

# Fresh Passenger Rail Approaches

A collection of some of the most inventive passenger rail approaches to finance, safety, infrastructure, equipment and leadership

By Scott Bogren

## Fresh Finance — America Fast Forward

One of the nation's most innovative new ideas for investing in public transportation — and specifically local passenger rail initiatives — emanates from an area some may find surprising: Southern California. Dubbed *America Fast Forward*, the idea is to use dedicated local funding streams like sales or gas taxes and leverage up-front, low-interest federal loans, thus expediting project delivery while creating jobs. The concept emerged first in 2009 when Los Angeles Mayor Antonio Villaraigosa introduced his 30/10 Transit Plan, a strategy to build 30 years' worth of transit infrastructure in 10 years.

Remarkably, America Fast Forward has won widespread champions since Mayor Villaraigosa first introduced the concept last spring. These backers include bi-partisan support in Congress, the support of the Obama Administration, the U.S. Conference of Mayors, the AFL-CIO, the US Chamber of Commerce and many more.

Secretary of Transportation Ray LaHood, in a letter last year to Senator Barbara Boxer (herself, a key chair of the Senate Committee on Environment and Public Works), called the plan a model, noting: "It has the potential to transform the way we invest in transportation projects across the nation."

In rolling out the House Transportation and Infrastructure Committee's surface transporta-



tion reauthorization, Chair John Mica repeatedly pointed to his plans to fund the Transportation Infrastructure Finance and Innovation Act (TIFIA) loan program at \$1 billion per year as a key strategy in maximizing existing federal transportation revenues. Redesigning TIFIA is one of several key components Mayor Villaraigosa has identified in bringing America Fast Forward to reality.

In March, Mayor Villaraigosa told the Los Angeles Times: "We've won the support of 105 mayors — 20 percent of them Republicans — because they understand the prospect of getting federal assistance through the traditional channels is now

remote. This is a program that puts people to work now at little cost, since 98 percent of the federal dollars would be repaid from local sources. This is more than a step we're proposing; it's a leap forward. There's nothing in the country that's as exciting right now, because America Fast Forward is doable, even in this divided, partisan environment."

It is not surprising that this innovative funding strategy has emerged out of a powerful local vision, rather than waiting for Washington.

The best way to understand the intended impact of America Fast Forward is to more fully exam-



ine the local environment in Southern California from which it was born. From its inception as the 30/10 plan, the initiative was designed to streamline major project delivery in terms of both time and resources. The 30 years' worth of projects the Mayor intended to complete in 10 years include 12 Southern California projects that are as follows:

- Extending the Orange Line busway project four miles to connect it with MetroLink commuter rail trains.
- Continuing the Expo light-rail line, in phase 2, through to Santa Monica from Culver City along the old Pacific Electric right-of-way.
- Extending the Metro Gold Line light rail from its current terminus in Pasadena eastward along the foothills to San Dimas, and connecting with MetroLink commuter trains along the way.
- Improving the speed of buses along several key north-south road corridors.
- Building the Crenshaw/LAX corridor light-rail line, which will connect the Expo and Green light rail lines.
- Building the Regional Connector – a 2-mile,

Los Angeles' 30/10 plan is the prototypical example of the America Fast Forward concept.

fully underground light-rail line that will bring together the Gold, Blue and Expo lines.

- Opening, in segments, the west side subway extension – or Purple Line – that will serve such key destinations as Beverly Hills, Westwood and Century City.
- Developing the West Santa Ana Transit Corridor, a 20-mile right of way that may end up as Bus Rapid Transit or rail.
- Extending the eastside corridor for the Gold Line light rail into such communities as Bell, Downey and Whittier, among others.
- Completing the Green Line LAX extension, linking Los Angeles International Airport with the Green Line light-rail.
- Furthering Green Line light rail service into Los Angeles's South Bay region, providing alternative mobility to the I-405 corridor.
- Launching the Sepulveda Pass Transit Corridor linking the San Fernando Valley with West Los Angeles, ideally using a public-private partnership.



