

6.0 Successful U.S. High-Performance Rail Role Models

In crafting SouthwestLynx, data on numerous HPR operations around the world was examined. While economic, demographic and market conditions in Western Europe, the UK, Japan and China make comparisons with Southwestern Ontario difficult, the car- and air-dependent U.S. offers many applicable and transferrable working models. Some have been successfully implemented in regions that were virtually stripped of rail passenger service decades ago.

These U.S. rail-based regional transportation systems share a number of characteristics related to their successes, including:

- joint funding by the federal and state governments;
- new governance and service delivery models that localize day-to-day management and long-range planning;
- municipal participation through station ownership, enhanced transit service and, in some cases, policy and management decisions;
- HPR or substantially upgraded conventional rail services for the spines;
- important, well-used bus feeders;
- modern, cost-effective rail and bus equipment;
- high connectivity through the conversion of rail

stations into intermodal mobility hubs;

- incremental increases in rail frequencies and speeds; and
- adaptability as components of larger, longer-term HSR plans

Of these factors, it is the joint funding by the upper levels of government and the new governance models that have been the keys to making the best of these HPR operations succeed as fully as they have. This is the cornerstone of the SouthwestLynx approach.

The incorporators of Amtrak wisely included a provision in its enabling legislation that recognized the desirability of working with other levels of government to improve and expand its federally-funded service. Under Section 403(b) of the Rail Passenger Service Act of 1970, which also established a cost-sharing formula, it was provided that:

“Any State, regional, or local agency may request of the Corporation rail passenger service beyond that included within the basic system. The Corporation shall institute such service if the State, regional, or local agency agrees to reimburse the Corporation for a reasonable portion of any losses associated with such services.”



Amtrak Pacific Surfliner. Amtrak.

These 403(b) services extended Amtrak's regional reach during many years of federal funding problems similar to VIA's. Other growth drivers have been the Amtrak Thruway bus feeder routes, which attend to markets not easily served by rail, programs to assist bus operators, the revamping of existing rail stations and the construction of new intermodal terminals.

With Amtrak's reauthorization under the Passenger Rail Investment and Improvement Act of 2008 (PRIIA), the original 403(b) program was redefined. Under Section 209 of PRIIA, states are responsible for the full operating losses on routes of less than 1,200 km. However, this has come with increased grants from federal programs for capital projects to improve operating efficiency and cost recovery. PRIIA also established a Next Generation Equipment Committee to standardize locomotive and rolling stock for improved service and cost reduction.

In addition, many state-supported corridors will benefit incrementally from upgrading as components of the national HSR initiative. Grants for improved intercity connecting bus services and major local transit projects are coupled with the continuing investment in the state-funded Amtrak corridors.

Today, 18 states support 29 Amtrak corridor services, three of which are detailed here. All offer lessons for improving transportation in Southwestern Ontario quickly, rationally and affordably. Each corridor varies in terms of regional needs, the trains and feeder services employed, and their governance, but they have one common denominator: they have succeeded because the various levels of government and their agencies have worked collaboratively.



Through cooperative federal and state investment, the Pontiac-Detroit-Chicago Wolverine Corridor has been incrementally improved to increase ridership and revenue, as well as boosting frequency and reducing running times through the progressive upgrading of various line segments for 110-mph (160 km/h) service. Photo courtesy Michigan DOT

6.1 Michigan's Wolverine Corridor

When Amtrak took over the deteriorating U.S. network of passenger trains operated by the private freight railways, Michigan's service was reduced overnight to two roundtrips on the Detroit-Chicago route, now known as the Wolverine Corridor. On this meagre foundation, the Michigan Department of Transportation (MDOT) has slowly built a larger rail passenger service and a truly intermodal network using intercity buses, urban transit and intermodal terminals to improve non-automotive mobility throughout the state.

Michigan was an early proponent of intermodality. Faced with a shrinking and disjointed network of rail services, private bus operations and public transit,

it accomplished a great deal on a limited budget. Now, through a major investment in the Wolverine Corridor, the whole Michigan network will undergo positive change. Michigan's example can serve as an example for Southwestern Ontario and its federal and provincial governments.

