Financial Analysis

Of The Proposed California High Speed Rail Project

– A Report from the authors of –

The Financial Risks of California's Proposed High-Speed Rail Project

See: http://www.cc-hsr.org

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At least four critical variables make the project to link California's two major metropolises with a high-speed rail system a risky financial proposition for the State and its taxpayers. First, the chances that the project will acquire more than the present $3.6 Billion of "free Federal money" diminish daily; while the financial success of the Authority's 2009 Business Plan depends on $15 Billion more in federal grants. Second, there is an ever-increasing probability that the costs to construct the Phase One Corridor (Los Angeles/Anaheim to San Francisco) will continue to increase dramatically. Third, the likelihood of California's cash strapped cities and counties contributing $4-5 Billion in grants to the project is zero. Fourth, the operating results projected in the CHSRA's 2009 Business Plan, such as ridership and ticket prices may be very difficult, if not impossible, to achieve. For a project already mired in controversy, more unknowable risks are likely to make private investors 'gun shy' of providing the vast majority of the debt and at risk equity capital now needed for this project.

This analysis measures the impact of the four variables within several financial relationships with private investors and/or operators that are applicable in different "design – build – operate" options. The projected financial results continually show an insufficient Operating Margin to service the debt repayment requirements, and this will result in a $10 Billion to $50 Billion range of cumulative negative cash flows in the sixteen operating years between 2020 and 2035. These will have to be funded via additional taxes, fees, additional State of California debt, or the use of General Funds at the expense of other spending priorities such as education, health, and public safety.

We are grateful to the Community Coalition on High Speed Rail for providing a virtual 'home' for this and our other Briefing Papers, plus our original (October 2010) report *The Financial Risks of California's Proposed High-Speed Rail Project*.

For downloadable copies of this and all our work, visit their website
http://www.cc-hsr.org/

October 2010 Report:

The Financial Risks of California's Proposed High-Speed Rail Project

Other Briefing Papers found at that web site are:

Executive Summary of the October 2010 Financial Risks Report
Dubious Ridership Forecasts Threaten The High-Speed Rail Project
Six Myths Surrounding California's High-Speed Rail Project
A Train To Nowhere But Bankruptcy
Seven Deadly Facts For California's High-Speed Rail Authority
Big Trouble For California's $66Billion Train
Will The High-Speed Train Benefit California's Middle Class?

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Part I

Financial Analysis
Of the California High Speed Rail Project

SUMMARY FINANCIAL ANALYSIS

USING THE CHSRA'S DATA ON REVENUES AND EXPENSES, THE SYSTEM WILL NEVER ACHIEVE POSITIVE CASH FLOWS WITHOUT THE ASSUMED FEDERAL GRANTS AND LOWER CONSTRUCTION COSTS

Introduction – Using the CHSRA's 2009 Business Plan as a baseline and incorporating new estimates of both possible future Federal and local grants plus the costs of constructing Phase One, this analysis examines a range of dramatically different financial outcomes for the CHSRA and California's taxpayers. Theses outcomes are expressed in terms of cash flows for the project's first sixteen operating years (2020 -2035). The results indicate serious negative consequences for California's taxpayers (ie. like a large unfunded mandate, it will lead to a reduction of other services or more taxes or debt) unless the CHSRA's most optimistic estimates of construction costs as well as Federal and local grant acquisitions are coupled with the complete attainment of the CHSRA's 2009 Business Plan's operating results. The results simultaneously indicate that most of the returns to the private 'at risk' investments would be poor, if not negative.

The analysis provides, in summary and detailed form, a range of financial outcomes by looking at the outcomes of the best and the worst cases that may occur through 2035. The reader must decide which outcomes appear to be the more likely and must understand the financial consequences of those outcomes. The reader also needs to understand the negative consequences to the State and its taxpayers if other, less preferable, outcomes occur. Lastly the reader needs to understand what decisions must be made in the near term when faced with this degree of future uncertainty.

The following Financial Summary, presented in three Sections, provides an overview of the outcomes of these cases for the Phase One project.

Section A. Construction Costs – Like all capital-intensive public works projects, the amount that will be needed to build Phase One, and then a subsequent phase or phases is hotly debated. Additionally, the Phase One estimates suffer from the rightfully-deserved stigma that globally nearly all such estimates are significantly below what they ultimately cost to build. Higher construction costs usually magnify the nation's or state's debt and therefore add to taxpayers' burden, since most are financed with public or private debt that adds financial servicing costs to the initial costs of construction.

The CHSRA's 2009 Business Plan's estimated construction costs for the San Francisco to Los Angeles/Anaheim Phase One Corridor are now almost three years old, and were done with a low level of detailed engineering design. Recent estimates of costs to build the initial sections and segments appear to be at least more than half again as much as the 2009 estimates, making construction costs a critical component in estimating the project's long term financial consequences. A good analogy to the project's present financial status would be a young family that believes they could afford to build a house for $X with promises of help from their rich grandfather. After starting construction, they find they have a serious cash flow problem when the house's estimated cost jumps 50%; they discover the grandfather is living on credit and near bankruptcy, and their new mortgage payment forecasts have skyrocketed.

Keeping the analogy in mind, this analysis looks at two baseline construction costs: 1) the 2009 Business Plan's $43 Billion estimate and 2) projections made by two independent parties in early 2011 that 'bracket' $66 Billion. [View page 8, the first page of the Financial Summary; Section A and the two major columns for the 2009 Plan, on the left side, and the 2011 Projections on the right side].

Section B. Mixes of Financing – For the State of California there are only two kinds of money. The first, of which $3.6 Billion has been received, is "free money" such as Federal grants that never have to be repaid. This kind also includes the $4 to $5 Billion of grants the CHSRA expected from California's counties and cities. The second kind is investments; specifically debt and equity, where the investor could be either a private or public entity. However, both types of investors have reasonable expectations of the principal amount being returned over time, plus some type of periodic or one-time gain, as a "return on the investment" (ROI).

The 2009 Business Plan was based on the State securing a large percentage (42%) of the construction costs as "free" Federal grants. With the changes occurring in Washington, the odds of gaining another $15 Billion are declining, while the need increases for additional capital due to rising construction costs. [In the context of the above analogy, it is like learning the 'rich' grandfather is living on credit and near bankruptcy, as the construction cost estimates for the house are going up. Both of these conditions lead to the situation of requiring a larger mortgage.] The result is a very real risk of needing much larger amounts of public or private debt and/or equity, all of which have long term costs associated with them. Therefore, this analysis investigates the cash flow consequences between 2020 and 2035 of various mixes of the above types of financing that could be put in place during the 2012 to 2019 construction phase. [View page 8, Section B and the four columns that define at the Best and Worst financial mixes. These mixes will be used for the results, shown on the Financial Summary's second page.]

Section C. Operating Results – The 2009 Business Plan provided projections of riders, ticket prices, revenues, and expenses for the first sixteen years of operations (2020-2035). But there was no 'risk

analysis' of the impact of these projections if they were incorrect. Additionally, the operating margin's cash flow that is produced in those years must be used to reduce the impact of servicing the increasing amount of debt and equity that will be needed to finance the construction. This report analyzes various degrees of success – or lack of success – in meeting these operating objectives, and the subsequent impacts on the State and taxpayers if these objectives are not met. [See, on page 9, in Section C of the Financial Summary, the five types of equity, or no equity, financing shown in Sections C1 through C5, and the cumulative cash flow results in 2035, for three different "Operating Plan Results" cases in each Section.]

Conclusions Of This Financial Summary

Section C1 shows that the equity investor with a "Fixed Return" always makes an ROI of 10%. (This ROI is consistent with the 16% after tax yield discussed in the 2009 Business Plan, adjusted for the lack of a return during the 2012 to 2019 construction period.) However, this is the worst option for California's taxpayers. By 2035 the cumulative cash flow position is just $2 Billion if three conditions prevail: 1) the project is built for $43 Billion (the CHSRA 2009 Plan columns on the left), 2) all $18 Billion in Federal grants of the 2009 Business Plan are obtained (the column Best Case – A, Grants), and 3) the operator attains 100% of the operating results defined in the 2009 Business Plan between 2020 and 2035. (These results are the basis of the financial results shown as Case 1)

Alternatively, if: 1) Phase One costs $66 Billion to construct (the 2011 Projections columns on the right), and if 2) it is financed mostly (82%) with private debt and equity (the column Worst Case – C, Private), and if 3) only three-fourths (Case 2) of the forecasted ridership volumes and operating costs are achieved, the cumulative cash flow results for California's State finances and its taxpayers will be a negative $81 Billion by 2035. If ticket prices also fall by 25%, then Case 4 shows the cumulative cash flow position falls to a negative $94 Billion. [Case 3 information is available in the various Exhibits.]

Section C2 shows that if the private equity investor is "At Risk", the return to the investor (ROI) ranges from 9% to "less than zero" (not all of the original investment is repaid). However, the State and its taxpayer's cash positions improve, ranging from a positive $13 Billion to 'only' a negative $40 Billion by 2035. The possibility of a $13 Billion positive cash flow – on average a little more than a Billion per year, or a loss of 'only' $40 Billion – is a relatively better outcome for the State, compared to the fixed return alternative in Section C1. However, the private equity investors will most probably reject this option as the ROI is relatively low for such large and high risk investment, if the construction costs are in the $66 Billion range.

Section C3 shows that if the "At Risk" private equity investor is provided with a 10-year revenue guarantee, the results are between the two extremes of C1 and C2. This might be a more acceptable financing alternative if the private investor is also the operator. However, it may be illegal under Prop 1A and AB 3034.

Sections C4 and C5 show that if all the private or public financing is debt, with either a 30 year or 50 year payback period and there is no private equity, the private or public investor has a small return, and the cumulative negative cash flows for the taxpayers are not much worse that C2. This is possibly one other, more acceptable, alternative.

Finally, if the project's construction cost is $66 Billion and the Federal grants are limited to the existing $3 Billion, as shown on the right most column [2011 Projections, Worst Case - C (Private)], all of these possible financing outcomes lead to very large cumulative negative cash flows. This will require billions of dollars per year to service these negative cash flows. This cash requirement will necessarily lead to either reductions in other State spending, (such as in education, health, or safety), additional taxes, withdrawals from the General fund, or additional State of California debt between 2020 and 2035, over and above the $9 Billion of Prop 1A Bonds approved in 2008.

To have even a remote chance of not requiring State budget reductions, more State debt, or increased taxes, three conditions must be met (the first two simultaneously between 2011 and 2019): 1) the project's construction costs must stay at $43 Billion; 2) all of the planned $18 Billion in Federal grants must be obtained; and 3) the 2009 Business Plan operating results must be achieved (100% of ridership, ticket prices, and operating costs) in the sixteen years between 2020 and 2035. These results are shown on the left-most column, in the top row of each Section.

Recommendation On How To Proceed With This Report

This report is intended to be a reference point which can be used to analyze the impacts of different financing alternatives. It is not designed to be read front to back with sweeping conclusions on the last page. Once the reader is familiar with the overall structure of this Part I and its two page Financial Summary, then Part II, the "Detailed Analysis" on pages 10 to 18, can be used to understand the logic behind the Warren Model, the applicability of the financing alternatives to various "build/operate" options, and several financing examples. These examples should be very helpful.

Part III, "Using The Financial Summary Pages", starting on page 19, provides very detailed explanations of the different Sections of the Financial Summary and the Exhibits that support each Section. The indented paragraphs provide very detailed explanations regarding the Exhibits. Finally, on page 39, Part IV contains all of the Exhibits, and the Appendixes, which apply to the various Sections.

Financial Summary

March 23, 2011

State Cash Flow Implications of Phase 1 Cost to Build, Sources of Funding, and Operating Results
For 2009 CHSRA Plan and 2011 New Cost Estimates
(Page 1 of 2)

	(All $s In Billions) **CHSRA 2009 Plan**			(All $s In Billions) **2011 Projections**		**Comment**
A. – COST TO BUILD						
Cost to Build Phase One, San Francisco to LA/Anaheim	Cost to Build	For 535 Miles		Estimated Increase to	For same 535 miles	Up 60%
Phase 1 Construction Costs	42.60	0.080/mile		66.00	0.123/mile	2009 to 2011
	(See Exhibit 1, Left)			(See Exhibit 1, Right)		
B. – FUNDING SOURCES	**Best Case - A (Grants)**	**Worst Case - C (Private)**		**Best Case - A (Grants)**	**Worst Case - C (Private)**	
Sources and interest rate						
Cal Bonds at 5.9%	9.0	9.0		9.0	9.0	Same
Fed Grants at 0.0%	18.0	3.0		18.0	3.0	Down
Fed Bonds at 5.0%	0.0	0.0		0.0	0.0	
Local Loans at 7.5%	4.5	0.0		4.5	0.0	Down
Private/Public Debt at 6.0% - 30 and 50 years	7.8	21.5		24.2	37.8	Up
Private Equity at 21% (Fixed Return), or 0% (At Risk), or as Debt	3.3	9.2		10.4	16.2	Up
Total	42.6	42.6		66.0	66.0	
	(See Exhibits 2.1 and 2.3)			(See Exhibits 3.1 and 3.3)		

Financial Summary March 23, 2011

State (Taxpayers) Cash Flow Implications of Phase 1 Cost to Build, Sources of Funding, and Operating Results

For 2009 CHSRA Plan and 2011 New Cost Estimates

	(All $s In Billions) **CHSRA 2009 Plan**		(All $s In Billions) **2011 Projections**		**Comments**
A. – COST TO BUILD	42.60	0.080/mile	66.00	0.123/mile	
B. – FUNDING SOURCES	**Best Case - A (Grants)**	**Worst Case - C (Private)**	**Best Case - A (Grants)**	**Worst Case - C (Private)**	
Total	42.6	42.6	66.0	66.0	
C. -TAXPAYER'S CUMULATIVE CASH FLOW & INVESTOR'S ROI FOR PERIOD 2020 to 2035	Annual Debt and Equity Service Funding Requirement Ignoring Any Construction Period Interest-Only Charges				
C1 -Fixed Return Equity - See Exhibit 2.1 & 3.1	(2.3)	(4.1)	(5.0)	(6.8)	
Case 1 & 2: 100% - 75% of 2009 Operating Plan	2 - (9)	(28) - (38)	(41) - (51)	(70) - (81)	2035 Cash
Results, Average Annual Margin = $2.4 - $1.8	10%	10%	10%	10%	Pr Eq ROI
Case 4 – 75% of Ridership & Expenses	(22)	(51)	(65)	(94)	(same)
& Ticket prices Down 25%, AAM = $0.9	10%	10%	10%	10%	
	(See Exhibit 2.2)		(See Exhibit 3.2)		
C2 - At Risk Equity - See Exhibit 2.3 & 3.3	(1.6)	(2.2)	(2.8)	(3.4)	
Case 1 & 2: 100% - 75% of 2009 Operating Plan	13 - (2)	3 - (7)	(6) - (17)	(16) - (26)	(same)
Results, Average Annual Margin (AAM) = $2.4 - $1.8	9% - 8%	4% - 1.3%	3.5% - (0.4%)	(3%) - <0%	
Case 4 – 75% of Ridership & Expenses	(11)	(20)	(30)	(40)	(same)
& Ticket prices Down 25%, AAM = $0.9	4%	<0%	<0%	<0%	
	(See Exhibit 2.4)		(See Exhibit 3.4)		
C3 - At Risk Equity with 10 Year Guarantee	(1.6)	(2.2)	(2.8)	(3.4)	
Case 1 & 2: 100% - 75% of 2009 Operating Plan	13 - (7)	3 - (16)	(6) - (26)	(16) - (35)	(same)
Results, Average Annual Margin = $2.4 - $1.8	9% - 11%	4% - 4%	3.5% - 2.6%	(3%) - <0%	
Case 4 – 75% of Ridership & Expenses	(27)	(36)	(46)	(55)	(same)
& Ticket prices Down 25%, AAM = $0.9	13%	4%	3%	(0.2%)	
	(See Exhibit 2.5)		(See Exhibit 3.5)		
C4 - No Equity, All Private/Public Debt 30 years	(1.8)	(2.9)	(3.5)	(4.6)	
Case 1 & 2: 100% - 75% of 2009 Operating Plan	9 - (1)	(7) - (18)	(18) - (29)	(35) - (45)	(same)
Results, Average Annual Margin = $2.4 - $1.8	3.3%	3.3%	3.3%	3.3%	
Case 4 – 75% of Ridership & Expenses	(15)	(31)	(42)	(58)	(same)
& Ticket prices Down 25%, AAM = $0.9	3.3%	3.3%	3.3%	3.3%	
	(See Exhibit 2.5)		(See Exhibit 3.5)		
C5 - No Equity, All Private/Public Debt 50 years	(1.6)	(2.5)	(3.1)	(4.0)	
Case 1 & 2: 100% - 75% of 2009 Operating Plan	13 - 2	(2) - (12)	(11) - (22)	(25) - (36)	(same)
Results, Average Annual Margin = $2.4 - $1.8	2.6%	2.6%	2.6%	2.6%	
Case 4 – 75% of Ridership & Expenses	(11)	(25)	(35)	(49)	(same)
& Ticket prices Down 25%, AAM = $0.9	2.6%	2.6%	2.6%	2.6%	
	(See Exhibit 2.5)		(See Exhibit 3.5)		

PART II

DETAILED FINANCIAL ANALYSIS

The Warren Financial Model Highlights What The State And Its Taxpayers Will Bear

The Objective Of The Analysis

The objective of the analysis is to project the financial consequences of the CHSRA's project for California and its taxpayers. The goal is to understand the cumulative negative or positive cash flows that will occur in the first sixteen years of operation, 2020 to 2035, based on different construction cost levels and different forms of financings that could emerge between 2011 and 2020. Additionally, four different financial cases will be used to vary the operational success during the years of 2020 to 2035. The base case (Case 1) are the results defined in the CHSRA's 2009 Business Plan. Cumulative cash flows will be used to compare the results of the various financial scenarios, because using average annual cash flow results can be misleading. Average annual cash flows can vary significantly year-to-year, from being more negative in the early years of operations to being more positive in the later years of operations.

The Warren Model

Absent basic information from the CHSRA that would be in an investment grade business plan, William Warren, a former executive of several Silicon Valley companies, reviewed and built a surrogate CHSR project Excel based financial model.

The Warren Model and accompanying explanations of its findings are Appendix B to the "*The Financial Risks of California's Proposed High-Speed Rail Project*", published in October 2010. Both are available online at www.cc-hsr.org. The Model's baseline ridership, revenues, capital, and operating expenses are taken from the CHSRA's 2009 Business Plan for the period 2010 to 2035. This approach shows the potential financial impact of the CHSRA's assumptions before reviewing and varying any of the CHSRA's Business Plan's numbers and then incorporating the two early 2011 Construction Cost Estimates discussed in Section B of the Financial Summary. Like the CHSRA's technique, the Warren Model focuses on when and how much cumulative positive or negative cash flow the project will produce.

