

# **APPENDIX B**

## **CALIFORNIA HIGH SPEED RAIL SYSTEM**

### **A COMPARISON OF DIFFERENT FINANCING ALTERNATIVES**

#### **FOR THE INITIAL PHASE ONE CORRIDOR SAN FRANCISCO TO ANAHEIM**

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## INTRODUCTION

**The Challenge** – To understand the financial consequences of the High Speed Rail (HSR) System on the State of California and its taxpayers.

**Background** – The HSR Authority’s mission is to build a statewide high speed rail network, over the next 15 to 20 years, connecting:

In the north – San Francisco, Oakland, San Jose, and Sacramento

Through – Stockton, Merced, Fresno, and Bakersfield

In the south – Los Angeles, Anaheim, Irvine, San Diego, and Riverside

Prop 1A and AB 3034 authorized \$9.95B in State Bonds, \$9.1B of which is for HSR, and which needs matching funds

Between 2010 and 2020, Phase One will connect the “underlined” cities. Project cost of construction & trains - \$43B

I estimate the follow on-phases to complete the network will be an additional \$30B to \$35B, which is an additional 70% to 80%.

The HSR Authority’s 2009 Phase One Business Plan projects the following Ridership volumes, Revenues, Operating Costs, and “Surplus”, which I call Operating Margin. Note their inflation rate takes the 2009 \$’s on the left side into “Year of Estimate” \$’s on the right side of the table.

**Table 1 - Summary of the Ridership and Financial Operating Results for Phase One, from the 2009 Business Plan**

Year	Riders	Revenue	Revenue	Operating	Inflation	Revenue	Revenue per	Operating	Operating
	(Millions)	\$B, 2009 \$	per Rider,\$	Costs	From 2009	\$B,YOE\$	Rider, YOE\$	Costs	Margin
				\$B, 2009 \$	@ 3.0%			\$B,YOE\$	\$B,YOE\$
2020	13.50	0.95	70.37	0.68	1.38	1.32	97.41	0.94	0.37
2025	36.50	2.55	69.86	1.02	1.60	4.09	112.11	1.64	2.46
2030	39.30	2.75	69.97	1.04	1.86	5.12	130.17	1.93	3.18
2035	41.00	2.87	70.00	1.07	2.16	6.19	150.96	2.31	3.88

The 41M riders in 2035 is their annual forecast from their detailed forecast of 121,000 riders per day, for Phase One. I have used prior Business Plans to estimate the completed network, with all the cities, to be in the range of 76 M riders in 2035, which are 224,000 riders per day. This is an increase of about 85%.

There is no technical breakthrough required – this is all known engineering and technology; used in safe, reliable transport in Europe and Asia. The challenges are financial - available investment (construction) capital, and political management of decision making under uncertainty (such as ridership forecasts).

To paraphrase a famous quote – “If we build it, will they come?” The answer to this question will determine if the HSR System will have positive Operating Margins, and will the Margins be sufficient to recover the \$43B, to approximately \$80B, that will be invested by the taxpayers of California, by the taxpayers of the United States, as well as the cities, counties, and private/sovereign sources of capital who may invest.

## TWO VIEWS OF THE WORLD

### There are two different views on who owes what to investors and taxpayers: The HSR Authority and The State of California

- The HSR Authority does not believe it has to measure its financial performance by returning all of the capital invested, plus a fair rate of return. It believes it will be responsible for returning some of it, and maybe guaranteeing some revenues streams. In effect, this guarantees investors in this position a fixed rate of return. For example, the HSR Authority believes they are not responsible for repaying the \$9B in Bonds authorized in 2008; rather, the State of California is responsible.
- The State of California needs to understand and measure the overall impact this program has on the future tax obligations of its taxpayers - as measured by this program's ability to retire debt or equity investments, plus additional subsidies that may be needed to cover any obligations that the Operating Margins cannot service. Included in this measurement is the servicing of the \$9B in Bonds authorized in 2008.

The best way to measure these issues is to project the amount of cash flow, after servicing the financial obligations, and determine what is the peak negative cash flow, and when does the cumulative cash flow reach breakeven. This avoids issues of P & L financial accounting requirements that confuse "profits or losses" with cash surplus or deficiencies. It also determines both the peak cash deficiency and when it will be repaid.

Table 2 is a simple example on how Operating Margins are impacted by the servicing of debt and equity investments and capital equipment replacement programs. It also shows how these results lead to annual cash flows and to cumulative cash flows over a number of years. Using this methodology, the model I have calculates the annual cash flows, based on various assumptions, such as the amount of different types of debt or equity investments, and their committed rates of return (interest rates), and Operating Results.

**Table 2 - How Operating Results Become Cash Flows Over Time**

Years	Operating Margins (positive or negative)	Less Debt and Equity Repayments	Less Capital Equipment Replacement	Yields Annual Cash Flow (positive or negative)	And Produces, Over Time, Cumulative Cash Flow (positive and/or negative)
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On the next two pages we will examine three cases, each with a different mix, and amount, of financing sources, starting with data in the HSR Authority's 2009 Business Plan. This first case is the "Mostly Grants" case, then I modified the mix to create the "More Debt Mix" case, and finally the "Mostly Private" case. These three cases are shown on the next page, in Table 3. I assumed a set of interest rates for each source of funds. If the HSR Authority is not responsible, I set it to "None".