Michigan's state-supported rail system grew incrementally, adding the Port Huron-Chicago Blue Water in 1974 and the Grand Rapids-Chicago Pere Marquette in 1984. A third Wolverine service train was added in 1975 and extended to Pontiac in 1994. Network ridership has grown by more than 50 per cent since 2000, reaching more than 800,000 passengers annually.

In addition to the trains, state-assisted, privately-operated intercity buses serve as components of the nationwide Amtrak Thruway bus feeder network. Funding for the buses, which serve nearly 150 Michigan communities and connect directly with the three rail routes, has been provided through a variety of low-cost MDOT programs. These include the Bus Loan, Terminal Development, Intercity Services and Intercity Bus Capital Equipment programs. Under the last, the state acquires new buses under a lease agreement that requires private carriers to provide daily service. This program has helped launch new services and has preserved existing routes.

The creation of intermodal mobility hubs throughout Michigan has been a key component of the MDOT intercity transportation program, providing a mixture of new terminals and rehabilitated stations on the three rail passenger lines and the connecting bus routes. The Wolverine Corridor offers direct train-to-transit connections at 11 of its stations.

The most recent intermodal mobility hub on the Wolverine Corridor is Dearborn's municipally-owned John D. Dingell Transit Center. Built with a \$28.2-million federal grant under the American Recovery and Reinvestment Act of 2009, and opened as of December 15, 2014, it is located near Dearborn's retail district, Greenfield Village and the Henry Ford Museum. In addition to the Wolverines, it serves the regional SMART transit system and Amtrak Thruway buses to East Lansing and Toledo, Ohio. It will also be served by the new Ann Arbor-Detroit commuter rail service, which is currently under development.

A less visible but equally important component of the 486-km Wolverine Corridor HPR upgrade as Michigan's public transportation spine is its new rail traffic control system. Amtrak's ownership of the 156-km line segment west of Kalamazoo and the federally-funded MDOT purchase of the 217-km Kalamazoo- Dearborn section in 2011 have expedited the installation of the advanced Positive Train Control (PTC) system mandated by Congress for train operation at 128 km or more.

The Amtrak-owned section of the line now has PTC and is cleared for 180-km/h operation, which has reduced running times. PTC application on the longer Michigan-owned section is under way and, along with numerous

other improvements, it will cut the Detroit-Chicago journey time of 6 hours and 30 minutes by two hours.

A key component of the \$687-million Wolverine Corridor project is new equipment to increase speed, comfort and capacity, while reducing costs. The experience on some state-assisted Amtrak routes, such as the Vancouver-Seattle-Portland-Eugene Cascades Corridor, is that the arrival of new equipment boosts ridership even without service increases. The Wolverines currently operate using conventional, single-level Amtrak trainsets with locomotives on both ends. This makes it unnecessary to physically turn the trains at terminals, which saves time and operating costs, while increasing equipment availability and utilization.

As part of a coalition of three Midwestern states and California, MDOT has received the first of its 200-km/h Siemens Charger diesel-electric locomotive and, beginning in 2020, will take delivery of its portion of a 130-car fleet of Siemens single-level coaches, which are modified versions of the cars Siemens has already delivered for Brightline service in Florida.

The Wolverine Corridor will grow to 10 daily roundtrips between Detroit and Chicago, with six extended to Pontiac. End-to-end running times will progressively drop by 30 to 50 per cent, with running times for the Port Huron-Chicago Blue Water also reduced as a result of its use of a portion of the Wolverine Corridor's 180-km/h infrastructure. The recommended service increases on the Port Huron and Grand Rapids routes would eventually see four roundtrips daily on each, as well as additional feeder buses. Proposed additions to the rail passenger network include Detroit-Grand Rapids, Detroit-Toledo and a service to northern Michigan.