*Click on the image below for video of Mayor Villaraigosa discussing the America Fast Forward approach.*



## Innovative Infrastructure – St. Paul's Connectivity Commitment

Delivering passengers into the bustling hearts of thriving downtown areas, turn of the last century passenger rail stations made good on their promise of economic development and connectivity. In St. Paul, Minnesota, the historic Union Depot is well on its way to a return to its former glory as a fully-functioning transportation and economic hub.

Under the direction of the Ramsey County Regional Railroad Authority, the St. Paul Union Depot will be reborn as a multi-modal station featuring light rail, intercity rail, local and intercity bus, automobile, pedestrian and bicycle traffic. Set to open in late 2012, the Depot will rise out of the ashes of an oft-told, sad tale of a once historic, busy rail station falling on hard times.

By 1971 the stately beaux-arts Saint Paul Union Depot, with its signature collection of towering columns and portico along its 4<sup>th</sup> Street entryway, saw fewer than 200 daily passengers. A half century prior, the same facility had opened to 20,000 daily passengers.

Unable to maintain the Depot, Amtrak moved to a single, unified presence in the Twin Cities in 1972, and the cruel combination of apathy and winter began their siege of the St. Paul Union Depot. Plaster ceilings soon crashed to marble floors. Trees took root inside the Depot and the historic facility that had once been St. Paul's face to the world became an eyesore.

The fate of the Saint Paul Union Depot changed with the emergence of the Hiawatha light rail service in neighboring Minneapolis, which launched in 2004. In the Hiawatha line's wake, plans arose for a Central Corridor light-rail line to connect downtown Minneapolis with St. Paul – with the





St. Paul Union Station will become a key regional, intermodal transportation nexus through a \$35 million renovation. The facility will also provide connections to the Central Corridor light-rail line to Minneapolis (see rendering below right).

Union Depot acting as the eastern terminus of the line.

But before the historic station could embrace rail passengers once again, a serious renovation was in order. In 2009, the Ramsey County Board agreed to purchase the station head house for \$8.2 million to both accommodate the Central Corridor light rail line and, perhaps just as importantly, to facilitate future multi-modal transportation services.

“Today marks the official start of the project to return the Union Depot to what it once was: a transportation hub for Ramsey County, the state of Minnesota, and the entire upper Midwest,” said then Commissioner Jim McDonough, chair of the Regional Rail Authority, during the announcement of the purchase. Rightfully, local leaders understood not only the practical role that the Union Depot could play with bringing together local and intercity rail and bus lines, but they also recognized the station’s potential as a hub for riverfront economic redevelopment. Currently, HR&A Advisors, Inc., is conducting a survey of Twin Cities businesses to best determine the types of commercial activities that the Union Depot ought to house, in addition to its multi-modal transportation functions.

In 2010, the Ramsey County Regional Railroad Authority announced it had won a \$35 million TIGER (Transportation Investments Generating Economic Recovery) grant through the US Department of Transportation, to be used to renovate the facility and restore tracks, driveways and sidewalks. It is a process that continues today, as entryway, sidewalk and driveway reconstruction began in earnest late last month.

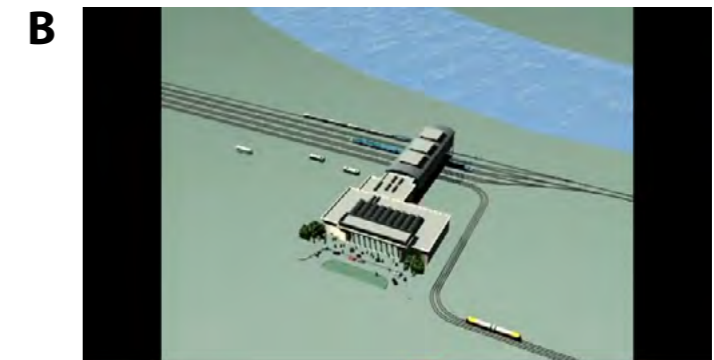


“This project is another great example of how the Recovery Act is creating jobs and improving lives in cities and towns around the nation,” said U.S. Secretary of Transportation Ray LaHood. “It will bring together transportation options all at one location in a way that is convenient for passengers and beneficial to the environment.”

Plans are for the first intercity trains – Amtrak’s long-distance *Empire Builder*, which connects Chicago with Portland/Seattle – to call at Saint Paul Union Depot in 2012. Two years later, the Central Corridor light-rail service is scheduled to launch. Jefferson Lines and Greyhound intercity bus services also are scheduled to call the station home.