We will also examine two alternative forms of equity financing. First, equity which is serviced and retired over a period years, with a "fixed annual return" which includes an interest payment, using a Sinking Fund (effectively, it is like an unsecured debt). Second, equity which has no annual repayment and, therefore, the return is "at risk". Here, the recovery of the investment, and any return, is at the end of a number of years. The Business Plan discusses a 16% after tax ROI for equity investors, so I used 21%, pre-tax, for the "fixed return" cases and 0% for the "at risk" cases. The model calculates the "at risk" ROI, based on the cash available at the end of the number of years.



**THE MIXES OF FINANCING (Continued)**

The following chart, Table 4B, summarizes the cash flow impacts of the three different cases of financing, at 100%, and 75%, of the Business Plan and equity financing with an At Risk Return. The At Risk investors are assumed to get all the cash in the HSR System, at a specific date in the future, ranging from 2030 to 2045. Note the dramatic drop in Peak Cumulative Negative Cash Flows in Table 4B, compared to Table 4A.

**Table 4B – Cash Flow Results with the Private Equity investment having an At Risk Return  
From The View of the: HSR Authority Taxpayers of California**

	Revenues and Costs, % of Plan	First Year of Positive Cash Flow	Peak Cumulative Negative Cash Flow	First Year Cumulative Positive Cash Flow	First Year of Positive Cash Flow	Peak Cumulative Negative Cash Flow	First Year Cumulative Positive Cash Flow
Case:			\$, B			\$, B	
1. Mostly Grants	100%	2021	(0.19)	2021	2023	(2.04)	2025
(In Business Plan)	75%	2021	(0.28)	2022	2023	(2.73)	2030
2. More Debt Mix	100%	2022	(1.47)	2024	2025	(4.69)	2035
(Grants and Debt)	75%	2023	(2.03)	2027	>2035	>(10.40)	Never
3. Mostly Private	100%	2022	(1.69)	2025	2023	(3.65)	2030
(Debt and Equity)	75%	2023	(2.37)	2028	>2035	(6.11)	Never

Lastly, it is important to understand the investor’s Internal Rate of Return on the Equity Investment (ROI), for the Fixed Return option, and the At Risk option (which is a one time “at risk” payout for different ends of the investment period). This is shown in Table 5.

**Table 5 – What is the Private Equity Investor Really Achieving as a Return?**

	Revenues & Costs, % of Plan	2030 Fixed Return	2030 At Risk Return	2035 Fixed Return	2035 At Risk Return	2040 Fixed Return	2040 At Risk Return	2045 Fixed Return	2045 At Risk Return
Case:									
1. Mostly Grants	100%	6.8%	9.1%	8.7%	10.0%	9.5%	9.7%	9.9%	9.3%
(In Business Plan)	75%	6.8%	7.1%	8.7%	7.9%	9.5%	7.8%	9.9%	7.9%
2. More Debt Mix	100%	6.8%	4.4%	8.7%	6.2%	9.5%	6.9%	9.9%	7.2%
(Grants and Debt)	75%	6.8%	-1.6%	8.7%	1.7%	9.5%	3.6%	9.9%	4.7%
3. Mostly Private	100%	6.8%	-0.5%	8.7%	2.4%	9.5%	3.8%	9.9%	4.7%
(Debt and Equity)	75%	6.8%	-8.1%	8.7%	-3.0%	9.5%	.1%	9.9%	1.9%

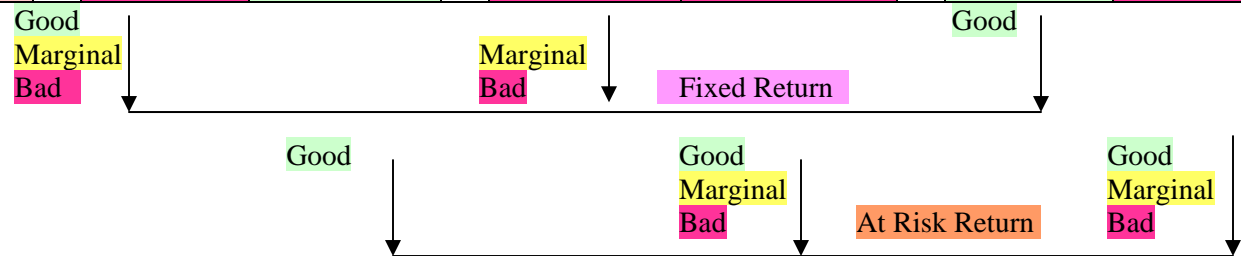
Note that the investor never gets to a 21% return, because the money is invested when construction begins in 2012 and no returns occur until 2020, when operations begin, driving down the ROI. Also note that in the At Risk Option, the larger amounts of debt in the Mix and Private cases (as opposed to the “free money” of the Grant case) reduces the amount of cash available at the end of each payout period, driving down ROI.