The CHSRA's Plan model is a very basic cash flow analysis presentation of only one set of projections of financial results during the first sixteen years of operations, starting in 2020. The Warren financial model also incorporates a cash flow analysis model, and part of it replicates the CHSRA operating results. However, part of it expands beyond the CHSRA Plan model to incorporate the financing of the construction of the system. Cash left over, or cash required to break even from operations (revenues less operating expenses), is counted by both models as an Operating Margin, which is referred to as a Surplus (or Deficit) by CHSRA documents. Neither model is a Profit and Loss statement. For example, neither the CHSRA plan nor the Warren Model takes into consideration an annual depreciation charge. And neither is based on accrual accounting practices. Instead, both start a Capital Replacement Fund in the 12th year of operations to accumulate enough funds to replace the rolling stock starting in the 16th to 21st years (2035-2040).

To repeat, readers are forewarned that nothing in the CHSRA 2009 Business Plan, nor anything in the documentation accompanying Prop 1A or AB3034, portrays a "Profit" or a "Loss". The CHSRA Plan is only a representation of day to day operational cash flow. For apples-to-apples comparisons, the Warren

Model mirrors this approach, and then goes beyond the CHSRA model to present more of the cumulative effects of the CHSRA's information, and its stated plans, such as financing arrangements put in place from 2011 to 2020.

One could argue that it would be beneficial to have a "Profit or Loss" view of the proposed CHSRA's system. Unfortunately, it would be meaningless. Few rail systems in the world present themselves financially in this manner, nor are they consistent with generally acceptable accounting practices of the United States. Most rail systems report on their ability to cover their operating costs, to accumulate cash to be used for future expansion, or to forecast how large of a subsidy is needed to support current operations. Very few take into account the previously invested capital that built and operated the rail system since its inception. Additionally, very few take into account the public funds that have been spent constructing the rail system. Most of these funds have most probably been written off by various "re-financings, 'haircuts', and repayment re-schedulings". These accounting changes simply write off some, if not the majority, of the value of the debt obligations at some negotiated rate. The result of these "re-financings, etc.", has been to shift some of the true costs of most of these systems to the national, state, and/or provincial governments, where these costs, usually in the form of debt or securities, are simply buried in the government's general debt. Given the complexity of trying to unravel these entangled arrangements to get to a meaningful comparison, the CHSRA correctly focused on cumulative "cash flows", and therefore the Warren Model starts by taking this same approach as its first step.

Then the Warren Model goes beyond either the CHSRA's model or a May 2009 basic cash flow analysis done by Californians Advocating Responsible Rail Design (CARRD). The Warren Model considers the cash flow implications of various mixes of grants, debt, and equity on the CHSRA's financial performance as well as its impacts on the State of California and its taxpayers. Additionally, it allows for sensitivity analyses on multiple variables; e. g. changes in ticket prices, changes in physical ridership volumes, changes in operating cost levels, annual inflation rates, and interest rates and repayment years of various types of financing.

However, there is a fundamental difference between the CHSRA's 2009 financial plan's point of view and the Warren Model's point of view. While both assume Federal grants do not have to be repaid, the CHSRA model assumes their organization, the CHSRA, is not obligated to service any debt on the project. To the CHSRA, that debt is 'laid off' on some other entity: namely the State of California. To highlight the true total costs of the system, the Warren Model assumes that California's taxpayers will be responsible for paying for any hidden subsidy (aka a revenue guarantee). Taxpayers will also be ultimately responsible for paying for the cost of construction by servicing any possible private and public debt, Federal loans or bonds (but not Federal Grants), State of California Prop 1A Bonds, local loans, and retiring equity positions. The magnitude of this responsibility will be to the extent these obligations can not be covered by the CHSRA's operating margins on an annual basis, from 2020 to 2035. Both of these annual and cumulative cash flow results, for 1) the CHSRA and for 2) the State of California and its taxpayers, are provided in the Warren Model for comparison purposes.

To summarize the point above, the CHSRA model simply reports the annual operating margin (revenues less operating expenses). The Warren Model takes this operating margin, from 2020 to 2035, and applies it to the annual debt and equity servicing that is required to cover (repay with interest) the 2011 to 2019 financing used to construct the system. To the extent the annual debt and equity servicing cash requirements exceed the available operating margin cash flows in 2020 to 2035, this creates a negative cash requirement (which is, in effect, like a future, long term, unfunded mandate), that the future taxpayers of California will be responsible for, through higher taxes, new debt, or reductions of other spending priorities in the General Fund. It is this negative or positive number which is the critical focus of this report.

Note that in the cash flows for the State of California and its taxpayers the impact of servicing the $9 Billion of Prop 1A Bonds is taken into consideration in the Warren Model. These cash flows accumulate to about $10 Billion in negative cash flow between 2020 and 2035. For example, in the Financial Summary discussion on page 6, regarding "At Risk" Equity investments in Section C2, on page 9, the range of the possible taxpayer's position in 2035 was a range from a positive $13 Billion (in the upper left corner) to a negative $40 Billion (in the lower right corner), which includes the impact of the $10 Billion to service the Prop 1A Bonds over this period. The Warren Model is therefore showing an overall financial impact on the taxpayers; including the cost of servicing the previously approved 2008 Prop 1A Bonds.

Therefore, if the reader believes that the voters agreed that they would be taxed to repay these Prop 1A Bonds, as opposed to believing that the operating cash flows would retire this debt, then the reader should set this $10 Billion cash flow requirement aside (as an assumed agreed-upon tax) and increase the results on the Financial Summary by a positive $10 Billion. Following this reasoning, the results in Section C2, for example, would then range from a positive $23 Billion to a negative $30 Billion.

What Results Are Being Presented?

Two sets of analyses are provided. The first set, consistent with the 2009 Business Plan, assumes $43 Billion for the Phase One construction costs. The second set assumes the 2011 Estimates of $66 Billion for the Phase One construction costs, but with the operating parameters for 2020 to 2035 remaining consistent with the CHSRA's 2009 Business Plan. The two sets are needed because the details caused by the dramatic difference in theses two construction cost estimates are too complex to understand in one analysis. The two sets of results are summarized in the two major columns on pages 8 and 9 of the Part I Financial Summary.

Readers familiar with our previous publications will notice we are now presenting a greatly increased number of financial alternatives. Only one form of financial arrangement with the private investor was presented in earlier publications, including the October 2010 Report *The Financial Risks of California's Proposed High-Speed Rail Project*, and the six subsequent Briefing papers listed on the inside page of this report's cover sheet. This is identified as a "Fixed Return" for the investor. This form was used initially because it is discussed on page 108 of the 2009 Business Plan, where the after-tax private investor's equity internal rate of return was assumed to be 16%. This form of financing is covered in this report in Section C1 of the Financial Summary on page 9.

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As will be discussed in detail below, there are now 4 different forms of financial arrangements to be analyzed. These are presented in Section C of the Financial Summary on page 9, and are:

- The private investor equity investment with a fixed internal rate of return, as mentioned above, and discussed in Section C1 of the Financial Summary.

- The private investor equity being totally at risk, as discussed in Section C2.

- The private investor equity being totally at risk, but with an initially agreed upon 10 year Revenue Guarantee, as discussed in Section C3.

- No private equity investment. All financing done with private or public debt, as discussed in Section C4, for 30 year debt, and Section C5 for 50 year debt.

The reason to add these other forms of financing is that the decisions about what will be the appropriate "Business Model" roles of the State and the private partners, in terms of "design", "build", and "operate" will need to be made during the present, and the near term, fiscal years. These different financial relationships have different levels of applicability and risk to the varying roles for the State, the private

investor, and the private operator. It is also possible to put these different financial relationships in the perspective of which favor the State of California more, and which favor the private investor more, especially if the private investor is also the private operator.

Such a perspective would be helpful when the negotiations begin in earnest. This chart may help clarify the possible roles:

Financial Relationships Analyzed in This Report		**Possibly Applicable Financial Relationship For This Mix Of "Design and Build" and "Operate" Roles**				
		Design and Build Role →	**State**	**State**	**Private**	**Relationship Favors**
Section	**Private Equity Investor**	**Operator Role →**	**State**	**Private**	**Private**	**One Party or Other**
C1	Fixed Equity Return		Yes, as only Private Investor	Yes	Yes	Private Investor
C2	At Risk Equity		Yes, as only Private Investor	Yes	Yes	State
C3	At Risk Equity with Guarantee		No	Yes	Yes	"In the middle"
C4 & C5	All Debt, 30 or 50 years		Yes, as only Private Investor	Yes	Yes	"In the middle"

The chart summarizes several points:

- Even if the State remains as the Operator, there is still a role for the private investor, except the case described as C3 would not be applicable.

- If the private investor is also the private operator, all the relationships discussed in C1 through C5 are applicable.

- Two of these relationships tend to favor one party or the other.

    - The private investor will want C1, the Fixed Equity Return, as it minimizes risk, and guarantees a good Return on Investment (ROI), which in this analysis is 10%.

    - The State will want C2, the At Risk Equity, as it shifts the risks to the private investors and reduces the cumulative negative cash flow the State will have between 2020 and 2035.

- Two of these relationships are "In the middle", as they appear to be at a mid point that reduces the extreme negative and positive consequences of C1 and C2 for both the State and the investor.

    - C3, the At Risk Equity with a Guarantee option improves the ROI to the private investor, but not as high as the C1 option. However, it reduces the cumulative negative cash flow consequences to the State. The problem with this option is that Section 2704.08 (J) of AB 3034 may preclude this option, with its guarantee, from being an alternative.

    - C4 and C5, the All Debt options, also improve the ROI to the private investor, but these returns are not as high as the C1 option. However, they reduce the cumulative cash flow consequences to the State. C4 and C5 may be preferable to C3, as they avoid the issue of a guarantee that

conflicts with AB 3034. It is also simpler to project the cash flow requirements, as they are a simple 30 or 50 year repayment schedule of the construction cost principle and interest.

The Logic Behind The Model And The Analysis

Before exploring the details, it may be valuable to understand the logic behind the financial projections. The challenge is to think about the decisions that need to be made in the short term, based on data that is available in the short term. Then one must think about the future consequences of those decisions based on events and conditions that cannot be forecasted today with a high degree of certainty. Decision makers with different personal risk profiles, given different perspectives of the possible impacts of the yet-unknown events and their consequences will either 1) seek to minimize future negative impacts, 2) find that the benefits of their decisions probably outweigh the possible negative impacts, or 3) seek some balance between the two extremes. Therefore, a reasonable future looking plan must give a range of future financial results, based on some variation of marketplace results expected in the future, so decision makers can assess this range of financial uncertainties that can be compared to their overall objectives and levels of risk.

Two near term sets of information, the construction costs and the forms of financing that construction, will shape the high speed rail program's long term financial consequences. But the results of these decisions will not become apparent until after 2020. Only when the system is once in operation will the realities of the market determine the important parameters of ridership volumes, ticket prices, and operating costs. By 2020 the critical construction and financing decisions will already have been made, the system will be in place, and operational decisions will influence short term operating results. But the overall financial consequences will already have been determined by decisions that are made in the next few years.

A Simple Example

A simple example, which is used in the Financial Summary, shows these parameters in action. Some would call it a "worst case" set of events. First, assume the cost to build the San Francisco to Los Angeles/Anaheim corridor turns out to be $66 Billion, and no more than the existing $3 Billion in Federal grants is ever to be awarded to California. This means that about $63 Billion must be raised through some mix of public and private debt and equity. Assume the financing is all debt, since fixed return equity is always more expensive to service than debt. This debt will be composed of the $9 Billion of Prop 1A Bonds, and $54 Billion in private or public (we shall call this the State of California Construction Bonds) debt. Both are 30 year bonds with the Prop 1A Bonds sold at a 5.9% interest rate, and the private or public California Construction Bonds sold at a 6% interest rate. This is an example of the aforementioned two near term sets of data that will affect the program's outcome (the cost of construction and how it is to be financed). (Note that "at risk" equity is also assumed to be more expensive than debt, as it must appear to the potential private investor to have a higher ROI than debt financing, otherwise the private investor would not consider taking the equity risk.)

Once the Phase One Corridor is built, this $63 Billion has to be serviced under the above-mentioned terms. The annual payments to retire the $63 Billion in debt and provide the interest payments to the bond holders are $4.6 Billion per year, for 30 years.

Once the Corridor is in operation in 2020, revenues need to be collected, and operating expenses paid. Hopefully there will be a positive Operating Margin. The only forecasts of an Operating Margin are from the CHSRA's 2009 Business Plan. The Plan shows an average Operating Margin of $2.4 Billion/year. This $2.4 Billion/year will be produced only if the Authority achieves 100% of their Operating projections (such as revenues and expenses) over the sixteen years, 2020 to 2035. This means that between 2020 and 2035

the CHSRA's Operating Margin (net revenues, after paying operating costs) is projected to deliver to the State of California an average of $2.4 Billion per year.

The Problem

The problem becomes immediately apparent. The annual cost to service the construction debt, $4.6 Billion per year, exceeds the average $2.4 Billion net cash flowing in annually from operations. (The CHSRA's analysis and consequently the Warren Model end in the year 2035; however subsequent years will exhibit similar problems.) Therefore, the State of California will somehow have to provide an average of about $2.2 Billion per year for these sixteen years. This leads to a cumulative total of $35 Billion, by 2035, just to service the debt incurred to build the Phase One Corridor that can not be completely serviced by the insufficient Operating Margin cash flows. The funds needed to service this cash requirement, which is like an unfunded mandate, will have to come annually from increased taxes, or from diverting available funds from other priorities in the General Fund, or from specific spending categories such as education, health or safety. Or the State could annually issue additional new General Obligation (GO) debt, temporarily postponing raising taxes or diverting funds to retire the construction debt.

Seeing The Possible Consequences

This Financial Analysis report follows the money trail. The money is tracked from raising the construction financing, through the construction expenditures, then through the years of repaying the cost of construction during the years of revenue producing operations. The primary focus is on the State and the taxpayers as they are ultimately responsible for the repayment of this construction financing. [The above example is taken from page 9, in the right most column of the second page of the Part I Financial Summary. This column shows the results for $66 Billion of construction costs and the Worst Case of Financing Mix (minimal grants, mostly debt and equity). Note that in the row for Section C4 (No Equity, All Debt – 30 years), Case 1 is a negative $35 Billion.]

Case 1 - Accomplishing 100% of CHSRA's 2009 Business Plan Operating Objectives

Looking at Section C4, which analyzes "No Equity, All Debt, 30 years" financing, one sees the "(35)" in the right most column, which means that a cumulative negative cash flow of $35 Billion will have to be faced by the State by the end of 2035. And this is if the Authority actually achieves the "Case 1" projections of 100% attainment of their 2009 Business Plan operating revenues and expenses for the sixteen years, 2020 to 2035. The cumulative negative $35 Billion divided by the sixteen years equals the annual average negative $2.2 Billion cash flow.

Case 4 - Considering Other Consequences, Such As A Worst Case Operating Result Example

This "Case 1" projection is based on complete, 100%, attainment of the CHSRA's 2009 Business Plan revenues and expense numbers. It is also necessary to view the consequences of only a partial attainment of these revenue and expense projections, as it is impossible to accurately predict what these outcomes and results will actually be between 2020 and 2035. Therefore, a worst cast example also needs to be examined. This "Case 4" is based on a 25% drop in physical ridership, an equivalent reduction in operating expenses, and a 25% reduction in average ticket prices. Looking again at Section C4, in the Case 4 row, in the same column, ones sees a "(58)" which means that a cumulative negative cash flow of $58 Billion will have accumulated for the State to deal with by the end of 2035. A cumulative negative $58 Billion over the sixteen years (2020 -2035) equals an average annual negative cash flow of $3.6 Billion per year. Note the ROI for the "all debt" investor is just 3.3%, as shown on the second line, just below the Cash Flow value.

Here then is the range of future consequences that the person making decisions today or in the near future, must deal with. In summary in this example, with the cost of construction know to be $66 Billion, the mix of financing known to be in column C, mostly "Private", and the Section C4 "All Debt/No Equity" financing in place, the long term cumulative cash flows in 2035 will be in the range from a negative $35 Billion to a negative $58 Billion. The risk adverse person will tend to focus on the possible negative $58 Billion in 2035 (Case 4), and this person may not be willing to accept the consequences to the State of an average annual negative cash flow of $3.6 Billion affecting the General Fund every year from 2020 to 2035.

Conversely, the person who sees great social benefits from the high speed rail program will tend to focus on the negative $35 Billion in 2035 (Case 1). They will also note that the voters on Prop 1A already agreed to fund the repayment of the $9 Billion in Prop 1A Bonds, which is about $10 Billion of this $35 Billion in cumulative negative cash flow. Therefore, this second person will believe the only downside is the balance of $25 Billion in cumulative negative cash flow, which averages "just" $1.6 Billion per year, effecting the General Fund spending allocations, new debt levels, or new tax rates between 2020 and 2035.

How Does The State Go Forward?

At this point it is not clear whether voter approval will be required for the State to enter into new funding agreements. These may be to accept private equity, borrow private debt, or issue Construction Bonds, between 2011 and 2019. The uncertainty increases if there is a high probability that some of the repayment cash flow requirements will adversely affect General Fund spending allocations, new debt financings, or new tax levels between 2020 and 2035. The level of collateral and security that is negotiated, in the next few years, in such a debt agreement may determine the answer to the question of whether voter approval of the agreement will be required. For example, if the debt is to be secured by the CHSRA's right of way, lands, tracks and structures, trains and facilities, such an arrangement may require voter approval.

Because this paper's intent is to compare various financial options over the sixteen operating years (2020-2035) of the 2009 Business Plan, the most reasonable comparison is the cumulative cash flow position at the end of 2035. Therefore, understanding the range of consequences for the example above is critical; 1) a negative $35 Billion by 2035 if the operating results are at 100% of the 2009 Plan, and 2) a negative $58 Billion by 2035 if the operating results are at 75% (three-fourths) of the 2009 Plan. For California's taxpayers in the 2020 to 2035 time period, there is no way to avoid the very negative consequences of either of these strikingly different sets of future operating circumstances and results, unless the State of California defaults on its obligations sometime between 2020 and 2035.

Caution When Using Average Annual Cash Flows

While the analysis of this example allows exploration of the average annual negative impact on the State of California, it is also important to remember this negative $2.2 Billion per year (Case 1) is an average annual number. Importantly the Model shows that for this example, in the first few years, the annual negative cash flows vary from $2.4 to $4.2 Billion per year, because early years' ridership is estimated to be lower than the average of the sixteen years, but the annual debt servicing is constant over the sixteen years. Conversely, at the end of the sixteen years, the annual negative cash flows are in the range of $1.5 to $1.8 Billion per year, because the volume of traffic is projected to be then higher than the average, but the annual debt service has remained constant. Therefore, one should use the average annual number carefully, when trying to measure the near term or late term cash flow impacts of operations. The early years will be worse than average; the later years will be better.

