

US mulls high-speed rail

Full steam ahead for the Obama administration as the US begins to rethink the value of a high-speed rail system to rival Europe. Barry Parker reports

High-speed rail, where passengers are transported at speeds of 90 miles per hour (mph) and greater, is coming to the United States, if President Barack Obama has his way.

Several months after the passage of the American Recovery and Reinvestment Act (ARRA), Obama has provided more information on his ideas for building rail networks in the US that will rival those elsewhere, notably in Europe.

Within ARRA, USD8 billion of grant money has been allocated to catalysing high-speed rail. One transport finance veteran, DJ Gribbin, previously general counsel at the US Department of Transportation (DOT) and now managing director at Macquarie Capital, based in [New York](#), told Jane's: "The USD8 billion in stimulus spending has certainly increased interest in high-speed rail and underscores the need for the US to rethink the value of this mode of transportation."

Work in progress

The US high-speed rail network is a work in progress, with the exact details still needing to be filled in. At his mid-April press briefing on the subject, Obama said: "No decision about where to allocate funds has yet been made and any region can step up, present a plan and be considered."

But, as a practical matter, the Obama administration seeks to fund shovel-ready projects where advance work has already been done. Written guidance points to projects in which "planning, environmental and preliminary engineering activities have been completed - thus allowing grant recipients to immediately begin final design and construction and/or enter into design-build contracts."

Obama noted that there are "at least 10 major corridors," of between 100 miles and 600 miles in length with the potential for hosting high-speed rail. Obama's remarks - like the written guidance - emphasise upgrades of existing systems, rather than fresh ground-breaking approaches.

The "corridor" designation actually dates back to the early 1990s, when railroads with potential for future development were identified in a previous piece of transportation funding legislation.

The deliberations leading up to the passage of the ARRA saw legislators walking a delicate line between an immediate economic boost in the form of job creation and programmes with longer-term benefits.

In providing justification for his programme, Obama said: "What we need, then, is a smart transportation system equal to the needs of the 21st century - a system that reduces travel times and increases mobility - a system that reduces congestion and boosts productivity."

Obama specifically took inspiration from successful high-speed rail operations in [France](#) and [Spain](#). Spain's Alta Velocidad Española (AVE) has seen investments of USD130 billion since 1992, a decade after [France](#) launched its Train à Grande Vitesse (TGV), operated by the French national railway [SNCF](#). An increasing marginal cost of expanding highway and airport infrastructure is a recurring theme in US discussions of high-speed rail.

Details on precise financing for high-speed rail will emerge as states vie for the USD8 billion ARRA funding. The Obama team is already talking about an additional USD5 billion in the coming years.

Most analysts are quick to opine that USD13 billion would enable upgrades on freight right-of-way, clearing the way for higher-speed passenger service, but not much more. In perspective, funding of this magnitude will provide only a fraction of the cost of high-speed rail service.

A guidepost comes from efforts in the state of California - one of the corridors under consideration - which launched the California High-Speed Rail Authority (CHSRA) in 1996. Work began in the early part of this decade on a series of planning and environmental reviews. A series of CHSRA documents provides a unique window into how projects might be financed in other corridors.

Planners in California have estimated the aggregate capital costs of a system spanning 520 miles from [San Francisco](#) - with another spur originating in [Sacramento](#) - southward to Anaheim in the southeastern suburbs of [Los Angeles](#) at USD32.8 billion to USD33.6 billion. Construction would occur in stages during 2012 through completion in 2020. The CHSRA business plan reveals that construction costs comprise 70 per cent of the total, with 12 per cent (roughly USD4 billion) allocated to the cost of vehicles.

Over the timeframe through 2030, additional buildout, bringing total distance to 800 miles - including a link from [Los Angeles](#) south to [San Diego](#) - would bring the aggregate cost to USD45 billion. A 2005 estimate, within the comprehensive planning reviews, put the cost of highway and airport expansion for handling a comparable forecast passenger volume through 2020 at USD82 billion in 2003 dollars.