### CONCLUSIONS FROM THE THREE CASES

This chart, Table 6, summarizes the different cases and results we have just analyzed. The First Year of Positive Cash Flow, the Peak Cumulative Negative Cash Flow, and the First Year of Cumulative Positive Cash Flow are shown for the HSR Authority and the State of California. For the Equity Investor, the ROI is shown. Moving from the “Grants” case to the “Private” case, the results move from “Good” to “Bad”.

**Table 6 – Economic Impact on the Three Stakeholders, for different Funding Cases, Operating Results and Type of Equity Investment**

Cases and Descriptions	Revenues and Costs, % of Plan	HSR Authority		State of California and Its Taxpayers		Equity Investor At 2045	
		Fixed Return	At Risk Return	Fixed Return	At Risk Return	Fixed Return	At Risk Return
<b>Case:</b>							
1. Mostly Grants (In Business Plan)	100%	2022 (\$1B)	2021 (\$0.2B)	2024 (\$4B)	2023 (\$2B)	10%	9%
With a heavy mix of Grants (43% of total financing)	75%	2023 (\$2B)	2021 (\$0.3B)	>2035 (>\$9B)	2023 (\$3B)	10%	8%
		2024 (\$4B)	2022 (\$1B)	>2035 (\$14B)	2025 (\$5B)	10%	7%
2. More Debt Mix (Grants and Debt) Less Grants, with a heavy mix of Federal Loans and Bonds, plus Private Investments (57%)	100%	2032	2024	Never	2035	10%	5%
	75%	>2035 (\$8B)	2023 (\$2B)	>2035 (>\$25B)	>2035 (>\$10B)	10%	5%
		Never	2027	Never	Never	10%	2%
3. Mostly Private (Debt and Equity) Mostly Private Investments (68%), with just the State Bonds of \$9.1B, plus \$4.5B in Grants	100%	2035 (\$15B)	2022 (\$2B)	>2035 (\$25B)	2023 (\$4B)	10%	5%
	75%	>2035 (\$25B)	2023 (\$2B)	>2035 (\$35B)	>2035 (>\$6B)	10%	2%
		Never	2028	Never	Never	10%	2%



## CONCLUSIONS FROM THE THREE CASES (Continued)

### From the First Case – with a heavy mix of Grants (43%)

- The Authority’s point of view – as they are not required to service the debt associated with repaying either the State bonds or the contributions from cities and counties, the Authority will only have a two or three year negative cash flow. True for both types of Equity.
- The State and taxpayers’ point of view – at 100% of Revenues and Fixed Return equity, the cash flow does not go positive for five years but the State will have to subsidize the program to a peak of about \$4B, and it may never get repaid. If Revenues and Costs are at 75% of Plan the subsidy will exceed \$8B, and there is never a year of positive cash flow. With At Risk equity, these negative peaks are cut in half.
- The minor Equity investment makes the same returns for At Risk or Fixed Returns – about 8% to 10 %.

### From the Second Case – less Grants, with a heavy mix of Federal Loans and Bonds, plus Private Investments (57%)

- The Authority’s point of view – at 100% of Revenues and Fixed Return equity, the cash flow does not go positive for five years and they will need about \$4B, and it may not be repaid until 2032. If Revenues and Costs are at 75% of Plan, the subsidy will reach \$8B, and it may never get repaid. This \$4B increase is, in effect, a guarantee of ridership/revenues to provide an “agreed to” rate of return to the Private Equity investor. With At Risk equity, these negative peaks are cut by 75%.
- The State and taxpayers’ point of view – at 100% of Revenues and Fixed Return equity, the cash flow never goes positive and the State and the taxpayers will have to subsidize the program to a peak of over \$14B. If Revenues and Costs are at 75% of Plan, the subsidy will exceed \$24B, and it, also, may never get repaid. Here the guarantee has grown to \$10B. With At Risk equity, these peaks are cut by 60%.
- The small Equity investment makes the same return for Fixed Returns – about 10%, but the At Risk Returns drop to 5% to 7%.

### From the Third Case – mostly Private Investments (68%), with just the State Bonds of \$9.1B, plus \$4.5B in Grants

- The Authority’s point of view – the HSR Authority will need a subsidy of between \$15B and \$25B, by 2035, from the State to provide a Fixed Rate to the investors, depending on the Revenues and Costs being 100% or 75% of Plan. There is no year of positive cash flow before 2035, and the subsidy may never be repaid. Here the guarantee remains at \$10B. With At Risk equity, these negative peaks are cut 85%.
- The taxpayers’ point of view – the subsidy from the State and the taxpayers could be in the \$25B to \$35B range, by 2035, depending on the Revenues and Costs being 100% or 75% of Plan with Fixed Rate equity, and may never be repaid. Here the guarantee is also \$10B. With At Risk equity, these negative peaks are cut 85%.
- The larger Equity investment makes the same return for Fixed Returns – about 10% %, but the At Risk Returns drop to 5% to 2%, due to the large amount of debt being served. Reducing the size of the Equity investment, with a Fixed Return, dramatically cuts peak negative cash flows for the HSR Authority and the State and taxpayers.