An Example Of A Lower Cost Initial Construction Alternative

Given this discussion of the use of "All Debt" based financing, it may be helpful to consider another alternative to lower the initial construction costs and thereby reduce the risk to the initial Phase One Corridor from Anaheim/Los Angeles to San Francisco.

CARRD's Recommendation

In February, 2011, Californians Advocating Responsible Rail Design (CARRD) suggested that initially the Corridor run from Sylmar at the north end of the Los Angeles Basin to San Jose at the south end of the San Francisco Peninsula. The rational of this recommendation was that while ridership is increasing, local commuter rail systems (such as LA Metro in Southern California, and BART and Caltrain in Northern California) could be used to move passengers inside the metropolitan areas.

CARRD's new cost estimates to build the initial HSR corridor between Sylmar and San Jose are shown on Exhibit 1, page 1 of 3, of this report (far right hand corner of the Construction Cost Estimates spreadsheet). CARRD projects that the costs between these two cities would be about $43 Billion. Their conclusions used the same analysis that led CARRD to estimate in early 2011 that the San Francisco to Los Angeles/Anaheim construction costs at $66 Billion.

Financial Analysis Results Of The CARRD Alternative

The Financial Summary pages show a set of columns for the CHSRA 2009 Plan construction cost that were estimated at $43 Billion for the Los Angeles/Anaheim to San Francisco Corridor. Since the CARRD estimate for Sylmar to San Jose is coincidentally equal in total costs (about $ 43 Billion), these columns on the second page of the Financial Summary can also be used to examine the financial consequences of CARRD's proposal.

As discussed previously, since the 'All Debt' option discussed in Section C4 provides a reasonable "Middle of the Road" set of projections that balances the financial objectives of the State with the financial objectives of the private investor (see page 13), the CARRD recommendation will be reviewed in the light of Section C4 of the Financial Summary. Since the primary reason to consider this recommendation would be due to the lack of capital to build out the entire Los Angeles/Anaheim to San Francisco Corridor, the focus should be on Column C in the Financial Summary, the "Worst Case" in the CHSRA's 2009 Plan. As discussed above, this column is based on a mix of financing with only $3 Billion of the planned $18 Billion of Federal Grants being available, and row C4 is based on the balance of the financing method being all debt, the lowest cost of reasonably acceptable financing.

Case 1 – Results If All of the CHSRA's 2009 Operating Results Could Be Achieved

The Summary shows that for Case 1 in row C4 and Column C of the CHSRA 2009 Plan the taxpayer's cumulative cash flow by 2035 will be (7), a negative $7 Billion. This means that even if every one of the 2009 Operating Plan results for riders and revenues were achieved (as shown as Case 1) the cash shortfall to service the annual debt payments plus cover operating expenses over the sixteen years of 2020-2035 would be a cumulative negative $7 Billion.

Case 2 – Results If Passenger Ridership Drops 25%

Since passengers in and out of the two metropolitan areas would not have the speed and convenience of direct service to downtown Los Angeles and downtown San Francisco, it seems reasonable to assume that the physical ridership results might be at least 25% less than the CHSRA's 2009 Los Angeles/Anaheim to

San Francisco Corridor estimates. This would mean 25% fewer passengers but with the same ticket prices, as well as operating costs being 25% lower than in the 2009 Business Plan. This set of conditions is shown as Case 2. It is in the same cell of the Summary, and Case 2 shows an (18), or a cumulative negative cash flow of $18 Billion by 2035. This means that if no more free Federal grants for construction are raised for the Sylmar to San Jose Corridor, the negative cumulative cash flow between 2020 and 2035 would accumulate to about a negative $18 Billion by 2035. On average, this would be about $1.1 Billion per year that would also have to be serviced out of the General Fund, additional taxes, additional State GO bonds or some combination of these options. But, the smaller the drop in passenger volumes, the smaller the cumulative negative cash flow.

Even setting aside the cost of servicing the Prop 1A Bonds, which will be about $10 Billion between 2020 and 2035, the net cumulative negative cost to the taxpayers would still be about $8 Billion over these sixteen years. On average, this would be about $0.5 Billion per year that would also have to be serviced out of the General Fund, additional taxes, additional State GO bonds or some combination of these options.

Case 4 – Results If Ticket Prices Also Drop 25%

The Case 2 operating numbers will probably not be attained because, in addition to the above-noted drop in ridership, the average ticket prices will also decrease, since passengers will have to buy additional commuter tickets inside the LA Basin and in Northern California to reach the HSR end points. It is also reasonable to assume that the airlines will also engage in ticket price wars with the HSR system. Finally, ridership to and from the CARRD end-points is likely to be lower given middle-class budget assessments of the presently stated one way ticket of $105 between Los Angeles and San Francisco. Case 4 results are more likely, as these are based on a 25% reduction in the CHSRA 2009 Plan average ticket prices, as well as the reductions shown in Case 2 (the 25% drop in passenger volumes and the 25% drop in operating costs). (Case 3, which is an intermediate set of financial conditions, is not discussed in the Financial Summary, but is available in the detailed analysis and all of the Exhibits.)

The cumulative negative cash flow between 2020 and 2035 for Case 4 are a negative $31 Billion, which is an additional $21 Billion on top of the $10 Billion to service the Prop1A debt between 2020 and 2035. This $21 Billion would be an average of $1.3 Billion per year, ignoring the cost to service the Prop 1A Bonds, more in the earlier years, less in the later years. The total of $31 Billion would be, on average, about $1.9 Billion per year, including the cost to service the Prop 1A Bonds.

While not perfect, the CARRD option reduces the financial risks to the State.

PART III

USING THE FINANCIAL SUMMARY PAGES

In the left side columns of the two Financial Summary pages, in Part I, are the results, done in the Fall of 2010 and presented in our "Financial Risks" document, using the construction cost estimate of $43Billion; in the right hand columns are the results done in February 2011, using the independent construction cost estimates of $66 Billion. Note - With these two sets of results, if one wished to see the effects of a $55 Billion cost estimate, taking a mid point number between these two sets of results will give a rough approximation of the results for a $55 Billion construction cost estimate.

Behind each Section of the Financial Summary there can be one or more Exhibits that show inputs into, or outputs out of, the model. In the following pages as each Section of the Financial Summary is discussed, indented paragraphs are provided that discuss the associated Exhibits. Depending on the level of interest of the reader, it is possible to skip over the indented "details", or the discussion of the Exhibits, and they can be reviewed later. The Exhibits are attached as part of this report, and are included in the Table of Contents.

On the First Page of the Financial Summary

Section A – The 2009 construction cost projection of $43 Billion for the 535 miles from San Francisco to Anaheim, averages out to $80 Million per mile in "Year of Expenditure $" (the impact of inflation is built into these numbers). The new 2011 construction costs estimate of $66 Billion, for the same miles, averages out to $123 Million per mile. This increase of 60% leads to an overall increase of 55%, assuming there is no change in the costs of the train sets. The details of these projections are shown in Exhibit 1 (pages 1 to 3) and Appendixes A and B. In a recent Briefing Paper, "Big Trouble For California's $66 Billion Train", Figure 1 was taken from this Exhibit 1, and Appendixes A and B.

Section B – The types and amounts of different mixes of financing to fund these two different levels of construction are shown in Section B. Two cases are summarized for the 2009 Business Plan construction cost of $43 Billion, Case A - the best case, and Case C – the worst case. The same is summarized for the 2011 estimated cost of $66 Billion, Case A – the best case, and Case C – the worst case. These mixes of financing are critical inputs to the financial model developed by William Warren. The Warren Model starts with the amount of the construction costs and allows the user to specify the types of funding sources, interest rates, repayment schedules, and the amount of funds to be raised from each of these sources. The inputs and the results of the Warren Model are discussed in detail in Exhibit 2.1 and 3.1, and Exhibit 2.3 and 3.3. Note that no construction period interest-only carrying charges are included for any of the private investments; see discussion of Section C4 and C5, below.

Exhibit 2.1 and 3.1, and Exhibit 2.3 and 3.3

Exhibit 2.1 shows the funding source assumptions for the 2009 Plan construction costs of $43 Billion, with the Private Equity investor being guaranteed a fixed rate of return on this investment. Exhibit 2.3 is the same, except it is for a Private Equity investment which is at risk. (There is no guaranteed repayment schedule) Exhibit 3.1 shows the funding source assumptions for the 2011 Projections based on the new construction cost estimates of $66 Billion, with the Private Equity investor being guaranteed a fixed rate of return on this investment, consistent with the parameters

defined in the 2009 Business Plan. Exhibit 3.3 is the same, except it is for a Private Equity investment which is at risk. (There is no guaranteed repayment schedule)

On the upper part of Exhibit 2.1 & 2.3 and Exhibit 3.1 & 3.3

The six different sources are shown at the top of these pages. Three different mixes of these financial sources were examined, and these three mixes are documented in the center of the pages. Column A presumes all of the planned $18 Billion in Federal grants are achieved, with private/public debt and private equity minimized to the extent possible. This is the most advantageous set of financing as there is no cost to repay any of the Federal grants. Column B reduces the amount of Federal grants, and assumes Federal Bonds are used instead, where debt servicing would be required. Column C drops Federal grants again, assumes no Federal Bonds, or Local Loans, and therefore the bulk of the financing has to be in the form of private/public debt and private equity, on a 70 – 30 ratio, consistent with the 2009 Business Plan. Please note that on Exhibit 3.1, in Column C, the Private/Public Debt and Equity has grown to $54 Billion. This is $23 Billion higher than the $31 Billion shown on Exhibit 2.1.

Note that Exhibit 2.1, Column A, which is taken directly from the 2009 Business Plan, shows that 42% of the $43 Billion in planned construction costs were projected to be Federal Grants, which, of course, do not have to be repaid. In comparison, on Exhibit 3.3, Column C, which was used in the simple example discussed above, shows that the $3 Billion in Federal Grants will represent only 4% of the $66 Billion projected construction costs. These two dramatic changes from late 2009, the potential increase in construction costs and the diminishing amount of Federal Grants contribute to the incredibly large amount of construction debt that may have to be serviced by the State of California in the 2020 to 2035 time period.

On these exhibits, note that the row for "debt" is identified as "Private/Public". From a financial analysis point of view is does not make any difference if the construction debt is provided by a third party domestic or foreign bank, one of the operating railroads, a construction company, or a financing arm of the State of California. It is presumed that this debt will all be at the same interest rates and with 30 years repayments terms; additionally, it is presumed that this debt will be secured by the assets of the CHSRA. Without a security position in the right of way, the facilities to be built and the train sets and the equipment installed on the right of way, the interest rates will be much higher than 6%. This private/public debt will have to be repaid annually, first by the available annual operating margins, and to the extent the repayment obligations exceed the operating margins, then the State will have to make up the shortfall out of the General Fund, as shown in the example. Otherwise, the bondholders will view the debt to be in default and will move to seize the assets that are securing the bonds.

These funding assumptions for the best case, Column A, and the worst case, Column C are shown in Section B of the Financial Summary. The Financial Summary will now focus on these two sets of cases for both the 2009 Plan and the 20110 Projections.

On the lower part of Exhibit 2.1 and Exhibit 3.1 – Which represent Fixed Returns for the Private Equity Investor

The amount of cash needed, annually, for the next 30 years, to services these mixes of finances is shown on the lower part of Exhibits 2.1, & 2.3, and 3.1 & 3.3. Note that there are annual payments scheduled, in Exhibits 2.1 and 3.1, for the Private Equity investor, as this investment is "Guaranteed", at a fixed rate of return. For all practical purposes, this equity investment is like debt, it is just not secured by CHSRA assets, as the various forms of debt will most probably

require. To recognize the annual need to pay an annual interest based dividend payment and set aside cash to repurchase this equity investment, a Sinking Fund has been assumed to be set up. This Sinking Fund would accumulate the cash for the dividend payments and the cash for the repurchase of this equity. The interest rate of 21% has been used to deliver the after tax 16% rate of return called out for the equity investors in the 2009 Business Plan.

On Exhibit 2.1, based on the 2009 Plan for the $43 Billion in Construction Costs and the Column A mix, the taxpayers have an annual servicing requirement of $2.29 Billion per year, and the CHSRA is responsible for just $1.27 Billion of this $2.29 Billion. Unfortunately, it appears that Column C may have a higher probability of occurring, given the changes in the House of Representatives in Washington DC. Comparing Column A to Column C ones sees that that the annual cost that the taxpayers are responsible for grows from $2.29 to $4.14 Billion per year, due to the shift from Federal grants to private/public debt and equity.

In comparison, on Exhibit 3.1, for the $66 Billion 2011 Projection, with the Column A mix, the taxpayers have an annual servicing requirement of $4.96 Billion per year, and the CHSRA is responsible for just $3.94 Billion of this $4.96 Billion. Comparing Column A to Column C ones sees that that the annual cost that the taxpayers are responsible for grows from $4.96 to $6.81 Billion per year, due to the shift from Federal grants to private debt and equity.

It is important to remember that the CHSRA's Operating Margin, which is their annual revenues, less their operating costs and capital replacement, will help to provide cash to service some of this debt and equity repayment requirement. What can not be serviced, or "covered" by their operating margin will become an obligation of the taxpayers of California. On the bottom of Exhibit 2.1 and Exhibit 3.1 there is a summary of the Operating Results for the CHSRA for the 2020 to 2035 time period. These results are from the 2009 Business Plan. Note that the Operating Margin is the same on both pages. This is because these two Exhibits show the difference in the cash required to service the financing that has to be in put in place in the 2011 to 2020 time frame to fund the construction of the system. The operating results are based on the ridership, pricing, and operating expenses which occur in the following 16 years. How much had been previously spent to build the system does not affect the operating margin, once the system is in operation. What does matter is to know if the annual operating margins will cover the annual cash requirements needed to service all of the construction financing obligations. As seen on the bottom of Exhibit 2.1 and 3.1, the average annual margin over the 2020 to 2035 time period, assuming the 2009 Business Plan operating parameters are 100% met, is about $2.4 Billion.

On the lower part of Exhibit 2.3 and Exhibit 3.3 – Which represent "At Risk" Returns for the Private Equity Investor

The amount of cash needed, annually, for the next 30 years, to service these mixes of finances is shown on the lower part of Exhibits 2.3, and 3.3. Note that there are no annual payments scheduled for the Private Equity investor, as this investment is "At Risk". The payout on this investment is defined in the model to be the amount of cash that has been accumulated in the CHSRA cash account by the end of 2045, after 26 years of operations. If the CHSRA operations have been very successful for this 26 year period the equity investor will received a great deal of cash in 2045, representing a return of the principal that was invested, plus a return on this principal. The size of these two payments represent the investor's Return on Investment (ROI). If the CHSRA operations have not been successful for this 26 year period the equity investor may received very little cash in 2045, representing, maybe, a return of the principal that was invested. The size of this one payment would then represent the investor's Return on Investment (ROI) of zero, "0%". If the amount of cash available in 2045 was less than the initial principal that was

invested, or could even be a negative balance (the CHSRA has financial obligations to settle), the ROI for the investor would be a negative number and is normally represented as "<0%". This is similar to the private equity investor who purchases stock in a private corporation, and after a number of years the firm offers to buy back all of the investor's "common" stock for a one time lump sum of cash (which may be very large or very small).

On Exhibit 2.3, based on the 2009 Plan for the $43 Billion in Construction Costs and the Column A mix, the taxpayers have an annual servicing requirement of $1.59 Billion per year, and the CHSRA is responsible for just $0.56 Billion of this $1.59 Billion. Note that both have dropped by $0.70 Billion per year, because of the elimination of the Sinking Fund payments needed to service the Private Equity investment which is shown on exhibit 2.1. Comparing Column A to Column C one sees that that the annual cost that the taxpayers are responsible for grows from $1.59 to $2.21 Billion per year, due to the shift from Federal grants to private debt and equity.

In comparison, on Exhibit 3.3, for the $66 Billion 2011 Projection, with the Column A mix, the taxpayers have an annual servicing requirement of $2.78 Billion per year, and the CHSRA is responsible for just $1.75 Billion of this $2.78 Billion. Comparing Column A to Column C ones sees that that the annual cost that the taxpayers are responsible for grows from $2.78 to $3.40 Billion per year, due to the shift from Federal grants to private debt and equity.

Just as was shown on Exhibits 2.1 and 3.1, on the bottom of Exhibit 2.3 and 3.3, the average annual margin over the 2020 to 2035 time period, assuming the 2009 Business Plan parameters are 100% met, is about $2.4 Billion.

Conclusions from Exhibits 2.1 and 2.3, for the 2009 Business Plan

Looking at Exhibit 2.1, in Column A, which is based on the 2009 Plan construction costs of $43Billion, and the acquisition of the $18 Billion in Federal grants, the annual operating margin of $2.4 Billion compares very favorably to the CHSRA's cash requirement to service debt of $1.27 Billion. However, from the point of view of the taxpayers of California, and their need to have $2.29 Billion available for servicing all of their obligations, it is very close. In comparison, looking at Column C which assumes very few Federal grants and much more private investment, the taxpayer's cash requirement to service the financing obligations is now $4.14 Billion, annually, compared to the operating margin of $2.4 Billion, which has not changed. Even the more limited obligations of the CHSRA, of $3.49 Billion, can not be covered by the operating margin of $2.4 Billion. This shows that without the $18 Billion of "free" money, the old 2009 Business Plan operating results can not cover the financing costs to build the system, even assuming the old 2009 Plan number of $43 Billion, if the Private Equity investor is guaranteed a fixed return.

Just below the row showing the annual cash required to service the debt, such as $4.14 Billion in Column C, the cumulative requirement for the 2020 to 2035 time period is shown, as $66.26 Billion. This can be compared to the cumulative operating margin for the same 2020 to 2035 time period, at the bottom of Column C, of $38.47 Billion. This means that the State will have a cash "shortfall" after operations and servicing debt and equity, over this 16 year time period of $27.79 Billion. Clearly, entering into an agreement with private investors in which their return is "fixed" would be a very expensive proposition for the taxpayers of California. This will be discussed in more detail on the following pages.

These same points are illustrated on Exhibit 2.3 which shows that with the Private Equity investor being "at risk", with no annual requirement to service a fixed equity investment, even in the worst

case of Column C, the taxpayer's cash requirement of $2.21 Billion could just be met by the operating margin, if operations are at 100% of the 2009 Business Plan assumptions.

