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Fast Track to the Future: A High-Speed Rail Agenda for America

by Mark Reutter

n the next few weeks, the administration will be announcing which states will be awarded funds from \$8 billion dedicated for high-speed rail (HSR) development in the stimulus package. Right now, 259 applications from the states valued at \$57 billion are chasing the recovery plan money.¹ The administration's decision to devote considerable resources to developing HSR underscores its commitment to bring bullet trains to the U.S. But unless it makes the right decisions about where to put the money and what policies to follow, the new enthusiasm for HSR could be just the latest false start in a long, disappointing history.

Last spring, President Barack Obama unveiled his vision for a national HSR network. The

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president conjured up an image of a 21 st-century train infrastructure, "a system that reduces travel times and increases mobility...reduces congestion and boosts productivity...reduces destructive emissions and creates jobs." The administration also put forward a rail policy that, rather than laying track coast to coast, would concentrate on heavily populated corridors where short distances between cities would let faster trains compete effectively with cars and airplanes.²

Since then, the administration has called on states to submit plans for HSR competitive grants. Congress, meanwhile, added \$2.5 billion to the HSR pot for fiscal year 2010, and it remains possible that the House and Senate will add billions more in a second jobs stimulus, focusing on infrastructure, likely to be taken up this winter.³

For decades, high-speed rail has been a fantasy, mired in bureaucratic, regulatory and market inertia. But with the renewed push for

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it by the administration, the high-speed rail future is beginning to take shape. The benefits of high-speed rail are enormous. For one, HSR is a big step toward energy independence and a post-carbon future. HSR corridors operated with nonpolluting electric locomotives could reduce carbon emissions by as much as six million pounds annually.

HSR also has a strong track record of jumpstarting economic development along its path. Fast, efficient transportation could revitalize depressed cities and transform regional economies. And while the creation of an HSR network lies in the future, it will put people to work immediately. Eighty percent of the cost of

HSR is in infrastructurebuilding and land acquisition, while 20 percent goes for the trainsets and stations that passengers use. New rights of way need to be built now for HSR corridors that are projected to be operational in a few years – meaning tens of thousands of jobs that can't be exported.

The question that we now face is: How do we get there from here?

The choice that the Obama administration and Congress face is simple: modest incrementalism versus a truly transformative vision. The administration's commitment to fund high-speed rail is a step in the right direction, but it's not the end of the process. Lest the allocation of stimulus funds to HSR become President Obama's own "Mission Accomplished," the administration needs to remain engaged, proactive, and forward-thinking in shepherding high-speed rail to completion.

With HSR, President Obama can leave a lasting imprint on the American landscape and economy. But that legacy can only be secured if the administration is willing to make bold decisions and confront a tired political culture. If we really are serious about making the highspeed rail future a reality, the old ways of doing business will not suffice.



Falling Behind

In the 1960s, the Japanese Shinkansen grabbed the world's attention as the first "bullet train." That was followed by the French TGV in 1981. Today, trains that reach speeds of 150 miles per hour zip across 11 countries in Europe and Asia. In December, China launched the fastest service yet – trains hitting 245 mph – as part of its plan to build 8,000 miles of ultra-speed lines. The government said the new Wuhan-Guangzhou railway, which has cut the travel time between central China and the south coast from 10 hours to three, will promote economic growth, reduce oil imports and ease labor shortages.⁴

China plans to have a north-south and eastwest grid of 200-mph-plus lines in place by 2020 that will serve as feeders to regional lines that will operate at 125-155 mph. A major objective is to free existing railways to concentrate on moving freight for China's booming export industries. Eventually, China wants to connect its rail network to a "supertrain" line to Europe that, carrying both passengers and freight, would help secure the nation's future as a global powerhouse.⁵

Comparing China's achievements and ambitions with what has been done in this country is disheartening. As far back as 1965, transportation experts, city planners and even a U.S. president, Lyndon Johnson, envisioned bullet trains operating between large urban areas.⁶ But after tens of millions of dollars of studies and reams of congressional testimony, just one high-speed service has been developed – Amtrak's Acela Express.