James Oberstar, chairman of the House of Representatives Transportation and Infrastructure Committee, has touted another funding source - bonds issued under the US government-guaranteed Railroad Rehabilitation and Improvement Financing (RRIF) programme. In testimony, Oberstar said 30-year funds were available at an interest rate of under 4 per cent, adding that RRIF money could be useful for California's efforts given logjams throughout the bond markets.

High-speed funding

In California, funding for high-speed rail will come from multiple sources under what the CHSRA calls a "multi-track financing strategy" under a plan developed in 2007. On Election Day 2008, voters in California approved a down payment of more than USD9.9 billion for a statewide high-speed rail system. The state's voters, in approving Proposition 1A, authorised the state to issue general obligation bonds to fund specific segments of the broader plan. At least 90 per cent of the bond funds, effectively USD9 billion, must be used for capital costs rather than engineering studies and administration. ARRA funding, by contrast, must only be used for capital investment.

In large public transport projects, costs are often shared among entities at different levels of government. Proposition 1A states clearly that state bonds fund "no more than 50 per cent of the construction cost of any segment or corridor". Unlike the state funding, the ARRA funding does not include such a cost-sharing requirement.

Public money attracts private sector money. The financing plan which set the parameters for the Proposition 1A bond issuance looked for early funding to come from multiple governmental sources - federal, state and local initially. However, over time, as the system generates positive cashflows, the CHSRA expects to attract private money through public-private partnerships (PPPs) that would include "project debt financing, vendor financing, system operations and private ownership".

In early 2008, the CHSRA formally solicited non-binding expressions of interest and ideas from the private sector. A blue-ribbon group of leading industry participants expressed interest in participating in California's massive project. Infrastructure Management Group (IMG), a Maryland-based consultancy, summarised the private sector responses in a November 2008 report, drafted with assistance from a subcontractor group including Barclays Capital (replacing defunct investment bank Lehman Brothers) and Sperry Capital.

Five financial investors - Babcock & Brown, Carlyle Group, Goldman Sachs, HSH Nordbank, and Meridiam - were among the 30 respondents. Equipment providers that weighed in on privatisation issues included

[Alstom](#), Bombardier, Italferr, RTT, [Siemens](#), [Sumitomo](#) and [Talgo](#). Operators offering input consisted of ACD ID, [SNCF](#), [UK](#) train operator [Stagecoach](#), Veolia, and [Angel Trains](#), the UK-based rolling stock lessor.

Contemplating concessions

More than 90 per cent of the responding private entities cited the commitment to funding by California as a precondition for their active participation in the project, with just under 90 per cent identifying federal government funding among criteria necessary for involvement.

All of the responding financial firms expressed an interest in participating in a consortium that would enter into a design, build, finance, operate and maintain (DBFOM) arrangement with the contracting authority. In such arrangements, a master contractor from the private sector handles all phases of the project, in contrast to the traditional model where the design aspect is separate from the construction portion.

The report suggests that many respondents were contemplating concession type arrangements; one unnamed company stated: "Concessions are not a panacea for an underfunded and/or unfeasible project.

"The project and/or the asset need to be able to support a business case for private investment."

IMG suggests in the report that: "Typically, concessionaires invest equity in their projects ranging from 10 per cent to 20 per cent of the total investment," adding: "similar figures could be expected in this project."

The CHRSA requires, as stated in a staging profile of its financing plan, that public money must be committed first; the authority targets between USD6.5 billion to USD7.5 billion of private participation in the state's high-speed rail programme through 2020. Of this, an estimated USD4.5 billion to USD5.5 billion constitutes debt.

A key concern of possible private participants is euphemistically described as the amount of risk to be transferred to the private entity and, specifically, ridership risk. IMG's report discusses models for compensating the private sector contractor, which must, after all, be able to repay its debt.

In discussions with potential private partners, many suggested a willingness to explore a spectrum of concessionaire compensation schemes after the project construction phase. At one end of the range, flows to concession-holders would be tied to a user-fee approach; quite simply, more riders would mean more revenue.