Conclusions from Exhibit 3.1 and 3.3, for the 2011 Projected $66 Billion Construction Cost

Now, turning to Exhibit 3.1 in Column A, which is based on the 2011 estimated construction costs of $66 Billion, and the acquisition of the $18 Billion in Federal grants, the operating margin of $2.4 Billion does not compare favorably to the CHSRA's cash requirement to service debt of $3.94 Billion. Additionally, from the point of view of the taxpayers of California, and their need to have $4.96 Billion available for servicing all of their obligations, it is not even close. Therefore, if the construction costs are near the $66 Billion estimate, even with $18 Billion in free Federal grants, both the CHSRA and the taxpayers of California will have ongoing, and unsustainable, negative cash flows. In comparison, looking at Column C which assumes very few Federal grants and much more private investment, the taxpayer's cash requirement to service the financing obligations is now $6.81 Billion, annually, compared to the operating margin of $2.4 Billion, which has not changed. Even the more limited obligations of the CHSRA, of $6.16 Billion, can not be covered by the operating margin of $2.4 Billion. This shows that even with the $18 Billion of "free" money, the old 2009 Business Plan operating results can not cover the financing costs to build the system, assuming the new 2011 estimated $66 Billion, if the Private Equity investor is guaranteed a fixed return.

This point is further illustrated on Exhibit 3.3 which shows the Private Equity investor being "at risk", with no annual requirement for the State to service a fixed equity investment. In the worst case of Column C, the taxpayer's cash requirement of $3.40 Billion can not be met by the operating margin, even if operations are at 100% of the 2009 Business Plan assumptions. Even if the $18 Billion in Grants became available, see Column A, the taxpayer's cash requirement of $2.78 Billion can not be met by the operating margin, of $2.40 Billion, even if operations are at 100% of the 2009 Business Plan assumptions. So, with a $66 Billion in Construction Costs, even with the equity investor at risk, the operating margins cannot service the annual debt repayment obligations, with or without the $18 Billion in Federal grants, and the State will have to make up the difference out of the General Fund.

On the Second Page of the Financial Summary

Section C – This Section of the Financial Summary shows the results of measuring the available operating margin to the cash required to service the construction costs. This is the primary output of the Warren Model. The conclusions discussed above, and which appear on the bottom of Exhibit 2.1 & 2.3, and 3.1 & 3.3, are based on the operating margin being held constant and at the level that would be attained if the 2009 Operating Plan was 100% successful, in terms of ridership, ticket prices, revenues, and operating expenses. Just as the consequences of different mixes of finances (to be put in place in the 2011 to 2019 time period) must be analyzed, so must the consequences of different mixes of operating results (over the 2020 to 2035 time period) be analyzed and understood.

To analyze the impacts on the CHSRA and the State of California, four different sets of Operating Results were defined for the 2020 to 2035 time period, the 16 years the 2009 Business Plan provided details of physical passenger ridership, ticket prices, operating expenses (such as labor, maintenance, etc), and equipment replacement. No variation was made to the equipment replacement schedules as there was no data on which to base such a variation. Each of these four cases was then used to measure the impact of the CHSRA operating margins in conjunction with the impacts of the various sizes and mixes of financing discussed above. Section C is therefore divided into 5 different sub-sections, each representing a different form of financing. The first two deal with equity investments included in the mix, either a fixed return (C1)

or with an "at risk" return (C2). The question of a Guarantee for the "at risk" investor is examined in (C3). Finally, a mix of all debt (no equity), is examined in (C4) for 30 year repayment schedules, and in (C5) for 50 year repayment schedules. Note that no construction period interest-only carrying charges are included for any of the private investments; see discussion of Section C4 and C5, below.

These four cases that appear in C1 through C5 are:

Case 1 – 100% of the 2009 Business Plan – These operating results are identical to the ones shown in the 2009 Business Plan, in terms of physical ridership, and ticket prices, revenues, operating expenses, and equipment replacement schedules. Both the values presented in 2009 dollars and in "Year of Expenditure" dollars are used to match the values in the Business Plan. The key tables from the 2009 Business Plan are Table E, Figure 8, Table J, and Table K. With these values used a baseline, one can see the amount of gross operating margin that is provided, by year, over the 2020 to 2035 time period, which averages at about $2.4 Billion per year.

Case 2 – 75% of Ridership and Operating Expenses – This set of results is based on 25% less revenues, and 25% less operating expenses, than was used in Case 1. Implicit is the assumption that the CHSRA will be able to vary downwards its operating expenses proportionally to a reduction in physical ridership. Since there is no discussion in the Operating Plan, about the amount of fixed costs and the amount of variable costs which are in their Plan, for the sake of simplicity, the assumption was made that all these costs were variable, even though this will probably not turn out to be the case.

Case 3 – Ticket Price is down by 25% - This set of results is based on the same values as in Case 1, except that the revenue, in dollars per ticket, was reduced by 25%, to reflect the consequence of a pricing drop, from what was in the 2009 Business Plan. The physical number of riders was left as in Case 1, as were operating expenses, as they are driven by the number of riders, not the value of the average ticket.

Case 4 – 75% of Ridership and Operating Expenses and Ticket Prices Down by 25% - This set of results looks at the consequence of both Case 2 and Case 3 occurring. This would mean that average ticket prices are 25% less than what is in the Operating Plan. However, even with the prices being 25% lower, the number of riders is also 25% lower than what is in the Operating Plan. Operating expenses were reduced by 25% just as they were in Case 2. Note that the operating margin, while small, is still positive.

These four cases were then used to analyze the combined consequences of 1) the operating margins produced by each of these four cases, and 2) the amount of cash that would be needed by the CHSRA and the State of California to service all of the debt and equity obligations discussed above for the $43 Billion and $66 Billion construction projections. In the introductory example on the previous pages, in "What Results Are Being Presented", Case 1 was used. Of these four cases, the Case 1, Case 2, and Case 4 results are summarized in Section C of the Financial Summary, in each of the five different financing mixes presented in the rows identified as C1 though C5. Note that no case is defined for the situation where there is no positive operating margin (where operating expenses exceed revenues), as this condition just makes the results worse than Case 4, and such a situation, requiring a subsidy, is not allowable under Prop 1A and AB 3034.

Exhibits 2.2 and 3.2, and 2.4 and 3.4

Associated with each of the mixes of financing discussed above (Exhibits 2.1 and 3.1, and Exhibits 2.3 and 3.3) there is an Exhibit which shows the cash flow results of combining the financing cash requirements with the various operating margins from these 4 cases. There are shown in Exhibit 2.2 and 3.2, and Exhibit 2.4 and 3.4.

Exhibits 2.5 and 3.5

Lastly, there are two exhibits, Exhibits 2.5 and 3.5, which show the results of the financing cash requirement with the various operating margins, with the private investors "at risk", but with a Revenue Guarantee from the State. Exhibits 2.5 and 3.5 also show the results of no Private Equity Investment, with all Private or all Public investments being made in the form of 30 year and 50 year debt.

The relationships of the various Financial Summary Sections and the various Exhibits are shown in the following Table 1.

Table 1
Exhibit 2.1 through Exhibit 3.5 - Showing Cash Flows and ROI's for Construction Costs, Financing Mixes, Operating Results, different Private Equity Participations

Private Investor Participations	**For the State, the CHSRA, and the Private Investor**	**$43 Billion Construction Costs Section A**	**$66 Billion Construction Costs Section A**
Fixed Return Section B	Financing Mixes and Servicing Requirements	Exhibit 2.1	Exhibit 3.1
Section C1	Operating Results and Cash Flows & ROI after Servicing Financing	Exhibit 2.2	Exhibit 3.2
At Risk Return Section B	Financing Mixes and Servicing Requirements	Exhibit 2.3	Exhibit 3.3
Section C2	Operating Results and Cash Flows & ROI after Servicing Financing	Exhibit 2.4	Exhibit 3.4
At Risk Return with a Revenue Guarantee Section C3	Operating Results and Cash Flows & ROI after Servicing Financing	Exhibit 2.5	Exhibit 3.5
No Equity Investment, all Private/Public Investment is Debt Section C4 and C5	Operating Results and Cash Flows & ROI after Servicing Financing	Exhibit 2.5	Exhibit 3.5

Section C1 of the Financial Summary, Fixed Equity Returns, Detailed Discussion

The results of Exhibit 2.2 and 3.2 are shown on the Financial Summary in Section C1, which presents the results for the Fixed Return Equity cases. The left most columns shown the results of the $43 Billion construction cost estimate, as presented in the CHSRA 2009 Business Plan, and the results for the $66 Billion estimate are on the right. The row C1 shows the annual debt and equity servicing requirement for this financing mix and both the $43 Billion and the $66 Billion construction cases. Note in the left most cases it shows a negative $2.3 Billion and a negative $4.1 Billion, which are the values taken from Exhibit 2.1 in the Annual Total for the Cash Required to Service Funding, on the lower part of Exhibit 2.1, Column A and Column C.

The next two rows summarize the results of Cases 1 and 2, as shown on Exhibits 2.2 and 3.2. These are based on 100% of the 2009 Business Plan, producing an Average Annual Operating Margin of $2.4 Billion, and for the 75% Case, a margin of $1.8 Billion. This range of Average Annual Operating Margins must be

used to service as much of the Annual Debt and Equity Service Requirement as possible. Any of the Service Requirement not covered by the Margin will become an obligation of the State and the taxpayers.

For the 2009 Plan

Looking in Section C1 of the Financial Summary, at the 2009 Plan $43 Billion, Best Case - Column A, the cumulative cash flow for the 2020 to 2035 time period is a positive $2 Billion if Case 1 results are achieved. If Case 2 results are achieved, the cash flow for the 16 year period is a negative $9 Billion. These results are taken from Exhibit 2.2, Column A, Taxpayers results, for Case 1 and Case 2, on the third line. Also note that the ROI for the equity investor is 10%, as also shown on the fourth line of these two cases on Exhibit 2.2.

The last two rows of Section C1 summarize the results of Case 4, also taken from Exhibits 2.2 and 3.2. Note that the Average Annual Operating Margin has dropped to $0.9 Billion, so very little of the Annual Debt and Equity Service Requirement can be covered by the margin, leading to a negative $22 Billion Cash Flow position, by the end of the 2020 to 2035 time period, for the Best Case. Note that since these cases are based on a fixed return for the equity investor, the ROI remains at 10%. These Case 4 results are shown on the bottom of Exhibit 2.2 on the third and fourth lines of Case 4, in Column A, Taxpayers.

The Worst Case Column C shows the results of a change from the financing based on a large amount of "Grants" (which was Column A), to a financing based on predominately private debt and equity, with the private equity receiving a fixed return (Column C). Here the cumulative cash flow for Case 4 Operating Results will be a negative $51 Billion by the end of 2035, as also shown in the bottom right hand column of Exhibit 2.2. Note that even if Case 1 Operating Results were to occur in the 2020 to 2035 time period, if the financing mix had shifted from "mostly grants" to "mostly debt", the cumulative cash flow position will shift from a positive $2 Billion to a negative $28 Billion.

For the 2011 Projections

The right hand side of Section C1 of the Financial Summary shows the impact of the increased construction costs associated with the $66 Billion 2011 Projections. If the best financing mix could be achieved, with $18 Billion in Grants, Column A shows that the Case 1 Operating Results would be a cumulative cash flow by 2035 of negative $41 Billion. On the other hand, if the worst financing mix was obtained, with mostly debt, and then Case 4 Operating Results occurred, the cumulative cash flow impact on the State and the taxpayers would be a negative $94 Billion by 2035, as shown in Column C. These results are taken from Exhibit 3.2.

Exhibit 2.2

Looking at an example, Exhibit 2.2, in detail.

To understand the information provided in the four exhibits, Exhibits 2.2, 3.2, 2.4, and 3.4, please turn to Exhibit 2.2, which is for the $43 Billion Construction Costs and a Fixed Return for the Private investor. At the top of each Column, for the three mixes of financing, the total amount cash required is shown, for the 2020 to 2035 time period, to service the debt and equity that the CHSRA and the State are responsible for. This is just 16 years of the annual cash required, as shown in Exhibit 2.1, and previously discussed, above. For example, on Exhibit 2.1, on Column A, which is the $18 Billion in Federal Grants, the Annual Total of Cash Required to Service Funding for the Taxpayers is $2.29 Billion, and for the 16 years of 2020 to 2035, it is $37 Billion. If there was no positive operating margin contributing any cash from operations, this is the amount of cash the State would have to provide over the 16 years to service all the debt and equity repayment

obligations. Note that just below is the total for 30 years, $68.82 Billion, which would be required to retire the debt and equity obligations.

However, in each of the four Operating Results Cases described above, there is some amount of positive cash flow flowing out of operations over the 16 year period. Returning to Exhibit 2.2, on the first row the cash required to service the debt is shown, which for column A, is the $37 Billion for the taxpayers, as discussed above.

Looking at Case 1 for Column A, four rows of information are provided.

- On the first row is the peak cumulative negative cash flow that will be seen by the CHSRA, in this case a negative $1 Billion; and by the taxpayers, in this case a negative $4 Billion.

- The second row shows the year that this peak negative cash flow occurs, if it is any year other than 2035. In this case, the first year of positive cash flow for the CHSRA is 2021, and for the taxpayers it is 2023.

- The third row shows the cumulative cash position at the end of 2035, which in this case is a positive $18 Billion for the CHSRA, and a positive $2 Billion for the taxpayers.

- The fourth row shows the ROI the Private Equity investor will receive, which in this case is 10% as the Private investor has a Fixed Return of 21% pretax, and 16% after tax, per the 2009 Business Plan. However, the true ROI is only 10%, not 16%, because the investor will invest early during the 2011 to 2019 time period to finance the construction, but repayments will not start until operations start in 2020, thereby reducing the true ROI. Note, that the ROI is 10% for all the cases on Exhibit 2.2, as the private equity investor has a fixed return in all of these cases.

From this case the following observations can be made, taking the taxpayers' perspective.

First. Faced with a State (Taxpayers) $37 Billion cash requirement to service the debt and equity, which is $2.29 Billion per year, for the first three years the operating margins were not enough to service all of this $2.29 Billion per year, and by 2023 the State was running a cumulative negative cash flow that peaked at $4 Billion. In that year the operating margins became large enough to cover all of that year's servicing requirements and the negative balance was slowly paid down over the subsequent years, such that by the end of 2035 the State had a positive cash balance of $2 Billion. In other words, over the 16 years the operating margins produced enough cash flow to cover the $37 Billion in cash that was required to service the debt and equity, and to still have $2 Billion in the State's accounts at the end of 2035. This means the operating margin had produced about $39 Billion in cash, which is the average annual operating margin of $2.4 Billion, discussed before, for Case 1, i.e. – 100% attainment of the 2009 Business Plan operating result projections. This is consistent with the operating margin for the 2020 to 2035 time period, which is shown on the bottom of Exhibit 2.1, of $38.47 Billion.

Second. The other important point to note is how dramatically the cash flow position changes due to operating results changing. If Case 4 was to occur, with the financing mix of Column A, the taxpayer's position at the end of 2035 is now a negative $22 Billion. Since the first row is also ($22), and the second row is blank, this means the annual cash flows never became positive and the negative cumulative cash flow was its largest in 2035. In other words, things were not getting better the last few years, they were getting worse. The taxpayer's position has worsened because

the passenger ridership numbers were down by 25% from the 2009 Business Plan, and those passengers were paying 25% less per ticket than projected in the 2009 Business Plan. While the operating expenses were reduced by 25% as the physical volume of passengers was down by 25%, the drop in the gross margin from $2.4 Billion per year, to $0.9 Billion per year, took $1.5 Billion of available gross margin away. That drop of $1.5 Billion per year, for 16 years, is the $24 Billion change shown between Case 1 and Case 4 (a positive $2 Billion to a negative $22 Billion).

Third. Lastly, if Column C becomes the mix of financing that the CHSRA has to agree to in the 2011 to 2019 time period, with only about $3 Billion in Federal grants and over $30 Billion in private debt and equity (as shown on Exhibit 2.1), the shift in financing raises the cash required, dramatically. At the top of Column A, the cash needed by the Taxpayers goes up, from $37 Billion over the 2020 to 2035 time period, to $66 Billion, in Column C, due to so much more of the financing being debt and equity, which must to serviced, as opposed to grants which do not have to be repaid. In Column C, if the operating results were consistent with Case 1, i.e. 100% of the 2009 Business Plan, the cash position at the end of the 2020 to 2035 time period, for the taxpayers has gone from a positive $2 Billion to a negative $28 Billion, ($28); simply due to the increased cost of financing, coming from the change in the mix of the sources of the financing. However, if Case 4 operating results were to occur, with Column C financing in place, i.e. less grants, and more financing, followed by worse operating results, the cash position for the State and its taxpayers will be in the range of a negative $51 Billion, ($51), by 2035.

Exhibit 3.2

The impact of increased construction costs appears in Exhibit 3.2.

The difference between Exhibit 2.2 and Exhibit 3.2 is the increase in the construction cost from $43 Billion to $66 Billion, about a $23 Billion increase. As shown on Exhibit 3.1, the increase in construction costs is assumed to be financed by private/public debt and equity, in the same ratio of 70%/30% that was used in the 2009 Business Plan, with the private equity investor having a fixed return participation. Once the Phase One corridor is in operation, it is assumed to have the same operating results as shown in Exhibit 2.2, with the same 4 operating cases being shown to see the cash flow consequences of merging the same operating results with increase construction cost financing repayment requirements. In a recent Briefing Paper, “Big Trouble For California’s $66 Billion Train”, Figure 2 through Figure 6 were taken from this Exhibit 3.2, and Exhibit 3.1, above.

At the top of Column A the taxpayers cash requirement to service this increased amount of debt and equity is now $79 Billion over the 2020 to 2035 time period, and this can be compared to the $37 Billion needed for the $43 Billion construction project, as shown on Exhibit 2.2. The $79 Billion is the requirement on Exhibit 3.1 for the 16 years of the taxpayer’s annual requirement of $4.96 Billion. If Case 1 operating results are attained, the taxpayers have a 2035 negative cash flow position of $41 Billion, and if Case 4 results were to occur, the taxpayer’s position in 2035 would be a negative $65 Billion. These extremely negative cumulative cash flow positions are occurring because the annual cash servicing requirements of $4.96 Billion can not be covered by the Case 1 operating margin of $2.4 Billion, or the $0.9 Billion operating margin of Case 4, which has not changed from the $43 Billion Construction Cost financing shown in Exhibit 2.2. This $65 Billion in servicing requirement is due to the need to service a very large amount of private debt, and also service (in terms of an interest based dividend payment and a sinking fund requirement) a very large amount of private equity which has a fixed return guaranteed.

Section C2 – The Need for "At Risk" Equity

Moving the Private Equity, to an "At Risk" participation, helps solve the cash problem, but the investor has no measurable return.

Because of the large negative cash flows that the taxpayers will have to endure in Exhibits 2.2 and especially Exhibit 3.2, and as shown in Section C1 of the Financial Summary, there should be tremendous motivation on the part of the State to move the private equity investor from a "fixed return", in the 10% ROI range, to an "at risk" participation in the HSR program.

If an investor can be found who is willing to take an "At Risk" position, by definition, the investor believes that the return will most probably be higher than the return that would be offered in a "Fixed Return" investment. The comparison would be like electing to take common stock in a private company, with the hope that the superior results of the company will make the common stock more valuable, at some point in time in the future, than the value that could be achieved by taking a non-convertible preferred stock position in the same company, and achieve a fixed rate of return on the initial investment, such as 10%.

