CALIFORNIA
HIGH-SPEED RAIL AUTHORITY'S
2012 DRAFT BUSINESS PLAN

ASSESSMENT:
STILL NOT INVESTMENT GRADE

Comments on the 2012 Business Plan to CHSRA by CEOs and Investors, including assessment of improvements and remaining weaknesses to the Plan from a financial point of view

Is This What Californians Voted For?

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EXECUTIVE SUMMARY

While more rigorous and honest than the weak and superficial 2008 or 2009 CHSRA Business Plans, the 2012 Plan remains **non investment grade** in the opinion of our group of CEOs, investors, bankers and businessmen. It continues to deploy a **widely criticized ridership model** which likely skews revenue upwards; its **capital plan is wholly inadequate,** with needs neither met nor plausibly forecasted in terms of supply; the Plan continues to deploy a **flawed financial P&L model** that proposes 50% of Europe's revenue-per-mile on the income side but sets cost-per-mile at 25% of European costs, with no adequate explanation as to why both should be true; it **does not detail its operational cost** modeling for stress testing by outsiders; it identifies **no operating partner** that might give confidence in the management team; its "downside" case is just a baseline case and it presents **no alternatives analysis** in the event that the first operating segment is not actually profitable; and it cites **benefits versus traditional infrastructure that are mathematically and statistically incorrect, and wildly overblown.** Almost certainly, it is also a **blunder to commence HSR in an uncongested, lightly populated part of California,** unless there is a 100% assurance that funding for subsequent segments is in place.

In short, this Plan in its current form could not be supported by private investors and should not be supported by taxpayers.

The Plan is an improvement over the 2008 and 2009 versions. However, most of the improvements are simply overdue concessions to reality and, in being more realistic as opposed to promotional; the 2012 Plan has consequently made the entire project much less palatable to taxpayers, legislators and citizens. Moreover, in certain fundamental ways it is not a Business Plan at all, but really a "building plan." After three tries, we wonder whether CHSRA does not privately believe that it does not actually need a Business Plan because it does not really plan to run a business.

For the CHSRA and the Draft Plan authors, we have attempted to organize our comments by section in the commentary that follows.

For outside readers, our caution is this: the longer an investment goes on, the harder it is to stop and re-program. We had hoped that HSR would be a business "winner". We hoped the financial promise of "no new taxes" would hold up under scrutiny, not because we are anti-tax, but because if the private sector or federal government were going to build and run High Speed Rail effectively "for free" for Californians, then assessing the risk to California taxpayers seemed important, but less critical.

However, it is now clear to everyone that Californians will need to devote substantial tax revenue to this project, perhaps in perpetuity, unless the Federal government commits to provide $65 Billion to $90 Billion in Grants over the next twenty years. The simple truth is that even if the Authority produces all the Net Operating Profit (Margin) they forecast over the next 40 years, it is insufficient to pay back all of the costs of construction. Someone, either the California or the United States taxpayers are going to wind up paying for the construction. Therefore, Californians need to choose between High-Speed Rail (HSR) and, for example, repairing levees, improving roads and commuter rail, rebuilding bridges or the California university system, to name just a few other public priorities. (By the way, many of those other projects could commence actual construction much sooner than HSR.) Based on the weakness of the current financial plan, **we do not believe an investment in CHSR will generate a strong ROI for California, especially compared to other potential investments of public dollars.**

BACKGROUND AND AUTHORS

From the outset, the California High Speed Rail Authority (CHSRA) and advocates of a High Speed Rail line in California have couched their arguments in financial terms, promising the people of California that there would be no new taxes needed to pay for the train, that private investors would shoulder a significant portion of the upfront build cost, that the "users of the system would pay for the system"[1], that there would be no public subsidies to operations, and that this system would relieve California of many tens of billions of dollars of other investments in road and airport expansion.

Initially intrigued by what seemed like a win-win project for commuters and taxpayers, our informal group of former CEOs, investors and financial experts gathered to assess the original 2008 and 2009 Business Plans – but with increasing dismay, as the shallowness and wildly over-optimistic assumptions became apparent. Despite the financial promises made to voters in the 2008 Ballot that approved California's $9.5 billion bond measure, it turned out the 2008 Business Plan which underpinned the rosy Ballot initiative was, according to a CHSRA Board member Lynn Schenk in a 2010 interview, *"...pulled together with Scotch tape and hairpins because we had to get something to the Legislature, but we didn't have the money, the resources, the people to pull together, so there were a lot of errors"* [2].

In response to this clearly and admittedly deficient Plan, our group drafted a series of reports, expert monographs and commentary. Our goal was to help correct the business model so that its financial risks and rewards could be properly assessed by legislators. Any new enterprise involves risk and requires a certain leap of faith. But we know from many years of bitter experience that if the risk is not characterized, skepticism about capital and operating costs displayed, and conservative assumptions about demand assumed then bad investment decisions will be made. Our over-riding concern was that, as modeled, the 2008/9 Business Plans had substantial risk that (A) the project would be more expensive to build than proponents claimed; (B) it would fail to attract Federal and private sector financial support in the amounts called for; and (C) it could require construction debt repayment and operating subsidies from taxpayers, perhaps in perpetuity, due to the high risk of not being profitable.

At this stage, three years later, we have already been proven correct on (A) and (B) – Phase 1 is now forecast to cost more than **twice as much for half the system** (San Diego and Sacramento were quickly dropped from Phase 1) and the Authority has acknowledged that HSR is **too risky for the private sector** until at least $30 billion is invested by the public to build an operating line that can prove to be profitable. Finally, there are no more Federal Grants on the medium-term horizon. For reasons we explain in depth, we believe there is substantial risk that costs will rise even higher, construction capital will not be present, and operating profits will not exist. For legislators, betting that the private sector will come in to build the rest of the system ten years from now is, we believe, a very risky, if not foolhardy, position. For State budgeters, making allowance for perpetual operating subsidies by California seems a plausible scenario.

In fairness, the 2012 Plan is more rigorous, more honest, and more thoughtful than its predecessors, and we applaud those improvements. Unfortunately, there are still substantial, important flaws in the document issued in November 2011. We lay these out in detail below.

Good investments don't need cheerleaders. They stand, or fall, on their merits. In our view, sadly, the High Speed Rail Program in the 2012 Draft Plan does not measure up for California. It is still not yet investment grade.

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PUBLICATIONS – All available at www.cc-hsr.org

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)

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)

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 to present

The Authors appreciate the untold number of hours spent by many other investigative reporters, citizens groups and individuals in addition to our own, which formed the following analysis and recommendations. However, any fault found in this report is solely the responsibility of the Authors.

INTRODUCTION

The California High-Speed Rail (CHSR) Program's Draft 2012 Business Plan is more realistic than its 2008/9 predecessors and we commend the Authority for several important changes. Called 'Building California's Future,' the new plan is more than 200 pages with multiple appendices. The Plan is more coherent and, because its authors took the time to think through more elements of the business model (as opposed to the 2008 Plan), it is appreciably less rosy in its outlook. Among other sobering improvements to the 2008/9 Plans, the 2012 Draft Plan states that:

- The Project will cost much more (3 times) than the original forecast, with good chance that the number could rise even higher;
- The Project will not attract private investment for the first decade **and** until the public has sunk $30 billion or more into building an operating segment;
- The Project places all the front-end risk on US and California taxpayers and offers only a superficial view of what the ICS or IOS would be good for if the rest of the system is not completed;
- On the other hand, the Authority still predicts that CHSR can run profitably after a decade (provided it does not need to pay any of the build cost); and
- The Authority also now presents, as part of their Plan, arguments for the project based on "jobs" to be created and the "cost" of creating alternative modes of travel. However both justifications are based on deeply flawed analyses.

Public comments, supportive and skeptical, after its release on November 1st were predictable. But the 'sticker shock' of its $100 Billion plus construction price gave pause to many who may have voted to support a $33 Billion plan in 2008 but had become concerned by the project's $43 billion cost estimate in 2009. Advocates say it may be pricy, but California's future depends on it.

Lawmakers at the Federal and State levels are now confronted with a policy choice – do we keep investing billions in this project or not? Billions spent here will be at the expense of other projects – that is inevitable with sums this large in our current economy. Therefore, we believe it is especially important that lawmakers use the tools that investors use when assessing where to put precious capital. This is doubly important in the case of the California project since, as noted above, the 2012 Draft Plan makes it clear there will be no private investors to share the risk until the public has spent at least $30 billion to build the Initial Operating Section (IOS).

This report sets out where the financial risks occur for the State and the people of California in 'Building California's Future'. It is written from the point of view of potential investors in the project. It complements and is complemented by another of our reports: **Twelve Misleading Statements On Finance And Economic Issues In The CHSRA's 2012 Draft Business Plan**. We also assess the Business Model against the core promises that were made to California voters at the time of the Prop1A Bond approval **(Appendix A)** and that are contained within AB3034, such as the clear prohibition on providing an operating subsidy or revenue guarantee, the promise that no new taxes were required, and the limit on the State's liability to $9 Billion for high-speed rail construction. Our assessment techniques are those that a financial analyst would use in performing due diligence on an entrepreneur's prospectus.

CHAPTER ONE: THE CONSTRUCTION FINANCING PLAN IS UNREALISTIC, THEREFORE INADEQUATE

Our report assesses the twin elements of the CHSR finance plan – this chapter concerns the construction financing for the CHSR System, and Chapter Two assesses the future operations of the system as a financial operating entity. Throughout our analysis, we use terms and costs taken from the Draft 2012 Plan, a synopsis of which is below.

On the Build Cost side of the equation, there are substantial differences between the new 2012 Draft Plan, the earlier Business Plans, and what voters approved in 2008 as the financing for a high-speed rail system. **Tables 1A and 1B,** composites of several exhibits in the Draft Plan, are offered to help understand what the Draft Plan offers.

- **Description Of The Project –** Instead of building the LA/Anaheim-to-San Francisco project as described in the 2008 and 2009 Plans, the program now has four construction phases followed by an operational period. The construction costs and operational characteristics of the Draft Plan can be outlined as follows:

- **Initial Construction Section (ICS)** – to be built from 2013 to 2017, over a distance of (very roughly) about 140 miles of the roughly 160 miles between Merced to a point north of Bakersfield. The ICS budget does not include money for electrification nor for rolling stock. The incremental and cumulative cost is estimated at $5.2 Billion in 2010 dollars or $6 Billion in Year of Expenditure (YOE) dollars. The available $6 Billion in funds determines the actual distance to be built.

- **Initial Operating Section** (IOS) – the Plan provides two options, one between San Jose and Bakersfield (IOS North) another between Merced and the San Fernando Valley (IOS South). Construction costs differ by $3 Billion according to the Plan, or about 10% of total cost to that point. Construction is planned for 2015 to 2021. When completed, track mileage will have expanded to about 290 miles. Assuming IOS North is selected as it is the lower of the two options, the incremental cost is estimated to be $24.7 Billion (YOE dollars), and cumulative cost is estimated at $30.7 Billion (YOE dollars).

- **Bay to Basin (B2B) –** this would complete the trackage between San Jose and the San Fernando Valley, in this case (following construction of IOS North) by adding the trackage between Bakersfield and the San Fernando Valley. Construction is planned between 2021 and 2026. When completed, the total miles of track will have expanded to about 410 miles. The B2B incremental cost is estimated to be $24.0 Billion (YOE dollars), and cumulative cost is estimated at $54.7 Billion (YOE dollars).

- **Phase 1 (Blended)** is a new addition in the Draft Plan. It is not high-speed rail construction but rather improvements to the SF and LA commuter rail systems so that a single HSR train, traveling at commuter rail speeds, can move passengers in one voyage (the same seat) from SF's Fourth and King Station to LA's Union Station. It adds another $24.1 Billion (YOE dollars) of costs to improve commuter and intercity rail transport systems. It brings the cumulative cost of the proposed plan to $78.8 Billion (YOE dollars).

Table 1A – Synopsis of Build Stages and Construction Costs

Table 1A Synopsis of Build Stages And Projected Construction Costs				
Segment of 2012 Draft Plan	**Acronym**	**Location** (cumulative mileage)	**Forecast Completion**	**Cumulative Cost** (YOE Dollars)
Initial Construction Section	ICS	Central Valley (130 miles +/-)	2017	$6 Billion
Initial Operating Sections	IOS	**Either** San Jose-Bakersfield **or** Merced-San Fernando Valley (290 miles)	2022	$31 Billion
Bay to Basin	B2B	San Jose to Northern LA/San Fernando Valley (410 miles)	2026	$55 Billion
Phase 1 (Blended)	Phase 1 (Blended)	San Francisco to LA's Union Station and Anaheim (520 miles)	2030	$79 Billion
Phase 1 Complete	Phase 1 Complete	Same as above but to the TransBay Terminal in San Francisco and wholly independent and grade separated HSR tracks	2034	$99 Billion
Phase 2	Phase 2	Includes San Diego, Sacramento, Oakland and Riverside (about 400 additional miles)	UNKNOWN	UNKNOWN

- **Phase 1 Complete –** expands dedicated CHSR service north from San Jose to San Francisco's TransBay Terminal, and from the San Fernando Valley south to Los Angeles and Anaheim through two very congested urban areas. Construction is planned for the 2026 to 2033 time period. When completed, at a cost of an additional $19.9 Billion (YOE dollars) the total miles of HSR track will have expanded to about 520 miles and would be wholly dedicated to CHSR, with 100% grade separations to allow for higher travel speeds. The complete system to connect Los Angeles/Anaheim with the San Francisco Transbay Terminal will have cost at least $99 Billion in YOE dollars.

  Ignoring the projected 3% inflation built into the Plan, the 2010 dollars costs would be about $70 Billion. The Plan also gives a range of construction cost estimates (High, Medium, and Low), and then uses the Medium number for its financial analysis. These are the numbers summarized above. The High and Low number are in the range of +/- 7 % to 10% from these Medium numbers in the early periods. However, by 2034 the High estimate is $117 Billion, 18% above the Medium number used for financial planning. **Note also that all of these estimates are for construction costs only; no account is taken for debt service or financing charges, which could increase the true total cost figures by 75 – 100%.**

As many analysts have shown, megaprojects' costs in their early years, especially when engineering designs are in nascent stages as are most of CHSR's, almost inevitably rise as construction nears. We are confident that the Draft Plan's construction estimates will prove to be low, perhaps by tens of billions of dollars, should this project proceed.

Table 1B - Summary of Phases, Construction Costs and Funding

The table below presents the 2012 Draft Plan's key financial needs for the construction of Phase 1 of California's high-speed rail project. This information will be referred to in the discussion of the Plan's construction financing plans that follows.

Financial and Construction Summary of California High Speed Rail Program Through Phase 1 Based On CHSRA's Draft 2012 Business Plan (November 1, 2011) With Summary Based On New Findings							
PROGRAM PHASES CONSTRUCTION	**Initial Construction Section**	**Initial Operating Segment North[3]**	**SF Bay to LA Basin (B2B)**	**Phase 1 Blended & Complete Terminus**	**Program Summary Thru Phase 1[4]**	**TOTAL BY SOURCE (YOE $s)**	**Percent (%) Shares to Fund Phase 1**
Build Time Period	2013 to 2017	2015 to 2021	2021 to 2026	2026 to 2033	**2012 to 2055**		
Station End Points	South of Merced to North of Bakersfield	San Jose to Bakersfield	San Jose to San Fernando Valley	SF to LA and Anaheim	**Same Terminus – No Phase 2**		
Mileage between End Points	140 +/-	290	410	520			
Construction Estimates - $Bs							
2010 $s	$5.2B	$19.9B	$17.1B	$27.7B	**$69.8B**		
YOE $s	$6.0B	$24.7B	$24.0B	$43.8B	**$98.5B**		
Construction $ Sources - $Bs, YOE							
Available as of 31 Dec. 2011							
State Prop 1A Bonds	$2.7B	$4.9B	$0.4B		**$8.0B**[b]		
Federal Grants	$3.3B				**$3.3B**		
Forecasted In 2012 Draft Plan							
State Bonds or General Funds					**$0.0B**		
Federal Grants		$7.4B	$7.5B	$35.0B	**$49.9B**		
Private Investment **OR** Federal Grants[6]			Concession sold or grant of $11.0B		**Concession sold or grant of $11.0B**		
Federal QTCB (TRIP Bonds) Loan Assistance		$12.4B	$0.9B		**$13.3B**		
Other – Local Government Assistance			$4.2B	$8.8B	**$13.0B**		
Cumulative Construction Costs – ($Bs YOE) by phase & % of Total	$6.0B 6%	$30.7 30%	$54.7B 56%	$98.5B 100%	$98.5B		
SUMMARY[7] - SOURCES TO BUILD (YOE $s) TO FUND PHASE 1 CONSTRUCTION - ASSUMING NO FURTHER COST INCREASES							
Federal Grants (includes $10.9B not available for QTCB)	$3.3B	$18.3B	$8.4B	$35.0B		$65.0B	66%
Maximum QTCB $s (w/1.5x leverage)	-	$1.5B	-	-		$1.5B	2%
California Local Governments	-	-	$4.2B	$8.8B		$13.0B	13%
Concession Sale to Private Operator	-	-	$11.0B	-		$11.0B	11%
Prop 1A CA State Bond Authority	$2.7B	$4.9B	$0.4B	-		$8.0B	8%
Federal Grants Needed For Phase 1 – If QTCB, Local, or Concession Sale Funds Are Not Available						**$90.5B**	**92%**

Only in 2034, when Phase 1 is completed, would it be possible to travel in the same seat at high speed from San Francisco's Transbay Terminal to Los Angeles's Union Station. On some of the Phase 1 express trains the ride might meet the promise to voters and take 2 hours and 40 minutes, but most rides will take longer, even quite a bit longer.

A Critique Of The Proposed Financing In The 2012 Draft Plan

For the following discussion please refer to this Summary Table 1B that summarizes the various construction periods defined above, as well as the Funding Plan presented as part of the Plan.

It is not unusual for an expensive, long-term project to not have "all the money in the bank" at the outset. However, it is critical to believe in the plan to obtain all necessary financing. There is nothing worse, economically or politically, than stranding a large investment because it could not be completed. In our judgment, the current Draft Plan is inadequate and non-persuasive that the necessary capital will be in place to build CHSR to completion, or even to a very useful mid-point. Our reasoning is as follows:

1.1. The Draft Plan Calls For The Federal Government To Provide $60 Billion To $90 Billion To Complete Phase 1

The Authority forecasts in the Draft 2012 Plan that the vast majority of funds to build CHSR will come from the Federal Government. This percentage of federal money has increased from 42% in the 2008 and 2009 Plans to at least 66% in the Draft Plan [$65 Billion of a forecasted $99 Billion].[8] This is shown in Table 1B, under Forecast Construction $ Sources – Federal Grants, a total of $50 Billion, and Federal QTCB Loan Assistance, a total of $13 Billion.

To us, a capital strategy that is basically a "Federal Finance Plan" seems wildly optimistic, not just in today's environment but on a long-term basis.

First, the failure of the recent Budget Supercommittee in mid-November will 'trigger' Federal budget cuts of at least $1.2 Trillion over the next decade. Domestic discretionary spending programs, including transportation, are required to find ways to cut $600 Billion over the decade. That eliminates an average of $60 Billion a year.[9] While the nation's existing infrastructure sorely needs fixing, transportation is not the nation's only need, so the DOT will be at least as 'pressed' as other Federal agencies to set priorities among its competing demands and to come up with budget reductions.

On average, over the next 16 years, the California train's annual construction needs, according to this Plan, will be at least $6.3 Billion per year, if the construction costs are in the range of $100 Billion (YOE) [$100 Billion for Phase 1 divided by 16] and $7.3 Billion per year, if the construction costs continue to escalate into the $120 Billion range (YOE) [$117B for Phase 1 divided by 16]. As already noted, the Draft Plan forecasts about 66% of those funds coming from Federal grants and loans over the sixteen years of building the IOS to the completion of Phase 1, which implies **Federal funds to CHSR of $4.1 Billion to $5.0 Billion per year, every year, for 16 years**.

To put this in context, **each construction year would need almost twice as much** as the total federal grants to California for the last three years under a President and DOT that has made HSR a signature program. To believe that DOT/FRA will spend an average of $4 Billion to $5 Billion per year each year between 2015 and 2033 on one project, no matter who is in the White House and no matter what other domestic programs are being cut, seems highly unrealistic.

Indeed, it is not clear that even this White House can sustain spending for California's system against an ambivalent to hostile Congress. In late November, the Congress 'zeroed out' high-speed rail funding for FY2012, after it had eliminated it earlier for FY2011. The vote on that portion of transportation appropriations bill passed the Republican-controlled House of

Representatives and the Democratic-controlled US Senate by over seventy percent – including the votes of both of California's senators.

Barring unforeseen events, the same Representatives and Senators will be seated to 'zero out' high-speed rail funds for the FY2013 budget discussions. Even the 'best case' means there will be no HSR funds available until October 2014. Some very small grants will likely come from yet-to-be-spent ARRA monies the DOT/FRA still retains. After all, 2012 is an election year. The Draft Plan's authors do recognize this scenario and have established their earliest new cash needs for the IOS to be in 2015, under the next Administration.

Facing Increased Competition for Funds In Washington. There is also the issue of relative political power in Washington for high-speed rail funds. California's success in gaining about 40% of the high-speed rail Stimulus Grants in 2010-2011 caught the attention of the powerful House and Senate Democrats and Republicans from the Northeast US. They have formed their own voting block for the NE Corridor – and have the support of John Mica, Chair of the House Transportation Committee. From Virginia to Massachusetts, they represent 18 Senators and 93 Representatives, versus California's 2 and 63 respectively. At the moment, the White House and DOT argue that both plans should be priorities, but in an era of choices, if the White House and the nation decide to invest in only one HSR system over the next decade, there are many reasons why that choice would be the NE Corridor. This is another risk factor that the Draft Plan ignores.

