2016 Business Plan RECORD DETAIL

Submission Date :	2/19/2016
Submission Method :	Website
First Name :	Debra
Last Name :	Martin
Stakeholder Comments/Issues :	To have transportation throughout and within our state of CA. Will help thousands of people travel, see relatives, have the access to move within our state to interview for employment where it is located. The bullet would have been ideal to save on fuel, it is mass transportation which moves quickly and Thousands of people, including myself would have used this method. The challenge I see that we, as a state are having, is that we do not have the funds to complete this project, which I find so sad, because many regions in our planet uses this system and now there are legislatures who want to put it to a stop. There is a certain rep. on t.v. right now who asks us to write our opinion. This is mine, but if he feels that Jerry Brown doesn't have the funds to do, or complete the project and our tax dollars could be put to better use, I will reluctantly agree.
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	2/19/2016
Submission Method :	Website
First Name :	Brian
Last Name :	Phegley
Stakeholder Comments/Issues :	I appreciate the current business plan and its more moderate understanding of sources of funding to build high speed rail, but I am concerned about the lack of Southern California connections in the current initial operating system proposal. Has it been considered to build between Merced and Palmdale, and ensure timed connections to local rail service to more urban areas as the initial segment? I feel this would close a more significant rail gap, and motivate more interest and funding for the plan.
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	2/19/2016
Submission Method :	Project Email
First Name :	James
Last Name :	Shingledecker
Stakeholder Comments/Issues :	I am a Sacramento resident and would like to know if there is proposed track layout, drawn on a street map of sorts, for the Sacramento region south toward Merced and is it available to view? Thank you James Shingledecker 8332 Alpine Laurel Way Sacramento, CA 95829
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	2/19/2016
Submission Method :	Project Email
First Name :	Michael
Last Name :	Rooney
Stakeholder Comments/Issues :	Hello, Can you address how the Draft 2016 Business Plan achieves the legally-mandated maximum service travel times prescribed in Prop 1A? Based on the travel times shown in Figure 2 of the Service Planning Methodology source document, the travel times from Article 2, Section 2704.09 of Prop 1A are not achieved. For example: - San Francisco to Los Angeles - 2:40 mandated vs. 3:08 in 2016 Business Plan - San Jose to Los Angeles - 2:10 mandated vs. 2:15 in 2016 Business Plan - San Francisco to San Jose - 0:30 mandated vs. 0:51 in 2016 Business Plan Thanks, Michael Rooney
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	2/19/2016
Submission Method :	Project Email
First Name :	Vinton
Last Name :	Lampton
Stakeholder Comments/Issues :	It's time to stop the BS. This will never be anything but a money pit. Shut down this farce. Vinton M. Lampton 318651 Windrush Rd. Agua Dulce, CA 91390 vintana@dslextreme.com
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	2/19/2016
Submission Method :	Project Email
First Name :	Marjie
Last Name :	Carver
Stakeholder Comments/Issues :	Please abandon your plans to use traditional rail for high speed rail and switch to mag-lev monorail for many good reason including lower cost , less environmental footprint by far , less noise , less maintenance , better efficiency (milage per pax mile) , corners better and safer plus climbs steeper grades for far less tunnels and bridges , can easily enter urban areas , cannot hit cars or people , much less time and materials to build (pylons and spans can be built off site and carried in) , and also much of the technology is available in California plus all components can be built here . It is not to late to change from 1800's freight train technology to modern passenger carrying technology ! Feel free to contact me anytime . Cheers, Hugo Marjie Carver ,Cell 619-206-8041, Home 619-225-0864 Manager, Carver Marine Hugo Carver, Marine Surveyor, Eternal Boat Builder and Marine Engineer, Cell 619-778-7036 3698 Zola Street, San Diego, CA, 92106 See also CarverMarine@yahoo.com
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	2/19/2016
Submission Method :	Project Email
First Name :	Wayne
Last Name :	Schotten
Stakeholder Comments/Issues :	Excellent news! The Bay Area is heavily supportive of public transportation, San Francisco will soon finish the downtown terminal joining the HSR with BART, MUNI, and within walking distance of the financial district. Further, San Francisco has he highest acreage per square mile of rooftop solar, so they get it, and most of Muni is electrified. Caltrains is electrifying the tracks already from San Francisco to beyond San Jose. Since the casinos are planning to build HSR from Las Vegas to Burbank, then the final leg could be the connector between Palmdale and Bakersfield through the Tehachapi Pass. The current Amtrak from San Francisco to Bakersfield is heavily used and the HSR can easily replace it using the existing shuttle service from Bakersfield to other Southern Cities.
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	2/19/2016
Submission Method :	Project Email
First Name :	John
Last Name :	Kolski
Stakeholder Comments/Issues :	QUESTION WHERE DOES THE TRAIN STOP BETWEEN THE BAY AREA ND BAKERSFIELD? JOHN KOLSKI ducksfly10@gmail.com

Notes :

2016 Business Plan RECORD DETAIL

Submission Date :	2/20/2016
Submission Method :	Website
First Name :	Paul
Last Name :	Herman
Stakeholder Comments/Issues :	I greatly appreciate the California High-Speed Rail Authority's efforts to build high-speed rail in California. I have been a long time supporter of the project and have a few questions about the 2016 Draft Business Plan. I read in the report that with the current available funds the Authority will be able to build from San Jose to just north of Bakersfield. What is the current estimate of costs to construct from 'North of Bakersfield' to Downtown Bakersfield? I believe it would be worth funding this extension as to appropriately connect to the community it is serving. Terminating the train 25 miles outside of the city is an unacceptable outcome for anybody that claims to be building a true high-speed rail system. I would even prioritize this segment of track to be built before the necessary upgrades between San Jose and San Francisco because it is that bad of a solution. If the State is going to be taking out loans against future Cap-and-Trade revenues why not loan enough money to get into the city of Bakersfield? I, just as much as the Authority, want the federal government to be more forthcoming with funding for this project, but terminating the Initial Operating Segment 25 miles north of Bakersfield is unacceptable. Please reconsider this proposal and look at ways to find the necessary funding to build San Jose to Bakersfield completely, and ask the federal government to fund the San Jose to San Francisco upgrades this draft business plan says will be necessary for higher revenues and a higher concession price. Thank you for all of the hard work it takes to build this transformational project in our great State. I want this project to be a success and for other states to follow California's leadership in building a great high-speed rail network.
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	2/20/2016
Submission Method :	Website
First Name :	Robert
Last Name :	Allen
Stakeholder Comments/Issues :	Would appreciate getting a hard copy. If that is too costly, have you given a copy to public libraries or other places where I could review it in detail? Robert S. Allen 223 Donner Avenue Livermore, CA 94551-4240 My main concern is that HSR be securely fenced and grade separated. Let operation north of San Jose be by Caltrain under their rules and with their crews. You could thus get a one-seat ride for San Francisco passengers with minimal CPUC involvement - a little slower, but safer and sooner. When you go beyond Bakersfield, I strongly urge that you follow I-5 past Tejon Pass.
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	2/20/2016
Submission Method :	Website
First Name :	Joseph
Last Name :	Eisenberg
Stakeholder Comments/Issues :	I commend the CAHSRA for this improved, realistic business plan. I would strongly support further Federal and State support to complete the full HSR system. To make this possible, I suggest the Authority study alignments that could lead to further savings in construction and operations costs. The most important change is to reconsider a Tejon pass alignment, instead of the current route via Palmdale. According to detailed calculations by Clem Tillier (http://www.cahsrblog.com/2013/06/the-truth-about-tejon/), this route could save $5 in construction costs and improving the operating profits by $175 million a year due to lower operating costs and higher ridership. This route will also avoid the need to tunnel under the San Gabriel mountains from Palmdale to Burbank. Palmdale could be served in the second phase of the system, along a connection to Xpress West. This route could also serve Bakersfield via a station on the west side of the city, reducing impacts in downtown Bakersfield and greatly reducing costs, while providing faster service to LA and San Francisco for residents of Bakersfield. The lower costs and higher profits of the Tejon route will greatly increase the chance of private investment in completing the tracks from Bakersfield to LA. Politically, the Tejon Ranch company may not approve of this route, but the cost savings are enough to justify eminent domain if needed. I would also suggest the Authority study early service to Sacramento, and coordinate with the Bay Area MTC to study a new cross-bay route from San Francisco to the East Bay. These costs should be set aside for a "phase 1.1", along with the money planned for LA to Anaheim, to more clearly distinguish the capital costs for initial service in the key SF to LA route from the costs of addition track. I also would like the Authority to seek funding to plan LA to San Diego service. Although this would not need to be part of the initial business plan, it could be valuable to plan this route sooner. The Authority should also study an Anaheim to San Diego alignment via upgraded and electrified tracks along the coast, prior to the high-cost, full-speed route via Riverside. It is possible this route would be allow trip times sufficient to compete with driving and flights profitably, even at 110 to 125 mph max speed, at a much lower cost than the inland, high speed route.
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	2/22/2016
Submission Method :	Project Email
First Name :	Ed
Last Name :	Olson
Stakeholder Comments/Issues :	Why doesn't the high speed rail line go from LA to LAS VEGAS???? who goes to Las Vegas.....lots of people. who goes from the Central Valley to San Jose??? no one. Was the LV to Los Angeles considered????? Ed Olson
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	2/22/2016
Submission Method :	Project Email
First Name :	Cameron
Last Name :	Latchford
Stakeholder Comments/Issues :	Hello, my name is Cameron Latchford. I am currently conducting research on behalf of UC Davis, on rail ridership in California. I am a proud rail and public transit advocate and have been searching for data. Unfortunately, I have been having lots of trouble finding data on rail ridership in California--I know ridership has been increasing all across the board, but all I can find are data from 2013-2015. I'm looking for graphs that show ridership over the past few decades up until today, to show the overall trend of people giving up their cars for trains and other forms of transit. I read through the 2016 business plan, and was quite impressed! However, I only found forecasts of ridership, and no data on changes in ridership over the decades or changes in attitudes. Does anybody at CHSRA have any idea where I could find this information? Thank you, Cameron J Latchford
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	2/22/2016
Submission Method :	Project Email
First Name :	Xavier
Last Name :	Baldwin
Stakeholder Comments/Issues :	I believe this is a greatly improved business plan to help insure success and acceptance of the California High Speed Rail Project!
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	2/22/2016
Submission Method :	Project Email
First Name :	Jeffrey
Last Name :	Johnson
Stakeholder Comments/Issues :	California can not afford this. It's already doubled in cost from the original projections and everyone knows once you start to build it, it will double again. PLEASE don't do it. The masses will not ride it. It's easier to take a plane from the north to the south and if you are only going a couple hundred miles, people will drive. We are attempting to solve a problem that doesn't exist. Without a NATIONAL bullet train solution like other countries (Japan for instance), it won't work. You need to be able to get everywhere before this solution makes sense. Instead, please spend the money on the aging infrastructure. The roads and bridges are in need of repair. California needs a solid water distribution system because without water/food...a bullet train isn't going to matter. So I love that you are thinking about ways to improve but PLEASE... roads are terrible. You can put people to work by fixing and EXPANDING infrastructure. Traffic is terrible. That's a REAL problem that needs fixing. thx for listening.Jeffrey Johnson408.398.1783
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date : 2/22/2016

Submission Method : Project Email

First Name : Geoffrey

Last Name : Graff

Stakeholder Comments/Issues : To Whom it May Concern,

I have enjoyed doing an initial review of the CHSRA 2016 Business Plan Draft and am excited about the progress!

One issue that is perhaps mostly related to eventual operations, but also might have physical infrastructure implications, is the potential for early service connecting Merced directly via HSR to both the Bay Area and Fresno/Bakersfield to the south.

With the completion of the Central Valley Wye and the track to Merced, a few trains (1 or even 1/2 TPH) on the new initial Silicon Valley to N. Bakersfield line could service Merced as a reversal station with no additional track and minimal service disruption.

This kind of operation would provide attractive service to the growing population center at Merced; including immediate (UC Merced) and proximal (Yosemite Park) destinations. Also, it would provide an additional, closer entry point to the HSR system for the population in the northern San Joaquin Valley early in the system's operation. One seat HSR service to/from the Bay Area and Merced in particular would be appealing to potential riders.

This type of service may have been discussed, but I have not been able to find it mentioned in the documentation.

Happy to discuss further. Please let me know if there are questions.

Best regards,
-Geoff

Geoff Graff, NCARB, LEED AP BD+C
ideocraft, LLC
www.ideocraftllc.com
314-496-8019

Notes :

2016 Business Plan RECORD DETAIL

Submission Date : 2/22/2016

Submission Method : Project Email

First Name : Kelliane

Last Name : Parker

Stakeholder Comments/Issues : To whom it may concern;

I support the new proposal for high speed rail connection between the Central Valley and Silicon Valley. Silicon valley continues to bring jobs to the Bay Area which could benefit the
Central Valley by making job opportunities possible. There is no question that our current infrastructure will not support the continued population growth of California.

High speed rail will bring us in line with most major cities in the industrialized world. We have not made this type of long term investment in our transportation system in many decades.

While there are critics, who will argue that money needs to be used somewhere else, they are missing the point. Yes, California water is a priority, and yes we need to make a plan for it, but this money isn't earmarked for it, so it is a moot point. Also, failure to invest in transportation will harm our economy, including agriculture. We have far outgrown what our highway system is now capable of handling. With continued
issues with fossil fuels, we need to expand public transit statewide so that all may benefit.

Though expensive now, the costs will only continue to grow. This isn't a project for short-term thinkers. This is a plan to keep California a world class economy. Not only benefiting only the cities, but rural California as well.

It will take courageous leadership to keep pushing this through, but history will be kinder than the present. Remember, when the automobile was first created, there were no interstate highways to support the number of cars we have today, someone had the vision and courage to dream and plan for the future to benefit all. Without that foresight, our agri-business wouldn't be able to grow to the super economy it has, because distribution would not have been able to scale.

As a third generation Californian, I implore you to ignore the naysayers of high speed rail. The only argument they have is that it is expensive and they want the money spent elsewhere. This is not a reasonable argument, as we need to bolster our infrastructure for transportation, water and other services, these needs aren't mutually exclusive. Invest in the future economy and we will grow the funds for other projects.

Sincerely,

Kelliane Parker

kellianeparker@gmail.com

(510)599-8355

Confucius Quote

Notes :

Attachments : image001.jpg (11 kb)

2016 Business Plan RECORD DETAIL

Submission Date :	2/22/2016
Submission Method :	Telephone
First Name :	Daniel
Last Name :	Yoljanick
Stakeholder Comments/Issues :	Voicemail Submitted
Notes :	
Attachments :	voice_msg_455968754_1455931796.wav (41 kb) Yoljanick_BP_Voicemail.pdf (38 kb)

Yes my name is Daniel Yoljanick and I truly believe that this is one of California's finest moves to let the rail come though and link San Jose. They will not need to spend no more money on the original track. Thank you.

2016 Business Plan RECORD DETAIL

Submission Date :	2/22/2016
Submission Method :	Project Email
First Name :	Kathleen
Last Name :	Irgens
Stakeholder Comments/Issues :	Have you heard about the ballot initiative that would put a stop to this train fiasco and divert the funds to water storage?? A much more timely project since you don't seem to be able to comply with the rules set down in the "Bullet Train" initiative. You were supposed to come up with a plan that provided train service within these parameters: - It would take no more than 2 hours and 40 minutes, end to end - It would cost no more than 40 Billion - You would have private funding lined up before construction began - There would be no public/government subsidies (you are diverting cap and trade funding for this debacle) - You would comply with all environmental laws and conduct required studies - You lied about ridership projections (saying you would have more riders than all of Amtrak combined) - It was supposed to have a dedicated track, now you are delivering a "Blended Track System". - You lied about the cost of a projected ticket - It was supposed to go from San Francisco to San Diego - Now it will only go San Francisco to LA - Too many other things to list You need to stop spending money on this fraud and admit you can't comply with the with the ballot initiative!!You should all be in jail for fraud and deceit! PLEASE stop wasting our money so you can continue raping the taxpayers with your scandalously high salaries on this illegal project! STOP THE FRAUD, Kathleen Irgens
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	2/22/2016
Submission Method :	Website
First Name :	Stephen
Last Name :	Rosenblum
Stakeholder Comments/Issues :	In order to gain support in the SF Bay Area HSR must commit to grade separation along the entire right of way from San Jose to San Francisco The preferred method should be tunneling or trenching the tracks below the ground as this will minimize the traffic flow and eminent domain impacts in the bordering communities. I am an HSR supporter in principle but will aggressively oppose it if grade separation is not an inviolable part of the plan.
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	2/22/2016
Submission Method :	Website
First Name :	Sean
Last Name :	Maiwald
Stakeholder Comments/Issues :	I think the plan is a great plan- makes more sense in terms of economics. The garish bridge over 280 was a bad idea in the first place, and it was good to get rid of that. My issue is that unfortunately there is no mention of people with disabilities and the accommodations needed. Are there mandates for universally accessible stations, trains and more? Not only for people with wheelchairs/mobility problems, but for blind, and/or deaf people?
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	2/22/2016
Submission Method :	Project Email
First Name :	Robert
Last Name :	Allen
Stakeholder Comments/Issues :	Based on news reports, I hope CHSRA considers this proposal. (I have not seen the plan itself.) In the Bay Area we need coordinated rapid transit around the Bay with a single elected governing board, e.g., annexing San Mateo and Santa Clara Counties into BART as proposed in SFBARTC 1957 Report to the Legislature. If Caltrain is electrified, run a single train as CHSRA from CV to SJ, and as Caltrain from SJ to SF. CV to SJ would be high speed on fenced and grade separated track. On the peninsula, the train would go by Caltrain rules, including train speeds, minimizing the likelihood of CPUC dictate. The result, a one-seat San Francisco ride, slightly slower, but at much lower cost.
Notes :	
Attachments :	image001.png (3 kb) image002.jpg (8 kb) image003.jpg (8 kb) image004.jpg (1 kb) image005.jpg (1 kb) image006.png (7 kb)

2016 Business Plan RECORD DETAIL

Submission Date :	2/22/2016
Submission Method :	Website
First Name :	Antonio
Last Name :	Valenzuela
Stakeholder Comments/Issues :	Antes pasado el plan de negocio estaba en Espanol. Porque no esta en Espanol en este ostancia? Que no estan enteresados de comunicase con la gente Latina?
Notes :	Translates to: Before the business plan was in Spanish. Why isn't it in Spanish in this iteration? Are you not interested in communicating with Latinos?

2016 Business Plan RECORD DETAIL

Submission Date :	2/22/2016
Submission Method :	Website
First Name :	Mark
Last Name :	Mcavoy
Stakeholder Comments/Issues :	It is absolutely imperative that the link between Bakersfield and Palmdale/So Cal be prioritized. I don't understand why that isn't the very next thing on the to-do list. Riding high speed rail from the bay area or central valley down to Bako, just to get on that bus, is ridiculous. IOS means nothing without that critical link. Nothing at all.
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	2/23/2016
Submission Method :	Project Email
First Name :	John
Last Name :	Pivirotto
Stakeholder Comments/Issues :	All that money to litigate HSR up the peninsula when you can stop it at San Jose and have folks take Caltrains to San Francisco at a reasonable clip (speed). We don't want HSR here and we'll do everything in our powers to stop the "boondoggle". If you insist on that HSR train going direct to San Francisco's Trans-Bay Terminal, you need to find another way. With the HSR litigation, the tunnels under the delta, the overspending on Covered CA, is there any other ways that this state legislature and it's Governor can waste tax-payers dollars? I have a grand idea- Fix the existing roads, bridges and tunnels instead. Maybe built another reservoir before another drought shows us what water rationing really is. You all seem to be making way too much money for doing so may stupid things. John Pivirotto Cell- (650) 867-9122
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	2/23/2016
Submission Method :	Project Email
First Name :	Michele
Last Name :	McManus
Stakeholder Comments/Issues :	Scan of comment attached
Notes :	
Attachments :	image001.png (18 kb) SKMBT_C284e16022316350.pdf (269 kb)

Bakersfield F Street Station Alignment - RECORD #104 DETAIL

Status :	Action Pending
Record Date :	2/23/2016
Response Requested :	
Submission Date :	2/23/2016
Affiliation Type :	Individual
Interest As :	Individual
Submission Method :	Website
First Name :	Michele
Last Name :	McManus
Professional Title :	
Business/Organization :	
Address :	
County :	Kern
Apt./Suite No. :	
City :	Shafter
State :	CA
Zip Code :	93263
Telephone :	661-746-0225
Email :	mccrazies@bak.rr.com
Fax :	
Cell Phone :	
Email Subscription :	Fresno - Bakersfield
Add to Mailing List :	Yes
Comment Type :	Issue (concern, suggestion, complaint)

Stakeholder Comments/Issues :

The new proposed terminal in Shafter is not a sound idea. If there is not enough money to finish the project, it is not good business to forge ahead expecting funding. We have travel to Sacramento from Wasco and getting off of the train onto the bus in very inconvenient. That alone is a reason not to take the train. Now you are proposing 30 minutes from Bakersfield a stop! If that because us farmers haven't sued you yet? You call us the backbone, but you should just call you the train wreck that broke our back! Straighten out the lawsuits that you have with the City of Shafter and stop taking our ag land for an unwise ventures.

Subscription Request/Response :	URL: http://sites.focalbeam.com/chsra.gov/pb_commentSubmit.php?fn=Michele&ln=McManus&em=mccrazies%40bak.rr.com&city=Shafter&state=CA&zip=93263&interest=Individual&sections[]=Fresno+-+Bakersfield Response: *OK*
EIR/EIS Comment :	No
Attorney or Law Firm? :	No
Need PI Response :	Yes- Individual Response
Form Letter :	
Submisison in Language other than English :	

2016 Business Plan RECORD DETAIL

Submission Date : 2/23/2016

Submission Method : Project Email

First Name : Robert

Last Name : Benson

Stakeholder Comments/Issues : I have been closely following the project for several years now (and I also am a major contributor to the Wikipedia website for California High-Speed Rail).

I approve of 2016 Business Plan. More specifically:

(1) Similarly to the argument for starting construction in the Central Valley first, choosing the IOS-North route makes the most sense. It is true that more passengers could be served by the IOS-South, however the current limited financing environment forces the completion of the only affordable and viable self-sustaining segment, Silicon Valley to Bakersfield. It makes no sense to ignore this reality.

(2) A delay in construction of the IOS-South might also benefit the necessary tunneling projects. This is a whole new area of complexity, and a delay here might well be worth it in terms of costs, construction-time, and the quality of the constructed tunnels themselves.

(3) I also agree that additional funding for the San Jose to San Francisco and LA to Anaheim segments is highly desirable. It puts the money where it would provide the most benefit in heavy population centers, and addresses current transportation needs as well as being preparation for high-speed rail. Additional monies for these should be found, or appropriated by the state government.

(4) I also agree that the Central Valley line should terminate in Bakersfield, and not a temporary station north of the city. This NOT essential to the success of the line, but would be very desirable. Again, supplemental monies should be found for this.

(5) I further agree that continuing to fund the environmental and planning studies for the entire Phase 1 system is highly desirable. Those expenditures are comparatively small, and yet are critical to being able to move rapidly ahead when more funding becomes available as well as being able to more accurately estimate project costs. In this rather volatile political climate it is entirely possible that the funding environment could change and more monies made available, and it is best to be prepared. This is being prudent as well as forward-looking.

Sincerely,

Robert G. Benson
San Diego

Notes :

2016 Business Plan RECORD DETAIL

Submission Date :	2/24/2016
Submission Method :	Website
First Name :	David
Last Name :	Ng
Stakeholder Comments/Issues :	Regarding to news about your agency's plan to build the high speed rail to the Bay Area first, I want to submit my comment and suggestion that the San Francisco area is more dependent on public transit than San Jose and I have strong beliefs that having your high speed train directly serving San Francisco wil help promote healthy ridership levels as currently a lot of motorists hate driving into San Francisco due to terrible traffic conditions and difficulties finding parking, unlike San Jose where there is plenty of room to serve motorists driving their automobiles. It is very important to make sure the high speed train will directly serve San Francisco and not forcing any transfers at San Jose for trips to/from San Francisco other than unplanned emergencies along the Caltrain ROW.
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	2/24/2016
Submission Method :	Website
First Name :	Sean
Last Name :	Corbin
Stakeholder Comments/Issues :	It appears that in the new business plan, Merced doesn't get a functional station until 2029. It seems unfair that ridership should begin without a station serving Merced or Madera counties, given that significant portions of the HSR will run through those counties. For those of us living in Merced, this seems to mean that we'd have to first drive an hour to Fresno in order to board a train to San Jose/San Francisco. While it's nice to imagine the eventual completion of a Merced station in 2029, it seems that the HSRA would gain more local support if each county that is offering cooperation, land, and money were to have a station ready to go upon the start of initial service in 2025. You can imagine that for those of us living in Merced, the idea that our station would get pushed back from 2022 to 2029, or roughly the time it would take for my daughter to go from junior high to graduating high school, is hard to swallow. Personally, this makes it likely that I would re-locate to Fresno in order to receive 5 years additional access to the Bay Area. I can imagine that cities like Merced and Modesto would actually suffer in the short-term as residents move to further south to gain access to the HSR.
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	2/24/2016
Submission Method :	Website
First Name :	Sean
Last Name :	M
Stakeholder Comments/Issues :	An idea to save considerable dollars: for the cities that want a trench or other expensive option, only provide enough money for the cheapest option. Then, from there if the city wants a more expensive option, they can pay the difference.
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	2/18/2016
Submission Method :	Letter
First Name :	Ted
Last Name :	Hart
Stakeholder Comments/Issues :	Letter from Ted Hart
Notes :	
Attachments :	Letter from Ted Hart 2.25.16.pdf (37 kb)

February 18, 2016

Dan Richard. Chairman
Tom Richards, Vice Chair
CALIFORNIA HIGH-SPEED RAIL AUTHORITY
770 L Street. Suite 800
Sacramento, CA 95814

Re: Phase 2 Cost and Total Cost

Dear Dan and Tom,

I am really disappointed that you have decided to continue to hide the total cost of high-speed rail from the public. Your excuse that it is too difficult to estimate that far out doesn't hold up against the history of the project. From the inception, costs or even approximate costs, were mandatory and provided a base to move forward.

With the engineers and risk analysis experts you have on payroll, it is inconceivable that you can't come up with a cost. I can extrapolate the existing costs and arrive at an approximate cost of $100 billion. And that is the low-end cost, which avoids your revealing the high-end cost.

How far do you think you would have gotten with the voters in 2008 without showing the total cost of approximately $45 billion. An absolute rule in concrete; people don't buy things without knowing what it costs. Or is it that once you have the money, then it is no longer necessary to inform the voter that the cost has doubled to approximately $100 billion? This is the classic bait and switch.

What if the cost is $125 or $150 billion, is there any pain threshold at which you step in and say we have to stop this? The signal you are sending is that it doesn't make any difference what it costs, we are soldiering on come hell or high water.

I understand the difficult task and political situation you are in. The entry of the ballot initiative on the front page of the L.A. Times, puts into play your exposure to noncompliance with PUC 185033. I think the question is, are you better off putting a number in the 2016 Business Plan to get ahead of the curve?

My remarks are strictly business and don't detract from my personal regard for both of you.

Regards,

Ted Hart

2016 Business Plan RECORD DETAIL

Submission Date :	2/19/2016
Submission Method :	Website
First Name :	Dan
Last Name :	Hariton
Stakeholder Comments/Issues :	OVERVIEW OF KEY RISK AREAS The key risk areas that we have identified and manage on an ongoing basis vary based on the individual section's design or construction phase. This section provides an overview of the most significant risks identified by the Risk Management Program, together with management strategies and mitigations. We have grouped the key risk areas in three broad categories: 1. Program level risks 2. Construction risks 3. Technology risks = page 88 = My Risk (Security & Value-Added Cost) Comments: Please consider in the costs these add-inns, right now, at construction phase, them being cheaper to build-in now rather than later, built-in (electronic) security for: •Rail integrity (rail damage, anti-tamper, rail discontinuity; minimum scan frequency 1scan/second with GPS location alert) •Track intruder proximity-alert (underground buried cable for EMI field-distortion intruder alert for cows, persons, vehicles, etc. scan frequency 1scan/second, with GPS location alert) •Physical track/rail obstructions •Air space proximity (drones, either RC or autonomous) http://www.hsr.ca.gov/About/Business_Plans/Draft_2016_Business_Plan.html Please forward these comments to (I was unable to get online access). Thank you: https://www.hsr.ca.gov/About/Business_Plans/Draft_2016_Business_Plan_Comments.html at 2/19/2016 2:25:40 PM: The connection has timed out The server at www.hsr.ca.gov is taking too long to respond. The site could be temporarily unavailable or too busy. Try again in a few moments. Dan Hariton Dan.hariton@comcast.net 1-408-981-4788 (no robo-calls please)
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	2/26/2016
Submission Method :	Website
First Name :	Samuel
Last Name :	Gerner
Stakeholder Comments/Issues :	Thank you for your hard work and persistence in setting up the high speed rail in California. We definitely need it. Seeing this is such an extensive investment, please consider the emerging hyperloop technologies that are being explored. California is the pinnacle of innovation, and we can be on the forefront with a quicker and more efficient mass transit solution. Thank you, --Sam
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	2/28/2016
Submission Method :	Website
First Name :	Kevin
Last Name :	Wagner
Stakeholder Comments/Issues :	As a engineer, I understand the technical risks and challenges of 'closing the gap' between the Central Valley and Southern California. However, I am disappointed that the 2016 Business Plan abandons the attempt to quickly bring passenger rail service from Bakersfield to Los Angeles. This section of rail from Bakersfield to Burbank via Palmdale will be the most expensive, technically challenging, and the longest to construct. I hope that CAHSRA will reconsider the plan to postpone this difficult but vital portion of the project.
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	2/28/2016
Submission Method :	Website
First Name :	Eugene
Last Name :	Chao
Stakeholder Comments/Issues :	I am curious why the authority ask K.P.M.G. to do cash flow analysis, CamSys to do ridership and revenue forecast, and an unidentified agency to do O&M analysis. Should three of these analysis be consistent? Is there a possibility to create a mismatch?
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	2/26/2016
Submission Method :	Telephone
First Name :	Hugo
Last Name :	Diaz
Stakeholder Comments/Issues :	Voice mail
Notes :	
Attachments :	voice_msg_456210831_1456535312.wav (36 kb) Diaz_Transcript.pdf (38 kb)

Voicemail – My name is Hugo Diaz. I approve of the high-speed rail train. I think it is the best thing that could ever happen to California in the last 50 years.

2016 Business Plan RECORD DETAIL

Submission Date : 2/29/2016

Submission Method : Project Email

First Name : Alexander

Last Name : Friedman

Stakeholder Comments/Issues : Dear Sir or Madam:

The decision to open the initial HSR segment in the Bay area would be WRONG on so many levels... Yes, I understand that funding and costs are key issues, but what is the sense of building the project if it will not serve the main regions?! Los Angeles County - is where most of the California population is. Compare:

- 19 million population (in L.A. County), versus
- 6.4 million (San Jose area), versus
- 4.2 million (Fresno area).

Building the HSR to the highest-population, highest-density area is a Must. Otherwise, no sense of implementing the project.

Remember the saying, "Penny-wise, pound-foolish". By trying to save money and opening the 1st segment where "it's quicker and cheaper" may - in the long run - put the whole project in jeopardy; and you will end-up losing very many supporters - resulting in federal and state funding shortfalls.

Initial connection with Southern California - i.e. Burbank (if not Los Angeles), or at least Bakersfield - should remain, as originally planned. This is what we voted for, and this is what CHSRA had promised us.

I truly believe that the 1st segment should be between Palmdale (or Lancaster) and Bakersfield - to fill-in the missing rail gap.

To recap, I strongly encourage you to go with the original plan - i.e. to open the 1st segment of the HSR connecting with Southern California, rather than the Bay Area.

Thank you!

~ Alexander Friedman
Los Angeles, California
(323) 465-8511

Notes :

2016 Business Plan RECORD DETAIL

Submission Date :	2/29/2016
Submission Method :	Letter
First Name :	Fred
Last Name :	Gage
Stakeholder Comments/Issues :	
Notes :	
Attachments :	Gage_BP_Letter_022416.pdf (328 kb)

24 February 2016

California High Speed Rail Authority
Attn: Draft 2016 Business Plan, Ms. Annie Parker
770 L Street, Suite 620
Sacramento, CA 95814

Subject: High Speed Rail Authority (HSR) 2016 Business Plan

Dear Ms. Parker,

The purpose of this letter is to provide my comments concerning the HSR 2016 Business Plan (the plan). I thank HSR for the opportunity to provide comments.

I have reviewed the plan and I believe there are some significant flaws in the document.

A. The plan does not address where the electric power needed to power the system will be generated. In order for HSR to work a dedicated power system will be required. The major utilities in California have not built any significant electrical power plants in years. In fact, the state has had a net loss of power generation with the closures of the Rancho Seco, and San Onofre nuclear plants. There have been no hydroelectric plants constructed in the recent past and any proposal to develop them has been blocked by environmental groups. Our utility rates are the highest in the nation. As I see it, HSR will further tax an already fragile electrical system and end up causing significant increases in our electric bills.

B. I believe your passenger load factors a wildly optimistic. I seriously doubt many people from the Bay Area are going to rush to hop a train to Bakersfield. The plan gushes about the train opening opportunities for the Central Valley. I do not see how given the low skillsets in the Central Valley. The High Tech companies in Silicon Valley are seeking college educated employees. If you assume the tech companies are going to build manufacturing plants in the valley it is not going to happen. California is the most business unfriendly state in the union. If you have not noticed companies have moved production facilities out of state or out of the country.

C. The plan mentioned that air fares from the Bay Area to the Central Valley are expensive. There is a reason for this. The reason is a lack of demand. The passenger loads are not there. A train is not going to magically create demand. The simple fact is that it is easier and more convenient to drive. If one flies or takes Amtrak or Greyhound one usually has to get to their final destination. Unless that destination is within walking distance to a terminal a person will still rent a car. Money would be better spent by adding train service provided by Amtrak from San Francisco and San Jose to the Central Valley. The route could use the existing tracks over Altamont Pass or reinstall the tracks over the former Southern Pacific right of way.

D. The plan makes a huge assumption that the private sector would be interested in operating the system. I am sure the private sector would, as long as the state provides a subsidy. The plan refers to the Monte Carlo method of projecting results. You could not have picked a worse choice for words. In case you did not know, Monte Carlo is one of the gambling centers of the world. At least keep the method in the United States and call it the Las Vegas method. I would call it a "crap shoot." Is this the attitude of HSR, "Let's gamble with someone else's money?" That someone else happens to be the taxpayers of California. I digress. If the private sector was really interested in participating in passenger rail projects it would be running Amtrak or the municipal transit systems. The passenger rail systems in Europe and Japan are built and run by their respective governments. That should send a message to HSR that passenger train operations do not generate the profit necessary, if at all, to attract private investment.

E. I do concur with the portion of the plan that discusses making improvements to the Burbank to Anaheim corridor. I believe rail projects for local areas can ease traffic problems and reduce automobile caused pollution. This would benefit everyone.

F. I believe the long term goal of the plan which is to construct and profitably operate a high speed rail system is totally unrealistic. Air travel is and will continue to be the choice to get from the Bay Area to Southern California. The airlines provide service to all the strategic locations. One does not have to travel from only one point to another such as SFO to LAX. The same is true traveling from Southern California to the Bay Area. If the demand grows I know the carriers will add capacity. It is true that weather can cause delays. However, weather delays are reasonably infrequent. In addition, one can often reroute to another airport if the original airport is closed due to weather issues. Trains cannot be easily rerouted and in the case of HSR, rerouting would be impossible.

G. Having read all the optimistic projections I did not find a worse case option. What happens if the construction costs escalate? Right now the inflation rate is low. What happens if inflation rears its ugly head? Who makes up the difference if the passenger load factors do not meet expectations? Who will pay if the operations and maintenance costs are not supported by passenger fares? The plan does not address these issues. I know the answer and that answer is, the taxpayers of California are stuck with the bill for HSR.

If past performance is any indication, I view the ability of government to adequately estimate the cost of anything correctly with extreme skepticism. With the possible exception of the military, fire and police departments the performance of government run operations has been less than stellar. The Veterans Administration, Public Schools, the Postal Service, and Amtrak are good examples of why a governmental agency should not operate anything.

As mentioned, I read the rosy projections and believe them to be wildly optimistic. All I see in the immediate and long term future is a train to nowhere that will cost billions

with the taxpayers of this state getting stuck for the bill. No one will get fired and the expenses will mount until the citizens of this state will finally say, "We have had enough" and vote to shut it down.

If you wish to contact me I can be reached at 916-961-8019 or at the address below.