## IN CLOSING

### We need to answer the key questions:

#### Operational -

- “If we build it (per the Cost estimates), will they come (per the Ridership forecasts)?” What if we are wrong about the volume of traffic, the competitive pricing reaction of the airline industry, or the cost effectiveness of automobiles?
- What is our level of confidence in the Construction Cost estimates, the Ridership forecasts, and the Operating Margin forecasts? How can we validate these assumptions, without betting \$40B to \$60B?

#### Financial -

- Is the assumption of a subsidy, to finance debt and a “Fixed Return” equity investment, compliant with AB 3034 and Prop 1A?
- Without large amounts of Grants, is there ever going to be enough Operating Margin in this program to permit a private investor to make a reasonable “At Risk” rate of return (ROI) on an Equity Investment to fund the construction costs?
  - If not, what Terms and Conditions will be required to gain such an At Risk investment?
  - As we have seen, guaranteed “Fixed Returns”, on large equity investments, will lead to major peak negative cash flows that may never be recovered. We may be better off to have all Private Investments as 6% Debt, and subsidize a peak negative cash flow of about \$6B at 100% of the Revenue and Cost Plan (\$16B at 75% of Plan).

#### The Big Picture -

- Are the taxpayers ready for these possible burdens, plus an additional 70% to 80% for the follow-on phases to complete the system?
- Are the children of the taxpayers going to think we showed great wisdom and courage, and that we made the right investment choices and decisions for the State and its citizens?



# **CALIFORNIA HIGH SPEED RAIL SYSTEM**

## **EXAMPLE OF HSR FINANCIAL MODEL**

The following page is an example of the model's results and it represents the results summarized in Section 4.1, as Case 1A.

Please contact Mr. Warren to request a copy of the Excel model and a Word document on how to use the model. His contact information is on page 1.

The page shows to a peak cumulative negative cash flow, in \$ Billions, of (4.19) in cell U20, for the year 2023, and a positive number of .35 in cell U30, for year 2033.

