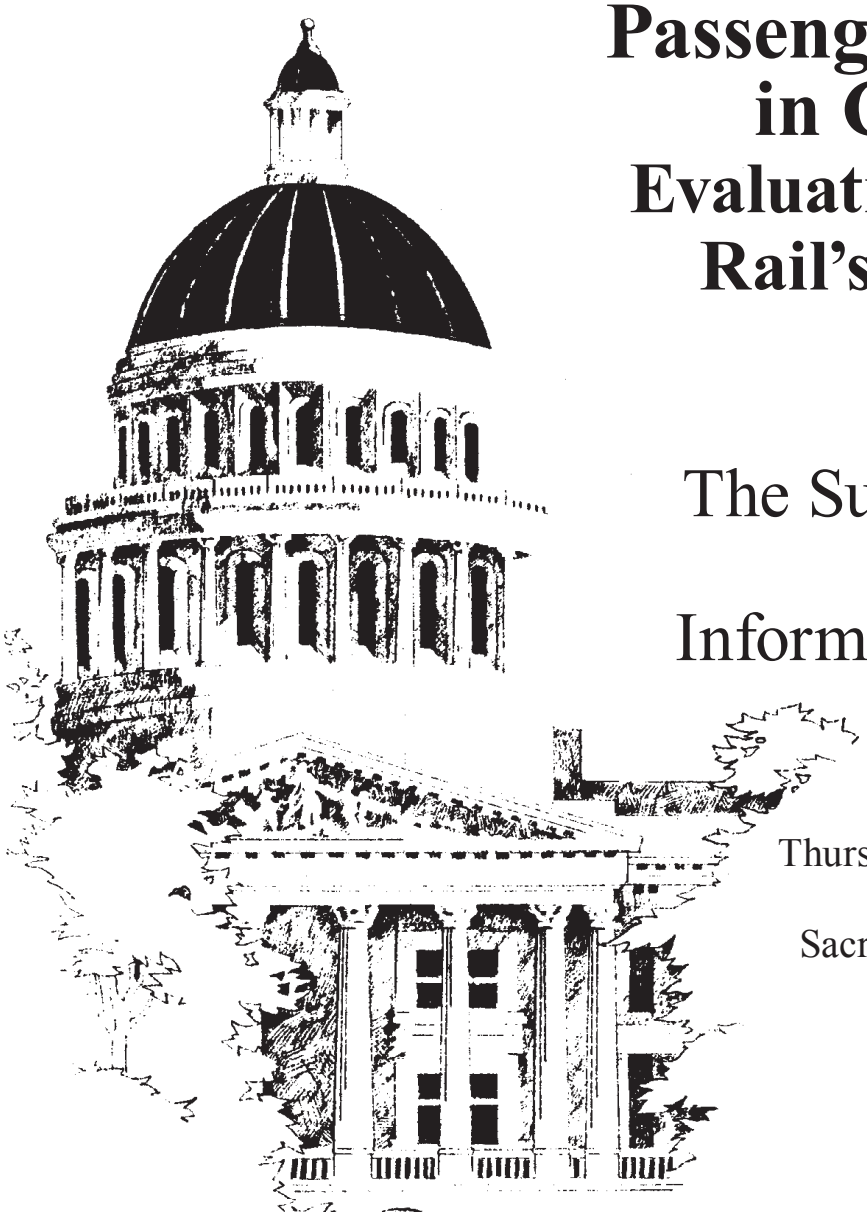
California State Legislature

Senate Transportation and Housing Committee



Toward a World-Class Passenger Rail System in California: Evaluating High-Speed Rail's Potential for Success

The Summary Report from the Informational Hearing

Thursday, March 27, 2014
State Capitol
Sacramento, California

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Senate Transportation and Housing Committee

Informational Hearing

Thursday, March 27, 2014

Toward a World-Class Passenger Rail System in California: Evaluating High-Speed Rail's Potential for Success

SUMMARY REPORT

April 7, 2014

Purpose of the Hearing

On March 27, 2014, this committee held an informational hearing entitled "Toward a World-Class Passenger Rail System in California: Evaluating High-Speed Rail's Potential for Success." This report contains the staff summary of the committee's hearing [*see the **white** pages*], reprints the committee staff's background paper [*see the **blue*** pages], reproduces written materials provided by the speakers [*see the **yellow*** pages], and reproduces written materials by others during public comment [*see the **green*** pages].

Among several legal and fiscal challenges the California high-speed rail project currently faces, this hearing identified a $21 billion funding shortfall for completion of an initial operating segment, with no specific funding proposal to fill this gap, as the overriding challenge to the project as it is currently conceived. Current plans call for completing this segment with trains carrying passengers in 2022, but this target date is contingent on filling this funding gap.

Background

This informational hearing reviewed the High-Speed Rail Authority's (HSRA) Draft 2014 Business Plan; considered the potential of the plan to promote the long-term success of the high-speed rail project; and considered changes or alternative pathways for inclusion in the Final 2014 Business Plan and beyond. The committee intended this hearing to help guide a high-speed rail project that can be the centerpiece of a world-class passenger rail system in California.

The hearing included testimony in three panels, from five expert witnesses:

- Jeff Morales, HSRA Chief Executive Officer, briefed the committee on the Draft 2014 Business Plan.
- Jeremy Fraysse, Fiscal and Policy Analyst at the California Legislative Analyst's Office, and Louis S. Thompson, Chair of the High-Speed Rail Peer Review Group, provided responses to the Draft 2014 Business Plan.
- William Ibbs, Professor of Civil Engineering at the University of California, Berkeley, and Paul Dyson, President of the Rail Passenger Association of California, discussed alternatives which could enhance high-speed rail's potential for success.

The hearing addressed the following three questions:

1. *Does the HSRA's Draft 2014 Business Plan provide a roadmap to success according to the performance specifications defined for it, and does it demonstrate progress toward meeting them?*
2. *What does a "world-class passenger rail system" in California look like? In megaproject parlance, what are the appropriate performance specifications, and have they been defined correctly in the high-speed rail project?*
3. *Are there alternative pathways, plans, and/or procedures toward a high-speed rail system that increases the likelihood of successfully developing a world-class passenger rail system?*

This report is organized topically, using hearing testimony and discussion to address the above framing questions, in the order listed.

1. Does the Draft 2014 Business Plan contain the ingredients for success?

In his remarks on the Draft 2014 Business Plan, Mr. Morales emphasized significant progress made in key aspects that define successful megaprojects, focusing on stakeholder engagement, governance and organizational structure, and risk management. In terms of governance, Mr. Morales highlighted that over the last two years, staffing has grown from about two dozen employees to about 120 today, including a finance and audit committee. He also noted that HSRA has instituted a risk-management program that has been informed by and built beyond the risk-management program developed, at the legislature's direction, for the east span of the San Francisco-Oakland Bay Bridge project. Mr. Morales also pointed to substantial progress on "bookend" projects, including Caltrain and Metrolink improvements.

During his comments, Mr. Louis Thompson emphasized how much more project specificity we have now compared with two years ago, supporting Mr. Morales' remarks on progress reflected in the Draft 2014 Business Plan.

Despite the recognized progress in the Draft 2014 Business Plan, the chair and subsequent witnesses identified a central, overriding risk to the success of high-speed rail: the lack of a specific plan to address a large shortfall in funding for the initial operating segment. Testimony by Mr. Fraysse estimated this shortfall as $21 billion. Mr. Thompson further estimated that, even under the most favorable projections of stable funding from a healthy cap and trade auction revenue program proposed by the governor, this $21 billion shortfall would only be reduced to approximately $15 billion. Moreover, the chair emphasized that these cost estimates do not include cost overruns, particularly likely to occur on high-speed rail projects that can exceed four times the initial estimates. Professor Ibbs emphasized the tendency of megaprojects to incur cost overruns, both on capital expenditures and also on operations and maintenance.

The chair asked how the HSRA plans to address the funding shortfall. Mr. Morales pointed to private financing that can leverage state funding, but Mr. Morales provided no specific plans or proposals. The chair noted the short period of time – about three months – before the

legislature must vote on the administration's proposed budget, and urged Mr. Morales to provide the committee with "a detailed spreadsheet, the sooner the better," of specific funding plans or proposals to address the shortfall. Similarly, Mr. Thompson remarked on the need for the HSRA to move from "possibilities to proposals" for funding the high-speed rail project and overall program.

2. Do high-speed rail's performance specifications align with those of a world-class passenger rail system?

In a summary comment, the committee chair remarked that the core performance specification that is most meaningful to most potential riders of a high-speed train is the travel time from "home or work to wherever you're going." According to Mr. Dyson, such a user's performance specification could not be met competitively in time or cost for riders that would travel between the southern terminus of the proposed initial operating segment and Los Angeles Union Station, let alone to a final destination in the Los Angeles area.

As in prior business plans, the Draft 2014 Business Plan continues to focus more narrowly on a performance specification defined as travel time between high-speed rail terminals. In particular, the HSRA seems focused on the legislatively required specification of two hours and forty minutes for travel time between San Francisco TransBay Terminal and Los Angeles Union Station. This travel time specification was a point of discussion following Mr. Thompson's testimony. The chair asked about the engineering challenge of adhering to this specification. In response, Mr. Thompson explained that, as the Peer Review Group pointed out previously in an August 2013 letter to the Legislature, while the current design allows a high-speed train to have a "pure run time" under two hours and forty minutes, taking into account "real-world scheduling issues as well as engineering issues," the current scheduled travel time between these two stations is about three hours and eight minutes.

This difference of nearly one-half hour in travel time is a point of contention regarding HSRA's adherence to the letter and intent of the law, but this point of argument also illustrates a focus on a narrowly defined performance specification that could be counter-productive for the purpose of building and sustaining public support. Further to that point, HSRA has conflated the

pure run time performance with the actual scheduled trip time by previously referring to the pure run times as "Travel Time" (2009 Report to Legislature, sidebar on p. 4) and "Express Trip Times" (2008 Business Plan, p. 8, Figure 9), emphasizing that "the projected travel times account for alignment, train performance characteristics, acceleration and deceleration capabilities, and passenger comfort criteria and have been verified by manufacturers of high-speed train equipment. The travel times include two minutes of dwell time at each station stop as well as a six percent schedule recovery time, consistent with European high-speed rail practice." (2000 Business Plan, Table 2.2, Section 2.4). Public expectations of scheduled travel times have been set based on pure run times, and it may be difficult to manage and change these expectations.

3. What alternatives may promote success of high-speed rail?

Professor Ibbs and Chair DeSaulnier both framed the discussion of alternatives to high-speed rail's Draft 2014 Business Plan as one of opportunity costs. In his comments, Professor Ibbs asked that the committee step back from the consideration of a world-class passenger rail system to consider more generally the characteristics of a world-class transportation system and its benefits and costs in order to understand the broader transportation needs context in which this $68 billion high-speed rail project is being considered.

Mr. Dyson advocated for a different initial operating segment–one building north from Los Angeles, for example, or more generally building from existing heavily used rail stations. Likening the building of a successful high-speed rail project to the building of a successful shopping mall, Mr. Dyson emphasized that an "anchor tenant" is needed: a "big box retailer" in the case of a mall, or an existing highly utilized transit hub in the case of high-speed rail.

As part of a broader consideration of alternatives to the current implementation plan for high-speed rail, the chair emphasized a need to examine alternative scenarios, including scenarios of variable megaproject cost growth, and the potential availability of heretofore unexplored federal funding or loan sources, including the Railroad Rehabilitation and Improvement Financing Program and the Transportation Innovation and Finance Program. The chair recommended that the Legislative Analyst's Office undertake an assessment of these funding opportunity scenarios.

Conclusion

The current set of legal and fiscal challenges to the high-speed rail project identified in this hearing–its adherence to travel time specifications, the use of cap and trade auction revenues, the legality of using Proposition 1A bond funds–are of little significance in comparison to the single largest unresolved risk to the viability of this project identified in this hearing: a minimum of a $15 billion, and up to $21 billion, funding shortfall, for which there is no documented, committed funding plan. This hearing has highlighted that issue as the most pressing need for resolution in order for the high-speed rail project to proceed if it is to pursue its current plan for a $31 billion initial operating segment. To the degree an alternative initial operating segment could be constructed at less than $31 billion, the funding shortfall would be that much less of a risk. This hearing touched on some specific alternative plans that may allow high-speed rail to survive and potentially thrive, but a more extensive consideration of alternative plans requires further discussion.

Senate staff video-recorded the entire hearing and it is possible to purchase DVD copies by calling the Senate TV and Video office at (916) 651-1531. Video of the hearing can also be viewed on the California State Senate website: http://senate.ca.gov/video-on-demand.

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Nathan Phillips, a California Council on Science and Technology Fellow for the Senate Transportation and Housing Committee, prepared this report.

Senate Transportation and Housing Committee

Informational Hearing

Toward a World-Class Passenger Rail System in California: Evaluating High-Speed Rail's Potential for Success

Thursday, March 27

1:30 p.m. or upon adjournment of Budget Subcommittee No. 2, Room 112

BACKGROUND PAPER

Introduction

On February 7, 2014, the High-Speed Rail Authority issued its Draft 2014 Business Plan, opening a 60-day public comment period prior to issuing a Final 2014 Business Plan, which it will do by May 1, 2014. This Informational Hearing will review the Draft 2014 Business Plan; consider the potential of this plan to promote the long-term success of the high-speed rail project in the face of current and pending legal, economic and policy challenges; and consider changes or alternative pathways for inclusion in the Final 2014 Business Plan and beyond. This hearing is intended to help guide a high-speed rail project that can be the centerpiece of a world- class passenger rail system in California.

Background

The unprecedented size and complexity of California's high-speed rail project defines it as a "megaproject," a class of infrastructure project that, because of its large size and timeline, is subject to changing conditions and circumstances that often require the project to adapt and evolve. In conventional projects, change almost always negatively impacts project success; [1] in megaprojects, some level of change is inevitable. On November 13, 2013, this committee held an Informational Hearing on "Improving Megaproject Outcomes,"[2] in which general features of megaprojects were investigated, including the eastern span of the Oakland-San Francisco Bay Bridge, and California's high-speed rail project, the topic of today's hearing.

California's high-speed rail project exemplifies the evolutionary nature of megaprojects. From its legislative conception in 1982, to the passage of Proposition 1A in 2008 in which voters approved a nearly $10 billion bond for construction of an initial segment, to the Draft 2014 Business Plan under consideration today, basic elements of the high-speed rail plan have grown, evolved, and changed. Although the core concept of California's high-speed rail has steadfastly remained an ultra-efficient rail line connecting the Bay Area, Central Valley, and Southern California, the exact route, planned construction phasing, and interconnectivity with existing passenger rail systems have undergone substantial changes over three decades of project planning. Hearings like today's offer a crucial opportunity to step back and assess whether the current project direction points toward a successful outcome, or whether change in direction, in a project that by nature must accommodate change, is warranted.

In recognition of the key evolutionary feature of the high-speed rail project, the High-Speed Rail Authority (HSRA) must submit a business plan every two years, giving the HSRA and the Legislature flexibility to respond to shifting budgetary landscapes, emerging engineering and logistical constraints, and evolving state policy and regulation.

Today, the high-speed rail project is at a critical juncture, facing serious and unresolved

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[1] Ibbs, William, Construction Change: Likelihood, Severity, and Impact on Productivity. Journal of Legal Affairs and Dispute Resolution in Engineering and Construction 2012.4:67-73.

[2] How to Save the State Billions: Improving Megaproject Outcomes. Background Paper, California Senate Transportation and Housing Committee, Informational Hearing, November 13, 2013.

legal and fiscal challenges. Lawsuits threaten use of the state's main funding provision for the project, Proposition 1A, and debate and uncertainty surround discussion of other proposed funding sources, including auction revenues from carbon emission credits under the state's cap and trade program. As a result of the legal and funding challenges, six years after passage of Proposition 1A, not a single foot of track has been laid, and even the strongest supporters of the high-speed rail project have expressed disappointment at the lack of progress. Public support for the project has eroded, where a majority of voters (54%) would now vote to end the high-speed rail project, according to a January, 2014 survey.[3] High-speed rail is experiencing a critical logjam.

From what the committee has learned about megaprojects, periodic serious challenges are the rule rather than the exception. Therefore, the current set of challenges to the high-speed rail project need not be cause for disillusionment, but can be seen as an opportunity for fresh re-evaluation. To overcome the inevitable challenges that attend projects of this size and scope, lessons learned from past megaprojects tell us that there are certain key ingredients in the successful shepherding of megaprojects through difficult times that can threaten to derail them.[4] These ingredients include a careful, fully vetted definition of performance specifications, which firmly establish and maintain the desired end project objectives and ensure that project ends are not forgotten or compromised by a myopic focus on technical means; flexibility in guiding a project that is subject to changing constraints and circumstances; and an ability to communicate project complexity and change and engage stakeholders.

To help resolve the array of issues confronting the high-speed rail project and promote a pathway to success, this hearing considers three key questions, the answers to which it is hoped will help to decide whether now is a time to stay the course, or to adapt and change. This informational hearing will consider the following questions:

1. What does a "world-class passenger rail system" in California look like? In megaproject parlance, what are the appropriate performance specifications, and have they been defined correctly in the high-speed rail project?

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[3] Probolsky Research, CA Statewide Voter Survey – Report on Results. www.probolskyresearch.com/wp-content/uploads/2014/02/Probolsky-Research-CA-Statewide-Voter-Survey-Report-on-Results.pdf

[4] Flyvbjer, Bent, Megaprojects and Risk: An Anatomy of Ambition, Cambridge Univ. Press, New York 2003, p. 15-16.

2. Does the HSRA's Draft 2014 Business Plan provide a roadmap to success according to the performance specifications defined for it, and does it demonstrate progress toward meeting them?
3. Are there alternative pathways, plans, and/or procedures toward a high-speed rail system that succeeds as a world-class passenger rail system?

Performance Specifications for a World-Class Passenger Rail System

While there are surely many definitions of a world-class passenger rail system, some common elements include convenience, efficiency, and cost effectiveness that together compete favorably with other travel modes. Moreover, a world-class passenger rail system is one that accounts not only for how riders travel between rail stations, but that ultimately allows efficient and cost-effective travel between real-life points of origin and final destinations, like homes and business destinations. A project performance specification should reflect this overall set of factors that determine travel mode choice, or else it risks undermining its ability to compete. The key performance specifications for high-speed rail, as specified by law (AB 3034, [Galgiani], Chapter 267, Statutes of 2008), are minimum travel times between stations, including that high-speed rail travel between Los Angeles Union Station and the TransBay Terminal in San Francisco should achieve a travel time of 2 hours and 40 minutes. HSRA has used this specification as a basis for forecasting travel mode choice and ridership relative to the choice of other travel options based on their costs and travel times. No fare requirement or guidelines were prescribed among high-speed rail performance specifications, and although $950M (or 10%) of Proposition 1A bonds were to support interconnectivity and enhancement with existing "bookend" rail systems, the bond act prescribes no performance specifications for the overall benefits in time or cost that would attend improvements to existing rail systems for typical travelers using them to interconnect with high-speed rail. [5]

A question to consider is whether a more comprehensive set of performance specifications would benefit the High-Speed Rail Business Plan, one that includes the rail

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[5] High-Speed Rail Connectivity and Bookends. California High-Speed Rail Authority. May 2013. Available at www.hsr.ca.gov/docs/newsroom/fact%20sheets/High-Speed%20Rail%20Connectivity%20and%20bookends.pdf

network as a whole and its connectivity to actual points of origination and departure. From a traveler's point of view, such a performance specification would simply amount to the requirement that trips using high-speed rail should generally be at least as competitive in time and/or cost as other choices that could be compared using tools that real travelers use every day, like the directions feature on Google Maps or transit agency trip planner tools.