In mid-December 2011, the Transportation Committee of the House of Representatives held a special hearing on California's high-speed rail project. The Chair, John Mica (R-FL) opening comments included; *"Because the project's cost is soaring, the amount of time to complete it is growing, and the segment chosen to be built first will not even be able to run high-speed trains, the project is imploding,"*[10] This resulted in a request from the Committee to the Government Accounting Office (GAO) to assess ridership, potential funding risks and alternatives to high-speed rail in California.[11] On January 4, 2012 eleven House Democrats – eight from California – joined that request from twelve Republican House members for an independent GAO investigation of the project.[12]

We perceive long-term risk in Washington to HSR funding as well. As the nation ages, not only does very 'unglamorous' infrastructure maintenance demand more of the transportation budget, medical expenses will only grow. The debates in Washington over concern with long-term sustainability for Medicare and Social Security will only grow more heated as their costs rise. Defense spending will also press for more resources as the nation replenishes depleted stocks after two wars and as the rise of new powers in Asia and the Middle East create new demands on American security. Against these various demands, and since the nation already has two robust passenger moving systems, highways and airways, it is a significant risk for Californians to bank on Washington to provide the lion's share of a $100 Billion plus passenger rail system.

1.2. The Plan Forecasts $13.3 Billion Of Qualified Tax Credit Bonds (QTCBs) For Financing, Which Is Highly Problematic

The Draft Plan states that the modified QTCB program (also known as TRIP Bonds) may be a good source of capital. However, S.1436, the Senate Bill to fund TRIP bonds is not yet law.[13] It requests $50 Billion over five federal fiscal years starting in FY2011 – one fiscal year ago. A similar program, the National Infrastructure Bank, did not pass Congress last year. And even if the TRIP bond program was enacted, given that Congress zeroed out funding for HSR, it is not clear the program administrators would make HSR financing a high priority since TRIP bonds could be used for highways, airports or conventional rail.

Further, S.1436 allows no more than 2% of the $50 Billion to be given to any one state. That would mean $1 Billion for California from the entire TRIP bond program. But the Authority's Plan

projects $12 Billion of QTCB funding for the IOS North or $13.3 Billion for IOS South.[14] **That's highly improbable and the Authority should strike this element from the final 2012 Plan**.

Finally, the draft TRIP bond program would entail the Federal government paying only the interest costs on the TRIP bonds – not the principal. For California to avail itself of the program, it would have to fund the face value of the bonds through taxes or borrowing. Prop 1A would be largely depleted by then. Yet taking on more debt for CHSR is illegal under AB3034's limits of $9 Billion in bonds as well as the Prop1A promise to the voters of "no new taxes".

1.3. The Draft Plan Assumes $13 Billion From California's Local Governments or "Other" Sources

The Draft Plan's capital budget significantly 'puts the screws' to local governments. The 2008 Plan said $2-3 Billion would be needed from local governments; and the 2009 Plan increased that to $4-5 Billion.[15] The Draft 2012 Plan's financial structure needs at least three times that amount – $13 Billion – to make up for the gap in private sector financing, albeit they do not expect such amounts until 2021 and beyond. [This is shown in Table 1B, under Forecasted Construction $s Sources – Other – Local Governmental Assistance, a total of $13 Billion.] Since the Authority has done nothing to explain what 'other' sources might be, one must presume that the Plan's management expects this $13 Billion from city and county governments, in terms of grants, not loans to be repaid.

Needless to say, **to assume California's cities and counties are going to contribute $13 Billion is audacious and risky**. First, no city or county has made the CHSRA a written offer of hard cash for the high-speed train, or even made HSR a priority.[16] Three years after Prop 1A, not one of the State's 482 cities or one of its 58 counties have "stepped up to the plate." In contast, cities and counties have started urging the State to drop CHSR altogether.

Local and county governments do not have the luxury of incurring large amounts of debt for speculative projects. The State's October 2011 transportation needs assessment said there is already a $193 Billion shortfall between what comes in for local transport from all revenue sources, and what is needed simply to maintain existing roads, ports, rail, airports, etc.[17] California's local governments account for about 65 percent ($158.4 Billion) of all revenues for transportation infrastructure.[18] That means to simply maintain what transport infrastructure they already have, local governments will need to raise $125 Billion over the next decade, an average of about $12.5 Billion per year.

Anyone who reads California's newspapers knows that local officials are struggling to meet current budget needs, including safety, library, parks, sidewalks and so on. To bank on local budgets to provide another $13 Billion in construction financing to CHSR is highly unrealistic.

1.4. The Construction Budget Is Likely To Rise Since Most Sections' Engineering Work Is At 15% Or Less Completion

In the first quarter of 2011, CARRD and this report's authors showed the Central Valley ICS costs had risen by over 50% when more engineering study had been done on track alignments, rights-of-way costs and estimated costs for eminent domain. By using the Authority's own construction data sets, they also showed that construction costs for Phase 1 would be at least $66 Billion.[19]

To the credit of the 2012 Draft Plan authors, the new Plan contains a range of price estimates for the capital investments beyond the Initial Construction Section (ICS). But as Table 1C shows, the difference in cost estimates only range from 13%-28%, substantially lower than the +50% jump in Central Valley costs witnessed between 2010 and 2011.

A simple truism of construction cost estimates is that costs always rise as a project approaches the start of construction, and then generally rise further while being built. Taking the costs in the 2008 Plan for the Merced to Fresno and Fresno to Bakersfield Segments, and adjusting them to 2010 dollars, from 2008 dollars, they were estimated at $42 Billion.

Table 1C	
Section of Proposed Project	**Low to High Estimates' Difference ($Bs-2010)**
ICS	na
IOS N	28%
IOS S	16%
B2B	18%
Blended	20%
Phase 1	13%

In the 2011 EIRs for these two segments, they were estimated at $59 Billion in 2010 dollars. That is an **increase of 40% in two years,** as engineering estimate levels went from 15% to 30%. This would imply that costs increases in other segments may be much higher than the 10% to 20% differences that exist between the Draft Plan's High and Low estimates. The recent five-fold cost rise of the BART extension to the Oakland Airport and the east section of the SF Bay Bridge are perhaps California's most recent, unhappy examples of this phenomenon.[20]

The Draft Plan shows that only two of the seven sections for which estimates are being prepared have completed the Preliminary Engineering 15% Design stage.[21] The construction estimates for the Central Valley have risen more than 40% in two years, despite the relative flatness of the terrain and lower eminent domain costs per linear mile than elsewhere along the CHSR route. We believe that the rest of the CHSR system will rise even more when tunnels have to be bored, viaducts and grade separations through urban areas becomes the norm, and land acquisition costs per acre are multiples of farmland's costs. The specter of more than 50% rises in the estimated costs is real, and the percentage rise of those costs is likely to be even higher than for the ICS.

Looking at other recent High Speed Rail construction estimates also leads one to the unfortunate conclusion that costs will almost certainly go much higher than $100 Billion for Phase 1. The proposed plan to upgrade Amtrak's Acela service is estimated to cost $117 Billion on a pre-existing rail line and covering 81 fewer miles than LA-SF. Britain's recently announced plans to create a High Speed Rail line between London and Birmingham, a distance of a little over 100 miles (one fifth of the California plan), is being estimated at $51 Billion.[22]

Taking the upper end of the Phase 1 estimate (approximately $117 Billion) and adding half again as much is not hyperbole. It is probable, even inevitable, that Phase 1, SF-LA, will end up costing at least $175 Billion. The Draft Plan does not even attempt to estimate what it would cost to truly fulfill the promise made to voters of a system that also links Sacramento, San Diego, and the East Bay. The figure may be too staggering.

1.5. The Capital Plan Relies On An $11 Billion Concession Sale After 2023 To A Private Operator, Based On The Assumption Of Early IOS Profitability And Long Term Government Funding Guarantees

After more than a decade of study, and three years after the State promised a $9 Billion seed investment, one would expect private investors and financiers to have approached the Authority to finance the project. They haven't. Instead, like the bank bailouts in 2008, the CHSRA has essentially set up a situation in which the public has all the downside risk and the private sector only comes in if there are profits to be made. Risk is socialized, reward (if any) will be privatized.

The Draft Plan says more than once that ridership revenues will generate sufficient cash flow from the government-built 'proof of concept' IOS "to attract private capital for subsequent construction" or when speaking of the Phase 1 plan "Private-sector investment is anticipated once revenues are proven through completion of an IOS." [23]

In fact, the record of interactions with the private sector to date shows no private financial interest without a government revenue guarantee or some other means of reducing risk. The Authority has been disingenuous with the public in this regard for at least three years. In 2008, the Authority sought interest from private investors in a Request For Expressions of Interest (RFEI). Summing up the responses in June 2008, the Infrastructure Management Group (IMG) told the CHSRA Board that all the operators and equipment manufacturers, and nine out of ten builders responding to their RFEI were reluctant to invest unless a large portion of the capital costs were from governments.[24] The Board heard this message again fifteen months later from IMG and Goldman Sachs when they said; "Due to uncertain demand, this will likely require a revenue guarantee." [25]

Yet, this reluctance was not disclosed in the Prop 1A Ballot initiative, in which private capital was clearly held out as available for each portion of the construction. Moreover, guarantees to private investors were prohibited by AB3034.

Even a decade from now, the private sector is not being forecast to take over future construction or financial risk. In the Draft Plan, the authors assume that CHSRA will be able to sell 30 year concession rights to operate the system to private investors/operators in 2023 for $11 Billion. [This is shown in Table 1B, under Forecasted – Private Investment – of $11Billion.]

Since the CHSRA financial model predicts a profit stream over the following thirty years of $66 Billion, this implies an 11% discount rate to get to an $11 Billion sale price.

As we note later, the $66 Billion in profits also assumes no taxes being paid; with a standard corporate tax burden and no deductions – since the buyer does not have depreciation – the forecast profit stream would drop to roughly $50 Billion, implying a much lower than $11 Billion to be paid by the private sector.

Needless to say, if profits and ridership on the IOS are non-existent or not as robust as CHSRA predicts – and we doubt they will be -- then the private sector will opt out or use a much higher discount rate when actually bidding, meaning they will pay less than $11 Billion for the right to operate the system for thirty years. Moreover, for the $66 Billion in future profits to have any chance of happening, a further $44 Billion must be invested in CHSR by the Federal Government and local governments to build the remainder of Phase 1. This is because the projection of the riders and revenues that support the projection of $66 Billion in profits/margin over the next 30 years is based on entire Phase 1 being completed.

This private investment of $11 Billion is in addition to the $13 Billion that will be needed from governmental agencies to complete the Bay to Basin (B2B) Section, shown in Table 1B in the Bay to Basin column.

In other words, CHSRA proposes to raise $11 Billion from the private sector by having government agencies commit to investing $13 Billion in B2B and another $44 Billion to complete Phase 1; about 80% of onward construction costs. **It is impossible to imagine a private investor making this offer absent guarantees from the Federal or State government that the government will complete Phase 1 construction and/or promise a revenue guarantee to the investors, no matter what AB3034 may say.**

The market has spoken -- private operators abandoned passenger rail in the 1970s; Amtrak requires an average $1 Billion annual subsidy to continue to operate. Freight rail remains a robust source of cash flow – **but HSR does not move freight**.

Of course, we must commend the authors of the 2012 Plan; for the first time, they have admitted that the Private Sector will not join the public in financing the first decade of construction of High

Speed Rail. The private sector perceives substantial risk that the system will not be completed and if built, will not be profitable. In essence Goldman Sachs told the Authority that in 2009.

If early IOS operating expenses, between 2022 and 2023 are higher than the Plan projects, the concession sale in late 2023 is improbable, thereby increasing the need for an additional $11 Billion in Federal grants just to complete the B2B. As we discuss in Chapter Two (Operating Expenses) and Chapter Three (Ridership and Revenue), we believe that both the cost and income side of the forecast are suspect, and therefore it is a very risky to rely on the private sector for $11 Billion to construct the additional segments of CHSR. In short, this is another risk to the capital plan, and a risk only to the public treasury.

1.6. In Sum The Federal Government May Need to Be Committed to Over $90 Billion, Or The State Of California May Need To Step In

There is a very high risk that as other sources of planned funding dry up, the Federal commitment to only Phase 1 will need to exceed $90 Billion. [This is shown on Table 1B in the bottom section labeled "Amended Summary".] The Summary Table shows that the minimum the Federal government will need to grant (not loan) to California is $65 Billion, because the QTCB/TRIP program will not materialize as projected in the Plan. Additionally, the Federal government may also have to provide another $1.5 Billion if the QTCB/TRIP program never becomes law, plus another $13 Billion if the Local Governments refuse or can't participate, and another $11 Billion if no private operator is willing to purchase the future revenue stream from a rail system that is only partially built. That could amount to $90.5 Billion, or more, in grants from America's taxpayers.

The worst-case situation is that the State decides to fund the project out of the General Fund or a combination of Construction Bonds (Revenue Bonds) and General Obligation Bonds having built the ICS with currently available funds, but with no other funding available. That would have enormous negative consequences for California's taxpayers, which we address in Section 5.

1.7. Prop1A / AB3034 Require Full Funding Be In Place Before A Useable Segment Can Be Started And Require Phase 1 Completion by 2020

The LAO dropped something of a bombshell on November 29th 2011 when its review of the Draft Plan said, *inter alia,* that Prop1A required the identification of *"all sources of committed funds (and) the anticipated time of receipt of those funds . . . Our review finds that the funding plan only identifies committed funding for the ICS, which is not a usable segment, and therefore does not meet the requirements of Proposition 1A."*[26]

The LAO report concludes: *"the HSRA . . . will not likely receive all of these approvals prior to the expected 2012 date of initiating construction."*[27] As the CHSRA knows, not only is the project's start threatened, but every day of delay means the decline in value of the Federal gift and the State's bonds for the ICS will build fewer miles of ICS track.

There is also the matter of completion timing. While we believe that the Draft Plan sets a more realistic timeline for construction completion – Phase 1 is forecast for completion by 2034 -- the awkward legal fact is that AB3034 requires completion of Phase 1 by 2020.[28]

1.8. What Is The Return On The $100 Billion+ Investment?

This is a simple question, but one we do not believe gets enough attention. When the US built the Interstate Highway System, we enabled enormous additional mobility to labor and to freight; when we built the Golden Gate Bridge and the Central Valley Water Project, we similarly enabled

development of vast new swaths of territory; when we invested in the Space Program and in new defense systems, we create powerful new technologies that, over time, created huge wealth, innovation and welfare gains in the private sector. When the transcontinental railroads were built in the late 1800's we enabled low cost movement of commodities heading east and manufactured goods heading west, not to mention labor migration. The Governor recently equated High Speed Rail to the Suez or Panama Canal enterprises, revealing a startling (or cynical) ignorance of the profound efficiencies that those two projects created for international trade.

Most great investments, whether by the private sector or the public sector, have enabled multiples of new activity and wealth-creating enterprises. Most create efficiencies or opportunities that did not previously exist. The High Speed Rail vision, whether in California or in the nation, is singularly unpersuasive in this regard. In no case does HSR enable labor movement that does not already exist by air or road. In no way does it push the boundaries of technology or manufacturing excellence (at least, not in the US, although perhaps in China, France or Germany); and it does not even move freight.

Nor does the Draft Plan make the argument that CHSR will cause more people to move from Point A to Point B. It only proposes to transfer a percentage of the projected traveling population from planes and cars to the railroads. It is a replacement strategy. It may argue that it can do it cheaper or cleaner than the alternatives, but it is not arguing that it is creating anything other than the functional equivalent of additional lanes on the highway or additional gates and runways at the airports. And even then, as we show later, HSR alleviates only a tiny fraction of the demand on these systems. **In sum, we see no multiplier effect from this investment.**

The argument one hears most is that the Chinese, Japanese and Europeans all have HSR systems and so should we. Of course, these nations are also highly reliant on nuclear energy and most of them have fuel taxes that are multiples of those in the US. We do not find "keeping up with the Wongs, and Schmidts" -- public policy by imitation -- to be a persuasive argument in itself, especially in an era of limited public resources. Indeed, we have yet to see, either in this Draft Plan or in any of the many advocate pieces, anything that approaches a true ROI assessment. Since the Draft Plan and the Authority are now arguing that the public should take **ALL** the upfront risk, we think a strong ROI argument is the least that could be provided.

If this were a modest investment, one might be willing to accept modest returns. But CHSRA and its legislative backers are proposing to soak up a substantial amount of all available infrastructure capital in California for decades to come in order to build the CHSR train. Is the prospective return on investment worth it? What will California **not** invest in so that it can build this train? That analysis is missing, but should be part of the Draft Plan's Business case.

CHAPTER TWO: DUBIOUS PROFITS – A REVIEW OF THE PROFIT AND LOSS FORECASTS IN THE PLAN

The CHSR project has two cost components – the construction build cost, discussed in Chapter One, and the Operations and Maintenance costs ("O&M" or "OpEx"), discussed here. This part of the Draft Plan, in conjunction with ridership/revenue, forms the Profit and Loss ("P&L") forecast for the future business. It is what determines whether there are likely to be profits or operating deficits. Note that none of these CHSRA projections presume any repayment of the more than $100 Billion in construction costs. Those costs are presumed to be the responsibility of the taxpayers of California and of the United Sates.

To appreciate the complexity of the development of a revenue stream and cash flow from the construction schedules discussed in Chapter One, we created Table 2B (page 24) to summarize the Plan's key assumptions. Table 2B shows the years that operations start in each of the sections or segments, and sample years where ridership and financial information has been projected in the Draft 2012 Plan. For example, once the IOS North is built, as shown in Table 1B, in Chapter 1, Table 2B shows that 2022 is the first year of passenger traffic for the 290 miles of track between San Jose and Bakersfield.

As the Draft Plan's data is provided for every fifth year, the year 2025 was selected as a good example of initial traffic, about three years after operations start. In that year, it is projected that 7.3 Million passengers will ride this IOS Segment. Since neither San Francisco nor Los Angeles are reached during this period, the key measurements of performance such as time between these two cities, and the number of transfers required of a passenger, etc, are not applicable. The columns at the right show when those metrics come into play, that by the time when service starts between LA and SF in Phase One (which is a combination of the Blended and the Complete Phase One), the best elapsed travel time between them will drop from some unknown time to 2.7 hours, and the number of different trains that will need to be ridden will drop from three to one.

Table 2B also shows the snapshot financial results forecasted in the Draft Plan. For example in 2025, during the operation of the IOS North, the 7.3 Million riders will produce $0.8 Billion YOE in revenues, and a net operating profit (margin) of 38%. To the far right, the Program Summary column shows revenues of approximately $152 Billion YOE between 2012 and 2055, with a 50% net operating profit of about $76 Billion YOE.

If there are operating deficits taxpayers will have to make up the difference as they do in virtually all other passenger rail service in the world, because revenues turn out to be less than projected and/or the operating and maintenance costs are higher than forecasted. The Legislature made it illegal in AB3034 for CHSR to receive 'operating subsidies' and the ballot description states plainly that the "users of the system shall pay for the system". But from a financial point of view wishing does not make it so. Once $30 Billion has been invested in the IOS, does anyone doubt that Californians will have to make up the probable annual Operating Deficits? If another $25 Billion is then invested in the B2B, and losses continue, then what is Plan B? Invest another $50 Billion to complete Phase 1? This is a never-ending, downward spiral.

The pivotal factor that seems to determine the Plan's O&M costs is the CHSRA's ridership forecast because, as discussed below, so many of the costs are assumed to be variable rather than fixed. Therefore, questions relative to the reliability of the ridership forecasts translate directly into concerns about operating expenses. [Ridership is discussed in Chapter Three.]

2.1. Per Ticket Revenue Is Highly Uncertain

Forecasting passenger rail revenues is especially contingent on the ridership forecast. For reasons highlighted in the next chapter, our group and others are deeply concerned that the current CHSR Ridership Model is unreliable and may grossly over-predict ridership, hence revenues.

That said, revenue is a function of both ridership and the ticket prices that riders are willing to pay. Unfortunately for CHSR's business model, the Authority believed (correctly) they had to price their tickets below airline tickets to be competitive. The ethos from CHSRA from the outset, and still in the 2012 Draft Plan, is that ticket prices should be set at roughly 85% of airline prices.

Because there is significant competition on the LA-SF air route and because the US is fortunate to have had, since the 1980s, a deregulated domestic air travel market, air fares are very competitive. This means that the CHSRA is basing its own pricing against a highly efficient, competitive, and cut-throat industry.

This is not typically a realistic way to start a business and is not the 'business' environment in which Europe or Japan created their High Speed Rail entities. At the time of construction of those systems, domestic air routes were highly regulated and protected; and many of their internal air routes are still regulated. Airline prices were, as one would expect, very high and that created the business conditions for High Speed Rail to offer a competitive product at price points that could recover some, but not all of their operating costs and still be attractive to consumers.

Table 2A
Comparative Ticket Pricing And Operating Expenses[29]

Ticket Prices Per Passenger Mile		**Operating Expenses** Per Passenger Mile	
Avg. Existing Europe, Japan, US (Acela)	CHSRA 2012 Draft Plan	Avg. Existing Europe, Japan, US	CHSRA 2012 Draft Plan
43¢	**19.5¢**	**Assume 43¢ since claim is breakeven, likely higher**	**10¢**

The other competitive force the Authority must deal with from a business point of view is that gasoline is much cheaper in the US than overseas where high taxes per gallon/liter make automotive travel very expensive. This, coupled with the improving Miles Per Gallon in new hybrid and all-electric cars, makes the automobile alternative much more price competitive.

This disparity is perhaps most visible when looking at the revenue-per-passenger-mile that the Draft Plan predicts versus existing systems in Europe and Japan. As Table 2A shows, the Draft Plan predicts about 19 cents of revenue per passenger mile, which is just 44% of the revenue that European and Japanese HSR systems gather on a per-passenger-mile basis. Even disregarding that those systems' operations are subsidized, how can the proposed CHSR prices be less than half what passengers in Europe and Japan are charged and have the CHSRA expect to make a 50% profit?

If the Draft Plan proposed using the 43¢ average price per-passenger-mile as charged overseas, then a one-way, 520 mile San Francisco to LA/Anaheim journey ticket should cost $224, excluding taxes or security charges.[30] That's three times what the Draft Plan is proposing and would make the train more the province of business travelers than cost-conscious families.