Innovative, fresh approaches to passenger rail infrastructure are those that not only directly impact a community’s mobility, but also its economic vitality. When an historic facility can be restored to serve – all the better. The Saint Paul Union Depot is just such an example.

Click on the images below to watch YouTube videos of a) the Central Corridor light rail project; b) an animation of the Union Depot revitalization as a multimodal hub; c) the meeting of project officials signing the contract to allow reconstruction to begin; and d) the broader Union Depot renovation concept.





## Vehicle Innovations – Kinki Sharyo's ameriTRAM Responds to North American Demand

In *RAIL Magazine's* 23<sup>rd</sup> Edition, we focused on the emergence of hybrid regional rail systems across North America – operations that were blurring the lines between traditional commuter, light-rail and even streetcar service. As is often the case, the marketplace now appears to be responding to these blended operations as Kinki Sharyo International, a Japanese-based railcar manufacturer has introduced the ameriTRAM, or LFX-300.

First tested and then unveiled in Charlotte last winter, the LFX-300 is a low-floor, electro-hybrid vehicle that has been specifically designed for the North American market and that can be flexibly deployed as single streetcars or combined into a larger consists in more light-rail-type operations.

“This is a very exciting time to introduce a 100 percent low floor, electro-hybrid streetcar, particularly in cities that value sustainability and community development. Municipalities are quickly realizing the lower overall life cycle costs, lower energy usage and emissions, greater access and comfort for all riders, and an unparalleled ability to preserve sensitive and historic areas by operating streetcars without overhead catenary wire,” says KinkiSharyo International Vice President and General Manager Rainer Hombach.

The ameriTRAM complies with both the Americans with Disabilities Act and federal Buy America regulations and is available in three separate models – allowing for passenger loads between 115 and 190. *RAIL Magazine* staff were on-hand for the new vehicle's unveiling in Charlotte and it has been subsequently showcased in Dallas.



*Watch RAIL Magazine's exclusive video footage of the ameriTRAM unveiling in Charlotte, N.C. by clicking below*



## A Fresh Approach to Passenger Rail Leadership – the Congressional Bi- Cameral High-Speed and Intercity Passenger Rail Caucus

Responding to criticisms of the Obama Administration's high-speed rail initiatives and support, key Democratic congressional members banded together in March to form the Congressional Bi-Cameral High Speed and Intercity Passenger Rail Caucus. With initial members including Senator Frank Lautenberg (N.J.) and House members. Louise Slaughter (N.Y.), John Olver (Mass.), Corrine Brown (Fla.), David Price (N.C.), Zoe Lofgren (Calif.) and Tim Walz (Minn.), the Hill Rail Caucus was announced, appropriately enough, at a press conference in Washington's Union Station.

“It'll be a great day for the United States of America when we have high-speed rail like every other industrialized nation,” said Rep. Slaughter at the initial announcement of the new caucus.

Rep. Walz added: “We will never pay off this nation's debt if we don't grown our economy and unleash innovation, and high-speed rail is a part of that.”

Since its inception, the Hill Rail Caucus has welcomed Rep. Earl Blumenauer (Ore.), Rep. Laura Richardson (Calif.) and Sen. Dick Durbin (Ill.) to its ranks.



## **New Safety Technology Approaches — Positive Train Control**

Though its development and implementation have taken years, if not decades, the technological and safety innovation that is Positive Train Control is a vital and ongoing effort across the nation. What follows is an update on Positive Train Control excerpted from the Federal Railroad Administration (FRA).

Positive Train Control (PTC) refers to technology that is capable of preventing train-to-train collisions, overspeed derailments, and casualties or injuries to roadway workers as a result of unauthorized incursion by a train. PTC is even capable of preventing train movements through a switch left in the wrong position. PTC systems vary widely in complexity and sophistication based on the level of automation and functionality they implement, the system architecture utilized, the wayside system upon which they are based (i.e., non-signaled, block signal, cab signal, etc.), and the degree of train control they are capable of assuming.

