Intercity Rail Passenger Systems Update

CURRENT RESEARCH AND DEVELOPMENT IN INTERCITY RAIL PASSENGER SYSTEMS

NUMBER 6 **DECEMBER 1999**

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Intercity Rail Passenger Systems Update is now published exclusively on the Internet. The table of contents offers links directly to each article, or you can scroll down to read the entire newsletter. Please keep your bookmark at http://www4.nationalacademies.org/trb/onlinepubs.nsf for upcoming editions.

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Acronyms Used Commonly Throughout This Edition:

Amtrak–National Railroad Passenger Corporation
DMU–Diesel Multiple Unit Vehicles
DOT–Department of Transportation
FRA–Federal Railroad Administration
MWRRI–Midwest Regional Rail Initiative
TCRP–Transit Cooperative Research Board
TRB–Transportation Research Board

Intercity Rail Passenger Systems Update is published intermittently by the Transportation Research Board to disseminate information about current research and development in intercity rail passenger systems. Ronald C. Sheck, editor; Daniel L. Roth, Chairman, TRB Committee on Intercity Rail Passenger Systems; Elaine King, TRB staff. Any findings and conclusions are those of the authors and not of TRB. Submit news items to *Intercity Rail Passenger Systems Update*, Transportation Research Board, 2101 Constitution Avenue, NW, Washington, DC 20418, telephone 202-334-3206, or e-mail eking@nas.edu.

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FROM THE EDITOR

Welcome to the first electronic newsletter of the Transportation Research Board's (TRB's) Committee on Intercity Rail Passenger Systems (A1E13)! In keeping with a new policy adopted by TRB, we will no longer produce a hard-copy newsletter for distribution to committee members and friends. TRB has decided that the level of Internet access and use by transportation professionals warrants having newsletters available in this new format. Cost savings associated with printing and distribution were also factors in making the electronic newsletter decision.

As editor, I believe we have assembled an interesting collection of news items and research materials for this first electronic issue. I deeply appreciate the time and effort invested by the various contributors who made this issue possible. To all of you, thanks for this active show of support for the Committee's activities. Items are grouped into two categories: a research section that reports on three subjects; and a section devoted to news items on rail passenger corridors in the United States and overseas.

In this edition, the research materials include a summary report by Arrigo Mongini, the Acting Associate Administrator for Railroad Development, Federal Railroad Administration (FRA), on FRA research activities; a capsulation of the Transit Cooperative Research Program (TCRP) Report on joint use of Diesel Multiple Unit Vehicles (DMUs), light rail, and intercity freight and passenger service written by David Phraner who served as project manager for the consultant team; and an interesting perspective on the significance of grade crossing safety and high-speed rail by Jack Tone of Parsons Brinckerhoff.

News reports from corridors and state programs have been provided by representatives involved in these efforts in several regions of the country. Chris Anderson reports on the Cascade Corridor. Caltrans' Matt Paul revisits the California corridors. Randy Wade of the Wisconsin Department of Transportation (DOT) provides us an update on the Midwest Regional Rail Initiative (MWRRI). Mark Sullivan summarizes North Carolina's statewide rail program developments.

Aad Ruhl from the Netherlands provides an overseas perspective and update of recent passenger developments in Europe.

The success of this newsletter depends on the contributions of committee members and friends. If you are involved in a research project or have a news item that you would like to report, please contact us through Elaine King, Rail Transport Specialist, TRB, at eking@nas.edu. Comments about the newsletter are welcome.

— Ronald C. Sheck, Editor
President, Transit Solutions.

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CHAIRMAN'S REPORT, FALL 1999

Intercity passenger rail (IPR) is a field in which unfortunately too little formal research is sponsored. As a result, A1E13 draws material and insight from a range of sources to share with the professional community we serve. Domestically, the state of the passenger rail planning practice is being largely advanced through federal and state-sponsored policy studies and actual projects, as well as the National Railroad Passenger Corporation's (Amtrak's) activities. Thus, in addition to a relatively small number of published formal papers, we are using presentation sessions and publications to disseminate findings and methodologies from these studies and actual projects.

We have focused on a couple of key themes throughout the past few years. The first is to evolve the understanding of IPR's place among modes. The future of successful IPR planning lies in understanding its intermodal context, from identifying competing and complementary markets, to enhancing facilities and operations. The second theme is the importance of capturing knowledge across the full range of IPR, from incremental improvements of conventional services, to new dedicated high-speed systems, to new technologies (e.g., Maglev). And to the extent possible we have actively sought the contribution of international expertise. This year's Annual Meeting program will again reflect these themes. (Please access the latest program on TRB's website at www4.nationalacademies.org/trb/annual.nsf and go to the Railroad Transportation link under Specialty Programs.)