Table 2B – Summary of Operations and Financial Results Through Phase 1

Based On CHSRA's Draft 2012 Business Plan (November 1, 2011)

PROGRAM PHASES OPERATIONS	**Initial Construction Section**	**Initial Operating Segment – North**[31]	**SF Bay to LA Basin (B2B)**	**Phase 1 Blended & Complete Terminus**	**Phase 1 Operations**	**Phase 1 Program Summary**
Build Time Period	2013 to 2017	2015 to 2021	2021 to 2026	2026 to 2033	**2034 Onwards**	**2012 to 2055**
Station End Points	South of Merced to North of Bakersfield	San Jose to Bakersfield	San Jose to San Fernando Valley	San Francisco to Los Angeles and Anaheim	**Same Terminus – No Phase 2**	
Mileage between End Points	140 +/-	290	410	520	**520**	
Operations – Time Periods						
First Passengers	No train, ergo none	2022	2027	2034	2034	
Typical Year for Operating Results	**n/a**	**2025**	**2030**	**2040**	**2050**	
Annual Ridership Volume - Ms	None	7.3M	17.5M	36.8M	38.7M	
For SF to LA passenger –best travel time & number of trains required	n/a	n/a	time unknown, 3 trains	time unknown to 2.7 hours; 3, 2 or 1 train	2.7 hours, 1 train	
Plan Financial Forecast - $Bs YOE						
Plan Revenue		$0.8B	$2.3B	$5.5B	$7.8B	appx. $152B
Plan Operating Costs &Trainsets		$0.5B	$1.1B	$3.0B	$4.1B	appx. $76B
Plan Projected Operating Profit/Margin		$0.3B	$1.2B	$2.5B	$3.7B	appx. $76B
Plan Projected Percent Operating Profit/Margin	n/a	38%	51%	46%	47%	50%
State Funds Available for Operating Subsidies[32]	n/a	0	0	0	0	0

2.2. Detailed Data On Operating Cost Assumptions Are Absent From The Draft Plan, Which Makes It Impossible To Independently Assess The Cost Structure

Table 2A is also revealing in its exceptionally low cost per-passenger-mile that the Draft Plan forecasts. While the Plan seems to be very generous to consumers in predicting a 19 cent per-passenger-mile price, it is even more generous to itself by assuming that its **10 cents per-passenger-mile costs**, will be less than 25% of existing worldwide HSR estimated costs.[33] Because all of the worldwide systems are subsidized, except for two segments (Paris-Lyon and Tokyo-Osaka) worldwide operating costs per passenger mile must be at least 43 cents. Otherwise, why would they need a subsidy? The Draft Plan's long-term gross Operating Costs, including trainset replacements, are projected at about 50% of revenues; therefore, Operating Expenses are about 10 cent per passenger mile.

We attempted to assess the cost structure of the Draft 2012 Plan, since on the face of it these forecasted expenses appear extremely low versus existing services. One might think this would be doable, since the Draft Plan claims O&M *"costs are fully comprehensive"* and the Plan has numerous citations of aggregated Operating Expenses (sometimes referred to as cost assumptions) – for example, exhibits 7-2 and 8-29.[34] However, nowhere in the Draft 2012 Business Plan, appendices, nor other documents referenced in the Plan, is there a detailed list of all of the items used by the Authority to compute operating expenses (OpEx) systems worldwide.

For example, what is included in Administrative Costs is uncertain. Does this include human resource management, recruiting, ongoing employee training, benefits, facilities (cost of occupancy), legal, information systems, communications, travel and entertainment, or professional services? The Plan states that; *"Composite unit prices for more than 300 separate cost items have been developed for the cost estimates."*[35] Yet none was issued with the Plan and so the nature of the assumptions cannot be verified.

The Draft Plan also lacks any independently validated data from the existing operators that would show what their manpower and operating and maintenance costs are, on a common measurement, such as per passenger miles. If this information were provided, along with the projected CHSRA costs in the same measurement methodology, a reasonable assessment of the risks associated with the costs structures could be made.

Without this level of data, the Plan's Operating Expenses (OpEx) cannot be truly assessed by the CHSRA or outside reviewers, including its Peer Review Group, and therefore any claims of operating profits must be suspect. We know from a 2007 Congressional hearing that Europe's national governments absorb much, if not most, of the operating expenses within various ministries, which can create the illusion that their high-speed rail systems achieve net operating profits. Is CHSRA using the same assumptions? It is hard to see how they can forecast costs so much lower than Europe's unless that is the case.

Only when the full extent of the inclusion or exclusion of operating expenses is known will the public understand and be able to assess the risk of CHSR's future profitability.

2.3. Taxpayers Will Pay Most Of The Costs To Build The System Including Debt Service: The Plan Gives the Passengers, Owners And Operators A 'Free Ride'

For the first time, the Draft Plan finally levels with the people of California on the debt financing piece of the puzzle – the construction of the system will be paid for by the people of California and the United States, including any debt service. This is despite the hopeful language in the Ballot initiative, and despite what appears to be the intention of the Legislature in the legislative language of AB3034:

> "Revenues of the authority, generated by operations of the high-speed train system above and beyond operating and maintenance costs and **financing obligations**"[36] (emphasis added)

In other words, the system was foreseen to cover financing charges. Yet, in the Draft 2012 Plan, the P&L Forecast makes absolutely no allowance for repayment of debt service on the capital costs. The interest charges alone, on $100 Billion of debt, would have been a very noticeable number.

Of course, most real businesses must pay the banks when they borrow for new equipment or factories. But for CHSR, any debt that is taken on by US or California taxpayers apparently will be serviced by those same taxpayers, according to the model. This includes capital expenditures such as acquisition of right of way, construction of track and associated infrastructure etc.[37] At least in France, there is a "trackage fee" that the private operator pays to the Government for use of the system (a similar model exists in Britain), but those fees do not cover the debt and interest payments on the underlying system.

2.4. Business Plans Must Differentiate Between Fixed, Semi-Fixed And Variable Operating Expenses

The Draft Plan seems to recognize nearly all Operating Expenses as Variable, which has the effect of making the system look profitable even at very low revenue forecasts (the poorly described "Breakeven Analysis" in the Plan).

Consider for example the O&M projections found in Exhibit 7-5. If the costs for IOS North and the medium ridership case (2035-2045) are divided by the ridership forecast from Exhibit 6-11, the result for 2035 is that the operating cost for each of the 28.5 Million riders is forecast at $29.30. Repeat the exercise for each of the 37.7 Million riders in 2045 and the operating cost per rider is $28.50.

This means that, even using constant 2010 dollars, a 32% increase in ridership produces less than a 3% cost efficiency per rider. Therefore, almost all OpEx is being treated as directly variable. Since no detailed explanation of the underlying costs is given in the Plan, the conclusion must be that most semi-variable and fixed operating expenses are excluded from the determination of Operating Expenses. Indeed, the Authority acknowledges that it has essentially assured a profit in its formula when it writes that Operations and Maintenance costs are assumed to

> *"grow at 60 percent of the growth of ridership, so if ridership grew one percent, operating expense costs grew six-tenth of one percent."*[38]

This bakes in a profit. But reality is very different. There are many fixed costs which cannot be so easily or quickly shed if ridership comes in below forecasts, including train set maintenance, track maintenance, unionized labor contracts, working capital's fixed costs and so on.

In fact, we believe most operating costs per train would be fixed or highly sticky, not variable. For example, stations' expenses must handle peak rider demand that occurs for two hours early in the day with a significant drop off in activity for about eight hours before recurring. In addition periodic (maybe nightly) track maintenance is probably highly fixed, since it is needed for safety, even if just a few trains travel the route. Manpower utilization in the off-peak is less efficient, but difficult to stand down. In another public context, this is the same conundrum that water districts face when they encourage conservation and then consumers comply. They find that it costs just as much to deliver fewer units of water, so per unit water bills rise to cover fixed costs even though less water is being consumed.

It also seems in the early years, as traffic is building up, the load factor per train must be lower, as the frequency of trains is high, but the number of passengers is low. It seems that the frequency must be high, from a marketing point of view to encourage and capture new customers. Therefore the operating costs per passenger mile must be higher in the early years. Therefore operating costs should be substantially higher, as a percent of revenues, in the early years. But, as shown in Table 2B, they are not.

The type of hazy, unspecific business modeling that exists in the Draft Plan, where costs are simply tied to ridership and scale up or down as ridership does, leads to favorable but probably illusionary operating profits. It also makes the value of "breakeven" analysis at low revenue questionable. The Authority's Plan has to solve the fixed, semi-fixed and variable costs trade-offs in much more detail before the operating expenses portion of the Plan is credible.

2.5. The Plan Fails To Explain Its Assumptions On Labor Costs

Labor is clearly an important element to pricing, but again there is not enough detail to assess the forecast. The Draft Plan, for example, assumes overall costs are lower than Europe's, so one might think that the Plan also is assuming labor costs will be lower. Yet elsewhere in the Plan, in bemoaning the challenge of keeping construction costs under budget, the Authority notes that *"US labor and construction costs are 30 – 75% higher than in other developed countries with existing HSR systems such as France, Germany, Italy, the Netherlands, the UK and Japan."*[39] Why would these higher labor costs not also apply in the Operating Expense assumptions? If so, then why are the Plan's Operating Costs so much more efficient than Europe's? It does not add up.

In fact, as another Inspector General's report finds, Amtrak's labor costs are much higher than in Europe. The report found that Amtrak pays its average "infrastructure worker" 2.3 times as much as the average European rail infrastructure worker. Base wages are only 30% greater, but Amtrak pays 4.25 times as much in fringe benefits. Expanding Amtrak's infrastructure expenses through the high-speed rail program is likely to dramatically increase its losses.[40]

Indeed, from what we can tell, the Authority has not budgeted for long term health and pension benefits for this new cadre of unionized public or private sector railway workers. As the State and all its counties and municipalities are well aware, unfunded health and pension benefits for public workers are ticking time bombs from a budget's point of

view. If the Authority plans to offer standard benefits, and it wants to avoid this future pitfall (as it should) then labor costs must be set appreciably higher than the Draft Plan's model seems to anticipate.

2.6. The Authority Bases Maintenance Cost Estimates On "Published Costs For Overseas Systems" But Overseas And Government Entities Do Not Use GAAP Accounting Metrics [41]

The Draft Plan lists seven countries (Exhibit 7-1) with which the Authority has information exchange agreements and the types of information that is exchanged. What is not stated, however, is what each operator includes in and excludes from O&M costs, and how the cost experience (i.e. the monetary values) of each compares with what CHSRA is projecting. Only when each operator's expenses are brought to a standard set of accounting principles can meaningful comparisons be made. Thus, when the CHSRA claims to be fiscally conservative because they are using Maintenance cost estimates that are at the upper end of the five foreign government-run HSR system maintenance costs (Exhibit 7-3 on page 7-3), it is not clear how robust this statement really is.

In France for example, the state-owned Société Nationale des Chemins de fer Français (SNCF) is required to *"undertake all maintenance and renewal activities"* for the Government-owned Réseau Ferré de France (RFF). RFF pays SNCF for these maintenance tasks, sometimes from trackage fees, sometimes from direct French government subsidies.[42]

Congressional hearings noted that Japan's operations expressed that the *"subsidy for the Shinkansen in 2006 was ¥151Billion, or a little less than $1.3 Billion, and the local government subsidy was ¥75.5 Billion, or $633 Million US."*[43] That clarifies who covers part or much of the Shinkansen's O&M costs.

One has to admire the honesty of the Spanish in 2007 for clearly saying that the Red Nacional de los Ferrocarriles Españoles (RENFE), as a government-owned company, *"both operates trains and manages all the infrastructure"* and that they are now emulating the French model of creating yet another government agency, Administración de Desarollo de Infraestructura Ferrocarriles (ADIF), to take over the infrastructure development and maintenance. But ADIF, like RENFE, is also a government agency inside the Ministerio de Fomento (Development Ministry) whose government budget is able to cover shortfalls of RENFE or ADIF. The Ministry reports that it *"provides about €1.349 billion ($1.8 billion US) per year for passenger rail operations and infrastructure maintenance."* [44]

Therefore, the Draft Plan's claim that it models itself on foreign operators is virtually meaningless to our assessment of its P&L forecast. This crucial part of the future business model is highly uncertain, with significant downside risk to either the entity's P&L or to taxpayers in terms of operations and maintenance expenses.

2.7. The Draft Plan Makes No Allowance For Taxes On The System's Profits, Inflating "Net Operating Profits"

If and when the Initial Operating Section is 'profitable' the Plan forecasts that the operations should be sold to and operated by a private entity. Yet nowhere in the calculations of Net Operating Profit is there mention of payment of taxes due to

California or the United States from those profits. We know of no exemption from corporate income taxes for the train's operator, or operators of specific facilities for O&M functions.

This is a substantial oversight, if it is such. Federal corporate income tax is imposed at 34% or 35% where taxable income exceeds $335,000.[45] California's corporate tax rate is only exceeded by New York's.[46] So the consequences of including taxes in the profit equation would make the proposition less attractive to a private operator than the Draft Plan presents. For the final Plan, the Authority should not exclude this important item in the P&L forecast.

2.8. The Plan Does Not Use Depreciation to Recognize The Costs of Future Capital Replacement

The CHSRA does not treat capital asset renewal as a component of O&M costs. Rather it says: *"Finally, the system will require capital asset renewal expenditures over its life reflecting the need to renew or replace assets over time."*[47] Conventional accounting practices calculate a depreciation charge towards what an eventual asset replacement would be and include a *pro rata* portion of such calculation in the annual O&M expense. This method of depreciation treatment is consistent with what US and state tax codes allow in determining a taxable profit. The Authority has chosen to ignore that convention, which means the inclusion of such replacement costs are not in the annual profit equation. Therefore near term "profits" are enhanced at the expense of later reserves taking affect. In some places, the Authority does appear to create a reserve account, but it is inconsistent. Not including an annual capital replacement charge during the time of the assets' use helps create the illusion of operating profit. Unless the reserve is real and adequately funded (which government agencies rarely pull off), and expensed during the entire life of the asset, then there will inevitably be large bills in the future that have not been budgeted, which will almost certainly be put back onto the public's responsibility.

2.9. The Draft Plan's Expenses Ignore Homeland Security-Type Expenses

Nowhere in the Plan is the level or cost of security addressed. Sadly, as Europe, Japan and India have learned, trains and subways can be a 'target' for terrorists.[48] [49]. Stations are crowded with passengers; hundreds of miles of track, tunnels, bridges trestles and viaducts are located in remote areas and can be readily accessed during the day or night by terrorists. Unless every train boarding at every station is subject to security controls equivalent to current practices at airports, luggage will present an easy delivery means for explosives that can be detonated after the terrorist has exited. This was the *modus operandi* in Madrid's Atocha Station in 2004.

Since there is no mention of security needs, no computations are included for the capital, operating or liability insurance costs for such an event or events. Public air carriers carry liability insurance because of the risk of harming the property or health or lives of passengers or those on the ground, with the resulting need to pay damages.[50] Security costs are borne by air passengers in the ticket price and via Transport Security Administration (TSA) surcharges.

The 2009 Plan made the indefensible claim of quicker door-to-door times because no security 'hassle' was required.[51] The omission of security-related plans and costs in the 2012 Draft Plan is a 'blind spot' the Authority must address to have a credible business

plan for the 21st century. It also begs the question as to how will people get on Express Trains and secure their luggage somewhere when the train is trying to hold to a 2 hour 40 minute schedule. In Japan, the answer is simple: if you have luggage, ship it ahead as freight!

2.10. The Draft Plan's Sales And Marketing Forecast Is Unconvincing

Marketing expenses are mentioned only three times in the Business Plan's more than 200 pages. The allocation for all administration, including marketing and sales is *"10% of all O&M excluding contingency"* set-asides.[52] Whether "standard industry allowance" refers to only Amtrak or all US rail or all worldwide rail or high-speed rail alone is not defined. It needs to be.

We do not know the right figure for sales and marketing in this business. What we can say with some experience is that putting a new product in the market, where there is already entrenched, efficient competitors, is an expensive proposition. In the case of High Speed Rail in California there will be the added expense of teaching consumers about the train and train travel; in Europe, China and Japan (and even elsewhere in the USA) the culture of train travel is well established. Consumers are used to getting on a train and then finding their ways to end-points with robust metropolitan urban transit networks. CHSR has none of those advantages. This is not an insurmountable challenge, but it could be an expensive one.

In addition, the Draft Plan contains no strategic discussion of what the seven airlines serving intra-California routes might do in reaction. Starting with lowering ticket prices might be one reaction, which could cause the train's operations to 'bleed' even more red ink. It is important to understand the criticality of pricing as opposed to ridership. A ten percent cut in prices, due to competitive airline price cuts, is a 10% reduction in revenue, but a 0% reduction in costs, as the volume of passengers has not changed. Therefore with a 50% operating cost, the operating profit (margin) becomes 40%. In sum, we find the Plan to be anemic in its consideration of actually building a business; the attitude seems to be: if we build it, they will come.

2.11. The Authority Argues That All High-Speed Rail Systems Are Profitable, But That Does Not Seem To Be The Case, At Least Using US (GAAP) Accounting Rules

The Authority and the Draft Plan frequently assert that HSR systems overseas are profitable. Such assertions were recently repeated by the Authority's CEO.[53] Yet nowhere in the Plan or accompanying documents is there any proof of the claimed profits of any system – no income statements, balance sheets or statements of cash flow or sources and uses of funds of those European and Asian operators. Providing excruciating engineering detail without equal financial detail creates a very large hole in the Plan's credibility.

The 2012 Draft Plan quotes a February 2011 letter from the Director General (DG) of the International Union of Railways (IUR) claiming profitable operations in Japan and Europe.[54] But the Plan parses the DG's full response and doesn't quote the accompanying two-page memorandum.

The IUR official position paper doesn't show proof of profits. Indeed, the IUR admits that; *"The public authorities/society generally bear the costs of investing in the new*

infrastructure, constructing and maintaining the infrastructure and related equipment such as safety, control-command and signaling, etc." [55] Having public authorities maintain the infrastructure and related equipment certainly offsets significant operating and debt finance expenses. And when the French government grants the TGV's operator, SNCF, $2-$3 Billion annually for *"tariff and public service contributions, concessionary fares and various other services"* and pays a retirement supplement to SNCF *"which is not shown on SNCF's income statement"* that certainly sounds like offsetting expenses which would in any other private business be borne by the operator.[56]

Effectively the IUR position is that if the government pays all the costs of building high-speed rail systems and pays to maintain and operate them, they become *"an attractive proposition for private investors."* [57] Absorbing these and other expenses doesn't make the operating expenses disappear except into the government's general fund.

Most businesses would be profitable if the government absorbed all their capital costs and much of their operating expenses. And we know how the public feels about this kind of "market building" since it has eerie echoes to the 2008 US bank bailout, in which all the risk was socialized and the reward was privatized. Is that really what the California High Speed Rail Authority wants as well?

The DG's letter, and the CHSRA's 2012 Plan's assumptions of profits also contradict the IUR's high-speed rail director. In a 2009 statement, Iñaki Barrón de Angoiti said that only two routes, Paris-Lyon and Tokyo-Osaka, are profitable.[58] But the IUR makes no claim that those routes' profits cross-subsidize the remainder of their national systems.[59] In sum, there is no profitable high-speed rail system. As a side note, it should be pointed out these two routes were implemented on top of existing slower speed rail systems, so the right of way was more easily available and the ridership was in place. Additionally, the local and regional rail systems at both ends of each route had been in place for years. This is the exact opposite of the situation in California.

The DG's letter and the IUR's position also contradict the US Congress Research Service report of April 18th 2007 of three high-speed rail operators – France, Japan and Spain. Their national governments paid the capital costs, or in Japan shared them with local government on a two-to-one ratio. And the governments subsidized their operations about $2-3 Billion annually.[60]

If the people of California had been told from the outset that this was going to be another public transit system that would serve a public good but which would require public subsidies ad infinitum – like OCTA, BART, buses, trains generally – then the focus on profitability would not matter. But over and over, voters were told that there would be "no new taxes", "no operating subsidies" and substantial investment from the private sector because of the lucrative nature of the business. CHSR advocates set these financial expectations – we are simply trying to hold them to these commitments or show the risk that they may be false commitments.

CHAPTER THREE: THE DRAFT PLAN'S BIASED RIDERSHIP FORECAST RAISES REVENUE CONCERNS

This review is not the place for a comprehensive critique of the Cambridge Systematics (CS) ridership model,[61] which still underpins the entire financial model in the Draft 2012 Plan. [62] The Authority points out that the CS Model has been approved by independent review groups, but each of the review groups to which they refer were hired by the Authority and in each case, were instructed to report to the CEO before announcing results. A number of independent modeling experts have criticized the CS model both for its mechanics and for the results that it produces. [63] **An important step the Legislature could take would be to commission an independent ridership forecast by a group that does not answer to CHSRA.**

The 2012 Draft Plan exudes confidence by showing readers in Section 6 (page 6-12) the ridership of transit systems – not high-speed rail in other nations. [64] However, that glossy view not only isn't an apples-to-apples comparison, it misses the point of asking what were other high-speed rail systems' forecasts versus actual riders ten or twenty years later? Surely the years of contacts with foreign high-speed rail operators could have told the CHSRA the answers to that central question.[65]

We highlight here some of the highly visible anomalies that continue to undermine the model's credibility – therefore the credibility of any (including ours) financial analysis dependent on the number of riders, and thus the interest of the private sector to risk a capital investment in the project.

3.1. The Cambridge Systematics (CS) Model's Ridership Forecasts Are Clearly Over-Optimistic For The Project

The CS model appears to wildly overestimate ridership, particularly when compared to reality. Take one stark example: at present, Acela in the Northeast US has about 3 million passengers annually. Acela's planned new high-speed rail service predicts it will attract 18 Million passengers.[66] The CS Model predicts that California's HSR system will attract 30-44 million riders when Phase 1 is completed, more than twice as many as Acela's proposed Acela II and ten times as many as Acela Express presently carries. This, despite the facts that the two market catchment areas' populations are similar (roughly 50 million people[67]), the culture of train travel is much more ingrained in the Northeast than in California, New York is the financial hub of the country/globe yet extremely difficult to drive in, and Washington is the political hub, each of which has highly developed public transit systems to take riders from the train stations to their final destinations. [68] It isn't credible to argue that the California system can equal Acela II's proposed ridership, let alone beat it more than two-fold.