For this analysis, it was assumed that the "At Risk" private equity investor would receive all the cash in the CHSRA's accounts at the end of 2045, after 25 years of operation. In return, the investor would "turn in", or exchange the "at risk" securities, and would no longer have an equity position in the HSR program. There would be no conversion option to exchange or convert these securities to any other form of investment in the HSR program.

Section C2 of the Financial Summary is structured just as Section C1 is structured. The one and most significant difference is the change in the position of the equity investor from one of having a fixed return "guaranteed" to one where the return (in terms of the actual principle invested and a gain on this investment) position is "at risk". The results shown in Section C2 are from Exhibits 2.4 and 3.4. These results are based on the financing mixes shown in Exhibits 2.3 and 3.3, as discussed above.

The most obvious result is that because the private equity is not getting a fixed "guaranteed" return each year the cumulative cash flow position of the State and the taxpayers is much improved over the similar financing mix and operating result in Section C1. If the system could be built for $43 Billion (left most Columns) and Column A financing with $18 Billion in grants could have been obtained by 2019, and Case 1 Operating Results (100% of the 2009 Business Plan) could be obtained between 2020 and 2035, the cumulative cash flow for the State and the taxpayers would be a positive $13 Billion in 2035, as opposed to $2 Billion in Section C1. At the same time the ROI for the equity investor will have only dropped from 10% in Section C1 to 9% with the "at risk" position of this Section C2. However, if it costs $66 Billion to build, and most of the financing is private (Column C on the far right), and only Case 4 operating results are obtained in the 2020 to 2035 time period, the State's cumulative cash flow will "only" be a negative $40 Billion in 2035, as opposed to a negative $94 Billion in Section C1. Note, however, that the ROI for the private equity investor will be less than zero, and there will most likely not enough cash in the CHSRA accounts in 2045, to allow the equity investor to even recover the initial $16.21 Billion investment. These results are discussed, in detail, in Exhibits 2.4 and 3.4.

Exhibits 2.4 and 3.4

Exhibits 2.4 and 3.4 show the financial results for the State and the "At Risk" investor for the $43 Billion Construction Cost and the $66 Billion Construction Cost investments. Exhibit 2.3 shows that this investor will invest $3.33 Billion, in Column A, if there is $18 Billion in Federal Grants, and this investment will grow to $9.19 Billion, in Column C, if there is only $2.96 Billion in

Federal Grants made available. Note that, in the "Cash Required to Service Funding" table, the cash required to service the Private Equity is zero, as there are no annual payments required. Instead the "At Risk" investor will be getting all the cash that is available in 2045, in effect a deferred, or "end of program" payout, with no annual or periodic dividend payments. This type of investment is in stark contrast to the "Fixed Return" investment discussed earlier, and as it turns out, it puts the investor in extreme risk.

Exhibit 2.4

Looking at the top of Column A on Exhibit 2.4, the amount of cash required to service the debt has dropped to $9 Billion for the CHSRA, and $25 Billion for the taxpayers, for the 2020 to 2035 time period. This is a big reduction from the $20 Billion and $37 Billion that was required by the CHSRA and the taxpayers, as shown on Exhibit 2.2, when the private equity investor had a "fixed return" participation. This reduction of $11 Billion to $12 Billion over the 2020 to 2035 time period is due to the lack of a requirement to pay out $0.7 Billion per year for the 16 years to the "Fixed Return" Private Equity Investor, as shown on Exhibit 2.1.

If Case 1 was to occur, in terms of Operating Results, in Column A, by the end of 2035 the CHSRA would have accumulated $29 Billion in its cash accounts, as the operating margin is larger than the amount of annual debt service, so both the CHSRA and the state are cash positive for the 16 year period, after a few years in the 2021 to 2022 time period when the passenger traffic has not yet built up enough to provide sufficient operating cash flows. By 2045, when the "At Risk" private investor will receive the cash payout, the $29 Billion in the CHSRA cash accounts in 2035, will have grown to a larger number and this amount of cash will provide the investor with a 9% annual rate of return on the initial investment (ROI) of $3.33 Billion. Very close to the 10% for the investor who would have taken a "Fixed Return" investment. Of course, if the operating results were better than Case 1, in terms of more riders, higher ticket prices, and lower operating cost, the cash accumulation would be higher, and the ROI would be higher than the 9% shown here. Note that if Column C financing had occurred, with more debt and equity, due to fewer Federal Grants, the larger debt repayment schedules have reduced the amount of cash available by 2035 to only $14 Billion, a reduction of about half. This would lead to only a 4% ROI on the equity investment of $9.19 Billion.

However, if the operating results were in the range of Case 4, the return for the investor has fallen dramatically. In Column A, for Case 4, the ROI has dropped to 4%, as there is less operating margin to cover the debt servicing requirements. Note that the state and the taxpayers are now facing a negative cash position of $11 Billion by 2035, which is about the amount of cash that would be needed to service the 2008 Bonds of $9 Billion, in these 16 years. Therefore, some would argue that this is what the taxpayers authorized in the 2008 election.

If, on the other hand, the Column C financing was in place, with only $2.96 in Federal grants and $21 Billion in private debt, and the operating results were in the Case 4 range, the ROI for the "at risk" private equity investor has become negative, in other words, less than 0% return. This means that in 2045 there in not enough cash in the CHSRA cash account to even repay all of the $9.19 Billion "at risk" cash that was invested in the 2012 to 2020 time period. This is seen by the $10 Billion in negative cash position in the CHSRA cash accounts in 2035, 10 years before the payout is due in 2045. By 2045, the negative cash position will be even larger. What happened, and how did the cash position become to negative, so quickly? Two factors went "against" the HSR program. First, the amount of debt went up in Column C, as compared to Column A, as federal grants dried up, raising the amount of cash needed to service the debt to $25 Billion for the CHSRA, and to $35 Billion for the Taxpayers, during these 16 years, as shown at the top of

Column C. (The difference of $10 Billion between the State and the CHSRA cash requirements is the State's obligation to service the 2008 Prop 1A Bonds.) Second, the operating margin dropped from an average of $2.4 Billion per year in Case 1 to $0.9 Billion per year in Case 4. This margin of $0.9 Billion per year is about $14 Billion in operating margin for the CHSRA and for the State, over the 16 years. But the CHSRA needed $25 Billion to service their financial obligations, so they have a $10 Billion negative position by 2035; and the State needed $35 Billion, and after receiving the $14 Billion in operating margins, the State's cash position is a negative $20 Billion in 2035.

And this preceding discussion was based on the construction costs being in the range of $43 Billion.

Exhibit 3.4

For the Private Equity Investor to take a "At Risk" position, if the Construction Costs are $66 Billion, will be an "Act of Faith"

If the Construction Costs are in the range of $66 Billion, the financial consequences are shown for the "At Risk" private equity investor, on Exhibit 3.4. If Column A financing was to occur in the 2012 to 2019 time period, with $18 Billion in federal grants, and Case 1 operating results were to occur in the 2020 to 2035 time period, the "at risk" private equity investor would make a 3.5% ROI on the initial equity investment of $10.35 Billion, as shown on Exhibit 3.3. Looking down Column A, if Case 2 operating results were to occur, the private investor would not quite get all of the initial investment returned in 2045, and if Case 3 or Case 4 operating results were to occur, the private investor will not get all on the initial investment back in 2045. In fact, in Case 4, with the CHSRA cash account at a negative $13 Billion in 2035, it is highly probable that by 2045, when the "payout" is to occur, the negative $13 Billion may even be greater, and will therefore be in excess of the investor's initial investment of $10.35 Billion, meaning that the investor might not get any of the initial investment returned in 2045. The fundamental problem is that as the annual average operating margin drops from $2.4 Billion in Case 1 to $0.9 Billion in Case 4, there is just not enough cash available to service all the debt and accumulate enough cash in the CHSRA accounts to return the initial investment, and a reasonable return on the investment to the private investor.

If the financing mix is in the range of Column C, the situation is even worse. With the amount of private debt very high, due to the increased cost of build the Phase One Corridor (for $66 Billion, as opposed to $43 Billion) and also due to the need for additional debt to replace the Federal grants that have dropped from $18 Billion to $3 Billion, the cash required to service the debt, between 2020 and 2035 has grown to $44 Billion for the CHSRA and to $54 Billion for the State and its taxpayers. Even if Case 1 operating results were to occur, the private investor will have a negative ROI of 3%, meaning that not all of the initial investment can be returned in 2045. Lastly, if Case 4 operating results were to occur, it is highly probable that none of the $16.21 Billion initial equity investment, as shown in Exhibit 3.3, will be returned in 2045. This is because the CHSRA cash position in 2035 is already at a negative $29 Billion and getting worse ever year. So in 2045, there will probably be no cash available to return on the $16 Billion initial equity investment.

Two Observations and One Comparison.

- First, the bad news is that the private equity investor has gone from a 10% return that would have been available if a "Fixed Return" investment had been made, to a range of returns that are between 9% (for the $43 Billion construction cost) and 3.5%(for the $66 Billion

construction cost), best case; and there is a reasonable amount of risk that the ROI could be negative, with some situations where none of the initial equity position would ever be repaid.

- Second, the amount of cumulative negative cash flow has therefore been reduced dramatically for the CHSRA and the State and its taxpayers, as the private equity investment shifted from "fixed" to "at risk".

- At the extreme case, if the private investor has a 'fixed" return of 10% (Exhibit 3.2), with Column C financing and Case 4 operating results, for a construction cost of $66 Billion, the negative cash flow for the taxpayers is $94 Billion over the 2020 to 2035 time period However, it is "only" a negative $40 Billion if the private investor is "at risk" (Exhibit 3.4), and the entire private equity investment of $16.21 Billion is most probably lost (Exhibit 3.3).

Section C3 – At Risk Equity with a 10 Year Guarantee

A Revenue Guarantee For the "At Risk" Private Equity Investor Is An interesting Compromise That Does Not Solve the Fundamental Problems of Low Operating Margins and High Financial Costs

The 2009 Business Plan, in several different places discusses the possibility of agreeing that the CHSRA and the State would provide, to the private operator, a revenue guarantee, such that the operator would not suffer financially if initial revenues did not reach the numbers shown in the 2009 Business Plan. In effect this would be an annual direct cash payment, from the State to the private operator, to make up the difference between the Plan's revenue number and the actual revenue number. Setting aside the legal questions regarding the ability of the State to provide such a cash payment, under AB 3034, the following analysis shows the financial effects on the State and the investors, of such an arrangement.

For the sake of simplicity, the analysis presumes that the private operator is also the private equity investor who has an "at risk" investment, as discussed above. If the private equity investor had a "fixed return" investment, there would be no logical reason for the investor to want or need such a guarantee. If the private operator in not also the private equity investor, it will be very difficult to get the private equity investor, who is "at risk" to agree that the operator is getting annual "guarantee" payments, when operating results are worse than Case 1 (100% of Plan) and the investor sees his investment moving into a more serious risk position. Using the assumption that the private equity investor is also the private operator, the ROI calculations discussed for the "at risk" investor, can be modified to include any "revenue guarantee" payments in addition to the "all cash" payout in 2045.

Three alternative payment plans were analyzed. A short period of the first 5 years of operations, such as 2020 to 2024; a medium term period, the first 10 years of operations, such as 2020 to 2029; and lastly, the entire operating period for which there were 2009 Operating Plan numbers, 2020 to 2035, a total of 16 years. For each of the operating results Cases (Case 2, Case 3, and Case 4), the revenue shortfall from the Case 1 revenues numbers was calculated and an annual payment was made to the private investor/private operator.

This had two effects, first it made the cash flow position of the State worse as additional cash was flowing out in those years to the private operator/private investor, in addition to all debt servicing payments discussed above, in the "at risk" Exhibits. Second, the cash flowing to the private operator/private investor was in addition to what even cash that would have been paid out in 2045, as in the "at risk" Exhibits discussed above. By definition, there would be no shortfall payments if Case 1 operating results were obtained, as the operator would already be at 100% of revenue.

In Section C3, the results of a 10 year revenue guarantee program are summarized. If the Construction Costs are in the $43 Billion column, then the results for the investor/operator are better than the "at risk" position, with returns in the 13% to 4% range, but probably less than the 10% that is assured in the "fixed" position. However, to improve these results for the investor/operator, the cumulative cash flow position of the State is now about half way between the terrible results of the "fixed" position (See Section C1) and the not-as-bad "at risk" position (See Section C2). If the Construction Costs are in the $66 Billion column, the ROI is very bad for the private equity investor, across the board, and the cumulative cash position for the State could still reach the negative $40 Billion to negative $50 Billion range.

The detailed results of this analysis are presented on Exhibit 2.5 for the $43 Billion in Construction Cost Plan, and on Exhibit 3.5 for the $66 Billion Construction Cost Projection.

Exhibit 2.5

Looking at Exhibit 2.5, for each of the three cases, Case 2, Case 3, and Case 4, six rows of information are presented.

Looking at Column A, with $18 Billion in Federal Grants, and Case 2, which is 75% of revenues and costs, the first row, labeled "FR", for "Fixed Return", shows the ROI for the private investor, of 10%, and the cumulative cash position for the taxpayers at the end of 2035, which is a negative $9 Billion. These results were taken from Exhibit 2.2, which were the results for the $43 Billion in Construction Costs and the private investor having a "fixed return".

The fifth row, labeled "AR", for "At Risk", shows the ROI for the private investor, of 8%, and the cumulative cash position for the taxpayers at the end of 2035, which is a positive $2 Billion. These results were taken from Exhibit 2.4, which were the results for the $43 Billion in Construction Costs and the private investor having an "at risk" investment.

These two rows define the best results/worst results situations. The first row is the best results for the private equity investor and the worst results for the taxpayers. The fifth row is the worst results for the private equity investor and the best results for the taxpayers.

The three rows in between present the results for 16 years of guarantees, then just 10 years of guarantee, and then just 5 years of guarantees. Naturally, the longer the guarantee is in place, the more "guarantee payments" will be made by the State, making the 2035 cash position worse, and increasing the ROI for the private equity investor/ private operator. Note that in this Column A, Case 2, the ROI is even better for the case where there is a longer "guarantee" than if there is a "fixed return" investment in position. This is because the "spread" between the revenue number in the 2009 Plan and the actual revenue achieved, plus the cash available in 2045, is greater than would have been made in a "fixed return" payment plan.

Looking at the extreme case of Column C with mostly private financing, and Case 4 operating results, a 5 year "guarantee" would be of no good for the investor/operator, as they would still never recover all of their initial investment, whereas a 10 to 16 year guarantee would give them a return in the 4% to 8% range. Also note that the end of period cash position for the taxpayers will be about the same with a "fixed return" agreement, and a 16 year "guarantee" agreement, whereas only a 10 year agreement would reduce almost $15 Billion off the negative cash position of the State in 2035, from a negative $51 Billion down to a negative $36 Billion.

The sixth row shows the results if all the private equity investments are treated as a private debt investment. This will be discussed below.

Exhibit 3.5

Moving to Exhibit 3.5, for the Construction Costs in the $66 Billion range, with the same operating results, including operating margins, and the same options in lengths of the "guarantee" period, the results are much worse, for both the private equity investor and the taxpayers. There are two reasons. First, the amount of private debt to be serviced has grown so much that the cumulative 2035 cash position of the taxpayers is driven down by this increased debt load. Second, the guarantee that is being paid is the same as in the case of the $43 Billion in Construction Cost program (because the guarantee is driven by operating results, not construction costs and debt/equity servicing), but the amount of equity that has been invested as grown from the $3.3 Billion to $9.2 Billion range (see Exhibit 2.3) to the $10.4 Billion to $16.2 Billion range (see Exhibit 3.3), so the same "guarantee" payments have a smaller effect on the ROI calculation.

To have any measurable ROI for the private equity investor, the Column C financing mix needs to be avoided, and even then the "guarantee" would been to be for the entire 16 year period. Without these two conditions the ROI for the private equity investor will not be an acceptable risk to the investor, and at the same time the cumulative negative cash flow position for the State is still in the tens of Billions of dollars.

Clearly, if the construction costs are in the $66 Billion range, there is no way to provide a reasonable return to the equity investor, without a "fixed return" program. The problem is that with a "fixed return" investment, the cumulative negative cash flows for Column A financing, including $18 Billion in grants, for the taxpayers, are between $41 Billion and $65 Billion, if the operating plan results are between Case 1 and Case 4. If Column C financing occurs, the range for the cumulative negative cash flow is between $70 Billion and $94 Billion. See Exhibit 3.2.

Section C4 and Section C5

A Financing Mix With No Equity May Be Expensive, But May Be The Only Solution

If a private investor/operator can be found who would accept an all debt investment, with no equity investment, this would dramatically reduce the negative cash flows for the CHSRA and the State's taxpayers. Lacking this option, an all public debt investment option may be the only other option.

Returning to Exhibits 2.1 and 3.1, note the Mix of Finance Sources table. The last two rows are the Private/Public Debt and Private Equity sources. If the Private Equity line was converted to just more Private Debt, with the same terms and conditions and interest rate costs, as the line above, the impact on the taxpayers would be significant. However, this may be difficult as the true rate of return (ROI) on this Private Debt is not the 6% shown as the Annual Interest Rate. Since these monies are needed to fund the construction, a time gap was built into the time line between when the investment was made, and when debt payments were initiated. In the model a lag of 7 years was used between the time of investment and the time when repayments and interest charge payments were initiated. Additionally, since the model was only developed to go out to 2045, the debt repayment schedule was only for 25 years, not 30 years. These issues bring the true ROI down from the nominal 6% interest rate to an ROI of just 3.3%, for a 30 year repayment schedule and an ROI of 2.6% for a 50 year repayment schedule. If the model went out another 5 years to 2050 the ROI would have been raised by about 0.5% to about 3.8% for the complete 30 year repayment schedule.

If the State decides to use an arm of the State to finance the construction of the HSR system via the issuance of State Construction Bonds, to be used in conjunction with the Prop 1A Bonds, these financial

results would apply equally to the State issuing these Construction Bonds or to the State borrowing all the funds from a private entity in the form of construction bonds, that would be at 6% and a 30 year repayment schedule. Either type of Bond is assumed to be secured.

Section C4 summarizes the results for the 30 year repayment option with its 3.3% ROI, and Section C5 summarized the results for the 50 year repayment option with its 2.6% ROI. These results fall between the Fixed Return option shown in Section C1, which is the most expensive alternative for the State (and the best for the private equity investor), and the At Risk option shown in Section C2, which is the least expensive for the State (and the worst for the private equity investor). These C4 results are also similar to the C3 results which provide a 10 year guarantee to an "At Risk": Equity investor.