The Michigan rail passenger program is part of the Midwest Regional Rail Initiative, which was formed in 1996 by a coalition of nine states (now 10) to develop a Chicago hub-and-spoke system of 11 rail routes totalling 5,000 km, as well as several Thruway feeder buses. The rail system will consist of 11 lines operated at maximum speeds of up to 176 km/h.

MDOT envisions the Wolverine Corridor eventually being converted to 352-km/h HSR as part of an interconnected, international service from Chicago to Toronto via Detroit and Windsor.



Using a no-frills approach that has included fully refurbished locomotives and rolling stock, North Carolina's Piedmont emerging HPR service has brought passenger trains back to a route that was largely stripped of all its locally-useful service in the 1960s. Photo courtesy of Amtrak

6.2 North Carolina's Piedmont Corridor

While North Carolina wasn't stripped of rail passenger service as dramatically as Michigan was with the creation of Amtrak and its early route rationalization, what was left was regionally ineffective, consisting of long-haul trains passing through the state at inconvenient hours on runs from the Northeast Corridor to Florida and New Orleans. Over the last quarter-century, the North Carolina Department of Transportation (NCDOT) has worked with Amtrak, on- and off-line municipalities, and connecting bus and transit operators to create an essentially all-new system.

North Carolina now has two state-supported rail services. Launched in 1990, the Carolinian links

Charlotte, Raleigh and other North Carolina points to Northeast Corridor destinations. It runs on a 13-hour Charlotte-New York schedule and is operated under a full service contract with Amtrak, similar to that employed by Michigan and many other states.

On the Raleigh-Charlotte Piedmont Corridor portion of the Carolinian's route, the state has progressively added daytime roundtrips. Originally a single daily train in 1995, the Piedmont's success has led to a doubling of the service and a plan that will, in combination with the Carolinian, soon offer six Raleigh-Charlotte roundtrips daily.

A unique feature of the North Carolina passenger program is the state's historic ownership of the Charlotte-Raleigh railway over which it operates. The line is leased to Norfolk Southern (NS), which operates and maintains it for freight service. In addition to the lease revenue, North Carolina benefits from being in a better position than most passenger operators to negotiate the priority of its passenger trains. It also benefits from NS's passenger-friendly management; the freight railway has an excellent track record of jointly crafting solutions for passenger and commuter services on its lines, in addition to its own freight operations.

Unlike many state-assisted services, the Piedmont service uses its own equipment and maintenance services. States have the right under the partnership agreements with Amtrak to provide certain aspects of the service and deduct those costs from the contract. North Carolina uses a remanufactured fleet for the Piedmonts, which includes eight diesel-electric locomotives (six of them former GO units), five cab cars to enable push-pull operation (remanufactured from ex-GO locomotives) and 20 passenger cars. With the North American pool of secondhand equipment almost exhausted, new equipment will have to be purchased for the full expansion of the Piedmont and additional new routes and services proposed by NCDOT.

The Piedmonts are comfortable and stylistically retro. One-class coach service is offered and each train has a lounge/baggage car with several tables and vending machines for locally-sourced food and beverages.

The baggage sections of the cars are well used by the numerous cyclists who ride the trains. A flexible fare plan includes discounted 10-trip passes, a 15 per cent reduction for students and a 30-per-cent-off companion fare. All fares and travel information are posted on Amtrak's website and the state's own site (www.ncbytrain.org).

Thanks to joint federal and state funding, the Piedmont Corridor's infrastructure is undergoing a \$520-million improvement program. The trains are now limited to 126 km/h under federal rules and require in-cab signal displays and automatic train stop protection at higher speeds. Congress has mandated the application of Positive Train Control (PTC) on all passenger and safety-sensitive lines by the end of 2018, although the multi-billion-dollar project is running behind schedule for a variety of reasons.

Track upgrading has already reduced the Charlotte-Raleigh running time by 35 minutes and higher speeds under PTC will cut it further.

The Piedmonts are directly connected to six transit systems at seven stations. These transit systems have benefitted from increased public investment spurred by North Carolina's shift from a rural economy, dominated by agriculture and related processing (especially tobacco) to an urban one driven by its many universities, research centres, high-tech industries, banking and tourism.