I'd like to share with you some of the things that A1E13 has undertaken since the last newsletter was published. At the January 1999 Annual Meeting we sponsored three sessions. The economics and finance-themed session included an informative overview of ridership and revenue forecasting, focusing on different estimates of traveler value of time. Also presented during that session were the methodology used by USDOT Office of the Inspector General to review Amtrak and the financing structure for the proposed Florida Overland eXpress (FOX) high-speed rail system in Florida.

Intermodal issues including bus and air interfaces were the focus of the second session. Separate stimulating presentations highlighted the contrast between the American and European experience on air-rail interfaces (largely competitive, versus frequently complementary, respectively). A third session (co-sponsored with the Committee on Guided Intercity Passenger Transportation) served to draw lessons for future U.S. corridor endeavors from the ongoing major enhancements to the Northeast Corridor, the latest stage of the Northeast Corridor Improvement Program begun over 20 years ago. This wide-ranging session provided historical perspective and covered civil engineering, commercial and commuter rail interface challenges, as well as federal oversight issues.

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Late 1998 saw the release of our Committee's comprehensive research problem statement, an effort that grew from TRB's National Conference on Critical Issues for the Future of Intercity Passenger Rail. This useful document (TRB Circular Number 490) serves as a catalogue of the numerous areas of research critical to the future of effective IPR planning. The discussion covers the collection of appropriate performance measures and metrics and the ways of learning from international IPR systems. Detailed chapters cover research needed on socioeconomic issues, management, financing and institutional options, and a host of infrastructure-related issues. We urge you to access this document (available through TRB's electronic bookstore at www.nationalacademies.org/trb/bookstore) and hope that it will help spur focused and much-needed research.

Finally, please look for A1E13's insightful contribution to the collection of papers on Transportation in the New Millennium available on CD-ROM. And as a reminder, we are constantly looking for papers and presentation ideas. Please stay in touch with us!

— Daniel Roth, Chairman
Committee on Intercity Rail Passenger Systems

UPDATES ON GRADE CROSSING RESEARCH AND DEVELOPMENT

FRA's grade crossing research program focuses on all aspects of the highway-railroad intersection, addressing the human factors of motor vehicle drivers, the visual warnings from signs, lights and rolling stock, motor vehicle and train presence detection systems, crossing geometry, photo enforcement systems, gate and light technology, as well as developing new techniques to conduct risk assessments. The program includes research, development, demonstrations, and education projects.

Projects underway include

- **Freight car reflectorization**—using retroreflective material to make freight cars and locomotives more visible to motorists;
- **Locomotive conspicuity**—clarifying whether steady burn or pulsing ditch lights are more effective in improving conspicuity;
- **Optimal acoustic warning systems**—optimizing the sound quality and effectiveness of train horns while reducing noise pollution in surrounding communities;
- **Driver behavior and accident causation**—gaining a better understanding of how drivers react to grade crossings and why accidents happen so drivers can increase their awareness of risks;

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- **Vehicle, train, and obstacle/intrusion detection**—examining and testing innovative vehicle, train, and obstacle/intrusion detection technologies suitable for use at grade crossings and expanding use along the right-of-way;
- **Illumination guidelines**—using street lights to illuminate trains at night so drivers can see and avoid running into the trains;
- **Photo enforcement**—using video cameras to record violations at crossings to assist law enforcement officers with their enforcement duties; and
- **Demonstration assessments**—evaluating technologies such as the four-quadrant gate with obstruction detection in Connecticut, the vehicle arrester barrier (VAB) in Illinois, and innovative, low-cost mitigation technologies submitted under a Broad Agency Announcement (BAA).

The Next Generation High-Speed Rail Program funds the TRB High-Speed Rail Ideas Deserving Exploratory Analysis (IDEA) program to support development of innovative projects that support high-speed rail, as well as the Intelligent Transportation System (ITS) IDEA program to develop ITS concepts, such as a very wide view camera suitable for automated monitoring of grade crossings and a scanning radar antenna for surveillance systems. BAA is also used to support innovative grade crossing concepts, such as the Locked Gate at Private Crossings, to be demonstrated in New York.

Finally, ITS Architecture Support developed User Service #30 to incorporate grade crossings into the overall ITS architecture and to link train control systems with advanced highway traffic control systems.