Take that designation with a grain of salt. An Acela Express can theoretically travel up to 150 mph on its Northeast Corridor route from Boston through New York City and down to Washington, D.C. But curving roadbeds, aging infrastructure and conflicts with commuter and freight trains put the brakes on any ballastscorching schedules.

Train Speeds Home and Abroad

United States

45-55 mph: Amtrak trains outside of NE Corridor 67 mph: Amtrak's Acela Express, Boston-NYC 77 mph: Acela Express, NYC-Washington

Europe and Asia

- 105 mph: Germany's Frankfurt-Cologne line
 110 mph: Russia's St. Petersburg-Moscow line
 139 mph: Taiwan's Taipei-Kaohsiung line
 146 mph: Spain's Madrid-Barcelona line
 159 mph: Japan's Hiroshima-Kokura line
 169 mph: France's Lorraine-Champagne line
 204 mph: China's Wuhan-Guangzhou line
 245 mph: Wuhan-Guangzhou line‡
 357 mph: France's next-generation TGV train‡
- +Average speed unless otherwise noted
- ‡ maximum speed
- † test speed

Even if everything clicks, America's fastest train takes more than six hours to span a route that China's newest railway could cover in 140 minutes. And that's downright speedy compared to the rest of Amtrak's network. From Portland, Maine, to Portland, Oregon, Amtrak trains poke along at average speeds of 45-55 mph.

If anything, most intercity train schedules are slower today than they were in the 1940s, when "streamliners" such as the Santa Fe Super Chief commonly hit speeds of 100 mph.⁷ And that's based on timetable schedules. More than half of Amtrak's long-distance trains don't run on schedule and some wind up hours late at their terminals.⁸

Acela's Fitful Journey

The Boston-Washington Northeast Corridor, the only high-speed passenger line by U.S. definitions, is an example of penny-wise, dollar-foolish federal spending. The Acela Express reaches a maximum speed of 150 mph, putting it within reach of the French and Japanese systems – except that it runs at this speed for only 30 miles of its 457-mile journey.

Such is the result of cobbling together modern technology with a 19th-century right of way. Amtrak has been working on Northeast Corridor improvements since the 1970s, but funding shortages from a fickle Congress have deferred many of the corridor's most pressing needs. For example, the 150-mph sprint Acela makes through Rhode Island is dissipated by the time its reaches the outskirts of New York because speed-restricted curves – and reverse curves – in Connecticut have never been untangled.

South of New York, Acela cannot reach its design speed because the overhead electrical wires, which feed energy into the locomotive, are obsolete. Until constant-tension catenary is installed, Acela trains must slow around curves, especially in hot weather, lest the contact wires sag and lose contact with the train's pantographs. And until the West Baltimore Tunnel, opened in 1873, is replaced, Acela must crawl through that long bore at 30 mph.

Currently, the 226-mile trip between New York and Washington takes a little under three hours if all goes well, while travel time on the 231-mile New York-to-Boston leg extends up to 3 hours 50 minutes.

Defining High-Speed Rail

There's an old railroad saying that the best way to make a train run fast is to make sure it doesn't run slow. That is the underlying philosophy of HSR. High-speed rail is a type of passenger rail transport that operates at uniformly higher speeds than regular rail traffic over short and medium distances (typically 100 to 300 miles), taking advantage of its inherent economy and attractiveness to customers to run frequent train service. This contrasts with the Amtrak model of low-volume, low-speed passenger service over nationwide routes.

There are two types of HSR based on the kind of infrastructure in place: systems that run on dedicated new rights of way and systems that run on existing, upgraded rights of way. For the U.S., the choice is clear: only by committing to dedicated rights of way can we build a true HSR system.

The Japanese pioneered such a system when it opened the Shinkansen, or "New Trunk Line," between Tokyo and Osaka in 1964. The new railway used modern engineering to take the kinks out of 19th-century railroad building, where going around a hill was considered preferable to boring through it. The Shinkansen line required expensive cutting, filling, bridging and tunneling to maintain the straightest possible right of way. Upon this racetrack, bullet trains initially cruised at 125 mph.⁹

Advances in wheeled-train technology pushed the maximum speeds of dedicated HSR lines to the 200-mph range in France, Spain and Taiwan. China has now convincingly broken the 200-mph barrier on its Wuhan-Guangzhou line. There appears to be no technical barriers that would prevent train speeds from continuing to advance to 300 mph or more.