Sincerely,

Fred W. Gage
6809 Albury St.
Citrus Heights, CA 95621-6323

Fred Gage
6809 Albury Street
Citrus Heights, Ca. 95621

SACRAMENTO CA 957
25 FEB 2016 PM 6 L

California High Speed Rail Authority
Attn: Draft 2016 Business Plan, Ms. Annie Parker
770 L Street, Suite 620
Sacramento, CA 95814

FEB 29 2016

9581439857O

2016 Business Plan RECORD DETAIL

Submission Date :	2/26/2016
Submission Method :	Project Email
First Name :	Doug
Last Name :	Muirhead
Stakeholder Comments/Issues :	Hello High Speed Rail People, Where do I find the "plan and profile conceptual drawings" mentioned on page 31 of the Capital Cost Basis of Estimate Report - DRAFT 2016 Business Plan: Technical Supporting Documents I am interested in the high-speed rail viaduct along Monterey Road from south of Tamien to Gilroy. Thank you, Doug Muirhead 15901 Village Way Morgan Hill, California 95037-5657 Email: doug.muirhead@stanfordalumni.org
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	2/25/2016
Submission Method :	Letter
First Name :	Colleen
Last Name :	Carlson
Stakeholder Comments/Issues :	
Notes :	
Attachments :	Kings_County_Draft_2016_BP_Comment.pdf (461 kb)

OFFICE OF THE
KINGS COUNTY COUNSEL

Kings Government Center
1400 West Lacey Boulevard,
Building No. 4
Hanford, CA 93230
(559) 852-2445
Fax No.: (559) 584-0865

COLLEEN CARLSON
County Counsel
Deputies:
CARRIE R. WOOLLEY
DIANE WALKER
JULIANA F. GMUR
ERIK D. KAEDING
RISÉ A. DONLON
FRANK A. RUIZ
VANJI R. UNRUH

February 25, 2016

Attn: Draft 2016 Business Plan
California High-Speed Rail Authority
770 L Street, Suite 620, MS-1
Sacramento, CA 95814

Via U.S. Mail, Electronic Mail, and Web Form

RE: Comments on Draft 2016 Business Plan

Dear Sir or Madam:

I write on behalf of the County of Kings to comment on the California High Speed Rail Authority's Draft 2016 Business Plan.[1] In general, the Plan reads like a marketing document rather than the informational and planning document envisioned by Public Utilities Code section 185033. The discussion that follows outlines why the Plan falls short of the requirements stated in section 185033, and also provides a general list of concerns that Commenter has with HSR as currently proposed.

1. **Estimated capital costs for each segment or combination of segments** (Pub. Util. Code, § 185033, subd. (b)(1)(A)):

    a. Section 5 of the Plan indicates that construction bids to date demonstrate an eventual $5.5 billion total savings over 2014 estimates for Phase 1. The Authority therefore contends that it is now feasible to set aside $2.1 billion to provide high speed service from Los Angeles to Anaheim. This assertion raises three concerns for Commenter:

        i. There is no discussion in the Plan of the cost of crossing over or tunneling through the Tehachapi Mountains. Evidence in the record in *Tos, et al. v. California High Speed Rail Authority*, Sacramento Superior Court Case

[1] Hereinafter, "Commenter" refers to the County of Kings, "Authority" refers to the California High Speed Rail Authority, "HSR" refers to the proposed high speed rail system, and "Plan" refers to the Authority's Draft 2016 Business Plan.

No. 34-2011-00113919 (*Toss*), shows that to help achieve the maximum travel times required by Streets and Highways Code section 2704.09, subdivision (b), the Authority proposes an alignment over the Tehachapi Mountains that would include almost nine miles at a grade in excess of the Authority's design guidelines. (AG 027511-027513.) It is reasonable to assume that it would be unsafe for a train to operate at 220 m.p.h. down that grade, as estimated by the Authority in its travel time analysis. (AG 017438, 017439, 13544:15-16.) It may, therefore, be necessary to tunnel through the Tehachapi Mountains, which will affect construction costs. Without analyzing the costs of tunneling, it is premature to predict a $5.5 billion total savings, or availability of funds to provide a higher level of service from Los Angeles to Anaheim.

ii. Although the Plan now proposes high speed service from Los Angeles to Anaheim, it continues to propose a blended system from San Jose to San Francisco. In Commenter's opinion, for reasons argued by the petitioners in *Toss*, a blended system violates Proposition 1A.

iii. Even if the Authority can achieve economies of $5.5 billion below previous estimates, as set forth in Part 2 below, the Authority still fails to identify sources of most of the funds needed to complete the system.

b. The Plan describes HSR as ultimately terminating in San Francisco at Fourth and King Streets. Commentator has understood until recently that HSR would terminate at the planned Transbay Terminal. In fact, the Transbay Joint Powers Authority's website states that HSR eventually will link to the terminal. The cost of this extension is not addressed in the Plan. The Plan also fails to discuss whether a phased approach to reaching the terminal will cost more than linking to the terminal from the outset. Commenter is also concerned that the Authority's arguments and evidence in the *Toss* matter imply that the choice to terminate initially at Fourth and King Streets was made to shave valuable minutes off of travel times so that HSR can meet maximums established in Streets and Highways Code section 2704.09, subdivision (b). This is disingenuous, especially if HSR ultimately will connect to the Transbay Terminal.

c. Commenter is perplexed by the proposal stated on page 24 of the Plan to subsidize construction of the Central Subway in San Francisco, a public works project with a staggering price tag of approximately $1 billion per mile. This expenditure appears calculated to help connect HSR to downtown San Francisco to make HSR a more viable option for city residents. The expenditure would seem unnecessary if HSR initially connects to the Transbay Terminal.

2. **An estimate and description of the total anticipated revenues the Authority intends to access to fund construction and operation of the system, and the level of confidence for obtaining each type of funding** (Pub. Util. Code, § 185033, subd. (b)(1)(E)): Unless the Authority concretizes its funding plan, California ultimately could

end up with a train that connects only San Jose and Shafter. Commenter has the following concerns regarding funding:

a. Section 6 of the Plan demonstrates that the Authority has identified only enough funding to construct HSR from San Jose to north of Bakersfield. It remains unclear how the rest of the project will be funded. The Plan is particularly vague in describing revenue sources that may be tapped to link HSR from Bakersfield to Burbank, and there is no discussion at all on funding for Phase 2 of HSR.

b. The Authority has consistently argued in *Toss* that compliance with Proposition 1A is not necessary if the HSR system is not constructed using bond revenues. Yet on page 59, the Plan states that $2.605 billion in Proposition 1A bond funds have been appropriated to match federal investments. There is no alternative source of matching funds addressed in the Plan.

c. To fund the remainder of Phase 1 beyond the San Jose to north of Bakersfield segment, the Plan identifies cap-and-trade, federal funds, and private sector investment leveraged through anticipated future revenue streams. However:

   i. The Plan lacks a discussion of how estimates of cap-and-trade revenues were derived, and the required analysis of the Authority's level of confidence that those revenues will be realized is entirely lacking. Commenter also wonders whether HSR is an appropriate use of cap-and-trade funds. For example, on page 32, the Plan states that all power used to run HSR will be supplied through contracts with renewable energy suppliers. Whether an actual offset of fossil fuel consumption will be achieved through these contracts, however, depends upon whether, because of the Air Resources Board's Renewables Portfolio Standard and other incentives, the suppliers ultimately will go into operation regardless of whether HSR is built. If so, then HSR will merely use renewable power that otherwise would have gone into the grid for other uses, which will instead be powered through traditional means.

   ii. The Plan's discussion of federal funding sources: (1) is lacking in specifics, (2) includes no confidence analysis, and (3) is vague concerning fund matching requirements. It also appears from the discussion that the Authority is relying heavily on the President's "21st Century Clean Transportation System" proposal, even though there is no evidence in the Plan that the proposal has been introduced as legislation in Congress, or that the Authority will qualify for funding under the proposal. Nor is there any indication of the specific amount of funding for which the Authority may qualify if the proposal materializes.

   iii. The discussion concerning private investment details the amount of investment the Authority can expect to receive based upon HSR's anticipated profitability, but no strategy is provided for securing such investment, and no current efforts for doing so are described.

3. **Forecast of the expected patronage, service levels, and operating and maintenance costs for the Phase 1 corridor** (Pub. Util. Code, § 185033, subd. (b)(1)(B), (C)):

    a. As part of this element, the Authority is required to describe "alternative financial scenarios for different levels of service." The only "different level of service" discussed in Section 7 of the Plan is a potential initial operating segment from San Francisco to Bakersfield rather than from San Jose to Shafter (i.e., north of Bakersfield). Furthermore, all financial projections for this alternative are based only on a medium level of ridership, revenue, and cost. More than one alternative and a fuller analysis based upon high, medium, and low levels of ridership, revenue, and cost seem appropriate.

    b. Reliance on Monte Carlo simulation is dubious. Many financial experts warn against reliance on Monte Carlo simulation because it fails to account for the fact that future investment performance depends as much on the sequence of future investment returns as on the average of those returns. According to Julie Crawshaw in an article in *WealthManagement Magazine* (www.wealthmanagement.com, accessed Feb. 24, 2016), in assessing risk, Monte Carlo simulation spreads potential losses across the full investment period, without giving consideration to the possible impact of multiple simultaneous loss years. A comparison may be drawn to climactic conditions. An analysis of the long-term impact of California droughts, for example, would be skewed if we assume that droughts happen at regular intervals without multiple dry years scenarios like the current one. According to Crawshaw, Monte Carlo simulation also fails to treat a starting position as an actual position, instead treating it as one scenario amongst many. Thus, based upon the Authority's figures, HSR may well operate at a loss in its anticipated first year of 2025, with fare box revenues estimated at $186 to 339 million, and projected operation and maintenance costs running between $268 and 306 million. However, Monte Carlo simulation assumes that a loss is merely one scenario among many, and gives equal weight to it without any analysis of the actual likelihood of a loss or its impact on future years or the ability in future years to compensate for the loss. In fact, here the Authority first calculates the likelihood of profits in future years, and then assumes that those profits will be adequate to cover initial year losses, without instead factoring the need to repay losses into calculations of future year profitability.

4. **The expected schedule for completing environmental review** (Pub. Util. Code, § 185033, subd. (b)(1)(D)): The Plan makes much of the Silicon Valley housing shortage and the potential benefits that an initial operating segment between San Jose and the Central Valley may have on alleviating the shortage. If a new goal of HSR is to spur high density housing development in Central Valley cities, this may be a significant impact that will require supplemental environmental analysis. It is also worth considering whether a market for high density housing in the Central Valley reliant on HSR is even sustainable. At page 67, the Plan estimates that a single trip from San Francisco to Los Angeles will cost $89. Even assuming that the trip from Fresno to San Jose, for example, is only one-third of that amount (which is conservative since Fresno and San Jose are 150 miles apart,

compared to the total distance of 380 miles between San Francisco and Los Angeles), a round trip ticket between San Jose and Fresno will cost approximately $60. Assuming a work year of 220 days, the total annual cost of commuting would be over $13,200, enough to contribute an additional $1,100 per year toward housing, without considering the tax and investment benefits of home ownership over sinking money into transit expenses. Under these circumstances, while there may be an initial demand for housing in the Central Valley from Silicon Valley tech workers, query whether that demand will remain constant as the market responds to the reality of HSR ticket pricing. While bulk pricing or fare subsidies may provide a solution to the problem, it does not appear that current Plan projections consider the impact of bulk pricing, and HSR is required by law to operate without subsidy, pursuant to Streets and Highways Code section 2704.08, subdivision (c)(2)(J).

5. **Any agreements with public or private entities to fund components of the high-speed rail system, including stations and terminals, and any impediments to the completion of the system** (Pub. Util. Code, § 185033, subd. (b)(1)(F)): Although the Plan appendix indicates that this element is addressed in Section 6 of the Plan, Commenter finds nothing directly on point in Section 6 or elsewhere in the Plan.

6. **Alternative public-private development strategies for the implementation of Phase 1** (Pub. Util. Code, § 185033, subd. (b)(1)(G)): The Plan appendix indicates that this element is addressed in Sections 3 and 6 of the Plan. Nothing in Section 6 clearly and concretely addresses this element. Section 3 states only that: (1) the system will be operated by a private party, and (2) the Authority will engage an operator early. There is also general mention in the Plan that private parties will serve as station concessioners, HSR will be constructed by private entities under design-build contracts, and HSR will enter into agreements with utility companies during construction. These bare bones assertions are not "development strategies," and this statutory element of the Plan is lacking.

7. **Discussion of all reasonably foreseeable risks the project may encounter, and the strategies, processes, or other actions the Authority intends to use to manage those risks** (Pub. Util. Code, § 185033, subd. (b)(1)(H)): According to the Plan's appendix, Section 9 of the Plan is intended to address this element. Generally, Section 9 is overly vague in describing risk management strategies. Commenter also is perplexed by the language on page 89 of the Plan that to mitigate potential legal challenges, the Authority will "[w]ork closely with affected stakeholders to address issues before they become formal lawsuits," and will seek to resolve "legal issues raised through those lawsuits." Commenter currently is engaged in litigation with the Authority specifically because the Authority refuses to do what it pledges here. From the beginning, the Authority has treated the people of Kings County with utter contempt. The Authority never consulted with the local community before deciding that HSR would shuttle through valuable Kings County farmland, and refuses to sit down with local officials to discuss seriously alternatives to condemning farmland rather than building HSR along existing right-of-ways through the County. Neither has the Authority made a single effort to address concerns raised by Commenter in litigation. Commenter has felt shut out of the process and entirely disregarded at every turn, and the message from the Authority consistently

has been that Commenter's communities stand in the way of "progress," and do not matter.

For the foregoing reasons, Commenter deems the Plan inadequate, and respectfully asks the Authority to complete the analysis for each of the Plan's statutorily required elements.

Sincerely,

By: */s/ Erik Kaeding*, deputy

COLLEEN CARLSON,
Kings County Counsel

OFFICE OF
COUNTY COUNSEL
KINGS COUNTY
1400 W LACEY BLVD
HANFORD CA 93230

RETURN SERVICE REQUESTED

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25 FEB 16
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MAR 1 2016

Attn: Draft 2016 Business Plan
Calif High-Speed Rail Auth.
770 L St., Ste. 620, MS-1
Sacramento, CA 95814

9581435900

2016 Business Plan RECORD DETAIL

Submission Date :	3/7/2016
Submission Method :	Website
First Name :	Randy
Last Name :	Coleman
Stakeholder Comments/Issues :	We live in San Martin CA. and want to know where exactly the track is going to be built.
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date : 3/7/2016

Submission Method : Project Email

First Name : Robert

Last Name : Allen

Stakeholder Comments/Issues : Your 2016 Business Plan is far better than those of previous years. It totally misses, however, the important role of another state agency, the California Public Utilities Commission.

CPUC has safety oversight responsibility over railroad operations. Yet I find no mention of CPUC's role in safety. Until a note at the bottom Page 93 not related to safety, CPUC is not even mentioned. You ignore CPUC at your peril. They are fierce, even overbearing at times, in pursuing safety issues. Let me cite an example with a publicly-owned railroad like yours.

In January, 1979, a third rail power pickup paddle on a BART train broke, sending a high voltage power surge that set a train on fire in the trans-Bay tube. I have retired from engineering and operations on three Class 1 railroads now part of Union Pacific. Any of those railroads after such a freak incident would have repaired the damage and continued operations.

CPUC here, though, ordered BART to keep their vital trans-Bay tube closed, causing chaos in the Bay Area commute for well over three months. Nobody would deny that the changes were needed, but the regional havoc was a stiff price to pay.

You plan "Blended Rail", operating on Caltrain tracks that now have a maximum speed of 79 mph. You and Caltrain talk of raising that speed to 110 mph or more and running your trains at close to the maximum speed.

Bourbonnais is a good example of a train at 79 mph hitting a truck loaded with steel. Two Amtrak locomotives and 11 of 13 cars derailed, with many deaths and injuries. Had that train been going faster , the toll would have been much higher. Or the truck could have been a gasoline or chlorine tanker or loaded with explosives.

Trains are vulnerable to accidents, suicides, sabotage, and even terrorism at grade crossings. Demand grade separation of roads crossing tracks where you operate. CPUC will likely demand it.

One thought re CPUC: operate your trains only south of San Jose. Let Caltrain either pilot or run your equipment north of San Jose as Caltrain.

Notes :

Attachments :

image001.png (3 kb)
image002.jpg (8 kb)
image003.jpg (8 kb)
image004.jpg (1 kb)
image005.jpg (1 kb)
image006.png (7 kb)

2016 Business Plan RECORD DETAIL

Submission Date :	3/8/2016
Submission Method :	Public Hearing - Written Comment
First Name :	Ted
Last Name :	Hart
Stakeholder Comments/Issues :	Concerns about safety and terrorism and claimed that they were not adequately addressed.
Notes :	He also provided written remarks, which he read from at the Board meeting. The transcript is attached

2016 Business Plan RECORD DETAIL

Submission Date :	3/14/2016
Submission Method :	Website
First Name :	STEVEN
Last Name :	BARNES
Stakeholder Comments/Issues :	IT IS GREAT THAT CALIFORNIA IS ACTUALLY BUILDING THIS HIGH SPEED RAIL. I WATCH THE WEBSITE DAILY. KEEP GOING AND HAVE SUCCESS !!
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	3/14/2016
Submission Method :	Website
First Name :	Kevin
Last Name :	Bush
Stakeholder Comments/Issues :	We at the Kern County Black Chamber of Commerce would like to see an extension of CP4 to 7th Standard Road (North of Bakersfield), the proposed site for an interim Multi-modal facility and Terminal Storage and Maintenance Facility.
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date : 3/17/2016

Submission Method : Letter

First Name : Bob

Last Name : Huff

Stakeholder Comments/Issues : March 17, 2016

Mr. Dan Richard, Chair
California High Speed Rail Authority
770 L Street, Suite 620 MS-1
Sacramento, CA 95814

RE: Draft 2016 Business Plan

Dear Chairman Richard,

As the Senator representing the 29th Senate District covering portions of Los Angeles, Orange and San Bernardino Counties, I reject the Draft 2016 Business Plan unveiled by the California High Speed Rail Authority. This draft will result in a continued series of broken promises to Californians who were sold a promise of “electric-powered high-speed trains running up to 220 miles an hour on modern track.”

Proposition 1 promised Californians that Phase 1 of the high speed rail project would connect Los Angeles with San Francisco at speeds up to 220 miles per hour, providing a "one-seat ride" for the trip in 2 hours and 40 minutes. Backers also promised that the system would operate without a subsidy, and would connect the state's major cities in the Bay Area, Central Valley and Southern California.

The Draft 2016 Business Plan unveiled by the California High Speed Rail Authority (HSRA) contains a dramatic change in promises previously made with Phase 1 of the project. It abandons Los Angeles and Southern California until much later and reverses track with promises to connect the Silicon Valley to the Central Valley.

Californians were promised stations and stops in San Diego, Los Angeles, San Jose, San Francisco and Sacramento. None of these stations will be built in the revised Phase 1 guidelines contained in the 2016 Draft Business Plan.

It’s been nearly eight years since California voters approved Proposition 1A. The only thing that Californians have received from the HSRA is a system of cost overruns and broken promises.

Revising Phase 1 of the project to connect the Central Valley to the Silicon Valley isn’t going to make tunneling through the Tehachapi Mountains any easier or cheaper. Instead of being upfront with the cost of this massive infrastructure undertaking, which will most certainly run into the billions of dollars, the Authority is instead opting to distract Californians with a shiny bauble. It isn’t going to work.

To make matters worse, work on the Central Valley segment is way behind schedule. Proponents of high speed rail promised us they would have the trains rolling by next year. Now this isn’t projected to take place until 2019, if at all.

Furthermore, the 2016 Draft Business Plan relies upon federal funding to extend the line to Bakersfield. Let’s be clear about this. This is funding that has not been promised by the federal government nor has it been received. Congressman Jeff Denham, a member of the House Transportation and Infrastructure Committee, recently weighed in with the prediction that “Congress is never going to allocate more money to a project that lacks the ridership numbers, speeds, private funding and voter support once promised.”

This is not the high speed rail system that voters supported in 2008. I believe it’s time to reveal the Draft 2016 Business Plan for what it truly is: wishful thinking and more broken promises. I will advise my Senate colleagues to reject this plan when it is presented to the State Legislature.

Sincerely,

BOB HUFF
29th Senate District

Notes :

Attachments : HSRLetter2016DraftBusinessPlan-Huff3-17-16.pdf (64 kb)

CAPITOL OFFICE
STATE CAPITOL
ROOM 305
SACRAMENTO, CA 95814
TEL (916) 651-4029
FAX (916) 651-4929
WEB
WWW.SENATE.CA.GOV/HUFF

California State Senate

DISTRICT OFFICE
1800 E. LAMBERT ROAD
SUITE 150
BREA, CA 92821
TEL (714) 671-9474
FAX (714) 671-9750

SENATOR
BOB HUFF
TWENTY-NINTH SENATE DISTRICT

March 17, 2016

Mr. Dan Richard, Chair
California High Speed Rail Authority
770 L Street, Suite 620 MS-1
Sacramento, CA 95814

RE: Draft 2016 Business Plan

Dear Chairman Richard,

As the Senator representing the 29th Senate District covering portions of Los Angeles, Orange and San Bernardino Counties, I reject the Draft 2016 Business Plan unveiled by the California High Speed Rail Authority. This draft will result in a continued series of broken promises to Californians who were sold a promise of "electric-powered high-speed trains running up to 220 miles an hour on modern track."

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The Draft 2016 Business Plan unveiled by the California High Speed Rail Authority (HSRA) contains a dramatic change in promises previously made with Phase 1 of the project. It abandons Los Angeles and Southern California until much later and reverses track with promises to connect the Silicon Valley to the Central Valley.

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billions of dollars, the Authority is instead opting to distract Californians with a shiny bauble. It isn't going to work.

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This is not the high speed rail system that voters supported in 2008. I believe it's time to reveal the Draft 2016 Business Plan for what it truly is: wishful thinking and more broken promises. I will advise my Senate colleagues to reject this plan when it is presented to the State Legislature.

Sincerely,

BOB HUFF
29th Senate District

2016 Business Plan RECORD DETAIL

Submission Date :	3/8/2016
Submission Method :	Public Hearing - Oral Comment
First Name :	Roland
Last Name :	Lebrun
Stakeholder Comments/Issues :	Transcript from public comment period on the Draft 2016 Business Plan at the March 8, 2016 Board of Directors meeting in Sacramento.
Notes :	
Attachments :	Lebrun_DRAFT_2016_BP_Transcript_030816.pdf (9 kb)

well, we're extremely proud that our sites have no to minimal environmental issues.

Lastly, Supervisor Gleason and our coalition would like to invite you to hold a meeting in Bakersfield or Kern County. And we welcome any of you individually at any time.

Thank you for your time.

CHAIRMAN RICHARD: Thank you, Ms. Skidmore. If you could pass on to the Supervisor our best wishes and tell him I actually thought his airplane was back in the shop. So that was -- thank you.

Okay, I think those are the comments from various people on the -- well no, I'm sure they're not. I'm sure we have at least one more on the heavy maintenance facility issue, so I'll hold my comment on that.

Next is Roland Lebrun, followed by Ted Hart.

MR. LEBRUN: Good morning, Chair Richard and Members. And thank you for reaching out earlier. I really appreciate that.

The first thing I'd like to say with regards to earlier remarks, it is really unfortunate when your own Chief Executive is quoted in the press as saying that the Authority is transitioning from providing a high-speed connection between L.A. and San Francisco. That's unfortunate.

But the real reason I'm here is to share some concerns with what we know of the Draft Business Plan so far. And the first one is Monterey Highway, which is in my back yard, and the second one is serious issues with the proposed tunnel designs.

The proposal right now is to pretty much build a $1.4 billion 20-mile viaduct between South San Jose and Gilroy. And it doesn't make any sense, because if you look at the Monterey Highway Alignment it's all built up, which means you've got the 125-mile-an-hour speed limit. And then you're going to hit something called Tulare Hill, which is a sharp bend around a hill that you can't possibly touch.

So the question is why are we having a 60-foot viaduct that basically goes over everything, all on the overpass over there?

The second thing I want to talk about, which I'm extremely concerned about, is the so-called value engineering for the Pacheco Pass tunnels. And the proposal is to reduce the tunnel diameters and eliminate the tunnel ventilation. And that is really remarkable, because the only way that you're going to be able save lives, if there is an incident in the tunnel, is with tunnel ventilation.

And the issue that you have is let's just suppose worst comes to worse and you do have an incident and you

have fatalities, and you do want to add tunnel ventilation later. The equipment interferes with the air flow in the tunnel, which means that eventually you're going to have to increase the diameter of the tunnels. That needs to be looked at.

But in closing, with all due respect to the Members of this Board, my recommendation moving forward is that next time you have vacancies is you follow the example that Mr. Rossi started with Administration and Finance -- start with engineering and consider appointing civil engineers to the Board who have got this kind of expertise. Who basically are going to stop this thing like right there before it gets anywhere in your Business Plan.

Thank you very much.

CHAIRMAN RICHARD: Thank you, Mr. Lebrun.

Ted Hart followed by Robert Allen.

MR. HART: Good morning.

CHAIRMAN RICHARD: Good morning.

MR. HART: The 2016 Draft Business Plan does not contain one word concerning the need for security to prevent a terrorist attack on the High-Speed Rail System. How could this have been overlooked with the threat and execution of bombings, murder, mass destruction a 24/7 worldwide reality?

Security is not something that High-Speed Rail

2016 Business Plan RECORD DETAIL

Submission Date :	3/8/2016
Submission Method :	Public Hearing - Oral Comment
First Name :	Robert
Last Name :	Allen
Stakeholder Comments/Issues :	Transcript from public comment period on the Draft 2016 Business Plan at the March 8, 2016 Board of Directors meeting in Sacramento.
Notes :	
Attachments :	Allen_DRAFT_2016_BP_Transcript_030816.pdf (9 kb)

light air craft. All road crossings are open. Keep in mind that people have been blowing up trains since the first ones made it out on to the tracks. And blowing up trains was perfected in World War II.

Since there isn't a security plan there isn't any way to make a cost analysis. The first terrorist-created high-speed train wreck would potentially end the demand for high-speed rail travel in the U.S. for the simple reason that fear would drive people to make the choice to fly or drive. Of course, planes are vulnerable, but so far they have a great safety record. It's hard for the bad guys to attack a plane once it's in the air whereas the train is exposed the entire trip. Fear is a great motivating factor. And people who fear a terrorist attack are not going to buy tickets on the high-speed rail.

The High-Speed Rail Authority must address these serious security issues. And I look forward to the response in the final 2016 Plan. Thank you.

CHAIRMAN RICHARD: Thank you Mr. Hart.

Next is Robert Allen.

MR. ALLEN: I never thought that we would see a train uprooted by a tree. A tree uprooted in the rain was all it took to stop that train. They tell us now that it was just a slide. The train was slow, but no one died.

I think you're on the right track. Your 2016

Business Plan is far better than plans of previous years. However, it does miss the important role of another state agency, the California Public Utilities Commission. CPUC has safety oversight responsibility over railroad operations. Yet I find no mention of the CPUC's role in safety. Indeed it's until we get to a note at the bottom of page 93 that we even see the CPUC mentioned.

You ignore the CPUC at your peril. They are fierce, even overbearing at times, in pursuing safety issues. Let me cite an example with a publicly-owned railroad like yours. In January of 1979, a third rail power pick up paddle on the BART train broke, sending a high voltage power surge that set the train on fire. The CPUC ordered BART to -- now let me look, my notes are missing here. I have the (indiscernible) --

CHAIRMAN RICHARD: Let me help you out with this. What you are going to tell us is that a firefighter died in the ensuing fire and the PUC shut down BART for many months after that.

MR. ALLEN: Yes, for over three months the PUC ordered BART to keep that Transbay Tube closed, even though -- well I've worked for three different railroads, which are all part of the Union Pacific now -- any of those railroads after such a freak incident would have repaired the damage and continued operations. The PUC here ordered

the BART to keep the Transbay Tube closed, causing chaos in the Bay Area commutes for well over three months. Nobody would deny that the changes were needed, but the regional havoc was a stiff price to pay.

You plan blended rail operating on Caltrain tracks that now have a maximum speed of 79 miles an hour. You and Caltrain talk of raising that speed to 110 miles an hour or more and running your trains at close to the maximum speed. Bourbonnais is a good example of a train at 79 miles an hour hitting a truck loaded with steel. Two Amtrak locomotives and 11 of 13 cars derailed, with many deaths and injuries. Had the train been going faster, the toll would have been much higher. Or the truck could have been loaded with gasoline, or chlorine, a chlorine tanker, or it could have been loaded with explosives.

Trains are vulnerable to accidents, suicides, sabotage and even terrorism at grade crossings. Demand grade crossings -- demand grade separation at roads that cross your tracks where you operate. PUC will likely demand it.

One thought regarding the PUC, operate your trains only south of San Jose. Let the Caltrain either pilot the equipment or run the equipment north of San Jose as a Caltrain train. Thank you.

CHAIRMAN RICHARD: Thank you, Mr. Allen.

2016 Business Plan RECORD DETAIL

Submission Date : 3/23/2016

Submission Method : Project Email

First Name : Cindy

Last Name : Bloom

Stakeholder Comments/Issues : Dear California High Speed Rail Authority:

Please see the attached reports; consider them my comments.

1. Analysis of 2016 Draft Business Plan Capital Cost Basis of Estimate
2. 2016 Draft Business Plan Ridership/Revenue and Projected Cashflow

In summary, the capital cost projection is incomplete as it leaves out many presumably expensive components and compares the 2016 figure to the 2014 figure, when instead, it should be comparing the 2016 figure to, at minimum, the 2008 figure which was the basis for voters' marginal approval of Prop 1A. Additionally, the revenue projections are just pure bunk.

One issue which I have never seen addressed is: If private investor(s) do provide equity to the project, in what proportion or priority do they recoup their investment? Do they keep 100% of operating revenue or it is based on the amount of their equity stake? Do the taxpayers recoup any sunk costs?

Your agency frequently boasts of its transparency and this 2016 draft business plan is just that: Transparent. It is easy to recognize when a fiscal target is set and then input variables are manipulated. Your 2016 draft business plan is a textbook case of fudging numbers. Congratulations!

Thank you.

Cindy Bloom, M.B.A.
818-445-5602
9800 La Canada Way
Shadow Hills, CA 91040

Notes :

Attachments : Analysis of 2016 Draft Bus Plan Capital Cost.Final.pdf (1 mb)
2016 Draft Business Plan Ridership & Cashflow.Final.pdf (1 mb)

ANALYSIS OF CALIFORNIA HIGH SPEED RAIL AUTHORITY'S CAPITAL COST BASIS OF ESTIMATE REPORT

Draft 2016 Business Plan: Technical Supporting Document

By Cindy Bloom
March 9, 2016

TABLE OF CONTENTS

ABSTRACT

From 1996 through 2016, there have been eleven publicly available budgets[1] prepared by the California High Speed Rail Authority ("CHSRA") (formerly known as the California Intercity High Speed Rail Commission) and/or the California Legislative Analyst's Office. These cost estimates range from a low of $16.5 billion (1996) to a high of $98.1 billion (2011). The aforementioned $98.1 billion cost estimate was published in November 2011 as a precursor to the 2012 Draft Business Plan and plummeted by $29.7 billion to $68.4 billion by the time the 2012 Revised Business Plan was revealed—only a few short months later. While CHSRA attempted to explain this significant drop, it served to aim a spotlight on CHSRA's planning process. Also, the $81.6 billion variance from this 2012 Draft Business Plan over the 1996 Business Plan, and CHSRA's "moving target" cost estimates is a symptom of an underlying problem and strongly suggests the CHSRA's management team and Board of Directors are tasked with a project for which they do not possess the core competency to successfully plan, build, and implement this project--the largest infrastructure project in U.S. history.

EXECUTIVE SUMMARY

On February 18, 2016, CHSRA released its draft 2016 Business plan ("2016 BP"). The 2016 BP plan's cost now stands at $64.2 billion versus $67.6 billion, a reduction of $3.4 billion (5%) compared to the 2014 Adopted Business Plan ("2014 BP"). However, while on its face this reduction appears to be legitimate, when analyzing the details, this "cost reduction" seems to be a distraction in order to switch attention away from the fact that a $64.2 budget is *billions* more than what was presented as recently as May 2011. For example, rather than compare its 2016 BP to historical figures, it uses the 2014 BP as its only basis for comparison. Further, it continues to mix 2015 dollars with Year of Expenditure dollars (YOE$), which are adjusted for future inflation, in order to confuse and convince its readers that it is transparent and honest in its assessment of the project's true cost. It is worth mentioning that the savings could have been $5.5 billion instead of $3.4 billion had the agency had decided not to use some of its "savings" to add $2.1 billion worth of elements to the Los Angeles to Anaheim project section.

Although the CHSRA has properly included several contingency margins, at the same time it has also failed to include many necessary line items which could consume their $3.4 billion "savings" and possibly push the project's cost back up and possibly beyond the 2014 BP's estimate of $67.6 billion. Additionally, the 2016 BP states that CHSRA will seek to secure loans and financing, yet it has *excluded any interest or finance charges in its 2016 BP estimate*. For example, interest expense on a $5.3 billion loan[2] will incur approximately $5 – $5.2 billion in interest expense. The Prop 1A bond of $9.95 billion will incur $9.4 billion in interest charges that will be repaid from the General Fund. It is unclear where the interest charges on any debt

[1] The terms "budget," "cost," and "cost estimates" are used interchangeably in this document

[2] The loan amount mentioned in its main business plan which is expected to be repaid by cap and trade proceeds; Director Rossi acknowledges that cap and trade sunsets in 2020: https://www.youtube.com/watch?v=MxeSHZ9DoxQ&feature=em-subs_digest

beyond the Prop 1A bond issue will be budgeted; the only true known is that there will be billions of dollars in interest and the taxpayers will be held accountable for repayment.

Another item of concern is that these costs are the *capital costs only*—they exclude overhead, administrative costs, and a portion of planning costs. For total expenditures, CHSRA is on track to spent $2.5 billion from inception through June 30, 2016. Of this, $138 million for administrative costs[3] is not part of the capital costs/budget.

SCOPE

The 2016 BP is comprised of several documents:

- Connecting and Transforming California (100 pages)
- Capital Cost Basis of Estimate Report (49 pages)
- 50-Year Lifecycle Capital Cost Model Documentation (74 pages)
- Service Planning Methodology (18 pages)
- Ridership and Revenue Forecasting (62 pages)
- High, Medium, Low Cash Flows (12 pages)

This analysis examines the Capital Cost Basis of Estimate document that is the basis for the project's capital costs as of 2016.

ANALYSIS OF OVERALL PROJECT COST ESTIMATES[4]

Amount	Year	Description
$16.5 billion	1996	September 1996 Final Report of the California Intercity High Speed Rail Commission
$25 billion	2000	2000 California High Speed Train Business Plan
$37 billion	2005	August 2005 California High Speed Train Final Program Environmental Impact Report/Environmental Impact Statement
$45 billion	2008	July 7, 2008 Senate Appropriations Committee Fiscal Study of Assembly Bill 3034
$45 billion	2008	Analysis by the Legislative Analyst in the Official Voter Information Guide for the November 4, 2008 Election – Prop 1A – Safe, Reliable High Speed Passenger Train Bond Act
$33.6 billion	2008	November 2008 California High Speed Train Business Plan
$43 billion	May 2011	Report of the California Legislative Analyst's Office
$98.1 billion	2011	November 1, 2011 California High Speed Rail Program Draft 2012 Business Plan
$68.4 billion	2012	April 12, 2012 California High Speed Rail Authority Revised 2012

[3] It is unclear whether the administrative budget includes CHSRA staff salaries

[4] Source: California High Speed Rail Authority

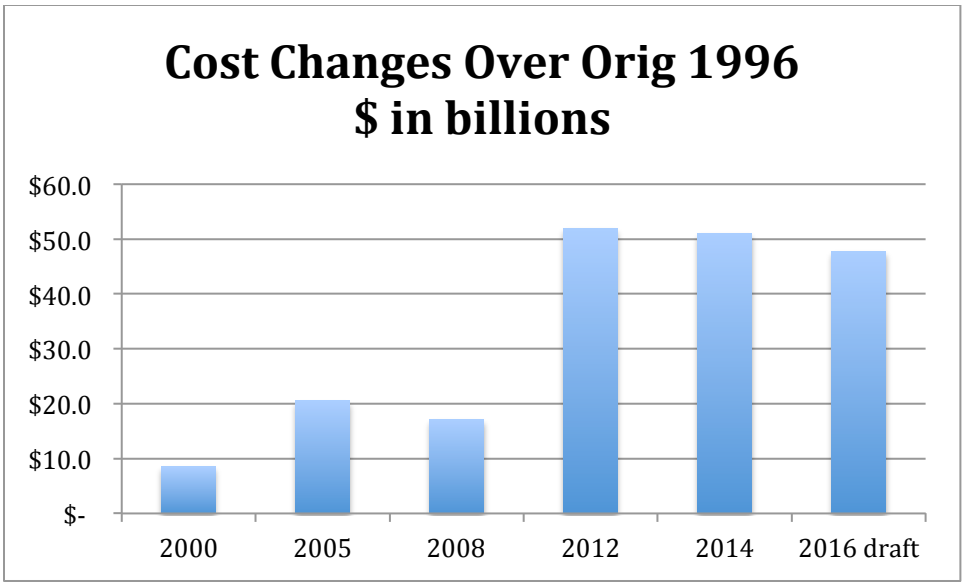
Amount	Year	Description
		Business Plan
$67.6 billion	2014	California High Speed Rail Authority's Adopted 2014 Business Plan
$64.2 billion	2016	California High Speed Rail Authority's Draft 2016 Business Plan

Although the costs have declined slightly from the most recent business plan, when compared to the original estimate put forth in 1996, the 2016 BP is over by 289%. These increases are not due to inflation, and the CHSRA frequently states that the majority of their business plan numbers is already inflation-adjusted and uses the "Year Of Expenditure" ("YOE$") figures. According to the U.S. Bureau of Labor Statistics, the original 1996 budget of $16.5 billion, when adjusted for inflation in 2016, would be $24.9 billion—certainly *not* $64.2 billion.