# HSR Financial Cash Flows With Financing Alternatives

HSR Cash Flows with Financing Alternatives										Annual Payments						Version 6		9-Jun 2010				
Year	Inflation				Source	Amount \$B	%	HSR	Taxpayers	Source Description	Cases:	Grants	Mix	Private	Cost							
	3.00%				State B.	9.10	5.9%	0.00	0.65	Prop 1A Bonds		9.10	9.10	9.10	9.10							
	per year, from 2009				Fed Grant	18.00	0.0%	0.00	0.00	Federal Grants - No repayment		18.00	5.00	4.50	18.00							
	1.00				Fed Guar D	0.00	5.0%	0.00	0.00	Federal Guaranteed Loans/Bonds		0.00	10.00	0.00	7.40							
	1.03				Local	4.50	7.5%	0.00	0.38	Local Investment, returned over period, at given % return		4.50	4.50	0.00	4.50							
2010	Riders	Revenue	Op. Costs	1.03	Private De	7.70	6.0%	0.56	0.56	Private Debt, returned over period, at given % return		7.70	9.80	20.30	7.70							
2011	Ratio	Ratio	Ratio	1.06	Private Eq	3.30	21.0%	0.70	0.70	Private Equity, Sinking Fund at given % return, or At Risk		3.30	4.20	8.70	3.30							
2012	To Plan	To Plan	To Plan	1.09	Total Inv	42.60		1.25	2.29	Investments recovered in :	30	42.60	42.60	42.60	50.00							
2013	100%	100%	100%	1.13																		
2014		Revenue	Operating	1.16	Revenue	Operating	Operating	HSR Debt	HSR Financial	HSR Cumulative	Capital	HSR Annual	HSR Cumulative	State Debt	State Financial	State Cumulative	State Annual	State Cumulative				
2015	Riders	Revenue	per Rider	1.19	Revenue	per Rider	Costs	Margin	Payments	Margin	Financials	Replace	Cash Flow	Cash Flow	Payments	Margin	Financials	Cash Flow	Cash Flow			
2016	(Millions)	\$B, 2009 \$	\$B, 2009 \$	\$B, 2009 \$	\$B, YOES	\$B, YOES	\$B, YOES	\$B, YOES	\$B, YOES	\$B, YOES	\$B, YOES	\$B, YOES	\$B, YOES	\$B, YOES	\$B, YOES	\$B, YOES	\$B, YOES	\$B, YOES	\$B, YOES			
2017				0.02	1.27		0.03	(0.03)														
2018				0.07	1.30		0.09	(0.09)														
2019		0.00		0.20	1.34		0.27	(0.27)														
2020	13.50	0.95	70.37	0.68	1.38	1.32	97.41	0.94	0.37	1.25	(0.88)	(0.88)	(0.88)	(0.88)	2.29	(1.92)	(1.92)	(1.92)	(1.92)			
2021	20.60	1.44	69.90	0.82	1.43	2.05	99.66	1.17	0.88	1.25	(0.37)	(1.25)	(0.37)	(1.25)	2.29	(1.41)	(3.32)	(1.41)	(3.32)			
2022	27.90	1.95	69.89	0.94	1.47	2.86	102.64	1.38	1.48	1.25	0.23	(1.02)	0.23	(1.02)	2.29	(0.81)	(4.13)	(0.81)	(4.13)			
2023	35.40	2.48	70.06	1.01	1.51	3.75	105.97	1.53	2.22	1.25	0.97	(0.05)	0.97	(0.05)	2.29	(0.07)	(4.19)	(0.07)	(4.19)			
2024	35.90	2.51	69.92	1.01	1.56	3.91	108.93	1.57	2.34	1.25	1.08	1.03	1.08	1.03	2.29	0.05	(4.15)	0.05	(4.15)			
2025	36.50	2.55	69.86	1.02	1.60	4.09	112.11	1.64	2.46	1.25	1.20	2.23	1.20	2.23	2.29	0.17	(3.98)	1.20	(3.98)			
2026	37.00	2.59	70.00	1.02	1.65	4.28	115.70	1.69	2.59	1.25	1.34	3.57	1.34	3.57	2.29	0.31	(3.68)	0.31	(3.68)			
2027	37.60	2.63	69.95	1.03	1.70	4.48	119.08	1.75	2.72	1.25	1.47	5.04	1.47	5.04	2.29	0.43	(3.24)	0.43	(3.24)			
2028	38.10	2.67	70.08	1.03	1.75	4.68	122.88	1.81	2.88	1.25	1.62	6.66	1.62	6.66	2.29	0.59	(2.66)	0.59	(2.66)			
2029	38.70	2.71	70.03	1.04	1.81	4.89	126.47	1.88	3.02	1.25	1.76	8.42	1.76	8.42	2.29	0.73	(1.93)	0.73	(1.93)			
2030	39.30	2.75	69.97	1.04	1.86	5.12	130.17	1.93	3.18	1.25	1.93	10.35	1.93	10.35	2.29	0.89	(1.04)	0.89	(1.04)			
2031	39.60	2.77	69.95	1.05	1.92	5.31	134.03	2.01	3.30	1.25	2.04	12.39	1.38	11.73	2.29	1.01	(0.03)	0.35	(0.69)			
2032	40.00	2.80	70.00	1.05	1.97	5.53	138.15	2.07	3.45	1.25	2.20	14.59	0.69	1.51	13.24	2.29	1.16	1.13	0.47	(0.22)		
2033	40.30	2.82	69.98	1.06	2.03	5.73	142.25	2.15	3.58	1.25	2.32	16.91	0.72	1.60	14.84	2.29	1.29	2.42	0.57	0.35		
2034	40.70	2.84	69.78	1.07	2.09	5.95	146.10	2.24	3.71	1.25	2.45	19.36	0.74	1.71	16.55	2.29	1.42	3.84	0.68	1.03		
2035	41.00	2.87	70.00	1.07	2.16	6.19	150.96	2.31	3.88	1.25	2.63	21.99	0.78	1.85	18.40	2.29	1.59	5.43	0.81	1.84		
2036				2.22				4.03	1.25	2.78	24.76	0.81	1.97	20.36	2.29	1.74	7.17	0.93	2.77			
2037				2.29	70.14		42.06	4.20	1.25	2.95	27.71	0.84	2.11	22.47	2.29	1.91	9.08	1.07	3.84			
2038				2.36				4.37	1.25	3.12	30.82	0.87	2.25	24.71	2.29	2.08	11.16	1.21	5.05			
2039								4.55	1.25	3.30	34.12	0.91	2.39	27.10	2.29	2.26	13.42	1.35	6.40			
2040		Equity:	At Risk	Fixed Return	As a % of Revenues			4.73	1.25	3.48	37.60	0.95	2.53	29.63	2.29	2.44	15.86	1.49	7.89			
2041		Year ROI, Gross		ROI, Gross	Margin	Payments	State Cash	4.92	1.25	3.67	41.26	0.98	2.69	32.31	2.29	2.63	18.49	1.65	9.54			
2042		2030 0.00%		6.86%	62.2%	44.8%	17.4%	5.12	1.25	3.87	45.13	1.02	2.85	35.16	2.29	2.83	21.32	1.81	11.35			
2043		2035 0.00%		8.66%	62.7%	37.0%	13.1%	5.33	1.25	4.08	49.20	1.07	3.01	38.16	2.29	3.04	24.36	1.97	13.32			
2044		2040 0.00%		9.50%				5.55	1.25	4.30	53.50	1.11	3.19	41.35	2.29	3.26	27.62	2.15	15.47			
2045		2045 0.00%		9.93%				5.77	1.25	4.52	58.01	1.15	3.37	44.71	2.29	3.48	31.10	2.33	17.80			
	no details - Adjusted from Table K, with 3% inflation																					
From:	Table E	Table E	Figure 8	Table J	= Table J	= Table J	= Table J	= Table K	= Table K	Table K												
Computed:		com		com	com	com	com	com	com	com	com	com	com	com	com	com	com	com	com			
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	

**CALIFORNIA HIGH SPEED RAIL SYSTEM**

**AN ANALYSIS OF TICKET PRICE REDUCTIONS**

**ON DIFFERENT**

**FINANCING ALTERNATIVES**

**FOR THE INITIAL PHASE ONE CORRIDOR**

**SAN FRANCISCO TO ANAHEIM**

July 5, 2010

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## **Background**

On June 9, 2010, I released my latest financial analysis of the California's High Speed Rail program. This analysis is included in a PDF document named HSR Financial Presentation. This presentation is titled, on its first page, "A Comparison of Different Financing Alternatives", dated June 9, 2010.