Recently completed in Connecticut is the demonstration of four-quadrant gates with obstacle detection and a communication system to notify the locomotive engineer of an obstruction in adequate time for the train to be stopped. Loop detectors between the gates and the track and between the tracks provide obstacle detection. When an obstacle is detected, a restricting signal is displayed in the train cab, ordering the locomotive engineer to slow down and stop safely if needed. The demonstration, begun in July 1998 at School Street in Mystic, is completed and the system remains in operation. A similar system, being installed at Palmer Street, is scheduled to be operational in December 1999. This system requires a gate downtime between 75 and 80 seconds, or about 2.5 times longer than before the system was installed. The public has not objected to this added wait time. Amtrak recently announced that they will use the technology at six other crossings in Connecticut.

VAB is being demonstrated at three locations on the Chicago–St. Louis high-speed rail corridor in Illinois. Similar to the nets used on aircraft carriers to stop planes in an emergency, the nets are housed in an overhead framework and are activated by the warning system at the grade

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crossing. As a train approaches, both the lights and gates at the crossing and VAB are activated. The net descends to block the entire roadway, preventing drivers from going around the net. The VAB systems are installed 100 to 150 feet from the crossing to slow any impacting vehicles. The demonstration began in March 1999 in McLean and Chenoa, and the nets in Hartford became operational in April 1999. So far, there have been six incidents of vehicles impacting the nets.

The Sealed Corridor Initiative builds upon the demonstrations of median barriers, four-quadrant gates, and finally four-quadrant gates with median barriers conducted at Sugar Creek Road in Charlotte, North Carolina from November 1994 through November 1996. Installed so far between Charlotte and Raleigh are four 4-quadrant gates (17 are planned), one long gate arm (51 are planned), and median barriers at 14 locations (22 are planned). A total of 12 crossings have been closed (4 private) and there are plans to close 7 more. Studies have identified 13 additional crossings eligible for closure.

For more information, visit FRA's website at www.fra.dot.gov, or contact Arrigo Mongini, Acting Associate Administrator for Railroad Development, Federal Railroad Administration, 1120 Vermont Avenue, Mail Stop 20, Washington, DC 20590. Telephone: 202-493-6386; Fax: 202-493-6330; E-mail: Arrigo.Mongini@fra.dot.gov.

Synopsis of TCRP Report 52: *Joint Operation of Light Rail Transit or Diesel Multiple Unit Vehicles with Railroads*

As North American railroads have evolved, passenger and freight systems have tended to become separated both physically and institutionally, and competition for track space in high-demand corridors has risen. This competition is most apparent between public and private systems, passenger and freight systems, and commuter and intercity rail systems. Four years ago in a problem statement submittal to TCRP, it was suggested that rail transit (light rail, light DMU, and rapid transit) might be able to claim space on railroad rights-of-way and railroad tracks when public demand for transit service is high and the railroad property is underused. Historical precedents for such joint operations were plentiful (Pacific Electric, North Shore, Hudson & Manhattan). TCRP selected this topic for research and a panel was formed—that was the origin of Report 52.

Rail "new starts" in North America, whether light rail or high-speed intercity rail, clamor for rights-of-way or track space. For most rail transit new starts, using existing rights-of-way or track is vital to the feasibility of a project. Consider that most new rail passenger services over the last two decades are built on the foundation of existing railroad infrastructure and

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real estate. Imagine trying to carve a new rail right-of-way through urban neighborhoods. New start rail alignments are therefore twisted to fit a mix of highway surplus space, abandoned or little used rail rights-of-way, and tracks. When it is a passenger railroad new start, for example, intercity or heavy-rail commuter, the problem is institutional between the operating authority and the freight railroad. When a rail transit operator seeks right-of-way or track use, however, two obstacles arise: regulatory restraints on joint use and the institutional competition for rail infrastructure.

The source of the dilemma is traced to North American rail mileage being divided into two seemingly incompatible spheres based on safety regulation: FRA-compliant railroads and FRA-noncompliant rail transit. *A central joint use dilemma is that public convenience and necessity for more and better rail transit service can conflict with the public interest in safety*. Which public interest should prevail? Can both be satisfied?

TCRP Report 52 contributes information relevant to the discussion of these questions, including the following:

- Background information related to four key issue areas: regulations and public policy, operations, physical plant, and vehicles;
- Detailed information on international experience with joint operations, particularly in Europe and the Pacific Rim;
- A risk assessment technique that could be used to evaluate proposals for joint operations; and
- Some conclusions about how a decision process for joint operations could be carried out, including a preliminary screening tool for risk assessment.