On a station-by-station basis, the CS Model looks even more ridiculous. Merced, a wonderful but modest California university town in the Central Valley with 246,000 residents, is predicted by the CS model in the year 2030, with Phase 1 in operation to have 1.68 million riders annually (roughly equal to Boston's Amtrak service now), or 4,800 riders a day. For comparison, Amtrak daily boardings in Merced today are 20 (twenty).[69] This is shown on the last row of Table 3A. Also note that this CS forecast was then raised by an adjustment by CHSRA management to a forecast of 8,500 per day, or an annual total of 3.10 million.

3.2. The 'Adjusted' Cambridge Systematics (CS) Model's Ridership Forecasts For The Two Initial Operating Segments Are Even Less Credible

Predicted ridership for the IOS is even more difficult to believe. Since both IOSs are the critical stages because they are predicted to be the first profitable segments, and thus attract private investment capital, ridership in these should be credible. But the project's managers didn't add credibility.

There are two issues that need to be understood, neither of which are clear in the Draft Plan. First, the CHSRA management made decisions to "adjust" upward and downward the CS model's output. Generally these are reasonable assumptions, but they are found only in a special memorandum.[70] These adjustments can be seen in Table 3A where the CS model output and the "Adjusted" projections are shown for Merced and Bakersfield. The two sources' differences are minor with one exception, which will be discussed below.

Second, for the IOS forecasts, a major increase was incorporated into the CS model, without being visible in the Draft Plan. When predicting riders for the IOS South (Merced to San Fernando), the CS model predicts that IF the IOS South is the last segment to be built Merced would have 15,100 daily riders or 5.5 million riders a year in 2030. That would make Merced's daily boardings more than half of New York City's current intercity rail ridership. This is italicized in Table 3A on the IOS South row, which shows the CS model predicted 14,400 daily riders at Merced; but then the management team adjusted that upwards to 15,100 daily riders. These daily boarding forecasts are about 10,000 higher than the other three scenarios.

This increase of about 10,000 passengers per day is due to CHSRA's management's assumption about passengers choosing to drive or being bussed from the San Francisco Bay Area to Merced to board the train, onwards towards Los Angeles.

Table 3A - Daily Boardings in 2030
Assumes Four Different 2030 Final HSR Configuration Scenarios – Limited By Funding

		Merced		Bakersfield	
Last Segment Built	**Cities at end of system in 2030**	**CS Model**	**CHSRA Mgmt's Adjustment**	**CS Model**	**CHSRA Mgmt's Adjustment**
IOS North	San Jose to Bakersfield	4,000	3,700	***13,200***	***12,100***
IOS South	San Fernando to Merced	***14,400***	***15,100***	2,400	2,500
Bay to Basin	San Jose to San Fernando	6,400	7,100	4,700	5,200
Phase 1	San Francisco to Los Angeles & Anaheim	4,600	8,500	5,400	5,600

The same, an increase of 10,000 riders per day, is true for Bakersfield's ridership forecasts. If the IOS North is the last segment built, and terminates in the south at Bakersfield, for this scenario the CS model forecasted that 12,100 to 13,200 passengers would board at Bakersfield and head north towards San Jose. The IOS North row of Table 3A shows this in italics. These 10,000 passengers also must be driving or being bussed to Bakersfield from the Los Angeles Basin to be able to take the train towards San Jose.

This set of forecasted ridership adjustments leads to very robust profit forecasts for the IOS's if one of the IOS segments is operated through 2030's, if the B2B and the complete Phase 1 are never built.

Also, CHSRA's management's upward adjustments in the complete Phase 1 system are not insignificant. The CS model forecasted 4,600 passengers per day in 2030 for Merced. But the CHSRA management team increased the projection to 8,500, and noted in their documentation that increase was mostly due to bus service that would be provided from Sacramento.[71]

The financial impacts on the IOS forecasts are important because an additional 10,000 daily passengers that depart from either Bakersfield or Merced at these IOS end points in 2030. These passengers represent about 30% to 35% of the total ridership forecasts if the IOS North or IOS South is the last segment built. This is not trivial because if it turns out that the extra 10,000 daily riders is an over-assumption, revenues will drop by the same percentage. Yet this is not discussed in the Draft 2012 Business Plan.

It would have been more professional to have left the Bakersfield and Merced daily projections in the range or 4,000 to 5,000; then discussed the "upside potential" to capture an additional 10,000 passengers per day. This approach would boost revenues about 40% if this "driving/bussing" occurred. Putting such a speculative addition in the Plan is confusing, makes readers less confident in CS and the Authority's ridership and revenue forecasts. Such an approach will certainly thwart the private capital's incentive to enter the project between 2020 and 2025.

The same is true regarding the assumption that if Phase 1 is built, that Merced will have 8,500 passengers per day, not 4,600. This is seen in Table 3A's bottom row. This increase is assumed in the revenue forecasts out through 2060. However, the special memorandum shows passengers are to be to be bussed from Sacramento. This can only happen if there is to never be a Phase 2, with Sacramento never connected to the HSR system. Clearly when it becomes time to plan for Phase 2 these Sacramento passengers will be in the Phase 2 forecasts, in effect double counting them in Phase 1 and Phase 2.

3.3. The Ridership Model's Formulas Are Deeply Flawed

In brief, the following are some of the mechanical flaws that create such bizarre and inaccurate predictions:

1. The CS model defines all trips within California as possibly served by the train, including such trips as Redding-to-Davis.[72] Redding is a 2.5 hours drive north of Sacramento, the northernmost terminus for Phase 2 of HSR. Ventura-to-Monterey (on the coastal highway) also assumed to feed the system, is well away from the HSR lines. In short, almost 30% of Californians will be nowhere near the train.[73] The baseline of trips taken is significantly inflated by the assumption, and their "trips" should not be counted in the CS model.

2. The present CS model appears insensitive to distance from stations. High-speed rail ridership demand is closely tied to stations' accessibility. The earlier Charles River Associates ridership model only considered trips by residents in a station's vicinity, plus those who were traveling to a destination near another station.[74] The CS model includes all trips taken in California, except those to Lake Tahoe.[75]

3. The model fails to consider income as a component of ridership demand. Numerous travel studies confirm that income levels, levels of professional attainment and education matter greatly in determining travel demand. The Ridership Peer Review panel noted this: "*Interactions between socioeconomic variables (income, etc.) and time/cost variables should be included in the model. Such heterogeneity has been found in virtually every study that has looked for it, and in some cases detailed results turn out quite different when it is included."*[76] But the CS model excluded that caution.

4. The model undercounts riders in auto trips, which makes train travel look more attractive. Unlike other ridership models, the model does not reflect the number of passengers in an auto, van, etc.[77] A large majority of non-business, intercity auto trips are taken by families and friends, and the cost-benefit ratio changes dramatically when it is a single auto trip shared by many versus each person having to buy a train ticket.

5. The model over-estimates the costs of auto trips. As with other Authority-generated financial formulas, the underlying assumptions of costs for driving are flawed. The model underestimates savings from having multiple people in a vehicle, and therefore inflates the true cost per automobile passenger mile to make the rail price per passenger mile look more competitive. It also makes no allowance for future gas mileage improvements; as a result, in one scenario the model generates a "gallon of gas" equivalent of $40/gallon.[78] These deeply buried biases make train travel look more attractive. The model also makes no allowance for the emergence of hybrid and electric auto technologies, the new, 2011, fleet mileage standards, or the impact of high-speed internet on lowering business travel. Needless to say, all of these assumptions would lower demand for train travel.

6. The Model does not assume price-cutting strategies by airlines. The model makes no effort to assess shifts in demand if any or all of the airlines serving intra-California routes cut fare prices to any of their seven LA and San Francisco destinations to compete with High Speed Rail on its single LA-SF route.

7. UC Berkeley Institute of Transportation Studies (ITS) deemed the CS Model "Not reliable." At the request of State Senators Lowenthal and Simitian, the prestigious Berkeley ITS reviewed the inner-workings of the CS model in mid-2010. They concluded that;" . . *the combination of problems in the development phase and subsequent changes made to model parameters in the validation phase implies that the forecasts of high speed rail demand - and hence of the profitability of the proposed high speed rail system - have very large error bounds.*" See a copy of the full report and commentary at www.its.berkeley.edu/publications/UCB/2010/RR/UCB-ITS-RR-2010-1.pdf).

3.4. The P&L Model Forecasts Very Low Ticket Prices Which Do Not Appear Sustainable If Profits Are Expected

As shown in Table 2A, the Draft Plan assumes lower ticket prices than are charged in Europe on a per-passenger-mile basis. Of course, the European and Japanese systems can charge higher per mile ticket prices partly because auto fuel costs are more than double those in the US, and air fares have traditionally been much higher than in the more competitive US domestic air market.

The Draft Plan sensibly links price to ridership – as price rises, ridership declines and vice versa. Importantly but erroneously, the Plan also assumes most of the Operating Costs are easily variable as well, meaning if revenues fall, costs can be adjusted downwards in synch, which is rarely so easy (see prior chapter). To create a profitable model at low average ticket prices requires that passenger volumes be very high, which is what the CS Ridership Model shows. In other words, we believe that in 2008 the Authority or its surrogates pressed CS to model high ridership precisely because they wanted to charge low ticket prices, since "about $50" from San Francisco to Los Angeles, was promised to voters in the 2008 Ballot Initiative. Associated with this low-ticket price was a forecast in the 2008 Business Plan, published shortly after the November 2008 election, of about 100 Million riders per year.

The 2009 Business Plan, published in late 2009, reversed the pricing strategy. The Authority announced a higher ticket price from San Francisco to Los Angeles, of about $105, and a lower annual ridership of just 40 Million passengers per year. Voters clearly had been enticed by the promise of very low ticket prices. By 2009 the near doubling of ticket prices had the feel of an inevitable bait-and-switch strategy. Clearly the Authority had figured out that the operating costs to support 100 Million passengers per year could not be recovered at an average ticket price of about $50, and went with the "higher price/lower volume" strategy.

The 2012 Draft Business Plan reflects about a 20% drop in the price for the San Francisco to Los Angeles from about $105 to about $81. Probably, as we pointed out in 2010, due to the fact that their $105 ticket price was too high to effectively compete with the current airline ticket pricing. Note even with this reduction in ticket prices, they continue to forecast a 50% net operating profit, as shown on Table 2B.

As shown in Table 2A, the ticket price of $81 translates into 19.5¢ per passenger mile. Since the Authority continues to predict a 50% operating margin, their operating costs must be about 10¢ per passenger mile.

If our analysis of existing HSR operating costs as being in the range of at least 45¢ per passenger mile is reasonable, then there is a four times difference in the projected costs in the Draft Business Plan and worldwide actual operating results. If the CHSR's operating costs do rise to the 45¢ per passenger mile, in order to avoid having a subsidy, ticket prices will need to rise from 19.5¢ to about 45¢ per passenger mile. This would be a price increase of at least 100% and would drive the average one-way ticket price from San Francisco to Los Angeles from about $81 to at least $162.

What is the ridership forecast at this level of pricing, given the low airline ticket prices and the lower prices of gas in the United States? Would this lower volume of passenger generate enough revenue at this higher price to cover the CHSRA's fixed and variable operating costs?

As we consider what might actually happen to rail tickets in the future, which is relevant both to the business model and to our own sense of the fairness of asking all taxpayers to support this very expensive system, the following colloquy from Britain's House of Parliament as quoted by the BBC is informative:

> "Minister for Transport Mr. Hammond appeared before the Commons transport committee on Tuesday to answer questions on High Speed 2 (HS2) - the planned line between London and Birmingham with a possible future extension to northern England and Scotland.

> He was asked by Labour MP Julie Hilling whether HS2 would become a "rich person's toy" unavailable to "people of low or moderate means".
>
> She said: "Can you assure people that actually, it's going to be a railway for everybody, and what will happen about regulating fare prices, etc?"
>
> Mr. Hammond replied: "Uncomfortable fact number one is that the railway is already relatively a rich man's toy - the whole railway.
>
> "People who use the railway on average have significantly higher incomes than the population as a whole - simple fact."
>
> He said it was assumed HS2 would use "similar pricing to the West Coast Mainline, which I have said before ranges from eye-wateringly expensive to really quite reasonable, if you dig around and use the advance purchase ticket options that are available".[79]

This may not square with some California legislators who hoped this would be a low-cost travel option for the middle class. Sadly, however, we believe that if this system ever gets built, there will be a few tickets priced at the low-ball estimate we were given in 2008 and the rest will be much higher, at least double, and maybe triple, if the system is ever going to come close to breaking even. It will become, as the Transport Minister Hammond said, a “rich man’s toy” unless one wants to put public subsidies into the operations – which, of course, AB 3034 Section 8 (J) prohibits.

CHAPTER FOUR: BETTER RISK ASSESSMENT BUT STILL INCOMPLETE AND OVER-OPTIMISTIC

This chapter responds not only to Chapter 9, Risk Identification and Mitigation, of the 2012 Draft Plan, but to other instances where risks and risk mitigation are discussed.

Risk is one of the key variables that investors – and public officials with fiduciary responsibility – must assess as they decide whether to put money into an enterprise. Risk has two vectors: the negative impact to the bad outcome, and the probability of the risk (bad outcome) becoming actualized. One can assess a high risk of something minor happening, and therefore decide to take the risk and proceed, or assess a low risk of something severe happening, and therefore decide not to proceed, to cite two ends of the spectrum.

Since an investor is always assessing **future** risk, there is an inevitable amount of guesswork. Therefore, prudent investors back up their guesswork with in-depth research about each of the risks' components.

To correct for bias and to increase the chances that the future surprise will be on the upside and not on the downside, investors in risky enterprises commonly embrace two strategies. First, investors try to encourage other investors or investment groups to participate. The reasoning is that worst-case scenarios have occurred too often, and that two heads – two different points of view, two industry skill sets, two different levels of risk tolerance and importantly, two pockets from which to raise additional money – are better than one.

The other key approach to risk mitigation is to model a very conservative 'downside' or 'worst case' planning scenario and understand its implications. Sadly, the Draft Business Plan neither spreads risk with other investors nor does it articulate a pessimistic downside case for policymakers to consider.

4.1. The Consequences OF A Bad Outcome Are Severe

The consequences of a bad outcome, defined as the inability to run the system profitably, are extremely bad for the State of California. Without adequate revenues and operating profits, the Authority acknowledges that there will be no private capital, requiring the public (at either the national and/or the State level) to pay at least $100 Billion for Phase 1 construction and subsequently the train's annual operations. To put this number in perspective, as of June 30 2011, outstanding State of California debt (mainly General Obligation and Lease Revenue Bonds) totaled $82.6 Billion.[80] As noted above, national or State taxpayers and decision makers will have to commit $31 Billion (40% of the State's entire present debt load) before the IOS demonstrates whether there are adequate profits to entice the private sector into investment and cost sharing. But in reality, a 10% private investment only solves about 10% of a $100 Billion construction problem. And the investor is not going to take much risk on uncertain future profits from a system that will only be half built when the investor is asked to come on board.

By that point – approximately a decade from now – California would have a semi-high speed rail line between somewhere in the Central Valley and either San Jose or San

Fernando/Sylmar; hardly an investment to make people excited. Furthermore, without adequate profits, State budgets would be encumbered to cover operating deficits in addition to the onward build-out expense.

The bad consequences of failure are, in our judgment, severe. It therefore behooves the Legislature charged with overseeing the State's fiduciary responsibility to take a very cautious approach in forecasting this business.

Sadly, the Draft Plan's "low case forecast" for policy makers is anything but. Its "breakeven analysis" is, as discussed in Chapter Two, highly suspect, and ignores servicing the debt of the costs of construction. In Chapter 9, the Authority purports to review Risks and Mitigation Measures for the High Speed Rail's business model; however from an investors' point of view, we consider each of these to be incomplete, even misleading, analyses.

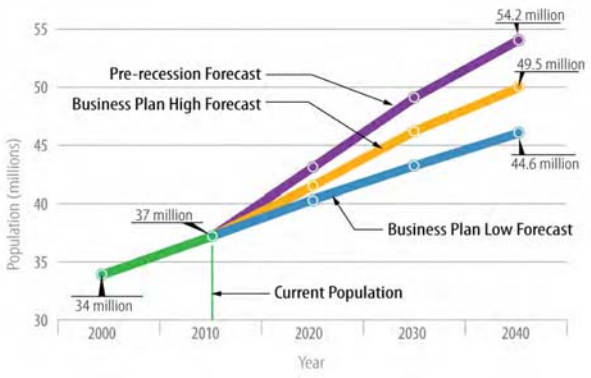
4.2. The Plan Does Not Take A Conservative Approach To Forecasting

The Authority created what it deems to be low/medium/high scenarios for ridership: *"…the modeling work conducted for this 2012 Business Plan takes a deliberately conservative approach."*[81] Upon examination of the "low case" assumptions, it's amazing how favorable (non-conservative) to building the project they remain. A few examples:

- In the 'low' case scenario, revenue comes in at 19% less than the Plan says or 81% of the forecast rate (for full Phase 1 revenue in 2040).[82] In the venture capital world, it is not uncommon to run stress tests that assume only 50% of the forecast rate in a 'worst case roll out' for financing a project. Lowering the 'worst' case by only a fifth doesn't seem like much of a 'worst' case.

- In the 'low' case for the IOS North-only scenario (San Jose, Gilroy, Merced, Fresno, Visalia, Bakersfield), the Authority estimates that 'low' ridership would be 5,900,000 riders per year generating $394 Million in annual revenue in 2025.[83] By comparison, Amtrak's service from Sacramento-Oakland-Bakersfield, one of its most successful in terms of volume and one that is similar to the IOS North routing, carried 978,000 passengers in 2010.[84] Is it prudent to risk the public's money with a claim that ridership will leap six-fold along a similar route?

- The full Phase 1 ridership 'low case' in 2040 generates a 'low' estimate of 30 Million riders per year and $1.83 Billion in revenue. Yet, the Boston-New York-Washington portion of the Northeast (NE) Corridor carried only 10 Million passengers in FY 2010 on Regional Rail Service and other trains, such as Acela Express (a subset of the NE corridor) which carried 3.2 Million in 2009. How can the Authority claim their 'low' case ridership is three times higher than **all** the intercity passenger trains of the entire NE Corridor?



- The 'low' case for California's population growth projects the state's population will continue

to grow linearly over the next three decades (see chart).[85] This might be a reasonable guess as a base case, but is not a 'low' case forecast by any objective means of prudent business judgment. That CHSRA choice is a clear demonstration of bias. The low case should be a zero growth – with people exiting the state and deaths exceeding immigration and births; a very possible scenario.

- While the 'low case' California population forecast by the Authority shows a 20% increase in total state population by 2040, the Business Model for 'total trips taken' in the State of California is forecast to grow by 80% by 2030, from 500 million trips to 900 million in all scenarios.[86] How can population rise by 20% but total trips rise by 80%? This demonstrates that the Plan has not truly embraced conservative forecasts in its assumptions and formulas, which is where the numbers actually get created.

The Authority's own ridership experts state their 'low case' could be overly optimistic.

> *"A variety of events could occur which could push the outcomes higher or lower than the range of forecasts used in the business plan. Examples of events that could cause lower ridership (ie. lower than the 'low' case) include security screening at HST stations, slower than expected or less frequent HST service, new modal competition such as luxury buses or cars that drive themselves, changes in trip making patterns due to changes in the relationship between jobs and population, and lower population and economic growth than assumed.."* [87]

It certainly seems possible that economic or population growth might be less than the Draft Plan assumed, and it seems altogether possible that there will be security screening at future high speed rail stations; that technology shifts will make business travel less frequent, and certainly that high-speed trains will not run at the short headways assumed.[88]

Our argument here is not to state that one scenario is more likely than another, but rather that the Draft Plan's 'low' case should have been set much lower than is being presented to lawmakers and the public. If that had been done, the negative consequences of that lower outcome could be assessed as the true 'lower boundary' of possible financial outcomes.

We do not have the data sets, nor access to the Authority's ridership or business models to run scenarios in which revenues are set much lower and costs much higher than forecast here. We believe that low case outcomes are appreciably worse than the Authority's 'low case' revenue and cost scenarios and should be stress tested in tandem on the business model. This conservative modeling must be done for lawmakers and citizens to understand the true risk that first, no private sector investor may ever come into the project; and second, Operating Subsidies may be required for high speed rail, encumbering the State's budgets for decades.

4.3. The Risk Is High That Private Investment Will Not Occur

California and US taxpayers will have to spend at least $31 Billion to build a rail line from the Central Valley to either San Jose or Sylmar before anyone knows if the private sector will participate in a meaningful way in future. This appears at odds with what voters were told in the Prop 1A Ballot Summary,

"Provides that at least 90% of these bond funds shall be spent for specific construction projects, with private and public matching funds required..."[89]

According to that promise, it's not a matter of whether private capital is involved from the start; it's a requirement.

The Authority also seems to believe that revenues are all the private sector needs to see before it will invest. For example: *"third-party financing is anticipated to be available once revenue service is stabilized"* as though profitability is irrelevant.[90]

As described elsewhere in this report, we believe there is a substantial risk that the IOS will not in fact be profitable unless the public absorbs even more of the expenses or unless it is run as an extremely modest, high priced service (and then only if it is not required to pay any of the construction's debt service). Without private sector funding, as described in Chapter One, a key plank of the capital plan falls apart.

4.4. Debt Loads And Interest Rates Will Be Much Higher Than Forecast

Higher debt and higher debt expenses seem to be highly probable risk events in light of rising construction costs as inflation returns in the coming decade, the low likelihood of the Federal Government supplying grant capital in the amounts suggested, the low probability of significant loan/equity capital from either the private sector or local governments, and the way the Plan pushes out expansion into a distant future in which case higher interest rates may well be the norm, as opposed to the last two decades. The Draft Plan seeks to obscure this, in part by hiding behind the Prop 1A initiative and by making dramatic assumptions about federal largess, but California's legislators should assume that the majority of the at least $100 Billion capital cost will have to sit on California's books if the project is going to happen at all.

4.5. The Plan Underestimates The Risk That Californians Will Stick With Cars And Airplanes

All of the 2012 Draft Plan's business cases use European and Japanese per-capita ridership to justify the forecast for California's future levels of ridership. This underlying correlation explains why the state's population forecast matters so much to the business model.

However, there appears to be no 'low case' assumption or scenario in which Californians ride the train in much lower proportions than their European peers, North East Corridor residents or New Yorkers. This ignores the cultural legacy of the automobile in California, shown *inter alia* in per capita auto ownership. California auto ownership per capita is at least forty percent higher than Spain, France, or Japan.[91] Importantly, when those systems were built, auto ownership was an even smaller fraction of California's.