As North Carolina's urban population has risen, younger professionals have increasingly shown their preference

for car-free travel. Statewide transit ridership has increased 95 per cent since 2002 and automotive vehicle-km travelled has declined by 4.3 per cent.

In linking this expanding transit system with the trains, some intermodal improvements have been as simple as diverting transit buses from nearby streets to the front doors of the stations at train time. More substantially, several historic rail stations have been refurbished as mobility hubs and new ones have been constructed.

The largest mobility hub project is the new Raleigh Union Station. Replacing a cramped and poorly-located facility, it will maximize connectivity at a downtown location.

Piedmont ridership has almost tripled since 2002 and doubled statewide. Including the Piedmonts, the Carolinian and Amtrak's four north-south long-haul services, North Carolina is now served by 14 daily trains on five routes with stations in 16 communities. More than 70 per cent of North Carolina's population is within a 50-km radius of a rail passenger station, with an additional 11 per cent within a 50-km radius of stops served by the Amtrak Thruway feeder bus connections.

In its 25-Year Vision for North Carolina, the state committed itself to several ambitious transportation goals, including the expansion of both rail passenger options in all regions and more transit. A major component of this vision is the state's participation in the federally-designated Southeast High-Speed Rail Corridor plan.

To be built as a cooperative federal/state project, the principal main line will stretch from Washington to Jacksonville via Richmond, Raleigh, Charlotte, and Atlanta. Later segments will be built from Atlanta to Birmingham and Raleigh to Jacksonville via Savannah, Georgia.

Although it is described as "high-speed," it isn't. It will be a diesel-powered, 176-km/h HPR system. Except for a segment north of Raleigh that will be built on an abandoned right-of-way, the system will share trackage with the freight railways.

While the line is largely single-track south of Richmond, Virginia, the upgrade to HPR has included the construction of 8-km passing sidings every 16 km, the straightening of curves, grade crossing elimination, PTC, station improvements, and the use of higher-speed locomotives and cars.

A side benefit of this HPR approach is the improvement it will bring in line capacity and speed for the freight railways. Additionally, the plan contemplates the possible inclusion of a parallel, multi-purpose trail from Petersburg, Virginia, to Raleigh as part of the Maine-to-Florida East Coast Gateway. This hiking and biking trail would be built on the rights-of-way and safely separated from the adjacent rail passenger and freight operation.

The addition of new conventional rail services to North Carolina's Atlantic coast and the Smoky Mountains is also projected under the 2014 *Comprehensive State Rail Plan*.

6.3 Northern California's Capitol Corridor

Prior to the 1991 launch of the state-assisted San Jose-Sacramento Capitol Corridor service, the only train serving the full 269-km route was Amtrak's Coast Starlight, which operated at hours inconvenient for local travel on its run between Los Angeles and Seattle. The last local service on the line was discontinued in 1962. Nevertheless, California voters approved two 1990 ballot propositions providing \$105 million for the revival of service on the route.

The Capitol Corridor began with three roundtrips and expanded in stages to the current 15 on the Oakland-Sacramento route segment, with seven operating south of Oakland to San Jose and one extending east of Sacramento to Auburn. It is now the third busiest route in the Amtrak network, behind the Northeast Corridor and the San Luis Obispo-Los Angeles-San Diego Pacific Surfliner. During the 2012 fiscal year, Capitol Corridor trains carried 1.7 million passengers and recovered half of their \$58 million operating costs through passenger fares.

Like other state-assisted services provided in California at the time of its launch, the Capitol Corridor was originally operated by Amtrak under a full-service contract with the state's department of transportation – Caltrans – which managed the program. Equipment was provided from Amtrak's own fleet.

This began to change in the mid-1990s, when a fleet

of California-owned locomotives and bi-level California Cars arrived for service under the distinctive Amtrak California brand. In 1998, management of the Capitol Corridor was transferred to a joint powers authority (JPA) composed of representatives from six municipal transit agencies on the line. State funding is provided through Caltrans and the JPA contracts with the San Francisco Bay Area Rapid Transit District for day-to-day management.