A new draft policy on this issue has been issued jointly by FRA and the Federal Transit Administration, and is available on the Internet at http://dms.dot.gov. The docket number is FRA-1999-5685.

For further information contact S. David Phraner, Rail Projects, Edwards and Kelcey, Inc., 299 Madison Avenue, Morristown, NJ 07962-1936. Telephone: 973-267-8830, ext. 1396; Fax: 973-267-3555. Also, visit the TCRP website at www4.nas.edu/trb/crp.nsf.

A WAKE-UP CALL FOR PASSENGER RAIL PLANNING

The recent tragic accident in Illinois involving Amtrak's *City of New Orleans* should serve as a wake-up call to states and agencies considering incremental high-speed rail passenger services and new commuter

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rail services. On March 15, 1999, in Bourbonnais, Ill., the southbound *City* struck a loaded tractor-trailer at a grade crossing. The accident resulted in 11 fatalities and over 100 injuries. The train was operating at 79 mph. While the cause is still under investigation by the National Transportation Safety Board, it is clear that the crossing gates were not a sufficient deterrent to prevent the truck from crossing the tracks.

This was the first time that Amtrak experienced a passenger fatality due to a grade crossing accident. But it was similar to a recent fatal accident in Indiana in which a Northern Indiana Commuter Transportation District train struck a loaded truck stopped on a crossing to a steel mill.

Illinois DOT (IDOT) is testing three installations of "dragnet" barriers, which are lowered across the road as a train is approaching. IDOT plans to conduct crash tests in the spring of 2000. North Carolina is developing a "sealed corridor" to accommodate improved passenger service between Charlotte and Greensboro using median barriers to discourage drivers from going around standard two-quadrant gates. Connecticut DOT with FRA and Amtrak has installed four-quadrant gates on the Northeast Corridor at Mystic. This crossing includes sensing equipment to detect a vehicle in the crossing with interconnection to the train's cab signal system.

In spite of FRA's focus on rail safety and railroad efforts through *Operation Lifesaver* (www.oli.org), there are still 10 grade crossing accidents in the United States each day—over 400 fatalities resulted in 1998. The importance of including grade crossing improvements in any plans for either intercity or commuter rail programs is clear. Grade separations can be costly, but the benefits in terms of reductions in injuries and deaths are great, not to mention the economic savings in terms of reduced delays.

Parsons Brinckerhoff recently completed a commuter rail feasibility study in Dane County, Madison, Wis., (discussed at Session 383 at TRB's 1999 Annual Meeting). The capital cost estimate included funds for four-quadrant gates and other crossing improvements. In fact, 17 percent of the capital costs were devoted to grade crossing improvements. Prior to the Bourbonnais accident, some questioned the need for this work. Those questions have not been heard since March 15.

The need for improved crossing protection becomes even more critical for services planning to use non-FRA-compliant DMUs. The *City of New Orleans* was being pulled by a massive Amtrak locomotive. A lightweight DMU would not have fared as well striking a loaded truck, even with a crash-absorbing structural design.

The recent MWRRI Final Report, dated August 1998, predicated the plan to close 30 to 50 percent of the existing public and private crossings on the eight primary rail corridors in its plan. Capital cost estimates included $500,000 for each of the remaining crossings to provide full-width barrier gates. Rail planners in other areas should not overlook the

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importance of improved crossing protection and grade separation where feasible in their plans.

For more information, contact John C. "Jack" Tone, P.E., Senior Professional Associate, Parsons Brinckerhoff, 230 W. Monroe, Suite 350, Chicago, IL 60606. Telephone: 312-803-6538; Fax: 312-782,1684; E-mail: tone@pbworld.com.

PACIFIC NORTHWEST CORRIDOR GROWS

The Pacific Northwest Rail Corridor ridership continues to grow with the first quarter of calendar year 1999 showing over 120,420 passenger trips, an increase of 8.7 percent compared with the same period in 1998. The continuing popularity of the Amtrak *Cascades* custom-built Talgo trains is reflected in its ranking among Amtrak's top ten services for customer satisfaction nationwide.

A $10 million funding package approved by the 1999 Oregon legislature provides a critical boost in service and greater opportunity for rail and station improvement funding. The funding package will allow a continuation of one Amtrak *Cascades* train and three Amtrak Thruway Motorcoaches. These services provide daily round trips between Portland and Eugene to connect to other Pacific Northwest Rail Corridor trains and national passenger rail services. The Seattle–Los Angeles *Coast Starlight* train provides an additional daily run in the corridor. With the increase in funding, expanded service will include an additional train between Eugene and Portland and connecting service via motorcoach to southern, central, and eastern Oregon. A capacity analysis of the corridor is nearing completion for negotiations with Union Pacific regarding the additional train. Expanded service will start in July 2000.