When 2016 is compared to 2008 estimates published in the text of the Prop 1A ballot initiative, it is 43% over that estimate; when compared to the subsequent 2008 Business Plan, it is 91% above--or nearly double—in less than a 10 year period. What is important to remember is that the electorates who voted in favor of Prop 1A approved a project estimated to cost $45 billion.

The following chart lays out each business plan budget and calculates the change in cost compared to the previous business plan, and then to the original $16.5 billion. For example, 2012's budget increased $34.8 billion over the prior business plan in 2008, and $51.9 billion over 1996.

Business Plan Capital Costs Comparison							
Business Plan Year	**1996**	**2000**	**2005**	**2008**	**2012**	**2014**	**2016 draft**
Cost (billions)	$ 16.5	$ 25.0	$ 37.0	$ 33.6	$ 68.4	$ 67.6	$ 64.2
$ Change over Prior BP (billions)		$ 8.5	$ 12.0	$ -3.4	$ 34.8	$ -0.8	$ -3.4
% Change over Prior BP		52%	48%	-9%	104%	-1%	-5%
$ Change over Original BP (billions)		$ 8.5	$ 20.5	$ 17.1	$ 51.9	$ 51.1	$ 47.7
% Change over Original BP		52%	124%	104%	315%	310%	289%



When further broken down into "cost per mile," the story is similar and just as troublesome. The cost per mile increased 558% 2016 BP versus 1996:

Cost per Mile (millions)							
Business Plan Year	**1996**	**2000**	**2005**	**2008**	**2012**	**2014**	**2016 draft**
Miles	880	700	520	520	520	520	520
Cost per mile (millions)	$ 18.8	$ 35.7	$ 71.2	$ 64.6	$ 131.5	$ 130.0	$ 123.5
$ Change over Prior BP (billions)		$ 17.0	$ 35.4	$ -6.5	$ 66.9	$ -1.5	$ -6.5
% Change over Prior BP		90%	99%	-9%	104%	-1%	-5%
$ Change over Original BP (billions)		$ 17.0	$ 52.4	$ 45.9	$ 112.8	$ 111.3	$ 104.7
% Change over Original BP		90%	279%	245%	602%	593%	558%

COMPARISON OF DRAFT 2016 BUSINESS PLAN TO 2014 BUSINESS PLAN

The capital costs overall decreased by a nominal 5%, a rate commonly used for allowances and returns in other industries, yet CHSRA claims this to be a major victory:

	$ in Billions	
2014 Business Plan	*$67.6*	
Design Refinements	$-3.5	
Lessons learned from bids	$-1.3	
Allocated contingencies	$-0.7	
LA to Anaheim	$2.1	
	$64.2	<---2016 Biz Plan YOE $
	$-3.4	<---Net change 2016 v. 2014
	-5%	<---Net change 2016 v. 2014 %
	$55.3	<---2016 Biz Plan 2015 $
	$8.9	Cost of Time

Further, their estimates could be grossly inaccurate. The CSHRA is using an Association for the Advancement of Cost Engineering Class 3 estimate process which currently which has a swing of -10% to 20% and +10% to 30%. In YOE$ terms, this could conceivably inflate their 2016 BP figure from $64.2 to $83.5 billion:

$ in billions	COST RANGE BASED ON CLASS 3 ESTIMATE			
2016 Est.	-10%	-20%	10%	30%
$ 64.20	$ 57.78	$ 51.36	$ 70.62	$ 83.46

EXCLUDED ITEMS FROM THE 2016 BUSINESS PLAN

It is essential to note that there are many items excluded from the cost estimates that could conceivably push the project way beyond its current projection of $64.2, even with all the built-in contingencies:

- Finance charges (entire project)
- CHSRA administration costs (entire project)
- Five mile track from Santa Clara to San Jose for UPRR (SF to SJ)
- Structural modifications to 4 existing tunnels (SF to SJ)
- Conversion of Caltrain platforms to level boarding except for stations shared with HSR (SF to SJ)
- Platform extension to 1400 feet (SF to SJ)
- Blast protection zone (Bakersfield to Palmdale)
- Metro/UPSS agreements for shared used (Burbank to Union Station)
- Burlington North Santa Fe Railroad's Hobart yard expansion (Burbank to Union Station)

ANALYSIS OF COST ESTIMATES BY PROJECT SECTIONS

There is a wide cost variation between project sections and it becomes apparent why CHSRA decided to change direction and select the Central California to Northern California as the initial operating section.

The following chart illustrates the cost per mile by project section. Not surprisingly, the Palmdale to Burbank segment is the most expensive, nearly 2.5x more than its nearest "competitor," San Jose to Gilroy.

COST PER MILE BY PROJECT SECTION SORTED DESCENDING

Project Section	$ Millions	Miles	Cost Per Mile	+/- Avg Cost
Palmdale to Burbank	$ 11,877.0	33.0	$ 359.9	$ 244.2
San Jose to Gilroy	$ 4,376.0	30.0	$ 145.9	$ 30.2
Burbank to LA	$ 1,593.0	13.0	$ 122.5	$ 6.8
Bakersfield to Palmdale	$ 9,746.0	80.0	$ 121.8	$ 6.1
Merced to Wye Legs 1	$ 1,032.0	9.0	$ 114.7	-$ 1.0
Wye Legs 1	$ 1,183.0	11.0	$ 107.5	-$ 8.2
Gilroy to Carlucci Road	$ 5,483.0	54.0	$ 101.5	-$ 14.2
Poplar Avenue to Bakersfield**	$ 2,030.0	23.0	$ 88.3	-$ 27.4
LA to Anaheim	$ 2,319.0	30.5	$ 76.0	-$ 39.7
San Francisco to San Jose	$ 3,136.0	48.0	$ 65.3	-$ 50.4
Madera Acres to Poplar Ave**	$ 6,908.0	118.0	$ 58.5	-$ 57.2
Carlucci Road to Madera Acres (Wye Leg 2)	$ 960.0	37.0	$ 25.9	-$ 89.8
TOTAL - CORRIDORS*	**$ 50,643.0**	**486.5**	***$ 115.7***	
Maintenance Facilities	$ 1,242.0			
Trainsets	$ 3,399.0			
TOTAL (unadjusted for inflation)	**$ 55,284.0**		**Average Cost**	

*does not tie to CHSRA's 520 mile figure

**new segment based on adding in an interim stop in Shafter

Although the Southern California operating segments represent only 16% of the total miles, they consume 31% of the budget:

SOUTHERN CALIFORNIA ROUTES ONLY

Project Section	$ Millions	Miles
Palmdale to Burbank	$ 11,877.0	$ 33.0
Burbank to LA	$ 1,593.0	$ 13.0
LA to Anaheim	$ 2,319.0	$ 30.5
TOTAL SOUTHERN CALIFORNIA ONLY	**$ 15,789.0**	**$ 76.5**
% of Total	31%	16%

PALMDALE TO BURBANK SECTION

The project section S.A.F.E. is most interested in is the Palmdale to Burbank operating segment. The 2016 BP is quite vague as it specifically refers to E1a, and "a new alternative defined in … adopted in June 2015." Note that they have eliminated smoke control shafts and instead are using a "compartmentation strategy" for smoke control, which sounds neither safe nor desirable. Also note that it is eliminating any third bore service tunnel for tunnels over six miles long so one can assume it applies to tunnels along the SR14 route. It certainly can be implied from this statement that in the event any of the East Corridor routes are selected, CHSRA *is*

planning on building three tunnels through the Angeles National Forest: Two for trains and one for service. The following is copied directly from their document:

Palmdale to Burbank

Table 16. Palmdale to Burbank Cost by SCC

STANDARD COST CATEGORY	2014 BP COST (2015 $, millions)	2016 BP COST (2015 $, millions)
10 TRACK STRUCTURES & TRACK	$5,994	$7,580
20 STATIONS, TERMINALS, INTERMODAL	$246	$313
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	$149	$19
40 SITEWORK, RIGHT-OF-WAY, LAND, EXISTING IMPROVEMENTS	$2,367	$1,609
50 COMMUNICATIONS & SIGNALING	$88	$214
60 ELECTRIC TRACTION	$278	$450
80 PROFESSIONAL SERVICES	$1,106	$1,247
90 UNALLOCATED CONTINGENCY	$372	$446
SUBTOTAL	**$10,599**	**$11,877**

Estimate assumes a new segment based on the east corridor tunnel alignment option E1a terminating just south of Burbank Airport station, and also reflects a new alternative defined in the Palmdale to Burbank Supplemental Alternative Analysis adopted in June 2015. The 2014 Business Plan estimate for this section was based on a SR-14 West alignment alternative resulting in comprehensive revision to earthwork, viaducts, and tunneling and grade separation quantities. The right-of-way requirements were also reevaluated to reflect the new east corridor tunnel alignment.

Assumptions

- Based on an alignment section length of 33 route miles
- An allowance is being carried for mechanical ventilation in tunnels due to the length of the tunnel segments
- Based on compartmentation strategy for smoke control in tunnels that would eliminate shafts to the surface within Angeles National Forest
- Third bore service tunnel was assumed not to be required in tunnels over six miles in length

Figure 1 Report on The Capital Cost Basis of Estimate Report, p. 40

The most notable change from 2014 to the 2016 BP is the addition of the Angeles National Forest corridor; overall, the incremental increase is only $14 million:

Palmdale to Los Angeles	$13,456	$13,470	$14	• Reflected Supplemental Alternative Analysis East Corridor alignment under the Angeles National Forest • Increase in tunneling costs due to increase in tunnel length (+$0.8B) • Increase in retaining walls due to constrained right-of-way (+$1.4B) • Increase in Los Angeles Union Station costs with shared tracks into station and dedicated platform faces for high-speed rail (+$0.6B) • Decrease in aerial guideway due to increase in tunneling (-$0.7B) • Decrease in grade separations costs by implementing shared use of existing corridor south of Burbank (-$0.7B) • Decrease in right-of-way costs (-$0.7B) • Reduced utility relocation costs due to increase in tunneling (-$0.2B) • Moved cost of LMF to HMF (-$0.2B)

Figure 2 Report on the Capital Cost Basis of Estimate Report, p.16

CHSRA appears to have intentionally excluded the incremental cost increase for solely the tunneling portion in its 2016 BP. However, due to the magic of math, it was easy to figure out, as follows:

$ in Millions	**Palmdale to Los Angeles**
$1.4	retaining walls
$0.6	LA-US
-$0.7	Less aerial, more tunnel
-$0.7	shared corridor
-$0.7	ROW
$0.2	utility reloc due to tunnel
$0.2	LMF to HMF
$13.7	*SAA East Corridor Tunnel**
$14.0	**Total Net Change**

*calculated number; includes $.8 billion for increased tunnel length

Using the numbers above, the incremental increase in costs due to tunneling through the Angeles National Forest is $13.7 million. This amount seems faulty since there is approximately 33 miles of tunneling and this would equate to roughly $415 million per mile. This figure seems low, particularly since it is inferred that there will be 3 tunnels bored through 33 miles of mountains. It also appears to be low compared to other projects' cost per tunnel mile with some estimates being as high as $1 billion per mile. However, the shorter the tunnel, the lower

the cost per mile due to amortizing the fixed costs (i.e., boring machine) over more miles. Even so, the $415 million per mile seems suspiciously under-budgeted.

MISCELLANEOUS

The CHSRA did include some reasonable assumptions such as their contractor mark-ups and overhead; and future CPI inflation rates.

Fun facts:

- Each train set is about 72 feet long and will cost $49 million each
- Phase 1 assumes 54 train sets; full build out will have 70
- Full build out construction is expected to be completed by 2028 and start of revenue operations is 2029
- Palmdale to Burbank[5] is at "conceptual" design stage, meaning it's only about 5% complete
- To date, the California Legislature has appropriated $3.71 billion in restricted Prop 1A bond funds although they have not been issued. If the bond funds are lost for any reason, the funds will be unencumbered (unappropriated).

CONCLUSION

The 2016 BP plan's cost now stands $64.2 billion versus $67.6 billion, a reduction of $3.4 billion (5%) over the 2014 BP. Although the CHSRA has properly included several contingency margins, it has also failed to include many necessary line items that could consume their $3.4 billion "savings" and possibly push the project's cost back up and perhaps beyond the 2014 BP's estimate of $67.6 billion. Additionally, the 2016 BP states that it will seek loans and financing, yet it has *excluded any interest or finance charges in its estimate*. Other risks include: (1) relying solely on cap and trade for capital investment and loan payments, and which revenue stream is scheduled to sunset in 2020; (2) depending heavily on securing dubious federal and other agency grants; (3) appropriating Prop 1A bond funds which are being legally challenged and are burdened with stringent requirements for issuance; and (4) 2016 ballot initiatives and pending legislation proposing to repurpose the Prop 1A bond funds for other state projects. Based on a plethora of recent negative press and intense public scrutiny, it appears that the 2016 BP's goal was to come in less than the 2014 BP by excluding several key items and under budgeting others, while simultaneously ignoring very genuine risks.

[5] The document does not identify when the Palmdale to Burbank operating segment will be operational

APPENDIX A
SOURCE OF FUNDING
From Draft 2012 Business Plan (page 60)

Federal Grants

$3.48 billion in Federal grants, including funds available through the American Recovery and Reinvestment Act and Fiscal Year 2010 funds are available for the program:

- $315 million is dedicated for Phase 1 planning activities
- $3.165 billion is dedicated for construction in the Central Valley

Proposition 1A Bond Proceeds

- 9.95 billion in bond funds are available to pay for the planning and construction of the system, including regional services which will connect to the system:
    - $2.609 billion has been appropriated for and committed to matching the Federal grant funds in the Central Valley
    - $1.1 billion has been appropriated for and committed to "bookend" improvements in Caltrain electrification and improvements in Southern California
    - $950 million was appropriated for regional connectivity projects, as laid out in Proposition 1A
    - Up to $1.125 billion can be set aside for preconstruction activities and administration costs, as spelled out in Proposition 1A
- This leaves approximately $4.166 billion of bond funds available to help fund capital costs for the first high-speed rail line

Cap & Trade Proceeds

- In 2014, the Legislature approved appropriation of funding including 25% of the annual Cap and Trade proceeds on a continuous basis beginning in FY15/16 along with two one-time appropriations:
    - $250 million, one-time appropriation in FY14/15
    - $600 million in the Governor's budget for FY15/16 based on the continuous appropriation
    - $500 million in the Governor's budget for FY16/17 based on the continuous appropriation plus $100 million of a $400 million one-time appropriation, for a total of $600 million in FY16/17
- In making the continuous appropriation, the Legislature determined that we could use these funds to pay for planning and construction costs for the system and/or to repay loans made to the Authority.

ANALYSIS OF CALIFORNIA HIGH SPEED RAIL AUTHORITY'S

RIDERSHIP/REVENUE AND PROJECTED CASH FLOW

Draft 2016 Business Plan
and
Technical Supporting Document

March 9, 2016
By Cindy Bloom

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ABSTRACT

On February 18, 2016, the California High Speed Rail Authority (CHSRA) released its draft 2016 Business Plan (2016 Draft BP), which is comprised of several documents, including *Ridership and Revenue Forecasting* and *High, Medium and Low Cash Flows*. These documents are vital in convincing private investors to provide equity capital for the venture as soon as possible so that the California State Legislature can approve the sale of the $9 billion in bonds to help fund the $64.2 billion project. CHSRA is in a catch-22: They need the Prop 1A bond money to build the system to attract private investors but in order to be in compliance with Prop 1A, they need private investors to issue the bonds to build the system. The ridership revenue projections and cash flow models must provide enough of a return on investment to assuage potential private investors' fears and persuade them to invest. This analysis suggests the CHSRA has exercised liberties in inflating the 2016 Draft BP revenue numbers in order to achieve this goal.

EXECUTIVE SUMMARY

CHSRA has essentially turned their statewide high-speed train into a high-cost commuter train for the revised IOS although few people could afford it (a commuter from Fresno to San Jose would spend $27,000 annually on train fare).

When dissected, the 2016 Draft BP's first year of operation breaks down to 11,233 (high), 7,794 (medium), and 6,027 (low) passengers riding *daily* within the IOS which runs from one metropolitan area (San Jose) to the Central Valley, California's agricultural area.

Average ridership increases from the 2014 BP to the 2016 Draft BP range from 22% to 29%--double-digit increases--with no legitimate explanation. CHSRA merely states, "Forecasts reflect an enhanced travel demand model."

The ridership farce flows through to its cash flow projections. There is no explanation why the 2016 Draft BP net cash flow increased 66% to 132% over the 2014 BP. It is even loftier based on a 5% discounted cash flow, ranging from 83% to 150%. While the 2014 BP includes the capital cost as part of it cash flow, it is suspiciously absent from the 2016 Draft BP's cash flow projection.

If CHSRA actually meets their incredibly aggressive ridership targets, they will be forced to purchase and operate more train sets at a cost of $49 million each beyond the budgeted 70 at full build-out.

It is clear that in CHSRA's desperation, they inflated their ridership/revenue figures in order to present a picture of fiscal viability to (1) prospective investors and (2) taxpayers.

INTRODUCTION

The *Ridership and Revenue Forecasting* is a very statistical, and difficult to follow document. It was prepared by Cambridge Systematics, Inc., a transportation modeling and analytics firm for Parsons Brinckerhoff. Rather than using straight-forward and verifiable traditional financial forecasting models, it instead relied exclusively on multiple input variables through multiple regression analyses; the last step was running the data through a simulation program 50,000 times. These tools, while helpful, only add to the convoluted ridership and resultant revenue figures that became the basis for the cash flow document. While probabilities can be useful, it is similar to forecasting the weather. If there is a 30% chance of rain, the end result ultimately is that it either rained or it didn't. The same can be said for the revenue and ridership projections. Even if there is a 95% chance that the project will achieve break-even or surplus in any given year: either it will – or it won't.

Operating revenue is the backbone of every company. Every company at minimum is measured by its revenue, profit and cash flow. It uses these key ratios to compare its own earnings year over year, and to other companies within the same industry. If any of these items are deficient or trending downwards, a company cannot sustain its operations and will eventually be faced with the daunting and difficult decision of how to proceed. The most immediate strategy is to reduce expenses but if this solution is insufficient, a company may seek a buyer, merge with another company, declare bankruptcy, or in the worst case, go out of business.

CHSRA is not a privately held company, but instead is a governmental agency that is managing the construction of the largest infrastructure project in the history of the United States and is not held to the rigorous universally accepted accounting standards imposed in private industry. There are other governmental public works projects, such as freeways, road and bridges, that are also not subject to profit and loss or cash flow measurements as they provide the infrastructure for others to utilize. There are, however, other projects' whose operations are sustained by user fees, for example water reclamation plants, power plants, etc. These projects intend to be self-sustaining and have the ability to raise rates in order to cover their costs. Most public works projects during the construction phase are funded in large part by debt (bonds) and are subject to reporting requirements in order to maintain their bond rating and other compliance issues. For CHSRA to successfully complete the high-speed train project, it must present positive cash flow, otherwise: (1) it cannot attract private investment dollars to assist the funding of construction; (2) without these private investment dollars, it also cannot unlock the balance of the $9 billion in Prop 1A bonds in order to fund construction; and (3) it will be unable to sell the concession once the infrastructure is built. It is also required to provide matching funds for several federally funded grants and could potentially lose several billion dollars if it fails to meet its deadlines. If any of these criteria are not met, the project is doomed.

PURPOSE

The purpose of this report is to scrutinize the 2016 Draft BP's ridership revenue and resultant cash flow projections while also attempting to answer the following questions:

1. Are the ridership (number of passengers) projections attainable and/or reasonable?
2. Are the ridership revenue projections attainable and/or reasonable?
3. Is the projected cash flow attainable and/or reasonable?

SCOPE AND METHODOLOGY

The 2016 Draft BP is comprised of several documents:

- Connecting and Transforming California (100 pages, main document)
- Capital Cost Basis of Estimate Report (49 pages)
- High, Medium, Low Cash Flows (12 pages)
- 50-Year Lifecycle Capital Cost Model Documentation (74 pages)
- Service Planning Methodology (18 pages)
- Ridership and Revenue Forecasting (62 pages)

This analysis examines the revenue portion of the *Connecting and Transforming California*, *Ridership and Revenue Forecasting*; and *High, Medium, Low Cash Flows*. This report will not address the Initial Operation Section Extended because it is contingent upon CHSRA securing additional federal funding to complete.

DRAFT 2016 BUSINESS PLAN CORRIDOR SUMMARY

Section	Length in Miles	From/To	Operational	Cumulative Cost (billions) 2015$ / YOE[1]
IOS[2]	250	San Jose and North of Bakersfield (aka Valley to Valley/ Silicon Valley to Central Valley)	2025	$18.7 / $20.7
Initial Operation Section Extended	321	San Francisco to Bakersfield (aka Valley to Valley Extension/ Silicon Valley to Central	2025	Unk / $22.7

[1] Year of Expenditure, adjusted for future inflation

[2] Formerly was Merced to San Fernando Valley

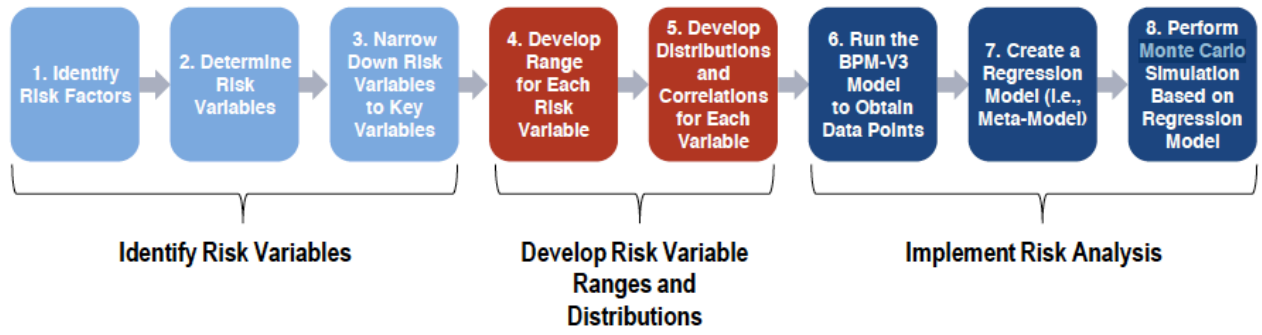
		Valley Extension)		
Phase 1	***520***	***San Francisco/Merced to Anaheim***	***2029***	***$55.3 / $64.2***
Phase 2	280	Merced to Sacramento; Los Angeles to San Diego		

2014 ADOPTED BUSINESS PLAN CORRIDOR SUMMARY

Section	Length in Miles	From/To	Operational	Cumulative Cost (billions) YOE
IOS	300	Merced to San Fernando Valley	2022	$31
Bay to Basin	410	San Jose and Merced to San Fernando Valley	2026	$51
Phase 1 Blended	***520***	***San Francisco to Los Angeles/Anaheim***	***2028***	***$68***

CHSRA utilized a very complex methodology to arrive at their ridership, revenue, and cash flow estimates as illustrated in Figure 7.1. Although it appears to be a very comprehensive approach, the problem is that it is over-complicating the process and over calculating by averaging averages. The final process, the Monte Carlo Simulation, was run 50,000 times. It is unclear whether or not CHSRA or its contractor, Cambridge Systematics, Inc., kept running the simulation until they came up with projections that met their goals or whether 50,000 is considered a standard number of times to run the simulation model.

Figure 7.1 Risk Analysis Approach



The 2016 Draft BP contains projections in 2015 dollars (2015$) and Year of Expenditure dollars (YOE$)[3]. For easy comparison and familiarity to today's travel fares, unless otherwise stated,

[3] The familiar $64.2 or $68 billion figure for capital costs is in YOE$

this report uses 2015$ instead of YOE$. CHSRA uses two sets of forecasts and cost estimates below:

- Silicon Valley to Central Valley line – (Valley to Valley) - One scenario assumes that operations begin on the Silicon Valley to Central Valley line from San Jose to a station north of Bakersfield in 2025 (construction completed in 2024) and on the entire Phase 1 system from San Francisco and Merced to Los Angeles and Anaheim in 2029.

- Silicon Valley to Central Valley Extension (not included in the scope of this study) - A second scenario runs from Silicon Valley to Central Valley to San Francisco and Bakersfield. This scenario also assumes operations starting in 2025 and the Phase 1 system opening in 2029. Together these extensions would provide a one-seat ride from Bakersfield to San Francisco. Because this scenario is dependent upon securing additional funding, it is not examined in this report.

Ridership and revenue forecasts in the 2016 Draft BP reflect an "enhanced" travel demand model and changes to some key assumptions. There are several key differences between the forecasts presented in the 2014 BP and the forecasts presented in the 2016 Draft BP including:

- The 2016 Draft BP assumes that service will start on the line from San Jose to north of Bakersfield (to an interim facility that functions as a temporary station) and evaluates an additional scenario extending service to San Francisco and Bakersfield that had not been analyzed in the 2014 BP (not within the scope of this report). It also assumes a Phase 1 system that offers a one-seat ride to Anaheim; ridership and revenue forecasts in the 2014 BP assumed a Phase 1 southern terminal in Los Angeles.

- Forecasts reflect an "enhanced" travel demand model that incorporates the latest available input data, new variables that better reflect travel behavior and adjustments to the transit access network and station locations.

VALLEY TO VALLEY MAP

Figure 3.1 Silicon Valley to Central Valley Line

PROJECTED HIGH SPEED TRAIN FARES AND REVENUE

While other comparisons were utilized in order to estimate projected fares, airfare prices were the governing basis and CHSRA used 77% to 80% of these current prevailing airfare prices within or close to the same travel corridors. The following chart contains the presumed fares in 2015 dollars. Although the IOS is actually "North of Bakersfield," the following chart has no fare for this as a terminus station[4]. According to Table 3.1, for the IOS, a one-way fare from San Jose ranges from a low of $19 (Gilroy) to a high of $83 (Bakersfield).

[4] This will be a temporary station

Table 3.1 Assumed High-Speed Rail Fares

2015 Dollars

High-Speed Rail Stations	San Francisco (Transbay)	Millbrae	San Jose	Gilroy	Merced	Fresno	Kings/Tulare	Bakersfield	Palmdale	Burbank Airport	Los Angeles Union Station	Gateway Cities/ Orange County	Anaheim
San Francisco (Transbay)		$18	$23	$25	$59	$70	$78	$89	$89	$89	$89	$89	$89
Millbrae			$20	$24	$59	$70	$77	$89	$89	$89	$89	$89	$89
San Jose				$19	$56	$63	$68	$83	$89	$89	$89	$89	$89
Gilroy					$52	$59	$65	$78	$89	$89	$89	$89	$89
Merced						$45	$52	$67	$85	$86	$89	$89	$89
Fresno							$40	$56	$74	$75	$78	$81	$84
Kings/Tulare								$51	$67	$68	$74	$76	$78
Bakersfield[9]									$51	$52	$56	$58	$60
Palmdale										$32	$33	$34	$36
Burbank Airport											$27	$30	$32
Los Angeles Union Station												$27	$30
Gateway Cities/ Orange County													$27
Anaheim													

Source: Cambridge Systematics, Inc.

The following is the projected revenue that was used to calculate average fares. For example, year 2025: $255,000,000 (revenue) divided by 4,100,000 (ridership) = $62.20.

FAREBOX REVENUE: SAN JOSE - NORTH OF BAKERSFIELD (2015 dollars)

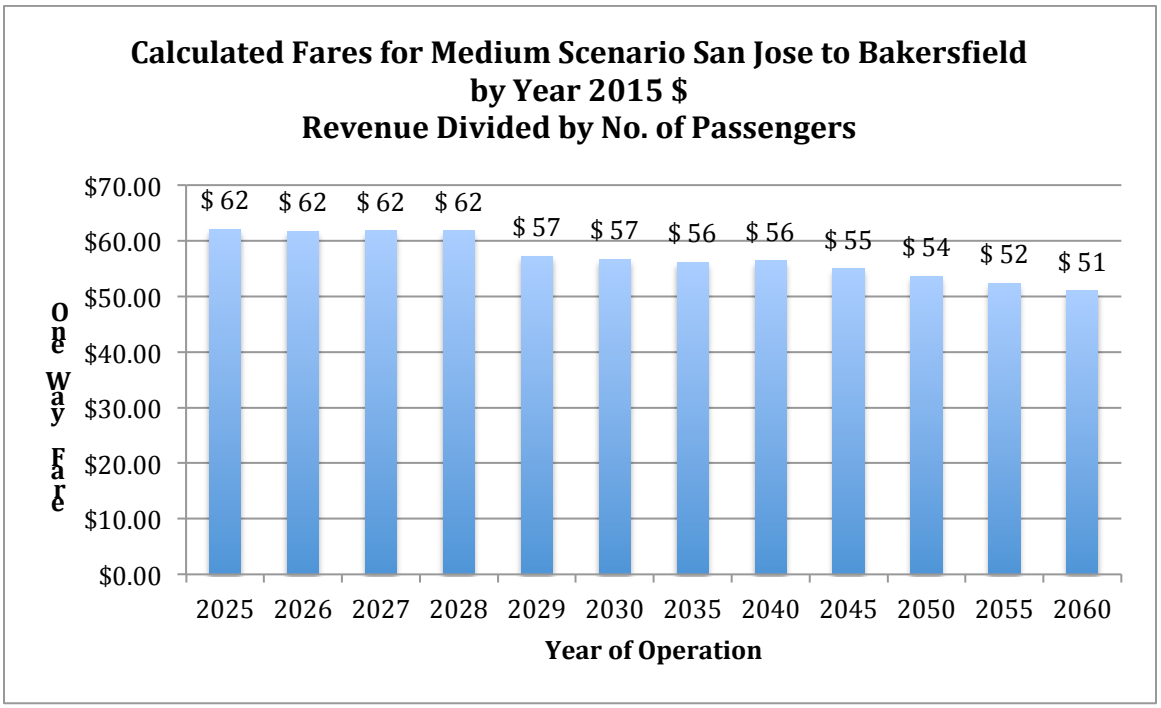
(SILICON VALLEY TO CENTRAL VALLEY LINE) THROUGH PHASE 1 (IN MILLION OF 2015 $)

	2025 VALLEY TO VALLEY	2026 VALLEY TO VALLEY	2027 VALLEY TO VALLEY	2028 VALLEY TO VALLEY	2029 PHASE 1	2030 PHASE 1	2035 PHASE 1	2040 PHASE 1	2045 PHASE 1	2050 PHASE 1	2055 PHASE 1	2060 PHASE 1
High	$255	$351	$447	$543	$1,460	$1,793	$2,927	$3,139	$3,218	$3,299	$3,383	$3,468
Medium	$180	$247	$315	$383	$1,098	$1,360	$2,250	$2,413	$2,474	$2,537	$2,601	$2,666
Low	$140	$193	$246	$299	$859	$1,064	$1,761	$1,889	$1,936	$1,985	$2,035	$2,087

When backing into an average fare based on total revenue and ridership, the average fare comes to around $62 for the IOS (2025 through 2028). This implies that Fresno would be the most common origin or destination. As the years progress, the fare prices trend downwards, meaning that more passengers are opting for shorter routes. There are several station-to-station permutations that fall within $50 - $57 fare range.

AVERAGE TICKET PRICE (CALCULATED: RIDERSHIP DIVIDED BY REVENUE)

	2025 VALLEY TO VALLEY	2026 VALLEY TO VALLEY	2027 VALLEY TO VALLEY	2028 VALLEY TO VALLEY	2029 PHASE 1	2030 PHASE 1	2035 PHASE 1	2040 PHASE 1	2045 PHASE 1	2050 PHASE 1	2055 PHASE 1	2060 PHASE 1
High	$62.20	$61.58	$61.23	$61.01	$56.37	$55.86	$55.02	$55.26	$53.90	$52.62	$51.34	$50.04
Medium	$62.07	$61.75	$61.76	$61.77	$57.19	$56.67	$56.11	$56.38	$54.98	$53.64	$52.33	$50.98
Low	$63.64	$62.26	$63.08	$62.29	$57.65	$57.20	$56.62	$56.90	$55.47	$54.09	$52.86	$51.53



Since there is limited air service between many of the cities, the train would fill that gap, however, at a relatively high cost when compared to taking a bus or driving. While conventional trains are also an alternate mode of transportation, they are not addressed.

RIDERSHIP VOLUME

The 2016 Draft BP uses three scenarios for ridership: high, medium and low, starting in 2025. Phase 1 (San Francisco to Anaheim) becomes operational in 2029. In each scenario, the annual increase in ridership is aggressive through 2035. From 2025 to 2028, the average annual increase over the prior year ranges from 22% to 41%. Then, in 2029 when Phase 1 becomes operational, the increase over 2028 ranges from 191% to 210%.

RIDERSHIP: SAN JOSE - NORTH OF BAKERSFIELD
(SILICON VALLEY TO CENTRAL VALLEY LINE) THROUGH PHASE 1 (IN MILLIONS OF RIDERS)

	2025	2026	2027	2028	2029	2030	2035	2040	2045	2050	2055	2060
	VALLEY TO VALLEY	VALLEY TO VALLEY	VALLEY TO VALLEY	VALLEY TO VALLEY	PHASE 1	PHASE 1	PHASE 1*	PHASE 1*	PHASE 1*	PHASE 1*	PHASE 1*	PHASE 1*
High Ridership	4.1	5.7	7.3	8.9	25.9	32.1	53.2	56.8	59.7	62.7	65.9	69.3
Yrly Increase in volume		1.6	1.6	1.6	17.0	6.2	4.2	0.7	0.6	0.6	0.6	0.7
Increase in %		39%	28%	22%	191%	24%	13%	1%	1%	1%	1%	1%
Medium Ridership	2.9	4.0	5.1	6.2	19.2	24.0	40.1	42.8	45.0	47.3	49.7	52.3
Yrly Increase in volume		1.1	1.1	1.1	13.0	4.8	3.2	0.5	0.4	0.5	0.5	0.5
Increase in %		38%	28%	22%	210%	25%	13%	1%	1%	1%	1%	1%
Low Ridership	2.2	3.1	3.9	4.8	14.9	18.6	31.1	33.2	34.9	36.7	38.5	40.5
Yrly Increase in volume		0.9	0.8	0.9	10.1	3.7	2.5	0.4	0.3	0.4	0.4	0.4
Increase in %		41%	26%	23%	210%	25%	13%	1%	1%	1%	1%	1%

*divided by 5 due to projection changing from annual to every 5 years

The daily ridership seems unattainable, especially in the "High" scenario. CHSRA asserts that over 11,000 passengers will ride the IOS the first year of operation, increasing to nearly over 24,000 by year 2028. When Phase 1 becomes operational, their estimate soars to almost 71,000 daily passengers.

In comparison, Bob Hope Airport served nearly 2 million passengers (5,479 per day) for 2015. CHSRA is claiming that it will serve over twice the number of passengers in its first year of operation for a segment that is only 250 miles long and only serves one metro area (San Jose). The other terminus station isn't even in Bakersfield—it is 20 miles north of Bakersfield in the town of Shafter, population of 17,000. In contrast, Bob Hope Airport is a regional airport with service to the entire country, including Hawaii and Alaska.

RIDERSHIP IN MILLIONS

	VALLEY TO VALLEY	VALLEY TO VALLEY	VALLEY TO VALLEY	VALLEY TO VALLEY	PHASE 1	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5	PHASE 6	PHASE 7
Scenario	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
High	4.1	5.7	7.3	8.9	25.9	32.1	53.2	56.8	59.7	62.7	65.9	69.3
Medium	2.9	4.0	5.1	6.2	19.2	24.0	40.1	42.8	45.0	47.3	49.7	52.3
Low	2.2	3.1	3.9	4.8	14.9	18.6	31.1	33.2	34.9	36.7	38.5	40.5

RIDERSHIP PER DAY (WEEKDAYS AND WEEKENDS)

Scenario	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
High	11,233	15,616	20,000	24,384	70,959	87,945	145,753	155,616	163,562	171,781	180,548	189,863
Medium	7,945	10,959	13,973	16,986	52,603	65,753	109,863	117,260	123,288	129,589	136,164	143,288
Low	6,027	8,493	10,685	13,151	40,822	50,959	85,205	90,959	95,616	100,548	105,479	110,959

How do these ridership estimates compare to the ridership estimates in the 2014 BP? In order to compare apples to apples, this analysis will examine Phase 1 because both business plans have Phase 1 running from San Francisco to Anaheim and covering 520 miles. In order to be further comparable, the "matching" is based on year of operation, not calendar year.