Then there are systems that run on upgraded existing rights of way. Slower speed trains (between 110 mph and 150 mph) have been developed on such routes by smoothing out curves and improving trainset and locomotive technology.

While Belgium, France, Germany, Italy, Japan, South Korea, Spain and Taiwan have opted for new dedicated lines, Britain, Canada, Finland, Portugal, Russia and Sweden have followed the path of modernizing existing lines. China, meanwhile, has adopted both strategies by constructing a system in which superfast "trunk lines" feed traffic into less speedy regional lines.

While faster trains in the 110-mph range would be an improvement for the U.S., the administration should aim higher. The goal for American high-speed rail should be trains that run at an average speed of 150 mph, with the capacity to reach a maximum of 220 mph. Already a reality in other countries, there's no reason why trains reaching those speeds can't be built here. Pushing for dedicated new lines is a first step toward achieving that goal.

Freight Train Blues

Structural barriers stand in the way of a true high-speed rail system in the U.S. In Europe and Asia, governments directly or indirectly own the railways. Public ownership makes government investment in railways a common-sense, politically acceptable task.

In the U.S., however, private freight railroads own 99 percent of the existing rail plant.¹⁰ Amtrak pays a fee for the right to move its trains across property owned by companies that

Slow Ride

Several states have funded track upgrades to improve Amtrak service on freight railroads. The success of these programs is decidedly mixed. Take the New York-Buffalo "Empire Corridor," a 435-mile route made famous by the Empire State Express, a crack steam train that broke the world speed record in 1893.

In 1971, Amtrak took over the line's passenger service from the bankrupt Penn Central Co. Since then, New York State has invested \$97 million in track and signal upgrades to allow Amtrak trains to operate at up to 110 mph. These bits of rapid running, however, have been undermined by sloworder bottlenecks elsewhere, not to speak of freighttrain congestion. Since CSX owns the trackage, it dictates the schedules – and the "necessary" delays – under which the trains operate.

The end result: eastbound trains are a few minutes slower today than they were 100 years ago when the Empire State Express was still puffing smoke.

are otherwise preoccupied with hauling coal, lumber and consumer goods. Such freight moves in long, heavy, ponderous trainloads that share little in common with passenger trains. Track that keeps passenger trains from accelerating over 79 mph works just fine for



freight railroads whose trains aren't designed to run at higher speeds.¹¹

This presents a huge problem for passenger speed development. In the first place, upgrading old freight-railroad roadbeds to HSR standards is very costly. But even more troublesome, the owners of the track aren't interested in projects that would divert their attention from the profitable business of freight.

Publicly, the railroad industry claims to support the Obama

administration's HSR initiative. But that support comes with the important caveat: so long as it doesn't interfere with freight traffic. At present, rail companies like CSX Corp. and Union Pacific consider even a handful of Amtrak trains a day a tremendous interference with their freight operations.

The perils of depending on freight railroads are made evident in a report titled *Root Causes of Amtrak Train Delays.* The report, prepared by the U.S. DOT Assistant Inspector General, concluded that improper dispatching practices and poor operating discipline by freight railroads were among the key reasons why 58 percent of Amtrak's long-distance trains and 34 percent of its short-distance trains arrived late at their end terminals in 2007.¹² Improving an existing freight line to expand conventional Amtrak service may be a reasonable expenditure of public money, but should it come under the rubric of high-speed rail? At best, such projects have little strategic national purpose; at worst, they subsidize for-profit corporations whose operating practices keep rail passengers stuck on the siding.

Danger Ahead

Is Washington at last getting serious about implementing a fast train program?

Yes and no. The growing bipartisan consensus in Congress that population growth and energy concerns make HSR an attractive mode of travel in 200- to 600-mile intercity markets is good news. This represents a historic shift in

Why Do We Need High-Speed Rail?

