SHOULD HIGH-SPEED RAIL BE BUILT IN CALIFORNIA? (AND CAN IT BE?)

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California has embarked on a massive undertaking to build an 800-mile high-speed rail system throughout the state. The first phase of 520 miles would connect Los Angeles/Anaheim with San Francisco, not directly, but through the Central Valley. That phase is presently under construction. As of this date, some 2600 men and women are working on 19 different job sites to construct the 119-mile spinal portion of the system. Although starting in the middle of the state has been criticized due to lack of requisite ridership for that portion of the system, the decision was taken to begin in the Central Valley for reasons of economic stimulus, relatively lower costs of land, operational benefits for testing trains at high speeds and so forth. Still, the project is beset with both predictable and unique challenges. Cost increases, schedule delays, litigation and funding challenges abound, along with criticisms (both fair and unfair) about poor management, etc. Recently, a new governor indicated his desire to steer the project in some new, if not completely clear, directions. Accordingly, it is a good time to take stock of where the project stands, what lessons have been learned and whether it is still worth it or possible to proceed. First, let's address the fundamental question: does it make sense—in the abstract—for California to build a high-speed rail system? Actually, that question, often asked, is fundamentally the wrong question. California's population growth is inexorable; 38 million people today will before long become 50 million. How will we provide a sustainable transportation system for that populace? Continuing to construct highways and airports will be both difficult and is projected to cost two to three times the amount of the present budget of high-speed rail for equivalent mobility levels.

Second, California is not building a fast train line so much as it is engaged in a broad modernization of its passenger rail network, of which high-speed rail is an integral part. Fast intercity rail can be the backbone of a system that has dendritic connections with regional, urban and local rail lines. Like any network, those interconnections dramatically increase efficiency and reduce costs, in this case by mutually supporting ridership/revenue increases for all the modes. California's rail modernization program also makes sense for reasons of environmental sustainability. Unlike other regions where legacy electric generating plants are the main source of greenhouse gas emissions (and tropospheric "criteria" pollutants), in California, some 45% of all GHGs emanate from the transportation sector. Electrification of transportation, both at the level of individual vehicles and rail networks, is a central tenet of the state's carbon reduction goals. Moreover, rail modernization offers the opportunity to shape future land use, with concentration of development around the nodal points, i.e., transit stations. This higher density development allows for avoidance of many trips and is another key element of the strategies to combat climate change through better land use.

So, for the foregoing economic and environmental reasons, it would still be vital to upgrade the state's rail network and provide high speed intercity rail as a central, but not exclusive component of that system.

OK, but can we do it? Does this state or any governmental entity have the capacity to actually deliver a program of this magnitude? Can the rail network operate successfully or does it require crushing amounts of ongoing government support through subsidies? Will the public tolerate the grinding pace, ongoing controversies and depressing cycle of cost increases and delays?
The answers to those questions are yet to be determined, at least in the Golden State. But after years of development efforts on this program, some things have become clear.

An important truth is that while there are enormous challenges for all "mega-projects," California's experience is unique in many respects and offers no conclusive evidence as to whether these types of projects are beyond our capacity to accomplish.

The organic legislation establishing the funding mechanism for the project—the Proposition 1A Bond Act—was well intentioned, but deeply flawed. In a good faith attempt to make certain the bond monies were not bled off on other projects that weren't "true high-speed rail," the authors conditioned the use of the bonds on adherence to certain engineering and financial standards, essentially writing technical specs into a bond initiative. The law specifies that the bond proceeds can only be used for a system "designed to achieve" sustained speeds in excess of 200 mph, with a maximum travel time between downtown L.A. and San Francisco of 2 hours 40 minutes, that is fully electric and that can function without the need for an operating subsidy. These requirements, rather than boosting the project, formed the basis for a series of legal challenges. Ironically, the challengers were not seeking to compel the Authority to meet the bond criteria, but instead were attempting to kill the project by claiming it wasn't being built in conformance with "the will of the voters." The challengers met with success through a single judge who brought the project to halt for more than a year, until his cramped readings of the statue were overturned on appeal. Meanwhile, costs rose and landowners dragged their feet on negotiations over right-of-way, pausing to see if the project would survive at all.

The law also established a byzantine and contradictory process for the bond funds to be drawn, even after the favorable public vote. This led to more litigation, along with garden-variety challenges under state and federal environmental laws.