An alternative approach common on large projects is "availability payments", in which concessionaires would be given periodic payments based solely on the condition and/or performance of the facility, thereby removing the ridership risk. This trade-off has implications for financial structuring, as the IMG report states bluntly: "We believe that availability payments create an opportunity to utilise higher levels of debt financing, as these payments are generally more stable than other sources, such as fare box revenues."

A March 2009 IMG update said: "Willingness to accept [ridership risk] could increase as the project is nearer to completion, or after several years of ridership has been demonstrated."

The concerns identified in the IMG report are borne out in the views of Gribbin, who told Jane's: "High-speed rail networks are very expensive and it is highly unlikely any system will be built on a P3 model based solely on user fees. However, P3s could offer significant value to a high-speed rail project supported by availability payments."

Robert Poole, founder of the conservative-leaning think-tank Reason Foundation and a long-time adviser to US presidential administrations on transport matters going back to the Reagan years, cautioned that government support is intrinsic to high-speed rail.

Poole, known for his work on the US air traffic control system, told Jane's: "On high-speed rail and privatisation, I am generally a sceptic, since every such system I know of has had most or all of its capital

costs paid for by the national government - and in at least some cases they also require operating subsidies.

But Poole offered one example of how a privatisation scheme might work. He told Jane's: "The only kind of PPP model that might work is something like the government of Victoria has done for the trams and commuter rail in [Melbourne](#): bid out operations and management for a medium term based on which bidder requires the least subsidy while committing to achieve a set of performance targets."

Patchwork finance

High-speed rail finance would likely be a patchwork - even with the federal portion - in which money besides ARRA will be available. Two weeks before California's Proposition 1A referendum and roughly four months prior to the passage of ARRA, former US President George W Bush signed the Passenger Rail Investment and Improvement Act of 2007 (HR 2095) into law. This bill, a work-in-progress since 2006, had already established the framework for federal support of high-speed rail, providing states with USD1.6 billion over a five-year period.

As ARRA grant money is allocated in California and beyond, the [Federal Railroad Administration](#) (FRA) will be at the controls. The agency, housed within the US DOT, has already submitted a strategic plan to a congressional committee - as required under the ARRA - detailing a vision for the nationwide rail network and selection criteria for projects to be funded by the ARRA.

As explained by the FRA, grants will encompass development of the corridor infrastructure (typically the elimination of road crossings and raising of bridge heights), capital assistance specifically aimed at railroads moving passengers between cities and grants tied to mitigation of congestion, which is a recurring theme as congestion is tied to emission of harmful gasses.

Applicants for the infrastructure development category may include states, groups of states, and new regional organisations and agencies with a high-speed rail development mission. A lengthy list of categories for capital projects would qualify, including specific items such as: "acquiring, constructing, improving, or inspecting equipment, track, and track structures" or "a facility of use in or for the primary benefit of high-speed rail service", acquisition and construction expenses, "payments for the capital portions of rail trackage rights agreements" and "highway-rail grade crossing improvements related to high-speed rail service", among others.

Unlike concession approaches, in which a government retains ultimate ownership of an asset, outsourcing of discrete project components moves a specific piece off the government's balance sheet. The FRA list also includes: "communication and signalisation improvements".

In theory, an early possibility for private ownership might take a cue from the aviation mode. Air traffic control, akin to the railroads' signaling system, has been partially privatised in the [UK](#) and [Canada](#). Skeptics of this approach are quick to complain about its highly political nature, with one highly placed US airline executive telling Jane's: "If the government appoints the private partner, or even sets up a duopoly, that's not really competition in the free market sense. If it's just about hiving off part of the balance sheet, that might not be the right move strategically." Nevertheless, a rail signal network may be a candidate for privatisation.

Passengers and freight

The high-speed rail discussion centres on passengers, but it overlaps with concerns about rail freight, in which the rail mode could relieve pressure on the highway network, drawing freight away from trucks. Phil Longman, a senior fellow at New America Institute who looks at issues concerning responsibilities of the government versus the private sector, has written a paper called 'Steel Wheel Infrastructures' that has underpinned his discussions with US legislators and transport policy officials.