2016 Draft Business Plan Ridership Estimates (Millions) - PHASE 1									
Operation Year No.	**Year 1**	**Year 2**	**Year 7**	**Year 12**	**Year 17**	**Year 22**	**Year 27**	**Year 32**	**Average**
Year of Operation	**2029**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**	
High Ridership	25.9	32.1	53.2	56.8	59.7	62.7	65.9	69.3	**53.2**
Medium Ridership	19.2	24.0	40.1	42.8	45.0	47.3	49.7	52.3	**40.1**
Low Ridership	14.9	18.6	31.1	33.2	34.9	36.7	38.5	40.5	**31.1**

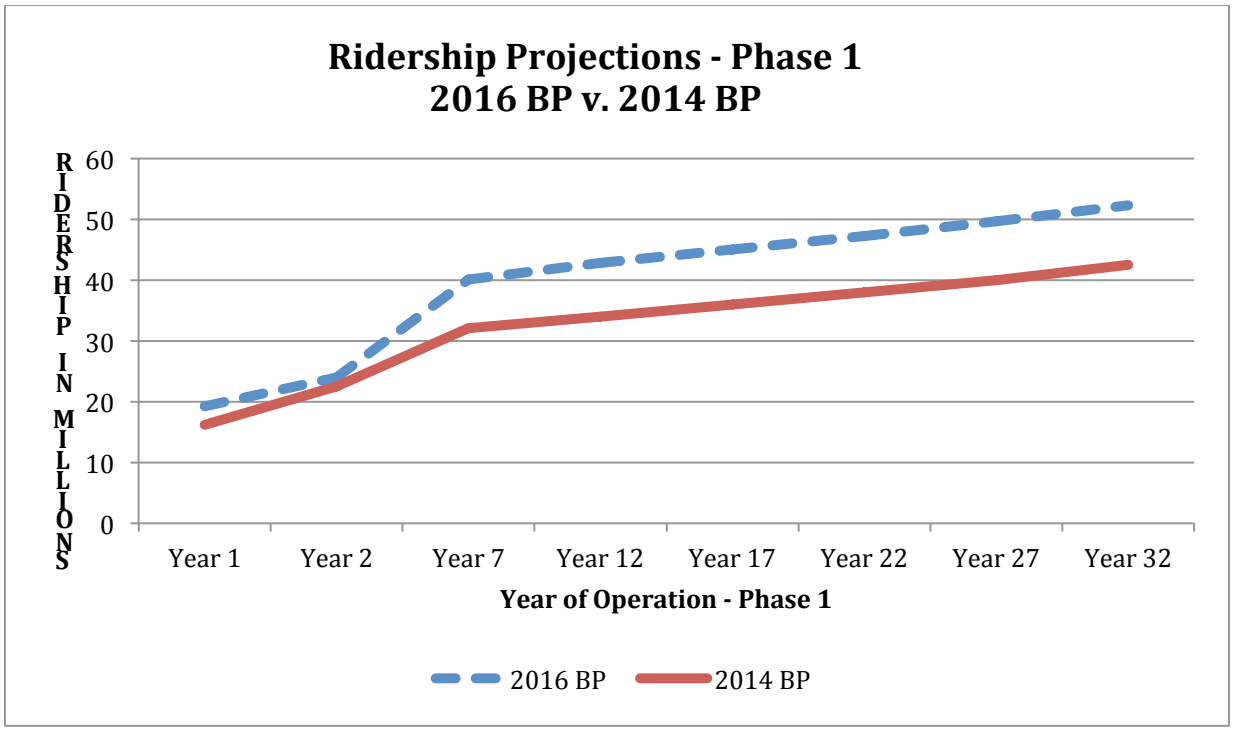
2014 Adopted Business Plan Ridership Estimates (Millions) - PHASE 1									
Operation Year No.	**Year 1**	**Year 2**	**Year 7**	**Year 12**	**Year 17**	**Year 22**	**Year 27**	**Year 32**	**Average**
Year of Operation	**2028**	**2029**	**2034**	**2039**	**2044**	**2049**	**2054**	**2059**	
High Ridership	23.0	28.0	41.4	44.9	47.0	49.5	52.0	54.9	**42.6**
Medium Ridership	16.2	22.5	32.1	34.0	36.0	38.0	40.0	42.5	**32.7**
Low Ridership	13.0	12.5	24.1	26.0	27.0	28.0	30.0	31.9	**24.1**

Change in Ridership Figures (Millions) 2016 versus 2014 - PHASE 1									
	Year 1	**Year 2**	**Year 7**	**Year 12**	**Year 17**	**Year 22**	**Year 27**	**Year 32**	**Average**
Year of Operation 2016	**2029**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**	
Year of Operation 2014	**2028**	**2029**	**2034**	**2039**	**2044**	**2049**	**2054**	**2059**	
High Ridership	2.9	4.1	11.8	11.9	12.7	13.2	13.9	14.4	**10.6**
2016 +/- 2014 %	13%	15%	29%	27%	27%	27%	27%	26%	**24%**
Medium Ridership	3.0	1.5	8.0	8.8	9.0	9.3	9.7	9.8	**7.4**
2016 +/- 2014 %	19%	7%	25%	26%	25%	24%	24%	23%	**22%**
Low Ridership	1.9	6.1	7.0	7.2	7.9	8.7	8.5	8.6	**7.0**
2016 +/- 2014 %	15%	49%	29%	28%	29%	31%	28%	27%	**29%**

With no plausible explanation except for the word "enhanced," the 2016 Draft BP increased its ridership figures over the 2014 BP for Year 1 of operation by 2.9 million, 3 million, and 1.9 million for the high, medium, and low scenarios respectively. The average increase ranges from 22% (medium scenario) to 29% (low scenario) (note that these are done in 5 year increments with the exception of years 1 and 2).

The increase in daily ridership for 2016 Draft BP over 2014 BP is aggressive. Even the "low scenario" of an increase of 5,205 is nearly the same number of Bob Hope Airport's daily outbound passenger figure of 5,479.

Change in Ridership Figures 2016 versus 2014 - PHASE 1 DAILY									
Operation Year No.	**Year 1**	**Year 2**	**Year 7**	**Year 12**	**Year 17**	**Year 22**	**Year 27**	**Year 32**	**Average**
Year of Operation	**2028**	**2029**	**2034**	**2039**	**2044**	**2049**	**2054**	**2059**	
High Ridership	7,945	11,233	32,329	32,603	34,795	36,164	38,082	39,452	**29,075**
Medium Ridership	8,219	4,110	21,918	24,110	24,658	25,479	26,575	26,849	**20,240**
Low Ridership	5,205	16,712	19,178	19,726	21,644	23,836	23,288	23,562	**19,144**



According to CHSRA's incredible ridership projections, it would not have enough trains to satisfy demand. The 2016 Draft BP states it will have 70 trains at full build-out, which is consistent with the number of trains per hour during peak (3 hours in the morning and 3 hours in the evening) and non-peak (10 hours). According to the Request For Expressions of Interest (RFEI) for train sets, each train must have a minimum of 450 passenger seats.

RIDERSHIP PER DAY (WEEKDAYS AND WEEKENDS)												
Scenario	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
High	11,233	15,616	20,000	24,384	70,959	87,945	145,753	155,616	163,562	171,781	180,548	189,863
Medium	7,945	10,959	13,973	16,986	52,603	65,753	109,863	117,260	123,288	129,589	136,164	143,288
Low	6,027	8,493	10,685	13,151	40,822	50,959	85,205	90,959	95,616	100,548	105,479	110,959
No. of Runs	44	44	44	44	196	196	196	196	196	196	196	196

Passengers per train												
High	255	355	455	554	362	449	744	794	834	876	921	969
Medium	181	249	318	386	268	335	561	598	629	661	695	731
Low	137	193	243	299	208	260	435	464	488	513	538	566
% Train Capacity Based on 450 Seats per Train												
High	57%	79%	101%	123%	80%	100%	165%	176%	185%	195%	205%	215%
Medium	40%	55%	71%	86%	60%	75%	125%	133%	140%	147%	154%	162%
Low	30%	43%	54%	66%	46%	58%	97%	103%	108%	114%	120%	126%

To meet this astonishing demand, and assuming that each train has exactly 450 seats, additional train sets would need to be purchased at a cost of $49 million each. Not only will additional train sets have to be purchased, but also they will require additional recurring O&M including operating personnel expense. At an average fare of $57, it would require 860,000 tickets to pay for 1 train set, excluding recurring O&M.

Additional Number of Trains Needed to Satisfy Demand												
High	-	-	1	1	-	-	1	1	1	1	2	2
Medium	-	-	-	-	-	-	1	1	1	1	1	1
Low	-	-	-	-	-	-	-	1	1	1	1	1
Additional Capital Cost to Purchase Train Sets @ $49 million each (2015 $)												
High	$0	$0	$49	$49	$0	$0	$49	$49	$49	$49	$98	$98
Medium	$0	$0	$0	$0	$0	$0	$49	$49	$49	$49	$49	$49
Low	$0	$0	$0	$0	$0	$0	$0	$49	$49	$49	$49	$49

Comparison to Eurostar service from London to Paris. In 1996, London and Continental Railways (which have true expertise in forecasting ridership figures) predicted that passenger numbers would reach 21.4 million annually by 2004, 10 years after its opening in 1994, but only 7.3 million (34%) was achieved. This is particularly important to realize because, unlike the CHSRA high-speed train, the only transportation competition that the Eurostar has is air service. As airlines reduced their fares, the Eurostar had to reduce theirs in order to maintain competitive.

Only 2 of the 99 current high-speed lines in the world are fiscally self-sustaining, Tokyo-Osaka and Paris-Lyon, and they required considerable subsidies at the beginning.

WHO ARE THESE PASSENGERS?

CHSRA assumes that their passengers will include business travelers, commuters, and recreational travelers. The noted variables that affect ridership include auto operating costs, high-speed rail fares, frequency of service, bus connections, high-speed train station proximity to passengers' points of origin and destination, and airfares. CHSRA contends that the initial operating section from San Jose to North of Bakersfield[5] (Valley to Valley) will allow residents in the now affordable Central Valley to commute to jobs in Silicon Valley, providing them with a relatively short commute when compared to driving. It is true that travel time is greatly reduced, but it is an expensive mode of transportation for commuting. Additionally, once one arrives at his/her destination, additional transportation may be needed in order to get to one's place of employment. The time "savings" could be greatly reduced if the passenger has to endure additional time getting to/from the HSR station on either or both ends of their journey.

The following chart illustrates how much it would cost for a commuter to travel from/to San Jose to/from various stations along the Valley to Valley segment.

[5] 20 miles north of Bakersfield which means a passenger must somehow get there to catch a high-speed train

COST OF COMMUTING USING HIGH SPEED TRAIN - IOS

No. of weeks (assumes 2 vacation weeks/yr and 10 holidays/yr): 48

Round trip; assumes 10% discount for a pre-paid pass for monthly and annual[6]

San Jose to/from:	Gilroy	Fresno	Kings/Tulare	Bakersfield
Daily	$38	$126	$136	$166
Weekly	$190	$630	$680	$830
Monthly	$735	$2,438	$2,632	$3,212
Annually	$8,208	$27,216	$29,376	$35,856
Annual Median Income	$81,056	$45,201	$42,863	$48,574
After-tax	$71,329	$37,517	$35,576	$40,316
HSR Cost as % after tax	12%	73%	83%	89%

It becomes clear that using the high-speed train is *not* an affordable commute. It is possible that an employer would provide a commuting subsidy but that is outside the scope of this report. Let us further assume that the commuter who lives in the Central Valley is traveling to San Jose because he/she secured a higher paying job in Silicon Valley:

COST OF COMMUTING USING HIGH SPEED TRAIN – IOS – ASSUMING HIGH PAID JOB IN SILICON VALLEY

No. of weeks (assumes 2 vacation weeks/yr and 10 holidays/yr): 48

Round trip; assumes 10% discount for a pre-paid pass for monthly and annual

San Jose to/from:	Gilroy	Fresno	Kings/Tulare	Bakersfield
Daily	$38	$126	$136	$166
Weekly	$190	$630	$680	$830
Monthly	$735	$2,438	$2,632	$3,212
Annually	$8,208	$27,216	$29,376	$35,856
Annual Median Income*	$81,056	$93,854	$93,854	$93,854
After-tax	$71,329	$82,592	$82,592	$82,592
HSR Cost as % after tax	12%	33%	36%	43%

*Santa Clara County (Silicon Valley) median income for Central Valley commuters only; no adjustment for Gilroy

Even if commuters now earned a Silicon Valley salary, the high-speed train commute is still unaffordable for most commuters.

With the exception of to/from San Jose to/from Gilroy, a high-speed train will be faster than a bus or car[7] and it is doubtful that one would spend $19 one-way for a 33-mile trip:

[6] Not included in CHSRA documents but it is common to offer discounted passes for public transportation

[7] "Car" includes SUVs, trucks and other motorized vehicles

TRAVEL SAVINGS IN MINUTES BY USING HIGH SPEED TRAIN

San Jose to/from:	Gilroy	Fresno	Kings/Tulare	Bakersfield
Bus	9	173	344	435
Car	2	127	171	208

The main factor for choosing a high-speed train for transportation is how it compares in terms of cost, convenience, and time saved to other modes of transportation. CHSRA is attempting to schedule its service times to coincide with bus and conventional rail schedules so that passengers can link to these if they need to continue their travels beyond high-speed rail stations and/or to get to their final destination within a short distance of the high-speed train station.

It is uncertain if passengers would be willing to pay $83 each way ($53[8] more than driving) to/from Bakersfield to/from San Jose, and then deal with the inconvenience and additional cost of finding short-distance transportation from point of origin and again at the destination, to save less than 2 hours (and less than that if additional transportation is needed to travel to/from the high speed rail station).

San Jose to/from:	**Gilroy**	**Fresno**	**Kings/Tulare**	**Bakersfield**
HSR No. Minutes	32	72	93	128
Cost	$19.00	$63.00	$68.00	$83.00
Cost per Minute	*$0.59*	*$0.88*	*$0.73*	*$0.65*
Bus No. Minutes	41	205	376	467
Cost	$10.50	$33.00	$45.00	$55.00
Cost per Minute	*$0.26*	*$0.16*	*$0.12*	*$0.12*
Car	34	159	203	240
Cost	$4.00	$19.50	$24.50	$30.00
Cost per Minute	*$0.12*	*$0.12*	*$0.12*	*$0.13*
HSR Cost above in $				
Bus	$9	$30	$23	$28
Car	$15	$44	$44	$53
HSR Cost above %				
Bus	81%	91%	51%	51%
Car	375%	223%	178%	177%
HSR Cost Per Minute above in $				
Bus	$0.34	$0.71	$0.61	$0.53
Car	$0.48	$0.75	$0.61	$0.52
HSR Cost above %				

[8] This is on the high end, assuming peak prices for gasoline

San Jose to/from:	Gilroy	Fresno	Kings/Tulare	Bakersfield
Bus	132%	444%	511%	451%
Car	405%	613%	506%	419%

CASH FLOW ANALYSIS

The 2016 Draft BP's cash flow unashamedly excludes the capital investment/cost while the 2014 BP included it. Why? Simple: It scared off potential investors. At several community outreach meetings, CHSRA representatives stated that it does not include any investment cost as part of their return on investment (ROI) calculation; it is no wonder that CHSRA refuses to perform an ROI measured as an internal rate of return (IRR), as this is the result:

	IRR
High Revenue	0.64%
Medium Revenue	-1.18%
Low Revenue	-3.09%

Since the core reason for CHSRA to provide an attractive cash flow projection is to entice private investors to (1) become an equity partner during the construction phase and (2) to take over operations once the infrastructure has been completed, it is a certain project failure if that the cash flow projections fail to deliver satisfactory rates of return on investment.

According to CHSRA, even the "low" forecast will show positive cash flow from 2025 to 2060. The 2016 Draft BP cash flow projections also include ancillary revenue (1% of the total), which includes on-board sales, advertising, asset and right-of-way utilization and transit-oriented development opportunities[9]. Note that operation and maintenance (O&M) and capital replacement costs vary between the scenarios. It is presumed that the variance is due to the number of trains increasing or decreasing based on passenger demand.

2016 Draft Business Plan

Scenario	High	Medium	Low
Revenue in Millions	$100,572	$77,151	$60,376
Less: O&M	-$31,411	-$28,704	-$27,505
Net Cash Flow from Operations	$69,161	$48,447	$32,871
Capital Replacement	-$6,043	-$5,549	-$5,033
Net operating cash flow after Capital Replacement	**$63,118**	**$42,898**	**$27,838**
Breakeven or Profit Occurs	*2025*	*2027*	*2029*
Ancillary Revenue only	*$1,006*	*$772*	*$604*

[9] A type of community development that includes a mixture of housing, office, retail and/or other amenities integrated into a walkable neighborhood and located within a half-mile of quality public transportation.

In order to make a meaningful analysis, the 2016 Draft BP must be compared to the 2014 BP. Note that the 2014 BP *includes* the capital cost investment wherein the 2016 Draft BP *excludes* it.

2014 Business Plan-Adjusted to 2015$

Scenario	High	Medium	Low
Revenue in Millions	$82,359	$63,922	$47,650
Less: O&M	-$36,385	-$32,318	-$29,019
Net Cash Flow from Operations	$45,974	$31,604	$18,631
Capital Replacement	-$7,965	-$7,313	-$6,634
Net operating cash flow after Capital Replacement	**$38,009**	**$24,291**	**$11,998**
Breakeven or Profit Occurs w/o Capital Cost	*2022*	*2022*	*2024*
Capital Cost	-$57,239	-$57,239	-$57,239
Net Cash Flow After Capital Cost	**-$17,208**	**-$30,925**	**-$43,217**
Breakeven or Profit Occurs	*Never*	*Never*	*Never*

It is shocking to see that the 2016 Draft BP's revenue estimates range from $12.7 to $18.2 million *higher* (22% to 27%) than the 2014 BP which was prepared *only two years previously*. The net operating cash flow ranges from nearly $16 to $25 million higher (66% to 132%).

2016 Draft Business Plan +/- 2014 Business Plan

Scenario	High	Medium	Low
Revenue in Millions	$18,213	$13,229	$12,726
Less: O&M	$4,974	$3,614	$1,514
Net Cash Flow from Operations	$23,187	$16,843	$14,240
Capital Replacement	$1,922	$1,764	$1,601
Net operating cash flow after Capital Replacement	**$25,109**	**$18,607**	**$15,840**
2016 +/2014 Business Plan	**66%**	**77%**	**132%**
Breakeven or Profit Occurs	3 yrs later	5 yrs later	5 yrs later

Another useful measurement is to compare 2016 Draft BP to the 2014 BP in discounted cash flow or Net Present Value (NPV). This measurement takes into account the time value of money, based on the assumption that a dollar today is worth less than a dollar next year, the year after, and so on. For example, if two competing projects ultimately bring in $50,000, but one provides positive cash flow earlier, that is the better investment. Typically, assessing discounted cash flow is one of the items that potential investors examine in making a decision whether or not to invest in a project.

The following chart illustrates that CHSRA has inflated discounted its cash flow (assuming a 5% discount rate) for the 2016 Draft BP to the extent that is nearly double of that in the 2014 BP

(ranging from 83% to 150% [versus non-discounted 66% to 132%]). Assuming the "low scenario," it is no surprise that potential investors ran away from this project based on the 2014 BP. Their return would be a pitiful $4.3 billion (*excluding* their initial investment). If they had been foolish enough to invest $9 billion (matching the Prop 1A bond issue), they would have lost $4.6 billion ($9 billion minus $4.4 billion). Although the 2016 Draft BP is more palatable, the "low scenario" only returns a net $10.9 billion (again, excluding an initial investment).

Cash Flow NPV at 5% ($ in Millions)			
Scenario	**High**	**Medium**	**Low**
2016 Draft Business Plan NPV	**$24,745**	**$16,777**	**$10,869**
Non-Discounted 2016 Draft BP	*$63,118*	*$42,898*	*$27,838*
Cost of Time	*$38,373*	*$26,121*	*$16,969*
2014 Draft Business Plan NPV	**$13,533**	**$8,687**	**$4,355**
Non-Discounted 2016 Draft BP	$38,009	$24,291	$11,998
Cost of Time	*$24,476*	*$15,604*	*$7,643*
2016 Draft BP +/- 2014 BP	**$11,212**	**$8,089**	**$6,514**
2016 +/2014 Business Plan	**83%**	**93%**	**150%**

CONCLUSION

In order for the high-speed train project to survive, it is imperative that CHSRA demonstrate positive cash flow within a few short years of the start of operation to secure private investment—both as equity capital partners for construction and for operation of the train concession once construction is completed. CHSRA was shrewd to exclude the capital investment as part of their presentation, especially to potential investors, because the IRR ranges from .64% (high) to -3% (low). In order to achieve its goal, CHSRA has turned their high-speed train into a high-cost commuter train for the revised IOS. While on its face this appears to be a good strategy, the reality is that very few, if any, people could afford it (a commuter from Fresno to San Jose would spend $27,000 annually on train fare). The average one-way fare of $62 skews close to the San Jose and Fresno route fare of $63 and supports the "commuter train" designation. Then as Phase 1 comes online, the calculated fares trend downwards, meaning that the bulk of ridership will be for shorter trips as time progresses.

CHSRA has omitted some key inputs, for example, excluding passenger fares in Table 3.1 for San Jose to North of Bakersfield that is part of the IOS. Also, some of their assumptions are inconsistent between the figures published in the *Ridership and Revenue Forecasting* document and their main 2016 Draft BP document.

CHSRA utilized a convoluted methodology to arrive at its ridership and revenue projections. Incorporating key input variables, using multiple regression analysis, and then running a Monte Carlo simulation 50,000 times in order to arrive at its ridership, revenue, and resultant cash flow, the financial models' components become nearly impossible to scrutinize. It is hubris to believe that in year 1 of operation that 11,233 (high), 7,794 (medium), and 6,027 (low)

passengers will ride *daily* within the IOS which runs from one metropolitan area (San Jose) to the Central Valley, California's agricultural area.

Average ridership increases from the 2014 BP to the 2016 Draft BP range from 22% to 29%--double-digit increases--with no legitimate explanation. CHSRA merely states, "Forecasts reflect an enhanced travel demand model."

The farce continues to its cash flow projections. There is no reasonable explanation as to why the 2016 Draft BP net cash flow (after capital replacement but excluding capital investment) increased from 66% to 132% over the 2014 BP. On a discounted cash flow basis, the increase is even larger: 83% to 150%.

If CHSRA meets their projected ridership targets, they will have to purchase and operate more train sets[10] beyond the budgeted 70 at full build-out to meet their incredible passenger demand. These additional train sets require increased operating costs for O&M, including employees' salaries, benefits, etc.

In conclusion, in CHSRA's desperation, they inflated their ridership/revenue figures in order to present a picture of fiscal viability of the high-speed train project to potential private investors and taxpayers.

[10] The RFEI for train sets specifies a minimum of 450 passenger seats per train

HIGH-SPEED RAIL SYSTEM MAP

2016 Business Plan RECORD DETAIL

Submission Date :	3/23/2016
Submission Method :	Project Email
First Name :	Mony
Last Name :	Vaca
Stakeholder Comments/Issues :	Estimados señores: Soy estudiante de la Universidad de Barcelona y para fines académicos necesito la información completa que contiene el plan de negocios 2016. El documento que se encuentra publicado en su página web con el nombre "Borrador del Plan de Negocios 2016" (url: http://www.hsr.ca.gov/docs/about/business_plans/borrador_del_plan_de_negocios_2016.pdf), no contiene la información completa, únicamente consta hasta la introducción. Con estos antecedentes, agradeceré su ayuda para el envío o publicación del documento completo en idioma español. Quedo pendiente de sus comentarios y facilidad de información. Gracias por su gentil atención. Saludos cordialesMónica Vaca
Notes :	Translation below: Dear Sirs/Madams: I am a student at Universidad de Barcelona. For academic purposes, I need all the information about the 2016 Business Plan. The document on your webpage titled "Borrador del Plan de Negocios 2016" (url:http://www.hsr.ca.gov/docs/about/business_plans/borrador_del_plan_de_negocios_2016.pdf), does not contain all the information but just the Introduction. Therefore, I would really appreciate your help in the delivery or publication of the entire document in Spanish. I will be looking forward to your comments and the availability of such information. Thanks in advance for your attention. Sincerely Mónica Vaca

2016 Business Plan RECORD DETAIL

Submission Date :	3/23/2016
Submission Method :	Project Email
First Name :	Morris
Last Name :	Brown
Stakeholder Comments/Issues :	Attached in PDF format are comments to the 2016 Draft Business plan. Thanks, morris brown
Notes :	
Attachments :	Comments-to-2016-draft-business-plan-morris-brown.pdf (463 kb)

3/10/2016

California High Speed Rail Authority

Comments on the 2016 Draft business plan.

False promotion of using HSR as a commuter train.

Chair Richard and others have been trying to make the point, that commuters will be able to buy homes much cheaper in the Central Valley, say Fresno or Bakersfield as examples, and these buyers will be able to commute to Silicon Valley, since the speed of the HSR Train would allow for relatively short commute times of 45 minutes.

The claim is being made that this will help the jobs / housing imbalance that currently exists now in Silicon Valley and elsewhere on the Peninsula.

The reality of the situation is not being presented however. HSR is a premium transportation service; the fares needed to be charged to operate the system without a subsidy are quite high compared to fares on commuter lines, like BART or Caltrain.

Thus we see, that the projected one-way fare from San Jose to Fresno is $68.00. Each day the round trip to and from home would cost $136.00. This being the case, the cost to a commuter in fares, to have a home in Fresno / Bakersfield would be around $34,000 per year. (250 working days x $136.00 = $34000.00 per year). This does not even add in possible parking lot fees and transportation at one end.

Now just how many commuters will be able to pay this much in commuting fares and justify this expense for sake of a cheaper mortgage in the Central Valley? The numbers just don't work. There will be very very few commuters taking such an option. (It should also be noted that mortgage interest can be a tax deduction, whereas the commuter fares for the most part are after tax dollars. (Maximum possible $225 / month or $2700 / year deduction if employer has a suitable plan.

The new plan will not fill in the passenger rail gap between the North and South

One of the major selling points for the 2014 business plan, was that by building South, the gap in passenger rail service from Bakersfield to Los Angeles would be closed. By going north first, the gap remains, perhaps forever, since there is certainly no foreseeable funding to ever complete Phase I.

Private equity will never be available to build from Bakersfield on south.

Despite lack thus far of any Private Equity to invest in the project, the plan is claiming that after IOS San Jose to Bakersfield is complete, private Equity will appear. I have

heard this myth of private equity coming for 7 years now. At first it was claimed in meetings with investors, such funding was imminent. Now 7 years later such private equity funding is nowhere in sight.

The Authority is now claiming the private equity will be willing to finance the capital cost of filling the gap between Bakersfield and Los Angeles. Building this segment of the system, is by far and way the most technically challenging and costly of any segment of the system. Why would any private equity group seek to fund this section and simply risk losing the equity when the possibility of failure due to technical problems or unexpected escalation of costs to complete, would be on the horizon?

Morris Brown
Menlo Park
A founder of DERAIL, the original grass roots effort against this HSR project

2016 Business Plan RECORD DETAIL

Submission Date :	3/23/2016
Submission Method :	Project Email
First Name :	Mir S.
Last Name :	Alikhan
Stakeholder Comments/Issues :	Minor comments, please see attached. Regards Mir [Description : Macintosh HD:Users:noemie.frechette:Desktop:test.png] Mir Alikhan, P.E. 770 L Street, Suite 800 Sacramento, CA 95814 (916) 384-1091 alikhanms@pbworld.com<mailto:alikhanms@pbworld.com> wsp-pb.com/usa ATTORNEY-CLIENT PRIVILEGED/CONFIDENTIAL This message may contain information which is confidential, proprietary and/or privileged. Unless you are the addressee (or authorized to receive for the addressee), you may not use, copy or disclose to anyone the message or any information contained in the message. If you have received the message in error, please advise the sender by reply, and delete the message. Thank you. _____ NOTICE: This communication and any attachments ("this message") may contain confidential information for the sole use of the intended recipient(s). Any unauthorized use, disclosure, viewing, copying, alteration, dissemination or distribution of, or reliance on this message is strictly prohibited. If you have received this message in error, or you are not an authorized recipient, please notify the sender immediately by replying to this message, delete this message and all copies from your e-mail system and destroy any printed copies.
Notes :	
Attachments :	image001.png (10 kb) 2016 BP Comments.pdf (757 kb)

CALIFORNIA
High-Speed Rail Authority

Connecting and Transforming California

DRAFT 2016 BUSINESS PLAN

FEBRUARY 18, 2016

www.hsr.ca.gov

Executive Summary

Much has happened since we issued our 2014 Business Plan. There are now more than 100 miles of construction underway in the Central Valley. We have made a fundamental transition from being a planning organization to a program-delivery organization. And the Legislature and the Governor reaffirmed their commitment to the program by providing an ongoing revenue stream through the state's Cap and Trade proceeds (also referred to as Greenhouse Gas Reduction Funds). We are now positioned to deliver the program in a logical and practical way.

As we move forward, we remain focused on three fundamental objectives:

- → **First, initiate high-speed rail passenger service as soon as possible.** By doing so we both demonstrate its benefits and begin generating revenues which will then attract private sector participation and help fund extending the system beyond an initial line.
- → **Second, make strategic, concurrent investments throughout the system that will be linked together over time.** By making discrete investments that connect state, regional and local rail systems, we can provide immediate mobility, environmental, economic and community benefits. Together these prepare a solid foundation for high-speed rail. We will enter into partnering agreements with other transportation providers, aggregate federal, state and local funding sources and advance regional planning and coordination. This approach will yield the best and fastest results.
- → **Third, position ourselves to construct additional segments as funding becomes available.** This requires completing the required environmental analyses for every mile of the program and securing environmental approvals as soon as possible. These three objectives will continue to provide a framework for decision-making as we move forward.

What Is Different from our 2014 Business Plan

- → **Funding** - The funding authorized by the Governor and Legislature, by the federal government and the people of California is sufficient to deliver a high-speed rail line connecting the Silicon Valley to the Central Valley
- → **Schedule** – We now project starting passenger service on that line in 2025 instead of on a line between Merced and the San Fernando Valley in 2022
- → **Cost Estimates** - Our capital cost estimates for building the Phase 1 system between San Francisco/Merced and Los Angles/Anaheim are lower than prior estimates

THIS IS THE AUTHORITY'S DRAFT 2016 BUSINESS PLAN

This Draft 2016 Business Plan provides an update on the progress made, the changes that have occurred and the lessons we have learned over the past two years. It focuses on achieving the above objectives and specifically it:

- → Lays out an approach to sequencing the Phase 1 system that will ultimately connect the San Francisco Bay Area to the Los Angeles Basin via the Central Valley with high-speed passenger rail service
  - ▸ This sequencing approach is designed to maximize current federal and state dollars – and use them to deliver the earliest operating high-speed rail line within anticipated funding levels and to comply with Proposition 1A, which the voters approved in 2008.

- It also positions the program to begin generating revenues that will allow access to private sector investment that in turn will be used to continue building out the Phase 1 system.

→ Describes our plan to deliver high-speed rail service connecting the Silicon Valley to the Central Valley, and offer high-speed rail passenger service between these two important economic regions within the next ten ~~year~~ years

→ Provides a clear path for making concurrent investments in concert with regional partners and delivering early, tangible mobility and safety benefits in Southern California, while building a solid foundation for the critically important passenger rail corridor that links Burbank, Los Angeles and Anaheim .

→ Commits to completing environmental clearance, and selecting alignments and station locations for the remaining sections in order to position the entire system to be ready for immediate construction as funds become available

→ Provides updated capital cost estimates, showing that the projected cost of the entire system has been revised downward by $5.5 billion. This lower cost estimate comes about mainly through value engineering efforts, better operational and technical approaches to design, and the favorable bidding environment.

California's investment in high-speed rail will provide both near- and long-term transportation benefits—in addition to increasing safety, protecting the environment, creating jobs, supporting disadvantaged communities, businesses and workers, and helping California continue to prosper in an increasingly competitive global economy.

WE ARE MOVING FORWARD

Building on lessons learned. Over the past few years, we have received bids for three design-build construction contracts in the Central Valley from 13 world-class teams with significant experience delivering large, complex transportation projects including developing high-speed rail projects internationally. The proposals for the first three construction packages not only offered valuable design innovations, they contained bids that were hundreds of millions of dollars under our estimates. The international marketplace for construction has been very responsive and competitive in its bidding.

However, advancing construction on the first design-build construction package (Construction Package 1) has been challenging. Specifically, as construction got underway, acquiring the necessary right of way lagged. Further, the time associated with completing third party agreements, such as utility relocations, took longer and is now projected to cost more than originally predicted. We acted quickly to analyze and address these challenges. Based on this experience, we reorganized and enhanced our land acquisition processes, increased our estimates for the cost of third party agreements, and instituted aggressive management and mitigation strategies. Despite these challenges, we have been able to maintain project momentum as we advance through the Central Valley.

This Draft 2016 Business Plan focuses on three positive developments that impact how we are advancing the delivery of the program:

→ **Progress on Environmental Clearance –** Over the last two years, significant progress has been made in advancing environmental clearance of the Phase 1 system. In June 2014, we achieved a Record of Decision on the Fresno to Bakersfield section. Completing the rest of the environmental clearance for the entire Phase 1 system is a high priority yielding maximum flexibility to take advantage of opportunities to develop any segment of the system as circumstances allow.

→ **New funding –** As previously noted, with the passage of Senate Bill 862, the Legislature and Governor approved an annual appropriation of 25% of the annual Cap and Trade proceeds on a continuous basis to fund high-speed rail.

sential to completing structural design, demolished mostly-dilapidated existing structures and relocated utilities along the right of way in preparation for the construction of dedicated high-speed rail trackways and bridges.

→ By June 2015 the first vertical structure started to take shape at the Fresno River Viaduct in Madera. Seven small businesses and more than 100 workers have been involved in the construction of the viaduct.

→ In January 2016, we began the process of demolishing and rebuilding the Tuolumne Street Bridge in downtown Fresno to allow for clearance over the high-speed rail line and for two-way traffic to support the revitalization of downtown Fresno's city core.

→ In February 2016, drilling and concrete operations began at the Fresno trench, the almost 1.5 mile long and 40-foot deep trench that will carry high-speed rail trains under State Route 180 in Fresno.

→ In partnership with Caltrans, work has begun to realign portions of State Route 99 north of Fresno to accommodate high-speed rail and at the same time improve traffic operations, reducing congestion and improving safety in this busy corridor.

→ We continue to work closely with homeowners, property owners and businesses being relocated as part of the development of the high-speed rail system. This process can be a challenge for those affected by the relocation. However some property owners have chosen to use the relocation as an opportunity to expand and grow their businesses or move to better locations.

→ As of January 29 2016 we have acquired 642 parcels of the 1458 parcels needed. With this, we have reached critical mass and have advanced construction in Construction Packages 1 and Construction Package 2-3.

→ We have been able to advance property acquisition and deliver right of way through better understanding of individual property owner concerns, improved communications and processes and increased staff and resources.

→ We have partnered with Caltrans to use its Quick Map traffic system to inform public safety officials and the public about any construction activities that may impact them.

→ With work underway, a comprehensive set of project management, finance, and risk reports were developed and are updated monthly, reviewed by our Finance and Audit Committee, and made available to the public on our website.

→ We have selected an alignment and station locations between Fresno and Bakersfield, certified the environmental document and received approval to begin construction.

→ As of November 2015, 214 construction craft laborers have been dispatched to work on Construction Package 1.

→ 174 people have graduated from a Pre-Apprenticeship Training Program established by the Fresno Workforce Investment Board.

→ As of November 2015, 266 Small Businesses are working on the program statewide

CENTRAL VALLEY LESSONS LEARNED AND MANAGEMENT STEPS IMPLEMENTED

As with many projects of this magnitude, the initial implementation stages often reveal unknowns that require adjustments and mitigation strategies. Some of these factors have worked in favor of the project and some have exposed challenges. Our experience with construction bids and project delivery to date has taught us the following:

→ Since 2013, we have received competitive design-build bids for the first three construction contracts in the Central Valley, demonstrating strong competition within the industry to be part of building the first high-speed rail system in the country.

→ On average, Construction Package 1 and Construction Package 2-3 bids came in approximately 30% below engineer's estimates. As announced in January 2016, bids for the Construction Package 4 contract continued this trend and came in about 25% below engineer's estimate.

→ We have not carried this 30% reduction directly into the current cost estimates. That is because during a bid process other factors, such as competitive pressure, current market conditions, risk position and specific bidding strategies adopted by bidding consortia play a more significant role in lowering the average bid price.