The Oregon Department of Transportation has received an FRA grant for $2.7 million to install and test a next-generation railroad radio system on the Cascade Corridor between Eugene and Vancouver, British Columbia. During the past two years, the Union Pacific Railroad (UP) and the Burlington Northern and Santa Fe Railway (BNSF) have been testing a communications-based train control system in Washington and along the north and south shores of the Columbia River. The system uses global positioning to locate trains precisely within three feet of their actual position. Early use of the train control system indicated that the existing radio communication systems did not have the capacity to transmit the enormous amounts of data needed for the control system. Only 20 trains could be managed by the system while up to 80 to 100 trains might be operating in the corridor at any one time. It is hoped that the new radio system will solve this problem.

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The first radios will be used on six Amtrak locomotives operating between Eugene and Vancouver, British Columbia and on a small number of UP and BNSF freight locomotives. Tests will include voice and data transmission, shared data over various railroad radio networks, and simulated train control signals from an Amtrak train to BNSF computers in Fort Worth, Texas, and UP computers in Omaha, Nebraska. All phases of the pilot program will be completed by fall 2000.

In May 1999 Washington State allocated $127 million over the 1999–2001 biennium to its rail program. Projects and services programmed out of this funding package for the Cascade Corridor include $18.3 million to continue existing Amtrak *Cascades* service; $10.5 million in capital and operating funds to be matched with $26 million in capital from Amtrak and BNSF for additional daily Seattle-Vancouver, British Columbia service (Canadian investment will be necessary for connection from Blaine to Vancouver); $55.4 million for track and safety system improvements throughout the corridor; $9.4 million in federal funds for the $52 million King Street Station redevelopment project ($26 million from various funding sources has already been committed); a $15 million state contribution toward a $50 million Amtrak train maintenance facility in Seattle; and $3 million for additional Talgo coaches to increase existing Amtrak *Cascades* seat availability.

Washington State has been the leader in the Pacific Northwest High-Speed Rail Corridor since corridor designation in 1992. To date, Washington State has committed over $200 million to develop its portion of the corridor. In November 1999 an initiative measure known as I-695 was passed, repealing all state motor vehicle excise taxes (MVET), the state travel trailer and camper excise tax, and the state clean air excise tax as of January 2000. The annual vehicle registration fee for passenger cars, motor homes, travel trailers, motorcycles, and tow trucks had been $30. Current Washington State MVET is 2.2 percent of the value of the vehicle, plus the clean air tax is $2 per vehicle. Revenue from the MVET was distributed according to a formula with the Transportation Fund, used for public transportation and highway purposes, receiving over 51 percent and the Motor Vehicle Fund, used for highway purposes, receiving over 25 percent. The remaining funds were distributed across a wide range of state and local programs. Assuming that I-695 goes into effect in January 2000, the total loss in revenue (projected at $1.2 billion) represents approximately one-third of the current 1999–2001 adopted Washington State DOT (WSDOT) budget of $3.3 billion.

Nearly all WSDOT rail programs are funded by MVET revenue. More than 90 percent of the $127 million 1999–2001 budget for state rail programs is from license tab fees. Policy makers will now revisit the Rail Office budget. Until this occurs, it is not possible to predict the exact budget impact of I-695 on specific transportation programs.

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For additional information, contact Christine F. Andersen, P.E., Director of Public Works, City of Eugene, 858 Pearl Street, Eugene, OR 97401. Telephone: 541-682-5241; E-mail: Chris.F.ANDERSEN@ci.eugene.or.us. Additionally, information about WSDOT can be found at wsdot.wa.gov/pubtran, and information about Oregon's DOT can be located at www.odot.state.or.us/rail/railpass.htm.

CALTRANS INCREASES SERVICE

The Caltrans Rail Program, started in 1976 with state sponsorship of a fourth Amtrak San Diegan train, has created an integrated statewide network of bus and train service and has overseen major improvements to equipment and track on intercity and commuter rail routes. Amtrak operates the rail and bus services under contract with the state. California has been the lead state in corridor development outside of the Northeast, with three corridors and a daily frequency of as many as 11 trains each way on the Los Angeles–San Diego segment of the San Diegan Corridor.