Prior to October 2008, PTC systems were being voluntarily installed by various carriers. However, the Rail Safety Improvement Act of 2008 has mandated the widespread installation of PTC systems by December 2015.

Currently, all of the affected railroads are aggressively pursuing development of the PTC implementation plans required by law and are adapting their individual PTC systems to maximize interoperability. The BNSF Railway Company (BNSF), Union Pacific Railroad (UP), Norfolk Southern Railway (NS), and CSX Transportation (CSXT) are leading the interoperability effort for technologies based on the Electronic Train Management System (ETMS) for rail traffic outside of the Northeast Corridor (NEC). The National Passenger Rail Corporation (Amtrak) is undertaking similar action for rail traffic in the NEC using the

Advanced Civil Speed Enforcement System (ACSES).

The Federal Railroad Administration (FRA) is supporting all rail carriers that have statutory reporting and installation requirements to install PTC, as well as rail carriers that are continuing to voluntarily implement PTC, through a combination of regulatory reform, project safety oversight, technology development, and financial assistance. The following is a summary listing of the major PTC system projects currently in progress in the United States.

### **ACSES**

Amtrak has implemented ACSES on the NEC between Boston and Washington, DC. ACSES supplements the existing cab signal/automatic train control system on the NEC, providing full PTC functionality in support of operations up to 150 mph. Originally designed as a transponder-based system, enhancements are under development to replace the transponder-based system with a radio-based system. The ACSES architecture represents one of the two major PTC architectures that will be deployed in the United States.

### **CAS**

The Alaska Railroad is in the process of a multiyear, phased statewide implementation of their communications-based train control system called the Collision Avoidance System (CAS). Originally planned for completion by late 2008/early 2009, technical complications have delayed the estimated completion. CAS enhances safety by enforcing movement authority, speed restrictions, and on-track equipment authorities in real time in a combination of Direct Traffic Control (DTC) and signaled territory. The initial phases of work involving the design and installation of the communications infrastructure and a new train dispatching system are complete. The current phase, the design, and implementation of the onboard system is undergoing initial field testing.

### **ETMS**

BNSF has received FRA approval for full revenue deployment of their ETMS Version 1 on 35 separate BNSF subdivisions. BNSF and FRA are working together on testing a second enhanced version of ETMS on an additional 300 miles of high-density signaled territory in Texas and Oklahoma over which mixed freight and passenger service operate. ETMS is an overlay-type communication-based system that enforces movement authority and speed restrictions for ETMS-equipped trains and proximity warnings of nearby equipped on-track equipment. This system works in conjunction with the existing methods of operation, including using input from the currently installed signal systems, to protect against the consequences of human error. ETMS-based architecture is the other major architecture being planned for nationwide deployment.

### **CBTM**

In 1998, CSXT requested a waiver from the existing Federal Regulations to implement a pilot overlay-type PTC system called Communications Based Train Management (CBTM) on 126.6 miles of CSXT track operating under DTC rules in the Southeast, between Spartanburg, South Carolina, and Augusta, Georgia. The pilot included all of the territory on two subdivisions, Spartanburg and McCormick, of the Florence Service Lane. CSXT has subsequently decided to modify the original CBTM architecture to implement an ETMS-based architecture. FRA is currently processing a new test waiver to support the revised CBTM system implementation.

### **ITCS**

FRA joined with Amtrak and the state of Michigan to install an Incremental Train Control System (ITCS) on Amtrak's Michigan line between Chicago and Detroit. Currently installed on over 60 miles of track in the territory between Niles and Kalamazoo, Michi-



gan, this project includes using advanced high-speed highway-rail grade crossing warning system activation using radio communication rather than track circuits. ITCS monitors highway-rail grade crossing warning (HGCW) system health through communications between the locomotives and the crossings. Depending on the condition of the HWGC system, ITCS imposes and enforces appropriate speed restrictions. In revenue service for Amtrak since January 2002, the maximum train speed for passenger train operations in ITCS territory is currently 95 mph. ITCS has completed the necessary system upgrades to support operations up to 110 mph after final review and approval of the system validation and verification. Consideration is being given to expand the project to cover an additional 60 miles of track.