- High-speed rail (HSR) will create hundreds of thousands of well-paid jobs. By some measures, every \$1 billion spent in HSR construction will create 15,000 direct jobs and tens of thousands more will grow from operating and maintaining the train system. Keep in mind: these jobs cannot be shipped overseas.
- HSR makes economic sense. The U.S. population will increase from its current 300 million to more than 390 million by mid-century. Those citizens will need transportation. HSR is cheaper to build and causes much less environmental damage than new highways and airports.
- HSR has a proven record of economic development. With station stops located every 30 or 40 miles between terminals, HSR has spurred growth in rural France and Spain. Fast, efficient transportation could bring similar benefits to economically depressed Main Street.
- HSR is a big step toward energy independence. Present-day diesel-powered trains use 27 percent less energy per passenger mile than cars and 21 percent less than airplanes, according to the Oak Ridge National Laboratory. If HSR corridors were operated with nonpolluting electric locomotives, they could reduce carbon dioxide emissions by as much as six billion pounds annually, according to the Center for Clean Air Policy.
- HSR is almost infinitely expansible. A double-track railway, once in place, can meet heavy traffic needs with no additional capital expenditures except more trainsets. Highways and airports, on the other hand, require more lanes and runways to accommodate greater traffic loads.
- HSR is astonishingly safe. The Japanese Shinkansen has transported more than 8 billion passengers since 1964 and has experienced not one fatality. Meanwhile in the U.S., 37,313 people were killed in motor vehicle crashes in 2008 alone.

POLICY MEMO

U.S. transportation policy, which has focused almost exclusively on airports, highways and the family car since the 1920s.¹³

The Obama administration has been wise in going directly to the states, bypassing Amtrak, to jumpstart the HSR program. This follows the precedent of the Interstate Highway System, for which states planned and built the highways according to standards set by the federal government. The administration also wants to encourage partnerships with pri-

vate industry, bringing railway manufacturers, suppliers, contractors and the private freight railroads into the mix.

But along with this opportunity comes the danger that the HSR stimulus cash will be spread across too many rail corridors. The U.S. Department of Transportation and its railway arm, the Federal Railroad Administration (FRA), are under enormous pressure to award grants to "shovel-ready" projects supported by powerful Congressmen and revenue-strapped governors.¹⁴

The Obama administration and Congress should establish a national infrastructure bank that would evaluate and finance the nation's largest civil works, including HSR.

Seeking to appease special interests, FRA administrator Joseph Szabo has indicated in media interviews that federal monies may be spent on small projects, such as double-tracking an existing freight line or reconstructing a bridge. More worrisome, Szabo has not yet



disclosed – almost a year after the HSR program was announced – exactly what criteria the FRA is using to determine which states to fund. Such lack of transparency underscores an apparent lack of vision to get the highest quality HSR up and running, rather than accepting incremental projects that, according to Szabo, have a good chance of being implemented in a short time frame.¹⁵

Raising the Bar

Before it is too late – the FRA plans to distribute the first round of stimulus money in the next few weeks – the Obama administration needs to narrow its overly broad approach to funding and set out clear goals and specific timetables. The following are focused policy recommendations that the administration should adopt:

> • Commit to a vision of HSR predicated on dedicated lines, rather than merely upgrading existing rights of way. Only with dedicated rights of way can we bring the U.S. up to speed with our global HSR competition. This means separating HSR lines from existing freight lines. The two can run parallel in places, but mixing passenger and

freight trains on the same track is operationally difficult and poses safety risks.

• Set deadlines for national HSR development. For instance, the administration should set a realistic goal of having the first fully operational HSR line finished by 2016, and 1,000 miles of HSR completed by 2020.

• Adopt international standards for HSR design and construction to ensure the highest-quality engineering. As part of this process, the administration should rewrite obsolete "crashworthiness" design specifications that now prevent foreign trainsets with unblemished safety records from operating on U.S. track.¹⁶ All trainsets should reach a maximum design speed of 220 mph.

• Prioritize bridging the "knowledge gap" in this country by tapping into foreign expertise to help build up our own intellectual and technical capital. Only by bolstering American knowhow can we begin to build a new economy and create new jobs that stay in America.