→ Although the first construction packages came in under engineers' estimates, they also faced a number of problems in execution and delivery.

→ Execution delays associated with Construction Package 1 may impact the expected cost and schedule for completing that package. However, we are making adjustments and managing the project to stay within budget contingencies:

- The right of way acquisition process was slow to start due to litigation-related delays and required some streamlining and heightened management. The program requires the acquisition of an unprecedented number of parcels of land. A more efficient process was implemented over time that has allowed us to significantly increase the rate of parcels acquired per month. We are on schedule with respect to the Construction Package 2-3 and Construction Package 4 contracts.

EXHIBIT 1.3 COMPARISON OF ENGINEER'S ESTIMATE AND BID PRICES*

SECTION	ENGINEER'S ESTIMATE	BID AVERAGE	BEST VALUE BID	PERCENT DIFFERENCE (BEST VALUE VS. ESTIMATE)
Construction Package 1	$1.2 - $1.8 billion	$1.25 billion	$985 million	-18/45%
Construction Package 2-3	$1.5 – $2 billion	$1.68 billion	$1.23 billion	-18/38%
Construction Package 4	$400 – $500 million	$442 million	$348 million	-13/30%

*Does not include contingencies or provisional sums.

unclear

- Negotiations for third party agreements (railroads, utilities and others) were more difficult than anticipated. Mitigation strategies were implemented successfully so that key agreements with the railroads and the utility companies (power, water and communications) were finally signed leaving free access for the contractors to start construction.

Section 2: *Guiding Principles and Core Values*

There are a number of guiding principles and commitments that we have established and that we will adhere to as we advance the California high-speed rail system.

GUIDING PRINCIPLES

We will continue to advance the statewide program on multiple fronts over the coming years within a flexible framework and guided by the following principles:

- → **Fulfill all commitments made to the citizens of California when they approved Proposition 1A to provide a true high-speed rail system**
- → **Evaluate new opportunities—and adapt to changing circumstances—so that a cost-effective, high-quality system can be delivered as quickly and efficiently as possible**
- → Reduce costs and construction time by using a blended implementation strategy in urban areas where appropriate and consistent with mandated performance goals to:
  - Enhance access and mobility
  - Minimize impacts
  - Reduce costs
  - Improve safety
  - Expedite implementation
- → Match projects with available funding and deliver them through appropriate business models:
  - Seek the earliest and best value private-sector participation with appropriate risk management and cost containment
  - Select an initial line for development (as described below), establish a funding plan for it and commit all resources necessary to build it and begin offering high-speed passenger service as quickly as possible
- → Advance other strategic early investments in collaboration with our partners in order to:
  - **Improve the speed, safety and efficiency of existing passenger rail services and prepare the way for high-speed rail**
  - Grow the market for passenger rail travel throughout California
  - **Deliver early economic, environmental, mobility, safety and community benefits**
  - Promote regional rail and bus connectivity projects
  - **Leverage funding by collaborating with local partners to advance high priority mutually beneficial projects**

Sustainable Infrastructure - Comparing early operations, 2025-2033

By 2028, diversions of air and auto travel to train travel on the Silicon Valley to Central Valley line cumulatively results in 700,000 metric tons carbon dioxide equivalent (MTCO2e) net reduction while the extended line to San Francisco and Bakersfield results in 1 million MTCO2e net reductions. In other words, capturing more riders, sooner, results in greater net emissions savings in the near term. Cumulatively by 2030, comparatively, the extended line saves 2.5 MTco2e which is 500,000 MTCO2e more than the Silicon Valley to Central Valley line in the same time-frame. By 2033 each option achieves the same annual savings rate, reflecting full system ridership.

"High-speed rail will take cars off the road, boosting California's economic productivity as more people take a fast, efficient train. By 2040, the system will reduce vehicles miles in the state by almost 10 million miles every day, a game-changer."

- Mayor of the City of Palmdale
Jim Ledford

Sustainable Infrastructure

We will be a leader in delivering sustainable infrastructure in the state of California through our commitments to:

- → Operate our system on 100% renewable energy for which we will contract for 400 to 600 megawatts of renewable power
- → Develop net zero energy buildings and water conservation strategies
- → Achieve net zero greenhouse gas emissions in construction and recycle 100 percent of the steel scrap and concrete refuse generated in project construction.
- → Utilize the most environmentally-friendly construction equipment available to reduce emissions
- → **Implement mitigation strategies to create long-term benefits including:**
  - Working with partner agencies to modernize systems that use renewable energy
  - Enhancing sustainable practices utilized by planning, engineering and construction teams
  - Reducing vehicle miles travelled – and subsequently reducing statewide emission levels
  - Building a sustainable travel alternative to support California's growing population

Workforce Development

We will create training and employment opportunities for Californians, including disadvantaged workers by:

- → Building the system and directly employing thousands of Californians while indirectly providing job opportunities throughout the surrounding communities and in the larger economy.
- → Generating more than 3,500 permanent jobs around the state as high-speed rail opens and expands service from the Bay Area to the Los Angeles Basin. These workers will be responsible for operating and maintaining the high-speed rail system.
- → **Assisting job seekers in finding jobs by promoting and advancing training opportunities for all individuals, including those often left behind by economic opportunities**
- → Implementing our Disadvantaged Worker Program, which ensures that 30 percent of project work hours are performed by National Targeted Workers and 10 percent of all hours are performed by Disadvantaged Workers

Small Business Participation

Maintain our commitment to small businesses making major contributions to building the statewide project by:

- → Meeting our aggressive 30 percent goal for small business participation
- → Meeting specific goals for Disadvantaged Business Enterprises (DBEs) and Disabled Veteran Business Enterprises (DVBEs) of 10 percent and 3 percent, respectively
- → Conducting extensive outreach, including workshops and events to encourage businesses to get certified, meet prime contractors, and learn about upcoming opportunities
- → Collaborating with the Business Advisory Council, which works with us to refine our approach to meeting our small business goals

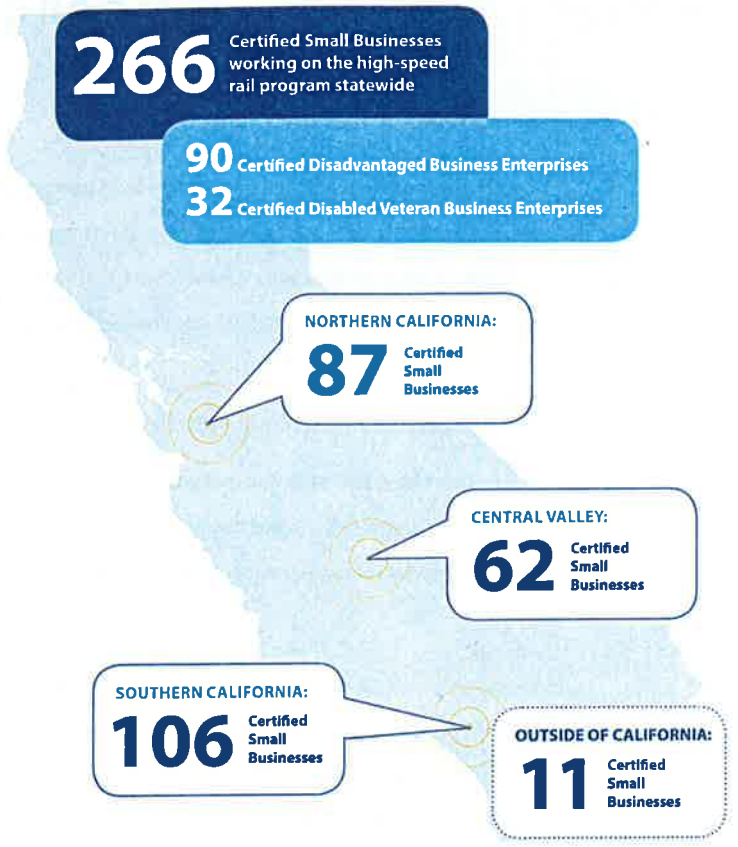
Sustainable Land Use

Support sustainable land use and economic development around high-speed rail stations by:

- → Connecting the state's mega-regions to spur economic development, create a cleaner environment and preserve agricultural and protected lands.
- → Minimizing impacts to the natural and built environments, developing policies that encourage efficient land development around stations, and helping California manage pressing issues with climate change, highway and airport congestion and energy use.

Our commitment to these values is reflected in the work we do every day and the progress we have made to date in delivering the system.

EXHIBIT 1.2 SMALL BUSINESS PARTICIPATION
As of November 2015



"This forward-looking initiative will employ thousands of construction workers and eventually create generations of well-paying rail operations, maintenance, and manufacturing jobs here in the U.S."

- Ed Wytkind
President of the Transportation Trades Department AFL-CIO

Section 5: *Capital Cost Estimates*

This section presents the program's updated capital cost estimates factoring in the lessons learned from the bids we've received and the progress we have made in design and construction to date. These updated estimates reflect and incorporate design refinements, contractors' viewpoints and other reviews, more advanced and detailed engineering and design work and other changes. The new estimates show an eight percent cost reduction for the equivalent scope shown in the 2014 Business Plan (from $67.6 billion to $62.1 billion in YOE$). The updated cost estimates also include a scope change, specifically a higher level of investment in the Los Angeles to Anaheim segment (this scope change adds $2.1 billion). This higher level of investment is designed to enhance capacity, speed and reliability in this already high demand passenger rail corridor. Even when accounting for this additional investment, our cost estimate has been reduced from $67.6 billion to $64.2 billion (YOE$).

- → Since 2013, we have received competitive design-build bids for the three construction contracts in the Central Valley, demonstrating the high level of interest within the industry to be part of building the first high-speed rail system in the country.
- → The best value bids for Construction Package 1, Construction Package 2-3 and Construction Package 4 have come in between 13 and 45 percent below engineer's estimates.
- → Several reasons can explain the differences between estimates and final contractor bids, including:

EXHIBIT 5.1 COMPARISON OF ENGINEER'S ESTIMATE AND BID PRICES*

SECTION	ENGINEER'S ESTIMATE	BID AVERAGE	BEST VALUE BID	PERCENT DIFFERENCE (BEST VALUE VS. ESTIMATE)
Construction Package 1	$1.2 - $1.8 billion	$1.25 billion	$985 million	-18/45%
Construction Package 2-3	$1.5 – $2 billion	$1.68 billion	$1.23 billion	-18/38%
Construction Package 4	$400 – $500 million	$442 million	$348 million	-13/30%

*Does not include contingencies or provisional sums.

Confusing

Using Monte Carlo

Monte Carlo simulations are an analytic technique used by many decision-makers, both public and private. The goal of a Monte Carlo simulation is to quantify the chances that risks that might impact future costs, revenues or other aspects of a program will occur and, if they did occur, what their impact would be. This allows decision-makers to make informed choices and/or develop strategies and plans to prevent, manage, or mitigate potential future risks.

Monte Carlo analysis involves running thousands of simulations where each of the risks may occur with a given probability; the simulation develops an overall probability distribution of potential cost or schedule outcomes. This distribution can be used to describe how likely it is that any given outcome might happen and what the chances are for the results to be above or below a given threshold. This allows decision-makers to thoroughly understand the level of confidence associated with a specific forecast.

These methods are used for a variety of purposes. For example, the banking and finance sector uses Monte Carlo simulations to help make investment decisions in an uncertain environment where risks have been identified and estimated. The decision reflects how much risk the financial institution is willing to take and how costly the risk would be based on the probability that this risk could actually occur.

that offers a one-seat ride to Anaheim; ridership and revenue forecasts in the 2014 Business Plan assumed a Phase 1 southern terminal in Los Angeles.

- Forecasts reflect an enhanced travel demand model that incorporates the latest available input data, new variables that better reflect travel behavior and adjustments to the transit access network and station locations.
- The above changes and model enhancements results in Phase 1 ridership increases of approximately 25% depending on the forecast year.
- The ridership risk analysis considers new risk variables and was conducted separately for each model analysis year and system implementation assumption (Silicon Valley to Central Valley line and Phase 1).
- At the same time, many elements of the ridership forecasts remain consistent with the 2014 Business Plan:
  - High and low ridership forecasts were developed through a rigorous risk analysis that provided a forecast range and associated probabilities for each Business Plan scenario through Monte Carlo simulations. The risk analysis model includes a range of assumptions relating to various risk factors having the greatest combination of uncertainty and impact on the results.
  - The ridership forecasts employ the same ramp-up methodology as the 2014 Business Plan, which assumes 40% ramp-up in year one, 55% ramp-up in year two, 70% ramp-up in year 3, 85% ramp-up in year 4 and 100% ramp-up in year 5. Separate ramp-up calculations are applied to each phase based on its assumed opening date.

For more information on the ridership and revenue forecasts, please refer to the Draft 2016 Business Plan Technical Supporting Document: Ridership and Revenue Forcasting.

2016 Business Plan RECORD DETAIL

Submission Date :	3/23/2016
Submission Method :	Project Email
First Name :	Robert
Last Name :	Allen
Stakeholder Comments/Issues :	Your Draft 2016 Business Plan is a vast improvement over those in the past Choice of the IOS from San Jose to near Bakersfield was especially wise. It gives you time to reconsider running between Bakersfield and Burbank generally along I-5, with Palmdale on the leg of a wye toward Las Vegas, making the main stem much shorter and direct. Tejon Pass would be much better than the dog-leg. Sorely missing, though, are "Safe" and "Reliable", the first two words in the title of 2008 Prop. 1A. Neither word is even mentioned in Page 3 (Preface) Page 4 (History) Page 5 (Table of Contents) Pages 6-7 (Statutory Requirements) use them only once, in the Prop 1A title. The five-page Executive Summary mentions "safety" only four times, (without emphasis) and "Reliabililty" once. .The four-page Introduction mentions "Safety" only twice and "Reliability" not at all.(It does say "predictable" once.) I did not find "California Public Utilities Commission" or "CPUC" even mentioned until the bottom of Page 93, and that was not in their role safety oversight. CPUC has exercised that oversight aggressively with BART, a publicly-owned rail property like yours, and governed by an elected Board of Directors. One example: In January, 1979, after a power pick-up paddle broke on a BART car, resulting in a power surge that caused a train fire in the trans-Bay tube, CPUC made BART halt trans-Bay service for well over three months. From my experience with three Class 1 railroads (C&NW, D&RGW, and SP) all now part of UP, such a shut-down of so critical a service would seem unwarranted. Another example: after two experienced track workers failed to follow normal safety rules and were killed by a train, CPUC required BART to do away with "Simple Approval", which is like what railroad people have used for generations. We would get line-ups and be responsible for our own safety, and it worked well. The CPUC edict has added needless cost to BART operations. At BART's inception, CPUC exercised stiflingly rigid controls on BART operations over things like braking profiles, train separations, merging, etc. (Even so, we had the Fremont Flyer.) Expect them to be very demanding. Your "blended rail" operations on Caltrain tracks could (and should) gain similar CPUC attention. Caltrain, with 79 mph track now, has several dozen grade crossings. They propose to raise that speed to 110 mph or higher. At Bourbonnais, Illinois, Amtrak on 79 mph track hit a heavy truck at a grade crossing, derailing two locomotives and 11 of 13 cars, with many casualties. All it takes is one truck loaded with steel, gasoline, or chlorine to cause devastation. Trains are vulnerable to accidents, suicides, and sabotage. Don't think that CPUC would subordinate safety so you can have a one-seat ride. Ending your Bay Area reach to San Jose for now is a wise move. You might let Caltrain operate your rolling stock on the Peninsula, and let them handle any problems with CPUC. A score of factors - only one of which is train speed - enter into CPUC analysis of crossing safety. Their Rail Crossings and Engineering Branch

(RCEB) has many decades of experience dealing with grade crossings. High Speed Rail needs secure, fenced and grade separated track just as freeways need to control access and cross traffic.

Notes :

Attachments :

image003.jpg (8 kb)
image005.jpg (1 kb)
image006.png (7 kb)
image004.jpg (1 kb)
image002.jpg (8 kb)
image001.png (3 kb)

2016 Business Plan RECORD DETAIL

Submission Date :	3/9/2016
Submission Method :	Project Email
First Name :	Robert
Last Name :	Allen
Stakeholder Comments/Issues :	At Tuesday's CHSRA Board meeting in Sacramento I used your incident in my plea for them to consider safety and the CPUC in the Business Plan 2016. Train speeds are critical, as Amtrak learned at Bourbonnais, IL. I started my remarks: I never thought that we would see A train get derailed by a tree. A tree uprooted in the rain Was all it took to wreck that train. They tell us now 'twas just a slide; The train was slow, and no one died. I hope that it made them think about what could happen with high speed trains at Caltrain grade crossings. Robert S. Allen 925-449-1387<tel:925-449-1387> BART Director, District 5, 1974-1988 Retired, SP (now UP) Western Division, Engineering/Operations
Notes :	
Attachments :	image001.png (3 kb) image002.jpg (8 kb) image003.jpg (8 kb) image004.jpg (1 kb) image005.jpg (1 kb) image006.png (7 kb)

2016 Business Plan RECORD DETAIL

Submission Date :	3/24/2016
Submission Method :	Project Email
First Name :	Thomas
Last Name :	Dorsey
Stakeholder Comments/Issues :	On paper it looks like a straiter route bypassing Sylmar and San Fernando. Does that suggests 1-2 minute time savings? Be sure to trumpet shorter travel time and lower cost to build to the media. Thomas Dorsey http://www.soulofamerica.com/blog/california_high_speed_rail/ <http://www.soulofamerica.com/blog/california_high_speed_rail/>

Notes :

2016 Business Plan RECORD DETAIL

Submission Date :	3/25/2016
Submission Method :	Website
First Name :	Robert
Last Name :	Strickland
Stakeholder Comments/Issues :	Why is your agency insisting on perpetrating fraud and wasting billions in California Taxpayer money on this project that will never work. Why are you ok with theft of public funds and public trust? You'really agency is a gross example of government waste and abuse. You should be ashamed of yourselves!
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	3/21/2016
Submission Method :	Letter
First Name :	Michael
Last Name :	Brady
Stakeholder Comments/Issues :	
Notes :	
Attachments :	Brady_Biz_Plan_Letter_March 21.pdf (457 kb)

Michael J. Brady
1001 Marshall Street, Fifth Floor
Redwood City, CA 94063
650-780-1724
March 21, 2016

Attn: Draft 2016 Business Plan
California High-Speed Rail Authority
770 L Street, Suite 620 MS-1
Sacramento, CA 95814

Subject – Comment Regarding Draft 2016 Business Plan

Topic – Plaintiff's Records and Documents from the Tos – CHSRA Lawsuit

The primary purpose of this Comment is to submit to the California High Speed Rail Authority (CHSRA) a complete set of the documents and records that were submitted by the Plaintiffs, John Tos, Aaron Fukuda, and County of Kings, and that were accepted by the Attorney General (AG), to be part of the Administrative Record (AR) of the case John Tos et al v.CHSRA et al. (Sacramento County Superior Court case No.34-2011-00113919) lawsuit.

These documents contain a wealth of information regarding a number of issues that the Authority needs to consider and needs to address as part of the development of the Final 2016 Business Plan. These issues relate to the use of Proposition 1A bond funds for system construction and the requirements contained in that ballot measure, notably: 1) the minimum time that will be required to travel from San Francisco to San Jose and to Los Angeles, 2) the minimum achievable headway requirement for the system, 3) the prohibition on an operating subsidy, 4) the overall financial viability of the chosen alignment, and 5) the availability of funds to fully construct the IOS as well as the complete Phase 1.

These documents are stored on the "Thumb Drive" that is included with this cover letter. There are 323 documents, each as an independent PDF file. Each PDF file has been assigned, by the AG, a Leading Bates Number, and a "Document Title/Topic" description, part of which is a portion of the name of the PDF file.

Also included on the Thumb Drive is a copy of the PDF file which is the Index published in September 2015, by the AG which includes all of the documents and records provided to the AG by the Plaintiffs and by the CHSRA. Referring to the Index, if a given row, which represents a specific document or record, has a "P" followed by 3 digits in the "Old Doc. Number" column, then this document or record was provided by the Plaintiffs,

and it is included on the Thumb Drive. Also included is a one page Supplemental Index that added two documents to the AR in the October 2015 time period.

If a given row in the Index does not have a "P" followed by 3 digits, the document or record was part of the Authority's files and records. We have not included these items as we presume you have copies of these items readily available to you. If you do not, and you would like us to provide them to you, please let us know by April 4th 2016, and we will have them delivered to you by April 18th 2016. By reference to these documents and records, which were provided by the Authority, we are incorporating them to be part of this Comment as they address the same issues mentioned above, and need to be considered in your preparation of the Final 2016 Business Plan.

On the last page of the Index, page 67 of 67, the AG included a Section "U. HIGH-SPEED RAIL AUTHORITY EIRS". These documents were included in response to several specific requests which have been included as P223 through P227. We have not included these documents, even though they relate to requests made by us, as they represent an additional approximately 740 documents, all of which were prepared by the Authority and presumably are readily available to the Authority in its files. We will consider these to be your documents and that they are also incorporated into this Comment, by this reference. Again, if you do need additional copies of any of these documents, please let me know by April 4th, 2016 and we will send them to you.

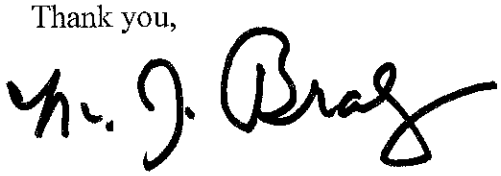
In addition to the documents included in Section U of the enclosed index, we are also asking that the Authority include in the record for the 2016 Business Plan one additional set of documents: the Final Project-level EIR/EIS for the Merced to Fresno segment of the proposed high-speed rail system. As with the other referenced EIR/EIS documents, this EIR/EIS was prepared by the Authority and is presumably readily available to it. If you need additional copies of any of these documents, please respond by April 4th, 2016 and we will send them to you.

As a minor administrative matter, on page 10 of the Index the AG shows, for the Leading Bates number AG004099, the AR number 125. It should also show our reference of P197, as the AG included AR125 in response to our request P197. We have included the PDF file for this document on the attached Thumb Drive.

Also on page 16 of the Index the AG shows, for the Leading Bates numbers AG005697 and AG005698, the AR numbers 179 and 180. A major portion of this video and transcript was struck by the AG from the copy we submitted, as P126 and P127, and these modified versions were submitted to the Court. We will be addressing this matter

separately, but please note that AG005697 and AG005698 are not all of the material we requested be incorporated in the Administrative Record as P126 and P127.

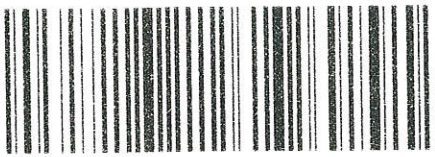
Thank you,



Michael J. Brady

PEEL LABEL AT DOTTED LINE FOR ENHANCED SECURITY. PEEL RIGHT ON THE RETURN ADDRESS, FOLD AT DOTTED LINE

CERTIFIED MAIL™



7010 0290 0001 6490 7624

Attn: Draft 2016 Business Plan
California High-Speed Rail Authority
770 L Street, Suite 620 MS-1
Sacramento, CA 95814

RETURN RECEIPT
REQUESTED

2016 Business Plan RECORD DETAIL

Submission Date :	3/28/2016
Submission Method :	Website
First Name :	Daniel
Last Name :	Stahl
Stakeholder Comments/Issues :	Connecting California's major population centers as soon as possible should continue to be the overall goal. However; I am concerned that targeting operation in 2025 will find competition from Electric Automated Highway vehicles. Please consider the impact that automated highway travel on future ridership as I find the thought of having a car drive me at high-speed on a freeway between major cities preferable due to flexibility.
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	3/28/2016
Submission Method :	Website
First Name :	Joseph
Last Name :	Shelfo
Stakeholder Comments/Issues :	The high speed rail project should be laid to rest. It was stupid from the beginning, and seems to be getting worse.
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	3/29/2016
Submission Method :	Project Email
First Name :	Carl
Last Name :	Iannalfo
Stakeholder Comments/Issues :	The focus on a high speed rail project in earthquake prone California is misplaced and, in my opinion ignores the fact that Water is the main issue in Southern California. We do not see the benefit for the Rail Project versus supplying the need to keep California as an agricultural and growing area. It's ironic that the Governors father first proposed solving the water needs of Southern California in 1958 and nothing has been done since then. Squandering Taxpayer Dollars on this project (HSR)is not good government in action. Carl Iannalfo
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	3/29/2016
Submission Method :	Letter
First Name :	William
Last Name :	Grindley
Stakeholder Comments/Issues :	Submitted book entitled, "The Economics and Politics of High-Speed Rail," by Daniel Albalate and Germa Bel
Notes :	Copy of book available upon request
Attachments :	Grindley_BP_032916.pdf (24 kb) Cover of book submitted.pdf (369 kb)

Attn: California High-Speed Rail Authority 2016 MAR 29 AM 9 07
770 L Street, Suite 620 MS-1
Sacramento, CA 95814

March 28, 2016

Subject – Receipt of one copy of a hand-delivered book

The purpose of this letter is to submit by hand to the California High Speed Rail Authority (CHSRA) a gifted copy of the book – The Economics and Politics of High-Speed Rail, Lessons From Experiences Abroad by the authors Daniel Albalate and Germa Bel.

This book contains a wealth of information regarding a number of issues that the CHSRA needs to consider and address as part of the development of its Final 2016 Business Plan. I hope these authors' findings are considered carefully, as they differ in many cases from those of the CHSRA.

As I am transmitting this book by hand to the CHSRA's headquarters, (770 L Street, Suite 1160, Sacramento, CA) I ask the person receiving the book to acknowledge, along with me, that The Economics and Politics of High-Speed Rail, Lessons From Experiences Abroad, has been received by him/her.

Thank You

William Grindley

151 Laurel Street
Atherton, CA 94027

29/3/2016.

Printed Name of Recipient
California High-Speed Rail Authority
770 L St. Suite 1160
Sacramento, CA

THE ECONOMICS AND POLITICS OF HIGH-SPEED RAIL

LESSONS FROM EXPERIENCES ABROAD

DANIEL ALBALATE
GERMÀ BEL

2016 Business Plan RECORD DETAIL

Submission Date :	3/30/2016
Submission Method :	Project Email
First Name :	Cindy
Last Name :	Bloom
Stakeholder Comments/Issues :	>

>
> Dear California High Speed Rail Authority:
>
> Please see the attached reports (one of which is revised); consider them my comments.

> 1. Analysis of 2016 Draft Business Plan Capital Cost Basis of Estimate
> 2. 2016 Draft Business Plan Ridership/Revenue and Projected Cashflow REVISED
>
> In summary, the capital cost projection is incomplete as it leaves out many presumably expensive components and compares the 2016 figure to the 2014 figure, when instead, it should be comparing the 2016 figure to, at minimum, the 2008 figure which was the basis for voters' marginal approval of Prop 1A. Additionally, the revenue projections are just pure bunk.
>
> One issue which I have never seen addressed is: If private investor(s) do provide equity to the project, in what proportion or priority do they recoup their investment? Do they keep 100% of operating revenue or it is based on the amount of their equity stake? Do the taxpayers recoup any sunk costs?
>
> Your agency frequently boasts of its transparency and this 2016 draft business plan is just that: Transparent. It is easy to recognize when a fiscal target is set and then input variables are manipulated. Your 2016 draft business plan is a textbook case of fudging numbers. Congratulations!
>
> Thank you.
>
> Cindy Bloom, M.B.A.
> 818-445-5602
> 9800 La Canada Way
> Shadow Hills, CA 91040
>

Notes :	
Attachments :	2016 Draft Business Plan Ridership & Cashflow.Rev.Final.pdf (1 mb) Analysis of 2016 Draft Bus Plan Capital Cost.Final.pdf (1 mb)

ANALYSIS OF CALIFORNIA HIGH SPEED RAIL AUTHORITY'S

RIDERSHIP/REVENUE AND PROJECTED CASH FLOW

Draft 2016 Business Plan
and
Technical Supporting Document

March 9, 2016 Revised March 28, 2016
By Cindy Bloom

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ABSTRACT

On February 18, 2016, the California High Speed Rail Authority (CHSRA) released its draft 2016 Business Plan (2016 Draft BP), which is comprised of several documents, including *Ridership and Revenue Forecasting* and *High, Medium and Low Cash Flows*. These documents are vital in convincing private investors to provide equity capital for the venture as soon as possible so that the California State Legislature can approve the sale of the $9 billion in bonds to help fund the $64.2 billion project. CHSRA is in a catch-22: They need the Prop 1A bond money to build the system to attract private investors but in order to be in compliance with Prop 1A, they need private investors to issue the bonds to build the system. The ridership revenue projections and cash flow models must provide enough of a return on investment to assuage potential private investors' fears and persuade them to invest. This analysis suggests the CHSRA has exercised liberties in inflating the 2016 Draft BP revenue numbers in order to achieve this goal.

EXECUTIVE SUMMARY

CHSRA has essentially turned their statewide high-speed train into a high-cost commuter train for the revised IOS although few people could afford it (a commuter from Fresno to San Jose would spend $27,000 annually on train fare).

When dissected, the 2016 Draft BP's first year of operation breaks down to 11,233 (high), 7,794 (medium), and 6,027 (low) passengers riding *daily* within the IOS which runs from one metropolitan area (San Jose) to the Central Valley, California's agricultural area.

Average ridership increases from the 2014 BP to the 2016 Draft BP range from 22% to 29%--double-digit increases--with no legitimate explanation. CHSRA merely states, "Forecasts reflect an enhanced travel demand model."

The ridership farce flows through to its cash flow projections. There is no explanation why the 2016 Draft BP net cash flow increased 66% to 132% over the 2014 BP. It is even loftier based on a 5% discounted cash flow, ranging from 83% to 150%. While the 2014 BP includes the capital cost as part of it cash flow, it is suspiciously absent from the 2016 Draft BP's cash flow projection.

If CHSRA actually meets their incredibly aggressive ridership targets, they will be forced to purchase and operate more train sets at a cost of $49 million each beyond the budgeted 70 at full build-out.

It is clear that in CHSRA's desperation, they inflated their ridership/revenue figures in order to present a picture of fiscal viability to (1) prospective investors and (2) taxpayers.

INTRODUCTION

The *Ridership and Revenue Forecasting* is a very statistical, and difficult to follow document. It was prepared by Cambridge Systematics, Inc., a transportation modeling and analytics firm for Parsons Brinckerhoff. Rather than using straight-forward and verifiable traditional financial forecasting models, it instead relied exclusively on multiple input variables through multiple regression analyses; the last step was running the data through a simulation program 50,000 times. These tools, while helpful, only add to the convoluted ridership and resultant revenue figures that became the basis for the cash flow document. While probabilities can be useful, it is similar to forecasting the weather. If there is a 30% chance of rain, the end result ultimately is that it either rained or it didn't. The same can be said for the revenue and ridership projections. Even if there is a 95% chance that the project will achieve break-even or surplus in any given year: either it will – or it won't.

Operating revenue is the backbone of every company. Every company at minimum is measured by its revenue, profit and cash flow. It uses these key ratios to compare its own earnings year over year, and to other companies within the same industry. If any of these items are deficient or trending downwards, a company cannot sustain its operations and will eventually be faced with the daunting and difficult decision of how to proceed. The most immediate strategy is to reduce expenses but if this solution is insufficient, a company may seek a buyer, merge with another company, declare bankruptcy, or in the worst case, go out of business.

CHSRA is not a privately held company, but instead is a governmental agency that is managing the construction of the largest infrastructure project in the history of the United States and is not held to the rigorous universally accepted accounting standards imposed in private industry. There are other governmental public works projects, such as freeways, road and bridges, that are also not subject to profit and loss or cash flow measurements as they provide the infrastructure for others to utilize. There are, however, other projects' whose operations are sustained by user fees, for example water reclamation plants, power plants, etc. These projects intend to be self-sustaining and have the ability to raise rates in order to cover their costs. Most public works projects during the construction phase are funded in large part by debt (bonds) and are subject to reporting requirements in order to maintain their bond rating and other compliance issues. For CHSRA to successfully complete the high-speed train project, it must present positive cash flow, otherwise: (1) it cannot attract private investment dollars to assist the funding of construction; (2) without these private investment dollars, it also cannot unlock the balance of the $9 billion in Prop 1A bonds in order to fund construction; and (3) it will be unable to sell the concession once the infrastructure is built. It is also required to provide matching funds for several federally funded grants and could potentially lose several billion dollars if it fails to meet its deadlines. If any of these criteria are not met, the project is doomed.

PURPOSE

The purpose of this report is to scrutinize the 2016 Draft BP's ridership revenue and resultant cash flow projections while also attempting to answer the following questions:

1. Are the ridership (number of passengers) projections attainable and/or reasonable?
2. Are the ridership revenue projections attainable and/or reasonable?
3. Is the projected cash flow attainable and/or reasonable?

SCOPE AND METHODOLOGY

The 2016 Draft BP is comprised of several documents:

- Connecting and Transforming California (100 pages, main document)
- Capital Cost Basis of Estimate Report (49 pages)
- High, Medium, Low Cash Flows (12 pages)
- 50-Year Lifecycle Capital Cost Model Documentation (74 pages)
- Service Planning Methodology (18 pages)
- Ridership and Revenue Forecasting (62 pages)

This analysis examines the revenue portion of the *Connecting and Transforming California*, *Ridership and Revenue Forecasting*; and *High, Medium, Low Cash Flows*. This report will not address the Initial Operation Section Extended because it is contingent upon CHSRA securing additional federal funding to complete.

DRAFT 2016 BUSINESS PLAN CORRIDOR SUMMARY

Section	Length in Miles	From/To	Operational	Cumulative Cost (billions) 2015$ / YOE[1]
IOS[2]	250	San Jose and North of Bakersfield (aka Valley to Valley/ Silicon Valley to Central Valley)	2025	$18.7 / $20.7
Initial Operation Section Extended	321	San Francisco to Bakersfield (aka Valley to Valley Extension/ Silicon Valley to Central	2025	Unk / $22.7

[1] Year of Expenditure, adjusted for future inflation

[2] Formerly was Merced to San Fernando Valley

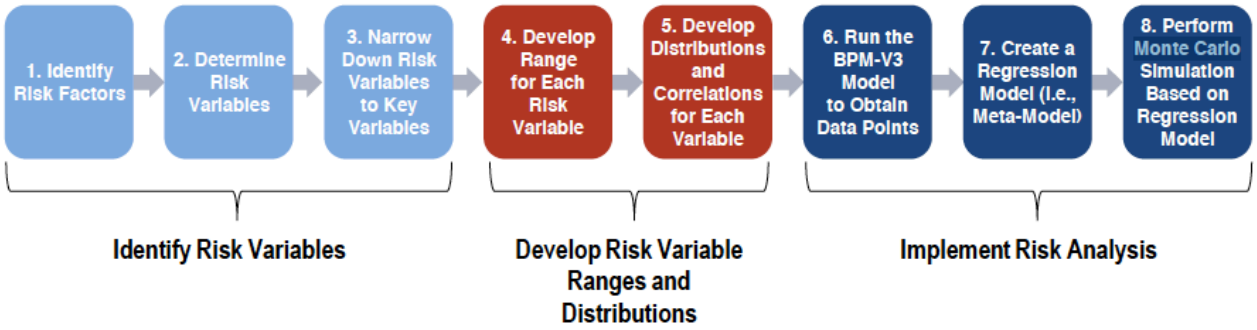
		Valley Extension)		
Phase 1	***520***	***San Francisco/Merced to Anaheim***	***2029***	***$55.3 / $64.2***
Phase 2	280	Merced to Sacramento; Los Angeles to San Diego		

2014 ADOPTED BUSINESS PLAN CORRIDOR SUMMARY

Section	Length in Miles	From/To	Operational	Cumulative Cost (billions) YOE
IOS	300	Merced to San Fernando Valley	2022	$31
Bay to Basin	410	San Jose and Merced to San Fernando Valley	2026	$51
Phase 1 Blended	***520***	***San Francisco to Los Angeles/Anaheim***	***2028***	***$68***

CHSRA utilized a very complex methodology to arrive at their ridership, revenue, and cash flow estimates as illustrated in Figure 7.1. Although it appears to be a very comprehensive approach, the problem is that it is over-complicating the process and over calculating by averaging averages. The final process, the Monte Carlo Simulation, was run 50,000 times. It is unclear whether or not CHSRA or its contractor, Cambridge Systematics, Inc., kept running the simulation until they came up with projections that met their goals or whether 50,000 is considered a standard number of times to run the simulation model.

Figure 7.1 Risk Analysis Approach



The 2016 Draft BP contains projections in 2015 dollars (2015$) and Year of Expenditure dollars (YOE$)[3]. For easy comparison and familiarity to today's travel fares, unless otherwise stated,

[3] The familiar $64.2 or $68 billion figure for capital costs is in YOE$

this report uses 2015$ instead of YOE$. CHSRA uses two sets of forecasts and cost estimates below:

- Silicon Valley to Central Valley line – (Valley to Valley) - One scenario assumes that operations begin on the Silicon Valley to Central Valley line from San Jose to a station north of Bakersfield in 2025 (construction completed in 2024) and on the entire Phase 1 system from San Francisco and Merced to Los Angeles and Anaheim in 2029.