Does the Draft 2014 Business Plan Contain Ingredients for Success?

Successful megaprojects are characterized by effectiveness in six key areas: [6] performance specifications; leadership; governance structure; risk management; transparency; and stakeholder engagement. These elements interrelate; for example, project performance specifications that gain consensus and lasting support are developed through effective leadership that oversees a transparent process and sustained stakeholder engagement.

The Draft 2014 Business Plan speaks to several of these elements. In response to suggestions in the California High-Speed Rail Peer Review Group's consideration of the 2012 Business Plan, the HSRA enhanced governance, staffing, organizational structure and capacity, and appointed a Program Risk Manager. This hearing may consider, with the aid of expert panelists, the details of these developments and assess their potential effectiveness.

The Draft 2014 Business Plan contains fewer specifics on outreach and stakeholder engagement; and while transparency of the HSRA proceedings can be considered very high in terms of availability of information, public notice, and open meetings, the project website and resources do not appear to communicate project developments effectively to the public at large, affecting an 'opaque transparency'. For example, the HSRA's website home page currently lists seven news items pertaining to research or business aspects of the project, but none that are directed toward an average citizen and potential user of high-speed rail. There is no FAQ page, and no basic information on how much a fare might cost or how a trip might actually be planned.

Finally, as described in the preceding section, a performance specification approach is a hallmark of successful megaproject outcomes. The high-speed rail project to date does not seem

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[6] How to Save the State Billions: Improving Megaproject Outcomes. P. 8-12.

to have developed a robust set of performance specifications, using a "planning process focused on defining and building public consensus around the range of performance-based goals and objectives."[7] Prescribing minimum travel times between high-speed rail terminals does not by itself engage the public at large, because these travel times lack relevance to the real travel decisions people would make, for example, from their home to a place of business.

While fare guidelines are not a formal part of the high-speed rail performance specifications, quantitative consideration of fares in the Draft 2014 Business Plan[8] indicates a bias toward considering the choices of travelers for which air travel is a viable option, most likely business people who can afford to put a premium on time over price. The Draft 2014 Business Plan forecasts future ridership and fare box revenues on scenarios in which the fares compete favorably with airfares. These fare considerations implicitly leave out Central Valley riders for whom flights are not likely to be a suitable alternative.

Moreover, the performance specifications as stated do not acknowledge the tradeoffs that people of different means make when deciding travel mode. A college student traveling from the Bay Area to Los Angeles may prioritize low cost over time, while a business person may prioritize short travel time over cost. By simulating a single cost performance specification and highlighting only the fastest time for travel (180 minutes, at 83% comparable airfare), this basic tradeoff is underappreciated.

Comparing Modes: Trip Choice Performance Specification

Three of the key ingredients for success of a megaproject – transparency, stakeholder engagement, and a performance specification approach – could be met using a "trip choice performance specification" that invites public participation, and becomes an avenue to garner public support. Two complementary approaches could be used that both (a) engage the public and (b) build data that allows for an iterative planning process to determine likely ridership and priority investments in the bookends and beyond.

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[7] How to Save the State Billions: Improving Megaproject Outcomes. P. 9.

[8] Values obtained from personal communication with HSRA staff, and *2014 Business Plan Ridership and Revenue Technical Memorandum.* www.hsr.ca.gov/docs/about/business_plans/BPlan_2014drft_Ridership_Revenue.pdf

First, a mechanism for public engagement includes a simple web-based trip planning tool, built as a stand-alone application, and as an option into the Google Maps directions platform. People could decide whether they would choose a High-Speed Rail option were it available, and if not, what combination of travel time, cost, or convenience barriers would need to be overcome. These data could be collected and used to improve the planning process, especially in determining which rail projects within the bookends would provide the most benefits to the most number and diversity of users. Table 1 compares and demonstrates the ease with which public input and stakeholder engagement could be generated using a travel planning tool.

Second, complementing public engagement and data collection from a trip choice performance specification could be a HSRA-directed analysis that uses the same Monte Carlo sampling approach it used in its ridership models to evaluate thousands of origin-destination pairs across the Bay Area / Central Valley / Southern California region, and uses the same basic tool to compare travel time and cost metrics as illustrated in Table 1. This would enable the HSRA to develop a robust, spatially explicit, global performance specification that meaningfully relates to the actual decision process that travelers make every day, and can be shared with the public. Crowd-sourced data collection and public research participation has a long history. [9]

Table 1. Travel Mode Comparison. *Costs and travel times of hypothetical one-way trips between the Los Angeles Basin and the Bay Area or Merced. Cost and time values are averages based on three randomly chosen origin and destination locations within the specified service areas, and estimates of current prices for gasoline, flights, Amtrak, and high-speed rail travel times with fares set at 83% of comparable airfares.*

Trip	Driving (25/50 mpg)	Flying	Amtrak	High-Speed Rail (peak)	High-Speed Rail (off-peak)
L.A. area – Bay area	\$116 / \$58 6.9 hours	\$244 3.6 hours	\$112 13.5 hours	\$212 5.2 hours	\$212 5.9 hours
L.A. area – Merced	\$94 / \$47 5.9 hours	\$275 5.4 hours	\$148 5 hours	\$207 4.1 hours	\$207 4.1 hours

[9] Muller, Michael J., and Sarah Kuhn. "Participatory design." *Communications of the ACM* 36.6 (1993): 24-28.

Table 1 illustrates that, with a cost-competitive scenario for high-speed rail fares with airfares in the 2014 Business Plan (83% of the corresponding airfare), high-speed rail could not currently compete on a time-by-cost metric ($-hrs) with driving (in the case of a single-occupant vehicle, no less; two or more carpoolers would render other modes by a factor of two or more, even less cost competitive, and increasing fuel economy adds further cost competition).

The examples shown in Table 1 are not intended to demonstrate that high-speed rail cannot be a viable travel option, but to illustrate how a consideration of global performance specifications can aid in determining where the "weak links" in the total travel chain exist, and therefore what levels of investment are needed, and where, in optimizing travel times and costs for entire trips across the high-speed rail service areas.

This project would greatly benefit from a concerted effort to re-engage with the public and develop sustained public support. According to Adam Probolsky, the pollster who conducted the most recent opinion poll (January 2014) on high-speed rail, "a poor outreach effort has slowly undermined public support."[10] Public participation in developing a trip choice performance specification may go a long way toward reviving public support.

Conclusions

Today's hearing and the Draft 2014 Business Plan benefit from understanding the dynamic nature of megaprojects in general, and the developmental history of California's high-speed rail project specifically, because it reminds stakeholders of the need to continually think freshly and creatively about how to nurture an organically developing megaproject, the largest project of its kind in the California and the nation.

In order for the high-speed rail project to accrue the environmental benefits it envisions and for which its proposed funding depends, it must achieve healthy ridership. Attracting ridership in turn depends on concerted public outreach and engagement that helps people to see this project as a real project rather than a distant dream. One way this can be achieved is by involving the public in a process by which the very performance specifications that they would use to decide travel mode becomes feedback to inform the planning process.

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[10] www.calnewsroom.com/2014/02/12/californians-strongly-against-high-speed-rail-new-poll finds/#sthash.3wPjOCCT.dpuf

That not a single foot of track has been laid can be seen as a failure of this project, or as an opportunity to move forward on building a world-class passenger rail system with a maximum degree of flexibility to engage all stakeholders. Change in tack is not only possible at this moment, but practicable. A premise of these proceedings, based on the committee's previous consideration of megaprojects, is that an unwavering vision of a world-class passenger rail system can best be fulfilled by maintaining flexibility in considering the means by which we achieve the ends we desire.

Questions for Consideration:

1. What does a world-class passenger rail system in California look like? Does the Draft 2014 Business Plan contribute to such a vision?
2. Are the improvements in governance, organization, and risk management described in the Draft 2014 Business Plan effective and sufficient for the size and scope of this project?
3. Is there a need for more transparency, public outreach, and/or stakeholder engagement? What initiatives or mechanisms might increase public awareness and support of this project?
4. Are high-speed rail's performance specifications adequately defined for likely future riders in recognition of the way travelers make travel mode choices?
5. What is the status of the current legal and fiscal challenges to the high-speed rail project?

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INFORMATIONAL HEARING

HIGH-SPEED RAIL:
Toward a World-Class Passenger Rail System in California: Evaluating High-Speed Rail's Potential for Success

Thursday, March 27, 2014
1:30 p.m. or upon adjournment of Budget Subcommittee No. 2, Room 112

AGENDA

I. Opening Remarks

II. 2014 Business Plan

Jeff Morales, Chief Executive Officer
California High Speed Rail Authority

III. Response: Benefits, Costs, and Risks

Jeremy Fraysse, Fiscal and Policy Analyst
Legislative Analyst's Office

Louis S. Thompson, Chairman
High-Speed Rail Peer Review Group

IV. Enhancing High-Speed Rail's Potential for Success

William Ibbs, Professor
UC Berkeley Department of Civil Engineering

Paul Dyson, President
Rail Passenger Association of California

V. Public Comment

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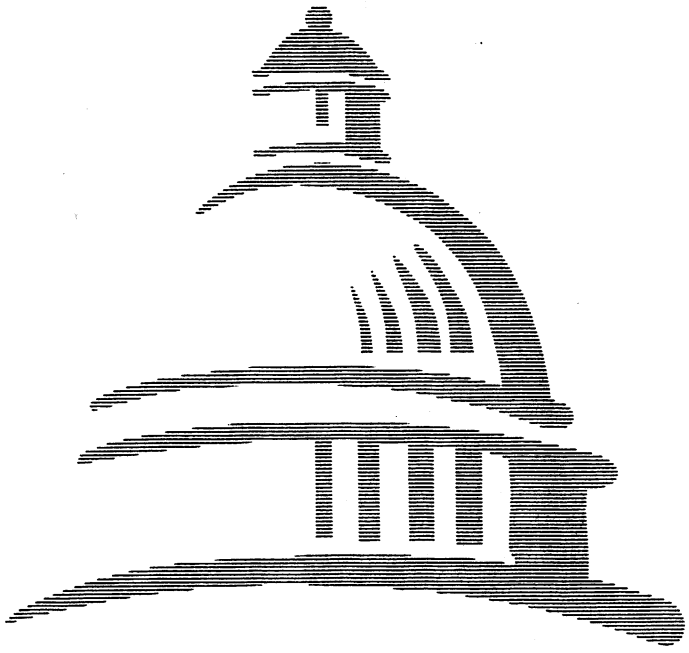
LAO
70 YEARS OF SERVICE

March 27, 2014

Funding for the High-Speed Rail Project

LEGISLATIVE ANALYST'S OFFICE

Presented to:
Senate Transportation and Housing Committee
Hon. Mark DeSaulnier, Chair



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Background

☑ Current Funding Available for High-Speed Rail

- In November 2008, voters approved Proposition 1A, which allows the state to sell up to $9.95 billion in general obligation bonds to partially fund the high-speed rail system. The bond funds authorized in Proposition 1A require a match of at least 50 percent from other funding sources.
- The state has received about $3.5 billion in federal funds for planning, engineering, and the construction of high-speed rail, which require matching funds.

☑ Construction to Start in Central Valley in 2014

- First operation of high-speed rail is planned to begin in 2022 after construction of the Initial Operating Segment (IOS), which would extend 300 miles from Merced to the San Fernando Valley. According to the 2014 draft business plan of the High-Speed Rail Authority (HSRA), the expected cost to complete the IOS is about $31 billion.
- Construction of the IOS will begin on a segment extending 130 miles from Madera to Bakersfield, referred to as the Initial Construction Segment (ICS). The HSRA anticipates that construction of the ICS will begin in 2014 and be completed in 2018.

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Background *(Continued)*

☑ Two Major Legal Cases Involving Use of Proposition 1A Bond Funds

- On November 25, 2013, the Sacramento Superior Court found that the funding plan that HSRA submitted to the Legislature in November 2011 in conjunction with a request for an appropriation of Proposition 1A bond funds for the IOS did not meet certain requirements specified in the proposition (such as identifying all of the funds that will be invested in a usable segment of the high-speed rail system). As a result, the court ordered the HSRA to rescind the funding plan, thereby halting any Proposition 1A bond proceeds expenditures to support the construction of the IOS.
- On November 25, 2013, the Sacramento Superior Court denied the administration's request that the court validate the issuance of more than $8 billion in Proposition 1A bond funds. Based on this ruling, the State Treasurer's Office currently does not plan to sell Proposition 1A bonds.
- The state is currently in the process of appealing both of these rulings.

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HSRA Expenditures

(Dollars in Millions)

	Actual 2012-13	Estimated 2013-14	Proposed 2014-15	Change From 2013-14 Amount	Change From 2013-14 Percent
State Operations					
Proposition 1A bond funds	$17.7	$26.4	$29.3	$2.9	11.0%
Local Assistance					
Federal funds	—	—	$32.0	$32.0	—
Capital Outlay					
Proposition 1A bond funds	$27.3	$22.0	—	-$22.0	-100.0%
Greenhouse Gas Reduction Fund	—	—	$250.0	250.0	—
Federal funds	185.8	571.3	1,078.7	507.4	88.8
Subtotals, Capital Outlay	($213.1)	($593.3)	($1,328.7)	($735.4)	(124.0%)
Totals	**$230.8**	**$619.7**	**$1,390.0**	**$770.4**	**124.3%**

- The Governor's budget proposes a total of $1.4 billion to HSRA for the high-speed rail project in 2014-15. As shown in the above figure, this is an increase of $770 million from the 2013-14 level.
- Most of the funding proposed for the budget year would be for the construction of high-speed rail.

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Governor's Proposal to Use Cap-and-Trade Auction Revenue

- The Governor's budget proposes $250 million in cap-and-trade auction revenue (Greenhouse Gas Reduction Fund [GGRF]) to support the development of the high-speed rail system in 2014-15. This includes (1) $58.6 million for environmental planning for the first phase of the project and (2) $191.4 million to purchase land and partially support construction of the ICS.
- In addition, the Governor is proposing budget trailer legislation that, beginning in 2015-16, 33 percent of GGRF revenues be continuously appropriated to HSRA for the high-speed rail system.
- The Governor is also proposing that when the remaining balance of $400 million from a loan made from the GGRF to the General Fund in 2013-14 is repaid, the funds be directed to HSRA for the IOS.

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Issues for Legislative Consideration

☑ **Using Cap-and-Trade Auction Revenues for High-Speed Rail May Not Maximize Greenhouse Gas (GHG) Reductions**

- The high-speed rail project would not contribute significant GHG reductions before 2020, which is the statutory target for reaching 1990 emissions. This is because the high-seed rail system will not be operational until 2022.
- The construction of high-speed rail would actually generate GHG emissions of 30,000 metric tons over the next several years. (The HSRA plans to offset these emissions by planting thousands of trees in the Central Valley.)

☑ **No Complete Funding Plan for IOS**

- In its 2014 draft business plan, HSRA identified a total of $10 billion in funding available to support the construction of the IOS. The plan states that an additional $21 billion will need to be identified in order to complete the IOS.
- The state will likely be the only source of additional funding to address the $21 billion shortfall identified by HSRA.

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Issues for Legislative Consideration

(Continued)

☑ **Unclear How Much Cap-and-Trade Funding Will Support High-Speed Rail in Future**

- It is unclear how much cap-and-trade auction revenue will actually be allocated to high-speed rail in 2015-16 and beyond to complete the IOS under the Governor's plan. While the Governor is proposing that 33 percent of all state auction revenues be continuously appropriated to HSRA beginning in 2015-16, the administration has not provided an estimate of projected cap-and-trade auction revenues.
- Absence of a detailed plan makes it difficult for the Legislature to determine if the Governor's proposed use of cap-and-trade auction revenues, along with available federal funds and Proposition 1A bond funds, would be sufficient to fund the expected costs per year to complete the IOS.

☑ **HSRA Expending Federal Funds While Matching Proposition 1A Bond Funds Face Legal Risks**

- For the remainder of 2013-14 and 2014-15, HSRA plans to spend about $1.6 billion in federal funds, which requires a match of state funds. However, as mentioned earlier, the availability of Proposition 1A bond funds has been the subject of litigation.
- If federal funds are expended as planned, and the state does not provide matching funds, the Federal Railways Administration reserves the right to require the state to repay federal funds spent on the project.

Legislative Testimony of Professor William Ibbs[1]

3/27/14

Thank you, Senator DeSaulnier. And I want to thank you again for speaking to my students at Berkeley two weeks ago, they were thrilled. It's a privilege to be here again and to offer some thoughts on the important questions you and your committee are facing. These thoughts have been formed by my 40+ years of large-scale construction project experience around the world, including the Big Dig, Panama Canal, and numerous rail systems including BART, LA MTA, Seattle's Central Link, Copenhagen's Comet system, and Johannesburg South Africa's Gautrain. My comments are also framed by my research work at Berkeley, where I have studied and quantified cost and schedule performance on over 2000 large-scale construction projects. That work's been published in various scholarly journals and mentioned in the background paper to this hearing.

I was asked to address three questions today:

1. What does a "world-class passenger rail system" in California look like? In megaproject parlance, what are the appropriate performance specifications, and have they been defined correctly in the high-speed rail project?
2. Does the HSRA's Draft 2014 Business Plan provide a roadmap to success according to the performance specifications defined for it, and does it demonstrate progress toward meeting them?
3. Are there alternative pathways, plans, and/or procedures toward a high-speed rail system that succeeds as a world-class passenger rail system?

I may be a party pooper, but let me first say that I would hope that somewhere along the way you and your committee revisit the question of whether we should be devoting billions of dollars to a high-speed, passenger-based rail system when we have pressing problems with our

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highways and airports. The American Society of Civil Engineers latest report card for California gives our highways a C- and calls for us to spend $10 billion per year to just maintain those roadways. There are many more people that will use our highways than will use this rail system, and I urge you and your committee to look at transportation investment across the board and to give us a world-class highway system that will serve the folks of Hayfork, Berkeley, and Los Angeles more often than this rail system that only goes between some fixed destinations.

However, if the decision is to look at how to spend money on rail systems, our research at Berkeley and my consulting work with rail systems around the world tells us there are grave financial and operational risks with large-scale public projects.

1. My research and that of other folks you are familiar with tells us that it's highly probably, I'd say 80% likely, that the costs of this project will come in at least 50% higher than currently projected. That's almost a given. You know the story with the Big Dig and the Bay Bridge. I can tell you that Copenhagen's Comet System and Johannesburg's Gautrain system are costing much, much more to build than the system advocates ever envisioned.
2. The second lesson that we've learned about such huge construction projects is that they take a long time to build, not so much because of the design and construction activities but more so because of the environmental permitting and right-of-way acquisition requirements. The Panama Canal, will be at least 1 year late and that project was only a 5-year project when it was launched. As the Sacramento judge reminded us last November, large expansive projects like this must meet strict environmental permitting requirements. Based on my Big Dig and the South African rail system experience, I suspect that the delay we're seeing associated with this first court ruling will not be the last such ruling and delay. Such delays add to the costs of the project and further jeopardize its financial viability. So in response to the second question I was asked to address "Does the HSRA's Draft 2014 Business Plan provide a roadmap to success according to the performance specifications defined for it, and does it demonstrate

progress toward meeting them?" I would say that it does not provide a realistic roadmap toward success because it does not sufficiently address the risks of such delays.