In testimony before a congressional subcommittee on materials movement, Longman described a dilemma facing transport planners looking at an overcrowded Route 1-81, a major north-south motorway running through the state of [Pennsylvania](#) and through the Appalachian Mountains, but parallel to a main line of Class 1 railroad Norfolk Southern (NS). Defending a proposal he calls "Back on Tracks" he says: "Instead of

using public money to endlessly widen I-81 and other interstates to accommodate more and more trucks, use it to improve parallel freight rail infrastructure."

NS had proposed such a project, dubbed the "Crescent Corridor", two years ago, hoping to complement its own investment with governmental funding. Such corridors, which, unlike their passenger analogs, are not officially designated entities, but are really a series of discrete projects, partly funded by the railroad and partly funded by local governmental entities along the route. NS describes it as follows: "A 2,500-mile rail network between [Pennsylvania](#) and the Gulf Coast, [where] more than USD2 billion in projects have been identified to improve freight rail service and reduce interstate highway congestion."

According to NS, the Commonwealth of Virginia, where two north-south tracks form the core of the corridor, has so far allocated USD45 million from its general fund. In Pennsylvania, NS was vying for a portion of USD57 million being made available for freight rail infrastructure. A railroad spokesperson told Jane's: "Stimulus money for freight rail projects is being handled by state DOTs. We have regular and frequent dialogues with state agencies regarding participation in rail projects - including the Crescent Corridor - that have public benefits."

The politics of such projects could pit the railroads against powerful interests, such as the American Trucking Association, that question the use of public money to aid a modal competitor. Conversely, intermodal transportation has a complementary element; freight transported on rail corridors would be handed off to trucking partners, providing a source of business.

Rail interests have been aided by the environmental camp. In early April, an alliance of environmental groups took the Federal Highway Administration and the Virginia DOT into federal district court with a request to re-evaluate funding that had been approved for expansion of the I-81 highway.

Funds from the ARRA have the potential to catalyse the Crescent Corridor and other rail freight projects.

Going forward, the 'green' element will play a greater role, as the battles unfolding over I-81 indicate. Indeed, a regional group called Coalition for Smarter Growth was working towards an expenditure of USD38 million of stimulus money towards initial work on the Crescent Corridor near route I-81, within central Virginia. To date, much of the justification for rail freight, currently diesel-powered, has been mitigation of highway congestion. Another Washington, DC-based think-tank, Millenium Institute, is promoting investment in an environmentally friendly electrically-powered freight and passenger rail system. The organisation suggests that, through 2030: "An estimated total investment of USD250 billion to USD500 billion in inter-city railroad lines non-oil transportation could supplant most inter-city truck freight and unspecified modal share of passenger service." There is no discussion of funding sources.

In prepared testimony, Longman pointed to the [UK](#) passenger rail sector as a model for a rail freight scheme, along with high-speed rail's environmentally-friendly electric technology.

Business examples

After noting that US railroads have preferred to own right-of-way (the tracks), he cited the example of the UK's Virgin Trains, and other franchised train operating companies formed in the mid-1990s. In this business model, "[Virgin Trains](#) - owned by [Stagecoach](#) and Sir Richard Branson - operates passenger trains on publicly financed infrastructure. Following this example would create something very much like the current interstate highway system: publicly financed transportation infrastructure maintained for the benefit of private operators."

But the business model, whether for freight or passengers, is not a cure-all solution. Beleaguered US passenger railroad [Amtrak](#), formed in the early 1970s, was originally built on a similar foundation.

The government-owned corporation originally operated passenger trains entirely on tracks owned by freight railroads. In 1976, [Amtrak](#) acquired the tracks and tunnels of the bankrupt Penn Central Railroad, in the heavily traveled Northeast Corridor.

The European high-speed experience will have a profound impact on activity in the US - indeed, media reports already have [Virgin Trains](#) discussing involvement and preparing bids on multiple high-speed rail corridors.