The Risk of Additional Construction Period Interest Charges

Interest charges could be accumulated over this time gap while the system is being built between 2012 and 2019. It is normal during a construction period for an "interest only" carrying charge to be applied to the outstanding balance of the amount of the loan that has been drawn down by the end of each year. Such a charge is hard to estimate, but as a quick way to measure the impact, if one assumed that the amount of all the debt was drawn down evenly over the 7 years of the construction period, then the average amount would be about half of the total amount of debt, for each of the 7 years, and at the same interest rate of 6%. As an example, if the total loan amount was $10 Billion, to be drawn down evenly over the 7 years, at 6%, the average amount outstanding over the 7 year period is $5 Billion, and the interest charge would be $0.3Billion per year. For the 7 year period, the construction cost interest charges would amount to $2.1 Billion, or about 21% of the total loan amount. <u>This construction cost interest charge is NOT included in the model.</u> It is possible that the private investor might wave such charges, or agree to a much lower interest rate, etc. However, it should be recognized that as the amount of the private debt is going up, and if the private equity option is not made available, the desire on the part of the private debt investor to improve the ROI will drive the need to include such construction period interest charges. The net effect would be to raise the cost to the taxpayers, but it would also raise the ROI to the private debt investor, possibly back to the listed interest rate, such as 6%. If one was to try to estimate this exposure, a good rule of thumb would be to add to the cash position of the State in 2035 an amount equal to 20% of the total amount of debt borrowed in the 2012 to 2020 time period. As an example, referring to Exhibit 3.1, for the $66 Billion Construction Cost Projection, Column C (for the mostly private investor mix of financing), the total of the private debt and private equity is $54 Billion. Therefore there is an exposure of up to 20% of this $54 Billion, which is an additional $11 Billion in cumulative negative cash flow. Or it may be half of this amount, or there maybe no construction period financing charges. To be negotiated!

<u>This All Debt Financing Mix Option Is Also Expensive</u>

On Exhibits 2.5 and 3.5, the last line for each of the Cases shows the All Debt option, for a 30 year and a 50 year repayment schedule. The ROI for the investor is always 3.3%, or 2.6%, per the discussion above regarding the construction period interest charges, and the cumulative negative cash flow for the taxpayers is always more that the "at risk" private investment option, and it is less than the "fixed return" option. It is similar to the cash flow requirements of the 5 or 10 year Revenue Guarantee Option, but it would bring more stability to the state, as the debt repayment annual cash flows would be highly predictable, as they are driven by debt servicing obligations, not operating results in the 2020 to 2035 time period.

However, the magnitudes of the cumulative negative cash flows are still extremely high, even ignoring the risk of construction period interest carrying charges. To put these numbers in perspective, if it costs $66 Billion to build the Phase One system in the 2020 to 2019 time period, and Column C financing mix of mostly debt was to occur (in the 2011 to 2019 time period), and Case 4 operating results occur over the 2020 to 2035 time period, the average annual negative cash flow that the taxpayers will have to cover by

authorizing additional debt, or by paying additional taxes, or pulling this amount of cash from the General Fund, will be about $3.6 Billion per year (See Section C4, Case 4, $58 Billion divided by 16 years). If the system could be built for $43 Billion and is financed by all debt, Section C4 shows that the cumulative negative cash flow drops in Case 4 to $31 Billion, or about $1.9 Billion per year. The reason for the high cost to the taxpayers is the same as for all the options – there is not enough operating margin to service a financing mix of mostly debt (with less Federal grants), for either a $43 Billion or a $66 Billion Construction Cost.

Exhibit 2.5

The last line of each of the four cases on Exhibit 2.5 shows the All Debt (AD) alternative for both 30 and 50 year repayment schedules, for the $43 Billion Construction Cost Plan. The ROI is 3.3% or 2.6%, as discussed above. The first number in the Taxpayers column is the 2035 cumulative cash flow position for the 30 year repayment period. The second number is the 2035 cumulative cash flow position for the 50 year repayment period. Note that no construction period interest-only carrying cost estimates are included.

Exhibit 3.5

The last line of each of the four cases on Exhibit 3.5 shows the All Debt (AD) alternative for both 30 and 50 year repayment schedules, for the $66 Billion Construction Cost Projection. The ROI is 3.3% or 2.6%, as discussed above. The first number in the Taxpayers column is the 2035 cumulative cash flow position for the 30 year repayment period. The second number is the 2035 cumulative cash flow position for the 50 year repayment period. Note that no construction period interest-only carrying cost estimates are included.

PART IV

EXHIBITS AND APPENDIXES

Exhibit 1

February 10, 2011

California High Speed Rail Construction Estimates

Two Business Plans and Two Independent Estimates (All $'s are in Millions)

San Francisco to Anaheim Phase 1	December 2008 Business Plan Phase 1, San Francisco to Anaheim				December 2009 Business Plan Phase 1, San Francisco to Anaheim							Bill Warren Feb. 2011 Estimate, Increase of 61%			CARRD Feb 2011 Phase 1 Detailed Estimate				CARRD Feb 2011 San Jose to Sylmar Estimate		
	Miles	2008 Bus Plan 2008 $s	Including program costs per mile	Cost per mile	Updated miles per 2009 detail costs	Change in miles	2009 Bus Plan 2008 $s	2008 $'s per mile	Change 2008 to 2009 Plan	2009 Bus Plan Y of Ex $s	2009 Cost per mile Y of Es $	Updated miles per 2009 detail costs	2009 Plan $/mile with Increase	Cost Y of Ex $s	Updated miles per 2009 detail costs	Estimated Cost per mile	2009 Plan with Increase	Cost	Updated miles per 2009 detail costs	Estimated Cost per mile	Cost
San Francisco to San Jose	50	$4,210	$4,612	$92	50	0.0%	$5,216	$104	13.1%	$6,142	$123	50	$198	$9,895	50	$175	42%	$8,750	X		X
San Jose to Merced	120	$5,175	$5,669	$47	124	3.4%	$5,637	$45	-3.9%	$6,943	$56	124	$90	$11,185	124	$115	106%	$14,272	124	$115	$14,272
Merced to Fresno	60	$2,093	$2,293	$38	65	7.7%	$2,495	$39	1.1%	$3,008	$47	65	$75	$4,846	65	$70	50%	$4,522	38	$55	$2,061
Fresno to Bakersfield	115	$4,249	$4,655	$40	131	13.9%	$4,204	$32	-20.7%	$5,094	$39	131	$63	$8,206	131	$85	119%	$11,135	131	$84	$10,985
Bakersfield - Palmdale	85	$3,892	$4,264	$50	76	-11.2%	$4,067	$54	7.4%	$4,998	$66	76	$107	$8,052	76	$120	81%	$9,060	76	$120	$9,060
Palmdale to Los Angeles	60	$5,438	$5,957	$99	60	0.0%	$6,241	$104	4.8%	$7,645	$127	60	$205	$12,316	60	$160	26%	$9,600	30	$160	$4,800
Los Angeles to Anaheim	30	$1,994	$2,184	$73	30	0.0%	$4,578	$153	109.5%	$5,454	$182	30	$293	$8,786	30	$160	-12%	$4,800	X		X
Program costs		$2,584																			
Trains Minimum		$2,835	$2,835				$2,242		-20.9%	$3,310				$3,310				$3,310			$1,700
Trains Additional		$1,155	$1,155						-43.8%												
Total - Phase 1	520	$33,625	$33,625	$65	535	2.9%	$34,679	$65	3.14%	$42,594	$80	535	$124	$66,595	535	$122		$65,449	398	$108	$42,878

Additional Phases 2 and 3 Possible Spending Plan by Segment	Bill Warren's Feb. 2010 Estimated of Extension To 2009 Plan, Additional Phases				Bill Warren Feb. 2011, Increased		
	Estimated Miles		Y of Ex $s	Estimated Cost per mile	Estimated Miles	Estimated Cost per mile	Y of Ex $s
Phase 2 - Southern							
Los Angeles to Riverside	56		$7,280	$130	56	$209	$11,728
Riverside to San Diego	101		$6,060	$60	101	$97	$9,762
Anaheim to Irvine	10		$1,800	$180	10	$290	$2,900
Total - Phase 2	167		$15,140	$91	167	$146	$24,390
Phase 3 - Northern							
Oakland to San Jose	42		$5,040	$120	42	$193	$8,119
Oakland to Stockton	75		$4,500	$60	75	$97	$7,249
Merced to Sacramento	117		$5,850	$50	117	$81	$9,424
Total - Phase 3	234		$15,390	$66	234	$106	$24,793
Additional Phases Total	401		$30,530	$76	401	$123	$49,183
System Grand Total, All Phases	936		$73,124	$78	936	$124	$115,778

Notes on Work done by Bill Warren - all $'s are in Millions

Exhibit 1

Allocation of 2008 Program Costs

Total Phase 1, with Program Costs	$33,625
Backout Train Costs	($3,990)
Backout Program Costs	($2,584)
Net Segment Costs	$27,051
Program Costs as a % of Net Segment Costs	9.55%

Calculation of Warren Cost Increase, February, 2011

Segments with December, 2010 CHSRA Costs Estimates

				Less Cost Items not in 2010 "Build" Cost Estimates								
Cost Information from 2009 Business Plan	Miles	Cost per Mile	2009 Plan Y of Ex $s	Electrification	System Elements	Testing & Commissioning	Subtotal	Allocated Program Management	Total Reduction	2009 Equivalent Cost	Adjusted Cost per Mile	Percent Reduction
Merced to Fresno	65	$47	$3,008	$258	$267	$14	$539	$46	$585	$2,423	$38	-19%
Fresno to Bakersfield	131	$39	$5,094	$523	$538	$28	$1,089	$91	$1,180	$3,914	$30	-23%
Totals	196	$41	$8,102	$781	$805	$42	$1,628	$137	$1,765	$6,337	$32	-22%

Build Approval at CHSRA Board Meeting, December 20, 2010

Available Funds from Federal Grants and State Bonds $5,565

A. Original Borden to Corcoran Segment, approved at Dec. 2, 2010 Board Meeting

	Number of Miles to Be Achieved				
	Smallest	Largest	Average		
Minimun Miles	54	54			
Maximum Miles	65		65		

B. Additional Miles approved on December 20, 2010 Board Meeting

Design Option 1A	15	69	80	75	<----------
Design Option 1B	45	99	110	105	<----------

C. Verbal commitment by CEO at December 20, 2011 Board meeting 123 <----------

With a "Build Until The Money Runs Out" Strategy
There are Three Possible Outcomes

		Change from 2009 Plan	Odds of Occuring
Most Expensive Alternative	$75	131%	10%
"In the middle" Alternative	$53	64%	50%
Least Expensive Alternative	$45	40%	40%
Selected Weighted Average as Increase to use in Costing Estimate	$52	61%	

Backup Information For CARRD Estimates

Exhibit 1

Notes on CARRD Feb 2011 Estimates:
SF-SJ costs are based on Alternatives Analysis and ARRA requests
SJ-Merced costs are expensive because of Pacheco Pass tunnel (over 10 miles), many aerials, environmentally sensitive route
Merced-Fresno costs are from ARRA applications
Fresno - Bakersfield costs are from ARRA applications
Bakersfield - Palmdale costs are estimated to be higher than Central Valley given mountain passes
LA - Anaheim costs assume shared tracks and cost REDUCTIONS from 2009 plans

Notes on San Jose to Sylmar Estimates:
SJ-Merced costs include SJ station
Merced to Fresno costs include nothing north of the Chowchilla wye. Reduced by 27 miles by Warren
Fresno to Bakersfield costs include maintenance facility; exclude Fresno passing tracks
Palmdale to LA - estimated 50% of cost by stopping at San Fernando Valley. Reduced by 30 miles by Warren, to hold $ per mile to the same estimate.

Sources:
CHSRA 2008 Business Plan http://www.cahighspeedrail.ca.gov/Business_Plan_reports.aspx
CHSRA 2009 Business Plan http://www.cahighspeedrail.ca.gov/Business_Plan_reports.aspx
Detailed costing data obtained from HSRA (available at: http://www.calhsr.com/wp-content/uploads/2010/02/Phase_I_CapitalCost-2009Update.pdf)
FRA funding applications - http://www.cahighspeedrail.ca.gov/fed_stimulus.aspx

CARRD can be reached at - www.calhsr.com
For questions, contact Elizabeth Alexis at EAlexis@gmail.com

Exhibit 2.1

Funding of Phase One Construction

Based on 2009 Business Plan Assumptions

Descriptions of Funding

Responsibility of CHSRA	Responsibility of Taxpayers	Title	Description of Source of Funding
No	Yes	Cal Bonds	Prop 1A Bonds
No	Yes	Fed Grants	Federal Grants - No repayment
Yes	Yes	Fed Bonds	Federal Guaranteed Loans/Bonds
No	Yes	Local Loans	Local Investment, returned over period, at given % return
Yes	Yes	Private/Public Debt	Private or Public Debt, returned over period, at given % return
Yes	Yes	Private Equity	Private Equity, guaranteed fixed return, Sinking Fund at given % return

(Thirty year repayment periods used)

Mixes Of Finance Sources

Responsibility of CHSRA	Responsibility of Taxpayers	Title	Annual Rate %	**A** -Mostly Grants As Per '09 Plan Billion of $s	A Mix	**B** - More Debt Than Grants Billion of $s	B Mix	**C** - Mostly Private Debt and Equity Billion of $s	C Mix
No	Yes	Cal Bonds	5.9%	$9.00	21%	$9.00	21%	$9.00	21%
No	Yes	Fed Grants	0.0%	$18.00	42%	$5.00	12%	$2.96	7%
Yes	Yes	Fed Bonds	5.0%	$0.00	0%	$10.00	23%	$0.00	0%
No	Yes	Local Loans	7.5%	$4.50	11%	$4.50	11%	$0.00	0%
Yes	Yes	Private/Public Debt	6.0%	$7.77	18%	$9.87	23%	$21.45	50%
Yes	Yes	Private Equity	21.0%	$3.33	8%	$4.23	10%	$9.19	22%
			Total	$42.60	100%	$42.60	100%	$42.60	100%

Cash Required to Service Funding

(From the Point of View of the:)

In Billions of $s

CHSRA	Taxpayers	Title	Annual Rate %	A CHSRA	A Taxpayers	B CHSRA	B Taxpayers	C CHSRA	C Taxpayers
No	Yes	Cal Bonds	5.9%		$0.65		$0.65		$0.65
No	Yes	Fed Grants	0.0%		$0.00		$0.00		$0.00
Yes	Yes	Fed Bonds	5.0%	$0.00	$0.00	$0.65	$0.65	$0.00	$0.00
No	Yes	Local Loans	7.5%		$0.38		$0.38		$0.00
Yes	Yes	Private/Public Debt	6.0%	$0.56	$0.56	$0.72	$0.72	$1.56	$1.56
Yes	Yes	Private Equity	21.0%	$0.70	$0.70	$0.89	$0.89	$1.94	$1.94
		Annual Total		$1.27	$2.29	$2.26	$3.29	$3.49	$4.14
		Over the 2020 to 2035 period		$20.26	$36.70	$36.14	$52.59	$55.91	$66.26
		Total Over Thirty Years		$37.98	$68.82	$67.76	$98.60	$104.84	$124.24

Note: The CHSRA Cash Required is a subset of the cash required by the Taxpayers.

Note: These Cash Requirements will be reduced by the Operating Margins (Revenues less Operating Expenses) See Exhibit 2.2

CHSRA 2009 Business Plan - Operational Results

(in Year of Occurance $s)

	Riders (Millions)	Operations (Billions) $/Ticket	Revenues	Costs	A Margins	A Margins	B Margins	B Margins	C Margins	C Margins
Annual Average	35.13	$124.78	$4.38	$1.98	$2.40	$2.40	$2.40	$2.40	$2.40	$2.40
2020 to 2035 Period	562.10	$124.78	$70.14	$31.66	$38.47	$38.47	$38.47	$38.47	$38.47	$38.47
		(In 2009 $s)								
Annual Average		$69.97	$2.46	$1.22	$1.24					
2020 to 2035 Period			$39.33	$19.53	$19.80					

						Exhibit 2.2
Based on 2009 Business Plan Construction Costs						
Economic Impact on the CHSRA and the State of California Taxpayers of Different						
Funding Cases and Different Operating Results						
For Fixed Equity Returns (Guaranteed)						
Shows The Peak Cumulative Negative Cash Flow						
For The Period 2020 to 2035						
Cash Position at the End of 2035						
Private Equity Rate of Return Through 2045						
	Mixes Of Finance Sources					
	Mostly Grants		**More Debt**		**Mostly Private**	
	As Per '09 Plan		**Than Grants**		**Debt and Equity**	
Revenues & Costs As A	**- - - - - - - - - - - - Billions of $s -**					
% Of 2009 Business Plan	**A**		**B**		**C**	
	CSHRA	Taxpayers	CSHRA	Taxpayers	CHSRA	Taxpayers
Cash Required To Service						
Funding – See Exhibit 2.1	($20)	($37)	($36)	($53)	($56)	($66)
Case 1 – 100% of 2009	($1)	($4)	($4)	($14)	($17)	($28)
Business Plan	in 2021	in 2023	in 2023			
	$18	$2	$2	($14)	($17)	($28)
	10%		10%		10%	
Case 2 - 75% of Ridership	($2)	($9)	($8)	($25)	($28)	($38)
and Op. Expenses	in 2022					
	$8	($9)	($8)	($25)	($28)	($38)
	10%		10%		10%	
Case 3 – Ticket Price is	($3)	($16)	($15)	($32)	($35)	($45)
Down by 25%	in 2022					
	$1	($16)	($15)	($32)	($35)	($45)
	10%		10%		10%	
Case 4 – 75% of	($5)	($22)	($21)	($38)	($41)	($51)
Ridership and Op.						
Expenses AND Ticket	($5)	($22)	($21)	($38)	($41)	($51)
Price Down by 25%	10%		10%		10%	

Note: The peak cumulative negative cash flow occurs at the end of the period (2035), except where noted. In these few other cases, the cash flow then becomes positive in the year noted, and the cumulative cash flow is positive by the end of the period (2035).

Note: The CHSRA numbers are part of the Taxpayers' numbers. For example in column B, Case 3, the CSHRA's ($15B) is part of the Taxpayers' ($32B) long term obligation. The balance, about ($17B) is the Taxpayers' requirement to service the 2008 State of California GO Bonds and the Local debt that will be needed to support the Local "Gifts" to the CHSRA.