3. A third risk I'll offer right now is the risk of expensive operating and maintenance costs. Our discussions today have focused on the initial capital costs. No one has talked about what this system will cost once it's up and running. Decades of American experience has shown that the ridership fares only cover about 2/3 of the actual running costs; that would mean the State taxpayers would be on the hook for the other 1/3 which would amount to billions of dollars every year.

So what recommendations would I offer to try to manage this gargantuan beast?

1. Focus on the interplay between scope, schedule, and cost. My students quickly learn that the cost and time required to build any construction system, depend on the underlying characteristics of the project – that is its scope. So, develop a high speed rail system that goes 200 mph and it will cost $68 billion; instead develop a system that is just as luxurious but goes 72 mph, and it will cost much less. 200 mph means that the sight lines and braking distances are extremely long and frequently preclude at-grade crossings; that in turn leads to putting the train on elevated trackways or in underground tunnels, which dramatically raises costs. These high speeds also mean that the operating and maintenance costs – something that no one here today has yet talked about – will be extraordinarily high. To answer your third question – namely alternative pathways – I would strongly urge policymakers such as yourselves to revisit the decision to run this system at such high speeds. Take it down a notch and use existing, proven off-the-shelf concepts, not the latest shiny toy that's come to the marketplace.
2. My second recommendation is a network concern. When the rail systems of Europe, Johannesburg, and Japan are successful it's because they tie into a good local system, be it local rail (like BART) or bus. At this time, we're missing local distribution systems that

would appeal to the business or high-end residential traveler that HSR aims for. The typical business traveler will not want to ride on SF's MUNI system. UBER, probably, but not MUNI. We need to develop improvements that would serve these travelers.

3. The last point that I'll make turns on something that Bill Gates, the founder of Microsoft, has noted: "Over the course of three years things change slower that we think, and over the course of ten years they change much more than we imagine." This proposed rail system will take decades, some say 30 years, to build out. I think it's hazardous to think we can predict what riders will want and what technology will offer us. Just look at what Google is doing right now with driverless cars, and consider that technologies like Skype will probably reduce the need for in-person meetings. I know that my college students are much more comfortable communicating, dating, and interviewing over the internet than I and other folks of my generation are. Therefore, we need to build systems that can change and adapt to changing technologies, competition, user needs. Eat the pie in small slices, not all at one time. That is, build the segments today that make the most sense from an economic and public welfare perspective – not the segments that are the easiest to permit.

Thank you, Senator, and I'm now available to answer any questions you may have.

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Testimony to the Senate Transportation and Housing Committee
High Speed Rail Informational Hearing – 27th March, 2014

Chairman DeSaulnier and Honorable Senators:

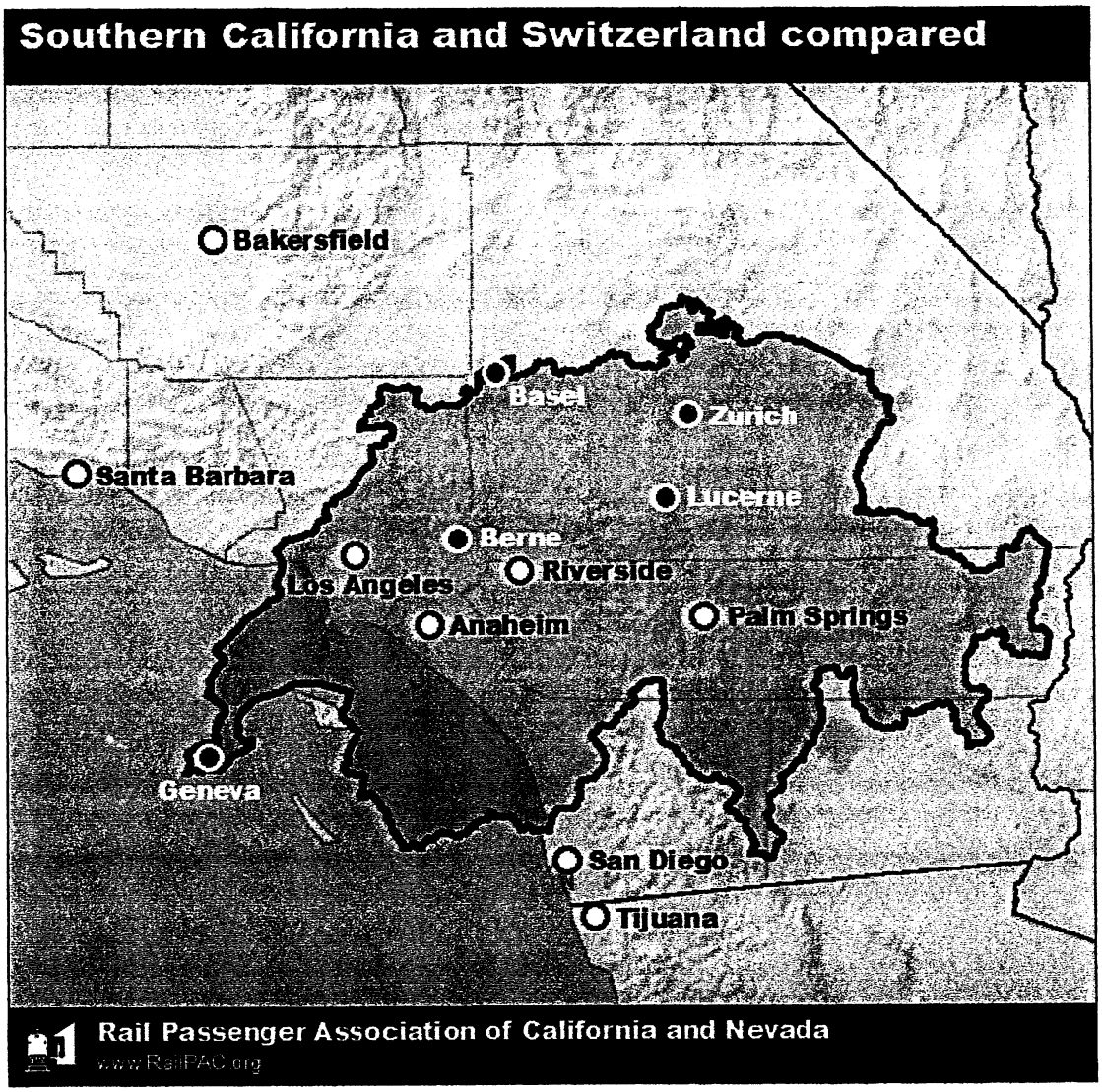
My name is Paul Dyson – I am RailPAC President and Chair of the City of Burbank Transportation Commission, and a recently retired 45 year veteran of the railroad and logistics industry.

RailPAC is an all-volunteer 501c3 membership organization educating the public in the need for a more balanced transportation infrastructure since 1978. We have always advocated investment in modern passenger railroads, both in a dedicated high speed right of way for passenger trains linking the main centers of population in California, as well as continuous upgrades to regional rail and local transit. Our concept continues to be one of incremental improvements, done smartly, so that each investment acts as a building block laid on the foundation of existing facilities. This policy is equally applicable for new high speed rail segments as well as regional rail. It is clearly not possible for a complete 800 mile system to fall from the sky and be instantly in place, so we have to ensure that each segment constructed fulfills a real need in its own right as well as being a part of the whole.

This hearing asks three questions. What do we want to see as the end product? Does the 2014 Business Plan move us in the right direction? What alternatives might give the project better chances for success?

I will be brief in answering the first question, what does a world class passenger rail system look like? Our model is Switzerland, where the transit systems, regional and intercity railroads, even the steamers on the lakes, are coordinated to provide service from just about every bus stop or rail station to every other one in the country every thirty minutes, 18 hours a day, seven days a week. You'll see from the map that Switzerland is about the size of the densely populated areas of northern or southern California, but actually faces far greater topographical challenges. It is an affluent country with high levels of automobile ownership, and yet has very high public transit usage. And of course there is a growing network of European high speed trains which links Switzerland with the major centers of Europe. Thus we advocate two robust regional systems, north and south, with a High Speed link between the two.

We can accomplish the same level of service with carefully planned infrastructure investments, strong *central* direction that *requires* cooperation between agencies, and excellent information and ticketing systems that provide seamless journeys, regardless of the mode selected.



Next I'd like to comment on the draft 2014 Business Plan. This plan calls for initial service between Merced and Palmdale, and, when complete, an as yet undetermined location in the San Fernando Valley north of Los Angeles. We believe that this strategy is exactly wrong for a number of reasons. Passenger rail is all about moving large numbers of people. It is also about providing a transportation product for which people will be prepared to pay their hard earned dollars. The Authority proposes a service, that will be in place for a number of years, whereby passengers will travel by bus or regional train to and from Merced, take a High Speed Train to Palmdale, and a Metrolink train from Palmdale to Los Angeles or beyond. (p12 of Draft Business Plan). We do not really know how long this service will be in place as funds are not identified to build further south into the L.A. Basin.

L.A. County MTA studied the route between Palmdale and Los Angeles a couple of years ago and concluded that even with significant investment there is little that could be done to improve journey times along this line which was originally

completed in 1876. The line follows Soledad Canyon and is built cheaply to typical 19th century standards. As far as modern passenger transportation is concerned I regard it as obsolete. It would be faster to continue to take a bus from Bakersfield.

Existing Rail line south of Palmdale through Soledad Canyon

Assuming funds are made available to build a new line south from Palmdale, to this proposed interim terminus, we still do not have service to Los Angeles Union Station, the hub of transit and regional rail. Where will this interim terminus be? We don't know yet although the Burbank Transportation Commission was told that a decision is imminent. But wherever it is there are no transit connections available to compare to those at Los Angeles Union Station, and clearly the majority of patrons will use either cars or special connecting buses.

Regardless of whatever projections of ridership and revenue might be found in the Business Plan, I ask you to apply the common sense test; would I spend my money on a bus – rail – bus journey say from Orange County to Sacramento, compared to the alternatives that are available? Some might, if they are so enthused about the new technology, but will the patronage be sufficient for the service to make a profit on operations? For that level of inconvenience and that slow a journey the fares will have to be pitched so low to attract passengers such

that an operating profit is out if the question.

What Alternatives does RailPAC propose?

We believe that the logical plan, the one most likely to be successful, is to start construction at Los Angeles Union Station, and build north. There are many very good reasons to adopt this strategy.

1. A rebuilt Los Angeles Union Station brings immediate benefits to eight of the most populous counties in the state. Converting the station from a stub end to through tracks has the same regional significance as the Transbay tube has to the BART system. It will bring improvements to the daily lives of thousands of Southern California commuters and intercity passengers.

2. Only Los Angeles in the south can generate sufficient numbers of passengers to allow for any prospect of a successful and profitable operation. The Authority's decision to delay service to Union Station until 2028 at the earliest is ridiculous.

3. The section between Los Angeles and Bakersfield is the most expensive and technically challenging. We believe it is better to solve these problems first rather than "kick the can down the road" and build the easy parts first. Imagine the British and French building the approaches to the Channel Tunnel first before they knew whether the tunnel was feasible or affordable!

4. Construction at Los Angeles, under the High Speed Rail aegis, will provide a demonstration to the majority of Californians that the project is truly under way.

5. A grade separated right of way from Los Angeles to Saugus will eliminate dangerous grade crossings in the San Fernando Valley.

6. There is a gap in the existing state intercity service between the San Joaquin corridor at Bakersfield and the LOSSAN corridor in Los Angeles. Building this segment of new line first will allow through journeys, one seat rides, all the way from San Diego to Sacramento and the Bay Area. This will not be high speed rail but will reduce travel time, eliminate the bus connection, and enhance the travel experience.

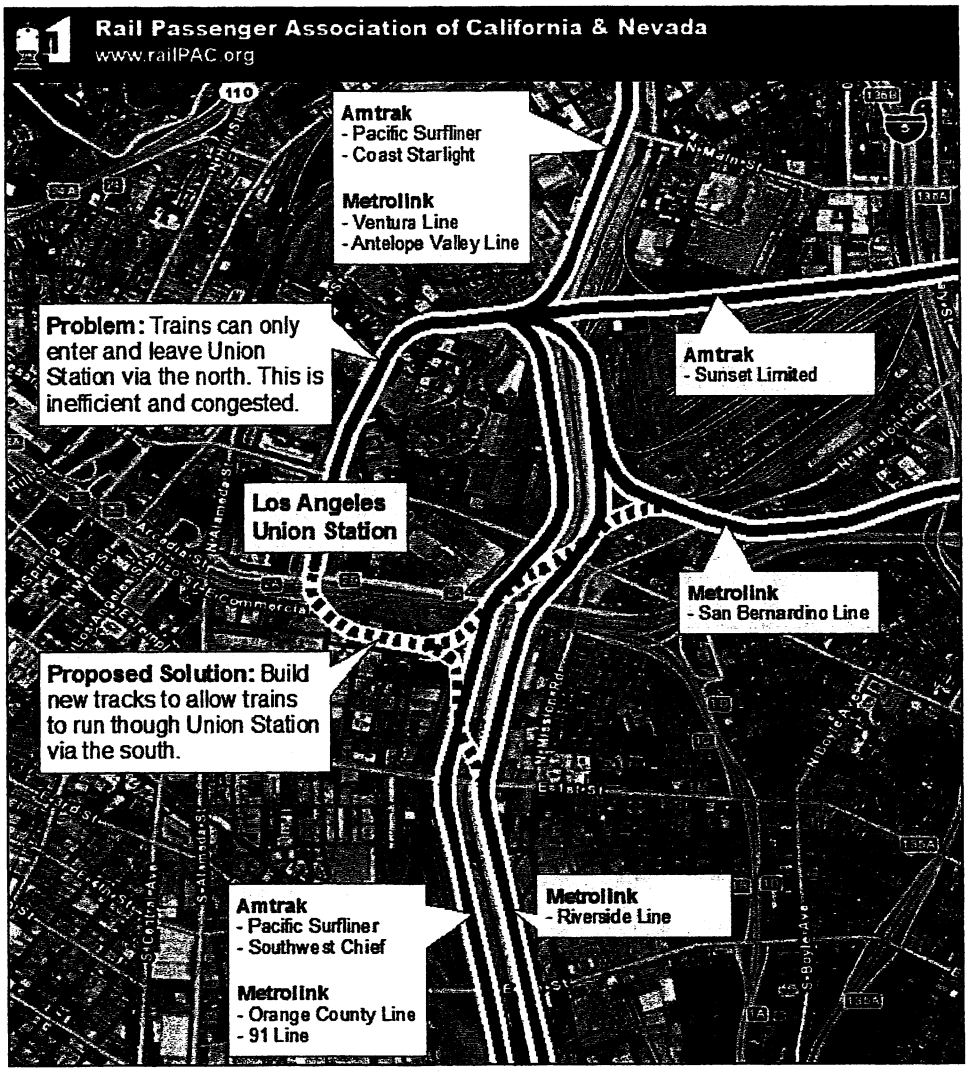
7. Bridging the gap between Los Angeles and Bakersfield is truly a project which on its own represents independent utility, regardless of whether there is additional investment in High Speed Rail.

After the link is made to Bakersfield each additional segment of new line will incrementally reduce journey times by allowing higher speed operation over a greater distance. Convenience and speed sell tickets. A single seat ride plus

gradually improving journey times will add to the commercial success of the service until end to end high speed operation is achieved.

Mr. Chairman, there is certainly a lot more that could be discussed here but I am mindful of your time and those wishing to make further comments. I'll be delighted to answer any questions you may have.

Paul Dyson
pdyson@railpac.org



SOUTHERN CALIFORNIA REGIONAL INTERCONNECT PROJECT

- Currently trains can only enter and leave Union Station via the 'Throat' - the set of tracks to the north.
- This is inefficient, slow and congested. For example Pacific Surfliner operators have to get out and move to the other end of the train prior to continuing the journey through Los Angeles.
- With the proposed new tracks, the Pacific Surfliner can go through Los Angeles without reversing direction. Metrolink trains can also loop around.
- Reduces congestion and wait times. Improves circulation.
- Makes new Metrolink routes going through Los Angeles possible, such as a route between Orange County and the San Fernando Valley, without the need to change trains.

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Why Cap & Trade Funds Cannot Be Used To Finance High-Speed Rail In California

Four Crucial Briefing Papers

April 2 2014

This paper regarding California's proposed high-speed rail project can be found at: https://sites.google.com/site/hsrcaliffr/home/3-1-briefing-paper---2014-plan/2-04-2014-analysis-of-cap-and-trade

Additional reports on California's proposed high-speed rail project can be found at: https://www.sites.google.com/site/hsrcaliffr/

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Introduction & Overview To The Four Papers

Introduction: The Governor's FY 2014-15 budget requests $250 million of Cap & Trade auction proceeds, and a third of all those proceeds thereafter to help finance the construction of California's high-speed rail (HSR) project.

As of early 2014, federal grants are close to being extinguished unless the State finds funds to match spent federal dollars. But with funds from the sale of Proposition 1A (Prop1A) funds denied the California High-Speed Rail Authority (CHSRA) because of court rulings, (now in the appeals process) it seems to many that funds from California's Cap & Trade auctions may be the sole funding source to continue the project.

The history of AB32, the legislative context of Cap & Trade funds, is rocky. After several court challenges, AB32 became law in 2006. Then-Speaker of the California Assembly, Fabian Nunez, authored AB32. During deliberations he stated the bill's intent.

> *"AB32 authorizes the California ARB* [Air Resources Board] *to adopt a schedule of fees to pay for the direct costs of administering the reporting and emission reduction and compliance programs established pursuant to the bill's provisions. IT IS MY INTENT THAT ANY FUNDS PROVIDED BY HEALTH AND SAFETY CODE SECTION 38597* ***ARE TO BE USED SOLELY FOR THE DIRECT COSTS INCURRED IN ADMINISTERING THIS DIVISION****."* [Emphasis added]

The use of Cap & Trade funds to finance the construction of the HSR project has been highly controversial, not just with the 'environmental community' but also with the LAO in 2012 and 2014, as well as with scholars who question the environmentally-friendliness of high-speed rail. Using Cap & Trade funds to construct the high-speed rail project may also be illegal. It was seen to be controversial in 2012 when the Legislature resisted Governor Brown's first attempt to divert Cap & Trade to the HSR project, and it is controversial now.

Overview: Because the issue is far from settled, four authors submitted papers about using Cap & Trade funds to build the high-speed rail project. They are:

Paper 1 – The Reason Foundation's paper by Wendell Cox and Adrian Moore, **California High Speed Rail Project Greenhouse Gas (GHG) Emissions: A Dynamic Impact and Cost Analysis,** analyzes the State's mandate, and the science of and the unverified data on which High-Speed Rail Authority claims its proposed system's environmental benefits. They point out that AB32 includes a cap and trade program and requires greenhouse gas emissions (GHG) be reduced 80%, to be at 1990 levels, by 2050. In February 2014, the California Air Resources Board (CARB) reported

that to achieve the 2050 target requires acceleration of annual GHG emission reductions at more than double the rate necessary to achieve the interim 2020 targets. High-speed rail (HSR) construction will create substantial GHG. HSR, which is forecasted to begin operations in 2022, cannot reduce GHG emissions before AB32's 2020 horizon and the project's construction must purchase credits through the cap and trade program. Very high passenger load factors may reduce overall GHG emissions. Cost effective GHG reduction is paramount to maintaining economic growth and not passing on AB32's costs to the disadvantaged. Based on four scenarios for 2040 from the 2014 Draft Plan, using high-speed rail (HSR) to reduce GHG emissions would be far more expensive per ton than alternatives, and range from 90 to 1,400 times the cost of cheaper carbon offsets.