High-speed rail corridors

Pundits make distinctions among three approaches to US high-speed rail: the Northeast Corridor; greenfield projects (for example, California); and upgrading existing rail corridors.

[Amtrak](#) owns most of the track along the Northeast Corridor, although certain segments in the states of Connecticut and Massachusetts are controlled by commuter rail agencies. [Amtrak](#) is also responsible for upgrading the infrastructure on the track that the railroad owns directly.

As currently configured, the Northeast Corridor will never be able to accommodate true high-speed rail unless the entire right-of-way is rebuilt - a monumental project. [Amtrak](#) has been upgrading the Northeast Corridor in fits and spurts, subject to the vagaries of the capital budgets coming out of Congress.

Even prior to Amtrak's formation in 1971, transport planners sought to bring high-speed rail to the Northeast Corridor. After 1965 legislation authorising demonstration projects for high-speed rail, the corridor saw the introduction of Metroliner service in the late 1960s.

The Metroliner has been superseded by Amtrak's Acela, introduced in 2000. Along the Northeast Corridor, Acela has gained market share and has been competitive with air shuttle service and automobile travel.

The increased waiting times for airport security in recent years, and the high price of fuel in 2007 and 2008, further added to Amtrak's value proposition along the Northeast Corridor, although some analysts have suggested that Amtrak's market share along the Northeast Corridor may have reached a ceiling. Experts told Jane's that the next steps for reduced travel times would include a complete replacement of the catenary electrical system and the power supply south of [New York](#).

Additionally, the realignment of some curves to enable higher speeds, construction of grade-separated road crossings and the rebuilding of numerous aging bridges and tunnels would be required.

High-speed rail would also require the implementation of a new signaling system. [Amtrak](#), with an entrenched political constituency, is not likely to go away anytime soon and will almost certainly play a role in whatever happens with high-speed rail along the Northeast Corridor.

Elsewhere in the country, true high-speed rail, such as that envisioned by the California High-Speed Rail Authority (CHSRA) and voters who have bought into the vision, would probably be designed, financed, built and operated wholly independent of [Amtrak](#).

For existing corridors upgraded for speeds of 90 mph and above, the jury is out on whether [Amtrak](#), third-party private businesses, or some combination, would operate the trains.

It is likely that the ownership - and the financing that goes with it - would be in the hands of newly created multi-state agencies or regional authorities.

The skirmishes in Virginia between freight railroads and highway advocates may be a precursor of future political battles as high-speed rail and those same freight railroads owning the existing infrastructure argue as to their share of costs and benefits.

Designated high-speed rail corridors

Name of corridor	Major cities along corridor
California Corridor	Bay Area (San Francisco , San Jose and Oakland), Sacramento , Merced, Bakersfield, Los Angeles , Anaheim,

[San Diego](#)

Pacific Northwest Corridor	Vancouver (BC), Seattle , Tacoma, Portland , Eugene
South Central Corridor	San Antonio , Austin , Dallas (hub), Little Rock, Oklahoma City , Tulsa
Gulf Coast Corridor	Houston , New Orleans , Mobile, Meridian, Birmingham , Atlanta
Chicago Hub Network	Chicago (hub), Minneapolis/ St Paul, St Louis , Kansas City , Detroit , Cleveland , Columbus , Cincinnati , Louisville , Indianapolis
Florida Corridor	Orlando , Tampa , Miami
Southeast Corridor	Washington DC, Richmond, Raleigh, Charlotte , Atlanta , Columbia, Macon, Savannah, Birmingham , Jacksonville
Keystone Corridor	Philadelphia , Harrisburg, Pittsburgh
Empire Corridor	New York City, Albany , Buffalo
Northern New England Corridor	Portland , Boston (hub), Montreal (PQ)
Northeast Corridor*	Boston , New York , Philadelphia , Baltimore , Washington DC

* (Not officially designated as a corridor for federal government programmes that rely on this designation)

(source: *Federal Railways Administration*)

US DOT:
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