

My Train Fantasy

Where's our high-speed rail?

By: Jeremy Stahl – March 15, 2013

Last month, graphic designer and railroad aficionado Alfred Twu published a stunning map of what America would look like if virtually every last nook and cranny of the country were connected by a state-of-the-art, 220-mph rail network. Twu's plan for a national high-speed rail system could get passengers from Cheyenne, Wyo., to Albany, N.Y., in just under 12 hours. It captured an old-school patriotic longing among young tech-savvy Americans for big, prestige projects with a design that was elegant in its simplicity. Online media outlets described Twu as a "visionary." "This Is What America's High-Speed Rail System Should Look Like" was one typically glowing headline.

Some conservatives had a different description for Twu and his map. "High-speed rail supporter Alfred Twu has gotten a lot of attention for having boldly drawn a map of where he thinks high-speed trains should go," wrote Randal O'Toole of the libertarian Cato Institute. "Twu's map is even more absurd than Obama's plan," he wrote, describing the map, and high-speed rail in general, as a "ridiculous fantasy."

O'Toole's reaction demonstrated one of the principal reasons why American high-speed rail has been mostly stymied: One person's beautiful vision of the future is another's terrifying government boondoggle. The Obama plan to use \$8 billion in stimulus money as a carrot to get states to invest in high-speed rail went down in flames two years ago. It failed largely because Republican governors in states such as Florida rejected federal funds. But if there were some way to get beyond partisan politics and legal battles over right-of-way issues, what would an ideally efficient map of an American high-speed rail system actually look like?

To be fair to his critics, it probably wouldn't look like Twu's map. While beautiful in its design, Twu's fanciful vision connects cities that are too far apart to have any kind of reliable passenger base, and it does so with little regard for geographical and engineering constraints. "Between Los Angeles and Denver there are huge segments of not only desert, but also mountain ranges that the high speed rail tracks would have to be built through," says Dan Schned, a senior planner at America 2050, a national infrastructure planning and policy program. Another flaw in Twu's dream of "the country as one connected city" is that it would serve routes that didn't actually have any passengers.

"Even if a Maglevline was built from L.A. to Chicago, you're not going to be able to get the trip times low enough" to convert air travelers, Schned says. And several of these lines pass across vast stretches of unpopulated areas where no new riders would be getting on the train. "Unless you're picking up riders and dropping off riders along the way and keeping that train full, it's not going to work," Schned says.

But fast, efficient, modern railways don't have to be just a fantasy art project. America 2050 has been heavily involved in attempting to establish which corridors make the most sense for high-speed rail. In 2011, it published a comprehensive report analyzing 7,870 potential high-speed rail corridors in the country's 11 "mega-regions" where 70 percent of the nation's population resides. Typical mega-regions include the Northeast corridor, the Great Lakes states, California and the Southwest, and the Northwestern "Cascadia" region of Washington and Oregon. Using a handful of criteria, including population, employment, the market for air travel, and automobile traffic congestion, the study attempted to establish which routes would be most ideal for high-speed rail construction. Routes with scores of 19 or more were deemed best-suited for the most modern high-speed rail systems, scores of 17 were projected to be well-suited for top-of-the-line systems if population growth were to continue at projected rates, and scores of 10 or below were said to not justify priority federal funding because of their sparse and spread-out populations.

Twu's map included some of the highest scoring routes, including Washington, D.C., to New York City (with a score of 20.15), Boston to New York (19.87), New York to Philadelphia (19.86), Los Angeles to San Diego (19.62), Chicago to Milwaukee (19.38), Los Angeles to San Francisco (17.98), and Portland to Seattle (17.37). But it also included many of the low-scoring routes as well, such as Chicago to Memphis (10.79), Kansas City to St. Louis (9.62), Little Rock to Dallas (10.66), Baton Rouge to New Orleans (8.48), and Birmingham to New Orleans (4.95). Twu also drew four routes connecting Albuquerque, El Paso, Denver, Omaha, and Salt Lake City that all scored between 4.67 and 9.91, and two separate lines in the low-scoring Florida region. "Some of these city pairs are so far apart that we didn't even rank them," says Schned.