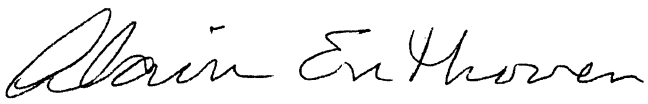
Paper 2 – Attorneys Birkey and Purvis' memorandum, the **Legality of Use of Cap-and-Trade Auction Proceeds to Fund High-Speed Rail**, outlines the goal of reducing GHG emissions statewide to 1990 levels, details the statutory requirements that Cap & Trade auction proceeds must be used to advance the goals of AB32, and that Health and Safety Code section 39712 plainly requires that AB32's auction proceeds must be used *"to facilitate the achievement of reductions of greenhouse gas emissions in [California] consistent with"* AB32. These esteemed attorneys then show why funding high-speed rail will not further the purposes of AB32. They finish with an analysis of why the use of Cap & Trade funds is a poor investment as a means to fund the high-speed rail project.

Paper 3 – Transportation Solutions Defense and Education Fund's President, David Schonbrunn, prepared an **Analysis of the CHSRA's GHG Report**, the California High-Speed Rail Authority's attempt to justify using the Cap & Trade funds. Schonbrunn argues that the entire approach is fallacious because it does not address here-and-now questions with facts, nor environmental impacts after construction of the first 29 miles. Rather the CHSRA report says, *"As the project moves forward, direct GHG emissions calculations will be carried out for each subsequent construction package."* He also points out there is no substantive or quantitative data on GHG emissions or their reductions, and no evidence to support CHSRA's contentions that by using renewable energy sources during construction, planting tress and supporting public transport the project will reduce GHG. These assertions are a *deus ex machina*, without foundation and inserted during the last minutes in the argument about using Cap & Trade funds.

Paper 4 – Mr. Mark Powell's paper, **The History and Status of The California High-Speed Rail Authority's Unlawful Funding Plan,** presents the context of funding the project using Cap & Trade monies. It details the evolution of high-speed rail funding approaches from the 1990s onwards. It shows how the CHSRA, ignoring directives to find ways of using sales or fuel taxes to fund the project's construction instead gambled that massive federal grants, coupled with Prop1A matching fund obligations,

would deflect criticism of the costs. That gamble failed. Federal funds have been limited to a single FY2010 grant and the nation's largest ARRA grants. The Department of Transportation (DOT) has not put new money into the California project for four fiscal years. The private sector has never put money in the project. Neither source is likely to in the future. Powell's paper closes by showing that the Governor's proposal would provide an infinitesimally small proportion of what is needed to continue constructing. Relying on Cap & Trade to fill the gap is foolish.

These papers represent a wide spectrum of practical and legal reasons that must be considered by decision makers during the debate over the use of Cap & Trade funds to partially finance California's proposed high-speed rail project. We thank the contributors for volunteering their time to prepare the papers and urge all readers to consider their arguments.



Alain C. Enthoven
Marriner S. Eccles Professor of Public and Private Management (Emeritus),
Graduate School of Business,
Stanford University

March 26, 2014

To the Members of the Transportation Committee:

RE: Toward a World-Class Passenger Rail System in California: Evaluating High-Speed Rail's Potential for Success

This is a report and update on various subjects that were problematic for the Bay Bridge and since the topic of those 3 meetings were" lessons learned", I wanted to update the committee up on various topics and apply them to the high-speed rail project.

The timing of this hearing may not be ideal since the Appellate Court is weighing if they will take the case and if they do, whether will decide to uphold Superior Court Judge Kenny's rulings or they will overturn them.
http://transdef.org/HSR/Extraordinary.html

The new business plan cannot conform to the Superior Court's ruling, despite the fact that Dan Richard promised during the January 15th House Transportation Hearing on the high-speed rail project that the Authority would comply to the courts ruling. http://www.examiner.com/article/highlights-from-congressional-hearing-on-california-high-speed-rail-project But apparently the Governor had a different idea, to file the case with the California Supreme Court to "stay" the rulings and hopefully to permanently overturn the court's rulings. It required the Authority to rescind their funding plan and the court did not validate the bonds needed for construction and matching early advanced federal dollars.

So while the case is in flux, we basically have most of the contents with the old business plan and there most likely will not be a ruling before the business plan has to be certified. Here's the news flash about the draft 2014 plan, "There still is no money."

See the article written which examines the financial health of the project.
http://calwatchdog.com/2014/03/05/high-speed-rail-wheres-the-money/ Here's an excerpt:

"The CHSRA came up with a new way to show that its assumptions are reasonable. It's called the Monte Carlo Plan. It uses Monte Carlo Analysis, which Microsoft explains here for use on its Office programs, as a statistical tool for estimating "the probabilities of uncertain events."

In brief, the CHRSA's Monte Carlo Plan takes operating costs, maintenance and capital expenditures and simulates thousands of possible outcomes. The outcomes allow the CHSRA, in the 2014 Plan's words, "to quantify and analyze the resultant potential variability in the estimate and determine the probability of different cost outcomes."

Sounds complicated. But is it reliable?

CEO Jeff Morales thinks it is. He said at the Feb. 11, 2014 board meeting:

"[T]he Monte Carlo analysis shows that we can be very confident in those results by running some 5,000 variations of the different outcomes that produces then a level of certainty that is extremely high, that when we say we will hit the break even cost of this, meaning that we will not require a subsidy, a key component of Prop 1-A, we can say that with as close to 100 percent certainty as I think anybody could get. It is still a forecast, obviously, but by utilizing these tools, we're able to provide a much higher degree of assurance of what that outcome will be."

Note the phrase, "It's still a forecast."

William Warren has a different opinion. The Stanford MBA with 40 years of financial experience in Silicon Valley companies doesn't think the Monte Carlo Analysis is useful or dependable for this project because of the large number of unknowns with the high-speed rail project. Along with a team of financial experts, he analyzed the HSRA's financial reports.

He told CalWatchdog.com:

"The more you know about your reality, such as costs, and the less you have to define as unknown variables, the better off you are, as you are reducing the range of probable outcomes.

"Our friends at the Authority have very little data which is known (i.e. — based on facts) and a great deal which is unknown (and therefore must be estimated), so the range of results is very wide and very subjective. It is the classic house of cards. Actually, it is the classic case of an apartment complex of cards….

"I believe the truth test is found in this question: 'Is there any HSR operator who believes the projected outcomes that show profitability, such that that the operator will sign an operations contract for the IOS, where they take a risk position based on these projections?' So far it seems that the answer in 'No.' So why should the public believe these profitable projections?"

The Legislature should write a law that requires the Authority to update their business plan after the Appeals Court ruling comes down so they can include

more specifics. One has to think they have another business plan waiting in the wings that the legislature and the public hasn't seen since Dan Richard promised a new plan at the Congressional meeting in January. Here are articles I have written about the draft 2014 business plan and some of the latest court actions. http://calwatchdog.com/?s=Kathy+Hamilton

There is a major difference between the Bay Bridge and the High-Speed Rail Authority's project. The latter was approved by the public in a bond measure. There are specific laws that must be followed. The Legislature should be aware that it's own laws are being violated and immediately upon the ruling of the court should have voluntarily rescinded it's own funding plan when a court found it was an illegal funding plan. This isn't politics as usual. Voter approved bond measures carry a more stringent responsibility and major changes must be approved by the public not by a bill in the Legislature.

I want to remind this committee that what's at stake is the rule of law. The Superior Court has ruled that the very laws that the Legislature put in place to protect the public have been violated.

The Senate Transportation handout speaks about the nature of evolving mega projects but please don't stretch that meaning so far as to mean a total change, something completing different, wiping out the promises made to the voters. Those carefully crafted provisions of the Bond measure and AB 3034 were put there for a reason and should not be tampered with. They were financial protections that would help insure that the state would not take on a project that is financially damaging.

Let's look at the intentions of this Rail Project: They were eloquently left by Senator Alan Lowenthal, who proudly wrote this preamble to a report in the summer of 2008 before the bond measure was voted on by the public.

"This farsighted transportation project, however, is not being developed as a conventional public works project to be built with pay as you go funding, or by relying on public debt financing. Instead, the Authority is offering California's voters a business proposition. Should the voters approve the $9.95 billion measure on November's ballot, the Authority is anticipating using the bond revenues and future federal funds to attract a substantial amount of private capital. The Authority's underlying assumption is that the demand for high-speed rail in California is so strong that it will attract a private consortium with the resources to design, construct, finance, and operate the high-speed project

under the terms of a long-term franchise.

The Authority's plans assume that the high-speed rail service, operated by a private consortium, will generate sufficient revenue to repay the consortium's investment, cover the annual cost of operations, and provide a profit. Furthermore, the Authority assumes that the rail service will not require any future operating subsidy from the State of California.

The immediate challenge for the Authority is to demonstrate to the voters how the $9.95 billion in bonds can generate the $33 billion necessary to fund the project's first phase. The Authority's longer-term challenge is to demonstrate its ability to develop and negotiate a franchise with a private consortium that ensures the state bears limited financial risk during the construction and operation of the high-speed service."

Anybody can see that this project has failed the key tests, no money, no private investment and no continuing support from the federal government.
The project is years late in completing environmental work, years late starting the project and there is not a dime of private funds and if predictions were accurate for federal contributions, at a rate of $ 3 billion a year, the project would have at least $15 billion but it has approximately $3.24 billion. Congress has blocked money from going to the California project. It still needs another $25 billion dollars to complete the first legal section from Madera to the San Fernando Valley.

I can't count the number of times that then CEO Roelof Van Ark said, we cannot have a successful project without the support of the federal government. But there isn't enough money at the federal level and transportation as a general category is underfunded. The trend is for states to fund their own projects. See Ken Orski's article about the changing responsibility for transportation projects. http://www.infrastructureusa.org/states-growing-role-in-funding-the-nations-transportation-infrastructure/

California's legislature cannot say for this project, they didn't know. Every major governmental agency has said that major concerns exist because of lack of funding and starting a project that is sure to end with a stranded asset.

The Authority has improved as far as staffing and some other record keeping requirements, the most major, the most important thing is the absence of financing to build the project with a September 2017 deadline for the ARRA Funds looming.

As the Chair of this committee well knows, three of the most knowledgeable Senators voted no for the funding, including Senator DeSaulnier, who had the most courage of all since he remained in the legislature. Senator Simitian and Senator Lowenthal who gave wonderful speeches why they had to vote no, were turned out and leaving the state legislature.

Things have not improved in regards to funding. As Senator DeSaulnier asked the Authority in the past, "Show me the money." They have none.

Cap-and-Trade:

Cap and Trade dollars won't do it, those dollars are not supposed to be used for this project, they are supposed to be used for programs that bring the immediate lowering of GHGs not a project that "might" ridership dependent of course, bring some relief in 20 or 20 years.

It is unknown what year if ever the first legal section of the rail project will make it to the San Fernando Valley but way past the legal requirements since the project isn't scheduled to be operational until 2029, so the train will provide zero help meet the state's 2020 emission reductions goals. They at best will be in the midst of construction sure to add pollution not reduce it.
http://la.streetsblog.org/2014/03/25/report-in-cutting-emissions-cahsr-expensive-compared-to-local-upgrades/

If the Central Valley first usable segment needs $25 billion more dollars, how's that going to work with $250 million, or $500 million or even 2 billion a year. Rising costs alone will drive the cost to build so high, the first segment will never be built. Cap-and-trade was supposed to be a stop-gap and now it's all they have.

In a public Senate Meeting, May 15, 2012, Senator Lowenthal asked then Peer Review Member, John Chauker a telling question about Cap-and-Trade:

" If the federal government doesn't come up with more funds and if cap and trade funds are used as a backstop then the state will effectively pay $17 billion and the feds will pay $3 billion to get an operable segment." Lowenthal continues, "the legislature would no longer be looking at the voter promise of a public/private partnership, we could be looking at " fully funded state project out of the general fund. Senator Lowenthal asked John Chalker, then peer review group member, "Does that seem unfair? Chalker answered, "Frankly, yes."

Peer Review Group

At the present time there are only 4 out of 8 people in the group. There have never been more than 7 members at any one time. Recently resigned member Will Kempton, who was CEO of Orange County Transportation Authority (OCTA) who pushed forward the Rail project during his tenure was seen as having an unquestionable conflict of his interest since his agency could have benefited from getting some of the bond money. At least one current member might be seen as having conflicts, that is Stacey Mortensen is the Executive Director of the ACE train whose organization is the recipient of rail funds from the Prop1A Bond Measure. See **https://www.acerail.com/About/Public-Projects/ACEforward/High-Speed-Rail-Authority-Approves-Altamont-Corrid.pdf**

Here is a 13 minute interview featuring Tom Umberg, answering questions about how the Independent Peer Review Group criticized the funding plan and the draft business plan published in November 2011. This letter was published in January 3, 2012 but is filed incorrectly under the label 2010 funding plan. http://www.cahsrprg.com/files/CommentsonCHSRA2010FundingPlan.pdf They came out with a far more favorable plan after they negotiated the bookend financing and the blended plan. http://www.cahsrprg.com/files/comments_on_draft.pdf

Umberg, who was taken off as the Chair of the committee shortly after January 2012, offered this view of the what the Peer Review group wants, "If you are looking at the project as a pot of money for transportation purposes and you want to spend that money as quickly as possible in order to improve transportation in different parts of California, you look at it differently and you say we should allocate in different places than if you are looking at building an entire high-speed rail system to connect Northern and Southern California. " http://www.youtube.com/watch?v=TbhoKBSOn58 January 13, 2012.

This was part of a negotiation to win a more favorable review of the April 2012 business plan.

See article 1: http://www.examiner.com/article/how-independent-is-the-independent-peer-review-group

See article 2: http://www.examiner.com/article/the-peer-review-group-report-and-a-change-tune

The High-Speed Rail Authority finally agreed to spend the bookend spending of $1.1 billion dollars, in the final April 2012 business plan. And so when the draft 2012 plan came out two things happened, one the blended plan was accepted and because of that $1.1 billion dollars was allocated for Northern and Southern California, the noise level from the peer review group diminished substantially.

Many question today the legality of offering Prop 1A funds voted for exclusively for high-speed rail for the bookend projects. There was a separate pot of money called the connectivity funds for projects that were not high-speed rail but would directly connect to the high-speed rail project. In Quentin Kopp's declaration for the Tos/Fukuda/Kings County case, says the "track-sharing" arrangement with Caltrain "constitutes the greatest betrayal of all in the context of the original intent and promises to voters. The project, as now planned rather than what was promised, constitutes a distortion and mangling of California's HSR project and promises to California voters."
http://transdef.org/HSR/Taxpayer_assets/HSR%20Declarations%20of%20Experts.pdf (Kopp's is the first one)

The Independent Peer Review Group is supposed to be just that independent, not as pushing forward the project no matter what. They are not to be seen as colleagues with the Rail Authority. They should not push forward with a project in conflict with Prop 1A. They are not independent or as transparent as it should be. Unfortunately well-meaning people are on this review panel. It certainly is a challenge finding objective, knowledgeable people that have nothing to gain to serve.

February 14, 2014 the State Audit report said this,

The Authority board refuses to seek a legal opinion to ask if the Bagley Keene Act (Open Meetings) applies to the Peer Review Group.

Stricter rules governing who and who cannot be on these committees must be passed, the public must be invited in and there needs to be more than half of the mandated number of peer review members voicing their opinion on what is written for the project. The public and the press need to see information hashed out, not just take a periodic report from the head of the group. It would be nice to see when the group met most recently or the frequency of conference calls to discuss the project issues. If members have conflicts due to consulting work or the group they work for actually receiving project money, are not qualified or don't have the time to serve, they should resign. Unfortunately it appears that it

may be likely that only the recently retired from active industry participation, who have nothing to gain, appear to be the only truly objective candidates.

State Audit Report

The State Auditor is required to follow up on past audit reports and they came out with their update of various audit reports. High-Speed Rail was one of them. While the state Auditor reports that the HSR project has cleared up many audit concerns, there are still outstanding and important issues with the project. See the February 14th report, page 10. http://www.bsa.ca.gov/pdfs/sr2014/2014-406s.pdf 2011-504 Report number. Key Issues not fully implemented or at all:

- The Authority board refuses to seek a legal opinion to ask if the Bagley Keene Act (Open Meetings) applies to the Peer Review Group.
- Subcontractors should file statements of interest.
- **It showed that the Authority will only receive profits for 2022 and 2023 and then not again until 2060.**
- **The Auditor's office wants to see funding alternatives that don't rely on large amounts of federal funds.**

Public Records Requests:

The Authority is not forthcoming. They do not answer requests in a timely way and hide behind the draft provision, which though is supposed to be very limited in its use is the most abused excuse used by them. Very much like the Bay Bridge. If they must give you the information, if they are afraid you will sue, you might get some of what you requested but most definitely it will be late and imcomplete. See the article I wrote about the practices of the Authority. See the full article: http://www.examiner.com/article/california-hsr-violating-the-public-records-act-deception-or-incompetence

Railroad Agreements:

The Authority admits that they do not have master agreements in place with the railroads and that is a risk for them. Construction is not supposed to begin until this master agreement is finalized for the project, not for 25-mile segments.

While the railroads, Union Pacific and BNSF, are addressing a specific problem with electromagnetic fields, they make this astounding statement about the Rail project.

"The California High-Speed Train Project ("CHSTP") is a project that has been defined by its uncertainty: uncertainty about when construction will start, how it will be paid for,[1] where it will run, and how it will achieve its statutory performance requirements. This proceeding is adding to the list of uncertainties and creating the probability that the project will cause unreasonable safety risks and conflicts with other railroad systems."

Note: The railroads have the ultimate control on the routes. Their protests can completely derail the high-speed project.

https://www.pge.com/regulation/High-SpeedRailElectricSafetyOIR/Pleadings/Joint-BU/2014/High-SpeedRailElectricSafetyOIR_Plea_Joint-BU_20140131_295470.pdf

Consultant activity:

I do not have a current accounting of who is working on the project from Parsons Brinckerhoff and attempts to find out who is in management roles have not been successful.

There still is an extraordinary amount of people working on the plans that they themselves will profit from. It's unacceptable.

This is a question for the Legislature to inquire about, who are the people and how many are working directly with PB are in Managerial, executive roles that influence business plans, environmental plans, environmental GHG reports etc. It is unhealthy for the people who have the most to gain to be in these positions.

See a clip, though in 2011, still is correct. This is from Elizabeth Alexis, co-founder of Californians Advocating Responsible Rail Design (CARRD) who has testified before this committee in regard to Peer review groups and disclosed incredible amounts of money being charges from the Ridership Peer Review panel, a group hand-picked by the past High-Speed Rail CEO, Van Ark. This legislature allowed this to happen when UC Berkeley's results were less than stellar on the condition of the ridership numbers. It shouldn't have been allowed.

Here is Elizabeth Alexis House Transportation Committee Testimony, five minutes. She says this is the "no consultants left behind program."
https://www.youtube.com/watch?v=LgcRMIcZgKk

In conclusion:

So far a court of law has ruled that the job the HSR Authority hasn't met the requirements of the law and maybe only the tip of the iceberg. The Superior Court ruled on March 4th that the 2nd half of the Tos/Fukuda/Kings County Court case could move forward. Within days the co-counsel for the *Tos case,* Stuart Flashman was notified that the Authority filed was going to file another extraordinary Writ of Mandamus Claim. They don't want further damage when the promises of Prop 1A are aired in the light of day so they are attempted to squash the trial from starting. They don't want a trial going on that might prevent validation of bond funds if in fact the Appeals Court overturns Judge Kenny's decision. They may have to go through another validation hearing but they would not have the stumbling block of another Prop 1A suit in process.