Finding the Funds

Over the years, the biggest objection to HSR has been cost. Critics claim that the expenditure required to get a system up and running would bankrupt the country.¹⁷ The interstate highway system faced the same problem of high upfront costs – and the same rap by critics – when it was being devised in the 1950s.¹⁸ Congress's creative answer was to establish the Highway Trust Fund.

The trust fund pooled money nationwide for highway construction from increased taxes on gasoline, tires and commercial road vehicles. In effect, the program favored certain groups in the name of building a uniform system. Urban drivers essentially subsidized rural drivers, and the crowded Northeast effectively bankrolled interstate building in Utah and South Dakota, whose traffic density could not otherwise justify the high cost of construction.¹⁹

Today, a similar kind of financial creativity is needed to get high-speed trains rolling. A 3,000-mile network may require \$200 billion over the next 20 years. Relying on yearly congressional appropriations would slow the program to a crawl, delaying construction, raising costs and deferring the economic benefits of a completed system.

Making HSR happen in the U.S. will take dedicated effort and smart decision-making in Washington. At present, old habits threaten the creation of a viable HSR program.

The Obama administration and Congress should establish a national infrastructure bank that would evaluate and finance the nation's largest civil works, including HSR. A national infrastructure bank is an idea that PPI has called for in the past and continues to advocate today.²⁰

But even as the administration pushes for such a bank, it should also be open to other ideas that have been suggested that could solve the funding conundrum. One such idea is a dedicated HSR trust fund, which would raise capital through a combination of user taxes and private investors counting on the ticket revenues generated by HSR lines.²¹ Another is an infrastructure investment fund to attract institutional pension funds, individual retirement accounts and, perhaps, the Social Security Trust Fund. Investing as little as 10 percent of these \$8-10 trillion worth of retirement accounts in federal infrastructure bonds would unleash almost \$1 trillion for HSR and other civil works.²²

As the administration explores its options, it should be wary of balkanizing the funding initiative for HSR. Splitting up funding programs – dedicating one to rail, another to water, another to energy – has in the past led to squandered opportunities. An infrastructure bank is a robust mechanism for funding that will help us avoid the pitfalls of a fractured financing scheme. In the coming months, we'll roll out a more detailed plan for the creation of an infrastructure bank.

Promising Projects

Together with reforming the way it funds rail passenger service, Washington must embrace HSR for what it is – an entirely new and very high-tech mode of intercity travel. At present, a handful of HSR proposals seem like promising candidates for federal funding, but only if they overcome some political and technical obstacles.

Florida has already spent close to \$1 billion in planning studies and acquiring land for a highspeed line along Interstate 4 between Tampa and Orlando. The state has asked for \$2.6 billion of federal stimulus money to supplement \$1 billion in private investment. Construction is scheduled to start in 2012, with the first leg completed between Tampa and Orlando International Airport by 2015. Future additions to the system would head west to St. Petersburg and south to Fort Lauderdale and Miami.²³

The Florida legislature and governor have strongly backed the 75-mile Tampa-Orlando segment. We believe this line should serve as a demonstration project that showcases stateof-the-art technology and proves the viability of fast trains not only to Florida residents but to the millions of Americans who visit Orlando and Tampa yearly.

The railroad played a vital role in the rise of the industrial Midwest. The proximity of major population centers 100 to 400 miles apart

makes this region an excellent candidate for a rail network radiating from Chicago. Various plans have been submitted to the Obama administration to develop 110-mph lines along existing freight rights of way.

We believe these proposals shortchange the potential of HSR to invigorate an economically hard-hit region. Funding rail projects between Chicago and St. Louis; Chicago, Toledo and



Detroit; and Chicago, Milwaukee and Minneapolis is an important national priority, but only if they are built as dedicated HSR systems. The job growth alone that such systems would generate would be a lifesaver to a region that has suffered from the collapse of manufacturing and the auto industry.²⁴

If the Midwest needs to aim higher, California needs to focus on its top priorities. California has applied for \$4.7 billion in stimulus money to begin construction next year on an 800-mile HSR network that ties together the state's major metropolitan areas. The concept is appealing, but the sheer scope of the project coming at a time when the state is approaching fiscal paralysis calls for a re-think. Concentrating its efforts on a viable segment of the master plan, such as between Merced and Bakersfield, or San Diego and Anaheim, may be more realistic.²⁵ As part of this redirection, California's legislature and Gov. Arnold Schwarzenegger need to deal with land-use obstacles that have been erected by NIMBY groups and by the Union Pacific Railroad, which owns right of way that should be incorporated into the HSR line.