## **My Recent Pricing Analysis**

Subsequently, I have been working on a detailed analysis of the pricing that is in the HSR 2009 Business Plan. The purpose of this presentation is to share my conclusions on this most interesting subject.

There is a companion eleven page document, "Analysis of the HSR's Planned Pricing". The first two pages summarize my conclusions and the remainder of the document discusses my analysis. This "Analysis" document refers to four Excel spreadsheets titled "Average Fares", these contain all the details of my analysis.

As will be apparent, while a considerable amount of effort has been invested into this task, but I believe I have just scratched the surface of this topic. The net of my conclusions is that I believe that the prices, and therefore, the revenues in the Business Plan are overstated by at least 25%, for the same volume of passengers and the same market share penetration. Given my lack of visibility into the HSR's details behind their Business Plan, I may be totally incorrect, but I doubt it.

Therefore, my recommendation is that an independent organization be brought in to validate my work, or to validate the numbers in the HSR Plan.

After completing this presentation, please look over the "Analysis" document. As I mentioned, you can get an overview on the first 2 pages. Please also look at the last "Average Fares" spreadsheet. This sheet is my updated version of Table C from the Business Plan, which shows my changes to their pricing and revenues by market segment.

## Implications on Financing Alternatives

The follow comparison will be helpful in putting my conclusions in perspective.

Please look at the following one page summary chart "Pricing Summary", which focuses on the implications for the State of California and its taxpayers. It is identifies as " Table 6 – State". You can refer to the other three attachments, Table 6, Table 6A, and Table 6B for additional backup information, as needed. Note that this chart focuses on the impacts on the State of California and its taxpayers, not on the High Speed Rail Authority.

1. Ridership at 75% - As is well known, the ridership numbers have been challenged by many organizations, and when I did my work on the financial and funding alternatives several months ago I did a "Case" that looked at ridership numbers and operating costs being at 75% of the planned numbers, but ticket prices remaining at 100% of planned numbers. The results of these 75% ridership numbers Cases are shown on the rows of "Table 6", in my Financial Presentation of June 9, 2010

The results for these cases are shown on the "Pricing Summary" chart. If you look at the Table 6 columns, and just focus on my Case 1, "Mostly Grants", which is in the 2009 Business Plan, I showed that for the State of California, if a fixed return is guaranteed to the private investor, a subsidy of over \$9B will be needed and it will never be repaid, if only 75% of the plan is attained. (Just above these cells it shows that if ridership was a 100% of Plan, the \$9B drops to \$4B and is repaid by 2033.) If the private investor is "at risk" with 75% ridership, the subsidy drops to \$3B, and is repaid by 2030. Naturally under the Case 3, "Mostly Private", the subsidies are \$35B and \$6B, and they are never repaid.

2. Ticket Prices at 75% - Now consider the effect of a pricing reduction, not a ridership reduction. The impact on the State of California is actually must worse. This stands to reason, because if ridership stays at 100%, while prices drop by 25%, operating costs have to stay at 100%, and therefore the negative cash flows are worse. Please look at the columns "Table 6A" which deals with a 25% drop in price per ticket, but leaves ridership and operating costs at 100%.

Under the first case of "Mostly Grants" the subsidy the State will have to fund is \$16B or \$5B, for the fixed or at risk alternatives, compared to the \$9B to \$3B in Table 6 (which, as I said above, dealt with a 25% reduction in ridership and operating cost, in effect holding the ticket prices at 100%). And in the Mostly Private case, the subsidy grows to \$43B or \$13B, as opposed to the \$35B or \$6B in Table 6.

3. Ridership and Ticket Prices at 75% - To complete the circle - what happens if the ridership and operating costs drop by 25%, but the per ticket price also drops by 25%? The answer is shown in the columns "Table 6B". Here the Mostly Grants case shows the subsidy grows to \$22B or \$11B, (compared to the \$9B or \$3B in Table 6) and the Mostly Private case grows to \$49B or \$20B (compared to the \$35B or \$6B).

### **In Summary**

I believe the important point here is that while the State has spent a great deal of effort trying to understand the ridership question, not enough time has been spent looking at the pricing question.

This is why I recommended, on the second page of my “Analysis” document, that an independent organization be charged with either validating my pricing work, or the work that is in the 2009 Business Plan. The economic impact, of a drop in the per ticket price, is very large, and may have more consequences than any changes in the ridership model and the associated operating costs.

Since this Pricing Analysis and my earlier Financing Alternatives document lead me to believe that substantial subsidies will be required to support the HSR program, and AB 3034, and Proposition 1A, specifically said no subsidy was to be provided to this program, I believe it is appropriate that the State urgently investigate this situation.

**PRICING SUMMARY**

**CONCLUSIONS FROM THE THREE CASES AT 75% OF PLAN AND/OR TICKET PRICE CHANGES**

This chart, Table 6 State - compares the 100% Plan Cases and Cases at 75% of Ridership and Operating Costs (Table 6), and Price Per Ticket down 25% (Table 6A), and a combination of both 75% of Ridership and Operating Costs, and Price Per Ticket down 25% (Table 6B).