Service Administration

The Rail Program directly administers two state-supported Amtrak routes, the San Joaquins between Oakland, Sacramento, and Bakersfield and the San Diegans between San Luis Obispo, Santa Barbara, Los Angeles, and San Diego. These routes are supplemented by dedicated feeder bus service that stretches to include Eureka, Redding, Reno, South Lake Tahoe, Las Vegas, and Indio.

The Rail Program also provides funding and oversight to the Capitol Corridor Joint Powers Authority, which has responsibility for administering the Amtrak Capitols, which run between Colfax, Sacramento, Oakland, and San Jose.

Major service increases in 1998–1999 were

1. Eleventh San Diegan	November 1998	Los Angeles-San Diego,
2. Fifth San Joaquin	February 1999	Sacramento-Bakersfield,
3. Fifth Capitol	November 1998	Sacramento-Oakland, and
4. Sixth Capitol	February 1999	Sacramento-Oakland.

The fifth San Joaquin involved an extension of the rail network from Stockton to Sacramento, as well as an increase in frequency between Bakersfield and Stockton.

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Traffic on the intercity rail system has increased significantly over the years. In 1998–1999, ridership on the three routes totaled 2.8 million.

Capital Projects Administration

The Rail Program administers the California Car Program, which includes procurement and maintenance of the cars. The Budget Act of 1999 provided $17.5 million to purchase additional rolling stock, and Caltrans is working to acquire this equipment.

Significant progress was also made on capital works projects in 1998–1999. The $57 million track and signal upgrade project on the Capitol Route is now substantially complete. On the north end of the San Diegans, work began in September 1998 on the $33 million track and signal upgrade project between Moorpark and Goleta, and is progressing well. Also, renovation of the historic Santa Barbara station was completed.

Over the life of the intercity program, more than $1.2 billion in state funds has been programmed or spent on intercity rail capital. These projects have upgraded track and signals and increased speed and capacity on all three routes, purchased a fleet of 66 state-of-the-art California Cars and 11 locomotives, and constructed and upgraded many stations. New stations have been built at Emeryville, Oakland (Jack London Square), Santa Ana, and Solana Beach. Several other stations have been rehabilitated or expanded. Cooperative work efforts with Metrolink, Coaster, and Caltrain commuter rail agencies have also resulted in track and station improvements that have benefited intercity rail services.

For more information about Caltrans Rail Program, visit www.dot.ca.gov/hq/rail/index.htm, or contact Matt Paul, Chief, Planning and Policy, Caltrans Rail Program, PO Box 942874, Sacramento, CA 94274-001. Telephone: 916-654-6657; Fax: 916-653-4565; E-mail: Matt.Paul@ca.gov.

MIDWEST GOVERNORS ANNOUNCE PARTNERSHIP

On October 26, Governor Tommy G. Thompson of Wisconsin, Governor George Ryan of Illinois, and Governor John Engler of Michigan announced that they would partner with Amtrak to purchase new high-speed passenger rail equipment as an initial step in the implementation of the Midwest Regional Rail Initiative (MWRRI). This equipment will provide 110-mph service in corridors between Chicago and St. Louis and Chicago and Detroit, and establish new service between Milwaukee and Madison.

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MWRRI is a coalition of nine states, Amtrak, and FRA committed to developing a 3,000-mile regional high-speed rail system that has its hub in Chicago. (See Figure 1.) The states involved include Illinois, Michigan, Minnesota, Missouri, Indiana, Ohio, Nebraska, Iowa, and Wisconsin, which also acts as secretariat for the group. The first MWRRI report was released in August 1998 and identified several corridors radiating out of Chicago, including those to Minneapolis, Omaha, St. Louis, Cincinnati and Detroit. The group has worked over the past year to refine its recommendations, and plans to release an updated report in January 2000.

The MWRRI report will call for $3.9 billion in capital investments over the next 10 years, with $3.2 billion in infrastructure improvements and $652 million for new high-speed train sets. Equipment purchases announced by Wisconsin, Illinois, Michigan, and Amtrak are part of $480 million in infrastructure and equipment investments associated with implementing Phase I of the MWRRI Plan. The governors' announcement was made at a two-day "States Summit on High-Speed Rail" held in Milwaukee with rep-