Private investors are always nervous when, in order to succeed, a business model requires Americans to change a fundamental way they live their lives. Even in California for example, the ill-fated Webvan Corporation experiment burned through $800 Million of 'smart' capital trying to deliver groceries rather than have Americans drive to the supermarket.[92] Even worse, four years after $4.3 Billion of debt and equity investment had been put into Globalstar telecommunications by supposedly smart investors to bring satellite phone communications to the long distance phone marketplace, it was sold for $43 Million – one one-thousandth of its investments' value.[93]

4.6. The Plan Makes No Assessment Of The Risks Of Labor Unrest

Indubitably, and because Federal funds are involved, both the construction and operation of the proposed train will be by union labor.[94] The need to account for cost increases due to delays and wage settlements for both strikes or work to rules seems prudent for a $100 Billion project that will take at least twenty-two years to build. This risk doesn't seem accounted for in the Plan's assumed annual 3% rise in costs.

Likewise, there doesn't seem to be an accounting for the risks of union actions during the IOS stage of train's operations – nor beyond. This too could add costs that would make any private operator pause before considering an operating contract.

Whether freight or passenger rail employees, railroad systems have a history of labor disputes, be they with their privately owned companies or with government-run Amtrak. Indeed, in mid-December 2011, freight rail workers threatened a strike concerning *"differences over wages, benefits and job protection."* [95] In 2007 then-President Bush barely averted a strike by Amtrak workers who believed they were being asked to perform tasks beyond their job descriptions.[96] Amtrak employees got wage raises in both July 2010 and July 2011, despite the fact that Amtrak does not make a profit and notwithstanding that private sector employees were receiving pink slips.[97] Not making some business plan concession to this difficult labor history seems a glaring omission.

4.7. The Plan Ignores Union Pacific's Interests Or The Risk It Poses

The Draft Plan mentions Union Pacific Railroad (UPRR) twice. Yet UPRR has significant contractual rights for the northern end of the proposed CHSR system. They are also a significant source of business for enterprises throughout the SF Bay Area. As recently as early 2010 the UPRR said *"no part of the high-speed corridor may be located on any rights of way owned or operated by UP . . . "*[98] The Draft Plan mentions UPRR twice, but never addresses the corporation's stance against use of its right of ways in the IOS North.[99] That means not only will another $20 Billion of public funding need to be found to start the IOS North in three years, the Authority must also solve a legal question that precludes engineering solutions until resolved.

CHAPTER FIVE: THE DRAFT PLAN'S IMPACT ON CALIFORNIANS AND ON CALIFORNIA'S FISCAL SITUATION

It is now clear to everyone that Californians will need to devote substantial tax revenue to this project, perhaps in perpetuity, if the Federal government does not choose to provide construction grants in the range of at least $60 Billion to $90 Billion.

A simple example from the 2012 Draft Plan proves this point. In the Summary Table 2B, in Chapter 2, bottom right corner, the Phase One total revenue for the next 40 years is estimated to be about $152 Billion, with a 50% cost structure, leading to a operating profit margin of about $76 Billion. The cost to build the Phase One system is projected to be, at the minimum, about $99 Billion. If we all lived in the perfect world where the cost of capital was zero, the taxpayers of the United States, or just the taxpayers of California, will have to fund this project to the tune of about $23 Billion. ($99 Billion less $76 Billion) Note that nowhere in the Plan is this point made, it is left to the reader to calculate for himself. Reality is much worse, capital is not free, costs will be higher than forecasted, and revenues will probably be worse; so the impact to the future taxpayers (US's or California's) will be much, much, worse. This point is elaborated below.

Depending on which government, or combination of governments, finances the proposed construction/build costs for the project, the impact on California's fiscal situation could be either bearable or catastrophic. Unfortunately, neither set of impacts is assessed in the Draft Business Plan. For State legislators' sakes, we developed two possible capital funding scenarios, the first of which below assumes the Federal Government provides the bulk of the capital, and the second of which assumes the State pays the bulk.

In both cases, we do not seek to differentiate between State and local (cities and counties) contributions, since in either case Californians are shouldering the burden. We do seriously question the assumption that local governments will be able or willing to invest or grant $13 billion into HSR, given that most local governments are trying desperately just to preserve vital services for the foreseeable future.

5.1 Scenario A – Federal Government Pays 76% Of Phase One Build Cost

In this scenario, the project gains $65 Billion of scheduled Federal grants, the QTCB/TRIP bond legislation becomes law, and the State Treasurer is able to 'leverage' the TRIP bonds 1.5 times. Note that the pending Federal legislation, S1436, would allow California no more than 2%, or $1 Billion, of the proposed $50 Billion total, so $11.8 Billion of the $13.3 Billion scheduled in the Draft Plan is assumed instead in this analysis to be Federal grants. [This is seen in Summary Table 1A in the lower right hand, in Chapter 1.] If the State Treasurer is able to 'leverage' that $1 Billion, TRIP bonds might contribute $1.5 Billion towards construction. In total, Federal Grants would have to amount to $76 Billion ($65 Billion plus the $11 Billion to replace the Concession Sale).

This scenario assumes no private concessionaire will enter the picture in 2023 to pay $11 Billion for a discounted revenue stream. At that point, after the IOS is built, there is virtually no turning back since what would the State do with a high-speed track that ran from San Jose to Bakersfield, (IOS North), for example? The State is legally limited to $8Billion (as $1 Billion is being aside for non-construction costs); so the Federal government would have to take on the extra burden of supplying another $18.5 Billion for building the B2B ($7.5 Billion plus $11 Billion). Then, the Federal government would

have to supply another $35 Billion to complete Phase 1 from San Francisco to Los Angeles – as seen in the B2B and Phase 1 columns of Summary Table 1A.

5.1.1 What Is The Outcome For Californians?

In the Maximum Federal Money Scenario, the Californians' exposure is the $9 Billion of Prop 1A and the $13 Billion that the Plan calls for from local governments. In today's dollars, that combined total works out to about $1,460 per Californian spread over 30 years, as the debt is retired

But Californians pay Federal taxes too. If no concession sale happens, the Federal government would have to add the $11 Billion to their bill to construct the California train. That would bring the total Federal gift to California to $76 Billion. The Federal contribution to build California's train, spread over 308 Million Americans would cost each American, including Californians, about $540 over 30 years as the debt is retired. Promoters are asking each household of four, from Alabama to Wyoming, to forego their own State's priorities and give California's train a gift of nearly $2,150.

While the State Treasury's exposure is limited if the Federal government takes on paying 76% of the train's construction costs, taxpayers would have to pay the State, the Federal and their local government's obligations to build the train. Together that adds up to about $2,000 per Californian, and over $8,000 per four-person household, over 30 years as the debt is retired. This is shown in Table 5A which shows the case of the Federal government granting California the funds to build Phase One.

Table 5A
Maximum Federal Money Scenario

Categories of Funds	Max Amt. Available ($Bs)	Impact on Each CA Resident, 30 years
Federal Grants (includes $10.9B of TRIP bonds and no concession sale of $11B)	$76.0B	$537
Max QTCB-TRIP Bonds	$1.5B	$53
CA Local Governments	$13.0B	$836
Concession Sale	na	na
State Bond Authority	$9.0B	$579
Total per capita Impact over 30 years of Maximum Federal Financing for CA HSR		**$2,006**

5.2 Scenario B – California Pays The Majority Of Phase One Build Cost

In this scenario we assume there will be no more Federal grants than the already obligated $3.3 Billion. We assume that neither QTCB/TRIP bonds nor the $11 Billion in private Concession sales happen. This scenario, which has a reasonably high probability in our estimation, would require the State to pay the balance of the minimum of $98.5 Billion to build Phase 1 (we ignore the strictures of AB 3034 for this example), or $95.2 Billion. Table 5B shows the consequences of the case where the State has to fund the vast majority of the project.

Table 5B
Maximum State – Minimum Federal Money Scenario

Categories of Funds	Max Amt. Available ($Bs)	Impact on Each CA Resident, 30 years
Federal Grants	$3.3B	$23
Max QTCB-TRIP Bonds	na	na
CA Local Governments	na	na
Concession Sale	na	na
State with new debt law (assuming no more Federal debt, no TRIP bonds, no concession sale)	$87.2B	$5,606
State Bond Authority	$9.0B	$579
Total per capita Impact over 30 years of Maximum State - Minimum Federal Financing for CA HSR		**$6,208**

5.2.1. What Is The Outcome For Californians?

In simple terms, each Californian becomes liable for over $6,200 over 30 years as the debt is retired – roughly three times the amount required if Federal grants are available. No matter rich or poor, urbanite or rural inhabitant, each Californian household of four persons would need to contribute at least $25,000 over the 30 years required to pay off the debt associated with the construction of Phase 1.

5.3. The Outcome For California Of "Self Funding" Phase 1 And Phase 2

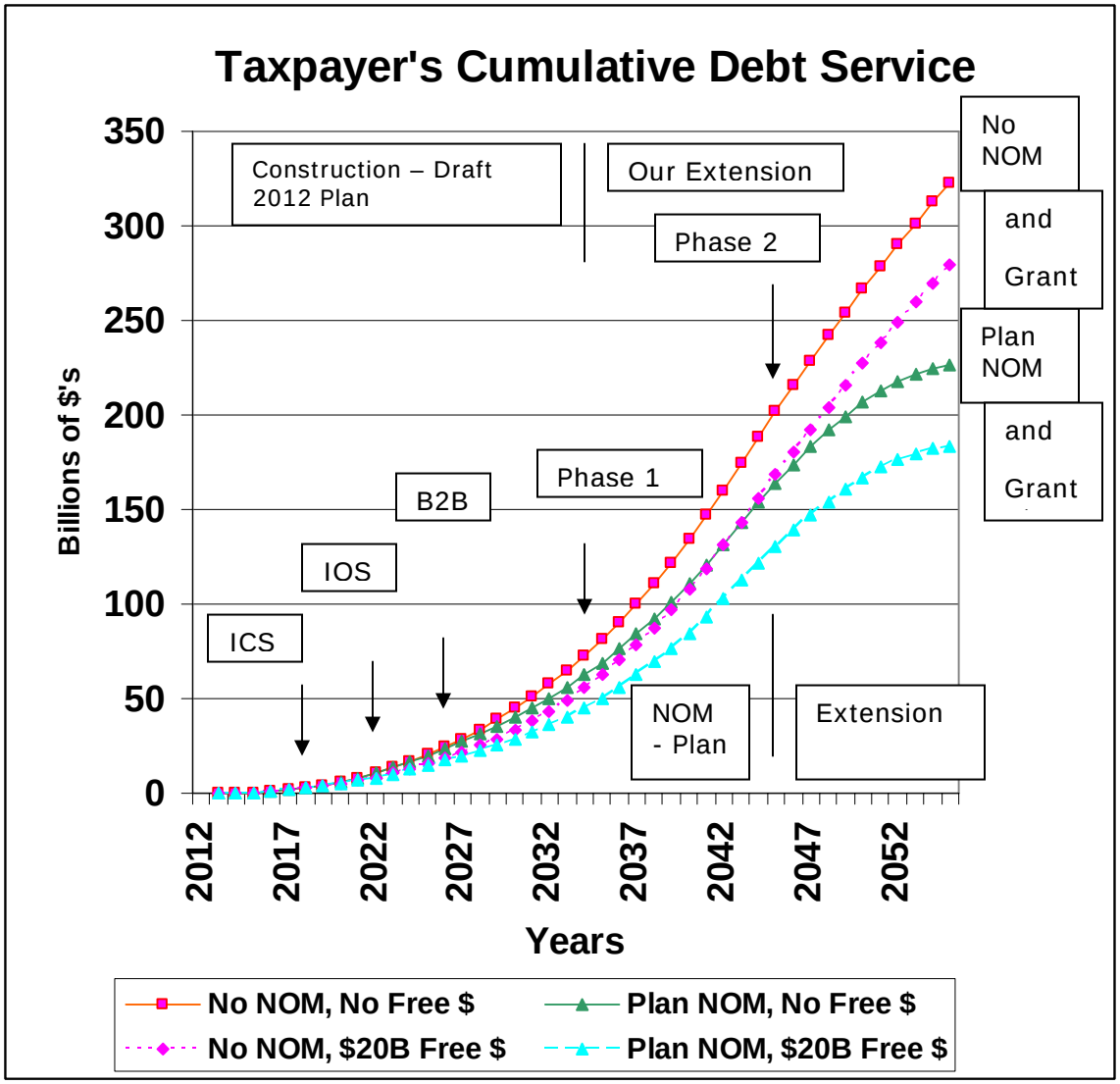
Another important way to measure the impact of the scenario of the State having to "self fund" is to measure the impact of the HSR debt that would need to be issued by the State, and to understand the amount of General Fund revenues that will be needed to service these debt responsibilities.

In analyzing the Draft Business Plan, we also projected to 2055 paying the construction of Phase Two. This would allow some insight into the ability of Phase 1 to help pay, or not pay, for the construction of Phase 2. Our projection for the construction cost of Phase Two in 2010 dollars was 76% of the cost of Phase 1 since it appears the additional miles to complete Phase Two is roughly 76% of the miles of Phase 1. These 2010 dollars were then projected out into the 2033 to 2043 time period (in the appropriate YOE values), so that Phase 2 construction starts up as Phase 1 construction ends. We also projected the same net operating profits (margin) per mile that were projected for Phase 1, adjusted to the appropriate YOE values. This allowed the operating results to be extended for a longer period as well as incurring the additional debt needed to finance Phase 2 after Phase 1 construction ends.

Under this scenario, the State would again have to go to the bond markets to secure funds. Taking a Year of Expenditure (YOE) approach to the borrowing needs, and using a 6.0% interest rate (non-tax exempt bonds) over 30 years, the debt accrued by the construction of Phase 1, and then Phase 2, would be accumulated, and serviced (principal and interest) on an annual basis. To the extent there is any Net Operating Profit-NOP (also called Net Operating Margin-NOM) in any given year; that cash can be used to service the debt, and the balance is then rolled over to the next year. If there is insufficient NOP-NOM to service all the debt in a given year, additional debt will need to

be found to provide cash to cover the debt servicing demand. This is shown in Table 5C, which shows the various completion dates of the stages of the Phase 1 Plan and the extension of Phase Two, to be operational ten years after Phase 1 is completed (2045).

Table 5C



Over time, the cumulative debt grows under all of the four cases examined. The lower two curves (the two triangles) are based on the NOM-NOP assumed in the Draft 2012 Plan actually occurring. The second from the bottom reflects the results if the Plan NOM occurs and the curve below it shows what happens assuming the Federal government provides an additional $20 Billion in grants during the Phase 1 construction period.

As can be seen, if the NOM in the Plan is attained, with 100% of self-funding, the cumulative debt that will have been incurred to build both Phase 1 and Phase 2 is about $220 Billion. If the project obtains $20 Billion of Federal grants, then the cumulative total drops to about $180 Billion. The fact that the cumulative amount of debt continues to grow, even when the projected NOM-NOP of the Draft 2012 Plan occurs, shows there

are insufficient funds generated by the CHSR system's operations to service the construction debt.

Note that the growth of debt servicing starts to flatten about 2050. That's because the 30 year debt that was incurred about 2020 starts being paid off. The annual debt service starts to drop to the point where the Plan's forecasted NOM-NOP can cover this smaller amount.

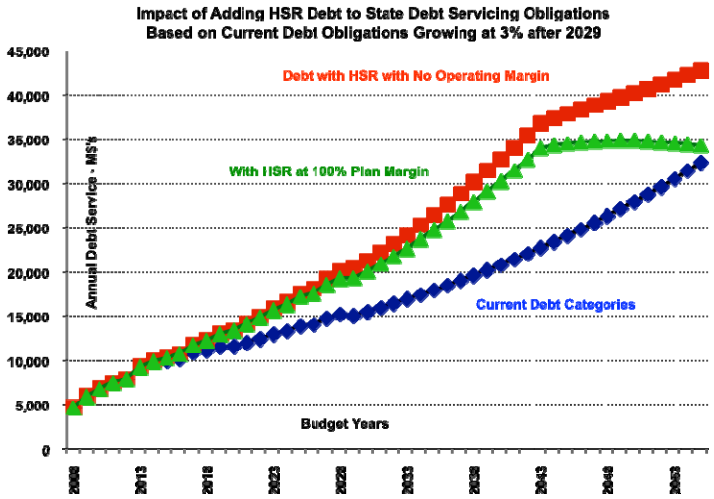
If there is no NOM-NOP because revenues barely match expenses, then the top two curves in Table 5C (the two squares) show the extent of growth in the cumulative debt requiring servicing. The top-most line shows that without any NOM-NOP the cumulative debt to build Phase 1 and Phase 2 is about $325 Billion by 2055. If the Federal government grants $20 Billion during the construction period, the cumulative debt drops to about $275 Billion. Note that these two curves **do not start to flatten out** until around 2050. Since there is no NOM-NOP available to service the annual debt requirement, the annual borrowing needed to service the cumulative debt will continue to grow, contributing to the growth of cumulative debt.

5.3.1. What Is The Impact On The General Fund?

Once the projections of the cumulative amount of HSR Debt that will require servicing were developed, as shown in Table 5C, it was possible to add the annual debt service for the CHSR to the currently projected State Debt Service identified separately by the Treasurer office and by the LAO. The State's Treasurer and the Legislative Analyst's Office (LAO) periodically make long-term forecasts of the State's debt servicing obligations as a percent of the General Fund's projected revenues; latest being in late 2009 and both focus on what will be required for other State projects.[100] That included the impact of the Prop 1A debt servicing obligations, but did not address the impact of any additional construction debt having to be serviced from California's General Fund. As discussed above, our projections show there would be insufficient net operating margins (NOM-NOP) in the CHSR program to cover all of the debt servicing obligations of the construction debt. The same was true of the CHSRA's 2009 Plan.[101]

Table 5D and Table 5E show the magnitude of the fiscal problem that would occur. The bottom line of Table 5D shows in Billions of dollars the non-CHSR projected **annual debt service** over the next 40 years, growing at 3%. The Treasurer and the LAO forecast all debt servicing in 2030 at about $15Billion annually.[102] The line in the middle of Table 5D shows the amount of CHSR debt service that will be added to the State's debt IF the HSR project is able to produce 100% of its projected Net Operating Profit (NOM-NOP). The top line of Table 5D is the amount of HSR debt service that will be added to the State's debt IF the HSR project is not able to produce any of their projected Net Operating Profit (NOM-NOP). In effect HSR revenues would just be matching expenses. But the CHSR would not lose money on an operating basis.

Table 5D



Note that in the "best case", the middle line levels off after 2043, since

1) the construction of Phase 2 ends,
2) the 30 year debt incurred between 2013 and 2020 starts to get paid off; and
3) the Net Operating Margin contribution is able to slow down the growth of CHSR debt service.

The top line, i.e. the "worst case", with no Net Operating Profit (NOM-NOP) contribution, only has the benefit of some earlier debt being retired, allowing it to start a slower reduction in CHSR debt service, once Phase 2 construction ends.

This chart also shows that the existence of Phase 1 revenues is insufficient to pay for all of the Phase 2 construction costs. Otherwise, the "knee" in the middle curve would have occurred around 2033, when CHSRA projects that Phase 1 operations are going well. The fact that the "knee" does not occur until Phase 2 construction ends in the mid-2040s and the growth in HSR debt service continues to grow between 2033 and 2044 confirms that Phase 1 Net Operating Profits (margins) are not sufficient to fund the construction of Phase 2.

5.3.2. What Is The Message For The State's Fiscal Situation?

If the Federal government is not ready, willing, and able to provide the minimum of $65 Billion to $90 Billion necessary to build Phase 1, the decision to "self fund" the project by the State will have a major impact on the debt service demands on California's General Fund. In 2012 the total debt service demand on the General Fund is about $7 Billion per year. The decision to self-fund Phase 1 will cause an incremental increase in the annual debt service demand around 2033 by about $7 Billion (the difference between the bottom line and the top two lines) – about the same as total debt service today. If the State proceeds to self-fund Phase 2, this will cause an incremental increase around 2043 in the annual debt service demand of about $12 Billion to $14 Billion (the difference between the bottom line and the top two lines). That's almost twice the State's total debt service today.

5.3.3. What Happens To Debt Service As A Percentage Of General Fund Revenues?

Another way to measure the impact of HSR annual debt service is to compare this annual demand for funds to the projected General Fund revenues in those years. This gives a measurement of debt service as a percent of General Fund revenues. It is also a convenient way for the Treasurer's Office, the LAO, and the Legislature to track what would be one of the principal consumers of tax revenues that flow into the State General Fund. Table 5E provides this overview in a format consistent with many LAO projections and reports. The projections for the amount of debt service are the same as in Table 5D; here they are plotted against a projected percentage of the General Fund revenues.