**Table 6 State – Economic Impact on the State of California, for different Funding Cases, Operating Results and Type of Equity Investment**

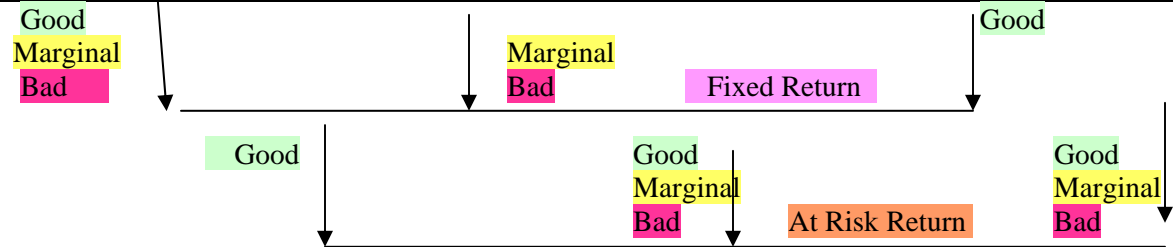
Cases and Descriptions	Revenues and Costs, % of Plan	Table 6 75% of Plan		Table 6A 75% of Ticket Price		Table 6B 75% of Plan and Ticket Price	
		Fixed Return	At Risk Return	Fixed Return	At Risk Return	Fixed Return	At Risk Return
<b>Case:</b>							
1. Mostly Grants (In Business Plan)	100%	2024 (\$4B)	2023 (\$2B)	2024 (\$4B)	2023 (\$2B)	2024 (\$4B)	2023 (\$2B)
With a heavy mix of Grants (43% of total financing)	Change to Plan and/or Price	>2035 >(\$9B) Never	2023 (\$3B) 2030	>2035 >(\$16B) Never	2027 (\$5B) >2035	Never >(\$22B) Never	Never (\$11B) Never
2. More Debt Mix (Grants and Debt) Less Grants, with a heavy mix of Federal Loans and Bonds, plus Private Investments (57%)	100%	>2035 (\$14B) Never	2025 (\$5B) 2035	>2035 (\$14B) Never	2025 (\$5B) 2035	>2035 (\$14B) Never	2025 (\$5B) 2035
	Change to Plan and/or Price	>2035 >(\$25B) Never	>2035 >(\$10B) Never	Never >(\$32B) Never	Never >(\$17B) Never	Never >(\$38B) Never	Never >(\$24B) Never
3. Mostly Private (Debt and Equity) Mostly Private Investments (68%), with just the State Bonds of \$9.1B, plus \$4.5B in Grants	100%	>2035 (\$25B) Never	2023 (\$4B) 2030	>2035 (\$25B) Never	2023 (\$4B) 2030	>2035 (\$25B) Never	2023 (\$4B) 2030
	Change to Plan and/or Price	>2035 (\$35B) Never	>2035 >(\$6B) Never	>2035 (\$43B) Never	>2035 >(\$13B) Never	Never (\$49B) Never	Never >(\$20B) Never

### CONCLUSIONS FROM THE THREE CASES

This chart, Table 6, summarizes the different cases and results we have just analyzed. The First Year of Positive Cash Flow, the Peak Cumulative Negative Cash Flow, and the First Year of Cumulative Positive Cash Flow are shown for the HSR Authority and the State of California. For the Equity Investor, the ROI is shown. Moving from the “Grants” case to the “Private” case, the results move from “Good” to “Bad”.

**Table 6 – Economic Impact on the Three Stakeholders, for different Funding Cases, Operating Results and Type of Equity Investment**

Cases and Descriptions	Revenues and Costs, % of Plan	HSR Authority		State of California and Its Taxpayers		Equity Investor At 2045	
		Fixed Return	At Risk Return	Fixed Return	At Risk Return	Fixed Return	At Risk Return
<b>Case:</b>							
1. Mostly Grants (In Business Plan)	100%	2022 (\$1B) 2024	2021 (\$.2B) 2021	2024 (\$4B) 2033	2023 (\$2B) 2025	10%	9%
With a heavy mix of Grants (43% of total financing)	75%	2023 (\$2B) 2026	2021 (\$.3B) 2022	>2035 >(\$9B) Never	2023 (\$3B) 2030	10%	8%
2. More Debt Mix (Grants and Debt) Less Grants, with a heavy mix of Federal Loans and Bonds, plus Private Investments (57%)	100%	2024 (\$4B) 2032	2022 (\$1B) 2024	>2035 (\$14B) Never	2025 (\$5B) 2035	10%	7%
	75%	>2035 (\$8B) Never	2023 (\$2B) 2027	>2035 >(\$25B) Never	>2035 >(\$10B) Never	10%	5%
3. Mostly Private (Debt and Equity) Mostly Private Investments (68%), with just the State Bonds of \$9.1B, plus \$4.5B in Grants	100%	2035 (\$15B) >2035	2022 (\$2B) 2025	>2035 (\$25B) Never	2023 (\$4B) 2030	10%	5%
	75%	>2035 (\$25B) Never	2023 (\$2B) 2028	>2035 (\$35B) Never	>2035 >(\$6B) Never	10%	2%