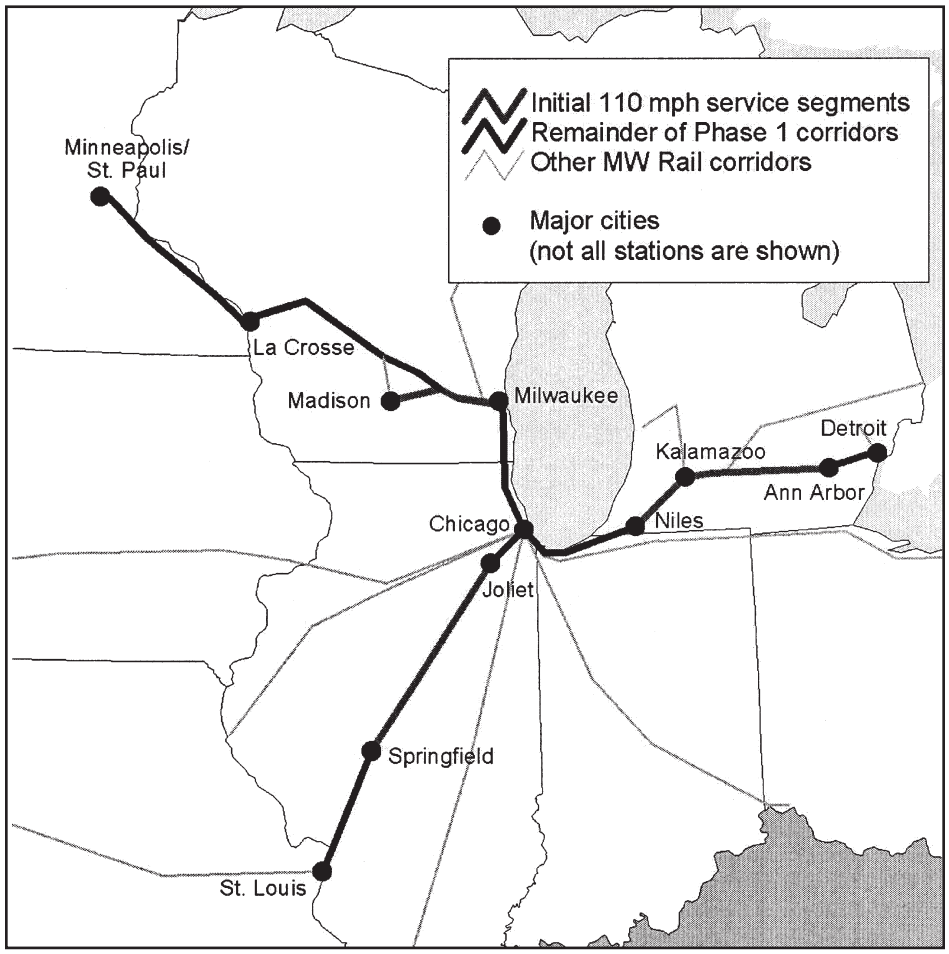

FIGURE 1 3,000-mile regional high-speed rail system to be developed through MWRRI.

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resentation from all federally designated high-speed rail corridors throughout the United States.

For additional information on MWRRI, visit www.dot.state.wi.us/opa/rail.html, browse Amtrak's website at www.amtrak.com, or contact Randall Wade, Wisconsin DOT, 4802 Sheboygan Avenue, PO Box 7914, Madison, WI 53707-7914. Telephone: 608-266-2972; Fax: 608-267-3567; E-mail: randall.wade@dot.state.wi.us.

NORTH CAROLINA PROGRAM DEVELOPMENTS

North Carolina has developed a statewide intercity rail program that includes Amtrak long-distance services passing through the state and intrastate corridor services linking Raleigh and Charlotte. The service is part of the Southeast High-Speed Corridor. In addition, the North Carolina DOT (NCDOT) has been working with local communities, transit agencies, Amtrak, and intercity bus carriers to rehabilitate existing rail stations, or build new ones, as intermodal transportation centers.

Twelve passenger trains presently serve 16 North Carolina cities daily along three routes. Three Amtrak New York–Florida trains pass through North Carolina: the *Silver Star* operates between New York and Miami with stops in Raleigh and Southern Pines; the *Silver Meteor* and *Silver Palm* operate between New York and Miami with stops in Rocky Mount and Fayetteville. Two trains provide North Carolina intrastate service, one continuing north to New York. The *Carolinian* operates between Charlotte, Raleigh, Washington, D.C., and New York City; and the *Piedmont* runs between Raleigh and Charlotte. The third route is that of Amtrak's *Crescent* between New York and New Orleans with stops in Greensboro and Charlotte. The *Piedmont* and *Carolinian* are supported by the state of North Carolina. Amtrak operates all trains.