By developing specific goals for HSR projects and working with state officials to hone their projects in Florida, the Midwest and California, the Obama administration would send a signal that it is serious about using government resources to upgrade our frayed transportation network.

Moving Forward

Making HSR happen in the U.S. will take dedicated effort and smart decision-making in Washington. At present, old habits threaten the creation of a viable HSR program. The administration may commit federal funds to upgrade existing rights of way under the guise of "higher speed" rail, repeating the mistake that has made Amtrak's Northeast Corridor a mishmash of good and poor track segments.

The first milepost of the administration's journey will come soon when the FRA and U.S. DOT announce the recipients of the \$8 billion stimulus funds. The administration needs to back its vision of rail passenger service – far different from the obsolete Amtrak model – with the boldness to make the necessary hard choices. An economic and infrastructure revolution – and the president's own legacy – are at stake.

"This is not some fanciful, pie-in-the-sky vision of the future," President Obama observed when introducing his plan for high-speed rail corridors last April. "It's been happening for decades. The problem is it has been happening elsewhere, not here."²⁶ The president is right – HSR is no longer a pipe dream but an achievable goal. Now it's up to the administration to seize the opportunity and bring American rail into the 21st century.

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- Except for Amtrak's Northeast Corridor and some scattered properties owned by Amtrak abd cimmuter rail or tourist lines, freight railroads own the 93,000 miles of rail right of way in the U.S.

- 11. See endnote 5, "Bullet Trains" pp. 30-32.
- 12. See endnote 8, p. ii.
- Since 2000, for example, the federal government has spent \$50-60 billion a year on highways, \$15-20 billion a year on air transportation, and \$1.2 billion or less a year on Amtrak. See Vision for High-Speed Rail in America, U.S. Department of Transportation, April 2009, p. 6.
- 14. For example, Florida Congressman John Mica reported the following exchange with Ray LaHood, U.S. Secretary of Transportation: "He said to me, 'Mica, what do you want for Christmas?' I told him high-speed rail, and he said, 'We're ready, we're waiting on you; you guys have to finish the job.' "Ted Jackovics and Catherine Dolinski, "Rail Bill Puts Florida on Right Track," Tampa Bay Online, <u>http:// www2.tbo.com/content/2009/dec/10/narail-bill-puts-florida-on-right-track/</u>. See also, Christopher Conkey, "Race is on to Grab Stake in Rail Effort," *Wall Street Journal*, September 8, 2009.
- 15. John D. Boyd, "Szabo Sees Passenger Grants Including Freight Needs," Journal of Commerce, <u>http://www.joc.com/node/413021</u>; "Railway Czar Says Illinois Merits High-Speed Train Cash," Daily Herald Online, <u>http://www. dailyherald.com/story/?id=351285</u>.
- 16. In response to a 1996 crash involving an Amtrak train in Silver Spring, Md., the Federal Railroad Administration required high-speed passenger trains to withstand 800,000-pounds collision force without deformation. The 800,000 figure a mostly arbitrary figure dating back to when railroads used heavyweight steel cars for U.S. mail delivery bars overseas HSR equipment from operating on U.S. track without major modifications.
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- 21. Perhaps the highway and aviation trust funds should be used to help build HSR systems that benefit these modes by relieving traffic congestion and freeing up airport gates.
- 22. This idea has been floated by Richard G. Little, director of the University of California's Keston Institute. See http://www.america2050.

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- 23. For Florida HSR plans, see <u>http://www.florida-highspeedrail.org/</u>
- 24. The Midwest High Speed Rail Association has put together a report to spur state governments to look beyond plans to operate trains at a maximum of 110 mph. See http://archives. chicagotribune.com/2009/jun/30/local/chihigh-speed-rail-30-jun30.
- 25. For California HSR plans, see <u>http://www.ca-highspeedrail.ca.gov/library.asp?p=8200</u>.
- 26. See endnote 2.

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