Next, the blessing of federal largess also turned out to be a curse. In 2009, the Obama Administration pushed an economic stimulus act through Congress and it contained $8 billion for high-speed rail development nationwide. California successfully competed for $2.6 billion of federal stimulus funds under this law, known as ARRA. However, the monies had to be expended by September 30, 2017, with any unspent dollars forfeited back to the Treasury[1].

Just as Odysseus had to navigate between Scylla and Charybdis, the High-Speed Rail Authority dealt with a complex set of risks. On the one hand, it faced a ticking clock on federal dollars and it had received highly favorable, but transitory construction bids that promised significant savings. On the other hand, litigation delays and sclerotic procedures for right-of-way acquisition meant commencing construction without requisite land assembly, thereby assuring that

[1] California later received an additional federal grant of $929 million appropriated in FY 2010, but those funds did not have an expenditure deadline. As of this date, the U.S. Department of Transportation has announced it wants to rescind those funds.

contractors would have some legitimate delay claims for interrupted work. The choice was tens of millions in estimated change orders for delay versus losing hundreds of millions in forfeited grants or higher cost of rebidding.

Of course funding is a challenge, but not in the way most people imagine. The answer to the question of where all the money will be found for a $77 billion endeavor is that no one knows today. This is no different than any other large public infrastructure project and has been a somewhat unfair critique of the program. The project is wisely being built in segments, just like the build-out of the Los Angeles Metro system or similar endeavors. Private sector funding, a bedrock promise to the voters, is indeed a likely occurrence, although not for some time. Because of the structure of the Bond Act, no subsidies can be paid; the private sector will await evidence that the system can operate profitably before committing, but ultimately its "purchase" of the operations can contribute some $20 billion to the construction costs.

The real funding challenge is that the project cannot use financing tools to accelerate construction due to the uncertain funding streams. Relying only on "pay as you go" means slower progress and correspondingly higher costs. Fortunately, there are legislative initiatives to stabilize funding available to the project in an effort to address this shortcoming.

Finally, it is clear now that the program has yet to find the right formula for program leadership; this is true of both the state personnel and the contractor side. Without denigrating individuals, it is essential that in order to carry out a project of this magnitude, the leadership team must be carefully chosen. State oversight is essential. In the early years, the high-speed rail program was almost entirely contractor-driven and anecdotal and other evidence shows that was highly damaging. Contractors bring engineering and financial expertise, but they should not be making public policy decisions. Those are the province of state officials accountable to the people through their executive and legislative representatives. As late as 2012, there were only 29 state employees at the High-Speed Rail Authority and hundreds of contractors. Key positions weren't filled. At the same time, the state relied too heavily on methods and personnel of those traditionally engaged in highway programs. The nature of contracting and risk allocation is entirely different for a mega-project. Risk allocation is a key element in maintaining budget, scope and schedule. But, simplistically, if too much risk is shifted to the contractor (through fixed cost construction contracts for example), the costs will be dramatically higher. If too little risk is put on them, then performance suffers. Finding and managing that balance takes people skilled in the art and science of project management. These resources are not readily available even if the state is willing to pay wages it hopes are competitive with the private sector. Similarly, not all contractors are skilled in project management. Some are excellent engineers technically, but lack the experience to drive a complex set of actors to work effectively and harmoniously. This is an ongoing challenge for the program.

What other lessons can be learned so far? Of greatest importance, it is essential to have a project champion. This must be a political leader who can articulate the vision, but also maintain public support and confidence in the face of inevitable "project fatigue."

Projects must commit to realism, avoiding overselling ridership and revenue forecasts that are grandiose. The truth will out eventually and it is corrosive to public support if it bogus claims become the norm.

In the future, no segment of the California's high-speed rail construction will begin without having all the land in hand.

All projects have difficult periods and the California high-speed rail project may have had more than its share. But the lessons of what's gone wrong, cannot eclipse what has gone right. America's first true high-speed rail system is under construction today. It is transforming cities in the Central Valley, exciting urban planners throughout the state, contributing funding to local rail partners and trying to work through its management issues. If there is continued visionary leadership at the state level, if the right project management team can be put in place, if the federal government sustains its historic commitment to be a funding partner for needed infrastructure, this project can be the most transformative endeavor of a generation.