See all court action on TRANSDEF's website. The most recent court filings are located on the last entry called Extraordinary Writs.
http://transdef.org/HSR/Extraordinary.html

What is the platform for the Democratic Party? To build a train for the rich paid for on the backs of the poor or is it to help the everyday man, educate our youth, help the less fortunate, the handicapped, the elderly?

Is this train project, a symbolic legacy for retiring politicians, and the imperative that drives the Democratic Party?

Every single legislator is supposed to take care in the spending of public dollars. This is near dead project can still do harm. It has spent or obligated with federal funds more than $1.5 billion. Allowing Central Valley farms, dairies and residences and businesses to be destroyed with the result of an isolated, non-electrified track of land partially built and stranded would be tragic. The only city that will gain something is the city of Fresno who will get grade separations and road improvements, the Authority's primary cheerleader. This is an improper use of state and federal funds.

If the legislature wished to "use" state bond funds that were allocated for this project, in order to do this legally, it will have to be in the form of another bond measure to transfer the funds. Surely the public will believe there are better uses

to spread $9 billion dollars. Education, law-enforcement, road repair and other infrastructure projects that are suffering with deferred maintenance or other transportation projects might be attractive. They may also choose to reclaim those dollars or apply them toward budget deficiencies for pensions.

The ARRA federal funds appear to be obligated for the Central Valley segment and unless independent utility is achieved with the federal definition of usefulness for other rail carriers, it is unknown if they will allow these funds to be transferred to other projects. The general thinking is they will not but they have changed a lot for the state of California in the past so it is a question mark at this time.

Thank you for the consideration,

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Kathy Hamilton writes for the Examiner and Cal Watchdog.com. She has written more than 215 articles on the subject of high-speed rail over a five-year period. She also sits on the board of Community Coalition on High-Speed Rail and has attended hundreds of meetings about the rail program.

Cal Watchdog.com http://calwatchdog.com/?s=Kathy+Hamilton
Examiner: See a brief synopsis by title, earliest at top.
http://www.examiner.com/transportation-policy-in-san-francisco/kathy-hamilton

IF YOU BUILD IT THEY WILL NOT COME

A Forensic Analysis of Why High-Speed Rail In California Will Fail In Its Initial Operating Years

A Briefing Paper – March 11th 2014

Prepared by: William Grindley and William Warren

Forty-one reports by the same authors on the proposed California high-speed rail project can be found at www.sites.google.com/site/hsrcaliffr

Preface: California's High-Speed Rail Authority proposes to bring a new service to the market in 2022. Its initial +$31 billion cost may make it the most expensive 'launch' in history, and a lot depends on whether it will be able to attract enough riders to make it profitable. If the travel times or costs to passengers for using rail and buses can't beat going by highway or flying, Californians will have to subsidize its operations forever. This Paper puts the origins of that risk under the microscope.

Overview: For five years (2022-2026) the Initial Operating Segment (IOS) **IS** high-speed rail (HSR) in California. The California High-Speed Rail Authority (CHSRA) offers nothing more. During this IOS-Only Phase, there is no travel time advantage for potential HSR riders to abandon the airlines or their automobiles to take combinations of rail and bus transport modes between the LA Basin and the SF Bay Area.

Likewise, would-be HSR travelers during the two-year Bay to Basin Phase (2027-2028) will only benefit from a shorter-than-driving travel time between the downtowns of Los Angeles and San Jose. While more expensive, every itinerary using flights to 'defeat the friction of distance' have significantly lower travel times.

CHSRA's offerings don't seem attractive enough to entice travelers to abandon their autos or the airlines. With nothing more to offer travelers, the chances of the CHSRA meeting their ridership or revenue figures and being profitable seem extremely thin, and the interest of private, at-risk capital seems even thinner.

California's high-speed rail project has truly become a 'Field Of Dreams' and it is doubtful whether 'They Will Come' during the seven years of the Authority's IOS and B2B offerings.

THE AUTHORS

William C. Grindley – World Bank; Associate Division Director, SRI International; Founder and CEO, Pacific Strategies, ret. (BA Architecture, Clemson; Master of City Planning, MIT)

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PUBLICATIONS

All available at www.sites.google.com/site/hsrcaliffr and at www.cc-hsr.org, then go to Financial Reports

Major Reports on High Speed Rail by the Authors:

- The Financial Risks of California's Proposed High Speed Rail Project (Oct 2010)
- A Financial Analysis Of The Proposed California High-Speed Rail Project (Jun 2011)
- Revisiting Issues In the October 2010 Financial Risks Report (Sep 2011)
- Twelve Misleading Statements on Finance and Economic Issues in the CHSRA's 2012 Draft Business Plan (January 2012)
- California High-Speed Rail Authority's 2012 Draft Business Plan – Assessment: Still Not Investment Grade (January 2012)
- A Partial Catalog of Inappropriate, If Not Illegal Actions in the Conduct and Execution of California's Proposed High-Speed Rail Project – Volume I, March 2012.
- The CHSRA Knows Their Proposed High-Speed Train Will Forever Need An Operating Subsidy (March 2012)
- A Partial Catalog of Inappropriate, If Not Illegal Actions in the Conduct and Execution of California's Proposed High-Speed Rail Project – Volume II, November 2012.
- To Repeat: The CHSRA Knows Their Proposed High-Speed Train Will Forever Need An Operating Subsidy (December 2012)
- Diminishing Prospects For The CHSRA's Initial Construction Section (July 2013)

Briefing Papers:

- Dubious Ridership Forecasts (Oct 2010)
- Six Myths Surrounding California's High-Speed Rail Project (Jan 2011)
- Seven Deadly Facts For California's High-Speed Rail Authority (Jan 2011)
- A Train To Nowhere But Bankruptcy (Feb 2011)
- Big Trouble For California's $66 Billion Train (Mar 2011)
- Will The Train Benefit California's Middle Class? (Apr 2011)
- DOT/FRA Has Several Reasons To Withhold Further Funding From California's High-Speed Rail Project, November 2012
- 'Fleecing' Local High-Speed Train Riders While Big City Executives Ride Cheaper, January 2014

Brief Notes: Twenty-three one page, single subject papers on various aspects of financial issues related to the proposed high-speed rail system, Oct 2010 - Aug 2011

Any fault found in this report is solely the responsibility of the Authors.

Introduction – California's High-Speed Rail In Its First Operating Years – If the Authority finds at least another $25 Billion to finance its Initial Operating Segment (IOS), the privately operated IOS is supposed to prove that California's high-speed rail (HSR) program will eventually deliver passengers between the downtowns of LA and SF in 2 hours 40 minutes, not need an operating subsidy and will attract private capital to complete the system promised in 2008.[1]

The first five years of the Initial Operating Segment's operations, **IS** high-speed rail for Californians. The California High-Speed Rail Authority (CHSRA) offers nothing else. To be financially successful, the whole concept promised to 2008's voters must be proven early on in what is herein called the IOS-Only Phase. To do that, CHSRA's only offering during those five years must be an attractive enough option for travelers to abandon airplanes and automobiles.

The risks inherent of an HSR start up – During the IOS-Only Phase, CHSRA will launch a new technology and service. Under the sustainable profit demands of AB3034, the HSR train system must be judged first and foremost as any business is; it either succeeds financially or goes bankrupt.[2] Eighty percent of all businesses fail within eighteen months of their launch.[3] Examples abound of failed launches: for example, Coca Cola's New Coke, Ford's Edsel, Apple's Newton, Microsoft's Webtv, or Sony's Betamax. Then there is Webvan, Pets.com, and Solyndra. While investors lost millions of dollars in each failure, the difference is the first group's launches were from creditworthy, 'going concerns' with name recognition and brand value that survived, while the latter were start-ups that no longer exist.[4]

HSR in California is neither a 'going concern' nor a 'disruptive' technology. It's an unknown start-up with its brand value indubitably tied to Amtrak's poor passenger service and annual operating subsidies.

Background – During the five years of the IOS-Only Phase, the Authority only offers high-speed rail between San Fernando and Merced to the present market of Amtrak riders, airline passengers or auto drivers. Travel on the remainder of the route is by conventional rail or bus. That combination must be competitive with existing travel times and prices. But is it? Ridership forecasts tell the Authority's side of the story.

The 2014 Draft Plan says; *"The Medium outcome for the ridership forecast shows an overall ridership greater than 10 million trips in 2025 . ."*[5] In 2022, when the IOS-Only Phase begins and is supposedly profitable, ridership is forecasted to be about 4.6 Million.[6] The Authority's 2014 Plan is silent on IOS ridership before 2025, but assumes ridership explodes when IOS-Only operations start.[7]

Figure 1 Forecasted Ridership During IOS-Only Phase And Years 1 and 2 Of B-to-B Operations			
IOS-B2B Ops Year	**Year**	**Central Valley Ridership 2013-2030**	**Sections Available for Passengers**
	2013 actual [8]	1.2 million	Central Valley
	2017 est.	1.6 million	growth at 6.6% pa 2013-2021
	2021 est.	2.0 million	year before IOS begins
1	2022 est.	4.6 million	**IOS-Only – CHSRA estimate**
2	2023 est.	6.3 million	IOS-Only – CHSRA estimate
3	2024 est.	8.1 million	IOS-Only – CHSRA estimate
4	2025 est.	10.4 million [9]	IOS-Only – CHSRA estimate
5	2026 est.	12.3 million	IOS-Only – CHSRA estimate
6	2027 est.	14.6 million	**B-to-B becomes operational**
7	2028 est.	17.4 million	B-to-B
8	2029 est.	20.6 million [10]	**Phase 1 becomes operational**
9	2030 est.	24.4 million [11]	Phase 1

Figure 1 shows the growth rate in Central Valley Amtrak riders of 6.6% between 2012 and 2013. [12] Using that record growth rate indicates that in 2021, before the IOS-Only Phase begins, Central Valley ridership would be 2.03 million. According to the Authority, the following year (2022), when the IOS-Only Phase begins, ridership is to more than double to 4.6 million. Figure 1 also shows the Authority expects ridership to increase nearly three-fold during the five years of the IOS-Only Phase. That 28% per year growth would be most enviable.

A Comparative Analyses of Would-Be Travelers' Options In the IOS-Only Phase –To verify whether HSR-travel would be an attractive travel option requires analyzing the IOS-Only Phase's advantages for passengers between its 2022 opening and when the Bay to Basin is operational in 2027.[13]

Material for that analysis is embedded in a two types of practical examples showing would-be travelers' choices. The first type is of passengers from suburbs within 15 miles of the proposed south and northern terminus for Phase 1.[14] The potential traveler would be going from Norwalk in the LA Basin to Berkeley in the SF Bay Area.[15]. The second type is central city to central city. The examples are Los Angeles to San Jose, and Los Angeles to San Francisco. As a recent study shows, both Californian metropolises are business centers, which like Europe, will be the arrival or destination of most HSR passengers.[16]

Since HSR service' during the IOS-Only Phase starts at San Fernando, the examples start in the LA Basin, but the sequence could be reversed. The travel time and costs of reaching these destinations are analyzed using three different ways of transit during the IOS-Only Phase – by driving, by way of the CHSRA's offering(s), or by using the airlines as the principal 'distance killer'

While Figure 1's ridership figures look great on paper, doubling the first year and growing three fold in five years – the devil is in the details of what choices would-be passengers are likely to make.

Travel times are the first devil. Although challenged by their Peer Review Group, the Authority's 2014 Draft Plan still clings to promise to voters of a 2hour 40minute ride between the SF and LA downtowns.[17] That Plan now 'fudges' travel speed downward from the top 220mph operating speeds promised voters, to operate, "*. . . at speeds capable of exceeding 200 miles per hour.*"[18] Even an average of 200mph is still unrealistic given that data from decades of operations in Europe and Japan confirm that above about 186mph, power costs surge, maintenance costs increase, deceleration times increase and time advantages of going faster diminish. The IUR/UIC Director of HSR presented Figure 2 to the US Congress in 2007, and Figure 3 analyzes the realities of station-to-station times and average speeds on high-speed rail routes from that presentation.

What jumps out from Figure 3, an analysis of the UIC/IUR presentation's figures in Figure 2, is that the non-stop Paris-Brussels 'Thalys' is the shortest route with the fastest average speed.[19] Stops take time and also require deceleration and acceleration time.[20] On average, existing high-speed routes average a little over 100mph between destinations.

Given the evidence, it seems the Authority is making a very generous assumption that their train will travel the 300 miles between San Fernando and Madera (Merced) in 123-132 minutes; an average speed of 136-146mph.[21] However for purposes of this example, the Authority's average trip time during the IOS-Only Phase (128 minutes) is used to calculate total travel time.[22]

Counting the travel times in minutes – Study Figure 4's options for a potential HSR passenger during the five years of IOS-Only. Compare the elapsed travel-time results of principally using HSR, an auto, bus or airplanes to overcome 'the friction of distance' between the state's largest metropolises.

Travel times using the high-speed train during the IOS-Only Period – Figure 4 shows the HSR-based journey between the two metropolitan centers requires at least three separate tickets and four connections.[23] It also assumes the best of all possible conditions, i.e. connection times are not underestimated, all transport modes arrive and depart on time, no HSR security searches are required, estimated travel times are accurate, and each connection is made on time: that is to say the journey proceeds with no waiting or "idle time" before the next scheduled departure (This is a very optimistic assumption as some of these Metrolink and Caltrain departures are once per half hour, or once per hour, especially on off-peak hours and weekends) .

Adding together the increments, if the Norwalk-originated traveler only wished to go downtown San Francisco, he or she must go via the SF Peninsula on Caltrain from San Jose. That journey would be at least eight hours.[24] Using HSR, travel time from Norwalk to Berkeley requires at least seven hours if taking the bus between Merced and Oakland. The Norwalk-Berkeley journey, using Caltrain on the SF Peninsula, and then BART, would take at least eight and a half hours.

Figure 2 [25]

Distances And Station-To-Station Travel Times On Nine HSR Routes

(Source: Director, HSR – International Union Of Railways/Union Internationale des Chemins des Fer)

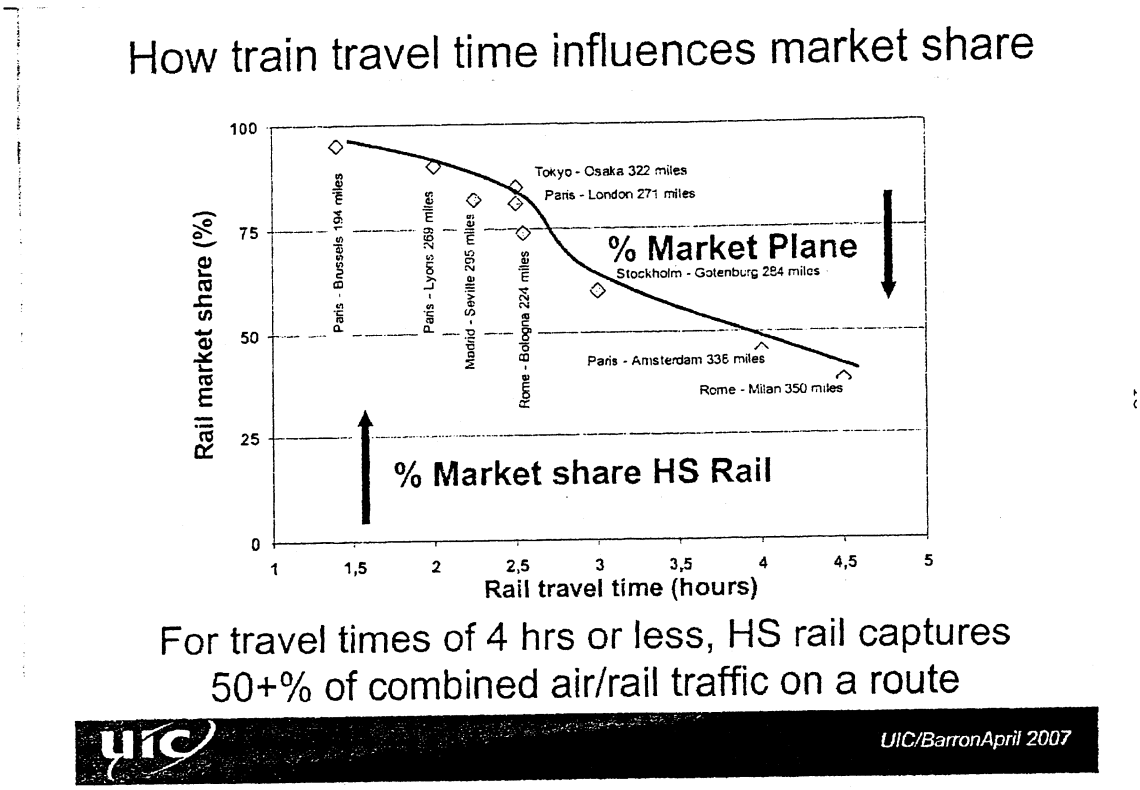

Figure 3 – Analysis of Figure 2

Figure 3 Analysis of IUR/UIC Station-To-Station Times And Average Speeds			
Origin and Destination of Nine HSR Routes	– Station-to-Station –		
	Distance (miles)	Travel Time	Average Speed
Paris-Brussels	194	1hr 22min	145mph
Paris-Lyon	269	1hr 56min	136mph
Madrid-Seville	295	2hrs 20min	74mph
Rome-Bologna	224	2. 5hrs	54mph
Tokyo-Osaka	322	2.5hrs	129mph
Paris-London	271	2.5hrs	108mph
Stockholm-Gotenburg	284	3hrs	95mph
Paris-Amsterdam	338	4hrs	85mph
Rome-Milan	350	4hrs 10 min	85mph
Average station to station speed			**101mph**

Figure 4
Estimated One-Way Elapsed Travel Times of Travel Options During the IOS-Only Phase (2022 - 2026)
(Calculations in minutes: totals converted to hours and minutes)

Point-to-Point Increments	Transit Mode	Travel Times of CHSRA's Offerings [26]			Travel Time By Auto		Travel Time Using An Airplane		
		Norwalk to Berkeley – Two Options –		Central LA to San Jose	Norwalk to Berkeley	Central LA to San Jose	Norwalk to Berkeley	Central LA to San Jose	Central LA to Market St. SF
		Via San Francisco	Via Oakland [27]	Via Union Station	Owner - operated auto	Driver lives in Central or South LA [28]	Via LGB to OAK to Berkeley [29]	LAX to SJC then to San Jose center	LAX-SFO to Market Street SF [30]
Board + time to departure point [31]		15	15	15			25	35	35
LGB/LAX Security & Boarding							45	45	45
Norwalk-LA Union Station	Metrolink [32]	30	30						
Connection		5	5	5					
LA Union - San Fernando	CHSRA Bus [33]	37	37	37					
Ticketing & Connection		15	15	15					
San Fernando-Merced	HSR [34]	128	128	128					
Connection Only		5	5	5					
Merced-Oakland	CHSRA Bus		160 [35]						
Merced-San Jose	CHSRA Bus	150 [36]		150					
Flying Time LGB-OAK, LAX-SJC, LAX-SFO [37]							59	50	56
Ticketing & Connection		15	15				25	15	15
San Jose To Millbrae	Caltrain	40							
Ticketing & Connection		15							
Millbrae-Berkeley	BART	62							
SFO to SF	BART								33
Oakland-Berkeley	BART [38]		16				23		
SJC-San Jose	#10+VTA							35 [39]	
Minimum Total Travel Time		**8hrs. 37min**	**7hrs. 6min**	**5hrs 55 min**	**6hrs. 13min [40]**	**5hrs. 20min [41]**	**2hrs. 57min**	**3hrs. 0min**	**3hrs. 4min**

Highway times during the IOS-Only Phase – Of the roughly 100 million annual passenger trips between Southern and Northern California, about nine in ten are made by autos, trucks or busses. Figure 4 shows the driving time between the downtowns of Los Angeles and San Francisco is around six hours, while taking the Megabus is 7 hours and 40 minutes. [42] Driving from Norwalk to Berkeley takes six hours and thirteen minutes: Norwalk to San Jose is five hours and twenty minutes.