Southeast High-Speed Corridor

In 1992, USDOT designated five national high-speed rail corridors across the country. The Southeast High-Speed Rail Corridor, extending from Washington, D.C., through Richmond and Raleigh to Charlotte, has been identified as the most economically viable high-speed rail corridor in the country. In December 1998, USDOT extended the corridor south from Charlotte through Greenville and Spartanburg, South Carolina, to Atlanta and Macon, Georgia, and from Raleigh south through Columbia, South Carolina, and Savannah, Georgia, to Jacksonville, Florida. Higher-speed

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rail service in the Southeast Corridor will mean average top speeds of more than 90 mph between Raleigh and Charlotte and more than 110 mph between Raleigh and Richmond. Improvements along the corridor will be incremental. The current Raleigh-Charlotte travel time of 3 h and 45 min can be market competitive through capacity improvements and operation of tilt trains. These first travel-time improvements will result from signal upgrades and crossing improvements and through the addition of significant freight capacity. Safety improvements to support additional freight and passenger service at highway-rail crossings are being made under the Sealed Corridor Program.

Regional Passenger Service Extensions

In 1995, at the request of the General Assembly, the NCDOT Rail Division began studying extension of conventional passenger rail service to western North Carolina. The General Assembly appropriated funds in 1998 to finalize plans for expansion, begin building or renovating stations, make infrastructure improvements, and provide operating funds for the new service. The actual start date for this service will depend upon negotiations with the host railroad, Norfolk Southern. In 1999, NCDOT also began a feasibility study of extending conventional passenger rail service from Charlotte to Wilmington.

Passenger Rail Stations

NCDOT has already begun restoration or rehabilitation work on historic passenger stations in Salisbury, Wilson, Rocky Mount, Selma, High Point, Hamlet, and Greensboro. The rail stations in Salisbury, Wilson, Rocky Mount, and High Point are near local bus centers or will include transit services. In addition, the state has plans to improve or build new stations for several other cities along existing and planned passenger service routes. Additional station construction or rehabilitation of the existing station structures will be necessary for the service extension from Salisbury west to Statesville, Hickory, Marion, Morganton, Old Fort, Black Mountain, and Asheville.

Major intermodal transportation centers are planned for Charlotte, Greensboro, and Raleigh. Selection of a site for the Durham intermodal station is in the final stages. Acquisition of property has begun for the Charlotte station. Station construction will soon begin in Greensboro.

More information about these rail passenger initiatives can be found at www.bytrain.org, or by contacting Mark Sullivan, Assistant Director for Planning, Rail Division, NCDOT, PO Box 25201, Raleigh, NC 27611-5201. Telephone: 919-508-1914; Fax: 919-508-1952; E-mail: msullivan@dot.state.nc.us.

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RAIL NEWS FROM EUROPE

With the new timetable effective May 30, 1999, German railways have opened the new Frankurt Flughafen Fernbahnhof (Frankfurt airport long distance) station. This station is being served by all trains on the Cologne-Basel route, and also by some InterCity Express (ICE), InterCity, and EuroCity trains with destinations that include Hamburg, Munich, and Berlin. Mainly regional trains will use the already existing airport station.

In general, international high-speed train (HST) traffic is developing satisfactorily on the European continent. Thalys has captured 48 percent of traffic between Brussels and Paris, exceeding auto traffic. The Paris-Milano HST is also doing well. On a number of days during the winter service, some trains were operated with two sets between Paris and Modane, and south of that station the second set operated as a relief train as far as Torino since platforms in Italy cannot accommodate 400-m trains. The 3 Eurostar sets that were modified to be able to run on 1500V dc for the winter service to Bourg–St. Maurice, also will be used during the summer for the daily Brussels-Nice service, thereby liberating four 3-current TGV-réseau sets for other duties.

Throughout the summer of 2000, there will be a Thalys Amsterdam-Avignon, and ICE3 sets will start operating between Amsterdam and Cologne or Frankfurt, for the time being without much change in schedule.

As a somewhat long-term project, 42 Paris-sud-est HST sets will be modified during their mid-life overhaul for use on the Mediterranean high-speed line, which is the present Paris-Valence line extended to Marseille. During that process, coach 3 will be changed from first to second class, new seats with more leg room will be added (at the cost of capacity, changing from 384 to 345) in view of the holiday and family travel expected on the route, and 3 areas for users of mobile telephones will be arranged. For trains between Paris and Marseille (a trip just over 3 hours) a batch of 12 TGV-duplex in addition to the 30 already in service is planned.

During the summer of 2000, the rail bridge and tunnel link across the entrance of the Baltic Sea between Copenhagen, Denmark, and Malmo, Sweden, will be completed. This will link the Scandinavian Peninsula with the main continental rail systems for the first time via a direct rail route and will replace ferry services.

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