Table 5E

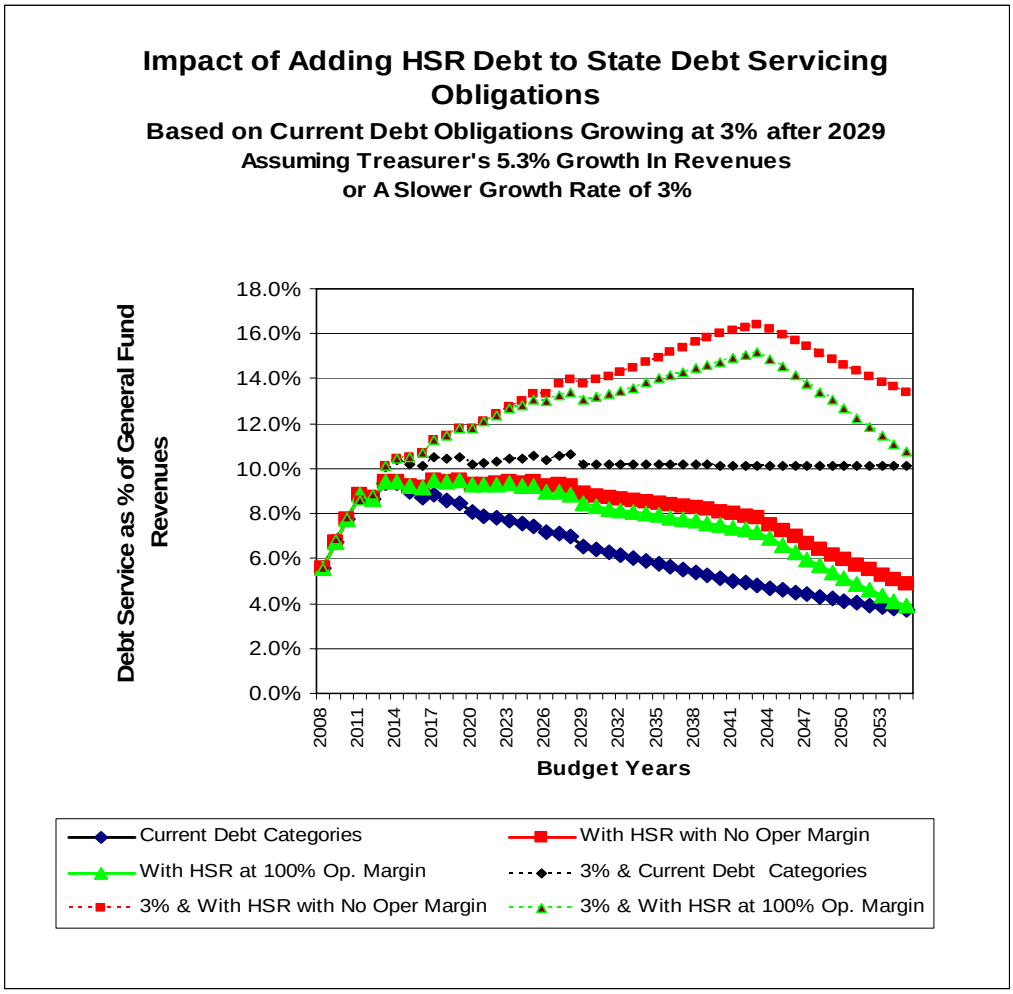


Table 5E, is based on two projections of the growth of what the General Fund revenues will be over the next thirty years. Those are:

- **Revenue Growth at 5.3% per Year** - The bottom three lines are based on the Treasurer's present projection of growth in General Fund revenues of 5.3% per year. The top three lines are based on a slower, more cautious projection of only a 3% annual increase in the General Fund

revenues. With the Treasurer's growth in revenues at 5.3% of General Fund revenues; the current debt obligations, as a percent of revenues peak at about 9% in 2014. Then they decline to about 4% by 2055 (see the bottom line on the chart). The impacts of the addition of CHSR debt caused by a "self funding" decision are shown above the baseline of non-HSR debt Service, with the additional CHSR debt service holding the total debt service to about 9% through 2029, then declining down to 7% to 8% in 2044. As the construction of Phase 2 ends around 2044, the total annual debt service declines to 4% – 5% of General Fund revenues by 2055.

- **Revenue Growth at 3% per Year** - If the more cautious projection of future General Fund revenues is used, i.e. 3% per year growth, then the top three lines are illustrative of the impact of HSR funding costs. Without the CHSR being "self funded" the total debt being serviced flattens out at about 10% in 2015 and remains constant at about 10% of General Fund revenues until about 2055. If CHSR is "self funded", then the top two lines show that total debt service will peak in 2044 in the range of 15% – 16% of General Fund revenues, when Phase Two construction ends, and then slowly declines over the next 10 years. Clearly the magnitude of the debt created to execute a "self funding" plan has very measurable impacts on the State's debt service.

Depending on the projection used for the growth in General Fund revenues (5.3% or 3%), this choice makes a major difference. This difference is not just to the degree of risk the additional CHSR debt would bring to bear on the General Fund, but also to the State's ability to fund other responsibilities, such as education, health, and non-CHSR transportation projects.

CHAPTER SIX: STILL NOT INVESTMENT GRADE-- KEY CONCLUSIONS ABOUT THE DRAFT 2012 PLAN

The Draft 2012 Plan is an improvement over its predecessors in terms of its structure, the amount of detail provided, and for some of its more sober forecasts. A number of these improvements mesh with concerns we raised after close scrutiny of the CHSRA business modeling in 2009, which we flagged in three major reports and over two dozen studies since then.

But because the new Plan is more realistic, it is far less encouraging in terms of costs, benefits or profits. In fact, an objective reader would be hard-pressed to see why the State would want to take this significant risk for so little potential payoff, unless the Federal government is willing to GRANT California the $65 Billion to $90 Billion to construct the Phase 1 system. This assumption also leads to having to assume the Federal government will fund the Phase 2 extensions to the system, because the cash flows from Phase 1 will most probably not be enough to build it. And that is without considering the fact that the Plan still relies on the original, highly flawed, highly bullish ridership forecasts of the 2008 Plan. Deflating ridership with reasonable operating cost projections comparisons makes the model bleed red ink profusely.

Still less, would a private investor make the decision to invest on the basis of this Plan – which is why the Authority itself acknowledges that there will be no private investors for at least a decade, waiting to see how this turns out. If ever there was a "tell" about the merits of a proposed investment, this is it.

6.1 Improvements In The 2012 Plan

6.1.1. Assumes A Much Longer, More Realistic Build Time

The 2012 Draft Plan increases the amount of time it will take to build the project, forecasting an extra 13 years to build full Phase 1; this is much more realistic and comports with what a private investor would assume. Of course, the consequence is that costs grow with inflation and benefits are pushed even further into the uncertain future.

6.1.2. Suggests A Go/No Go Decision Tree To Public Finance Risk

The 2012 Draft Plan acknowledges that private investment cannot be expected to come in before the first IOS is constructed. This requires that State and Federal taxpayers front $20-$26 Billion in addition to Prop1A bond funds. The Basin to Bay section and Phase 1 will require substantial additional public capital. Phase 2, which is the San Diego/Sacramento/SF/LA HSR vision that California voters were sold on for the 2008 Prop1A Bond vote, is so far in the future that the Authority does not even try to estimate costs or timing. The decision to use a "decision tree" as the Plan's structure – with Go-No/Go points to limit Californians' liability to the $9 Billion committed by AB3034 – is the right approach. For example, we would expect the Go/No Go point for the ICS is this year, and the point for the IOS will be in 2013, after the national elections in late 2012.

6.1.3. Proposing A "Blended Option" To Utilize Upgraded Commuter Rail Systems Is A Good Hybrid Between Performance And Cost

The Plan develops a hybrid step before full, stand-alone dedicated tracks for bringing high-speed rail through dense urban settings. The blended option utilizes existing tracks without the expense of dedicated, grade-separated rails for HSR.[103] This is not optimal for speed or safety, but it does reduce expense in the interim and may temporarily mitigate impacts on urban communities. However, the Plan ultimately calls for a fully dedicated CHSR system with grade separated and dedicated tracks and, indeed, it is hard to imagine true high-speed travel without it. Therefore, while we applaud the inclusion of the interim step, one needs to assess the entire project for cost/benefit and reality, which the Draft Plan demands as well.

6.1.4. More Fulsome Discussion Of Risks

The 2012 Draft Plan addresses many risks, uses high-medium-low scenarios, and contains a break-even analysis. These were in neither of the two former business plans. That said, and as elaborated in Chapter Four, we believe the so-called conservative "low case" is really more of a base case and not a true "low case" scenario as private investors would understand it. The other cases could be called optimistic and very optimistic. We advise developing a significantly lower ridership, revenue and higher OpEx forecasts and stress testing for the financial consequences of these.

6.1.5. More Realistic Ticket Pricing

The 2012 Draft Plan geared its LA-SF ticket price to more realistic airfares between the two metropolitan conurbations. The 2009 Plan used unrealistically higher airfares to compute the high-speed rail ticket. However there is no assumption of competitive pricing responses by the airlines, which would drive prices lower in the short or medium term, creating difficulty for the train's planners to meet the profit requirements demanded in AB3034.

6.2 Concerns And Recommendations for the 2012 Draft Plan

The deficiencies in the 2012 Plan undercut the Plan's credibility and lead to our conclusion that it is still not "investment grade." Moreover, while we are not lawyers, it strikes us that a number of modifications in the current Plan put it at odds with the strictures of AB 3034 and what was promised the voters in 2008. Finally, a large amount of the Draft Business Plan is really not about a financial or business model but rather more of marketing or promotional features used to justify the project on non-financial terms.

6.2.1. The Decision To Commence HSR In The Central Valley Is Flawed. It should be changed so as to provide some hope that if the future construction is halted, there is true utility to this investment.

The CHSRA proposes building an ICS in the middle of the agricultural heartland of California. To justify starting with the "affordable" ICS in the Central Valley, the Authority argues that all complex transport systems are built in phases. That is true, as

far as it goes. However, the two leading nations in HSR, Japan and France, each commenced building their systems between city-pairs that were highly trafficked by train riders, from which immediate benefits would be gained. Japan (1964) built the HSR line between Tokyo and Osaka and France (1981) built between Paris and Lyon. No doubt the heavy existing traffic is one reason these two city-pairs (and only these two) appear to be run profitably. The closest US analog to this strategic approach would be to build HSR on the Northeast Corridor, not in one of the nation's prime agricultural geographies.

The Business Plan argues that there would be benefits to the State from the ICS even if no further lines are built because the infrastructure could be deeded to Amtrak. We are quite certain Amtrak would prefer $6 billion in cash rather than a somewhat parallel 130 mile rail bed section saving 45 minutes for passengers in rural California who could still only travel as far south as Bakersfield.

Had the CHSRA had time, it almost certainly would have preferred to develop its CHSR system between California city-pairs that might generate real revenue and community support. However, the rush to grab time-limited Federal grants produced the decision to start in an isolated part of California because the CHSRA judged that getting environmental and political approvals in rural communities would be easier than in highly populated urban settings.

As we have seen, the decision was a costly one: not only has it produced much more community outrage than expected, it has also seriously damaged the project's operational and financial credibility in Washington and among the country's editorial boards. California's Train To Nowhere has become the laughing stock of the country.

Moreover, since the ICS is largely only at the thirty percent (30%) engineering study stage, costs are sure to rise further, meaning that potentially even the un-electrified, train-less ICS in the Central Valley that admittedly doesn't reach from Modesto to Bakersfield could remain unfinished. The rush for 'free-to-the-CHSRA' grants has been and could be the State's 'albatross' for generations.

In short, while we acknowledge the obvious statement that complex systems must be built in phases, the phases ought to be staged in such a way as to achieve the maximum benefit first, not last. That is certainly what a private sector approach would be and it is what other nations have all done.

There is only funding to build a section that will not generate revenue nor even allow for High Speed Rail testing. The business should not be funded until an actual High Speed Rail segment is funded and revenues are achievable, preferably in a location with independent utility. In other words, until the IOS is funded (with committed money), it is not wise to build the ICS.

This is a corollary issue. The proposed Central Valley section will not be electrified nor will it will equip the ICS with positive train control systems or high-speed rolling stock.[104] In short, and as stated clearly in the RFQ to builders, it will not be high-speed rail.[105] CHSRA has $3.3 Billion of Federal grants that it can match with $2.68 Billion of the State's Prop1A GO bonds.[106] That money is enough for about 140 miles of ICS track but not for High Speed Rail use. Therefore, there will be no way to "test" High Speed Rail operationally or economically with the ICS alone. Needless to say, there is no chance of revenue to pay down any of the State-obligated construction debt, nor operating costs, since there's no high-speed train.[107] It is rightfully called the No Train To Nowhere.

There is also a question of legal exposure, or legal risk that the ICS location decision created. AB3034 directed that State bonds be spent only on useable segments. But the ICS will not bring value to California since, by the CHSRA's admission, it will not complete a useable segment nor prove that "users of the system pay for the system."[108]

In our judgment, the State should not commence construction of the ICS until it has identified full funding for an actual High Speed Rail segment (IOS), preferably between city-pairs that might actually create real utility for the residents and taxpayers of California.

6.2.2. The Plan Asserts IOS Profits Will Attract Private Capital, Yet Ridership/Revenue For The IOS Are In Doubt. There Should Be A 'Plan B' If The IOS Is Not Profitable.

The Draft Plan asserts that the IOS will be profitable. For this to be true, passengers are presumed to go either to San Jose in order to take the train to Bakersfield; or go to the San Fernando Valley to take the train to Merced (and vice versa). These forecast paying passengers, at least 7.5 million of them by 2025, will supposedly make the first Initial Operating Section profitable. This may be seen on Table 2B (in Chapter 2) in the IOS column. In 2023, three years after starting initial operations (remember, no passengers on the ICS) assumed passenger volumes supposedly reach 7,500,000 per year, or an average of 20,500 per day. Over an 18-hour day, that is about 1,100 boardings per hour, which is about 550 per hour going south from San Jose towards Bakersfield, and 550 per hour going the other way (if, for example, the IOS North is selected).

First, the model implicitly suggests that the many riders who are presumably going beyond either Merced or Bakersfield for their final destinations will have a way to get there. Taking a train partway, to then have to rent a car for a substantial additional journey, hardly seems like a compelling value proposition for most travelers.

The P&L forecast for the IOS is a microcosm of all that is wrong with the Draft 2012 Plan approach. First, it is based on the flawed Cambridge System ridership model, which leads to such bizarre forecasts as this – that the IOS will generate 7 times more riders per year than Amtrak's current service which runs from Bakersfield to Sacramento (note, Amtrak's service runs farther than the IOS and includes California's capital). Second, the model guarantees profitability. That's because almost all costs in the model are assumed to be variable, not fixed, which means that the plan formula simply deflates costs as revenues fall, virtually assuring a profit even at the smallest revenues. This looks good on paper but rarely works so neatly in the real world, especially in business models that are so heavily capital intensive, and have higher fixed cost ratios.

Equally disturbing, there is no 'Plan B' in case the IOS is not profitable. The Plan suggests that the project could be suspended, but this feels like a cynical comment by the authors. The inertia of having already spent at least $31 Billion by then would likely embolden supporters to continue to claim profits are 'just around the corner' and force the State and the Federal government to find more money to just keep the CHSR project going. This, sadly, is a common phenomenon in the investment world. One of the hardest disciplines is to stop throwing good money after bad, and we doubt State legislators will be any different. Some of those who have followed the evolution of this project for years may believe the Draft Plan is a cynical way to get a project started at any price, betting that it is harder to stop something once in motion.

6.2.3. The Plan Needs A New Ridership Model From A Disinterested Expert

Why does CHSRA cling to Cambridge Systematics' discredited ridership forecasts? In the face of widespread popular disbelief and professional criticism of the Cambridge Systematics (CS) forecasts, and despite promises to the contrary, the 2012 Plan still uses the same challenged CS forecasts, just spread over a longer period.

How can CS's model be credible when even their hired ridership peers didn't have access to the propriety structure of the CS model, any more than did UC Berkeley's Institute Of Transportation Studies, Smart Mobility or Californians Advocating Responsible Rail Design (CARRD)? How could any independent group assess the accuracy of the model without that access? And the ridership peers' $400,000 efforts don't really seem to agree with CS's conclusions. So how can the Authority continue to use this contested data – which drives operating revenues, expenses and margins – to produce credible or contestable financial plans? As noted in the Ridership section of this report, the model falls apart when practical examples – such as California exceeding the Acela system by two times or Merced matching Boston's train ridership – are revealed.

What the Business model needs more than anything is not another critique of Cambridge Systems forecasting model, but a whole new model and market surveying effort performed by an expert entity that is not beholden to the CHSRA.

6.2.4. Given The Critical Role Of The Federal Government In The New Plan's Capital Structure, There Needs To Be A Long Term Commitment From Congress Before Significant Money Goes Into The Ground

No reasonable business plan starts with having (at best) only 12% of its future funding needs in hand after more than a decade of study and promotion.

From page 2–10 onwards, the Draft Plan's financing scheme is based on the assumption that massive amounts of Federal funding is either at hand or likely to be so in three years (2015). The plea in the Draft Plan's remaining Chapter 2 pages and throughout discussions on an Initial Operating Section (IOS) is for more 'free' Federal grants for a Section – carefully avoiding the term 'segment' because that carries a legal definition from AB3034.

Since the Draft Plan argues that an IOS is needed as the 'proof of concept' to show private operators the system's profitability, this is the *sine qua non* of the system's future beyond the ICS. But the only way to get an IOS built is through $20 Billion more Federal government grants or loans after the ICS is built. [109]

The Authority argues they only need $2-$4 Billion a year from the Federal Government over the 6-7 years (2015-2121) of building an IOS. [110] But to comply with AB3034, they would need a legally binding commitment for all of that funding prior to starting. To put in perspective: an annual Federal commitment of that size for 6 to 7 years is about six times as large as all the monies committed to California's program in the halcyon days of Stimulus (ARRA) spending and high-speed rail's popularity during 2008 and 2009.

For reasons discussed in detail in Chapter One, we are highly skeptical that the QTCB/TRIP Bond program will provide meaningful finance to the project. And even in the very best case, the (still unapproved) program would only pay the interest; the State of California would still be responsible, as we understand it, for the repayment of the face value of the construction bonds. It is also not clear how this obligation can be taken on without taxpayer approval, as these cannot be Revenue Bonds since the plan is to sell a concession to the revenue stream in 2023.

In sum, for everyone's sake, the State of California and the Federal Government should reach a compact on what can be reasonably expected from the US Treasury and the Department of Transportation over the next two decades or more in terms of transport grants for CHSR. Such a compact would not be binding but at least it would show a funding commitment from Congress, the holders of the proverbial purse strings, and not just the present Executive Branch. Absent such a compact to have a grant program out through the B2B construction period, it would be irresponsible to spend California's investment on the ICS or IOS given the huge uncertainty about completion financing.

6.2.5. The Authority Ought To Level With Californians And Develop A Business Model That Takes The Majority Of Its Construction Finance From The State of California.

The Draft Plan is explicit for the first time that the operator will not pay construction debt for the IOS or likely B2B or Phase 1. Perhaps, in the distant future, the operator may be able to help defray future expansion costs, but of course that is dependent on whether CHSR is truly profitable.

The Plan 'punts' about who pays the debt servicing for building anything other than the ICS, if debt has to be used to replace non-forthcoming Federal grants or subsidized 'loan' programs. The Plan states that the IOS will require a total of $30.7 Billion to construct – $23.1 Billion of Federal grants and (not yet existent) Qualified Tax Credit Bonds (QTCB/TRIP) plus $7.6 Billion of State Prop1A Bonds.[111] These funding needs are best seen on the Summary Table 1B in the ICS and IOS columns. If the money is not in the form of grants but instead in the form of bonds, the Plan is silent on who should take on the debt and the servicing expense, just as the 2008 and 2009 plans were also silent on the subject of construction debt.[112]

It seems clear to us, in thinking about the Plan's silence on such a key point and in listening to CHSRA officials in testimony, that the Authority's attitude is that federal or state taxpayers should build the entire system and CHSRA will run it (hopefully without operating subsidies). In more than one instance, CHSRA officials have said that is what the State and Federal Government did with airports and interstate highways. This might be a reasonable public policy argument, **but it was not what California voters were told when they voted for Prop 1A and it is not what AB3034 says**. Voters were promised, in effect, construction of a system mostly paid for by others, either the Federal Government or the private sector. AB3034 clearly implies the system will cover financing charges.

Not surprising, the Plan is equally vague about who will pay for future expansion costs or Phase 2 construction. Is the operator responsible for that debt servicing, if debt is needed? Such a fundamental strategic decision about such a large capital project should be in the very first pages of the 2012 Draft Plan. It isn't.

6.2.6. The Final 2012 Business Plan Should Zero Out Expectations Of Meaningful Capital From California's Strapped Cities And Counties.

Another highly shaky leg of the capital stool is the assumption the CHSRA makes that county and local governments will subsidize the capital expense in a significant way. According to the Draft Plan, by the time the project begins to build the Basin-to-Bay (B2B) portion of the project in 2021, Prop1A bonds will be *"fully used and an additional $3.9 to $4.2 billion in local or other funds will be needed to match federal funds to complete construction of the B2B."*[113] To complete Phase 1, another $9 Billion of local funds are planned, or $13 Billion in total. [See Summary Table 1A, the B2B and Phase 1 columns.]

Since the 2012 Plan does not define what "other funds" means, and since private capital is not expected to participate until after the IOS is built and proven profitable, we have to assume "other funds" only means local capital.

To date, no local government or governments have committed resources to build any portion of the system. Indeed, several local governments have *sought funds* from CHSRA to help defray the substantial technical and information work they are doing with their residents. To even the most obtuse observer, an assumption that local governments would believe building CHSR is the best use of their precious public resources over the next three decades, when most local governments will be bypassed by CHSR anyway, is ludicrous.

The Final 2012 Plan should zero out expectations that local governments will contribute any significant capital to build CHSR. Replacement capital must be found elsewhere for the final plan to be at all credible.

6.2.7. Without Any Private Capital Or Operators Committed To CHSR Now, There Is Zero Assurance They Will Invest A Decade From Now.

The Authority continues to imply that the private sector will be visible in the finance equation, even though the Draft Plan now pushes that participation out until 2023. (As an aside, we do not consider it relevant that there are many private sector contractors who are bidding on potential CHSR projects; plenty of companies would be happy to build something on CHSR's dollar. The question is whether there are any who are willing **to invest** in the project.) As recently as November 15th CHSRA CEO van Ark commented that he had conversations with private capital interested to invest in the project.[114] Yet no letter of commitment accompanied the statement for Assembly Members to assess how real that statement was.

The market has spoken -- private operators abandoned passenger rail in the 1970s; Amtrak requires an average $1 Billion annual subsidy to continue to operate. Freight rail remains a robust source of cash flow **but CHSR will not move freight**. If there were really a high potential for arms-length, no gimmicks profit in High Speed Passenger Rail service, bankers and operators would have jumped to join the project years ago. They didn't.

There really is not a recommendation here except to say that, in our view, the Final 2012 Plan ought to have a "Plan B" for building the rail system in case the private sector is not interested in investing.