Exhibit 2.3

Funding of Phase One Construction

Based on 2009 Business Plan Assumptions

Descriptions of Funding

Responsibility of CHSRA	Responsibility of Taxpayers	Title	Description of Source of Funding
No	Yes	Cal Bonds	Prop 1A Bonds
No	Yes	Fed Grants	Federal Grants - No repayment
Yes	Yes	Fed Bonds	Federal Guaranteed Loans/Bonds
No	Yes	Local Loans	Local Investment, returned over period, at given % return
Yes	Yes	Private/Public Debt	Private or Public Debt, returned over period, at given % return
Yes	Yes	Private Equity	Private Equity, At Risk, No Sinking Fund, All cash in CHSRA, in 2045

(Thirty year repayment periods used)

Mixes Of Finance Sources

Responsibility of CHSRA	Responsibility of Taxpayers	Title	Annual Rate %	**A** -Mostly Grants As Per '09 Plan Billion of $s	**A** Mix	**B** - More Debt Than Grants Billion of $s	**B** Mix	**C** - Mostly Private Debt and Equity Billion of $s	**C** Mix
No	Yes	Cal Bonds	5.9%	$9.00	21%	$9.00	21%	$9.00	21%
No	Yes	Fed Grants	0.0%	$18.00	42%	$5.00	12%	$2.96	7%
Yes	Yes	Fed Bonds	5.0%	$0.00	0%	$10.00	23%	$0.00	0%
No	Yes	Local Loans	7.5%	$4.50	11%	$4.50	11%	$0.00	0%
Yes	Yes	Private/Public Debt	6.0%	$7.77	18%	$9.87	23%	$21.45	50%
Yes	Yes	Private Equity	0.0%	$3.33	8%	$4.23	10%	$9.19	22%
			Total	$42.60	100%	$42.60	100%	$42.60	100%

Cash Required to Service Funding

(From the Point of View of the:)

In Billions of $s

CHSRA	Taxpayers	Title	Annual Rate %	**A** CHSRA	**A** Taxpayers	**B** CHSRA	**B** Taxpayers	**C** CHSRA	**C** Taxpayers
No	Yes	Cal Bonds	5.9%		$0.65		$0.65		$0.65
No	Yes	Fed Grants	0.0%		$0.00		$0.00		$0.00
Yes	Yes	Fed Bonds	5.0%	$0.00	$0.00	$0.65	$0.65	$0.00	$0.00
No	Yes	Local Loans	7.5%		$0.38		$0.38		$0.00
Yes	Yes	Private/Public Debt	6.0%	$0.56	$0.56	$0.72	$0.72	$1.56	$1.56
Yes	Yes	Private Equity	0.0%	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
		Annual Total		$0.56	$1.59	$1.37	$2.40	$1.56	$2.21
		Over the 2020 to 2035 period		$9.03	$25.48	$21.88	$38.33	$24.93	$35.28
		Total Over Thirty Years		$16.93	$47.77	$41.03	$71.86	$46.75	$66.16

Note: The CHSRA Cash Required is a subset of the cash required by the Taxpayers.

Note: These Cash Requirements will be reduced by the Operating Margins (Revenues less Operating Expenses) See Exhibit 2.4

CHSRA 2009 Business Plan - Operational Results

(in Year of Occurance $s)

	Riders	Operations (Billions)			**A**	**A**	**B**	**B**	**C**	**C**
Annual	(Millions)	$/Ticket	Revenues	Costs	Margins	Margins	Margins	Margins	Margins	Margins
Average	35.13	$124.78	$4.38	$1.98	$2.40	$2.40	$2.40	$2.40	$2.40	$2.40
2020 to 2035 Period	562.10	$124.78	$70.14	$31.66	$38.47	$38.47	$38.47	$38.47	$38.47	$38.47

(In 2009 $s)

Annual Average		$69.97	$2.46	$1.22	$1.24					
2020 to 2035 Period			$39.33	$19.53	$19.80					

Exhibit 2.4

Based on 2009 Business Plan Construction Costs

Economic Impact on the CHSRA and the State of California Taxpayers of Different Funding Cases and Different Operating Results For "At Risk" Equity Returns (NOT Guaranteed)

Shows The Peak Cumulative Negative Cash Flow For The Period 2020 to 2035 Cash Position at the End of 2035 Private Equity Rate of Return Through 2045

	Mixes Of Finance Sources					
	Mostly Grants As Per '09 Plan		**More Debt Than Grants**		**Mostly Private Debt and Equity**	
Revenues & Costs As A	**- - - - - - - - - - - - Billions of $s --**					
% Of 2009 Business Plan	**A**		**B**		**C**	
	CSHRA	Taxpayers	CSHRA	Taxpayers	CHSRA	Taxpayers
Cash Required To Service						
Funding – See Exhibit 2.3	($9)	($25)	($22)	($38)	($25)	($35)
Case 1 – 100% of 2009	$<.5)	($2)	($1)	($5)	($2)	($4)
Business Plan	in 2021	in 2022	in 2022	in 2025	in 2023	in 2023
	$29	$13	$17	$0	$14	$3
	9%		7%		4%	
Case 2 - 75% of Ridership	($<.5)	($3)	($2)	($10)	($3)	($7)
and Op. Expenses	in 2021	in 2022	in 2023		in 2023	
	$19	$2	$6	($10)	$3	($7)
	8%		5%		1.3%	
Case 3 – Ticket Price is	($1)	($5)	($3)	($17)	($4)	($14)
Down by 25%	in 2021		in 2025		in 2026	
	$12	($5)	($1)	($17)	($4)	($14)
	6%		0.4%		<0%	
Case 4 – 75% of	($1)	($11)	($7)	($24)	($10)	($20)
Ridership and Op.	in 2022					
Expenses AND Ticket	$6	($11)	($7)	($24)	($10)	($20)
Price Down by 25%	4%		<0%		<0%	

Note: The peak cumulative negative cash flow occurs at the end of the period (2035), except where noted. In these few other cases, the cash flow then becomes positive in the year noted, and the cumulative cash flow is positive by the end of the period (2035). If the amount of cash available to the private equity investor is a negative value, it is marked as "<0%".

Note: The CHSRA numbers are part of the Taxpayers' numbers. For example in column B, Case 3, the CSHRA's ($1B) is part of the Taxpayers' ($17B) long term obligation. The balance, about ($16B) is the Taxpayers' requirement to service the 2008 State of California GO Bonds and the Local debt that will be needed to support the Local "Gifts" to the CHSRA.

Exhibit 2.5

Based on Initial Projection of $43B of the 2009 Business Plan Construction Costs

Economic Impact on the Private Equity Investor and the State of California Taxpayers of Different Funding Cases and Different Operating Results For Different Forms of Equity Returns

Shows For The Taxpayers shows the Cumulative Cash Flow at end of 2035
Shows For The Private Equity Investor ROI on Initial Investment

FR – Fixed Return, see Exhibit 2.2, annual Sinking Fund
16 – 16 Years of Revenue Guarantees, 2020 to 2035, paid annually
10 – 10 Years of Revenue Guarantees, 2020 to 2029, paid annually
5 – 5 Years of Revenue Guarantees, 2020 to 2024, paid annually
AR – At Risk - All Cash, see Exhibit 2.4, as of end of 2045, in CHSRA, paid out
AD – All Debt - No Equity Investment, all treated as Private/Public Debt, 30 and 50 years

	Mixes Of Finance Sources					
	Mostly Grants		**More Debt**		**Mostly Private**	
	As Per '09 Plan		**Than Grants**		**Debt and Equity**	
Revenues & Costs As A	**- - - - - - - - - - - - Billions of $s --**					
% Of 2009 Business Plan	**A**		**B**		**C**	
	Equity	Taxpayers	Equity	Taxpayers	Equity	Taxpayers
Case 1 – 100% of 2009 FR	10%	$2	10%	($14)	10%	($28)
Business Plan AR	9%	$13	7%	$0	4%	$3
AD 30 50 Years	3.3 2.6%	$9 $13	3.3 2.6%	($5) $1	3.3 2.6%	($7) ($2)
Case 2 - 75% of Ridership FR	10%	($9)	10%	($25)	10%	($38)
and Op. Expenses 16	13%	($15)	11%	($28)	6%	($25)
10	11%	($7)	9%	($19)	4%	($16)
5	10%	($1)	6%	($14)	2%	($11)
AR	8%	$2	5%	($10)	1.3%	($7)
AD 30 50 Years	3.3 2.6%	($1) $2	3.3 2.6%	($15) ($10)	3.3 2.6%	($18) ($12)
Case 3 – Ticket Price is FR	10%	($16)	10%	($32)	10%	($45)
Down by 25% 16	12%	($22)	10%	($35)	4%	($32)
10	11%	($14)	7%	($27)	0%	($23)
5	8%	($8)	3%	($21)	<0%	($18)
AR	6%	($5)	0.4%	($17)	<0%	($14)
AD 30 50 Years	3.3 2.6%	($8) ($5)	3.3 2.6%	($22) ($17)	3.3 2.6%	($25) ($19)
Case 4 – 75% of FR	10%	($22)	10%	($38)	10%	($51)
Ridership and Op. 16	16%	($41)	13%	($54)	8%	($51)
Expenses AND Ticket 10	13%	($27)	11%	($39)	4%	($36)
Price Down by 25% 5	9%	($17)	4%	($30)	<0%	($27)
AR	4%	($11)	<0%	($24)	<0%	($20)
AD 30 50 Years	3.3 2.6%	($15) ($11)	3.3 2.6%	($28) ($23)	3.3 2.6 %	($31) ($25)

Note: For the "Revenue Guarantee" results, if the amount of cash available to the private equity investor over the 16, 10, or 5 years time periods , plus the cash available in 2045, does not return a positive ROI, but is, in fact, a large negative ROI, it is marked as "<0%". For the "At Risk" results, if the amount of cash available to the private equity investor is a large negative value in 2045, it is marked as "<0%". The implication is that the investor will not even recover the initial investment, let alone any return on the initial investment.

Exhibit 3.1

Funding of Phase One Construction

Funds required for Construction Cost increases from 42.6 to $66B, increase of $23.4B.

Added to Private Investment, same mix as in $42.6 Plan, 70% Debt, 30% Equity, Both Fixed Returns

Descriptions of Funding

Responsibility of CHSRA	Responsibility of Taxpayers	Title	Description of Source of Funding
No	Yes	Cal Bonds	Prop 1A Bonds
No	Yes	Fed Grants	Federal Grants - No repayment
Yes	Yes	Fed Bonds	Federal Guaranteed Loans/Bonds
No	Yes	Local Loans	Local Investment, returned over period, at given % return
Yes	Yes	Private/Public Debt	Private or Public Debt, returned over period, at given % return
Yes	Yes	Private Equity	Private Equity, guaranteed fixed return, Sinking Fund at given % return

(Thirty year repayment periods used)

Mixes Of Finance Sources

Responsibility of CHSRA	Responsibility of Taxpayers	Title	Annual Rate %	**A** -Mostly Grants As Per '09 Plan Billion of $s	**A** Mix	**B** - More Debt Than Grants Billion of $s	**B** Mix	**C** - Mostly Private Debt and Equity Billion of $s	**C** Mix
No	Yes	Cal Bonds	5.9%	$9.00	14%	$9.00	14%	$9.00	14%
No	Yes	Fed Grants	0.0%	$18.00	27%	$5.00	8%	$2.96	4%
Yes	Yes	Fed Bonds	5.0%	$0.00	0%	$10.00	15%	$0.00	0%
No	Yes	Local Loans	7.5%	$4.50	7%	$4.50	7%	$0.00	0%
Yes	Yes	Private/Public Debt	6.0%	$24.15	37%	$26.25	40%	$37.83	57%
Yes	Yes	Private Equity	21.0%	$10.35	16%	$11.25	17%	$16.21	25%
			Total	$66.00	100%	$66.00	100%	$66.00	100%

Cash Required to Service Funding

(From the Point of View of the:)

In Billions of $s

CHSRA	Taxpayers	Title	Annual Rate %	CHSRA	Taxpayers	CHSRA	Taxpayers	CHSRA	Taxpayers
No	Yes	Cal Bonds	5.9%		$0.65		$0.65		$0.65
No	Yes	Fed Grants	0.0%		$0.00		$0.00		$0.00
Yes	Yes	Fed Bonds	5.0%	$0.00	$0.00	$0.65	$0.65	$0.00	$0.00
No	Yes	Local Loans	7.5%		$0.38		$0.38		$0.00
Yes	Yes	Private/Public Debt	6.0%	$1.75	$1.75	$1.91	$1.91	$2.75	$2.75
Yes	Yes	Private Equity	21.0%	$2.18	$2.18	$2.37	$2.37	$3.42	$3.42
		Annual Total		$3.94	$4.96	$4.93	$5.96	$6.16	$6.81
		Over the 2020 to 2035 period		$62.96	$79.41	$78.85	$95.29	$98.62	$108.97
		Total Over Thirty Years		$118.05	$148.89	$147.83	$178.67	$184.91	$204.31

Note: The CHSRA Cash Required is a subset of the cash required by the Taxpayers.

Note: These Cash Requirements will be reduced by the Operating Margins (Revenues less Operating Expenses) See Exhibit 3.2

CHSRA 2009 Business Plan - Operational Results

(in Year of Occurance $s)

	Riders	Operations (Billions)			**A**		**B**		**C**	
Annual	(Millions)	$/Ticket	Revenues	Costs	Margins	Margins	Margins	Margins	Margins	Margins
Average	35.13	$124.78	$4.38	$1.98	$2.40	$2.40	$2.40	$2.40	$2.40	$2.40
2020 to 2035 Period	562.10	$124.78	$70.14	$31.66	$38.47	$38.47	$38.47	$38.47	$38.47	$38.47
		(In 2009 $s)								
Annual Average		$69.97	$2.46	$1.22	$1.24					
2020 to 2035 Period			$39.33	$19.53	$19.80					

						Exhibit 3.2
Based on Estimated Increases to $66B for the 2009 Business Plan Construction Costs						
Economic Impact on the CHSRA and the State of California Taxpayers of Different						
Funding Cases and Different Operating Results						
For Fixed Equity Returns (Guaranteed)						
Shows The Peak Cumulative Negative Cash Flow						
For The Period 2020 to 2035						
Cash Position at the End of 2035						
Private Equity Rate of Return Through 2045						
	Mixes Of Finance Sources					
	Mostly Grants		**More Debt**		**Mostly Private**	
	As Per '09 Plan		**Than Grants**		**Debt and Equity**	
Revenues & Costs As A	**- - - - - - - - - - - - Billions of $s --**					
% Of 2009 Business Plan	**A**		**B**		**C**	
	CSHRA	Taxpayers	CSHRA	Taxpayers	CHSRA	Taxpayers
Cash Required To Service						
Funding – See Exhibit 3.1	($63)	($79)	($79)	($95)	($99)	($109)
Case 1 – 100% of 2009	($24)	($41)	($40)	($57)	($60)	($70)
Business Plan						
	($24)	($41)	($40)	($57)	($60)	($70)
	10%		10%		10%	
Case 2 - 75% of Ridership	($35)	($51)	($51)	($67)	($71)	($81)
and Op. Expenses						
	($35)	($51)	($51)	($67)	($71)	($81)
	10%		10%		10%	
Case 3 – Ticket Price is	($42)	($58)	($58)	($74)	($78)	($88)
Down by 25%						
	($42)	($58)	($58)	($74)	($78)	($88)
	10%		10%		10%	
Case 4 – 75% of	($48)	($65)	($64)	($80)	($84)	($94)
Ridership and Op.						
Expenses AND Ticket	($48)	($65)	($64)	($80)	($84)	($94)
Price Down by 25%	10%		10%		10%	

Note: The peak cumulative negative cash flow occurs at the end of the period (2035), except where noted. In these few other cases, the cash flow then becomes positive in the year noted, and the cumulative cash flow is positive by the end of the period (2035).

Note: The CHSRA numbers are part of the Taxpayers' numbers. For example in column B, Case 3, the CSHRA's ($58B) is part of the Taxpayers' ($74B) long term obligation. The balance, about ($16B) is the Taxpayers' requirement to service the 2008 State of California GO Bonds and the Local debt that will be needed to support the Local "Gifts" to the CHSRA.

Exhibit 3.3

Funding of Phase One Construction

Funds required for Construction Cost increases from $42.6B to $66B, increase of $23.4B.

Added to Private Investment, same mix as in $42.6 Plan, 70% Debt, 30% Equity, Equity At Risk

Descriptions of Funding

Responsibility of CHSRA	Responsibility of Taxpayers	Title	Description of Source of Funding
No	Yes	Cal Bonds	Prop 1A Bonds
No	Yes	Fed Grants	Federal Grants - No repayment
Yes	Yes	Fed Bonds	Federal Guaranteed Loans/Bonds
No	Yes	Local Loans	Local Investment, returned over period, at given % return
Yes	Yes	Private/Public Debt	Private or Public Debt, returned over period, at given % return
Yes	Yes	Private Equity	Private Equity, At Risk, No Sinking Fund, At Risk, All Cash in 2045

(Thirty year repayment periods used)

Mixes Of Finance Sources

Responsibility of CHSRA	Responsibility of Taxpayers	Title	Annual Rate %	**A** -Mostly Grants As Per '09 Plan Billion of $s	**A** Mix	**B** - More Debt Than Grants Billion of $s	**B** Mix	**C** - Mostly Private Debt and Equity Billion of $s	**C** Mix
No	Yes	Cal Bonds	5.9%	$9.00	14%	$9.00	14%	$9.00	14%
No	Yes	Fed Grants	0.0%	$18.00	27%	$5.00	8%	$2.96	4%
Yes	Yes	Fed Bonds	5.0%	$0.00	0%	$10.00	15%	$0.00	0%
No	Yes	Local Loans	7.5%	$4.50	7%	$4.50	7%	$0.00	0%
Yes	Yes	Private/Public Debt	6.0%	$24.15	37%	$26.25	40%	$37.83	57%
Yes	Yes	Private Equity	0.0%	$10.35	16%	$11.25	17%	$16.21	25%
			Total	$66.00	100%	$66.00	100%	$66.00	100%

Cash Required to Service Funding

(From the Point of View of the:)

In Billions of $s

CHSRA	Taxpayers	Title	Annual Rate %	**A** CHSRA	**A** Taxpayers	**B** CHSRA	**B** Taxpayers	**C** CHSRA	**C** Taxpayers
No	Yes	Cal Bonds	5.9%		$0.65		$0.65		$0.65
No	Yes	Fed Grants	0.0%		$0.00		$0.00		$0.00
Yes	Yes	Fed Bonds	5.0%	$0.00	$0.00	$0.65	$0.65	$0.00	$0.00
No	Yes	Local Loans	7.5%		$0.38		$0.38		$0.00
Yes	Yes	Private/Public Debt	6.0%	$1.75	$1.75	$1.91	$1.91	$2.75	$2.75
Yes	Yes	Private Equity	0.0%	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
		Annual Total		$1.75	$2.78	$2.56	$3.59	$2.75	$3.40
		Over the 2020 to 2035 period		$28.07	$44.52	$40.92	$57.37	$43.97	$54.32
		Total Over Thirty Years		$52.63	$83.47	$76.73	$107.56	$82.45	$101.86

Note: The CHSRA Cash Required is a subset of the cash required by the Taxpayers.