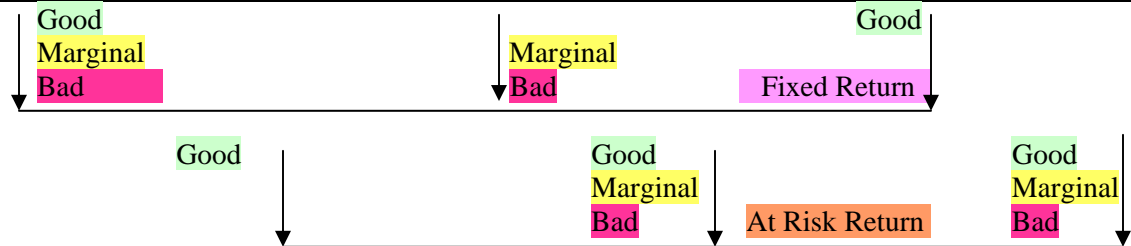
### CONCLUSIONS FROM THE THREE CASES WITH JUST TICKET PRICE CHANGE

This chart, Table 6A, compares the 100% Plan Cases and Cases with just Price Per Ticket down 25%. Ridership and Operating Costs are at 100% of Plan.

Moving from the “Grants” case to the “Private” case, the results move from “Good” to “Bad”.

**Table 6 – Economic Impact on the Three Stakeholders, for different Funding Cases, Operating Results and Type of Equity Investment**

Cases and Descriptions	Revenues and Costs, % of Plan	HSR Authority		State of California and Its Taxpayers		Equity At Investor 2045	
		Fixed Return	At Risk Return	Fixed Return	At Risk Return	Fixed Return	At Risk Return
<b>Case:</b>							
1. Mostly Grants (In Business Plan)	100%	2022 (\$1B) 2024	2021 (\$.2B) 2021	2024 (\$4B) 2033	2023 (\$2B) 2025	10%	9%
With a heavy mix of Grants (43% of total financing)	Price per ticket at 75%	2023 (\$3B) 2031	2022 (\$.7B) 2023	>2035 >(\$16B) Never	2027 (\$5B) >2035	10%	6%
2. More Debt Mix (Grants and Debt) Less Grants, with a heavy mix of Federal Loans and Bonds, plus Private Investments (57%)	100%	2024 (\$4B) 2032	2022 (\$1B) 2024	>2035 (\$14B) Never	2025 (\$5B) 2035	10%	7%
	Price per ticket at 75%	Never (\$15B) Never	2025 (\$3B) >2035	Never >(\$32B) Never	Never >(\$17B) Never	10%	0.5%
3. Mostly Private (Debt and Equity) Mostly Private Investments (68%), with just the State Bonds of \$9.1B, plus \$4.5B in Grants	100%	2035 (\$15B) >2035	2022 (\$2B) 2025	>2035 (\$25B) Never	2023 (\$4B) 2030	10%	5%
	Price per ticket at 75%	>2035 (\$32B) Never	2026 (\$4B) 2034	>2035 (\$43B) Never	>2035 >(\$13B) Never	10%	-4%



**CONCLUSIONS FROM THE THREE CASES AT 75% OF PLAN AND TICKET PRICE CHANGE**

This chart, Table 6B, compares the 100% Plan Cases and Cases at 75% of Ridership and Operating Costs, and Price Per Ticket down 25%.

Moving from the “Grants” case to the “Private” case, the results move from “Good” to “Bad”.

**Table 6 – Economic Impact on the Three Stakeholders, for different Funding Cases, Operating Results and Type of Equity Investment**

Cases and Descriptions	Revenues and Costs, % of Plan	HSR Authority		State of California and Its Taxpayers		Equity At Investor 2045	
		Fixed Return	At Risk Return	Fixed Return	At Risk Return	Fixed Return	At Risk Return
<b>Case:</b>							
1. Mostly Grants (In Business Plan)	100%	2022 (\$1B) 2024	2021 (\$.2B) 2021	2024 (\$4B) 2033	2023 (\$2B) 2025	10%	9%
With a heavy mix of Grants (43% of total financing)	75% and 75% Ticket Price	>2035 (\$5B) Never	2022 (\$1B) 2024	Never >(\$22B) Never	Never (\$11B) Never	10%	4%
2. More Debt Mix (Grants and Debt) Less Grants, with a heavy mix of Federal Loans and Bonds, plus Private Investments (57%)	100%	2024 (\$4B) 2032	2022 (\$1B) 2024	>2035 (\$14B) Never	2025 (\$5B) 2035	10%	7%
	75% and 75% Ticket Price	Never (\$21B) Never	Never (\$7B) Never	Never >(\$38B) Never	Never >(\$24B) Never	10%	>-5%
3. Mostly Private (Debt and Equity) Mostly Private Investments (68%), with just the State Bonds of \$9.1B, plus \$4.5B in Grants	100%	2035 (\$15B) >2035	2022 (\$2B) 2025	>2035 (\$25B) Never	2023 (\$4B) 2030	10%	5%
	75% and 75% Ticket Price	Never (\$39B) Never	Never (\$9B) Never	Never (\$49B) Never	Never >(\$20B) Never	10%	>-5%