Travel times using airplanes during the IOS-Only Phase – In every case on Figure 4, travelers looking to 'cut the time' use the airlines as their 'distance killer' between the LA Basin and the SF Bay Area arrive at either their central city or inner suburb destinations in about three hours.

Conclusions on relative travel times during the IOS-Only Phase – Figure 4 shows that, during the five years of the IOS-Only Phase, potential HSR passengers gain no travel time advantage over either driving times or air travel's times. Elapsed times of combined flights and ground connections show that airline passengers arrive at their destinations in about half the time as HSR users, and as little as a third the time as CHSRA's offerings.

Similarly, driving during the IOS-Only Phase has a clear time advantage over HSR-based travel. Between Norwalk and Berkeley, travelers arrive fifty-three minutes quicker than those using the CHSRA Bus from Merced to Oakland, and two hours and twenty minutes quicker than if the traveler is routed through San Jose and San Francisco. Between the centers of Los Angeles and San Francisco, the driver arrives a half hour earlier and doesn't spend more time renting a car. Even the Megabus gets between Los Angeles and San Francisco faster.

Why would any Californian choose to ride use the HSR offering to get between the two regions when they can get there faster by auto and a lot faster using the airplanes during the IOS-Only Phase?

Relative travel costs are the second devil during the IOS-Only Phase – Would the five years of CHSRA's IOS-Only offerings attract the budget-minded auto or airline traveler because of lower point-to-point costs? Figure 5 has a lot to say about that question.

The travel costs of using the high-speed train during the IOS-Only Period – As Figure 5 shows, choosing the CHSRA's offerings during the IOS-Only Phase to get from Norwalk to Berkeley (or vice versa) fall a few dollars on either side of $100. Getting from Central City Los Angeles to San Jose would be $93.25. The onward trip to from San Jose to downtown San Francisco on Caltrain would add another $9.00.[43]

The costs of going by highway during the IOS-Only Phase – Relative to worldwide costs, driving in California is cheap.[44] During the IOS-Only Phase an auto driver, can drive the 403 miles between Berkeley and Norwalk for under $61 in gas (a total operating cost of under $100) and can add family and friends to the family auto for almost no additional cost, something very useful to have in low density California.[45] Travelers could also take the Megabus between the city centers for $23-$34.[46]

But the Authority attempts to paint a very different picture of the costs of traveling by auto. The Authority's approach is highly biased against auto use since its formula adds each passenger's costs equal to that of the driver's costs. This approach purposely ignores the discipline of marginal cost economics, artificially inflates the costs of driving and distorts reality in favor of taking the HSR train. For example, using the Authority's approach and their 2014 range of per mile operating costs; in 2022 a family of four's one-way driving costs for the 340 miles between Los Angeles and San Jose would range between $300 and $408 – and for the 380 miles between the centers of San Francisco and Los Angeles would range between $334 and $456.[47] Any driver knows these results are absurd, but the Authority uses that self-promoting conceit to justify using the HSR train during the IOS-Only Phase and thereafter.

The costs of using airplanes during the IOS-Only Phase – As pointed out in a 2012 study on worldwide HSR systems, the profiles of HSR passengers show they are either affluent or reimbursed for their travel expenses.[48] As Figure 5 shows, using the airlines, a Berkeley to Norwalk journey costs about $144. Getting from downtown Los Angeles to San Jose is about $126, to downtown San Francisco about $133.

***Caveat Fidelis* (Believer Beware) of CHSRA's airfares** – The costs of traveling by air between the two metropolitan areas will always be more expensive than using the HSR option because CHSRA set average airfares between the two cities as their benchmark and their HSR fares 17% cheaper. That approach is by definition tautological – 'heads I win, tails you lose.' This simplistic approach to HSR fares is an excellent marketing tool, but unrealistic. It also creates all sorts of distortions in the Authority's own pricing schemes whereby a third of all fares quoted by CHSRA must be held to no more than 83% of the average airline fares ($86).[49]

Figure 5
Estimated One-Way Costs For Travel Options During the IOS-Only Phase (2022 - 2026)

Point-to-Point Increments	Transit Mode	Elapsed Times of CHSRA's Offerings			Travel By Auto		Travel Time Using An Airplane		
		Norwalk to Berkeley – Two Options –		Central LA to San Jose	Norwalk to Berkeley	Central LA to San Jose	Norwalk to Berkeley	Central LA to San Jose	Central LA to Market St. SF
		Via San Francisco	Via Oakland [50]	Via Union Station	Owner - operated auto[51]	Driver lives in Central or South LA [52]	Via LGB to OAK to Berkeley	LAX to SJC then to San Jose center	LAX-SFO to Market St. SF [53]
Norwalk - LA Union	Metrolink [54]	$7.25	$7.25	$0			$37.00 [55]	$20.00[56]	$20.00
LA Union Station - San Fernando	CHSRA Bus [57]								
San Fernando - Merced	HSR	$86	$86	$86					
Merced - Oakland	CHSRA Bus								
Merced - San Jose	CHSRA Bus								
Airline Fares LGB-OAK, LAX-SJC, and LAX-SFO [58]							$104	$104	$104
San Jose - Millbrae	Caltrain [59]	$7.00							
Millbrae - Berkeley	BART [60]	$5.10							
SFO - SF	BART								$8.65
Oakland - Berkeley	BART		1.85				$2.50		
SJC - San Jose	#10+VTA							$3.00	
Minimum Total Costs		**$106.15**	**$97.15**	**$93.25**	**$60.66 to $98.25**	**$52.64 to $85.25**	**$143.50**	**$125.85**	**$132.65**

Conclusions on relative costs of travel – CHSRA has accepted that its fares can't compete in California on a cost basis with auto operating costs, so plans to compete with airline fares: *"Fare levels are . . somewhat below current airfares in the longer distance travel markets and well above the out-of-pocket cost of driving in the shorter distance travel markets."* [61] When the costs of driving will only be 70% of the costs of getting between the two central cities, or three-fifths the costs of getting between Norwalk and Berkeley, it will be very hard to pry auto drivers from their seats based on the driver's operating costs relative to the

high-speed rail option. And when a Megabus passenger can get between San Francisco and Los Angeles for a third to half the CHSRA's offering, it will be a difficult 'sell' to budget travelers. During the IOS-Only Phase, CHSRA's ability to deflect travelers from highway travel (nine-tenths of the market) to their offerings is nil, especially if there are also passengers in the auto.

The Berkeley to Norwalk air travel option is about a third to half more expensive than the two IOS-Only offerings if using HSR. The five airlines serving the intra-state market will deeply discount or cross-subsidize fares that will force down high-speed rail's fares.[62] To get from downtown Los Angeles to downtown San Jose using airplanes will be nearly half (46%) as much more. Using the airplane as a 'distance killer' will cause the San Francisco to Los Angeles traveler to pay about a quarter more than if he or she had used the CHSRA's offering during the IOS-Only Phase. CHSRA's offering may attract some air travelers, who like most riders in Europe's shorter distance markets, are either affluent or reimbursed for their travel expenses: but how many? [63]

In 2007, at the peak of the SF Bay Area – Southern California air travel, there were about 10 million journeys between the six Southern California airports and the three SF Bay Airports.[64] After that air travel declined 17%.[65] While there is no way to tell how many airline passengers there will be when the IOS-Only Phase begins, 10 million seems possible. However, CHSRA's 2026 ridership forecast for their train of 12.3 million – 28% growth per year and a three-fold increase during the IOS-Only Phase – seems unrealistic, particularly if the Authority assumes many of them will be former airline passengers – as CHSRA must in order to meet their forecasts in Figure 1.

The third devilish detail is the self-inflicted bias of per mile charges in the Central Valley and 'Bookends' – In 2013, the twelve trains of the Central Valley's San Joaquin Amtrak made that line Amtrak's fifth busiest.[66] North and southbound boardings were 1.57 Million in 2013.[67]

The Authority will eliminate subsidies to riders on the discontinued Central Valley's San Joaquin Amtrak line on HSR (or HST) when IOS-Only Phase's rail service is in place in 2022 – effectively a forced fare increase.[68] As a recent report on post-subsidized rail fares points out, if a passenger wants to make a short trip on HSR during the IOS-Only Phase, they will face ticket prices per mile up to three to four times per mile of what riders between the metropolitan centers will pay.[69]

This is significant, because in the 2014 Draft Plan, the Authority claims no bias towards short or long haul charges per mile in the fare structure: *"In developing these forecasts, the Authority's consultants have not assumed any revenue optimization that would result from adjusting fares to optimize yields on specific markets such as short distance and commuter trips either in the San Francisco Bay Area and/or in the Los Angeles Basin."* [70] Yet the opposite is true: local (intraregional) passengers who might consider a HSR ride within the Central Valley, the San Francisco Bay Area and the Los Angeles Basin will pay considerably more per mile than they would on Amtrak, Metrolink or Caltrain. [71]

The February 2014 Draft Business Plan has exactly the same fare bias as the 2012 Plan, keeping downtown SF-to-downtown-LA fares low per mile (23¢) while a HSR ride in the Valley or the 'Bookends' will cost 27¢ to $2.08 per mile. [72] This is particularly injurious to intra-Central Valley riders who seemingly have no option but to pay 38¢-71¢ per mile, an average rise of 38% above what they pay now on the San Joaquin line. But they do have other options to travel inside the Valley and to Los Angeles by driving or carpools.

Inside the Valley, HSR will always be the travel time winner. A driver can cover the 164 miles between Valley's northern and southern terminuses (Merced and Bakersfield) in 2 hours and 36 minutes: the Amtrak ride takes three quarters of an hour more.[73] HSR's predicted travel times vary between an hour and an hour and fifteen minutes.[74] CHSRA's quicker, non-stop trains will fly through Fresno, Hanford, Visalia, and other Valley towns at 164mph: the slower, two stop trains will average 131mph. No contest.

Between Merced and Los Angeles the HSR train also wins the travel time race. Today's Amtrak train and bus journey takes five and a half hours.[75] The driving time is an hour less – 4 hours and 26 minutes. That's still an hour and a half longer than taking the high-speed train and the Metrolink connection. [76]

But does the HSR train win the price competition? Between Merced and Bakersfield the Amtrak ticket is $48 (Flexible fare is $26).[77] The HSR ride would be 35% more ($65).[78] In the Valley, Amtrak passengers' today pay about 54% of the San Joaquin Line's operating costs: i.e. their tickets are subsidized 46%.[79] Many if not most of today's 1.57 million (Figure 1) Amtrak riders will find alternatives to paying the increased HSR rail prices since Amtrak travelers aren't riding Amtrak for speed. They like the to-be-discontinued subsidized fares.

Driving the 280 miles between Merced and Los Angeles is cheaper than the HSR + Metrolink ride offered in the IOS and B2B phases. The gasoline cost of driving between the two is $42: the full costs of driving would be about $70. [80] The CHSRA fare between the two is $86.[81] When families, friends or employers consider that the driver could take three to four passengers between Merced and Los Angeles for $70, driving becomes the 'slam dunk' option.

How does the Authority expect attract Central Valley travelers to join them, or 'Bookends' commuters to abandon their subsidized fares when driving is cheaper and HSR fares will be so much higher than today's subsidized fares?

The fourth, but still unquantifiable, devil emerges from the 'HSR-unfriendly' urban structure of California's two metropolises. A recent scholarly paper pointed out the fragility of assuming the urban core of San Francisco and Los Angeles would be able to supply HSR passengers like Barcelona and Madrid.[82] The authors point out that; *"HSR has proved to work best in populous, dense, and mono-centric urban centers, such as Paris and Tokyo"* [83] Neither the Bay Area nor Los Angeles can be classified at having densely populated urban centers. Being spread out makes it difficult for public

transit development, when the " *. . radius of a catchment area of transit stations,* [should] *be less than 400 meters."* and HSR for inter-urban trips should have " *. . a catchment area of 1.5 – 5 kilometers . ."* [i.e. 0.9-3 miles]. [84] That poses a very large challenge for travelers to get to stations served by HSR.

Nor are LA and SF mono-centric: their employment centers are scattered around their metropolitan areas, stymieing the development of transit to feed passengers to high-speed train stations. In fact *"Los Angeles is the prime example of a polycentric city"* where urban analysts, *"identified 36 employment center in 1990 and 48 in 2000."* and *"The Bay Area is only slightly less polycentric . . with 22 employment centers."* [85]

Reinforcing the difficulty of attracting passengers from polycentric cities, the authors say, *". . population centers do not coincide with employment centers or the areas with relatively high incomes in the California cities."* [86] They also say *"Business trips usually take up a significant proportion of HSR trips. Many business trips originate or terminate at office district destinations where employment concentrates."*[87] Much has been made of 200-350 mile high-speed rail journeys in Europe taking market share from air travel, such as the Madrid-Barcelona AVE train.[88] But as pointed out in a 2012 book, those two-to-four hour trips are on high-speed rail systems (HSR) that not only don't make profits, but most passengers are reimbursed for their ride.[89] Without either the wealthy downtowns, or easy access to HSR by reimbursed travelers, attracting the numbers of riders shown in Figure 1 becomes even more questionable.

California's high-income areas' populations, needed to pay non-subsidized fares, are not in the central cities. And while the paper on urban structure and density's conclusions are as yet unquantifiable, the findings should give pause to optimistic forecasting of ridership and revenue for HSR in California.

Conclusions on the promise of high-speed rail at the conclusion of the IOS-Only Phase – The Draft 2014 Business Plan says that the IOS will demonstrate *"Ridership and revenues sufficient to attract private capital for expansion."* [90] This will come will come because the project moves " *. . to complex long-term concession agreements with under- lying private capital investment."* [91] In short, private investors are to raise at-risk funds to buy a concession that will produce enough revenue to both operate the IOS trains profitably and simultaneously invest as much as $20 billion to build the Bay to Basin (B2B) infrastructure.[92] Since all of this is to be done without the State providing an operating subsidy as prohibited by AB3034, this is the definition of capital-at risk.

Potential private investors will ask why should they invest if there are no time or cost advantages for the roughly ninety million auto travelers during the IOS-Only Phase to defect to the CHSRA's offerings. They will also ask whether air travelers – many, if not most, of who are on business trips between the metropolises – would choose a round-trip of 10-17 hours versus six hours door-to-door, especially since their costs are likely reimbursed.

They will see that, unlike the Golden Gate Bridge's use of revenue bonds, there has never been at-risk money put into the project – not since its inception and not in the 15 years (2012-2026) since the Legislature agreed to match federal funds. They will know that the Authority's own consultants told them in 2008 and 2009 that there would be no private money in the project unless there was an illegal subsidy – euphemistically called a 'revenue guarantee.'[93]. But most importantly they will see the evidence presented here that challenges the Authority's ridership claims in Figure 1 and ask themselves whether those forecasts are realistic enough to risk their personal savings and their client's savings to pay billions of dollars for a concession.

The Bay-to Basin Phase won't improve demand for the Authority's offerings much either – When and IF the CHSRA finds yet another $20 Billion – a total of $51 Billion – to build onward north and west of Fresno to San Jose, the Bay to Basin Phase of the program will be completed.[94] CHSRA forecasts it will have the San Fernando to San Jose portion of their system ready by 2027.

Figure 6
Estimated One-Way Elapsed Travel Times of Travel Options During the Bay to Basin Phase (2022 - 2026)
(Calculations in minutes: totals converted to hours and minutes)

Point-to-Point Increments	Transit Mode	Travel Times of CHSRA's Offerings [95]			Travel Time By Auto		Travel Time Using An Airplane		
		Norwalk to Berkeley – Two Options –		Central LA to San Jose	Norwalk to Berkeley	Central LA to San Jose	Norwalk to Berkeley	Central LA to San Jose	Central LA to Market St. SF
		Via San Francisco	Via Oakland [96]	Via Union Station	Owner - operated auto	Driver lives in Central or South LA [97]	Via LGB to OAK to Berkeley [98]	LAX to SJC then to San Jose center	LAX-SFO to Market Street SF [99]
Board + time to departure point [100]		15	15	15			25	35	35
LGB/LAX Security & Boarding							45	45	45
Norwalk-LA Union Station	Metrolink [101]	30	30						
Connection		5	5	5					
LA Union - San Fernando	CHSRA Bus [102]	37	37	37					
Ticketing & Connection		15	15	15					
San Fernando – San Jose	HSR	154		154					
San Fernando-Merced	HSR [103]		128						
Connection Only			5						
Merced-Oakland	CHSRA Bus		160 [104]						
Flying Time LGB-OAK, LAX-SJC, LAX-SFO [105]							59	50	56
Ticketing & Connection		15	15				25	15	15
San Jose To Millbrae	Caltrain	40							
Ticketing & Connection		15							
Millbrae-Berkeley	BART	62							
SFO to SF	BART								33
Oakland-Berkeley	BART [106]		16				23		
SJC-San Jose	#10+VTA							35 [107]	
Minimum Total Travel Time		**6hrs. 28min**	**7hrs. 6min**	**3hrs 46 min**	**6hrs. 13min** [108]	**5hrs. 20min** [109]	**2hrs. 57min**	**3hrs. 0min**	**3hrs. 4min**

Will would-be travelers use the B2B? The evidence is in Figure 6, where costs were found to remain the same as during the IOS-Only Phase, and only HSR-based travel times change.

The B2B's only significance to the traveler is the HSR service between Fresno and San Jose. The Authority says that the total travel time of the CHSRA's offering between San Fernando and San Jose ranges from 151-157 minutes, an average of 154 minutes.[110] Given the exegesis of climbing and descending Pacheco Pass with HSR's constrained grades, and maintaining an average speed of about 150mph, that would be remarkable.

That increased speed of getting from the Central Valley to San Jose seems to the sole benefit of spending another $20 Billion.[111] If true, that speed would bring the advantage that during the Bay to Basin Phase (B2B), HSR travelers between Central Los Angeles to San Jose arrive in 3hours and 51minutes, cutting a quarter of the time off a auto journey and a third off the travel time by HSR during the IOS-Only Phase. That may be attractive to some auto drivers without passengers, but likely only so if they do not need to rent a car at their destination. Otherwise, all airline-based itineraries and their connections to the Bay Area are still quicker.

Conclusions at the end of the IOS-Only and Bay to Basin phases – Given the paucity of either travel time or cost advantages, where are more than 17 million forecasted riders by the end of the B2B Phase – a more than four fold increase in seven years – supposed come from? [112]

Time-sensitive business passengers for those IOS and B2B years certainly won't abandon the airlines to spend more time getting between California's metropolitan areas. Even at the close of the B2B phase, air-based travel is still faster to any of the destinations than HSR-based travel – about three hours or less compared to almost four to six hours for the best HSR-based options. The business riders, i.e. the less-price sensitive market segment, won't find comfort in a lower-than-airfare-based ride from CHSRA's offering in either phase since most of them are reimbursed for their travel expenses. Time matters to them, particularly if it is 'face time' with customers or time at home.