Note: These Cash Requirements will be reduced by the Operating Margins (Revenues less Operating Expenses) See Exhibit 3.4

CHSRA 2009 Business Plan - Operational Results

(in Year of Occurance $s)

	Riders	Operations (Billions)			**A**		**B**		**C**	
Annual	(Millions)	$/Ticket	Revenues	Costs	Margins	Margins	Margins	Margins	Margins	Margins
Average	35.13	$124.78	$4.38	$1.98	$2.40	$2.40	$2.40	$2.40	$2.40	$2.40
2020 to 2035 Period	562.10	$124.78	$70.14	$31.66	$38.47	$38.47	$38.47	$38.47	$38.47	$38.47

(In 2009 $s)

Annual Average	$69.97	$2.46	$1.22	$1.24
2020 to 2035 Period		$39.33	$19.53	$19.80

						Exhibit 3.4
Based on Estimated Increases to $66B of the 2009 Business Plan Construction Costs						
Economic Impact on the CHSRA and the State of California Taxpayers of Different						
Funding Cases and Different Operating Results						
For "At Risk" Equity Returns (NOT Guaranteed)						
Shows The Peak Cumulative Negative Cash Flow						
For The Period 2020 to 2035						
Cash Position at the End of 2035						
Private Equity Rate of Return Through 2045						
	Mixes Of Finance Sources					
	Mostly Grants		**More Debt**		**Mostly Private**	
	As Per '09 Plan		**Than Grants**		**Debt and Equity**	
Revenues & Costs As A	**- - - - - - - - - - - - Billions of $s -**					
% Of 2009 Business Plan	**A**		**B**		**C**	
	CSHRA	Taxpayers	CSHRA	Taxpayers	CHSRA	Taxpayers
Cash Required To Service						
Funding – See Exhibit 3.3	($28)	($45)	($41)	($57)	($44)	($54)
Case 1 – 100% of 2009	($3)	($7)	($6)	($19)	($7)	($16)
Business Plan	in 2022	in 2027	in 2025		in 2026	
	$10	($6)	($2)	($19)	($6)	($16)
	3.5%		(0.1%)		(3%)	
Case 2 - 75% of Ridership	($3)	($17)	($13)	($29)	($16)	($26)
and Op. Expenses	in 2024					
	($0)	($17)	($13)	($29)	($16)	($26)
	(0.4%)		<0%		<0%	
Case 3 – Ticket Price is	($7)	($24)	$20)	($36)	($23)	($33)
Down by 25%						
	($7)	($24)	($20)	($36)	($23)	($33)
	<0%		<0%		<0%	
Case 4 – 75% of	($13)	($30)	($26)	($43)	($29)	($40)
Ridership and Op.						
Expenses AND Ticket	($13)	($30)	($26)	($43)	($29)	($40)
Price Down by 25%	<0%		<0%		<0%	

Note: The peak cumulative negative cash flow occurs at the end of the period (2035), except where noted. In these few other cases, the cash flow then becomes positive in the year noted, and the cumulative cash flow is positive by the end of the period (2035). If the amount of cash available to the private equity investor is a negative value in 2045, it is marked as "<0%".

Note: The CHSRA numbers are part of the Taxpayers' numbers. For example in column B, Case 3, the CSHRA's ($20B) is part of the Taxpayers' ($36B) long term obligation. The balance, about ($16B) is the Taxpayers' requirement to service the 2008 State of California GO Bonds and the Local debt that will be needed to support the Local "Gifts" to the CHSRA.

Exhibit 3.5

Based on Estimated Increases to $66B of the 2009 Business Plan Construction Costs

Economic Impact on the Private Equity Investor and the State of California Taxpayers of Different Funding Cases and Different Operating Results For Different Forms of Equity Returns

Shows For The Taxpayers shows the Cumulative Cash Flow at end of 2035
Shows For The Private Equity Investor ROI on Initial Investment

FR – Fixed Return, see Exhibit 3.2, annual Sinking Fund
16 – 16 Years of Revenue Guarantees, 2020 to 2035, paid annually
10 – 10 Years of Revenue Guarantees, 2020 to 2029, paid annually
5 – 5 Years of Revenue Guarantees, 2020 to 2024, paid annually
AR – At Risk – All Cash, see Exhibit 3.4, as of end of 2045, in CHSRA, paid out
AD – All Debt – No Equity Investment, all treated as Private/Public Debt, 30 and 50 years

		Mixes Of Finance Sources					
		Mostly Grants		**More Debt**		**Mostly Private**	
Operating Results:		**As Per '09 Plan**		**Than Grants**		**Debt and Equity**	
Revenues & Costs As A		**- - - - - - - - - - - - Billions of $s --**					
% Of 2009 Business Plan		**A**		**B**		**C**	
		Equity	Taxpayers	Equity	Taxpayers	Equity	Taxpayers
Case 1 – 100% of 2009	**FR**	10%	($41)	10%	($57)	10%	($70)
Business Plan	**AR**	3.5%	($6)	(0.1%)	($19)	(3%)	($16)
AD 30 50 Years		3.3 2.6%	($18) ($11)	3.3 2.6%	($32) ($23)	3.3 2.6%	($35) ($25)
Case 2 - 75% of Ridership	**FR**	10%	($51)	10%	($67)	10%	($81)
and Op. Expenses	**16**	4.6%	($34)	3.0%	($47)	0.5%	($44)
	10	2.6%	($26)	(2%)	($39)	<0%	($35)
	5	0.7%	($20)	<0%	($33)	<0%	($30)
	AR	0.4%	($17)	<0%	($29)	<0%	($26)
AD 30 50 Years		3.3 2.6%	($29) ($22)	3.3 2.6%	($42) ($33)	3.3 2.6%	($45) ($36)
Case 3 – Ticket Price is	**FR**	10%	($58)	10%	($74)	10%	($88)
Down by 25%	**16**	3.0%	($41)	3.0%	($54)	0.5%	($51)
	10	(1%)	($33)	(2%)	($46)	<0%	($43)
	5	<0%	($27)	<0%	($40)	<0%	($37)
	AR	<0%	($24)	<0%	($36)	<0%	($33)
AD 30 50 Years		3.3 2.6%	($36) ($29)	3.3 2.6%	($50) ($40)	3.3 2.6%	($52) ($43)
Case 4 – 75% of	**FR**	10%	($65)	10%	($80)	10%	($94)
Ridership and Op.	**16**	7%	($60)	6%	($73)	4%	($70)
Expenses AND Ticket	**10**	3%	($46)	3%	($59)	(0.2%)	($55)
Price Down by 25%	**5**	<0%	($36)	<0%	($49)	<0%	($46)
	AR	<0%	($30)	<0%	($43)	<0%	($40)
AD 30 50 Years		3.3 2.6%	($42) ($35)	3.3 2.6%	($56) ($47)	3.3 2.6%	($58) ($49)

Note: For the "Revenue Guarantee" results, if the amount of cash available to the private equity investor over the 16, 10, or 5 years time periods, plus the cash available in 2045, does not return a positive ROI, but is, in fact, a large negative ROI, it is marked as "<0%". For the "At Risk" results, if the amount of cash available to the private equity investor is a large negative value in 2045, it is marked as "<0%". The implication is that the investor will not even recover the initial investment, let alone any return on the initial investment.

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Appendix A
Development of CHSRA Estimated Construction Costs Estimates
February 24, 2011

The attached Exhibit 1 spread sheets provide an analysis of CHSRA Construction Costs, as of early February, 2011.

Background

The California Legislature placed on the ballot in November of 2008 a measure that authorized the State of California to be able to sell $9.95B in Bonds to help finance a High Speed Rail System within the State of California. This measure passed with about 52% of the votes. This measure required the system to connect San Francisco, via San Jose, to Los Angeles as the first phase, and to eventually connect, in addition, Sacramento, Oakland, Anaheim/Irvine, Riverside and San Diego. The system was not supposed to require any Operating Subsidy from the State of California. The measure itself was silent regarding the construction costs to build the system.

Following the ballot measure in November, 2008, the CHSRA (California High Speed Rail Authority) has issued two Business Plans, one in late 2008, and one in late 2009. While there had been a plan for the CHSRA to produce updated Business Plan in early 2011, that effort has been delayed. It now seems that a "draft' of this next Business Plan may be available by the end of 2011.

In early 2011 two independent estimates have been published, one by William Warren, one of the co-authors of "The Financial Risks of California's Proposed High-Speed Rail Project", which was published in October, 2010; and the other by Elizabeth Alexis, one of the co-founders of Californians Advocating Responsible Rail Design (CARRD). Each of these documents will be discussed below.

CHSRA 2008 Business Plan

This plan, published shortly after the voters approved the state wide program, was focused on the Phase 1 effort to connect San Francisco to Los Angeles. This Plan is summarized in the top left corner of the spread sheet. It shows that the corridor from San Francisco to Los Angeles was to be 520 miles, and would be composed of seven segments. The project construction costs, in terms of 2008 $'s, were projected to be $33.6B, which amounts to $65M per mile, including Program Management and Trains. As can be seen, the most expensive segments are in the urban segments of San Francisco to San Jose, Palmdale to Los Angeles and Los Angeles to Anaheim.

The Plan showed the Program Implementation/Management as a separate line item as opposed to including these costs as part of the overhead of the various segments, as they subsequently were included, in the 2009 Plan, Therefore, for consistency, these costs were reallocated to the segments, proportional to the direct construction costs within each segment.

Note that nothing was said by the CHSRA about the costs to build out the system to the other five cities approved by the voters.

CHSRA 2009 Business Plan

This plan, published one year later, in December of 2009, again focused on just the Phase 1 effort to connect San Francisco to Los Angeles. This Plan is summarized in the top left center of the spread sheet. It shows that the corridor route was redefined to be about 3% longer, at 535 miles, with the same seven segments. The presentation of the project construction costs was changed to show the costs as "Year of Expenditure" costs to be consistent with DOT/FRA requirements. This, by definition, showed the effect of inflation on a construction project that was planned to continue for about 10 years. In these inflated "Year of Expenditure" dollars their estimate was now $42.6B, or $80M per mile. When these estimates are deflated back to 2008 dollars, so they can be compared to the 2008 Business Plan, they amount to $34.7B, about a 3% increase from the 2008 Plan, consistent with the 3% increase in the corridor mileage. Their cost per mile in 2008 dollars remained at $65M.

However, note that on a line item by line item basis there was some interesting movement. First the cost per mile, in 2008 dollars, for the Fresno to Bakersfield segment was reduced by 21%, and the cost for the Los Angeles to Anaheim segment was increased by 110%. Second, the cost of the train sets, in 2008 dollars was reduced by 21% from their minimum train set cost estimate in the 2008 Plan, and by 44% from the total of the minimum and the additional train set cost estimates in the 2008 Plan. None of these changes were discussed in the 2009 Plan.

Note that nothing was said by the CHSRA about the costs to build out the system to the other five cities approved by the voters.

Estimate of Extension to 2009 Plan

While nothing was said in the CHSRA 2009 Plan regarding the other cities, Mr. Warren, in February, 2010, published an estimate of the additional cost to build out the rest of the system, to connect, Riverside, San Diego, Irvine, Oakland, and Sacramento. This work is summarized on the spread sheet directly below the 2009 Business Plan information.

These additional cities, divided into a Southern Phase 2 and a Northern Phase 3, are estimated to add an additional 400 miles of track and will cost in the range of $30B in Year of Expenditure dollars, for an estimated $76M per mile, slightly less that the 2009 Plan for Phase 1, of $80M per mile. Mr. Warren used similar "costs per mile" for each of the Phase 2 and Phase 3 segments by finding segments in the 2009 Plan that had similar characteristics, and applying that 2009 Plan segment's cost per mile to these new segments.

When the entire state-wide system is then viewed from this perspective, it is estimated that it is a system of about 930 miles, will cost about $73B, and will average about $78M per mile. In fact, a more realistic estimate is probably higher. Since Phase 2 and Phase 3 may

be built about 10 years later than Phase 1, there is about 10 more years of inflation to consider when trying to determine the "Year of Expenditure" dollars for these two subsequent phases. At the inflation rate that CHSRA uses, 3%, that is an increase of about 30% over the numbers presented in the spread sheet. This would mean that Phase 2 and Phase 3 would not be an additional $30B, but closer to $40B, driving the total cost of the system to about $82B, not $73B.

Estimate of Increased Costs for Phase 1, by Bill Warren, February 2011

During December, 2010, following the awarding of about $1.3B in FRA Federal Grants, the CHSRA proposed to its Board of Directors that the first section to be built be in the Central Valley, between Merced and Bakersfield. This would be consistent with the conditions stipulated in the FRA award and also met the CHSRA'a objectives of starting with sections of track that have the lowest cost per mile. Through two meetings in December, a sufficient amount of information was presented to allow Mr. Warren, in early January, 2011, to analyze the projected costs of this construction plan and compare these to the cost projections in the last Business Plan, of December 2009. The results of this analysis is presented in the top right center block of the spread sheet, labeled "Bill Warren, Feb. 2011 Estimate". In summary, Mr. Warren concluded that the old 2009 Plan "cost per mile" projections need to be increased by 61% if the new 2010 cost projections for the Central Valley section are indicative of what is now an over all "under costing" in the 2009 Plan.

If Mr. Warren's estimated increase is correct, we see an increase of over 50% from the 2009 Plan cost per mile of $80M per mile to $124M per mile and a total construction cost for Phase 1 of about $67B, up from $43B. Following this same logic, Mr. Warren's 2010 Estimate for Phase 2 and Phase 3 would be increased also to $123M per mile, with a total cost of $49B. This leads to a total system costs for all corridors in the range of $116B. Additionally, based on the comments, above, regarding the inflated costs for Phase 2 and Phase 3, if they are built about 10 years after Phase 1, the costs for these two phases are probably closer to $65B, not $49B. Therefore, the total cost of the system is probably closer to $130B, not $116B.

Mr. Warren's methodology is shown on the page 2 of the Exhibit 1 spread sheet. Appendix B shows how he performed the steps to complete his work.

Estimate of Increased Costs for Phase 1, by Ms. Elizabeth Alexis of CARRD, February 2011

During the last few months of 2010 and into 2011, Ms. Elizabeth Alexis, of CARRD, operating independently of Mr. Warren, also was analyzing CHSRA's construction costs. As her source documents she used a number of official and publicly available CHSRA documents. The results of her analysis are presented on the top right side of the spreadsheet, just to the right of Mr. Warren's analysis. In summary, Ms. Alexis's analysis of each of the Phase 1 segments resulted in new estimates for each segment, with a total Phase 1 cost of $65B and a per mile cost of $122M.

Her analysis shows some dramatic increases in the San Jose to Merced segment and the Fresno to Bakersfield segment, both of which are increases of over 100%, and at the same time a reduction in the Los Angeles to Anaheim segment. The logic of her work is summarized on page 3 of the Exhibit 1 spreadsheet, as well as contact information to reach her if further information is desired.

Estimate of Possible San Jose to Sylmar Corridor, by Ms. Elizabeth Alexis of CARRD, February 2011

To show how the existing Phase 1 corridor program could be redefined to meet a spending target in the $40B to $45B range, Ms. Alexis suggests that the Phase 1 corridor be reduced to go from San Jose, at the southern end of the San Francisco Peninsula, to Sylmar, which is inside the Los Angeles basin. This would reduced the scope of Phase 1 from 535 miles to 400 miles, and reduce the cost to an estimated $43B. Note that the overall cost per mile drops from $122M per mile to $108M per mile as the expensive urban segments at both ends have been eliminated or reduced. The logic of this work is also summarized on the third page of the spreadsheet. The fundamental premise of this approach is that, for the initial Phase 1 period, passengers can use existing regional rail transportation to reach San Jose and Sylmar.

Conclusions

What is most interesting is the similarity of the results of the two independent, and different, analysis, of the estimated increases in the CHSRA construction costs. Ms. Alexis took a micro-analysis approach, going through the details of the various segments. Mr. Warren took a macro-analysis approach, taking one set of data points and extrapolating these changes to the entire Phase 1 program. The results, in terms of cost per mile, for Phase 1, are virtually the same, at $122M and $124M cost per mile. Note the cost per mile, by segment, is different for the two approaches, and Ms. Alexis's segment cost numbers are probably closer to reality, as she went into more detail, segment by segment. However, the macro-analysis by Mr. Warren provides a solid confirmation that these new estimates are very, very credible.

In summary, if these estimates turn out to be correct, the cost of Phase 1 is in the $66B range, not the $43B discussed in the 2009 Business Plan. Additionally, the costs for the entire system, which the voters approved in the fall of 2008, is approaching $110B to $120B, and may reach $130B, or more, if the subsequent Phases are not built until the 2030 to 2040 time period.

Lastly, it would seem that the most critical task before the CHSRA is to answer three important questions:

1. Are these estimates correct?

2. If so, where is this money going to come from over the 10 to 20 years?

3. Finally, how will it be prepaid in the next 40 years?

Appendix B
Mr. Warren's Estimated Cost Increase Methodology
February 24, 2011

Mr. Warren's methodology is shown on page 2 of the Exhibit 1 spreadsheet. Basically, he preformed the following three steps.

Step 1 – From the 2009 Plan cost numbers for the Merced to Fresno segment and the Fresno to Bakersfield segments, which amount to a total of 196 miles at a cost of $8.1 B, he reduced this total for the line items that appear to not be planned to be completed for the first Section that was approved for construction in the December 20, 2010 Board Meeting. These items included Electrification, System Elements, and Testing and Commissioning, as well as a proportional part of the Program Management costs. These items amounted to $1.8M for these two segments. This reduced the above 2009 cost, of $8.1B, to build just the track, consistent with the Section Build Plan, to $32M per mile. This was a 22% reduction from the $41M per mile to completely build and test these segments, as defined in the 2009 Business Plan.

Step 2 – The CHSRA has $5.6B available to build the first Section. In the December 2, 2010 meeting, when they believed they had only $4.2B of Federal grants and State Bonds to build with, they planned to build in the range of 54 to 65 miles. After the award of the $.6B of additional Federal grants in mid December, which raised the total, of Grants and Bonds, available to build, to $5.6B, the Board held another Board Meeting on December 20, 2010. At that meeting, two engineering alternatives were discussed which would add from 15 to 45 additional miles to the earlier range of from 54 to 65 miles. These lead to a total of from 75 to 105 miles to be built with the available $5.6B. At this Board meeting CEO van Ark committed he would deliver a total of 123 miles. This range of possible outcomes, which were approved by the Board, leads to a cost per mile that ranges from $75M to $53M to $45M, per mile. Until the engineering work is completed and some experience is gained with early construction activities, resolving the true cost per mile is difficult. But it appears that all these alternatives are much higher than the equivalent cost pr mile of $32 per mile computed in Step 1.

Step 3 – Mr. Warren then assigned probabilities to these possible outcomes, which the CHSRA was considering, to come up with a weighted average of $52M per mile, based on a 50% chance that the 105 mile result would occur, and a 40% chance that the 123 mile result would occur. This $52M per mile estimate is a 61% increase over the "apples" to "apples" adjusted, but equivalent, $32M per mile estimate computed in Step 1, and which was taken from the 2009 Business Plan estimate.