- Silicon Valley to Central Valley Extension (not included in the scope of this study) - A second scenario runs from Silicon Valley to Central Valley to San Francisco and Bakersfield. This scenario also assumes operations starting in 2025 and the Phase 1 system opening in 2029. Together these extensions would provide a one-seat ride from Bakersfield to San Francisco. Because this scenario is dependent upon securing additional funding, it is not examined in this report.

Ridership and revenue forecasts in the 2016 Draft BP reflect an "enhanced" travel demand model and changes to some key assumptions. There are several key differences between the forecasts presented in the 2014 BP and the forecasts presented in the 2016 Draft BP including:

- The 2016 Draft BP assumes that service will start on the line from San Jose to north of Bakersfield (to an interim facility that functions as a temporary station) and evaluates an additional scenario extending service to San Francisco and Bakersfield that had not been analyzed in the 2014 BP (not within the scope of this report). It also assumes a Phase 1 system that offers a one-seat ride to Anaheim; ridership and revenue forecasts in the 2014 BP assumed a Phase 1 southern terminal in Los Angeles.

- Forecasts reflect an "enhanced" travel demand model that incorporates the latest available input data, new variables that better reflect travel behavior and adjustments to the transit access network and station locations.

VALLEY TO VALLEY MAP

Figure 3.1 Silicon Valley to Central Valley Line

PROJECTED HIGH SPEED TRAIN FARES AND REVENUE

While other comparisons were utilized in order to estimate projected fares, airfare prices were the governing basis and CHSRA used 77% to 80% of these current prevailing airfare prices within or close to the same travel corridors. The following chart contains the presumed fares in 2015 dollars. Although the IOS is actually "North of Bakersfield," the following chart has no fare for this as a terminus station[4]. According to Table 3.1, for the IOS, a one-way fare from San Jose ranges from a low of $19 (Gilroy) to a high of $83 (Bakersfield).

[4] This will be a temporary station

Table 3.1 Assumed High-Speed Rail Fares

2015 Dollars

High-Speed Rail Stations	San Francisco (Transbay)	Millbrae	San Jose	Gilroy	Merced	Fresno	Kings/Tulare	Bakersfield	Palmdale	Burbank Airport	Los Angeles Union Station	Gateway Cities/ Orange County	Anaheim
San Francisco (Transbay)		$18	$23	$25	$59	$70	$78	$89	$89	$89	$89	$89	$89
Millbrae			$20	$24	$59	$70	$77	$89	$89	$89	$89	$89	$89
San Jose				$19	$56	$63	$68	$83	$89	$89	$89	$89	$89
Gilroy					$52	$59	$65	$78	$89	$89	$89	$89	$89
Merced						$45	$52	$67	$85	$86	$89	$89	$89
Fresno							$40	$56	$74	$75	$78	$81	$84
Kings/Tulare								$51	$67	$68	$74	$76	$78
Bakersfield[9]									$51	$52	$56	$58	$60
Palmdale										$32	$33	$34	$36
Burbank Airport											$27	$30	$32
Los Angeles Union Station												$27	$30
Gateway Cities/ Orange County													$27
Anaheim													

Source: Cambridge Systematics, Inc.

The following is the projected revenue that was used to calculate average fares. For example, year 2025: $255,000,000 (revenue) divided by 4,100,000 (ridership) = $62.20.

FAREBOX REVENUE: SAN JOSE - NORTH OF BAKERSFIELD (2015 dollars)

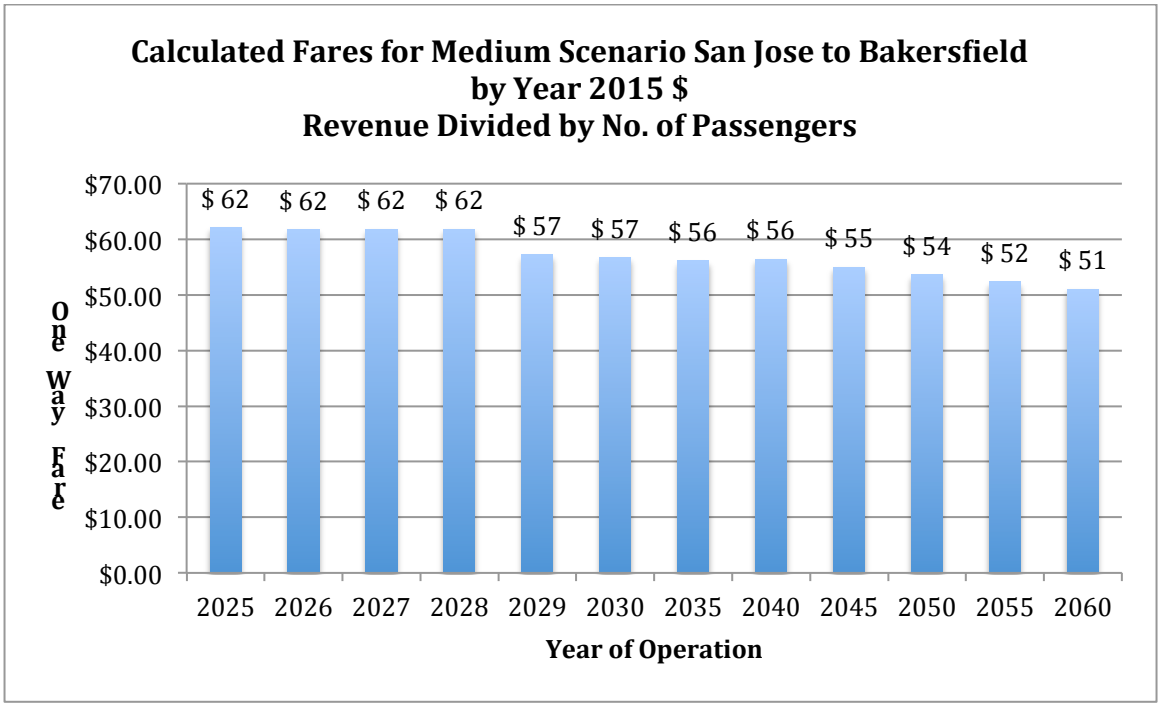
(SILICON VALLEY TO CENTRAL VALLEY LINE) THROUGH PHASE 1 (IN MILLION OF 2015 $)

	2025 VALLEY TO VALLEY	2026 VALLEY TO VALLEY	2027 VALLEY TO VALLEY	2028 VALLEY TO VALLEY	2029 PHASE 1	2030 PHASE 1	2035 PHASE 1	2040 PHASE 1	2045 PHASE 1	2050 PHASE 1	2055 PHASE 1	2060 PHASE 1
High	$255	$351	$447	$543	$1,460	$1,793	$2,927	$3,139	$3,218	$3,299	$3,383	$3,468
Medium	$180	$247	$315	$383	$1,098	$1,360	$2,250	$2,413	$2,474	$2,537	$2,601	$2,666
Low	$140	$193	$246	$299	$859	$1,064	$1,761	$1,889	$1,936	$1,985	$2,035	$2,087

When backing into an average fare based on total revenue and ridership, the average fare comes to around $62 for the IOS (2025 through 2028). This implies that Fresno would be the most common origin or destination. As the years progress, the fare prices trend downwards, meaning that more passengers are opting for shorter routes. There are several station-to-station permutations that fall within $50 - $57 fare range.

AVERAGE TICKET PRICE (CALCULATED: RIDERSHIP DIVIDED BY REVENUE)

	2025 VALLEY TO VALLEY	2026 VALLEY TO VALLEY	2027 VALLEY TO VALLEY	2028 VALLEY TO VALLEY	2029 PHASE 1	2030 PHASE 1	2035 PHASE 1	2040 PHASE 1	2045 PHASE 1	2050 PHASE 1	2055 PHASE 1	2060 PHASE 1
High	$62.20	$61.58	$61.23	$61.01	$56.37	$55.86	$55.02	$55.26	$53.90	$52.62	$51.34	$50.04
Medium	$62.07	$61.75	$61.76	$61.77	$57.19	$56.67	$56.11	$56.38	$54.98	$53.64	$52.33	$50.98
Low	$63.64	$62.26	$63.08	$62.29	$57.65	$57.20	$56.62	$56.90	$55.47	$54.09	$52.86	$51.53



Since there is limited air service between many of the cities, the train would fill that gap, however, at a relatively high cost when compared to taking a bus or driving. While conventional trains are also an alternate mode of transportation, they are not addressed.

RIDERSHIP VOLUME

The 2016 Draft BP uses three scenarios for ridership: high, medium and low, starting in 2025. Phase 1 (San Francisco to Anaheim) becomes operational in 2029. In each scenario, the annual increase in ridership is aggressive through 2035. From 2025 to 2028, the average annual increase over the prior year ranges from 22% to 41%. Then, in 2029 when Phase 1 becomes operational, the increase over 2028 ranges from 191% to 210%.

RIDERSHIP: SAN JOSE - NORTH OF BAKERSFIELD
(SILICON VALLEY TO CENTRAL VALLEY LINE) THROUGH PHASE 1 (IN MILLIONS OF RIDERS)

	2025	2026	2027	2028	2029	2030	2035	2040	2045	2050	2055	2060
	VALLEY TO VALLEY	VALLEY TO VALLEY	VALLEY TO VALLEY	VALLEY TO VALLEY	PHASE 1	PHASE 1	PHASE 1*	PHASE 1*	PHASE 1*	PHASE 1*	PHASE 1*	PHASE 1*
High Ridership	4.1	5.7	7.3	8.9	25.9	32.1	53.2	56.8	59.7	62.7	65.9	69.3
Yrly Increase in volume		1.6	1.6	1.6	17.0	6.2	4.2	0.7	0.6	0.6	0.6	0.7
Increase in %		39%	28%	22%	191%	24%	13%	1%	1%	1%	1%	1%
Medium Ridership	2.9	4.0	5.1	6.2	19.2	24.0	40.1	42.8	45.0	47.3	49.7	52.3
Yrly Increase in volume		1.1	1.1	1.1	13.0	4.8	3.2	0.5	0.4	0.5	0.5	0.5
Increase in %		38%	28%	22%	210%	25%	13%	1%	1%	1%	1%	1%
Low Ridership	2.2	3.1	3.9	4.8	14.9	18.6	31.1	33.2	34.9	36.7	38.5	40.5
Yrly Increase in volume		0.9	0.8	0.9	10.1	3.7	2.5	0.4	0.3	0.4	0.4	0.4
Increase in %		41%	26%	23%	210%	25%	13%	1%	1%	1%	1%	1%

*divided by 5 due to projection changing from annual to every 5 years

The daily ridership seems unattainable, especially in the "High" scenario. CHSRA asserts that over 11,000 passengers will ride the IOS the first year of operation, increasing to nearly over 24,000 by year 2028. When Phase 1 becomes operational, their estimate soars to almost 71,000 daily passengers.

In comparison, Bob Hope Airport served nearly 2 million outbound passengers (5,479 per day) and nearly 2 million inbound (5,400 per day) for 2015. CHSRA is claiming that it will serve more passengers in its first year of operation for a segment that is only 250 miles long and only serves one metro area (San Jose). The other terminus station isn't even in Bakersfield—it is 20 miles north of Bakersfield in the town of Shafter, population of 17,000. In contrast, Bob Hope Airport is a regional airport with service to the entire country, including Hawaii and Alaska.

RIDERSHIP IN MILLIONS

	VALLEY TO VALLEY	VALLEY TO VALLEY	VALLEY TO VALLEY	VALLEY TO VALLEY	PHASE 1	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5	PHASE 6	PHASE 7
Scenario	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
High	4.1	5.7	7.3	8.9	25.9	32.1	53.2	56.8	59.7	62.7	65.9	69.3
Medium	2.9	4.0	5.1	6.2	19.2	24.0	40.1	42.8	45.0	47.3	49.7	52.3
Low	2.2	3.1	3.9	4.8	14.9	18.6	31.1	33.2	34.9	36.7	38.5	40.5

RIDERSHIP PER DAY (WEEKDAYS AND WEEKENDS)

Scenario	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
High	11,233	15,616	20,000	24,384	70,959	87,945	145,753	155,616	163,562	171,781	180,548	189,863
Medium	7,945	10,959	13,973	16,986	52,603	65,753	109,863	117,260	123,288	129,589	136,164	143,288
Low	6,027	8,493	10,685	13,151	40,822	50,959	85,205	90,959	95,616	100,548	105,479	110,959

How do these ridership estimates compare to the ridership estimates in the 2014 BP? In order to compare apples to apples, this analysis will examine Phase 1 because both business plans have Phase 1 running from San Francisco to Anaheim and covering 520 miles. In order to be further comparable, the "matching" is based on year of operation, not calendar year.

2016 Draft Business Plan Ridership Estimates (Millions) - PHASE 1									
Operation Year No.	**Year 1**	**Year 2**	**Year 7**	**Year 12**	**Year 17**	**Year 22**	**Year 27**	**Year 32**	**Average**
Year of Operation	**2029**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**	
High Ridership	25.9	32.1	53.2	56.8	59.7	62.7	65.9	69.3	**53.2**
Medium Ridership	19.2	24.0	40.1	42.8	45.0	47.3	49.7	52.3	**40.1**
Low Ridership	14.9	18.6	31.1	33.2	34.9	36.7	38.5	40.5	**31.1**

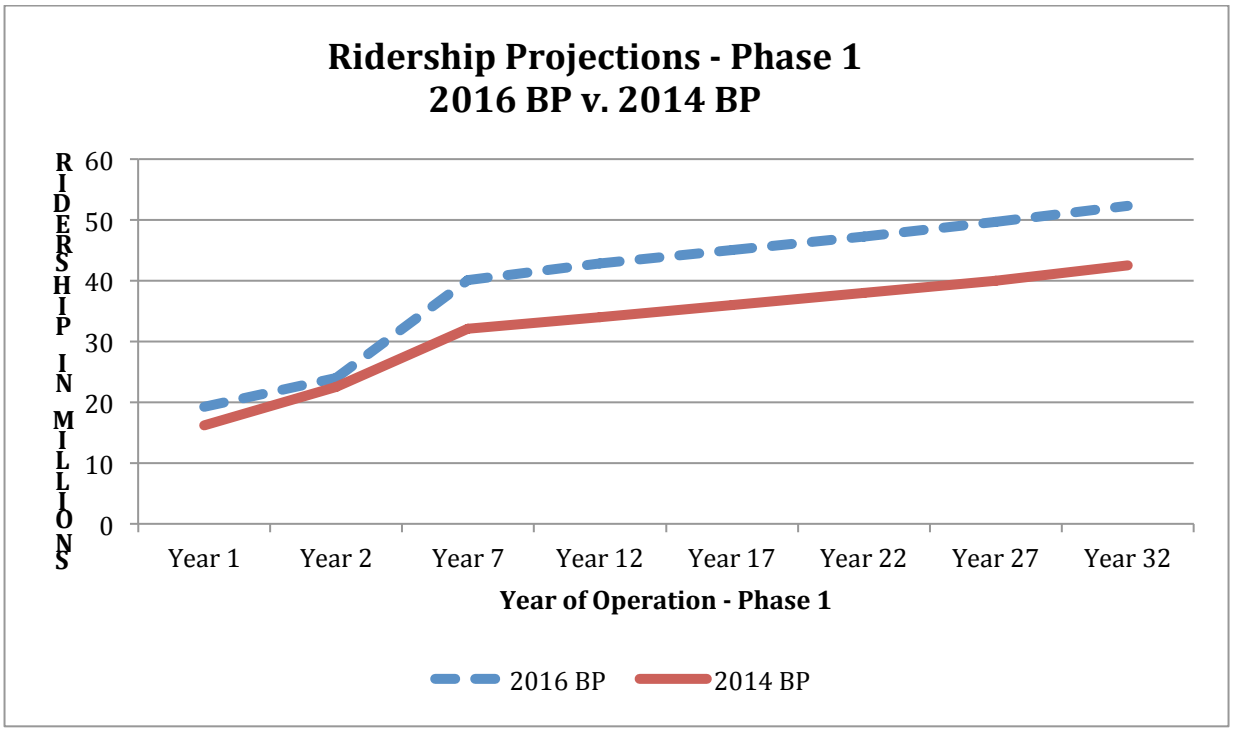
2014 Adopted Business Plan Ridership Estimates (Millions) - PHASE 1									
Operation Year No.	**Year 1**	**Year 2**	**Year 7**	**Year 12**	**Year 17**	**Year 22**	**Year 27**	**Year 32**	**Average**
Year of Operation	**2028**	**2029**	**2034**	**2039**	**2044**	**2049**	**2054**	**2059**	
High Ridership	23.0	28.0	41.4	44.9	47.0	49.5	52.0	54.9	**42.6**
Medium Ridership	16.2	22.5	32.1	34.0	36.0	38.0	40.0	42.5	**32.7**
Low Ridership	13.0	12.5	24.1	26.0	27.0	28.0	30.0	31.9	**24.1**

Change in Ridership Figures (Millions) 2016 versus 2014 - PHASE 1									
	Year 1	**Year 2**	**Year 7**	**Year 12**	**Year 17**	**Year 22**	**Year 27**	**Year 32**	**Average**
Year of Operation 2016	**2029**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**	
Year of Operation 2014	**2028**	**2029**	**2034**	**2039**	**2044**	**2049**	**2054**	**2059**	
High Ridership	2.9	4.1	11.8	11.9	12.7	13.2	13.9	14.4	**10.6**
2016 +/- 2014 %	13%	15%	29%	27%	27%	27%	27%	26%	**24%**
Medium Ridership	3.0	1.5	8.0	8.8	9.0	9.3	9.7	9.8	**7.4**
2016 +/- 2014 %	19%	7%	25%	26%	25%	24%	24%	23%	**22%**
Low Ridership	1.9	6.1	7.0	7.2	7.9	8.7	8.5	8.6	**7.0**
2016 +/- 2014 %	15%	49%	29%	28%	29%	31%	28%	27%	**29%**

With no plausible explanation except for the word "enhanced," the 2016 Draft BP increased its ridership figures over the 2014 BP for Year 1 of operation by 2.9 million, 3 million, and 1.9 million for the high, medium, and low scenarios respectively. The average increase ranges from 22% (medium scenario) to 29% (low scenario) (note that these are done in 5 year increments with the exception of years 1 and 2).

The increase in daily ridership for 2016 Draft BP over 2014 BP is aggressive. Even the "low scenario" of an increase of 5,205 is nearly the same number of Bob Hope Airport's daily outbound passenger figure of 5,479.

Change in Ridership Figures 2016 versus 2014 - PHASE 1 DAILY									
Operation Year No.	**Year 1**	**Year 2**	**Year 7**	**Year 12**	**Year 17**	**Year 22**	**Year 27**	**Year 32**	**Average**
Year of Operation	**2028**	**2029**	**2034**	**2039**	**2044**	**2049**	**2054**	**2059**	
High Ridership	7,945	11,233	32,329	32,603	34,795	36,164	38,082	39,452	**29,075**
Medium Ridership	8,219	4,110	21,918	24,110	24,658	25,479	26,575	26,849	**20,240**
Low Ridership	5,205	16,712	19,178	19,726	21,644	23,836	23,288	23,562	**19,144**



According to CHSRA's incredible ridership projections, it would not have enough trains to satisfy demand. The 2016 Draft BP states it will have 70 trains at full build-out, which is consistent with the number of trains per hour during peak (3 hours in the morning and 3 hours in the evening) and non-peak (10 hours). According to the Request For Expressions of Interest (RFEI) for train sets, each train must have a minimum of 450 passenger seats.

RIDERSHIP PER DAY (WEEKDAYS AND WEEKENDS)												
Scenario	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
High	11,233	15,616	20,000	24,384	70,959	87,945	145,753	155,616	163,562	171,781	180,548	189,863
Medium	7,945	10,959	13,973	16,986	52,603	65,753	109,863	117,260	123,288	129,589	136,164	143,288
Low	6,027	8,493	10,685	13,151	40,822	50,959	85,205	90,959	95,616	100,548	105,479	110,959
No. of Runs	44	44	44	44	196	196	196	196	196	196	196	196

Passengers per train												
High	255	355	455	554	362	449	744	794	834	876	921	969
Medium	181	249	318	386	268	335	561	598	629	661	695	731
Low	137	193	243	299	208	260	435	464	488	513	538	566
% Train Capacity Based on 450 Seats per Train												
High	57%	79%	101%	123%	80%	100%	165%	176%	185%	195%	205%	215%
Medium	40%	55%	71%	86%	60%	75%	125%	133%	140%	147%	154%	162%
Low	30%	43%	54%	66%	46%	58%	97%	103%	108%	114%	120%	126%

To meet this astonishing demand, and assuming that each train has exactly 450 seats, additional train sets would need to be purchased at a cost of $49 million each. Not only will additional train sets have to be purchased, but also they will require additional recurring O&M including operating personnel expense. At an average fare of $57, it would require 860,000 tickets to pay for 1 train set, excluding recurring O&M.

Additional Number of Trains Needed to Satisfy Demand												
High	-	-	1	1	-	-	1	1	1	1	2	2
Medium	-	-	-	-	-	-	1	1	1	1	1	1
Low	-	-	-	-	-	-	-	1	1	1	1	1
Additional Capital Cost to Purchase Train Sets @ $49 million each (2015 $)												
High	$0	$0	$49	$49	$0	$0	$49	$49	$49	$49	$98	$98
Medium	$0	$0	$0	$0	$0	$0	$49	$49	$49	$49	$49	$49
Low	$0	$0	$0	$0	$0	$0	$0	$49	$49	$49	$49	$49

Comparison to Eurostar service from London to Paris. In 1996, London and Continental Railways (which have true expertise in forecasting ridership figures) predicted that passenger numbers would reach 21.4 million annually by 2004, 10 years after its opening in 1994, but only 7.3 million (34%) was achieved. This is particularly important to realize because, unlike the CHSRA high-speed train, the only transportation competition that the Eurostar has is air service. As airlines reduced their fares, the Eurostar had to reduce theirs in order to maintain competitive.

Only 2 of the 99 current high-speed lines in the world are fiscally self-sustaining, Tokyo-Osaka and Paris-Lyon, and they required considerable subsidies at the beginning.

WHO ARE THESE PASSENGERS?

CHSRA assumes that their passengers will include business travelers, commuters, and recreational travelers. The noted variables that affect ridership include auto operating costs, high-speed rail fares, frequency of service, bus connections, high-speed train station proximity to passengers' points of origin and destination, and airfares. CHSRA contends that the initial operating section from San Jose to North of Bakersfield[5] (Valley to Valley) will allow residents in the now affordable Central Valley to commute to jobs in Silicon Valley, providing them with a relatively short commute when compared to driving. It is true that travel time is greatly reduced, but it is an expensive mode of transportation for commuting. Additionally, once one arrives at his/her destination, additional transportation may be needed in order to get to one's place of employment. The time "savings" could be greatly reduced if the passenger has to endure additional time getting to/from the HSR station on either or both ends of their journey.

The following chart illustrates how much it would cost for a commuter to travel from/to San Jose to/from various stations along the Valley to Valley segment.

[5] 20 miles north of Bakersfield which means a passenger must somehow get there to catch a high-speed train

COST OF COMMUTING USING HIGH SPEED TRAIN - IOS

No. of weeks (assumes 2 vacation weeks/yr and 10 holidays/yr): 48

Round trip; assumes 10% discount for a pre-paid pass for monthly and annual[6]

San Jose to/from:	Gilroy	Fresno	Kings/Tulare	Bakersfield
Daily	$38	$126	$136	$166
Weekly	$190	$630	$680	$830
Monthly	$735	$2,438	$2,632	$3,212
Annually	$8,208	$27,216	$29,376	$35,856
Annual Median Income	$81,056	$45,201	$42,863	$48,574
After-tax	$71,329	$37,517	$35,576	$40,316
HSR Cost as % after tax	12%	73%	83%	89%

It becomes clear that using the high-speed train is *not* an affordable commute. It is possible that an employer would provide a commuting subsidy but that is outside the scope of this report. Let us further assume that the commuter who lives in the Central Valley is traveling to San Jose because he/she secured a higher paying job in Silicon Valley:

COST OF COMMUTING USING HIGH SPEED TRAIN – IOS – ASSUMING HIGH PAID JOB IN SILICON VALLEY

No. of weeks (assumes 2 vacation weeks/yr and 10 holidays/yr): 48

Round trip; assumes 10% discount for a pre-paid pass for monthly and annual

San Jose to/from:	Gilroy	Fresno	Kings/Tulare	Bakersfield
Daily	$38	$126	$136	$166
Weekly	$190	$630	$680	$830
Monthly	$735	$2,438	$2,632	$3,212
Annually	$8,208	$27,216	$29,376	$35,856
Annual Median Income*	$81,056	$93,854	$93,854	$93,854
After-tax	$71,329	$82,592	$82,592	$82,592
HSR Cost as % after tax	12%	33%	36%	43%

*Santa Clara County (Silicon Valley) median income for Central Valley commuters only; no adjustment for Gilroy

Even if commuters now earned a Silicon Valley salary, the high-speed train commute is still unaffordable for most commuters.

With the exception of to/from San Jose to/from Gilroy, a high-speed train will be faster than a bus or car[7] and it is doubtful that one would spend $19 one-way for a 33-mile trip:

[6] Not included in CHSRA documents but it is common to offer discounted passes for public transportation

[7] "Car" includes SUVs, trucks and other motorized vehicles

TRAVEL SAVINGS IN MINUTES BY USING HIGH SPEED TRAIN

San Jose to/from:	Gilroy	Fresno	Kings/Tulare	Bakersfield
Bus	9	173	344	435
Car	2	127	171	208

The main factor for choosing a high-speed train for transportation is how it compares in terms of cost, convenience, and time saved to other modes of transportation. CHSRA is attempting to schedule its service times to coincide with bus and conventional rail schedules so that passengers can link to these if they need to continue their travels beyond high-speed rail stations and/or to get to their final destination within a short distance of the high-speed train station.

It is uncertain if passengers would be willing to pay $83 each way ($53[8] more than driving) to/from Bakersfield to/from San Jose, and then deal with the inconvenience and additional cost of finding short-distance transportation from point of origin and again at the destination, to save less than 2 hours (and less than that if additional transportation is needed to travel to/from the high speed rail station).

San Jose to/from:	Gilroy	Fresno	Kings/Tulare	Bakersfield
HSR No. Minutes	32	72	93	128
Cost	$19.00	$63.00	$68.00	$83.00
Cost per Minute	*$0.59*	*$0.88*	*$0.73*	*$0.65*
Bus No. Minutes	41	205	376	467
Cost	$10.50	$33.00	$45.00	$55.00
Cost per Minute	*$0.26*	*$0.16*	*$0.12*	*$0.12*
Car	34	159	203	240
Cost	$4.00	$19.50	$24.50	$30.00
Cost per Minute	*$0.12*	*$0.12*	*$0.12*	*$0.13*
HSR Cost above in $				
Bus	$9	$30	$23	$28
Car	$15	$44	$44	$53
HSR Cost above %				
Bus	81%	91%	51%	51%
Car	375%	223%	178%	177%
HSR Cost Per Minute above in $				
Bus	$0.34	$0.71	$0.61	$0.53
Car	$0.48	$0.75	$0.61	$0.52
HSR Cost above %				

[8] This is on the high end, assuming peak prices for gasoline

San Jose to/from:	Gilroy	Fresno	Kings/Tulare	Bakersfield
Bus	132%	444%	511%	451%
Car	405%	613%	506%	419%

CASH FLOW ANALYSIS

The 2016 Draft BP's cash flow unashamedly excludes the capital investment/cost while the 2014 BP included it. Why? Simple: It scared off potential investors. At several community outreach meetings, CHSRA representatives stated that it does not include any investment cost as part of their return on investment (ROI) calculation; it is no wonder that CHSRA refuses to perform an ROI measured as an internal rate of return (IRR), as this is the result:

	IRR
High Revenue	0.64%
Medium Revenue	-1.18%
Low Revenue	-3.09%

Since the core reason for CHSRA to provide an attractive cash flow projection is to entice private investors to (1) become an equity partner during the construction phase and (2) to take over operations once the infrastructure has been completed, it is a certain project failure if that the cash flow projections fail to deliver satisfactory rates of return on investment.

According to CHSRA, even the "low" forecast will show positive cash flow from 2025 to 2060. The 2016 Draft BP cash flow projections also include ancillary revenue (1% of the total), which includes on-board sales, advertising, asset and right-of-way utilization and transit-oriented development opportunities[9]. Note that operation and maintenance (O&M) and capital replacement costs vary between the scenarios. It is presumed that the variance is due to the number of trains increasing or decreasing based on passenger demand.

2016 Draft Business Plan

Scenario	High	Medium	Low
Revenue in Millions	$100,572	$77,151	$60,376
Less: O&M	-$31,411	-$28,704	-$27,505
Net Cash Flow from Operations	$69,161	$48,447	$32,871
Capital Replacement	-$6,043	-$5,549	-$5,033
Net operating cash flow after Capital Replacement	**$63,118**	**$42,898**	**$27,838**
Breakeven or Profit Occurs	*2025*	*2027*	*2029*
Ancillary Revenue only	*$1,006*	*$772*	*$604*

[9] A type of community development that includes a mixture of housing, office, retail and/or other amenities integrated into a walkable neighborhood and located within a half-mile of quality public transportation.

In order to make a meaningful analysis, the 2016 Draft BP must be compared to the 2014 BP. Note that the 2014 BP *includes* the capital cost investment wherein the 2016 Draft BP *excludes* it.

2014 Business Plan-Adjusted to 2015$

Scenario	High	Medium	Low
Revenue in Millions	$82,359	$63,922	$47,650
Less: O&M	-$36,385	-$32,318	-$29,019
Net Cash Flow from Operations	$45,974	$31,604	$18,631
Capital Replacement	-$7,965	-$7,313	-$6,634
Net operating cash flow after Capital Replacement	**$38,009**	**$24,291**	**$11,998**
Breakeven or Profit Occurs w/o Capital Cost	*2022*	*2022*	*2024*
Capital Cost	-$57,239	-$57,239	-$57,239
Net Cash Flow After Capital Cost	**-$17,208**	**-$30,925**	**-$43,217**
Breakeven or Profit Occurs	*Never*	*Never*	*Never*

It is shocking to see that the 2016 Draft BP's revenue estimates range from $12.7 to $18.2 billion *higher* (22% to 27%) than the 2014 BP which was prepared *only two years previously*. The net operating cash flow ranges from nearly $16 to $25 billion higher (66% to 132%).

2016 Draft Business Plan +/- 2014 Business Plan

Scenario	High	Medium	Low
Revenue in Millions	$18,213	$13,229	$12,726
Less: O&M	$4,974	$3,614	$1,514
Net Cash Flow from Operations	$23,187	$16,843	$14,240
Capital Replacement	$1,922	$1,764	$1,601
Net operating cash flow after Capital Replacement	**$25,109**	**$18,607**	**$15,840**
2016 +/2014 Business Plan	**66%**	**77%**	**132%**
Breakeven or Profit Occurs	3 yrs later	5 yrs later	5 yrs later

Another useful measurement is to compare 2016 Draft BP to the 2014 BP in discounted cash flow or Net Present Value (NPV). This measurement takes into account the time value of money, based on the assumption that a dollar today is worth less than a dollar next year, the year after, and so on. For example, if two competing projects ultimately bring in $50,000, but one provides positive cash flow earlier, that is the better investment. Typically, assessing discounted cash flow is one of the items that potential investors examine in making a decision whether or not to invest in a project.

The following chart illustrates that CHSRA has inflated discounted its cash flow (assuming a 5% discount rate) for the 2016 Draft BP to the extent that is nearly double of that in the 2014 BP

(ranging from 83% to 150% [versus non-discounted 66% to 132%]). Assuming the "low scenario," it is no surprise that potential investors ran away from this project based on the 2014 BP. Their return would be a pitiful $4.3 billion (*excluding* their initial investment). If they had been foolish enough to invest $9 billion (matching the Prop 1A bond issue), they would have lost $4.6 billion ($9 billion minus $4.4 billion). Although the 2016 Draft BP is more palatable, the "low scenario" only returns a net $10.9 billion (again, excluding an initial investment).

Cash Flow NPV at 5% ($ in Millions)			
Scenario	**High**	**Medium**	**Low**
2016 Draft Business Plan NPV	**$24,745**	**$16,777**	**$10,869**
Non-Discounted 2016 Draft BP	*$63,118*	*$42,898*	*$27,838*
Cost of Time	*$38,373*	*$26,121*	*$16,969*
2014 Draft Business Plan NPV	**$13,533**	**$8,687**	**$4,355**
Non-Discounted 2016 Draft BP	$38,009	$24,291	$11,998
Cost of Time	*$24,476*	*$15,604*	*$7,643*
2016 Draft BP +/- 2014 BP	**$11,212**	**$8,089**	**$6,514**
2016 +/2014 Business Plan	**83%**	**93%**	**150%**

CONCLUSION

In order for the high-speed train project to survive, it is imperative that CHSRA demonstrate positive cash flow within a few short years of the start of operation to secure private investment—both as equity capital partners for construction and for operation of the train concession once construction is completed. CHSRA was shrewd to exclude the capital investment as part of their presentation, especially to potential investors, because the IRR ranges from .64% (high) to -3% (low). In order to achieve its goal, CHSRA has turned their high-speed train into a high-cost commuter train for the revised IOS. While on its face this appears to be a good strategy, the reality is that very few, if any, people could afford it (a commuter from Fresno to San Jose would spend $27,000 annually on train fare). The average one-way fare of $62 skews close to the San Jose and Fresno route fare of $63 and supports the "commuter train" designation. Then as Phase 1 comes online, the calculated fares trend downwards, meaning that the bulk of ridership will be for shorter trips as time progresses.

CHSRA has omitted some key inputs, for example, excluding passenger fares in Table 3.1 for San Jose to North of Bakersfield that is part of the IOS. Also, some of their assumptions are inconsistent between the figures published in the *Ridership and Revenue Forecasting* document and their main 2016 Draft BP document.

CHSRA utilized a convoluted methodology to arrive at its ridership and revenue projections. Incorporating key input variables, using multiple regression analysis, and then running a Monte Carlo simulation 50,000 times in order to arrive at its ridership, revenue, and resultant cash flow, the financial models' components become nearly impossible to scrutinize. It is hubris to believe that in year 1 of operation that 11,233 (high), 7,794 (medium), and 6,027 (low)

passengers will ride *daily* within the IOS which runs from one metropolitan area (San Jose) to the Central Valley, California's agricultural area.

Average ridership increases from the 2014 BP to the 2016 Draft BP range from 22% to 29%--double-digit increases--with no legitimate explanation. CHSRA merely states, "Forecasts reflect an enhanced travel demand model."

The farce continues to its cash flow projections. There is no reasonable explanation as to why the 2016 Draft BP net cash flow (after capital replacement but excluding capital investment) increased from 66% to 132% over the 2014 BP. On a discounted cash flow basis, the increase is even larger: 83% to 150%.

If CHSRA meets their projected ridership targets, they will have to purchase and operate more train sets[10] beyond the budgeted 70 at full build-out to meet their incredible passenger demand. These additional train sets require increased operating costs for O&M, including employees' salaries, benefits, etc.

In conclusion, in CHSRA's desperation, they inflated their ridership/revenue figures in order to present a picture of fiscal viability of the high-speed train project to potential private investors and taxpayers.

[10] The RFEI for train sets specifies a minimum of 450 passenger seats per train

HIGH-SPEED RAIL SYSTEM MAP

ANALYSIS OF CALIFORNIA HIGH SPEED RAIL AUTHORITY'S CAPITAL COST BASIS OF ESTIMATE REPORT

Draft 2016 Business Plan: Technical Supporting Document

By Cindy Bloom
March 9, 2016

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ABSTRACT

From 1996 through 2016, there have been eleven publicly available budgets[1] prepared by the California High Speed Rail Authority ("CHSRA") (formerly known as the California Intercity High Speed Rail Commission) and/or the California Legislative Analyst's Office. These cost estimates range from a low of $16.5 billion (1996) to a high of $98.1 billion (2011). The aforementioned $98.1 billion cost estimate was published in November 2011 as a precursor to the 2012 Draft Business Plan and plummeted by $29.7 billion to $68.4 billion by the time the 2012 Revised Business Plan was revealed—only a few short months later. While CHSRA attempted to explain this significant drop, it served to aim a spotlight on CHSRA's planning process. Also, the $81.6 billion variance from this 2012 Draft Business Plan over the 1996 Business Plan, and CHSRA's "moving target" cost estimates is a symptom of an underlying problem and strongly suggests the CHSRA's management team and Board of Directors are tasked with a project for which they do not possess the core competency to successfully plan, build, and implement this project--the largest infrastructure project in U.S. history.