6.2.8 . The Draft Plan's Statements On Jobs Far Exceed Independent Professionals' Estimates

Prop1A's description said the project would create nearly "160,000 construction jobs and 450,000 permanent jobs." [115] Now the Draft Plan says: "starting in the Central Valley will generate 100,000 jobs for people who need them most. Connecting the Los Angeles and San Francisco metropolitan areas will generate approximately 800,000 to 900,000 jobs and eventually will result in well over one million jobs."[116] This assertion was preceded several months before by the CHSRA's CEO statement to the same effect.[117]

On Construction Jobs – Using the same methodology as California's Department of Labor uses to compute construction jobs produces a more realistic estimate of likely employment during the project's building.[118] About 60,000 jobs would be the most in any given year; that is not the 800,000-900,000 the Draft Plan's statement implies. A more accurate statement would have come from dividing the CHSRA's assertion by the more than twenty years the present Plan projects it will take to build Phase 1. Based on GAO's reported actual 2009 and 2010 DOT ARRA's job creation results, a lower estimate, about 45,000 per year, is also reasonable. See Table 6A. While an increase of 45,000 to 60,000 jobs is not to be disparaged, it represents only three-tenths to four-tenths of one percent of California's employed workers; unlikely to dent the state's construction unemployment.

Table 6A - Estimated Range of the Annual Number of Jobs Created By The Four Stages Of California's Proposed High-Speed Rail Project

Four stages of the proposed high-speed rail project – by stage	Incremental construction expenditure (2010 $s)	Years to build that stage	Average annual range of FTE jobs, by stage of construction	
			Low Estimate*	High Estimate**
ICS (Central Valley)	$5.2Billion	5	14,300	18,300
IOS North	$19.9Billion	7	38,900	49,800
LA Basin to SF Bay	$17.1Billion	6	39,200	50,200
Phase 1 Completion	$27.7Billion	8	47,400	60,800
Total costs + average annual range of FTE jobs by stage of construction	**$69.8Billion**	**21**	**45,600**	**58,500**

***** FTE Jobs (13,713 per Billion of 2010 $US) - Source of job data used in estimate of jobs in the 2009 to 2011 time period: GAO Testimony before House Committee on Transportation and Infrastructure – "Recovery Act – Use of Transportation Funds, Outcomes, and Lessons Learned". Found at: http://www.gao.gov/assets/130/126114.pdf

****** FTE Jobs (19,024 per Billion of 2006 $US or 17,575 of 2010 $US) - Source of Multipliers: California Economic Strategy Panel. (2009). Using Multipliers to Measure Economic Impacts. Found at: http://www.labor.ca.gov/panel/pdf/Using_Multipliers_to_Measure_Economic_Impacts.pdf

Nor will all those jobs be in California; probably half or less will be given that steel, power cable, and rolling stock are likely to be sourced from the lowest bidders.[119] That means China's steel and rolling stock fabricators may profit as much as they did on building the east span of the SF Bay Bridge. It's more likely that only a maximum of 30,000 full time equivalent jobs per year will be created in California, the remainder being elsewhere.

The CHSRA's construction job forecasts also skip over the point that every job created by building the railroad would be a job that would otherwise have been created expanding highway capacity or adding new runways or terminals in California's airports. But neither the 2008 Plan, nor the 2009 Plan, nor the 2012 Draft Plan chose to be honest about construction net job creation.

On Permanent Jobs – The Draft document later states *"With implementation of the HSR system in California, as many as 400,000 long term jobs could be created as the state's economy becomes more efficient*."[120] In their 2009 Plan, the statement was for 450,000 permanent jobs, while only documenting about 4,500 annual permanent jobs

directly operating and maintaining the high-speed train system.[121] Even if the 'multiplier effect' created three jobs at local retailers and service businesses for every one direct job, the combined total (18,000 annual permanent jobs) represents less than five percent of the Draft Plan's claims.

It is most important however to not overlook the fact that every 'permanent' job the train creates, that job displaces a job in the existing airline, airport services, highway services and maintenance industries. The net addition is zero to employment creation – and more dangerously a negative contribution if the Draft Plan's statement "*long term jobs could be created as the state's economy becomes more efficient."* is to be believed.[122] As with construction jobs, the Draft plan chose to misrepresent both actual job creation and net job creation in the rail project, during the construction period and the decades of operations afterwards.

But neither the ballot description the 2008 Plan, nor the 2009 Plan, nor the 2012 Draft Plan chose to be honest about construction net job creation. How can five times the ballot description's construction jobs get created for the same project whose costs 'only' doubled in 2012 dollars? And how exactly is the project to create more than twice the permanent employment of the government of the state of California?

6.2.9. Social Benefits Are Not Part Of A Business Plan And Should Be Removed: If They Remain, Then Their Claims Ought To Be Assessed By Independent Experts

The first line of 2012 Draft Plan's Executive Summary clearly states the project's mission: *"In 2008 Californians voted to develop a statewide high-speed rail (HSR) program."* However, the 2012 Draft Plan quickly devolves into claims that the purpose of the more than $500 million already spent and at least a hundred billion more proposed to be spent, is to solve California's transportation, employment and environmental challenges.

Those are high-minded goals, but the authorizing law (AB3034) is called the "Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century." It is not called the "California Traffic Decongestion Act" nor is it the "California Full Employment Act" nor is it the "Environment And Foreign Exchange Savings Act." The only mission the Legislature assigned to AB3034, and the one voters chose to support, was to provide California a high-speed train where the "users of the system pay for the system."

The CHSRA chose to devote chapters 1 and 10, and parts of others to the social and economic benefits of high-speed rail. These not only have no place in a business plan, but are canards which divert attention from the multitude of substantive financial issues the project faces. The CHSRA would do itself and the train's advocates a service by presenting a focused business plan and not another 'feel good' marketing document like its predecessors.

6.2.10. The Plan Says The Alternative Is To Spend $171 Billion On Highway And Airport Expansions, But The Analysis Does Not Meet AB 3034 And Is Flawed, Misleading And Should Be Deleted

The Draft Business Plan makes the argument that California will "save money" with its $100 Billion in CHSR because if we don't build HSR we will need to invest about $171 Billion in highways and airports.[123] This comparison even makes it into the Executive Summary. However, the Authority's analysis is blatantly 'cooked' to prove a point, and deeply misleading to the public as well as budget analysts and policy makers.

Parsons Brinckerhoff performed "capacity analysis" by multiplying more-than-maximum service with near maximum load factors. The authors essentially asked; "how much extra airport and road capacity would be needed to accommodate the maximum throughput of passengers on the California High Speed Rail system?" This is a 'loaded' question because no system runs at maximum all the time; indeed, as we have seen, there is significant concern that CHSR may run well below even forecasted medium projected levels, let alone at maximum capacity.

This is a different methodology than the Authority used in its earlier Plans, in which it asked the more reasonable question: how much would it cost to move by road and air the number of passengers they forecast taking CHSR. We suspect that the Authority and its Project Manager, Parsons Brinckerhoff (the author of this section) felt compelled to increase the alternatives' costs when their CHSR construction cost estimates tripled. Unfortunately, Parsons Brinckerhoff (PB) was not a disinterested party to this exercise because if the CHSR project proceeds, PB gets more consulting and project management work.

We have four fundamental problems within PB's body of work on capacity analysis:

1. There is the nagging issue of often-overlooked language in AB3034, in which the legislators said that:

> "*The high-speed train system proposed by the authority will cost about one-third of what it would cost to provide the same level of mobility and service with highway and airport improvements*"[124]

The existence of this language needs to be dealt with by the Authority, since it is now clear that this requirement was not met.

2. PB made some dramatic assumptions with respect to the amount of railroad capacity that the highway and airports would have to equal. To get the outcome they and the CHSRA wanted, they assumed that:

- There would be 12 trains per hour in each direction;
- The number of seats per train is 1,000 seats with 70% average load factor per trains
- Operations would occur 19 hours per day, 365 days/year.[125]
-

The PB 'capacity analysis' calculation means a train leaves both San Francisco and Los Angeles every 5 minutes, each carrying 700 passengers, 19 hours a day, every single day. This 'maximum capacity' analysis yields **over 116 Million passengers a year.**

The PB analysis then compares that indefensible number of passengers' needs with the need to build more and/or larger airports and more highway lanes to accommodate **116 million trips**. That leads to the extraordinary cost for alternative investments.

3. Not only is the analysis intellectually dishonest, it is mathematically incorrect. We found errors in the mathematical and statistical processes, used by PB in their highway calculations, that show that instead of costing $171 Billion (YOE) to provide highway and airport capacity for 116 Million passengers per year, the correct number is $102 Billion (YOE), roughly the same as the CHSR.

Table 6B – Corrected Cost to Build Peak Capacity and Demand					
	For Capacity of 116.5M Passengers per year			Change Capacity to Demand Ratio Down to 40M Passengers per year[126]	Projected Phase 1 Build Costs – 2012 Plan
	Cost in 2012 Plan	Corrected Math for 775 Miles[127]	Corrected Math for 520 Miles[128]		
Expressed in 2010 $'s in Billions					
Air (Not Analyzed)	$29.7	$29.7	$29.7	$10.2	
Highways	$84.6	$57.7	$38.7	$13.3	
Total	**$114.3**	**$87.4**	**$68.4**	**$23.6**	**$69.8**
Expressed in YOE $'s in Billions[129]					
Air (Not Analyzed)	$44.6	$44.6	$44.6	$15.4	
Highways	$126.9	$86.6	$58.1	$20.0	
Total	**$171.5**	**$131.1**	**$102.6**	**$35.4**	**$98.5**

Moreover, as shown in Table 6B, taking CHSRA's purported, but highly challenged estimated passenger load – 40 million – and asking what it would take to move that many people, the correct math shows the answer to be $35 Billion (YOE), substantially cheaper than the price tag to build CHSR Phase 1 of $99 Billion (YOE)[130].

4. While we did not analyze the math and statistics associated with PB's airport capacity calculations, there is another flaw in PB's alternatives analysis. The language in the Business Plan clearly wants policymakers to believe that an investment in HSR will significantly reduce demand on our airports, as well as the highways. But in fact SFO did a recent capacity forecast for itself that included CHSR's existence. SFO experts found that if CHSR Full Phase 1 were built, the CHSR would **reduce SFO's forecast demand growth by 2035 only by 6%** [131] In other words, we still must build 94% of what SFO needs to accommodate its growing domestic and international air traffic demand. SF-LA is an important route of course, but it is just one of very many places to which the people of the Bay Area travel.

In consequence, the more likely impact CHSR would have on SFO and California's other transportation upgrades would be negative, namely, crowding out California's bonding capacity to invest in upgrades to other systems.

The bottom line is that airports and roads are flexible passenger delivery systems – they can take people wherever they want to go, and they can be built when and where the demand appears over the next 20 to 30 years. On the other hand, trains are fixed systems with little flexibility, and the need to determine where the demand will be has to be made now. **Finally, the State of California is going to have to invest in roads and airports whether or not CHSR gets built, if it can afford to do so**.

This Parsons Brinkerhoff "capacity analysis" is another clear example of flawed, misleading reporting by proponents of CHSR. It doesn't help either the State or its taxpayers understand the true costs of alternative transport investment, in fact, just the opposite.[132] **This section should be struck from the report**.

6.3 Conclusion

Business Plans in the private sector are produced by men and women who have invested, and will invest, their time, intellectual capital, and normally a tremendous amount of their personal financial capital into making the future venture a success. For private enterprises that have outside shareholders, there is also a group of committed investors who press to maximize efficiency and opportunity for the business. Unfortunately, for an enterprise like High Speed Rail that aspires to be treated like a business but run by the public sector, what is missing is the lack of a strong personal financial stake in turning a profit. Because of this difference, financial commitments become promises; forecasts become guesses, and statement of facts become estimates. This is due to the consultants and managers having "no skin in the game." Given this tremendous difference, elected officials need to take what is told to them, or provided to them in a Business Plan, with a large grain of salt – and to think through, as we have tried to do here, the consequences to the State if the CHSR goes ahead but does not meet its proponents' financial assertions and expectations.

APPENDIX A: WHAT VOTERS WERE TOLD IN 2008 AND WHERE WE ARE NOW

To even the casual reader, the new Plan's promises are very different from what voters approved in 2008 and what analysts found in the 2009 Plan. Table A1 (below) shows that in a side-by-side analysis. With the exception of the constancy of ridership forecasts, almost everything else has changed.

Here are some of the promises made to Californians when they voted on Prop 1A in November 2008. The following statements all come from the State of California November 2008 Voter Guide – mailed to households.[133] The Voter Guide was what many, probably most, voters were given to decide whether to support the initiative (since the Business Plan AB 3034 required before the November 2008 election was not available until after the election:

THEN: ***"****Proposition 1A is a $9.95 billion bond measure for an 800-mile High-Speed Train network…linking San Diego, Sacramento, San Francisco and Los Angeles… that will cost an estimated $45 billion to build."*

> **NOW:** The Phase 1 system will only stretch from San Francisco to Anaheim with no service to Sacramento or San Diego – or other terminal points. It will cost at least $98.5 Billion to build. The timing and added expense for the San Diego and Sacramento linkages are unknown but are probably 60-70% of Phase 1 (Los Angeles/Anaheim to San Francisco) for a total estimated cost of $170 Billion+.

THEN: ***"****California's high-speed rail network requires NO TAX INCREASE."*

> **NOW:** Since the Authority acknowledges that public money must be used for at least the first $62 billion in capital expense ($31 billion in construction expense and $31 billion at least in financing charges) before private sector investors will come in, and that exceeds the $9Billion of State liability, then either there <u>will be</u> new taxes to pay for the system or equivalent cuts must be made elsewhere in California's budgets for schools, safety, levees, etc, or the Federal Government will have to contribute grants of $22 Billion, which will be financed by public debt to be paid for by all taxpayers of America…

THEN: ***"****Travel from Los Angeles to San Francisco will cost about $50 a person."*

> **NOW:** Tickets in the 2012 Business Plan between Los Angeles/Anaheim to San Francisco supposedly cost $81. If European pricing were adopted (on a price-per-passenger-mile basis) then the one-way ticket cost would jump to roughly $175 ($0.43/mile x 400 miles) which is in line with an equivalent mileage Acela ticket on the North East Corridor today.

THEN: *"High-Speed Trains require one-third the energy of air travel and one-fifth the energy of auto travel."*

> **NOW:** New federal mileage regulations will substantially improve the energy efficiency of automobiles, as will the rising number of electric and hybrid vehicles. Jets are also becoming much more fuel efficient in light of high oil prices, as one

would expect. Therefore, these energy "savings" for high-speed rail are substantially overstated.

THEN: ***"****Proposition 1A will protect taxpayer interests with public oversight and detailed independent review of financing plans; also it will require matching private and federal funding to be identified BEFORE state bond funds are spent."*

NOW: Not even according to the Draft 2012 Plan will there be matching money from the private sector until at least 2023. Many members of the public and many city and State officials do not believe there has been adequate oversight of the Authority; true independent reviews of the ridership models by UC Berkeley, CARRD and others have been dismissed by the Authority; in expressing his disgust with Authority spending, a former Board member and staunch supporter wrote in March 2011: *"The August 2010 invoice of Robinson Communications includes: on August 11, 2010, 3 hours for Mr. Robinson to attend the Transbay Terminal groundbreaking at $300/hour, a total of $900, and 3 hours for Patty Jo Rutland of his office, attending the same function for $200/hour, and total of $600. Thus, the Authority was billed $1,500 by Robinson Communications for their attendance at that event."* ***What a waste of taxpayers' money!***.[134]

THEN: *"Once completed, THE USERS OF THE SYSTEM PAY FOR THE SYSTEM."*

NOW: As our analyses make clear, and as CHSRA implicitly acknowledges when it says the private sector will not invest until HSR proves it can be profitable, there is no guarantee the system's revenues will actually cover operating costs (let alone capital expense charges). In the United States, a "successful" mass transit system is one in which fare box revenues cover 45% of the operating expenses. Certainly, High Speed Rail will be able to charge more than a commuter rail, but the risk of not covering all expenses is real. If the profits do not occur, then either the system will be shut down or the State's General Fund will have to make up the difference at the expense of other priorities.

THEN: ***"****Proposition 1A will create…450,000 permanent jobs."*

NOW: According to the 2012 Draft Business Plan ***"****Once fully operational, the Bay to Basin system will directly employ approximately 2,900 people, and the Full Phase 1 system will employ about 4,500,"* Where are the other 445,000 employed? The reality is that whatever new jobs are created; they are just jobs that would have existed in the airline and automotive market places if HSR did not exist. This is because the HSR system is not creating new passengers; it is taking them from existing and growing markets.

THEN: The ballot description and ballot language were drafted by high-speed rail proponents in California's Legislature.

NOW: A State judge invalidated this means of putting initiatives in front of voters, arguing that it is misleading to do so.[135]

It should be clear to readers by now that the history of this project is most aptly described as a string of broken promises. It is time to put the matter back to the voters.

Table A1 -- The 2008 Promises, The 2008 And 2009 Plans Compared To The Draft 2012 Plan

2008 Promises To Voters	**2012 DRAFT Business Plan**
A complete project – ie. LA/Anaheim – SF Transbay Terminal	In 2034 – best case
Building SF-LA/Anaheim – no price given	$98.5 Billion – best case
One-way SF-LA ticket – 'about $50'	Current estimate - $81
"The users of the system pay for the system"	Not mathematically and financially possible
Build and operate "without raising taxes" and "no tax increase"	Only if the Federal Government provides at least $60 Billion to $90 Billion in GRANTS
Entire system destinations – SD, LA, SF, SJ, Sacramento, and Oakland	Only LA and SF
Entire system cost, for all cities above, about $45 billion'	No estimate, probably in the range of $170 Billion
"Matching private and federal funding to be identified BEFORE state bond funds are spent"	Correct for ICS, IOS and onward is not known
2008 Business Plan and (2009 Business Plan)	**2012 DRAFT Business Plan**
Capital cost of Phase 1 $33Billion 2008$ ($43Billion – YOE)	Phase 1 - $69.8Billion 2010$ ($98.5-$117B Bin YOE through 2033)
Capital costs to be covered by Prop 1A funds, Federal Grants and Bonds, private debt and equity investors, and local governments	Capital servicing depends on Federal grants and/or private money, after Prop 1A Bonds are used
Completion of LA-SF Phase 1 – 2020 (2009 same)	Completion of Phase 1 – 2034
Trip time LA to SF –2 hrs 40 minutes (2009 same)	Trip time LA to SF – 4 hrs minimum, a few at 2 Hrs 40 min in 2034
AB3034 – LA to SF Transbay Terminal in one seat (2009 same)	Need to change trains twice in IOS & B2B, once or twice until 2034
SF Bay arrival at the SF Trans Bay Terminal (2009 same)	SF arrival point 4th and King St. via CalTrain, until 2034
Cost of project including debt service ~ $65 billion (2009 was $120B)	Cost of project including debt service ~~ $240 billion
Estimated ridership yearly –117,000,000 (2009 41M by 2035)	Estimated ridership yearly – 41 million by 2060
Start of construction in SF Bay area or LA/Anaheim	Expected construction start Central Valley
Train would be on completely grade separated tracks	Some tracks not grade-separated until 2034
Trains could pass at full speed through stations	Passing tracks mostly not available until 2034
Funding would only be approved for "usable segments"	Funding Plan approved in Dec. 2011 for request for non-usable segments
Federal grants needed $12-16B (2009 $17-19B)	Federal grants or loans at least $65 B to $90B
Track routing was determined	New studies for different routing now underway.
No federal funding when 2008 and 2009 Plans issued	$3.3 Billion secured. Future Federal funding questionable
Investors said clearly – no revenue guarantee = no investment	Private funding 'will come'
Additional funds needed to complete Phase 1 - $24 billion	Additional funds needed to complete Phase 1 $87 billion, minimum
One Way LA-SF ticket (2008) "about $50'. (2009 $105)	One way LA-SF $81
Anticipated "profit;" i.e. surplus revenue $3 billion annually	Surplus despite reduced price but same riders
160,000 construction jobs – 450,000 permanent jobs {years}	1,000,000 jobs [actually job-years, but no time frame] (peak annual jobs about 60,000)
Political Support: 52.5% voted for Prop1A	62.4% would vote to rescind Prop1A (Probolski poll), 66% would vote to rescind Prop 1A (Field Poll)

