the safety of commingled operations. To conclude an FRA grant agreement, the host freight railroad must agree to the project. Negotiation of these agreements has proved time-consuming.

After the elections in November, changes of administration in some states have altered the prospects for enhanced passenger rail. The states must cover project cost overruns, and the ARRA

Replacement of the 42-year-old Gerald Desmond Bridge—a joint project of the California Department of Transportation and the Port of Long Beach—currently is under way. The nearly \$1 billion project is expected to be completed in 5 or 6 years.

Last year, funds from the American Recovery and Reinvestment Act of 2009 were secured for the eventual replacement of the Livingston Avenue Bridge in New York between Rensselaer and Albany. The rail bridge is nearly 150 years old.

PHOTO: CARL JOHNSON, RENSSELAER, NEW YORK





With new proposals for intercity passenger rail, shared rail corridor use by freight and passenger operations presents a challenge.

funds do not cover expenses for operation and maintenance; as a result, some of the new administrations question whether the public benefit justifies the expense, citing historically low ridership.

### Freight Rail

On the freight rail side, the following issues loom:

- ◆ The proposed shared use of rail corridors by high-speed passenger rail and freight rail operations

raises challenges to capacity, safety, and maintenance and remains under discussion.

- ◆ Some in the freight rail industry maintain that the costs of implementing positive train control by 2015 may exceed the benefits. Financial assistance or tax credits to defray some of the cost have been proposed.

- ◆ The Staggers Act substantially reduced regulation of freight railroads 30 years ago; reinstituting some level of regulation is now under consideration. In a report, the Senate Committee on Commerce, Science, and Transportation notes that freight railroads have become profitable; yet the committee expresses concern that regulations have allowed the railroads to overcharge so-called captive shippers. Many freight railroads deny this and assert that freedom from additional regulation is necessary to retain and attract private investment.

### Public Transportation

Public transportation agencies have implemented innovations in financing and customer service and have formed partnerships in urban and rural envi-

## Did You Know?

- ◆ Arizona State University (ASU) operates a Decision Support Theater, a seven-screen immersive environment that displays complex data, models, and visualizations for decision makers and others. ASU staff have developed and employed graphics and tools to compare alternatives, develop consensus, or view the built environment in new ways. With the tool, decision makers and researchers have explored a range of topics, including urban development, education, environmental issues, policing and security, and public health.

- ◆ The fatality rate on rural roads is more than twice that in urban areas. The Western Transportation Institute at Montana State University, Bozeman, has a Naturalistic Driving Lab with three driving simulators to explore the driver's role in fatal rural traffic crashes. The most advanced simulator is a virtual reality, motion-based unit with a two-cab installation—sedan or pickup—and is used for human factors experiments and system evaluations. Research programs have tested cell phone use and teen driver safety.

- ◆ The planets Mars and Venus are better mapped than the state of Alaska. Aeronautical charts for the state are based on survey data from 1948 to 1952, and the inaccuracies have negative effects on safety. Many coastal marine maps similarly are out of date—some incorporate George Vancouver's charts from the late 18th century. The state DOT has launched the Alaska Aviation Safety Project and the Statewide Digital Map-

ping Initiative. One main task is to identify opportunities to use cell towers as a backup for automatic dependent surveillance-broadcasts in remote mountain areas with poor coverage. Another project is creating digital maps for at least 10 percent of the state's most heavily traveled areas.

- ◆ Many airports nationwide are using engineered material arresting systems (EMAS) to meet the FAA runway safety area requirements. Alaska has encountered a unique problem—moose walking across can poke holes in the EMAS.

- ◆ Rural emergency medical service drivers have a crash fatality rate 13 times higher than that of their urban counterparts.

- ◆ One in eight vehicles in Montana will be involved in a collision with an animal.

- ◆ Florida DOT is the only state agency with an archaeologist on staff.

- ◆ South Dakota DOT staff are responsible for more lane miles per person than staff at any other state DOT.

- ◆ A 300-year cycle near-shore undersea earthquake has been predicted as imminent along the coast of Oregon. If the event occurs, tsunami damage probably would claim Highway 101 along the coast. The coastal geology and infrastructure of Oregon are similar to those of Chile before the February 2010 earthquake.

- ◆ Oregon State University has a tsunami wave research center with a 120-foot-long channel that can produce a wave 6 feet tall.



ronments. Staff in transit agencies are using social media and smartphone applications with real-time arrival information to improve customer service effectively and to reduce printing costs. Many are forming partnerships and soliciting corporate sponsors for rail lines and stations, bus routes, retail concessions, and special events. For example, the Chicago Transit Authority recently updated the North-Clybourn stop, near an Apple Store, under the corporate sponsorship of Apple, Inc., which holds future naming rights for the station.

States have used creative financing—for example, private matching funds—to support and maintain rural intercity bus service. The Federal Transit Administration (FTA) approved a pilot program allowing states to include the capital costs of private-sector intercity bus service as an in-kind match for funds awarded under 49 U.S.C. 5311(f) for the operation of connecting rural intercity bus feeder services. For example, Kansas replaced lost service by working with Colorado to connect western Kansas with Pueblo and Denver.

State DOTs and transit authorities also are developing partnerships with other agencies to establish new services. In Aspen, Colorado, the Roaring Fork Transportation Authority implements projects to connect the region's trails with transit. In Montana, the Bureau of Land Management of the U.S. Department of the Interior and the state Fish, Wildlife, and Parks agency are helping to identify transit options, including shuttle buses to the Lower Madison River in the summer and to ski resort areas in the winter.

## Dedication and Effort

This sampling portrays some of the many behind-the-scenes efforts by dedicated staff at transportation agencies across the country. A cross section of colleagues in industry, consulting, contracting, universities, and research are supporting their initiatives. Despite diminished resources, their combined efforts are progressing toward key goals, ranging from reducing traffic deaths to improving the environment. TRB salutes their extraordinary dedication and efforts in these difficult times.

PHOTO: HARVEY DOUTHETT, ALASKA DOT & PF



The Nunapitchuk runway in Alaska's Yukon-Kuskokwim Delta. In this region, aviation is the primary form of transportation, and accurate aeronautical data are a necessity.

◆ On November 6–7, 2006, a massive debris flow on the east side of Mt. Hood washed out a 2.5-mile section of Oregon Highway 35; the flow contained an estimated 200 million cubic yards—or 20,000 dump truck loads—of mud, trees, and boulders. The highway reopened on December 8, 2006.

◆ The Purdue Road School, held annually at Purdue University since 1914 and cosponsored by the university's School of Civil Engineering and Indiana DOT, brings together approximately 1,500 transportation-related professionals from throughout the state for a three-day program.