EXECUTIVE SUMMARY

On February 18, 2016, CHSRA released its draft 2016 Business plan ("2016 BP"). The 2016 BP plan's cost now stands at $64.2 billion versus $67.6 billion, a reduction of $3.4 billion (5%) compared to the 2014 Adopted Business Plan ("2014 BP"). However, while on its face this reduction appears to be legitimate, when analyzing the details, this "cost reduction" seems to be a distraction in order to switch attention away from the fact that a $64.2 budget is *billions* more than what was presented as recently as May 2011. For example, rather than compare its 2016 BP to historical figures, it uses the 2014 BP as its only basis for comparison. Further, it continues to mix 2015 dollars with Year of Expenditure dollars (YOE$), which are adjusted for future inflation, in order to confuse and convince its readers that it is transparent and honest in its assessment of the project's true cost. It is worth mentioning that the savings could have been $5.5 billion instead of $3.4 billion had the agency had decided not to use some of its "savings" to add $2.1 billion worth of elements to the Los Angeles to Anaheim project section.

Although the CHSRA has properly included several contingency margins, at the same time it has also failed to include many necessary line items which could consume their $3.4 billion "savings" and possibly push the project's cost back up and possibly beyond the 2014 BP's estimate of $67.6 billion. Additionally, the 2016 BP states that CHSRA will seek to secure loans and financing, yet it has *excluded any interest or finance charges in its 2016 BP estimate*. For example, interest expense on a $5.3 billion loan[2] will incur approximately $5 – $5.2 billion in interest expense. The Prop 1A bond of $9.95 billion will incur $9.4 billion in interest charges that will be repaid from the General Fund. It is unclear where the interest charges on any debt

[1] The terms "budget," "cost," and "cost estimates" are used interchangeably in this document

[2] The loan amount mentioned in its main business plan which is expected to be repaid by cap and trade proceeds; Director Rossi acknowledges that cap and trade sunsets in 2020: https://www.youtube.com/watch?v=MxeSHZ9DoxQ&feature=em-subs_digest

beyond the Prop 1A bond issue will be budgeted; the only true known is that there will be billions of dollars in interest and the taxpayers will be held accountable for repayment.

Another item of concern is that these costs are the *capital costs only*—they exclude overhead, administrative costs, and a portion of planning costs. For total expenditures, CHSRA is on track to spent $2.5 billion from inception through June 30, 2016. Of this, $138 million for administrative costs[3] is not part of the capital costs/budget.

SCOPE

The 2016 BP is comprised of several documents:

- Connecting and Transforming California (100 pages)
- Capital Cost Basis of Estimate Report (49 pages)
- 50-Year Lifecycle Capital Cost Model Documentation (74 pages)
- Service Planning Methodology (18 pages)
- Ridership and Revenue Forecasting (62 pages)
- High, Medium, Low Cash Flows (12 pages)

This analysis examines the Capital Cost Basis of Estimate document that is the basis for the project's capital costs as of 2016.

ANALYSIS OF OVERALL PROJECT COST ESTIMATES[4]

Amount	Year	Description
$16.5 billion	1996	September 1996 Final Report of the California Intercity High Speed Rail Commission
$25 billion	2000	2000 California High Speed Train Business Plan
$37 billion	2005	August 2005 California High Speed Train Final Program Environmental Impact Report/Environmental Impact Statement
$45 billion	2008	July 7, 2008 Senate Appropriations Committee Fiscal Study of Assembly Bill 3034
$45 billion	2008	Analysis by the Legislative Analyst in the Official Voter Information Guide for the November 4, 2008 Election – Prop 1A – Safe, Reliable High Speed Passenger Train Bond Act
$33.6 billion	2008	November 2008 California High Speed Train Business Plan
$43 billion	May 2011	Report of the California Legislative Analyst's Office
$98.1 billion	2011	November 1, 2011 California High Speed Rail Program Draft 2012 Business Plan
$68.4 billion	2012	April 12, 2012 California High Speed Rail Authority Revised 2012

[3] It is unclear whether the administrative budget includes CHSRA staff salaries

[4] Source: California High Speed Rail Authority

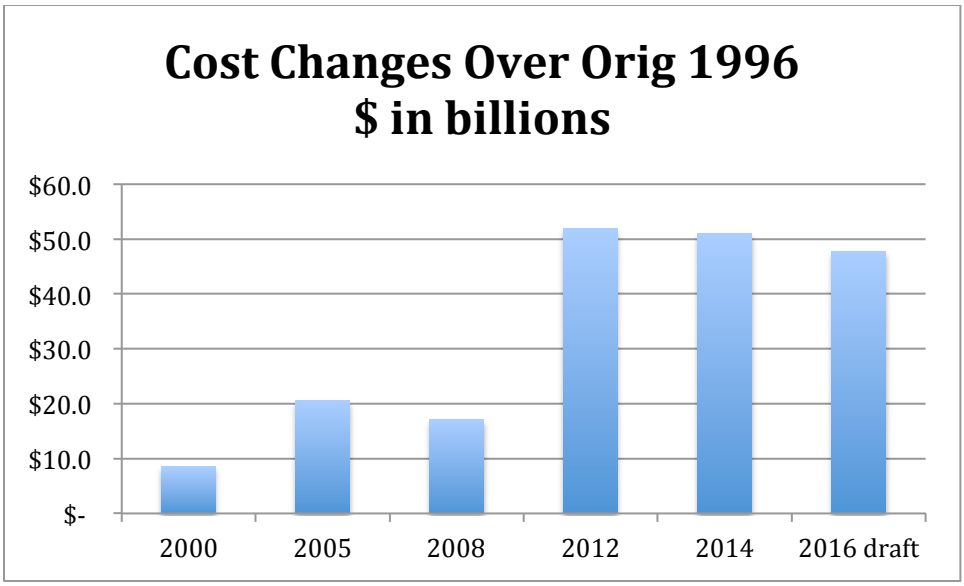
Amount	Year	Description
		Business Plan
$67.6 billion	2014	California High Speed Rail Authority's Adopted 2014 Business Plan
$64.2 billion	2016	California High Speed Rail Authority's Draft 2016 Business Plan

Although the costs have declined slightly from the most recent business plan, when compared to the original estimate put forth in 1996, the 2016 BP is over by 289%. These increases are not due to inflation, and the CHSRA frequently states that the majority of their business plan numbers is already inflation-adjusted and uses the "Year Of Expenditure" ("YOE$") figures. According to the U.S. Bureau of Labor Statistics, the original 1996 budget of $16.5 billion, when adjusted for inflation in 2016, would be $24.9 billion—certainly *not* $64.2 billion.

When 2016 is compared to 2008 estimates published in the text of the Prop 1A ballot initiative, it is 43% over that estimate; when compared to the subsequent 2008 Business Plan, it is 91% above--or nearly double—in less than a 10 year period. What is important to remember is that the electorates who voted in favor of Prop 1A approved a project estimated to cost $45 billion.

The following chart lays out each business plan budget and calculates the change in cost compared to the previous business plan, and then to the original $16.5 billion. For example, 2012's budget increased $34.8 billion over the prior business plan in 2008, and $51.9 billion over 1996.

Business Plan Capital Costs Comparison							
Business Plan Year	**1996**	**2000**	**2005**	**2008**	**2012**	**2014**	**2016 draft**
Cost (billions)	$ 16.5	$ 25.0	$ 37.0	$ 33.6	$ 68.4	$ 67.6	$ 64.2
$ Change over Prior BP (billions)		$ 8.5	$ 12.0	$ -3.4	$ 34.8	$ -0.8	$ -3.4
% Change over Prior BP		52%	48%	-9%	104%	-1%	-5%
$ Change over Original BP (billions)		$ 8.5	$ 20.5	$ 17.1	$ 51.9	$ 51.1	$ 47.7
% Change over Original BP		52%	124%	104%	315%	310%	289%



When further broken down into "cost per mile," the story is similar and just as troublesome. The cost per mile increased 558% 2016 BP versus 1996:

Cost per Mile (millions)							
Business Plan Year	**1996**	**2000**	**2005**	**2008**	**2012**	**2014**	**2016 draft**
Miles	880	700	520	520	520	520	520
Cost per mile (millions)	$ 18.8	$ 35.7	$ 71.2	$ 64.6	$ 131.5	$ 130.0	$ 123.5
$ Change over Prior BP (billions)		$ 17.0	$ 35.4	$ -6.5	$ 66.9	$ -1.5	$ -6.5
% Change over Prior BP		90%	99%	-9%	104%	-1%	-5%
$ Change over Original BP (billions)		$ 17.0	$ 52.4	$ 45.9	$ 112.8	$ 111.3	$ 104.7
% Change over Original BP		90%	279%	245%	602%	593%	558%

COMPARISON OF DRAFT 2016 BUSINESS PLAN TO 2014 BUSINESS PLAN

The capital costs overall decreased by a nominal 5%, a rate commonly used for allowances and returns in other industries, yet CHSRA claims this to be a major victory:

	$ in Billions	
2014 Business Plan	*$67.6*	
Design Refinements	$-3.5	
Lessons learned from bids	$-1.3	
Allocated contingencies	$-0.7	
LA to Anaheim	$2.1	
	$64.2	<---2016 Biz Plan YOE $
	$-3.4	<---Net change 2016 v. 2014
	-5%	<---Net change 2016 v. 2014 %
	$55.3	<---2016 Biz Plan 2015 $
	$8.9	Cost of Time

Further, their estimates could be grossly inaccurate. The CSHRA is using an Association for the Advancement of Cost Engineering Class 3 estimate process which currently which has a swing of -10% to 20% and +10% to 30%. In YOE$ terms, this could conceivably inflate their 2016 BP figure from $64.2 to $83.5 billion:

$ in billions	COST RANGE BASED ON CLASS 3 ESTIMATE			
2016 Est.	-10%	-20%	10%	30%
$ 64.20	$ 57.78	$ 51.36	$ 70.62	$ 83.46

EXCLUDED ITEMS FROM THE 2016 BUSINESS PLAN

It is essential to note that there are many items excluded from the cost estimates that could conceivably push the project way beyond its current projection of $64.2, even with all the built-in contingencies:

- Finance charges (entire project)
- CHSRA administration costs (entire project)
- Five mile track from Santa Clara to San Jose for UPRR (SF to SJ)
- Structural modifications to 4 existing tunnels (SF to SJ)
- Conversion of Caltrain platforms to level boarding except for stations shared with HSR (SF to SJ)
- Platform extension to 1400 feet (SF to SJ)
- Blast protection zone (Bakersfield to Palmdale)
- Metro/UPSS agreements for shared used (Burbank to Union Station)
- Burlington North Santa Fe Railroad's Hobart yard expansion (Burbank to Union Station)

ANALYSIS OF COST ESTIMATES BY PROJECT SECTIONS

There is a wide cost variation between project sections and it becomes apparent why CHSRA decided to change direction and select the Central California to Northern California as the initial operating section.

The following chart illustrates the cost per mile by project section. Not surprisingly, the Palmdale to Burbank segment is the most expensive, nearly 2.5x more than its nearest "competitor," San Jose to Gilroy.

COST PER MILE BY PROJECT SECTION SORTED DESCENDING

Project Section	$ Millions	Miles	Cost Per Mile	+/- Avg Cost
Palmdale to Burbank	$ 11,877.0	33.0	$ 359.9	$ 244.2
San Jose to Gilroy	$ 4,376.0	30.0	$ 145.9	$ 30.2
Burbank to LA	$ 1,593.0	13.0	$ 122.5	$ 6.8
Bakersfield to Palmdale	$ 9,746.0	80.0	$ 121.8	$ 6.1
Merced to Wye Legs 1	$ 1,032.0	9.0	$ 114.7	-$ 1.0
Wye Legs 1	$ 1,183.0	11.0	$ 107.5	-$ 8.2
Gilroy to Carlucci Road	$ 5,483.0	54.0	$ 101.5	-$ 14.2
Poplar Avenue to Bakersfield**	$ 2,030.0	23.0	$ 88.3	-$ 27.4
LA to Anaheim	$ 2,319.0	30.5	$ 76.0	-$ 39.7
San Francisco to San Jose	$ 3,136.0	48.0	$ 65.3	-$ 50.4
Madera Acres to Poplar Ave**	$ 6,908.0	118.0	$ 58.5	-$ 57.2
Carlucci Road to Madera Acres (Wye Leg 2)	$ 960.0	37.0	$ 25.9	-$ 89.8
TOTAL - CORRIDORS*	**$ 50,643.0**	**486.5**	***$ 115.7***	
Maintenance Facilities	$ 1,242.0			
Trainsets	$ 3,399.0			
TOTAL (unadjusted for inflation)	**$ 55,284.0**		**Average Cost**	

*does not tie to CHSRA's 520 mile figure

**new segment based on adding in an interim stop in Shafter

Although the Southern California operating segments represent only 16% of the total miles, they consume 31% of the budget:

SOUTHERN CALIFORNIA ROUTES ONLY

Project Section	$ Millions	Miles
Palmdale to Burbank	$ 11,877.0	$ 33.0
Burbank to LA	$ 1,593.0	$ 13.0
LA to Anaheim	$ 2,319.0	$ 30.5
TOTAL SOUTHERN CALIFORNIA ONLY	**$ 15,789.0**	**$ 76.5**
% of Total	31%	16%

PALMDALE TO BURBANK SECTION

The project section S.A.F.E. is most interested in is the Palmdale to Burbank operating segment. The 2016 BP is quite vague as it specifically refers to E1a, and "a new alternative defined in … adopted in June 2015." Note that they have eliminated smoke control shafts and instead are using a "compartmentation strategy" for smoke control, which sounds neither safe nor desirable. Also note that it is eliminating any third bore service tunnel for tunnels over six miles long so one can assume it applies to tunnels along the SR14 route. It certainly can be implied from this statement that in the event any of the East Corridor routes are selected, CHSRA *is*

planning on building three tunnels through the Angeles National Forest: Two for trains and one for service. The following is copied directly from their document:

Palmdale to Burbank

Table 16. Palmdale to Burbank Cost by SCC

STANDARD COST CATEGORY	2014 BP COST (2015 $, millions)	2016 BP COST (2015 $, millions)
10 TRACK STRUCTURES & TRACK	$5,994	$7,580
20 STATIONS, TERMINALS, INTERMODAL	$246	$313
30 SUPPORT FACILITIES: YARDS, SHOPS, ADMIN. BLDGS	$149	$19
40 SITEWORK, RIGHT-OF-WAY, LAND, EXISTING IMPROVEMENTS	$2,367	$1,609
50 COMMUNICATIONS & SIGNALING	$88	$214
60 ELECTRIC TRACTION	$278	$450
80 PROFESSIONAL SERVICES	$1,106	$1,247
90 UNALLOCATED CONTINGENCY	$372	$446
SUBTOTAL	**$10,599**	**$11,877**

Estimate assumes a new segment based on the east corridor tunnel alignment option E1a terminating just south of Burbank Airport station, and also reflects a new alternative defined in the Palmdale to Burbank Supplemental Alternative Analysis adopted in June 2015. The 2014 Business Plan estimate for this section was based on a SR-14 West alignment alternative resulting in comprehensive revision to earthwork, viaducts, and tunneling and grade separation quantities. The right-of-way requirements were also reevaluated to reflect the new east corridor tunnel alignment.

Assumptions

- Based on an alignment section length of 33 route miles
- An allowance is being carried for mechanical ventilation in tunnels due to the length of the tunnel segments
- Based on compartmentation strategy for smoke control in tunnels that would eliminate shafts to the surface within Angeles National Forest
- Third bore service tunnel was assumed not to be required in tunnels over six miles in length

Figure 1 Report on The Capital Cost Basis of Estimate Report, p. 40

The most notable change from 2014 to the 2016 BP is the addition of the Angeles National Forest corridor; overall, the incremental increase is only $14 million:

Palmdale to Los Angeles	$13,456	$13,470	$14	• Reflected Supplemental Alternative Analysis East Corridor alignment under the Angeles National Forest • Increase in tunneling costs due to increase in tunnel length (+$0.8B) • Increase in retaining walls due to constrained right-of-way (+$1.4B) • Increase in Los Angeles Union Station costs with shared tracks into station and dedicated platform faces for high-speed rail (+$0.6B) • Decrease in aerial guideway due to increase in tunneling (-$0.7B) • Decrease in grade separations costs by implementing shared use of existing corridor south of Burbank (-$0.7B) • Decrease in right-of-way costs (-$0.7B) • Reduced utility relocation costs due to increase in tunneling (-$0.2B) • Moved cost of LMF to HMF (-$0.2B)

Figure 2 Report on the Capital Cost Basis of Estimate Report, p.16

CHSRA appears to have intentionally excluded the incremental cost increase for solely the tunneling portion in its 2016 BP. However, due to the magic of math, it was easy to figure out, as follows:

$ in Millions	**Palmdale to Los Angeles**
$1.4	retaining walls
$0.6	LA-US
-$0.7	Less aerial, more tunnel
-$0.7	shared corridor
-$0.7	ROW
$0.2	utility reloc due to tunnel
$0.2	LMF to HMF
$13.7	*SAA East Corridor Tunnel**
$14.0	**Total Net Change**

*calculated number; includes $.8 billion for increased tunnel length

Using the numbers above, the incremental increase in costs due to tunneling through the Angeles National Forest is $13.7 million. This amount seems faulty since there is approximately 33 miles of tunneling and this would equate to roughly $415 million per mile. This figure seems low, particularly since it is inferred that there will be 3 tunnels bored through 33 miles of mountains. It also appears to be low compared to other projects' cost per tunnel mile with some estimates being as high as $1 billion per mile. However, the shorter the tunnel, the lower

the cost per mile due to amortizing the fixed costs (i.e., boring machine) over more miles. Even so, the $415 million per mile seems suspiciously under-budgeted.

MISCELLANEOUS

The CHSRA did include some reasonable assumptions such as their contractor mark-ups and overhead; and future CPI inflation rates.

Fun facts:

- Each train set is about 72 feet long and will cost $49 million each
- Phase 1 assumes 54 train sets; full build out will have 70
- Full build out construction is expected to be completed by 2028 and start of revenue operations is 2029
- Palmdale to Burbank[5] is at "conceptual" design stage, meaning it's only about 5% complete
- To date, the California Legislature has appropriated $3.71 billion in restricted Prop 1A bond funds although they have not been issued. If the bond funds are lost for any reason, the funds will be unencumbered (unappropriated).

CONCLUSION

The 2016 BP plan's cost now stands $64.2 billion versus $67.6 billion, a reduction of $3.4 billion (5%) over the 2014 BP. Although the CHSRA has properly included several contingency margins, it has also failed to include many necessary line items that could consume their $3.4 billion "savings" and possibly push the project's cost back up and perhaps beyond the 2014 BP's estimate of $67.6 billion. Additionally, the 2016 BP states that it will seek loans and financing, yet it has *excluded any interest or finance charges in its estimate*. Other risks include: (1) relying solely on cap and trade for capital investment and loan payments, and which revenue stream is scheduled to sunset in 2020; (2) depending heavily on securing dubious federal and other agency grants; (3) appropriating Prop 1A bond funds which are being legally challenged and are burdened with stringent requirements for issuance; and (4) 2016 ballot initiatives and pending legislation proposing to repurpose the Prop 1A bond funds for other state projects. Based on a plethora of recent negative press and intense public scrutiny, it appears that the 2016 BP's goal was to come in less than the 2014 BP by excluding several key items and under budgeting others, while simultaneously ignoring very genuine risks.

[5] The document does not identify when the Palmdale to Burbank operating segment will be operational

APPENDIX A
SOURCE OF FUNDING
From Draft 2012 Business Plan (page 60)

Federal Grants

$3.48 billion in Federal grants, including funds available through the American Recovery and Reinvestment Act and Fiscal Year 2010 funds are available for the program:

- $315 million is dedicated for Phase 1 planning activities
- $3.165 billion is dedicated for construction in the Central Valley

Proposition 1A Bond Proceeds

- 9.95 billion in bond funds are available to pay for the planning and construction of the system, including regional services which will connect to the system:
    - $2.609 billion has been appropriated for and committed to matching the Federal grant funds in the Central Valley
    - $1.1 billion has been appropriated for and committed to "bookend" improvements in Caltrain electrification and improvements in Southern California
    - $950 million was appropriated for regional connectivity projects, as laid out in Proposition 1A
    - Up to $1.125 billion can be set aside for preconstruction activities and administration costs, as spelled out in Proposition 1A
- This leaves approximately $4.166 billion of bond funds available to help fund capital costs for the first high-speed rail line

Cap & Trade Proceeds

- In 2014, the Legislature approved appropriation of funding including 25% of the annual Cap and Trade proceeds on a continuous basis beginning in FY15/16 along with two one-time appropriations:
    - $250 million, one-time appropriation in FY14/15
    - $600 million in the Governor's budget for FY15/16 based on the continuous appropriation
    - $500 million in the Governor's budget for FY16/17 based on the continuous appropriation plus $100 million of a $400 million one-time appropriation, for a total of $600 million in FY16/17
- In making the continuous appropriation, the Legislature determined that we could use these funds to pay for planning and construction costs for the system and/or to repay loans made to the Authority.

2016 Business Plan RECORD DETAIL

Submission Date :	3/30/2016
Submission Method :	Project Email
First Name :	Morris
Last Name :	Brown
Stakeholder Comments/Issues :	Attached in PDF format are more comments to the 2016 Draft Business plan. Thanks, morris brown
Notes :	
Attachments :	COMMENTS-BIZ-PLAN-3-30-2016-MORRIS-BROWN.PDF (31 kb)

3/30/2016

California High Speed Rail Authority

Re: Comments on the draft 2016 Business plan

Use of Cap and Trade revenue to partially fund the project

Any possibility that the new IOS north or the full Phase I of the project can be constructed, for sure rests on the use of Cap and Trade revenues to fund the capital costs of construction.

1. There is currently a legal challenge in the courts about the whole issue of Cap and Trade revenues. The Legislation (AB-32), was passed without a 2/3 majority in the Legislature. Although a lower court has ruled this was legal, this decision has been appealed and at the current time, this appeal has yet to be ruled upon. Thus if the Appeals court over rules the lower court, these funds disappear.

2. Many experts have examined AB-32 and concluded the Cap and Trade funds will expire in 2020. The Draft business relies on these funds well beyond 2020. Indeed on a pay as you go basis, the Cap and Trade funding will be required through 2025. If this funding is "bonded" after that date, the funding will be needed through 2050 to provide a source to pay interest and principal on any such bonds sold.

Now even at the Authority board level, there is disagreement on whether Cap and Trade revenues "sunset" in 2020. Thus Chair Richard maintains they do not expire in 2020. Yet Director Rossi, the financial expert on the board, clearly states these revenues do expire by law in 2020. (Board meeting 5-12-2015).

See video: https://www.youtube.com/watch?v=MxeSHZ9DoxQ (41 seconds)

The issue arose again at the March 28th, 2016, Assembly Transportation Committee. At that hearing the bipartisan Legislative Analyst made the statement that indeed Cap and Trade revenues expire in 2020.

See video: https://www.youtube.com/watch?v=qxDZAiThuY8 (2 minutes)

At the very least the Authority should secure and publish a legal opinion on this issue. This could be done by the AG, or perhaps also by the Legislative Counsel Bureau.

Morris Brown,PhD
A founder of Derail (the first grass roots group against the HSR project)
Stone Pine Lane
Menlo Park

2016 Business Plan RECORD DETAIL

Submission Date :	3/30/2016
Submission Method :	Letter
First Name :	William
Last Name :	Warren
Stakeholder Comments/Issues :	
Notes :	Contents of thumb Drive submitted with comments available upon request
Attachments :	Warren_2016_DRAFT_Biz_Plan_Comment_033016.pdf (301 kb) William_Envelope_033016.pdf (349 kb)

Attn: Draft 2016 Business Plan
California High-Speed Rail Authority
770 L Street, Suite 620 MS-1
Sacramento, CA 95814

March 30, 2016

Subject – Comment Regarding Draft 2016 Business Plan

Topic – Ridership Model Auto Group Factor Could Be Overstating Auto Market

The primary purpose of this Comment is to submit to the California High Speed Rail Authority (CHSRA) a complete set of analysis and the NHTS database to shown how the use of the Auto Group Factor may not be incorporating the implications of the Group portion of the auto market.

Summary

I believe the Ridership Model has added a costing parameter adjustment to divide auto costs by an assumed average auto occupancy of 2.5 for those who travel in "Groups". This is discussed in Section 2.1, on page 2-1, of the Ridership and Revenue document supporting the 2016 Business Plan. This adjustment appears to be in response to the Comment we made regarding the 2014 Business Plan where it appeared that all auto users were viewed as having a cost equal to the cost of a driver "only' auto, ever if there were 1 to 3 additional people (passengers) in the car.

This adjustment would appear to mean that if a driver is in a car by him/her self then that driver is viewed as having the projected cost per mile of 26 cents per mile in 2025 through 2029 and dropping to 24 cents per mile by 2040, per Table 4.4 on page 4-4 of the Ridership and Revenue document supporting the 2016 Business Plan. However, if there is 1 or more passengers (in addition to the driver) all of these people are considered to be a "Group", and the driver and the passengers would each have a auto cost of about 11 cents (26/2.5) in the 2025 to 2029 time period, and about 10 cents (24/2.5) in the 2014 time period.

For the driver without passengers his cost is roughly comparable to the High Speed Rail ticket prices on a per mile basis that can be computed from the Ridership and Revenue pricing Table 3.1 on page 3-3. For the Groups of a driver and one or more passengers, their effective auto cost is less than half of the HSR ticket prices on a per mile basis.

This, in effect is defining two tremendously different sub-markets of the "auto" market: the "Driver Only" sub-market and the "Group" sub-market. I can find no market forecasts for these two dramatically different sub-markets, in terms of the size of these sub-markets and the projected penetration of these two sub-markets. As the overall auto market is the primarily source of customers, the lack of these details shows something is not supposed to be apparent to the reader of the Business Plan.

To investigate this issue in more debt, I have attempted to see why the Authority chose the 2.5 "divider" for the Group potential customers; and at the same time I wanted to see what is the relative size of these two sub-markets.

I preformed two different analyses, which are discussed detail in the remained of this Comment.

First, I analyzed a US Department of Transportation data base to determine the average number of people (drivers and additional passengers) in autos, as a function of the length of the auto trip. The net of this analysis is that across the US, in 2009, there were 1.67 people in every auto trip of 50 miles or more.

Second, I created and then analyzed three different distributions of people per car trip (greater than 50 miles) that would produce an average of 1.67 people per trip, with the goal of determining what percent of the people are in a auto by themselves (the Driver only sub-market), and what percent of the people are in autos with two or more people (the Group sub-market). The net of this analysis is that only about 36% of all the people are in an auto by themselves, and 64% of all of the people are in a Group. In addition, the average number of people in a Group auto is 2.65, which is within 6% of the ratio of 2.5 that the Authority is using to reduce the cost of people in Group cars. It is good to see that the two conclusions validate the Authority's ratio.

What is striking is that these conclusions show that the mix of people in the auto market place are: 1) 36% in a car with just a driver, at a cost of 28 cents per mile, and 2) 64% are in cars that have an average of 2.5 people per car, with an average cost of about 11 cents per mile. Clearly the Authority has a chance to capture a share of the 34% of the market, that is a single person driving a car, and have some of these people choose to ride HSR. But how can the Authority penetrate the 64% of the market, who are in autos with other people, where the HSR price in the 25 cents per passenger mile range is more than two to three times the Group auto cost per passenger mile of about 11 cents per passenger mile? It does not appear that this significant problem is recognized or addressed in the Draft 2016 Business Plan. If these conclusions are correct, it is possible that the forecast of riders coming from the automobile market is overstated by a factor of about 3 times.

Detailed Discussion Of The Two Analysis

1. Analysis of a US Department of Transportation data base

The U.S. Department of Transportation, Federal Highway Administration provides a NHTS Home Page (National Household Travel Survey) Web site that has a tremendous amount of information regarding travel within the United Sates. This Web site asks that the following Citation be included when information from their site is referenced.

Citation

To recognize the valuable role of National Household Travel Survey (NHTS) data in the transportation research process and to facilitate repeatability of the research, users of NHTS data are asked to formally acknowledge the data source. Where possible, this acknowledgement should take place in the form of a formal citation, such as when writing a research report, planning document, on-line article, and other publications. The citation can be formatted as follows:

U.S. Department of Transportation, Federal Highway Administration, 2009 National Household Travel Survey. URL: http://nhts.ornl.gov.

The Home Page for this Web site is at: http://nhts.ornl.gov/index.shtml There are two ways to access and use this body of information. First, their data base can be downloaded and studied using software tools that are available to the person studying the database. Second, the person studying their database can utilize data extraction tools provided on the NHTS Web site which can be used to summarizes the results of various searches of the database.

Option One – Downloading the Database.

The data base to be downloaded is located at: http://nhts.ornl.gov/download.shtml
The current version of the database is: ***2009 NHTS - Version 2.1, February 2011***

Also, the user can access the "2009 Publications" web page for additional documentation.

The Database formats that are available are:

File Format	Download Size (MB)	Installed Size (MB)
SAS Windows Binary (.sas7bdat)	100	670
SAS Transport	100	600
DBase .dbf	90	990
ASCII .csv	100	620

Finally, an online "Codebook Browser" is available which provides definitions of the various columns in the different data sets. This Browser is available at: http://nhts.ornl.gov/tables09/CodebookBrowser.aspx

The ASCII .csv version of the NHTS database has been downloaded, and is attached to this Comment on the accompanying Thumb Drive in the folder marked "Data Sets". The Authority may wish to study these data sets using software tools at their disposal.

Option Two – Utilizing the NHTS Online Analysis Tools

The NHTS offers a group of online tools which are located at:
http://nhts.ornl.gov/tools.shtml

One of the available tools is the "Data Extraction Tool"

This data extraction tool allows users to obtain data from the 1995, 2001, or 2009 National Household Travel Surveys (NHTS) to examine total travel (i.e., person trips, person miles traveled, vehicle trips, and vehicle miles traveled). This tool also allows users to extract data from all three surveys for trends analysis. The user can select one or more elements using selection criteria to generate a customized data set. This customized data set can be downloaded in CVS format for additional analyses.

For the add-ons, the user can extract data from a specific add-on. Note: the samples sizes used to generate area-specific travel can be extremely small. Users are advised to use these data with caution.

The customized data set will include the user-selected criteria (e.g., household income), total travel (i.e., person trips, person miles traveled, vehicle trips, and vehicle miles traveled), and the corresponding sample size used to estimate total travel.

To start extracting NHTS data, the user needs to select one of the following options:

- Total Travel by Survey Year and Selected Household Characteristics
- Total Travel by Survey Year and Selected Person Attributes
- Total Travel by Survey Year and Selected Trip Characteristics
- Trends Analysis (1995, 2001 and 2009 surveys)

My Analysis

I chose not to utilize these downloaded data sets (Option One), but rather I elected to use the NHTS Online tools (Option Two). I selected the "Total Travel by Survey Year and Selected Trip Characteristics" process to collect information regarding the use of automobiles in the United States in 2009.

I performed four Extractions, as shown in the Folder on the Thumb Drive marked "Data Extraction Requests". These four query requests generated the output shown on the last row of the request page. For example, to gather data on all passenger trips using Private Owned Vehicles, for trips of 100 miles or more, I selected Year to be "2009", Mode to be "POV", and Miles to be "100+ miles". For the other parameters of Household Incomes, Age, Gender, Worker, and Purpose I selected "Combine Total". The result was 3,114 Million Person trips, covering 661,163 Million Person Miles.

I downloaded the results as CVS files, and they are included in the "Data Extraction Results" folder on the Thumb Drive.

My analysis of the data provided by these four extractions is shown on Exhibit 1, which is attached to this Comment. For Rows 6 to 9, Columns A to G are the information shown in the "Data Extraction Results" folder. Row 5 is the result of subtracting Rows 6

through 8 from Row 9. Column H is calculated by dividing Column D by Column F. Note that the average number of people in an auto for a trip of 100 or miles is 1.9, substantially higher than the overall average of 1.4, which is due to the smaller number of people per trip in the shorter distances between 0 and 74 miles,

Rows 15 through 19 is the same information as Rows 6 through 9, just presented as percentages.

Rows 24 through 28 Shows the Average length per trip for the different mileage groups, above, by dividing Miles by Trips for both People (Columns E by D) and Vehicles (Column G by F). Note the average length of all trips is 10 miles, but for the group of trips at 110 miles or more, the average is in the 212 to 216 range (about half the distance between San Francisco and Los Angeles).

Rows 32 to 34 summarize the information shown above in Rows 6 through 8, in terms of what defines the HSR market place. If the market is viewed as just serving the long distances, of 100 or more miles, then the average number of people per vehicle trip is 1.88 as shown on Row 32 and Row 8, in Column H. If the market is expanded to include trips in the 75 to 99 miles the average number of people drops to 1.82. See Row 33 Column H. Finally if the market is expanded to include all trips of 50 or more miles, the average number of people per vehicle trip is 1.67 as shown in Row 34, Column H. This is a summary of the information presented in Rows 6 through 8, above.

2. Analysis of three different distributions of the number of people per auto trip.

I created and analyzed three different possible distributions of people per car trip (greater than 50 miles) that would center on an average of 1.67 people per trip, with the goal of determining what percent of the people are in a auto by themselves (the Driver only), and what percent of the people are in autos with two or more people (the Groups). This would allow for gaining an understanding of the mix of Driver only and Group auto users.

This is a significant problem for the Authority as the reliable national data presented in my first analysis, above, shows that the average number of people per auto trip, if the trip is over 50 miles, is in the range of 1.67

This analysis is shown as Exhibit 2, attached. I created a group of 4 rows, shown in Rows 6 through 9 that represent auto trips with 1 to 4 people in an auto trip, as shown in Column A.

I then created and estimated 3 possible distributions of cars and people in Rows 6 to 9, Columns C to E.. The Medium case, Column D, shows that 60% of the autos have 1 person, the driver; 22% have the driver and one additional passenger; 10% have 3 people; and 8% have 4 people. I then created a Best case, Column C, which shows that 70% of the autos have just the driver. This is better for the Authority as a larger segment of the population would be in the Driver Only situation and fewer would be in the Group

situation where the cost of operating the auto is being divided over multiple people. Lastly I created a Worst case, Column E, that puts a larger share of the people in cars with other people, which makes the Group submarket a larger share of the total market, and the Driver submarket smaller.

In Columns G through I, for Rows 6 through 9, I computed the average number of people per trip by multiplying the number of people in Column A and the percentage distributions in Columns C through E, The results are in Columns G through I. The results as shown in Row 10, Columns G through I, is the weighed average number of passengers in an auto trip. Note that Medium case total in Row 10, Column H is 1.66 people per trip. This is the target I was trying to reach, as the NHTS database tells me that 1.67 is the national average of people per auto trip, for 50 miles and more. To achieve this target of 1.67, I had to change Column D, rows 6 to 9, until I achieved the desired result. I also decided that as the number of people in the auto goes up, the frequency of this auto with more people goes down. So while 22% may have just two people in the Medium case, the auto with 3 people must have a frequency of less than 22%, such as the 10% which I selected.

The distribution of people for each of the three cases is shown in Rows 6 through 9, Columns K to M.

It is important to note the difference between the distribution of autos with different numbers of people per auto, as shown in Rows 6 through 9, Columns C to E, and the distribution of the people across the autos, as shown in Rows 6 through 9, Columns K to M. For example, for the Medium case, to achieve the desired result of 1.67 people per trip, in Cell H10 (Column H, Row10), the distribution of the autos with just a driver needs to be in the range of 60% of the autos, see Cell D6. But while 60% of the autos are carrying just one person, that one person only represents 36% of all of the people in all of the autos, see Cell L6. Therefore, 64% of the people are in autos with 2 or more people (Column L, Rows 7 through 9). This 64% of all the people in autos are what the Authority define as "Groups"

This analysis is consistent with the Authority's view that there are 2.5 people in any car that is a Group (more that one person). Rows 21 shows that 40% of the cars in the Medium case have more than just the driver (Column D, Rows 7 through 9), and these autos contribute 1.06 of the weighted average of people per trip, as shown in Cell H21, which is the sum of Column H, Rows 7 through 9. When the weighted average contribution of 1.06 is divided by the 40% of the autos carrying more than just the driver, the result is 2.65 average number of people in any auto that has more than just the driver. The difference between this projection of 2.65 people in a Group auto (Greater than one person), and the Authority's projection of 2.5 is a 7% difference; certainly acceptable for this level of analysis.

My Conclusions

I conclude there is the one passenger per auto sub-market where the auto operating cost of 20 to 30 cents can be in the range of the long haul HSR pricing of 22 to 28 cents per mile. In this sub-market HSR has a chance to win the customer. Once there is a Group, with a second, third, and even a fourth person in the car, the auto operating costs, per person, drop to half, a third, or even a quarter of the 20 to 30 cents. Unless speed is critical to the people in a car, the multi-passenger per car sub-market will be extremely hard to penetrate. I have seen no survey data that shows this to be the case. I have also not seen any survey data that compares the preferences of people in Driver only autos compared to the preferences of people in Group autos.