Reference Notes

[1] See, for example, the 2008 California Voter Guide Information on Prop 1A in which this statement is in ALL CAPS by the proponents of the system
[2] http://www.youtube.com/watch?v=jGyUxBnoVpc
[3] IOS North is selected in this Summary since its median cost is less expensive than IOS South. However the long-term financial impacts of both IOS are similar.
[4] Construction and financial costs of Phase 2, promised by Prop 1A (includes San Diego, Riverside, Sacramento, and Oakland), would be about 60-70% of Phase 1
[5] Of the $9B in Prop 1A Bonds for Phase 1 construction, $1B has been set aside for administrative costs – therefore not available for construction
[6] Concession Sale of discounted 30 years of Phase 1 Future Net Profit/Margins in 2023, when Net Profits/Margins are $0.1B to $0.2B year or additional Federal Grants.
[7] The Summary table's downgrade of TRIP bond availability from $12.4B (Draft Plan) to $1.5B is based on S1436 and testimony given by Mr. Blake Fowler, CA Dept. of Treasury, at a December 5th 2011 hearing.
[8] 2008 Plan Page 21, 2009 Plan Page 93.
[9] See: http://www.outsidethebeltway.com/with-super-committee-dead-showdown-likely-over-defense-cuts/
[10] See: Committee Holds Hearing on Imploding California High-Speed Rail Project, at http://transportation.house.gov/News/PRArticle.aspx?NewsID=1485]
[11] A link to the letter is: http://republicans.transportation.house.gov/Media/file/112th/Railroads/2011-12-19-GAO_Letter_CA_HSR_Project.pdf
[12] Costa, Lofgren, Richardson Call for Comprehensive GAO Review of California High-Speed Rail; at http://www.turnto23.com/news/30135100/detail.html
[13] Senate Bill 1436 IS was introduced on July 28th 2011. It's intent is *"To provide $50,000,000,000 in new transportation infrastructure funding through bonding to empower States and local governments to complete significant infrastructure projects across all modes of transportation, including roads, bridges, rail and transit systems, ports, and inland waterways, and for other purposes."* No further action had been taken on it since its introduction. See: http://thomas.loc.gov/cgi-bin/query/z?c112:S.1436.IS:
[14] For the IOS North allocation by the Draft Plan see: Exhibit 8-23, pg. 8-27; For the IOS North allocation of TRIP Bonds see Exhibit 8-23, pg. 8-28
[15] For the 2008 estimate see: California High-Speed Train Business Plan, November 2008, pg 21. For 2009 estimate see: California High-Speed Rail Authority; Report to the Legislature; December 2009; page 93.
[16] The City of Fresno passed a resolution in December 2009 supporting the locating a maintenance facility there, but no funds were allocated from the city treasury to pursue this goal. See: www.fresnoworks.org/LiteratureRetrieve.aspx?ID=64724
[17] See: California Transportation Commission; 2011 Statewide Transportation System Needs Assessment; Final Report, October 2011; page 1-3.
[18] See: California Transportation Commission; 2011 Statewide Transportation System Needs Assessment; Final Report, October 2011; page 3-2.
[19] See: Big Trouble For California's $66Billion Train. Found at http://www.cc-hsr.org/
[20] The winning bid to build the structurally damaged Eastern Span of the Bay Bridge was $1.43Billion. As of late 2011, the bridge is estimated to cost $6.3Billion and open six years later than contractors had estimated. See: http://en.wikipedia.org/wiki/Eastern_span_replacement_of_the_San_Francisco_%E2%80%93_Oakland_Bay_Bridge
[21] See: Exhibit 3-1, pg. 3-3 of the California High-Speed Rail Program Draft 2012 Business Plan
[22] See, for example, Financial Times http://www.ft.com/intl/cms/s/0/5fc20cfc-3b8e-11e1-bb39-00144feabdc0.html#axzz1jA5i2CMk
[23] Op Cit. 2012 Draft Business Plan; page 8-4 and page 8-28
[24] 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 2008 *"A presentation summarizing the results of the RFEI was made before the Authority Board of Directors on June 11, 2008 "* The printed report issued in October 2008.
[25] Ibid
[26] A report for Bonnie Lowenthal, Chair of the Assembly Transportation Committee, from the Legislative Analyst's Office, dated November 29th 2011, named High-Speed Rail Authority: The Draft 2012 Business Plan and Funding Plan. Found at www.paloaltoonline.com/media/reports/1322613621.pdf
[27] See: Legislative Analyst's Office; Strategy for Reviewing the Draft 2012 High-Speed Rail Authority Business Plan; November 15, 2011; Presented to: Assembly Budget Subcommittee No. 3 On Resources

and Transportation Hon. Richard Gordon, Chair

[28] AB3034 speaks specifically about building Phase 1 in Article 2. 2704.04. (a) *"It is the intent of the Legislature . . to initiate the construction of a high-speed train system that connects the San Francisco Transbay Terminal to Los Angeles Union Station and Anaheim"* and later AB3034 Section 8 (f) says the project must *" . .be completed no later than 2020 . ."*

[29] This table's genesis is in: Revisiting Issues In The October 2010 Report; The Financial Risks Of California's Proposed High-Speed Rail Project; September, 2011, Found at http://www.cc-hsr.org/. Distances between European and US city pairs are from Google Maps, taking their city center to city center driving distances as representative of track miles. Ticket prices for European systems are from Rail Europe; http://www.raileurope.com/index.html. Prices are at an exchange rate of US$=0.69Euros. Distance and price ($US=80.9 Yen) for Shinkansen are from East Japan Railway Company; at http://www.jreast.co.jp/e/charge/index.asp. Also see Briefing Note 14, also available at http://www.cc-hsr.org/. While the 2012 Draft Plan states the LA-SF distance as 520 miles, our calculations are based on 430 SF to LA city-center to city-center air miles, as it is presently impossible to know the final track mileage the train's configuration will take. Using the 430 miles also gives us a consistent base by which we are able to compare the per passenger mile ticket charges proposed by the Authority with the actual ticket mile charges of European and Japanese systems. It is also useful to review our Brief Notes 14 and 15 found at http://www.cc-hsr.org/

[30] See: Revisiting Issues In The October 2010 Report; The Financial Risks Of California's Proposed High-Speed Rail Project; Figure D, page 28. Available at http://www.cc-hsr.org/.

[31] IOS North is selected in this Summary since its median cost is less expensive than IOS South. However the long-term financial impacts of both IOS are similar.

[32] Prop 1A precludes a State of California Operating Subsidy.

[33] See Briefing Note # 15 "ON OPERATING COSTS OUT OF SYNC WITH THE FRA AND REALITY", available at www.cc-hsr.org

[34] See: California High-Speed Rail Program Draft 2012 Business Plan, November 1, 2011; pg. 7-1

[35] Ibid; pg. 3-4

[36] See: AB3034 Article 2. 27404

[37] Among other costs included in the capital budget are; crossings, underpasses, overpasses, tunnels, bridges, berms, trestles, stations, parking garages, power delivery systems, train control systems, protective barriers, adjacent roadways, relocation of and establishment of utility services such as sewer, drainage, water supply, local gas and electricity supply lines, etc.

[38] California High-Speed Rail Benefit-Cost Analysis (BCA) October 2011, prepared by Parsons Brinckerhoff, Section 5.2

[39] Op Cit. 2012 Draft Business Plan, p 3-13

[40] http://ti.org/antiplanner/?p=1502

[41] See: California High-Speed Rail Program Draft 2012 Business Plan, November 1, 2011; pg. 7-3

[42] Op. Cit Hearing before the Subcommittee, pg. 3

[43] Op. Cit Hearing before the Subcommittee, pg. 10

[44] Op. Cit Hearing before the Subcommittee, pg. 11

[45] See: http://en.wikipedia.org/wiki/Corporate_tax_in_the_United_States

[46] See: State Business Tax Climate Index, 2006-2011 at http://www.taxfoundation.org/taxdata/show/22661.html

[47] Ibid; pg. 7-1

[48] The terrorist attacks in London's underground in July 2007 (known as the 7/7 attacks) killed fifty-two. See: http://en.wikipedia.org/wiki/7_July_2005_London_bombings. Trains en route to Madrid's main rail terminus, Atocha station, were attacked in March 2004, killing 191. See: http://en.wikipedia.org/wiki/2004_Madrid_train_bombings. Carlos the Jackal (Ilich Ramirez Sanchez) was tried and convicted in late 2011 in France for two attacks on high-speed trains in December 1983. See: The Wall Street Journal; November 7, 2011; pg. A10.

[49] See: http://en.wikipedia.org/wiki/2008_Mumbai_attacks

[50] For a general outline of airline's liability insurance see: http://ingos.ru/en/corporate/avia_space/avia_transporter/

[51] See: California High-Speed Rail Authority (CHSRA): Report to the Legislature; December 2009; page 69 *"The forecasts assume that high-speed train travelers will not face airport-style security checks and processing time,"*

[52] See: California High-Speed Rail Program Draft 2012 Business Plan, November 1, 2011; pg. 7-3

[53] See: YouTube presentation of 15 November by Roelof van Ark. http://www.youtube.com/watch?v=BsYrs3WzjLw

[54] Letter from Jean-Pierre Loubinoux, Director General of the International Union of Railways to CHSRA CEO Roelof van Ark, dated 8 February 2011. Of note is the apology for a late answer to Mr. van Ark's letter and accusations of bias probably directed at the same authors of this report and October 2010's report, *The Financial Risks Of California's Proposed High-Speed Rail Project*. Letter is found at http://www.calhsr.com/wp-content/uploads/2010/02/IUR-Officials-Letter-to-CHSRA-CEO.pdf
[55] "Official stance of the UIC (IUR), the worldwide railway association, on the profitability of the high speed rail system" This is a two-page memorandum accompanying the letter to CHSRA CEO Roelof van Ark from Msr. Jean-Pierre Loubinoux, Director General of the International Union of Railways, dated 8 February 2011. See: http://www.calhsr.com/wp-content/uploads/2010/02/IUR-Officials-Letter-to-CHSRA-CEO.pdf
[56] Ibid pgs 5-6
[57] Ibid
[58] Statement by Iñaki Barrón de Angoiti; NY Times, May 29, 2009
[59] Ibid
[60] 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 18, 2007: pages 5 through 10 at http://frwebgate.access.gpo.gov/cgibin/getdoc.cgi?dbname=110_house_hearings&docid=f:34799.pdf
[61] We are indebted in this chapter to Californians Advocating Responsible Rail Design (CARRD), the California Rail Foundation, Smart Mobility and TRANSDEF for their relentless pursuit of a more credible ridership model for CHSR.
[62] See: The Financial Risks of California's Proposed High-Speed Rail Project, pages 46-50; found at http://www.cc-hsr.org/
[63] For a more fulsome discussion of the disparities between forecasted and actual riders see: Revisiting Issues In The October 2010 Financial Risks Report: September 2011, pg. 23 and Section 2.1.3, The Financial Risks of California's Proposed High-Speed Rail Project, pages 47-48 found at http://www.cc-hsr.org/
[64] For the examples of lower than forecasted ridership, see: See: Section 2.2 of Revisiting Issues In The October 2012 Report: The Financial Risks of California's Proposed High-Speed Rail Project, September 14, 2011. Found at http://www.cc-hsr.org/. For the World Bank citations see: Paul Amos, Dick Bullock and Jitendra Sondhi; World Bank Report No 55856; July 2010; pg.14. See: *www-wds.worldbank.org/.../558560WP0Box341SR1v08121jul101final.pdf*
[65] The 2009 Business Plan boasts of working with 56 professionals and managers from 10 different high-speed rail projects in Europe and Asia. See: California High Speed Rail Authority, Report to the Legislature, December 2009; page 21
[66] "Full-Speed Ahead" by Al Engel, VP High-Speed Rail; appears on pg.10 of the July/August 2011 issue of All Aboard. Also see: http://www.arrive-digital.com/arrive/20110708#pg10
[67] See: http://www.city-data.com/forum/general-u-s/468856-census-bureaus-2030-population-projections-50-a.html
[68] See: "Full-Speed Ahead" by Al Engel, VP High-Speed Rail; appears on pg.10 of the July/August 2011 issue of All Aboard. Also see: http://www.arrive-digital.com/arrive/20110708#pg10
[69] See: testimony of Rich Tolmach of the California Rail Foundation, December 5th 2011 at the joint Senate hearing on high-speed rail. Found at http://www.youtube.com/watch?v=pS-pd1nsUoo
[70] Memo to Lou Thompson HSR Peer Review Group, from Cambridge Systematics, November 29, 2011, "Additional Information On Ridership and Revenue Forecasts", pages 4 to 8.
[71] Ibid, page 4
[72] CARRD Memo to Ridership Panel, September 2011 http://www.calhsr.com/wp-content/uploads/2010/02/Ridership-peer-review-letter-v1.1.pdf
[73] There are twenty-seven counties north, seven east of and three west of the proposed LA/Anaheim to SF route. They represent 11.9 million of California's 38.7 million 2010 residents. See: http://www.counties.org/default.asp?id=399
[74] See: http://cahighspeedrail.ca.gov/WorkArea/DownloadAsset.aspx?id=6588
[75] CARRD Memo to Ridership Panel, September 2011 http://www.calhsr.com/wp-content/uploads/2010/02/Ridership-peer-review-letter-v1.1.pdf
[76] Independent Peer Review of the California High-Speed Rail Ridership and Revenue Forecasting Process; July 22, 2011; pg. 7
[77] CARRD memo December 2011 (Update): How conservative are the Ridership Estimates (with respect to gasoline price assumptions)? http://www.calhsr.com/wp-content/uploads/2011/12/CARRD-Fact-check-How-conservative-is-the-model-wrt-gas-1.1.pdf
[78] "How conservative are the ridership forecasts?", A CARRD paper; updated: December 1, 2011, pg.2. Found at http://www.calhsr.com/resources/ridership-forecast/

[79] UK Minister Hammond to Parliament, Sep 13 2011, as quoted by the BBC http://www.bbc.co.uk/news/uk-politics-14904610
[80] State of California Debt Affordability Report, October 2011
[81] Op Cit, 2012 Draft Business Plan, page 6-4
[82] Op Cit, 2012 Draft Business Plan, page 8-14
[83] Op Cit. 2012 Draft Business Plan pp 6/13-15
[84] Basic Amtrak Facts, by Amtrak
[85] Page 6-5 2012 Business Plan
[86] Op Cit. 2012 Draft Business Plan, pg 6-8
[87] Technical Memorandum: Ridership and Revenue, Cambridge Systems, Page 48, 10-11-2011
[88] There already is security screening on the Eurostar and on Spain's AVE because of terrorist attacks
[89] See the color version of the Ballot Description at: http://www.voterguide.sos.ca.gov/past/2008/general/argu-rebut/argu-rebutt1a.htm. A second Guide was printed in black and white. See: http://www.voterguide.sos.ca.gov/past/2008/general/pdf-guide/suppl-complete-guide.pdf#prop1a
[90] Op Cit. 2012 Draft Business Plan pg 9-10
[91] Californians own an estimated 840 autos per 1000 residents; the number is estimated at 608, 593 and 575 per 1,000 respectively in Spain, Japan and France. Source: US Department of Energy and national reports.
[92] Webvan was founded in the late 1990's and lasted about three years. Its original investors included supposedly experienced and savvy investors such as Benchmark Capital, Sequoia Capital, Softbank Capital, Goldman Sachs, and Yahoo! See: http://en.wikipedia.org/wiki/Webvan and http://fail92fail.wordpress.com/tag/webvan/
[93] Some of the corporate investors were Alcatel, AirTouch, Deutsche Aerospace, Hyundai and Vodafone. See: http://en.wikipedia.org/wiki/Globalstar#Corporate_structure_and_financing
[94] Section 13(c) is included in the Federal Transit Law, and is located at Section 5333(b) of Title 49 of the U.S. Code (49 U.S.C. § 5333(b)). As a general rule, Section 13(c) protects transit employees who may be affected by Federal transit funding. See: http://www.dol.gov/olms/regs/compliance/QandA.htm
[95] Read http://www.sacbee.com/2011/12/02/4096110/threat-of-railroad-strike-subsides.html#ixzz1fdC5nmkb
[96] Amtrak Strike Averted; Bush Panel to Hear Dispute; Bloomberg News Service, November 28th 2007. Found at: http://www.usatoday.com/money/economy/2008-01-18-3439438932_x.htm
[97] Fiscal Year 2011 Revised Budget and Comprehensive Business Plan: Operating, Capital Programs, and Debt Service Expense Budget; March 2010; page 19
[98] See: Letter to Mr. Dan Levitt, dated April 23 2010 from Union Pacific General Manager for Network Infrastructure, Mr. Jerry S. Wilmoth.
[99] Op Cit. 2012 Draft Business Plan pp 9-13 and 11-10
[100] Treasurer's Office *Debt Affordability Report*; October 2009, pages 7 and 8. See: http://www.treasurer.ca.gov/publications/2009dar.pdf Also, LAO, *Informational Hearing on Debt Service*, December 2009, page 3. See: http://www.lao.ca.gov/handouts/FO/2009/Debt_Service_121409.pdf
[101] *Financial Analysis Report*, June 2011, and Briefing Notes #16 and #17, August 2011. All available at www.cc-hsr.org
[102] This includes bonds already sold, plus Authorized But Not Yet Sold, plus Projected Future Authorizations (excluding high-speed rail).
[103] Congresswoman Anna Eshoo, State Senator Joe Simitian, and State Assemblyman Rich Gordon first broached the concept of a blended option.
[104] See: California High-Speed Rail Program Draft Business Plan, November 1, 2011; pg. 2-11. The 2012 Plan admits there will be a gap in the high-speed rail bed *". . just north of Bakersfield. . "* that an Initial Operating Section (IOS) needs to fill. If the IOS needs to fill that portion, then the ICS has not filled that portion.
[105] *"The Scope of Work **does not include** design and construction of trackwork (i.e. ballasted and/or non-ballasted section); passenger station; buildings; ROW engineering, negotiations, and acquisition; soundwalls; and systems work (i.e., Overhead Catenary System poles, foundations, and wires, Traction Power Facilities, Automatic Train Control, etc.)."* See: Initial Construction Section: Construction Package #1:Fresno, California: REQUEST FOR QUALIFICATIONS: For a Design-Build Contract: RFQ Number: HSRll-16; Exhibit D (page 48 of PDF thumbnails)

[107] The claim of a 'fall-back' use for spending $6Billion to use the trackage for Amtrak trains rings hollow since there is already an Amtrak train serving those communities. It's not what Californian's voted to pay for.
[108] See: http://www.voterguide.sos.ca.gov/past/2008/general/argu-rebut/argu-rebutt1a.htm.

[109] See: California High-Speed Rail Program Draft Business Plan, November 1, 2011. Exhibit 8-30. Either IOS North (with a lower middle level cost) or IOS South (with a lower estimated total cost) would begin about mid-2015 and be completed sometime in mid-2021.
[110] The Authority will still have about $6.4Billion State bond fund authorization available to build an IOS after about $2.6Billion is used to build the ICS. The range of costs for the two IOS is $19.4 to $25.8Billion, requiring $13 to $24Billion to build an IOS.
[111] These figures come from the IOS North estimates because IOS North has a median price estimate lower than IOS South, therefore is a more likely candidate to but constructed. However, IOS South's total price is about the same as IOS North.
[112] We believe the reason the 2012 Draft Plan is silent on who pays construction debt is that the Net Operating Profit (Margin) defined in the 2012 Draft Plan is inadequate to service construction costs or to service construction debt if public or private debt is used – and has to be repaid –as the primary financing vehicle. No Public Private Partnership (PPP) arrangement will change the basic fact that the repayment of the construction costs now vastly exceeds the Draft Plan's projected Net Operating Profits, let alone what we believe is a much more realistic P&L forecast. Therefore, the taxpayers of the US (including Californians) will pay for it, with California's taxpayers most likely to be the last players standing.
[113] Op Cit. 2012 Draft Business Plan, page 8-29
[114] See: YouTube presentation of 15 November by Roelof van Ark.
http://www.youtube.com/watch?v=BsYrs3WzjLw
[115] See: http://www.voterguide.sos.ca.gov/past/2008/general/argu-rebut/argu-rebutt1a.htm.
[116] See: California High-Speed Rail Program Draft Business Plan, November 1, 2011: pg. ES-4.
[117] On August 25th 2011, CHSRA CEO van Ark said that building the project's first phase would create 800,000-900,000 temporary jobs. See: http://www.bizjournals.com/sanjose/news/2011/08/25/state-funds-eyed-for-high-speed-rail.html
[118] This type of overstatement on job creation was also addressed in both our October 2010 report, The Financial Risks In California's Proposed High-Speed Rail Project (pages 85-88) and our 2011 report; Revisiting Issues In The October 2010 Report: The Financial Risks In California's Proposed High-Speed Rail Project; Section 3.3.3 and Section 3.3.4 (pages 37-39). Both are found at http://www.cc-hsr.org/
[119] Material in the same documents as reference in the table suggest that anywhere between 45-55% of any construction job creation is off-site; whether within California, the US or abroad. See: California Economic Strategy Panel. (2009); Using Multipliers to Measure Economic Impacts. Found at:
http://www.labor.ca.gov/panel/pdf/Using_Multipliers_to_Measure_Economic_Impacts.pdf
[120] See: California High-Speed Rail Program Draft Business Plan, November 1, 2011; pg. ES-5.
[121] See: CHSRA: Jobs_FactSheet_051910.pdf and
http://www.cahighspeedrail.ca.gov/assets/0/152/159/0150b8aa-a61b-4aeb-9c18-6223d8fe429f.pdf
[122] Ibid
[123] Op Cit. 2012 Draft Business Plan pg. ES-1, November 1, 2011 *"Providing equivalent new capacity through investment in highways and aviation would cost California almost twice as much as the Phase 1 high-speed rail system and would require approximately: 2,300 miles of new highways, 115 new airport gates, 4 new airport runways. The costs of these expansions would exceed $170 billion over the next 20 years."*
[124] See: AB3034 Section 8. (c)
[125] Cost of Providing Equivalent Capacity to HSR through Other Modes, Parsons Brinckerhoff, Oct. 2011 Such egregious, self-serving use of benefit-cost analysis is what has brought disrepute both to the economic engineering companies that prepare them, and to the methodology itself.
[126] This column is 40/116's of the column to the left for both Air and Highway projections.
[127] This column corrects the 2010 $s highway projection in the 2012 Draft Plan, per the discussion in Section 11 of this document.
[128] This column is 520/775's of the column to the left, for the Highway projections.
[129] Ratio of YOE $'s to 2010 $'s in "Cost of Providing the Equivalent Capacity to High-Speed Rail through Other Modes", October, 2011, CHSRA, page 4, is 150%.
[130] See: "Twelve Misleading Statements on Finance and Economic Issues in the CHSRA's Draft 2012 Business Plan" January, 2012, Issues #10 and #11, pages 15 to 18. Can be found at www.cc-hsr.org
[131] Regional Airport System Planning Analysis, 2011 Update, Volume 1 – Final Report
[132] For example, using information developed by the California High Speed Rail Authority, about 6 Million annual air passengers would be diverted to high-speed rail in 2035 – about 6% of total Bay Area air passengers in 2035. But total forecast demand expansion for SFO is on the order of 90%, with passengers growing from 35 million to 64 million and air cargo almost doubling. Passenger growth comes from low cost airlines expanding their domestic offerings to outside California destinations and growing international traffic, neither of which is competed for by high-speed rail. Airports are going to have to expand dramatically in any

case, and high-speed rail's contribution to air traffic congestion would, at best, be negligible. See: http://www.regionalairportstudy.com/library/RASPA-2011_update/Volume_1-Sept_2011_RASPA_Final_Report.pdf)

[133] There were two certified Official Voter Information Guides. One was printed in color and the six cities mentioned were: San Diego, Los Angeles, Fresno, San Jose, San Francisco and Sacramento. Somehow Oakland disappeared from that list. See: http://www.voterguide.sos.ca.gov/past/2008/general/argu-rebut/argu-rebutt1a.htm. The second Guide was printed in black and white. See: http://www.voterguide.sos.ca.gov/past/2008/general/pdf-guide/suppl-complete-guide.pdf#prop1a

[134] Letter from Judge Quentin Kopp to CEO Roelof Van Ark, March 23, 2011

[135] In March 2009 a California Superior Court judge ruled in favor for the Howard Jarvis Taxpayers Association (HJTA) and Health Access California in a lawsuit filed on the grounds that voters are being misled regarding the ballot title and summary drafted by the Legislature as not being fair and impartial.