Corridors that couldn't attract sufficient numbers of riders would likely detract from the potential economic and environmental benefits gained from the more sensible routes. "If newly built high-speed rail services do not attract projected ridership over time, they will not only fail to deliver their promised benefits but they may waste energy, resources, and require excessive operating subsidies," the America 2050 report concluded.

Experts who study light rail often mention a "sweet spot" of between 100 and 600 miles for high-speed rail corridor trips. Shorter than 100 miles, and a rider is more likely to want to take a conventional train, a car, or a bus. Longer than 600 miles and a rider is better off flying.

The potential efficiencies of high-speed rail along corridors with proven ridership figures are getting tougher and tougher to deny. "We have millions of people living right now in this country in places where they don't have adequate inter-city transportation," says Christopher Barkan, director of the railroad engineering program at University of Illinois at Urbana-Champaign. "They're entirely dependent upon congested highways. They're entirely dependent upon using airplanes."

If we could connect those people in a way that cuts greenhouse emissions, comes at a lower cost for commuters, allows them to access wireless networks and work during trips, and is profitable, the potential economic and environmental efficiencies would easily be worth the initial investment. But that initial investment would be steep. California is the only state in the country right now that is actively pursuing a high-speed rail plan. Construction of the first leg of a corridor that is planned to ultimately connect San

Francisco and Los Angeles is set to begin in July. The cost is projected to be \$68 billion, and sources for less than a fifth of that funding have been identified so far.

In the right place, high-speed rail has the potential to be profitable. Amtrak's Northeast corridor service includes the higher-speed (but at a maximum of 150 mph, not high-speed by European or Asian standards) Acela line. A Brookings Institute report this month showed that Amtrak ridership has grown by 55 percent since 1997, that the 100 biggest cities generated 90 percent of that ridership, that 10 cities were responsible for nearly two-thirds of that ridership, and that the Acela line on its own was actually turning a profit of \$178 million in 2011. The heavily used routes are subsidizing the less trafficked routes.

"Here's the irony: It could carry more people, earn more money, and cost less per passenger if they had higher capacity out there," Barkan says of Amtrak's Northeast corridor. "They are a capacity-constrained corridor."

As anyone who has ever taken a train out of Penn Station could tell you, the biggest current constraining point on the Northeast corridor is between New York City and New Jersey. "Coming from New Jersey to New York there's only two tracks that go into Manhattan," says Conrad Ruppert Jr. of the University of Illinois at Urbana-Champaign, who worked as an engineer for Amtrak for 35 years, mainly on the Northeast corridor. "[Those tracks] are used by Amtrak and by New Jersey transit and they're at, if not above, capacity. Any minor incident that occurs disrupts service in one of those tunnels, whether it's a signal problem or a track related problem, it just entirely shuts down the system."

So before true high-speed rail can actually be broached in the Northeast—never mind a transcontinental dream line between Los Angeles and New York—critical basic infrastructure improvements need to be made to Amtrak's overstretched system. Acquiring funding for these relatively straightforward projects is a struggle, and because the issue has become so politicized, Barkan worries that maps like Twu's risk being counterproductive.

"I think it has potentially negative consequences because, on the one hand it might cause people to think that it makes sense to build high speed rail over a thousand miles of desert," he said. "It also gives ammunition to the critics of high speed rail that would then cause them to say that the high speed rail advocates are proposing to spend billions in taxpayer money where it doesn't make sense to build it."

Barkan's bewilderment at the popularity of Twu's map was echoed by his colleague, Ruppert Jr., who wondered why I was even asking about Twu's map when America 2050 and the Federal Railroad Administration had produced far more realistic ones. What I think the two engineers may have missed was the usefulness of Twu's project as a marketing tool for proponents of high-speed rail. People look at China building the world's longest high-speed rail line in a handful of years and wonder why America no longer seems capable of accomplishing similarly amazing prestige projects like we once did.

Then again, maybe it's not such a great marketing tool. As popular as Twu's map was online, his White House petition fizzled. Perhaps he needs to think less grandiosely with his next map. Or maybe he needs to go in the other direction: While Twu's petition didn't

get enough votes to earn a response from the White House, the Death Star petition did. Maybe in order to generate interest, we should be asking how fast high-speed rail can make the Kessel Run? Han Solo's Millennium Falcon ran the smuggling route in less than 12 parsecs. Something to aim for.