### **V-TMS**

The UP and their contractor are in the full-scale development phase of a fail-safe non-overlay derivation of the BNSF ETMS, called the Vital Train Management System (V-TMS). The V-TMS provides similar functionality as the BNSF ETMS, but its design is capable of supporting changes to the existing methods of operations. The UP is currently establishing pilot territories for V-TMS operations in both the Powder River Basin of Wyoming as well as in the State of Washington. Software development is in progress, and UP anticipates they will begin system testing in late 2009.

### **OTC**

The NS is implementing another fail-safe non-overlay derivation of the ETMS system called Optimized Train Control (OTC). The NS OTC system design integrates the new NS Computer Aided Dispatch (CAD) system with PTC functionality as well as other specialized business functionalities. Like the Alaska Railroad's CAS and UP's V-TMS, OTC will support changes in the existing methods of operations. NS

has established a test territory of approximately 120 miles in central South Carolina. The new CAD and communications system installation is nearing completion. Integrated system testing is planned for 2009.

### **TRAIN SENTINEL**

The Ohio Central Railroad System (OCHR) has begun installation and testing of their Train Sentinel PTC System on approximately 300 miles of OCHR territory in Ohio. Train Sentinel is a safety overlay on existing non-signaled methods of operations. The OCHR Train Sentinel System is an adaptation of a PTC system previously implemented on the Panama Canal Railroad (PCRR) between Balboa and Panama City in the Republic of Panama. Initial testing of the OCHR version of Train Sentinel began in late 2008. Technical issues were discovered during U.S. field testing of the system. Correction of these issues is in progress, and testing is expected to resume in 2009.

### **METRA ETMS**

The Chicago METRA is implementing a CAD independent PTC system based on the ETMS technology. METRA has installed and begin testing their version of ETMS on approximately 60 miles of the Joliet and Rock Island Subdivisions in suburban Chicago. The primary objective of the initial phase of the development program is to provide for speed enforcement



Metrolink – Southern California's commuter rail network – recently added new cab control cars to its coach fleet, in response to the agency's serious Chatworth accident in 2008. The new vehicles along with positive train control are being implemented to improve the system's safety platform.

without the need for integration with a CAD system, while still providing train separation and roadway worker protection. Plans for the METRA ETMS system will include eventual procurement, installation, and integration with an electronic CAD system. Initial system field testing of the system began in January 2009, and will continue throughout the year.

### **PATH CBTM**

System design work is underway for the Port Authority of New York and New Jersey (PATH) Communications Based Train Management (CBTM) System. CBTM will provide PTC functionality to the Trans-Hudson River Commuter Rail Line running underground between New Jersey and New York City.

PATH anticipates initial testing in 2009.

## NAJPTC

Unanticipated technical issues primarily associated with communications bandwidth limitations resulted in relocating the North American Joint Positive Train Control Project (NAJPTC) to the Technology Transportation Center (TTC) test facility in Pueblo, CO. NAJPTC, a joint development effort of the Association of American Railroads, the FRA, and the Illinois Department of Transportation, was attempting to develop an industry standard interoperable, vital, office-centric, high-speed (110 mph) passenger and freight service in Central Illinois. The new TTC test facility location will enable more timely resolution of the underlying communications issues associated with the standards in a more controlled environment.



## V I D E O

Click on the image below to watch Metrolink's overview of its PTC effort.



## About Fast Mail for Rail

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### The Capitol Limited

#### *News on federal passenger rail policy and developments from the Nation's Capitol*

- **Passenger Rail & Transit Receive \$17.7 Billion in American Recovery & Reinvestment Act** The new legislation provides the largest-ever single investment in rail transit and intercity rail.
- **President Obama Voices Support for Passenger Rail Investment** At his recent Town Hall meeting in Fort Myers, Fla., the President enthusiastically supported passenger rail projects as a key facet of his economic stimulus effort.
- **Analysis: Passenger Rail Investment in American Recovery & Reinvestment Act** Prepared by the National Corridors Initiative, this analysis considers the Amtrak, high-speed rail and rail transit provisions contained in the new legislation.
- **Analysis: Obama Positions Passenger Rail as Signature Item** Not only in the American Recovery & Reinvestment Act, but also planned in his forthcoming policy agenda, President Obama is establishing passenger rail as an area of special attention and support.