Some travelers will want the experience of a combination of transit rail, a HSR, buses, and commuter rail to get between city centers, or nearer their home base. But the inconvenience alone of so many connections (up to six) to get to or from Disneyland or Berkeley will put off many, if not most families traveling with children to even the B2B's offerings; particularly if they know that California's urban sprawl demands a rental car. Similarly, families will ask what's the HSR advantage through the B2B phase when they can drive all three or four of them round-trip for under $200, versus about $700 for transit and HSR train tickets? [113] That $500 difference is money in their pockets.

If reimbursed business travelers are unlikely to use the HSR system in its first seven years, and families with children are also unlikely HSR travelers, the Authority's ridership (and therefore revenue) figures are suspect. One could conclude that the main purpose of the HSR system may be to serve reimbursed government employees. Even if that were the purpose, the system would likely serve only less than four million riders per year; far below the 17 million forecasted for end of the B2B Phase in 2028.[114]

On the face of it, the Authority's offerings through the seven years of IOS and B2B are unattractive to both those not being reimbursed for their trip and those dependent on the time-efficiencies of California's airline-based travel. That makes the Authority's ridership projections – 4.6 million in 2022 and 17.4 million in 2028 – highly suspect.

The promise of someday having high-speed service operating between the metropolitan centers is enticing. But in practical terms, for their combined seven-year history the IOS-Only and the B2B phases have little to offer the middle income or the budget minded, the wealthy or the reimbursed traveler. People don't choose inconvenience and higher costs today for a promise of a better tomorrow. They have and will have better travel time or price options for travel inside California by 2022 and more in 2029. That is the definition of progress.

Un-kept promises are the Authority's hallmark – Set aside for a moment the hosts of unfulfilled promises the Authority has made about the costs, start times and other aspects of California's high-speed rail system.[115] Now the Authority's 2014 Business Plan promises to have the at least 151 miles of high-speed capability between Fresno and San Jose operational in 2027 – seven years after opening the IOS.[116] It also promised that two years later (2029) the truncated promise to voters, fictionally portrayed by the Authority as 2008's Phase 1, would be operational.[117] In 2008 the Authority told would-be travelers they could get between the downtowns of San Francisco and Los Angeles for about $50 and be there in two hours and forty minutes. It also said the entire Phase 1 would cost about $33 Billion, and by 2011 the Authority said the entire Phase 1 would be operational by 2033 (now postponed).[118] During the IOS and B2B phases, the train was also supposed to help improve the environment, but won't.[119] In 2008 the Authority and the Legislature promised there was no need for an operating subsidy, yet that too has been rescinded. [120] Promises were made: few were kept.

The Authority's ridership and revenue forecasts for the IOS or B2B phases have not, and will not, convince private, at-risk capital to invest – Anyone seeking private capital knows that the risks of a new service are very high: the principal one being the presence of competitors, i.e. the 'survivors' serving the same market. Investors know that too. If customers already have other choices, such as the airlines or inexpensive auto travel for as long as seven years, a 'second chance' would be very rare. Even if a HSR launch happens, competitors will cut prices or offer enhanced services – or both. Then there are 'disruptive technologies' – think of seven years ago (2007) when there was no Tesla, Facebook or Twitter, no self-driving car, no ride sharing or other 'disruptive' transportation or communication technologies. In less than a decade these and other offerings have changed way we communicate. By 2022 or 2029 more 'disruptive' changes are likely; but the Authority's HSR offerings would be still be dependent on a single route in a fixed rail system.

No private capital has been forthcoming in the nearly two decades the project has been publically discussed. There's a good reason for that; and this analysis has shown why. Neither the IOS, nor the B2B phase offers many travelers the clear time or cost advantages that might produce enough revenue to attract

private, at-risk capital to pay back its shareholders and invest in further extensions of HSR service. Nor is private, at-risk capital likely to be forthcoming.

The entire HSR project's rationale: profitable, environment-friendly, more rapid and cheaper travel between San Francisco and Los Angeles' downtowns, becomes unhinged by starting high-speed rail's role in transporting Californians with the IOS-Only Phase as the only offering, and only adding a quicker ride to San Jose in the next, B2B, phase. Launching high-speed rail into the headwinds of market-tested airline operations and relatively very cheap auto travel – both being competitive forces the Authority cannot influence – without unassailable costs and/or travel time advantages is a receipt for rapid financial failure.

END NOTES TO 'IF YOU BUILD IT THEY WILL NOT COME'

[1] On the subject of a private operator, Exhibit 1.1, page 16 of the California High-Speed Rail Draft 2014 Business Plan says the IOS will have a private sector operator and will produce revenues sufficient to attract private capital. On the subject of not needing an operating subsidy, the Draft 2014 Business Plan, Exhibit 6.3 PSF 52, broaches the subject of a $50M operating subsidy during the ramp-up period. However, the requirements of AB3034, Section 2704.08 (c) (2) (J) and Section 2704.08 (d) (2) (D) are the train cannot have an operating subsidy. No mention is made of allowing an operating subsidy during the ramp-up period, and this requirement assumes no return on the capital grants from Federal or State of California sources. On the subject of travel times between the downtowns of San Francisco and Los Angeles, the California High-Speed Rail Draft 2014 Business Plan Ridership and Revenue Forecasting—Draft Technical Memorandum, Appendix A, PDF 70 shows that the fastest trains between the downtowns of SF and LA when the Phase 1 is eventually finished will require 180 minutes, which is three hours – not the 2 hours 40 minutes promised voters in 2008.

[2] AB3034 Section 9, Article 2 (5) says; " *Revenues of the authority, generated by operations of the high-speed train system above and beyond operating and maintenance costs and financing obligations, including, but not limited to, support of revenue bonds, as determined by the authority, shall be used for construction, expansion, improvement, replacement, and rehabilitation of the high-speed train system.*

[3] Eric T. Wagner, "Five Reasons 8 out of 10 Businesses Fail" Forbes, September 12, 2013.

[4] By July 2001, after just two years in business, Webvan had spent just about all of the $1.2 billion put up by investors. See: http://www.venturenavigator.co.uk/content/153. Founded in 1998, and backed by Amazon.com, Pets.com raised $82.5 million in a February 2000 initial public offering. Within 18 months, nearly all was lost. See: http://news.cnet.com/2100-1017-248230.html. Solyndra received a $536 million U.S. Energy Department loan guarantee before going bankrupt. See: http://en.wikipedia.org/wiki/Solyndra

[5] See: California High-Speed Rail Draft 2014 Business Plan, PDF 42

[6] See: California High-Speed Rail Draft 2014 Business Plan Ridership and Revenue Forecasting—Draft Technical Memorandum, Figure 3.1 [PDF 25]. Estimates for 2022 and onwards are from Exhibit 4.2 [PDF 43] of the 2014 Draft Business Plan.

[7] Exhibit 4.1 [PDF 42] of the 2014 Draft Plan shows that by 2030, a year after the Bay-to-Basin is operational (as shown in Figure 3.2 PDF 26 of Cambridge Systematics' Technical Memorandum, Ridership and Revenue Forecasting), the Medium Ridership estimate on the IOS will be 24.4 million.

[8] For 2013 ridership on the San Joaquin line, see; Tim Sheehan, Fresno Bee, October 14, 2013 "Amtrak's San Joaquin trains set ridership record. Found at http://www.fresnobee.com/2013/10/14/3553276/amtraks-san-joaquin-trains-set.html

[9] Estimates for 2022-2024 are from Exhibit 4.2 [PDF 43] of the Draft 2014 Business Plan

[10] See: California High-Speed Rail Draft 2014 Business Plan Ridership and Revenue Forecasting—Draft Technical Memorandum, PDF 24 and PDF 25

[11] See Exhibit 4.1 [PDF 42] of the Draft Plan

[12] Amtrak San Joaquin ridership 2012-2013 growth was 6.6%. The compound growth rate of 6.6% was used to forecast growth 2013-2021.

[13] See: California High-Speed Rail Draft 2014 Business Plan Ridership Exhibit 4.1 [PDF 42] and the Revenue Forecasting—Draft Technical Memorandum, PDF 24 and PDF 25.

[14] The California High-Speed Rail Draft 2014 Business Plan Ridership and the Revenue Forecasting; Draft Technical Memorandum, Figure 3.3 [PDF 27] shows that Phase 1 HSR Service terminates at LA Union Station, where riders connect to Metrolink, and in the north in San Francisco in Phase 1. Terminating at LA Union Station violates 2008's promise that had HSR serving Anaheim and subsequent Business Plans through 2011.

[15] Norwalk and Berkeley, both considered inner radius suburbs of their central city, are roughly equal distances (15 miles) from Los Angeles Union Station and the SF TransBay Center respectively. A 2004 study suggests the market catchment area of Amtrak to be a 25 miles radius. See: T.R. Leinbach, City Interactions: The Dynamics of Passenger and Freight Flows, in Hansen & Giuliano; *The Geography of Urban Transportation* (pp. 30-58). NY: Guilford Press.

[16] C. Zhong, G. Bel, M. Warner; High-Speed Rail Accessibility: What Can California Learn from Spain; 2013

[17] On PDF 98 of the 2014 Draft Business Plan, the August 14, 2013 Peer Review Report says; " . . *it is unlikely that trains would actually be scheduled to run during normal hours of operation within the 30 minute or 2 hours 40 minute limits at the completion of the Phase I Blended system."*
[18] See: California High-Speed Rail Draft 2014 Business Plan, page 3 [PDF 3]
[19] The non-stop Thalys, departing Paris at 8:25am, arrives in Brussels at 9:47am, a journey of 1 hour 22 minutes. The economy ticket price is US60¢ per mile. Found at: http://www.raileurope.com/index.html
[20] This calculation allows 5 minutes for deceleration and connection at two stations. See: http://www.japan-guide.com/e/e2018.html Tokyo-Osaka, a longer route, with an average of 129mph would increase its average speed only to 138mph if deceleration and acceleration for the Nagoya and Kyoto stops were not counted.
[21] See: California High-Speed Rail Draft 2014 Business Plan Ridership and Revenue Forecasting—Draft Technical Memorandum, Appendix A [PDF 68]. The center of the page table shows 'HSR Patterns' Merced to San Fernando (Sylmar) Run Times to range from 123 to 132 minutes, which over the 300 miles of the IOS equates to speeds of 133mph to 150mph.
[22] In the CHSRA 2014 Draft Plan's Ridership and Revenue Technical Memorandum [PDF 68], it also says that a transfer time takes 15 minutes. Assuming that connection time includes ticketing, this is used in travel time calculations only when changing transport modes; i.e. from Metrolink to HSR, bus to Caltrain and Caltrain to BART (or vice versa). Same mode connections are five minutes. While this seems minimal, Amtrak assumes it and 5 minutes is used. See: http://tickets.amtrak.com/itd/amtrak.
[23] The Pacific Surfliner web site gives a five-minute interval to disembark in LA Union and board the next train. While this seems minimal, it is used. See: http://tickets.amtrak.com/itd/amtrak. Metrolink fares and times are at: http://www.metrolinktrains.com. The Caltrain Baby Bullet schedule shows a station to station time between San Jose Diridon and San Francisco's Fourth and King Street station to be 1 hour and 7 minutes. BART timetables are at: http://www.bart.gov/schedules/bylineresults?route=7&date=02/18/2014..
[24] The traveler at San Jose who wishes to go to downtown San Francisco could take Caltrain's 1 hour and 7 minute Baby Bullet train to 4th and King Street, San Francisco.
[25] Iñaki Barron de Angoiti, Director of High Speed Rail at the International Union of Railways/UIC, presented this chart to the US Congress On April 19th 2007. See: International High-Speed Rail Systems: a Hearing before the Subcommittee on Railroads, Pipelines and Hazardous Materials of the Committee on Transportation and Infrastructure, House of Representatives; April 19, 2007, at http://frwebgate.access.gpo.gov/cgibin/getdoc.cgi?dbname=110_house_hearings&docid=f:34799.pdf.
[26] Norwalk and Berkeley, both considered inner radius suburbs of their central city, are roughly equal distances (15 miles) from Los Angeles Union Station and the SF TransBay Center respectively. A 2004 study suggests the market catchment area of Amtrak to be a 25 miles radius. See: T.R. Leinbach, City Interactions: The Dynamics of Passenger and Freight Flows, in Hansen & Giuliano; *The Geography of Urban Transportation* (pp. 30-58). NY: Guilford Press.
[27] This option assumes the passenger goes from Merced to Oakland by CHSRA bus service, then to Berkeley by BART
[28] Assumes the driver lives in Downtown LA, Huntington Park or South Los Angeles, a 15-minute drive to pass near LA Union Station on or entering Hwy 5.
[29] The airport nearest Norwalk is Long Beach (LGB) – 12 miles. See: http://www.travelmath.com/nearest-airport/Norwalk,+CA. Driving time is 20 minutes. Prime Time Shuttle is scheduled pick-up. See https://primetimeshuttle.hudsonltd.net/res
[30] The San Francisco TransBay Center (SFTBC) is supposed to substitute for the Caltrain Terminal at from 4th and King Street. While SFTBC is scheduled to be completed in the fall of 2017, five years before the IOS is completed, the IOS funding does not include a connection to the SFTBC. See: http://transbaycenter.org/construction-updates/project-schedule
[31] Driving time to the Norwalk/Santa Fe Springs Metrolink station is assumed to be 5 minutes, connection time another 5 minutes
[32] Travel times for the 10 daily Metrolink trains (5am-5:33pm) between the Norwalk/Santa Fe Springs Station to LA Union Station vary between 27 and 37 minutes; the average being 30.2 minutes. See: http://www.metrolinktrains.com/schedules/line/name/Orange%20County/service_id/1152.html Amtrak does not stop at the Norwalk/Santa Fe Springs Station.

[33] PDF page 25, Figure 3.1 of the 2014 Draft Plan, Cambridge Systematics' Technical Memorandum, Ridership and Revenue Forecasting, shows that during the IOS-Only Phase, there will be a Dedicated Bus Connection between LA Union Station and San Fernando. Travel time is 37 minutes per page A-1 [PDF 68] of the 2014 Draft Plan, Cambridge Systematics' Technical Memorandum, Ridership and Revenue Forecasting .
[34] Assumes the average 2014 Plan's Merced-San Fernando run times (123-132 minutes); See the HSR Patterns table on page A-1 [PDF 68] of the 2014 Draft Plan, Cambridge Systematics' Technical Memorandum, Ridership and Revenue Forecasting.
[35] This is by CHSRA dedicated bus. Travel time is 160 minutes per page A-1 [PDF 68] of the 2014 Draft Plan, Cambridge Systematics' Technical Memorandum, Ridership and Revenue Forecasting.
[36] This is by CHSRA dedicated bus. Travel time is 150 minutes per page A-1 [PDF 68] of the 2014 Draft Plan, Cambridge Systematics' Technical Memorandum, Ridership and Revenue Forecasting.
[37] Flying times: LGB-OAK, See: http://www.travelmath.com/flying-time/from/Long+Beach,+CA/to/Oakland,+CA For LAX-SJC, see: http://www.travelmath.com/flying-time/from/LAX/to/SJC For LAX-SFO, see: http://www.travelmath.com/flying-time/from/LAX/to/SFO
[38] BART from Oakland Lake Merritt to Downtown Berkeley takes 16 minutes and Oakland Coliseum to Downtown Berkeley takes 23 minutes. See: http://www.bart.gov/schedules/bylineresults?route=3&date=03/02/2014
[39] Assume from the aircraft's landing to the free Airport Shuttle bus takes 15 minutes. The No. 10 VTA Bus takes 10 minutes from SJC to the Santa Clara Transit Center. See: http://www.vta.org/routes/rt10. From there it connects with Caltrain to San Jose Diridon station, which takes 9-10 minutes. Counting connections, SJC to downtown takes apprx. 35 minutes.
[40] For Norwalk to Berkeley driving times see: http://www.travelmath.com/driving-time/from/Norwalk,+CA/to/Berkeley,+CA .
[41] For Central Los Angeles to San Jose city center is 5hrs. 20 minutes see: http://www.travelmath.com/driving-time/from/Norwalk,+CA/to/San+Jose,+CA
[42] The Stagecoach Group owns Megabus. Megabus.com lists four daily services between San Francisco and Los Angeles. See: http://us.megabus.com. Travelmath.com says the driving distance is 381 miles, and driving time is 5 hours 59 minutes. See: http://www.travelmath.com/driving-time/from/San+Francisco,+CA/to/Los+Angeles,+CA
[43] Total costs between the SF and LA's central cities would be $102.25. For Caltrain fares, see: http://www.caltrain.com/Fares/farechart.html
[44] Comparing an auto's operating costs to a rail trip during the IOS-Only Phase is relevant because HSR also has capital and maintenance costs. The main operating cost of an auto is gasoline. Compared with five nations with sizeable HSR systems, California's gasoline is cheap. Gas in the UK is 92% more expensive than the US, Japan's 74% higher, France's 62% higher, Germany's 49% and Spain's 20% higher. This comparison is important because it demonstrates the relative attractiveness of HSR to California's auto drivers versus HSR relative to drivers in the five other (HSR) markets. See: http://www.nationmaster.com/graph/ene_gas_pri-energy-gasoline-prices
[45] Based on gasoline costs, the website, travelmath.com, computes the costs of the 393 miles using gas mileage at 25mpg, gas prices at $3.859, for a total price of $60.66. See: http://www.travelmath.com/cost-of-driving/from/Norwalk,+CA/to/Berkeley,+CA. Table 4.4 in Cambridge Systematics Technical Memorandum on Ridership and Revenue Forecasting to the 2014 Plan [PDF 33] says the costs of a driver-only trip would be $98.25-an average of 25¢/mile. What the Plan does not say is that the auto, SUV, van or truck could hold more than one passenger plus the driver, and that their costs are 'fully loaded' (incorporating insurance, maintenance, etc. costs). The 'gasoline only' cost to drive the 381 miles between central SF and central LA is $58.87. See: http://www.travelmath.com/cost-of-driving/from/San+Francisco,+CA/to/Los+Angeles,+CA. The 'gasoline only' cost to drive the 341 miles between central LA and San Jose is $52.69. See: http://www.travelmath.com/cost-of-driving/from/San+Jose,+CA/to/Los+Angeles,+CA. The Authority's 'fully loaded' cost for a driver-only auto trip would be $85.25.
[46] The Stagecoach Group owns Megabus. Megabus.com lists two fares between the downtowns of San Francisco and Los Angeles. See: http://us.megabus.com.
[47] Why is the Authority's approach biased? The Draft 2014 Plan's Final Technical Memorandum – Ridership and Revenue Forecasting, page 4-4 [PDF 33] says, *"The approach for forecasting auto operating costs for the 2014 Business Plan is consistent with the methodology used for the 2012 Business Plan, with updates to the cost projections."* The range of auto operating costs per mile in

the 2014 Draft Plan [Table 4.4 –PDF 33] is 22¢-30¢. However, in 2012 Business Plan's Final Technical Memorandum – Ridership and Revenue Forecasting; at the bottoms of Table 5.9 and Table 5.10 [PDF 55-56] are the notes. *"Auto Operating Cost = 20 cents per mile per person (2011$)."* and *"Auto Operating Cost = 28 cents per mile per person (2011$)."* The per-mile range of costs, 22¢- 30¢ are reasonable, and for a driver-only trip yield a 403-mile driving cost range of $89-$121. However, as opposed to applying the financial concept of marginal costs in the costs of driving formula, one is supposed to believe that the auto driver costs, and costs for each of three passengers should be defined to be equal. Therefore, an 403-mile auto trip between Norwalk and Berkeley with four occupants' one-way would have costs in 2022 range between $355 (4 times $89) and $484 (4 times $121). The consequence for the auto trip example is that the fixed costs must absorbed three more times – truly an ill-logical approach. The apples-to-apples equivalent would be to have each additional high-speed rail passenger absorbing the entire fixed and variable costs as is the first traveler – i.e. the locomotive's driver.