Delivery of the California rail passenger services is through Amtrak and an operating contract with the Union Pacific Railroad, which owns the line and continues to operate a heavy freight volume over part of it. This JPA governance and management model has been adopted for the other state-assisted California Amtrak routes, as well as many other non-transportation, not-for-profit services operated in the public interest.

The California JPA governance model has a large bearing on the recommendations for the implementation of the SouthwestLynx concept.

Similar to North Carolina's Piedmont service, the Capitol Corridor offers only one-class coach service and each train includes a café-coach with light food and beverage service. There is also at least one car on each train with ample, secure bicycle storage; passengers are responsible for loading and unloading their own bikes.

To augment the current bi-level fleet, Siemens 200-km/h single-level rolling stock has been ordered under a joint contract with Michigan, Illinois and Missouri. As previously mentioned in the context of the Michigan Wolverine Corridor, these cars will be almost identical to the Brightline rolling stock and they will be hauled by Siemens Charger diesel-electric locomotives, which are already in use on the Capitol Corridor and the other two Amtrak California routes.

This Siemens HPR equipment is discussed in more detail in Chapter 7 of this report.

In addition to one-way and roundtrip tickets, the Capitol Corridor offers a wide range of discounted fare options, including an unlimited monthly pass and 10-ride tickets. There are numerous discounts for seniors, students, children, disabled persons, veterans, active-duty military personnel, groups of 20 or more and members of the American Automobile Association and the National Association of Railroad Passengers. Discounts are also offered in partnership with the Oakland Raiders and California Golden Bears football teams, Levi's Stadium in Santa Clara and regional special events operators.

Intercommunity feeder buses and transit links to the Capitol Corridor trains are numerous. In addition to connecting at five stations with 11 Amtrak Thruway

bus routes, direct transit connections are made with 16 local or regional transit providers at 14 stations. These include the San Jose and Sacramento light rail transit systems, the Bay Area's BART subway, and the Altamont Commuter Express and Caltrain commuter rail services. Connections are also made with two Amtrak long-haul trains, the Oakland-Chicago California Zephyr and the Los Angeles-Seattle Coast Starlight, and the six daily San Joaquin trains on the inland route via Bakersfield to Los Angeles.

Fare integration with the transit systems is extensive. Discounted BART day passes are sold on the Capitol Corridor café cars and up to two free transfers for 11 of the connecting transit systems are issued onboard upon request. Full fare and connecting service information is available on the service's dedicated website (www.capitolcorridor.org).

The Capitol Corridor's trains have proved to be an attractive alternative to the congested, parallel freeways. They're also politically popular, serving many state legislators and political aides who use them to commute from their Bay Area homes to offices in Sacramento. The Capitol Corridor is the fourth busiest intercity rail passenger route in the U.S., exceeded only by the Northeast Corridor, the Keystone Corridor and California's Pacific Surfliner service.

The Capitol Corridor JPA has mapped out an ambitious expansion plan for the service. With the congressionally-mandated implementation of PTC, the maximum speed will be increased in combination with various infrastructure projects from the current 127 km/h to 176 km/h. Increases in frequency are planned on all route segments, and Oakland-Sacramento peak-hour express trains will be introduced, cutting the two-hour running time by almost half.

New stations will be added and intermodal connectivity increased with more Amtrak Thruway and transit feeder services. The long-range plan contemplates service extensions east to Truckee or Reno, Nevada, and south to Salinas and Monterey.

California's \$68.4-billion (and growing) HSR system will bring more riders to the Capitol Corridor. It will connect at San Jose with the Los Angeles-San Francisco HSR main line when it opens in 2029 (or later), serving as a connector and feeder. That role will grow if the HSR eastern branch from Merced to Sacramento is built, although funding and timelines have not been set.

The Capitol Corridor's future is guaranteed as part of a seamless, interconnected network that will blend HSR, HPR, conventional passenger service, and commuter trains to provide California with high-quality rail, bus and transit services.