[48] Daniel Albalate, and Germà Bel in, The Economics and Politics of High-Speed Rail; Lessons From Experiences Abroad, page xiii (Lexington Books, 2012) showed that most HSR passengers are those who *"travel for business reasons and whose ticket (the amount of which is far from covering the total cost of the service) is paid for by their employers."*

[49] See: California High-Speed Rail Draft 2014 Business Plan Ridership and Revenue Forecasting—Draft Technical Memorandum, Table 3.1, page 3-5 [PDF 28].

[50] This option assumes the passenger goes from Merced to Berkeley by CHSRA bus service

[51] The website http://www.travelmath.com/cost-of-driving/from/Norwalk,+CA/to/Berkeley,+CA says that assuming 25mpg, and the cost of gasoline at $3.859, the "gas only" one-way cost of driving is $60.66, at 15.4 cents per mile. The Authority's "fully loaded" one-way cost of driving is $98.25. See PDF page 33, Table 4-4 on page 4-4, of the 2014 Draft Plan, Cambridge Systematics' Technical Memorandum, Ridership and Revenue Forecasting, at an average of 25 cents per mile. Note: This "Auto" could hold from 1 to 4 passengers.

[52] Assumes the driver lives in Downtown LA, Huntington Park or South Los Angeles, a 15-minute drive to pass near LA Union Station on or entering Hwy 5.

[53] The San Francisco TransBay Center (SFTBC) is supposed to substitute for the Caltrain Terminal at from 4th and King Street. While SFTBC is scheduled to be completed in the fall of 2017, five years before the IOS is completed, the IOS funding does not include a connection to the SFTBC. See: http://transbaycenter.org/construction-updates/project-schedule

[54] Metrolink fares are from http://www.metrolinktrains.com/ticketspricing/. All Metrolink fares are 'Regular Fare' prices. Other ground transport modes are noted.

[55] Prime Time Shuttle is a privately offered pick up at a residence or business service. See https://primetimeshuttle.hudsonltd.net/res

[56] See: https://shuttletolax.com/reservations/SELDEP

[57] PDF page 28, Table 3.1 of the 2014 Draft Plan, Cambridge Systematics' Technical Memorandum, Ridership and Revenue Forecasting, shows that during the IOS-Only Phase, the maximum fare will be $86.

[58] The maximum price of a one-way HSR ticket was set at 83% of the average airline fare ($86). However, the website Expedia says, airline fares for a one-way fare on the day of travel were: LGB-OAK, $138. For LAX-SJC, $199. For LAX-SFO, $204. See: http://www.expedia.com/Flight-Search-

[59] See: http://www.caltrain.com/Fares/farechart.html

[60] See: http://www.bart.gov/tickets/calculator

[61] See: California High-Speed Rail Program Revised 2012 Business Plan, April 2012, page 5-11 [PDF 119]

[62] In the CHSRA's Draft 2014 Business Plan, the SF-LA fare is set at $86 – 83% of the average annual fares between airports in Los Angeles Basin and the SF Bay Area. Using an average distance between SFO and LAX, (338 miles), BUR (327 miles), SNA (372 miles), the airline charge works out to about 25$ per mile. On February 10, 2014, Virgin America, American Airlines, United Airlines and US Airways offered a two week advance purchase one-way, February 24th LAX-SFO ticket for $58. Southwest Airline's was $59.

[63] Op Cit. Albalate, and Bel, The Economics and Politics of High-Speed Rail; Lessons From Experiences Abroad

[64] The six southern ones were Burbank (BUR) Los Angeles International (LAX), Long Beach (LGB), Ontario (ONT), Palm Springs (PSP), Orange County-Santa Ana (SNA) and San Diego (SAN). The Bay Area airports were Oakland (OAK), San Francisco International (SFO) and San Jose (SJC).
[65] See: California High-Speed Rail 2012 Business Plan, final technical Memorandum, *prepared for* Parsons Brinckerhoff for the California High-Speed Rail Authority, *prepared by* Cambridge Systematics, Inc. *Ridership and Revenue Forecasting*, Appendix B, Table 1, page 10, [PDF 116] of, Potential Airline Response to High-Speed Rail Service in California, prepared by Aviation System Consulting, LLC August 2011, Prepared for Cambridge Systematic, [Sic] Inc.
[66] The Fresno Bee, December 2, 2013; Tim Sheehan, Amtrak's San Joaquin Valley trains see record ridership: Found at http://www.fresnobee.com/2013/12/02/3644370/amtraks-san-joaquin-trains-see.html#storylink=cpy
[67] Source: National Railroad Passenger Corporation (Amtrak)
[68] See PDF 43, CHSRA, Draft 2014 Business Plan, February 7 2014. Also, Cambridge Systematics' (CS) final technical memorandum of Ridership and Revenue Forecasting of April 12, 2012, Section 5.2, page 5-5 [PDF pg. 37] says *"Note that the existing San Joaquin service south of Merced to Bakersfield is assumed to be discontinued upon the initiation of HST service."* The Draft 2014 Plan is silent on discontinuing or continuing the subsidized Amtrak service.
[69] See 'Fleecing' Local High-Speed Train Riders While Big City Executives Ride Cheaper: A Briefing Paper, January 29, 2014; found at www.sites.google.com/site/hsrcaliffr/home/briefing-papers/01-2014-fleecing-local-high-speed-train-riders.
[70] See PDF 43, CHSRA, Draft 2014 Business Plan, February 7 2014
[71] William Grindley and William Warren, 'Fleecing' Local High-Speed Train Riders While Big City Executives Ride Cheaper: A Briefing Paper, January 29, 2014; found at www.sites.google.com/site/hsrcaliffr/home/briefing-papers/01-2014-fleecing-local-high-speed-train-riders
[72] In a back-handed recognition of this highly cynical approach, the Authority says: *"The consultants have assumed the same high-speed rail fare structure as assumed in the 2012 Business Plan forecasts and presented in the Draft 2014 Business Plan Ridership and Revenue Technical Memorandum."* The Technical Memorandum is available at: http://www.hsr.ca.gov/About/Business_Plans/Draft_2014_Business_Plan.html
[73] Driving time is at http://www.travelmath.com/driving-time/from/Bakersfield,+CA/to/Merced,+CA. The Amtrak ride is 3 hours and 10 minutes See: http://tickets.amtrak.com/itd/amtrak
[74] See: 2014 Draft Plan, Cambridge Systematics' Technical Memorandum, Ridership and Revenue Forecasting, page A-1 HSR Patterns [PDF 68].
[75] See: http://tickets.amtrak.com/itd/amtrak
[76] To go the 280 miles takes 4hrs. 26 minutes. See: http://www.travelmath.com/driving-time/from/Merced,+CA/to/Los+Angeles,+CA
[77] See: http://tickets.amtrak.com/itd/amtrak
[78] See CHSRA's Draft 2014 Business Plan, Cambridge Systematics' (CS) final technical memorandum of Ridership and Revenue Forecasting, Table 3.1, [PDF 28]
[79] In Federal Fiscal Year 2010-11, the San Joaquin route required a 46% subsidy to make up the difference between its operating costs and passenger-based revenues. Source: "Amtrak Operating Results, Amtrak Invoice (Actual and Contract Results) at 100%.
[80] For gasoline-only costs, wee http://www.travelmath.com/cost-of-driving/from/Merced,+CA/to/Los+Angeles,+CA. The Authority's "fully loaded" one-way cost of driving the 280 miles is $78. See PDF page 33, Table 4-4 on page 4-4, of the 2014 Draft Plan, Cambridge Systematics' Technical Memorandum, Ridership and Revenue Forecasting, at an average of 25 cents per mile. Note: This "Auto" could hold from 1 to 4 passengers.
[81] See CHSRA's Draft 2014 Business Plan, Cambridge Systematics' (CS) final technical memorandum of Ridership and Revenue Forecasting, Table 3.1, [PDF 28]
[82] See: Chuyuan Zhong, Germà Bel, and Mildred Warner: High-Speed Rail Accessibility: What Can California Learn From Spain? 2013, found at: http://mildredwarner.org.s3.amazonaws.com/2012/09/20/Zhong_Bel_Warner_HighSpeedRail_2012-b19b0817.pdf
[83] Ibid, pg. 8
[84] Ibid, pg 12
[85] Ibid, pg. 9

[86] Ibid, pg. 22
[87] Ibid, pg. 18
[88] In addition to the claims made by the UIC/IUR's Director of High-Speed Rail in the US Congress (Figure 2) since the introduction of the AVE between Madrid and Barcelona, HSR has captured over 50% of the train-air passengers. See: "EU could ground short-haul flights in favor of high-speed rail." The Guardian, April 18th 2011: at http://www.theguardian.com/world/2011/apr/18/eu-transport-plan-short-haul-flights
[89] In their worldwide study, The Economics and Politics of High-Speed Rail; Lessons From Experiences Abroad, page xiii, authors Daniel Albalate, and Germa Bel in; (Lexington Books, 2012) showed that most HSR passengers are those who *"travel for business reasons and whose ticket (the amount of which is far from covering the total cost of the service) is paid for by their employers."* In May 2009 Iñaki Barrón de Angoiti, Director of High-Speed Rail at the IUR, said, *"Only two routes in the world — between Tokyo and Osaka, and between Paris and Lyon — have broken even."* See: Spain's High-Speed Rail Offers Guideposts For U.S." NY Times, May 29, 2009. Those PPM fares are 56¢ and 34¢ vs. 23¢ in CA respectively.
[90] See: Draft 2014 Business Plan, Exhibit 1.1, page 16 [PDF 16]
[91] Ibid. pg. 29 [[PDF 29]
[92] Ibid. Exhibit 1.1, [PDF 16] says the IOS costs $31 Billion to build and by time the B2B is completed, $51 Billion will be spent; implying the B2B will cost $20 Billion, much if not all to be privately funded.
[93] Five months before Prop 1A passed (June 2008) the Authority's consultants, IMG, reported that private,". . *respondents argued that interest in equity investment would increase if the risk to the concessionaire were decreased, perhaps through some form of revenue guarantee* . ." [See: Report of Responses to the Request for Expressions of Interest For Private Participation in the Development of A High-Speed Train System in California by the Infrastructure Management Group (IMG) to the California High-Speed Rail Authority Board Financing Workshop, dated October 2008; page 2 of 17 The presentation was given in June but the printed report issued in October. *"A presentation summarizing the results of the RFEI was made before the Authority Board of Directors on June 11, 2008* "] Eighteen months after the IMG's 2008 survey, in a September 2009 IMG-Goldman Sachs workshop, CHSRA learned: *"Private appetite for ridership risk is limited without revenue guarantee or until ridership proven."* [See: California High-Speed Rail Authority Board Financing Workshop; A presentation by Infrastructure Management Group Inc. and Goldman Sachs; September 3, 2009; pages 9-1]
[94] See Exhibit 1.1 [PDF 16] of the 2014 Draft Plan. The IOS is to cost $31 Billion (YOE) and the cumulative expenditure through building the Bay to Basin is listed as $51 Billion.
[95] Norwalk and Berkeley, both considered inner radius suburbs of their central city, are roughly equal distances (15 miles) from Los Angeles Union Station and the SF TransBay Center respectively. A 2004 study suggests the market catchment area of Amtrak to be a 25 miles radius. See: T.R. Leinbach, City Interactions: The Dynamics of Passenger and Freight Flows, in Hansen & Giuliano; *The Geography of Urban Transportation* (pp. 30-58). NY: Guilford Press.
[96] This option assumes the passenger goes from Merced to Oakland by CHSRA bus service, then to Berkeley by BART
[97] Assumes the driver lives in Downtown LA, Huntington Park or South Los Angeles, a 15-minute drive to pass near LA Union Station on or entering Hwy 5.
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[102] PDF page 25, Figure 3.1 of the 2014 Draft Plan, Cambridge Systematics' Technical Memorandum, Ridership and Revenue Forecasting, shows that during the IOS-Only Phase, there will be a Dedicated Bus Connection between LA Union Station and San Fernando. Travel time is 37 minutes per page A-1 [PDF 68] of the 2014 Draft Plan, Cambridge Systematics' Technical Memorandum, Ridership and Revenue Forecasting .
[103] Assumes the average 2014 Plan's Merced-San Fernando run times (123-132 minutes); See the HSR Patterns table on page A-1 [PDF 68] of the 2014 Draft Plan, Cambridge Systematics' Technical Memorandum, Ridership and Revenue Forecasting.
[104] This is by CHSRA dedicated bus. Travel time is 160 minutes per page A-1 [PDF 68] of the 2014 Draft Plan, Cambridge Systematics' Technical Memorandum, Ridership and Revenue Forecasting.
[105] Flying times: LGB-OAK, See: http://www.travelmath.com/flying-time/from/Long+Beach,+CA/to/Oakland,+CA For LAX-SJC, see: http://www.travelmath.com/flying-time/from/LAX/to/SJC For LAX-SFO, see: http://www.travelmath.com/flying-time/from/LAX/to/SFO
[106] BART from Oakland Lake Merritt to Downtown Berkeley takes 16 minutes and Oakland Coliseum to Downtown Berkeley takes 23 minutes. See: http://www.bart.gov/schedules/bylineresults?route=3&date=03/02/2014
[107] Assume from the aircraft's landing to the free Airport Shuttle bus takes 15 minutes. The No. 10 VTA Bus takes 10 minutes from SJC to the Santa Clara Transit Center. See: http://www.vta.org/routes/rt10. From there it connects with Caltrain to San Jose Diridon station, which takes 9-10 minutes. Counting connection time, from SJC to downtown takes approximately 35 minutes.
[108] For Norwalk to Berkeley driving times see: http://www.travelmath.com/driving-time/from/Norwalk,+CA/to/Berkeley,+CA .
[109] For Central Los Angeles to San Jose city center is 5hrs. 20 minutes see: http://www.travelmath.com/driving-time/from/Norwalk,+CA/to/San+Jose,+CA
[110] See page A-2, [PDF 69] 2014 Draft Plan, Cambridge Systematics' Technical Memorandum, Ridership and Revenue Forecasting
[111] See Exhibit 1.1 [PDF 16] of the 2014 Draft Plan. The IOS is to cost $31 Billion (YOE) and the cumulative expenditure through building the Bay to Basin is listed as $51 Billion.
[112] That would be an annual growth rate of about 25%
[113] Travelmath.com computes the costs of the 403 miles using gas mileage at 25mpg, gas prices at $3.37, and consumption of 16.12 gallons for a total price of $54.42. See: http://www.travelmath.com/cost-of-driving/from/San+Francisco,+CA/to/Anaheim,+CA. Even considering lower miles per gallon or higher gasoline prices, three passengers would not increase the price of driving one way four-fold. The $300 estimate errs to the high side, while four fares to go the distance on CHSRA's offering would cost $452 ($113 x 4). A round trip would cost $904 and take 16hours and thirty-two minutes.
[114] In 2011, the State employed about 400,000 Full Time Equivalents. See: http://www2.census.gov/govs/apes/11stca.txt. Local and special purpose governments in California employed about 1.35 Million. See: http://www2.census.gov/govs/apes/11locca.txt. However, local and special purpose employees rarely travel outside their jurisdiction, and State government employees only occasionally. Even assuming all 1.75 million of them did use HSR annually and each took two trips, ridership by all California government employees would be 3.5 million, a fraction of Figure 1's estimates.
[115] In 2008, the downtown LA-to-downtown SF Phase 1, all on high-speed trains, was touted as costing $33 Billion. By November 2011, that had risen as high as $117 Billion. Only when the Authority unilaterally eliminated the expensive 'Bookends' did the costs seem to retreat to $68-$79 Billion. The Authority also claimed they could build the Initial Construction Section in the Central Valley with their $6 Billion in-hand until November 2013 when their engineers admitted the ICS' costs are closer to $7-$8 Billion. Within the space of two years, that ICS now costs 18-33% more than the Authority has commitments for. ICS construction was to have started in September 2012. As of close of February 2014, the Authority is still a long way from acquiring enough land to seriously begin construction.
[116] PDF page 25 and Figure 3.2 [PDF 26] of the 2014 Draft Plan, Cambridge Systematics' Technical Memorandum, Ridership and Revenue Forecasting, shows that by 2027, six years after the IOS is operational, the Bay to Basin section will open between Fresno and San Jose. The driving distance

between Fresno and San Jose is 151 miles. See: http://www.travelmath.com/drive-distance/from/Fresno,+CA/to/San+Jose,+CA

[117] PDF 26 and Figure 3.3 [PDF 26] of the 2014 Draft Plan, Cambridge Systematics' Technical Memorandum, Ridership and Revenue Forecasting, shows that by 2029, eight years after the IOS is operational, what the Authority refers to as Phase 1 will open between Los Angeles Union Station and San Francisco's TransBay Center. This ignores the fact that 2008's voters were promised a southern terminus of Phase 1 at Anaheim. Figure 3.3 shows Anaheim-destined riders must change to Metrolink at LA's Union Station.

[118] See California High-Speed Rail Program; Draft 2012 Business Plan, November 1, 2011, pg. ES-8 [PDF14]

[119] The 2014 Draft Plan, page 17, still claims the train will alleviate both congestion and pollution. See: *"The high-speed rail system will help reduce congestion on the state's highways and at its airports, will help the state improve air quality and meet its greenhouse gas reduction goals, and put thousands of people back to work"* Once HSR is in the Central Valley, and fares per mile jump, present-day Amtrak riders will vote with their pocketbooks to find auto or bus alternatives – exacerbating congestion and pollution. Unless there is some yet-to-be announced policy to end transit subsidies at the 'Bookends' the Caltrain and Metrolink riders will stay with their subsidized rail rides.

[120] This Paper does not analyze the subject of CHSRA's claims of a profitable service or environmental advantages while operating. However, The Authority's 2014 Draft Plan admits that the first three years (2022-2024) of the IOS-Only Phase will require an operating subsidy of $50 Million. See: California High-Speed Rail Draft 2014 Business Plan, Exhibit 6.1, page 52 [PDF 52]. There is no provision in the underlying legislation (AB3034) to permit the first three years of the system to have an operating subsidy. Not only would explicit ballot claims in 2008 of "NO NEW TAXES" be violated; but to finance that deficit, new legislation to override AB3034's Section 2704.08 (c) (2) (J) and Section 2704.08 (d) (2) (D) would have to be passed to allow this to happen. See: 2008, Supplemental Quick Reference Guide on Proposition 1A, page 3. Admission of this subsidy would also have a 'chilling effect' on would-be passengers. The actual or potential disruption to sales and ticketing during the 1980s and 1990s during the US budget airline 'shake-out' is proof positive the traveling public will only buy tickets into the near future from a stable transport alternative. The lack of a clear future for HSR, plus the legislative wrangling and inevitable court cases will inflict on the perception that HSR will not be available cannot be discounted. While Coca-Cola and Apple survived 'bumps-in-the-road' and continued as on-going businesses, HSR in California is a start-up company with considerable competition in the in-state transport system. Customers don't buy promises of better HSR tomorrow: they buy today's predictable and inexpensive modes transportation services to where they need to go soon.

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