This then raises the question of what is the size of the single passenger sub-market, where the Authority can be financially competitive. The analysis above leads me to believe that the true market for HSR to capture automotive passengers is about 36% of the over all auto market place. I see nothing in the 2012, or the 2014, or the 2016 Ridership Reports that recognizes this limitation to penetrate this overall auto market. If this conclusion is correct, it is possible that the forecast of riders coming from the automobile market is overstated by a factor of about 3 times.

William H. Warren
williamhwarren@sbcglobal.net
c/o Michael J. Brady
1001 Marshall Street, Suite 500
Redwood City, CA 94063-2052

Exhibit 1

	A	B	C	D	E	F	G	H
1								
2				**Analysis of NHTS Database**				
3								
4	Year	Mode	Miles	Person Trips (in millions)	Person Miles (in millions)	Vehicle Trips (in millions)	Vehicle Miles (in millions)	Average People per Vehicle
5	2009	POV	0-49 miles	318,713	2,291,177	228,805	1,669,279	1.39
6	2009	POV	50-74 miles	3,882	227,027	2,561	149,126	1.52
7	2009	POV	75-99 miles	1,409	118,800	826	69,340	1.71
8	2009	POV	100+ miles	3,115	661,163	1,658	357,366	1.88
9	2009	POV	All Distances	327,118	3,298,168	233,849	2,245,111	1.40
10								
11								
12			**Distribution of People and Vehicle Traffic**					
13								
14				% of Total	% of Total	% of Total	% of Total	
15			0-49 miles	97.4%	69.5%	97.8%	74.4%	
16			50-74 miles	1.2%	6.9%	1.1%	6.6%	
17			75-99 miles	0.4%	3.6%	0.4%	3.1%	
18			100+ miles	1.0%	20.0%	0.7%	15.9%	
19			All Distances	100.0%	100.0%	100.0%	100.0%	
20								
21			**Distribution Of Average Length per Trip**					
22								
23					Person Miles per Trip		Vehicle Miles per Trip	
24			0-49 miles		7		7	
25			50-74 miles		58		58	
26			75-99 miles		84		84	
27			100+ miles		212		216	
28			All Distances		10		10	
29								
30			**Definition of HSR Marketplace**					
31								
32		Limited to:	100+ miles	3,115	661,163	1,658	357,366	1.88
33		Including:	75-99 miles	4,523	779,963	2,484	426,706	1.82
34		Also Including:	50-74 miles	8,405	1,006,991	5,044	575,832	1.67

Exhibit 2

Impact Analysis of More Than One Passenger Per Auto Trip

Number of People Per Auto Trip	Distributon of Cars with People Per Trip			Average People Per Trip			Distribution of All People		
	Best*	Medium	Worst*	Best	Medium	Worst	Best	Medium	Worst
1	70%	60%	50%	0.70	0.60	0.50	48%	36%	26%
2	19%	22%	21%	0.38	0.44	0.42	26%	27%	22%
3	7%	10%	18%	0.21	0.30	0.54	14%	18%	28%
4	4%	8%	11%	0.16	0.32	0.44	11%	19%	23%
	100%	100%	100%	1.45	1.66	1.90	100%	100%	100%

* - for the Authority

Market

Driver only — 60% are cars with =1 person — 0.60 people in = I person cars — 36% of all people (drivers plus No passengers)

Summary: 1.00 person in a car with 1 person

Multiple people — 40% are cars with >1 person — 1.06 people in > I person cars — 64% of all people (drivers plus passengers)

2.65 people in a car with >1 person

Ratio of cars with > 1 person to cars with just 1 person is 67%

In other words for every car with 1 person there is 67% of a car with > 1 person in the car,

2.5 Authority's number of people in a Group (> 1 person)

NHTS Travel by Auto for 50 miles and greater, per Auto 1.67

The Authority's number is within 6% of our number.

In Summary :

36% of all people (who are in cars) are in cars with just the Driver (one person)

64% of all people (who are in cars) are in cars that are a Groups (more than one person)

William Warren
C/O Michael Brady.
1001 Marshall Street
Suite 500
Redwood City, CA 94063-2052

UNITED STATES POSTAL SERVICE

1020

95814

CERTIFIED MAIL

7015 1730 0001 0704 7962

Attn: Draft 2016 Business Pl
California High-Speed Rail Authe
Suite 620 MS-1
770 L Street
Sacramento CA.
95814.

2016 Business Plan RECORD DETAIL

Submission Date :	3/28/2016
Submission Method :	Letter
First Name :	William
Last Name :	Warren
Stakeholder Comments/Issues :	
Notes :	
Attachments :	Warren_DRAFT_2016_Bipz_Plan_Comment_032816.pdf (420 kb)

Attn: Draft 2016 Business Plan
California High-Speed Rail Authority
770 L Street, Suite 620 MS-1
Sacramento, CA 95814

March 28, 2016

Subject – Comment Regarding Draft 2016 Business Plan

Topic – Plaintiff's Declarations from the Tos – CHSRA Lawsuit

The primary purpose of this Comment is to submit to the California High Speed Rail Authority (CHSRA) a complete set of the declarations and supplemental declarations that were filed with the Court by the Plaintiffs, John Tos, Aaron Fukuda, and County of Kings in conjunction with the Opening and Closing Briefs for the case John Tos et al v.CHSRA et al. (Sacramento County Superior Court case No.34-2011- 00113919) lawsuit.

These declarations contain a wealth of information and analysis regarding a number of issues that the Authority needs to consider and needs to address as part of the development of the Final 2016 Business Plan. These issues relate to the use of Proposition 1A bond funds for system construction and the requirements contained in that ballot measure, notably: 1) the minimum time that will be required to travel from San Francisco to San Jose and to Los Angeles, 2) the minimum achievable headway requirement for the system, 3) the prohibition on an operating subsidy, 4) the overall financial viability of the chosen alignment, and 5) the availability of funds to fully construct the IOS as well as the complete Phase 1.

These declarations are stored on the "Thumb Drive" that is included with this cover letter. There are 16 declarations in one consolidated PDF file. As shown on Table 1, below, each declaration has been assigned a Declaration Number. The first 13 are associated with the Plaintiffs' Opening Briefs and the last 3 are Supplemental Declarations associated with the Plaintiffs' Closing Briefs.

Table 1

Declaration Number	Name	Type of Declaration
1.	Michael G. Brownrigg	Declaration
2.	Wendell Cox	Declaration
3.	William C. Grindley	Declaration
4.	Kathy A. Hamilton	Declaration
5.	Jason W. Holder	Declaration
6.	Paul S. Jones	Declaration
7.	Quentin L. Kopp	Declaration
8.	Adrian Moore	Declaration
9.	James Elliott Moore II	Declaration
10.	Randal O'Toole	Declaration
11.	Robert W. Poole	Declaration
12.	Richard F. Tolmach	Declaration
13.	William H. Warren	Declaration
14.	Paul S. Jones	Supplemental Declaration
15.	Kathy A. Hamilton	Supplemental Declaration
16.	William H. Warren	Supplemental Declaration

Also, please note, the Attorney General (AG) prepared the Administrative Record (AR) for the Tos vs CHSRA lawsuit. (Sacramento County Superior Court case No.34-2011-00113919) In that AR there is a Declaration by Mr. Frank Vacca, as AR Document Number 356, and which has a Leading Bates Number of AG013542.

We have not included this document as it was prepared by the Authority and presumably is readily available to the Authority in its files. We will consider this to be your document and that it is also incorporated into this Comment, by this reference. If you need additional copies of this document, please let me know by April 4th, 2016 and we will send them to you.

Thank you,

William H Warren

William H. Warren
williamhwarren@sbcglobal.net
c/o
Michael J. Brady
1001 Marshall Street, Suite 500
Redwood City, CA 94063-2052

William H Warren
c/o Michael D. Brady
Suite 500
1001 Marshall Street
Redwood City, CA
94063-2052

CERTIFIED MAIL

7010 0290 0001 6490 7662

UNITED STATES POSTAL SERVICE

1020

RETURN
RECEIPT

Attn Draft 2016 Business
California High-Speed Rail
Suite 620 MS-
770 L Street
Sacramento,
9581

FIRST CLASS

2016 Business Plan RECORD DETAIL

Submission Date :	3/28/2016
Submission Method :	Letter
First Name :	Andrew
Last Name :	Chesley
Stakeholder Comments/Issues :	
Notes :	
Attachments :	San Joaquin_COG_Biz_plan_March 28.pdf (920 kb)

SAN JOAQUIN COUNCIL OF GOVERNMENTS

555 E. Weber Avenue • Stockton, California 95202

209.235.0600 • 209.235.0438 (fax)
www.sjcog.org

March 28, 2016

Mr. Dan Richard
Chairperson, California High-Speed Rail Authority
770 L Street, Suite 800
Sacramento, CA 95814

SUBJECT: SJCOG Comments on California High-Speed Rail Authority (CHSRA) Draft 2016 Business Plan

Dear Chairperson Richard:

The CHSRA Draft 2016 Business Plan presents a major change for where high-speed rail (HSR) service will be initiated. This new plan focuses on delivering a HSR line connecting the Silicon Valley to the Central Valley in 2025 instead of between Merced and the San Fernando Valley in 2022. While the Silicon Valley to Central Valley segment may be cheaper to construct, it is not what the legislature voted for in 2012 to enable HSR construction to begin. Nor is it consistent with Senate Bill 862 (2014), which provided the substantial ongoing Cap & Trade funding required for the HSR project to be viable. Without significant changes to the Draft Business Plan, the San Joaquin Council of Governments (SJCOG) will be forced to take a position of opposition towards the Business Plan, and by extension the HSR project.

The new plan greatly delays closing the gap between Northern and Southern California which your 2012 Revised Business Plan stated was "the state's highest priority for intercity rail". It also delays providing benefit to the Northern San Joaquin Valley, Sacramento, and the rest of Northern California by eliminating the initial connection to Merced. The promise of the early connection to Merced has been essential for support from SJCOG for the HSR project for many years. CHSRA's commitment to Merced's inclusion as part of the initial HSR implementation goes back to before Proposition 1A was passed by the voters in 2008.

The CHSRA's 2012 Revised Business Plan not only promised the initial HSR service to be between Merced and Southern California, but it also committed to providing funding support for investments in conventional services which would connect to the HSR Initial Operating Segment. The Budget Act of 2012, as amended by SB 1029, included the appropriation of $53.9 million of Proposition 1A funding for planning work in the Merced to Sacramento Corridor. These funds are needed to enable the planning, environmental, and engineering work needed to provide improved passenger rail service between the future Phase 1 HSR service and Sacramento, and to provide the foundation for full Phase 2 HSR implementation.

The legislative intent behind the inclusion of the Merced to Sacramento planning funding in SB 1029 was to do the planning needed to support near-term passenger rail improvements that will benefit both the Amtrak San Joaquin service and the Altamont Corridor Express service. While Page 23 of the CHSRA Draft 2016 Business Plan asserts that "Phase 2 corridor studies and planning are ongoing including the connections and opportunities for early investments between Merced and Sacramento and between Los Angeles, the Inland Empire, and San Diego", this is not accurate. Despite the unwavering support and high level of interest from the region, there has been no progress over the last several years made in the planning for early investments for improving rail service between Merced and Sacramento.

The CHSRA 2016 Business Plan should be revised to specify that the majority of these planning funds (allocated in SB 1029) will be used to plan near-term conventional improvements and to highlight that this work will be done in partnership with the San Joaquin Joint Powers Authority, coordinated with the Central Valley Rail Working Group, and will be completed as quickly as possible.

The CHSRA Draft 2016 Business Plan includes a commitment to invest $2.1 billion between Burbank and Anaheim. The Executive Summary states that CHSRA will reinvest savings from its cost estimates for the Phase 1 HSR project to pay for this service enhancement in Southern California. However, Section 6 ("Funding and Financing") only specifies the $500 million commitment CHSRA already made in 2012 and lists a number of potential sources (most of which are not HSR funds). Rather than providing new funds through Phase 1 HSR savings to the Burbank to Anaheim Segment, CHSRA appears to be mostly promising their support for future Transit and Intercity Rail Capital Program (TIRCP) Cap & Trade and federal grant applications for this segment.

While SJCOG is not opposed to near term improvements in the Burbank to Anaheim corridor, SJCOG must stress that the system as proposed in the Draft 2016 Business Plan will not provide any meaningful benefit to the Northern San Joaquin Valley and Sacramento for years if not decades. As part of the "cost savings" for the Phase 1 HSR project, CHSRA must revise the Draft 2016 Business Plan to include an enforceable commitment for investing in near-term conventional rail connectively improvements between the Northern San Joaquin Valley, Sacramento, and the San Francisco Bay Area. CHSRA will need to specify where this funding will come from and that it will be a priority of the CHSRA to have improved conventional rail service between Fresno and Sacramento as an important "feeder" service to the Phase 1 HSR system. It is imperative for the state to fulfill the promise of the CHSRA's Revised 2012 Business Plans by supporting this improved conventional rail connectivity to the Phase 1 HSR service through the following:

- CHSRA must include the Central Valley Wye connection to the Merced Station as part of the Phase 1 HSR in the 2016 Business Plan.

- CHSRA must immediately release the $53.9 million of Proposition 1A funding authorized by the Budget Act of 2012, as amended by SB 1029 to the San Joaquin Joint Powers Authority (SJJPA) for planning work in the Merced to Sacramento Corridor.

- CHSRA must include a commitment for a $1.0 billion investment in near-term conventional rail connectively improvements between Fresno and Sacramento in the 2016 Business Plan.

- CHSRA must include a commitment for a $1.0 billion investment in near-term conventional rail connectively improvements between Merced and San Jose through the Altamont Pass in the 2016 Business Plan.

In addition, the Draft 2016 Business Plan does not include any commitment for funding near-term conventional rail improvements to the Capitol Corridor rail service. The Capitol Corridors provide a vital direct connection to the San Joaquin service in Sacramento, and share right of way and stations between Martinez and Oakland with the San Joaquin service, and between Fremont and San Jose with the Altamont Corridor Express service. We request that funding be provided to improve the Capitol Corridor service as follows:

- CHSRA must include a commitment for a $1.0 billion investment in near-term conventional rail connectively improvements between Sacramento and San Jose in the 2016 Business Plan.

We appreciate the opportunity to comment on the CHSRA Draft 2016 Business Plan. CHSRA has received significant support from SJCOG, the Northern San Joaquin Valley, and Sacramento for many years – even though the Pacheco Pass route selected by CHSRA between the Bay Area and San Joaquin Valley does not effectively serve the Northern San Joaquin Valley or Sacramento. Support from these regions helped pass Proposition 1A and members of the legislature from these regions provided key votes for CHSR in 2012 and 2014 (in addition to authoring Proposition 1A). We hope that the final version of your 2016 Business Plan will be a plan which can be supported by SJCOG. However, if these requested changes to the 2016 Business Plan are not made, SJCOG will be forced to adopt a position of opposition towards the Business Plan, and by extension the HSR project.

Sincerely,

ANDREW T. CHESLEY
Executive Director
San Joaquin Council of Governments

cc Senator Kathleen Galgiani
Senator Lois Wolk
Senator Anthony Cannella
Senator Jim Beall
Assemblymember Adam Gray
Assemblymember Susan Eggman
Assemblymember Kristin Olsen
Assemblymember Jim Cooper
Assemblymember Jim Frazier
Mayor Anthony Silva, SJCOG Chair
Supervisor John Pedrozo, SJJPA Chair
Councilmember Bob Johnson, SJRRC Chair
Mr. Mike McKeever, Executive Director, SACOG
Ms. Rosa Park, Executive Director, StanCOG
Ms. Marjie Kirn, Executive Director, MCAG
Ms. Stacey Mortensen, Executive Director, SJRRC
Mr. Mark Watts, Smith, Watts & Hartmann

2016 Business Plan RECORD DETAIL

Submission Date : 4/4/2016

Submission Method : Project Email

First Name : Leland

Last Name : Jue

Stakeholder Comments/Issues : Morning - attached is a 2016 Business Plan related comment received on the BFSSA Comment Sense inbox.

Comment Details:

Date Received: 3/31/16

Name: Leland Jue

BFSSA Record ID: 107

Thanks!

Annette Cortez

VMA Communications, Inc.

1420 N Claremont Blvd, Suite 107 B ? Claremont, CA 91711
T: 909.445.1001 ? D: 909.324-0347

F: 909.445.1022

From: office.manager@vmacommunications.com
[mailto:office.manager@vmacommunications.com]
Sent: Monday, April 04, 2016 10:00 AM
To: annette.cortez@vmapr.com
Subject: Message from KMBT_C284e

Notes :

Attachments : image001.png (18 kb)
SKMBT_C284e16040408591.pdf (192 kb)

Bakersfield F Street Station Alignment - RECORD #107 DETAIL

Status :	Action Pending
Record Date :	3/31/2016
Response Requested :	
Submission Date :	3/31/2016
Affiliation Type :	Individual
Interest As :	Individual
Submission Method :	Website
First Name :	Leland
Last Name :	Jue
Professional Title :	Automation Engineer
Business/Organization :	
Address :	
County :	Kern
Apt./Suite No. :	
City :	Bakersfield
State :	CA
Zip Code :	93311
Telephone :	661 477 3959
Email :	lwjue@bak.rr.com
Fax :	
Cell Phone :	
Email Subscription :	Fresno - Bakersfield
Add to Mailing List :	Yes
Comment Type :	
Stakeholder Comments/Issues :	

You are using Bakersfield's tax dollars to build a station in Tim Buck Too!

Subscription Request/Response :	URL: http://sites.focalbeam.com/chsra.gov/pb_commentSubmit.php?fn=Leland&ln=Jue&em=lwjue%40bak.rr.com&city=Bakersfield&state=CA&zip=93311&interest=Individual&sections[]=Fresno+-+Bakersfield Response: *OK*
EIR/EIS Comment :	No
Attorney or Law Firm? :	No
Need PI Response :	
Form Letter :	
Submisison in Language other than English :	

2016 Business Plan RECORD DETAIL

Submission Date :	4/4/2016
Submission Method :	Project Email
First Name :	James
Last Name :	Moore
Stakeholder Comments/Issues :	Hard copy is en route.

James E. Moore, II, Professor, Vice-Dean for Academic Programs, USC Viterbi School of Engineering
UNIVERSITY OF SOUTHERN CALIFORNIA President, Institute of Industrial and Systems Engineers (IISE)
Olin Hall of Engineering (OHE) Room 200M, Mail Code 1450
3650 McClintock Avenue, Los Angeles, CA 90089-1450
Direct: (213) 740-0595 (email contact will draw a more timely response)
Cell: (213) 663-8146
Staff: (213) 740-2751, Elena Camarena, ecamaren@usc.edu<https://ppdpost.sppd.usc.edu/owa/redir.aspx?C=nZ62uEaSxkCRJRkM8dH0sB0wbjP0_c8IfXFh3r85GgLrUDhYmUjpFc_oNdwN-HYyOFwf3qu_KlE.&URL=mailto%3aecamaren%40usc.edu>
Fax: (213) 740-8493
Email: jmoore@usc.edu<mailto:jmoore@usc.edu>

Notes :	
Attachments :	James_Moore HSR 4 3 2016.pdf (147 kb)

USC Viterbi
School of Engineering

OFFICE OF THE DEAN

MEMORANDUM

TO: Attn: Draft 2016 Business Plan
California High-Speed Rail Authority
770 L Street, Suite 620 MS-1
Sacramento, CA 95814

FROM: Professor James E. Moore, II, Vice Dean for Academic Programs

DATE: April 3, 2016

SUBJECT: Comment Regarding Draft 2016 Business Plan

TOPIC: Operational and Financial Deficiencies in the 2016 Business Plan

---

The purpose of this Comment is to submit to the California High Speed Rail Authority (CHSRA) a list of issues that should be dealt with before the approval of the 2016 Business Plan. I offer this Comment as an independent area expert. My positions are my own and do not reflect the opinions or position of the University of Southern California, its leadership, its trustees, or its faculty.

These issues include use of Per Passenger Mile (PPM) and Per Seat Mile (PSM) metrics, inadequate ridership survey data, and the misuse of Monte Carlo modeling.

My Qualifications to speak on these matters

I hold Bachelor of Science degrees in Industrial Engineering and in Urban Planning (1981, Technological Institute at Northwestern University); a Masters of Science in industrial Engineering (1982, Stanford University); a Masters of Urban and Regional Planning (1983, Northwestern University); and a PhD in Civil Engineering - Infrastructure Planning and Management (1986, Stanford University).

University of Southern California
OHE 200, Los Angeles, California 90089-1450 • Tel: 213 740 7832 • Fax: 213 740 8493

I am presently the Vice Dean of the Viterbi School of Engineering at the University of Southern California (USC), and have been a member of both the USC public policy and engineering faculties since January 1988. Prior to joining USC, I was a faculty member in Northwestern University's McCormick School of Engineering and Applied Science (then called the Technological Institute). I received tenure in what is now USC's Price School of Public Policy (formerly USC's School of Urban and Regional Planning) in 1993; in USC's Astani Department of Civil and Environmental Engineering in 1998; and in USC's Epstein Department of Industrial and Systems Engineering in 2003. I serve as Director of the Transportation Engineering program in the USC Astani Department of Civil and Environmental Engineering, and served for six years as Chair of the USC Epstein Department of Industrial and Systems Engineering. I have served as Vice Dean for Academic Programs in the USC Viterbi School of Engineering for the past five years.

My fundamental and applied research focus is on the engineering and economic aspects of large-scale transportation and land use systems. My specific research interests include risk management of infrastructure networks subject to natural hazards and terrorist threats; infrastructure investment and pricing policies, especially in California; economic impact modeling; transportation network performance and control; and large scale computational models of metropolitan land use/transport systems. I have published extensively in the transportation planning and engineering literatures. I have closely followed the course of the California high-speed rail project since spending a sabbatical year at in the California State Library's California Research Bureau in 1998, and have followed the project closely since 2003, reading materials from the California High-Speed Rail Authority (CHSRA) and its critics; and occasionally lecturing on the project.

PPM and PSM - Why are the Per Passenger Mile (PPM) metrics particularly important?

The key to any comparative financial analysis of different business activities around the world is to define a common dominator that allows apples to-apples comparison of how resources relate to the delivery of outcomes. The Authority would like this common dominator to be the Per Seat Mile (PSM) metric. For strictly operationally oriented questions, this is a reasonable choice. PSM measures revenues and expenses for every seat moved, regardless whether the seat is empty or occupied. The alternative common dominator is the Per Passenger Mile (PPM) metric, which is used in the Grindley and Warren "To Repeat" report. PPM provides an overall business level financial analysis perspective that incorporates a view of the passengers in terms of the prices they are paying, per mile, and how many passengers are actually traveling on the railroad and what it is costing the railroad to move these passengers. This contrasts with the number of seats being moved.

In practice, use of either PPM or PSM comparisons leads to the same conclusion about the *relative* relationship between revenues and costs. For example, if costs on a PPM basis are 70% of PPM revenues, then costs on a PSM basis will be 70% of PSM revenues. It can be difficult to obtain comparative data in consistent units from other public transportation companies and agencies from around the world. Sometimes it is possible to acquire comparative information that is PPM-based. Sometimes comparative data is PSM-based. If the Load Factor (LF) is available, it is possible to derive the one measurement from the other, as Passenger Miles divided by Seat Miles equals Load Factor.

Amtrak's Acela system is the logical domestic system against which to benchmark the anticipated performance of the Authority's California system. Amtrak publishes monthly reports that provide revenue and cost data for each of its operational routes, including the Acela line in the Northeast Corridor. With these published operational data, it is possible to compute both revenues and costs on a PPM and PSM basis. The Acela does not operate at the 200 MPH speeds the Authority is projecting, and the Authority should be able to show how their projected costs on a PPM and PSM basis will be different from the Acela data, because of these higher speeds. This comparison does not appear to be included in the Authority's 2016 Business Plan.

Much of this projected operational data was available in the Authority's 2012 Business Plan, but less was available in the 2014 Plan, and it appears that almost none is available to the public with the release of the Draft 2016 Business Plan. Comparative data defined on a PSM- and PPM-basis, for the Amtrak Acela route and the existing international operators of HSR systems has been lacking in the 2012, the 2014 and the 2016 Business Plans and their supporting documents. These basic comparisons are of obvious and great relevance, and their omission is glaring. This lack to transparency and comparative analysis is a disservice to the public interest and breeds distrust.

Ridership – No survey data has been used to validate Authority projections

It appears that the Cambridge Systematics Ridership and Revenue forecasting model focuses on the ridership during the Phase I period of operations by assuming a mature existence of the HSR program in those years. The estimated 50% probability of 38 Million riders in 2029 and 41 Million riders in 2040 presumes a mature Phase I system.

It is unclear how the similar projections for the Initial Operating Segment (IOS) North period of operations were created. These projections should not be predicated on the mature market penetration characterizing the Phase I system. Specifically, the supporting documents show a ridership projection of about 7.6 Million in 2025, but this appears to reflect a mature penetration of this marketplace. These values appear to have been extrapolated from the Cambridge Systematics Ridership and Revenue forecasting results for a period in which the assumptions that underlie these results do not apply.

There do not appear to have been any surveys of potential customers to estimate the level of interest in riding the HSR system between San Jose and Bakersfield in combination with the bus and conventional rail services that would be required to complete the journey into the LA Basin and the San Francisco Bay Area. Given the lack of such a survey or further model estimation efforts based on such a survey, how was the mature penetration forecast for the IOS North marketplace developed? Who developed these "mature penetration" projections? What are these individuals' track record with respect to accurate forecasts in prior studies? It appears the public is being asked to trust an unknown group to make a complicated projection that has been extracted from a modeling exercise defined for quite different conditions, and that no prospect customer or user data has been collected nor any other efforts made to validate this projection.

The 2016 Business Plan provides a reduced ridership projection, below the mature penetration rates, as HSR starts begins operation and must acquire market share by successfully competing for riders from the auto, bus, and conventional train options. This reduced ridership projection appears to have been based entirely the mature penetration expected for the IOS North. Instead the Authority should estimate a new model that

incorporates survey data accounting for the traveler tastes and resources in the existing markets. What evidence does the Authority have that riders are interested enough in switching to HSR that there is a 50% probability of 2.9M riders in 2025, and this penetration will double in three years and grow to 6.2 Million in 2028 and then, in a single year, triple to 19.2 Million in 2029? The 2092 forecast of 19.2 Million is a full 50% of the mature marketplace forecast of 37.5 Million. If the Authority could credibly justify a forecast that their business that would actually grow like this, private capital would flow to this project like a river. Unfortunately, there is no credible rationale for Authority's forecast, and unless or until the Authority can provide such support for their forecast, capital markets will continue to treat this project with skepticism.

Monte Carlo Method – There is insufficient data on to base Monte Carlo bottom up cost projections

Use of Monte Carlo techniques to estimate total cost distributions requires existing, validated, and documented data that represent the range and the distribution within the range of various cost elements. The Authority lacks these data, and so estimates must be made to be able to apply these tools. Every effort should be made to validate or otherwise account for the quality of these estimates. However, it does not for example, appear, that this the case with the Authority's cost inputs for Operational and Maintenance labor. The 2016 Business Plan includes many pages of projected costs per position, and the projected staffing levels. However there is no data from Acela or International HSR operations such as the French and Spanish HSR operators that can be used to validate the staffing levels projected in the Plan. The absence of any comparative validation of the projected labor head counts, for example, leaves the staffing cost estimates a guess at best, even if

embedded in an assumed distribution. Such crude use of such useful and powerful modeling tool reflects badly on the Authority's analysis, and risks giving the tool a bad name.

Monte Carlo Method – There is insufficient data on which to base Monte Carlo top down cost projections

Reference class analysis could help validate the 2016 Business Plan's "Bottom Up" approach to estimating cost distributions. However, it is not correct to presume that the aggregate experiences of other agencies are directly transferable to the Authority's project. For example, it was inappropriate, from a methodological perspective to use the LGV cost variances, at an average of 5%, as good guidance for the Authority to adjust their own midrange cost projections. This comparison first appeared in the 2014 Plan, which stated that "Most Likely parameter was taken as the Medium cost scenario + 5% based on the two most 'on-point' cases in the reference set—the LGV Rhone-Alps and LGV Nord, both high-speed rail systems." It is very important to note that these two sections of the French HSR system went into operation in 1994 and 1993, over ten years after the French HSR system initially went into operation.

With at least 10 years of internal operational cost data at their disposal, the French still constructed an operations cost plan for these two new sections that proved to deviate from experience by 4% to 6%. The Authority has no such internal operational data or externally-validated data, only guesses and distributions of guesses. It would be more appropriate to assign a much, much, higher variance percentage to be used to adjust the Medium cost scenario to the Most Likely cost value. We are not dealing with differences

that appear due to statistical variations occurring randomly around a recognized, well understood mean, but rather trying to cobble together guesswork without the benefit of any external validation. Constraining the Authority's guesses to only a small portion of the possible cost spectrum is wildly optimistic.

Analysis based on the Monte Carlo tool – Correlations have been handled inconsistently.

Comments about the Draft 2014 Business Plan include a comment submitted by Professor Evan Porteus of the Stanford University Business School. This Authority Record #182 is on PDF page 721 of the 825 page PDF file. His points were valid for the 2014 Business Plan and they remain valid for the 2016 Plan. It appears that nothing has been done to correct the situation, which Professor Porteus described as being "intellectually dishonest." At a minimum, the Authority's mix of assumptions is methodologically inconsistent. Dishonesty would require a degree of intention.

In the Monte Carlo simulations that Prof. Porteus reviewed, the quantities simulated were assumed to be statistically independent. But in Section 6 of the 2014 Business Plan (pp 51-52), the scenarios for revenue and O&M costs were assumed to be perfectly positively correlated. This dictated, as he pointed out, that if the revenues were low, then so were the O&M costs. Enforcing the statistical independence the Authority claims on this portion analysis requires accounting for the possibility of low or medium revenue along with high O&M costs, or high revenue along with low or medium O&M costs. Professor Porteus pointed out that it is not intellectually honest to assume that

(i) different O&M cost categories in the same year and O&M costs in the same category, but in different years, are statistically independent; and
(ii) ridership on different routes within a year and revenues between years are statistically independent, while,
(iii) assuming total O&M costs in a year are perfectly correlated with total revenues in that year.

Professor Porteus recommended enriching the analysis in Section 6 (Financial Analysis and Funding) of the Draft 2014 Business Plan by displaying outcomes that involve uncorrelated instances of revenues and costs. In particular, he believed that the 2014 Plan should include, among other scenarios, the outcomes of

(i) high revenue along with low O&M costs and
(ii) low revenue along with high O&M cost, along with the likelihood of each outcome.

This analysis should probably be a executed as a decision tree. For example, if ridership is higher than expected in the current month, this indicates that ridership is likely to be higher than expected in the following month, so increasing staffing (and O&M costs) would be appropriate to ensure acceptable levels of service.

The implication of Professor Porteus' recommendations is that the model would likely lead to substantially different results in the break-even analysis, as the model captures more realistic outcomes. It appears that this work has not been done as part of the 2016 Business Plan. Given that the Authority has been informed by Professor Porteus of the inconsistency in their methods, and given that they persist in their modeling practices, I conclude that the current use of the modeling tools in the Draft 2016 Business Plan still

conform to Professor Porteus' definition of intellectual dishonesty. It certainly conforms to mine.

James E. Moore, II, Vice Dean for Academic Programs, USC Viterbi School of Engineering

Professor Industrial and Systems Engineering, USC Viterbi School of Engineering
Professor of Civil and Environmental Engineering, USC Viterbi School of Engineering
Professor Urban Planning and Spatial Analysis, USC Price School of Public Policy
Professor of Public Policy and Real Estate Development, USC Price School of Public Policy

OHE 200 MC 1450 USC
3650 McClintock Avenue, Suite 200
Los Angeles, CA 90089
(213) 740-0595

jmoore@usc.edu

2016 Business Plan RECORD DETAIL

Submission Date :	3/28/2016
Submission Method :	Letter
First Name :	Mark
Last Name :	Powell
Stakeholder Comments/Issues :	Paper 2 entitled: Pushing Back on the California High-Speed Rail Authority's Myths About High-Speed Rail
Notes :	
Attachments :	Powell_Paper_2_Pushing_Back_on_HSRs_Myths_About_HSR_032816.pdf (1 mb)

Mark R. Powell
27840 Mount Triumph Way
Yorba Linda, CA 92887

March 28, 2016

California High-Speed Rail Authority
Attn: Draft 2016 Business Plan
770 L Street, Suite 620 MS-1
Sacramento, CA 95814

To Whom it May Concern:

Attached for the Authority's consideration is a Word document submitted as a comment on their Draft 2016 Business Plan . It is entitled *Pushing Back on the California High-Speed Rail Authority's Myths About High-Speed Rail: Paper 2- 4300 Miles of Highway Lanes as an Alternative to High-Speed Rail* . It has been sent "Return Receipt" so that I will have proof of date of delivery and the name of the person to whom it was delivered.

This same document was also submitted by e-mail to the Authority at:
2016businessplancomments@hsr.ca.gov
It was sent via email as a Word document because it is heavily footnoted with links to my sources making it easy for anyone to check my facts.

Sincerely,

Mark R. Powell

enclosures: 1 Comment on the Authority's Draft 2016 Business Plan: *Pushing Back on the California High-Speed Rail Authority's Myths About High-Speed Rail: Paper 2- 4300 Miles of Highway Lanes as an Alternative to High-Speed Rail*

Pushing Back on the California High-Speed Rail Authority's Myths About High-Speed Rail

Paper 2

4,300 Miles of Highway Lanes as an Alternative to High-Speed Rail

by Mark R. Powell
October 30, 2015

Paper 2

4,300 Miles of Highway Lanes as an Alternative to High-Speed Rail

Abstract

The Authority's most recent hyping of the need for high-speed rail, a June 2015 brochure entitled *California High-Speed Rail Big Picture,* makes the claim that Phase 1 Blended, connecting San Francisco and Los Angeles, provides a transportation capacity equivalent to 4,300 new highway lane miles, 115 additional airport gates, and four new airport runways costing $158 billion. A second claim is that high-speed rail provides this capacity at half the cost.

This paper dissects these deceptive claims where the Authority uses "capacity" instead of "ridership" knowing full well that the theoretical capacity of Phase 1 Blended will dwarf its ridership and that the itemized highway lane miles will not be necessary this century, if ever, whether Phase 1 Blended is built or not built.

The paper then traces the evolution over two decades of the asserted highway benefits of high-speed rail from the thousands of miles of highway lanes reported in the Authority's 2005*California High-Speed Train Final Program EIR/EIS* back to earlier minimal assertions made in its first business plan and those made by its predecessor, the Intercity High-Speed Rail Commission.

Lastly, this paper looks at California Department of Transportation (Caltrans) traffic data and Caltrans long range planning documents. The data and planning documents prove how the Authority grossly overestimated future highway infrastructure needs for the year 2016 in its 2005 *California High-Speed Train Final Program EIR* and attempts to give readers information sufficient to see for themselves high-speed rail's true impact on future highway needs over the next 20 years.

Pushing Back on the Authority's Myths About High-Speed Rail

California High-Speed Rail Authority Myth #2

"HIGH-SPEED RAIL MORE COST EFFECTIVE THAN ALTERNATIVES
Providing the equivalent new capacity on the state's highways and airports would cost more than double the investment required to develop a high-speed rail system between San Francisco and Los Angeles. If it was even possible, that would mean building 4,300 new highway lane miles, 115 additional airport gates, and four new airport runways at an estimated cost of $158 billion. While the high-speed rail system will operate without subsidies, Caltrans estimates operations and maintenance costs on those new highway lanes at $132.8 billion for over 50 years."[1]
(Source: *California High-Speed Rail Big Picture* brochure, dated June 2015)

Part I – Claims Made Recently by the Authority:

The quotation cited above, first written into the Authority's 2012 Business Plan[2], is cleverly crafted not to enlighten, but rather to confuse a public who would likely equate "capacity" with "ridership" and view construction of a high-speed rail system as a means of avoiding double the investment in roads and airports. But capacity and ridership are distinctly different.

Parsons Brinkerhoff, the Authority's prime contractor, makes this clear in their report entitled *Comparison of Providing the Equivalent Capacity to High-Speed Rail through Other Modes*, dated April 2012. Quoting directly:

> "This analysis was designed to answer the following questions:
> 1. What is the people-carrying capacity of the 520-mile Phase 1 HSR system?
> 2. What would be the composition and cost of providing this same capacity increase through freeways and airports?
>
> However, this is <u>not</u> an assessment of the whether the state would *need* to or *choose* to build this infrastructure if it did not build high-speed rail."[3] (emphases on <u>not</u>, *need*, and *chose* were made in the source document)

"Capacity" for the purpose of the Parsons Brinkerhoff report assumed construction of the Full Build Phase 1 system with northbound trains capable of seating 1000 passengers, but only 70% full, leaving Los Angeles every 5 minutes and identically loaded southbound trains leaving San Francisco at the same frequency.[4] Parsons Brinkerhoff avoided specifying how many hours per day or days per year the trains would operate and by doing so avoided reporting the system's capacity in terms of persons transported per year. However, Parsons Brinkerhoff identified additional airport infrastructure as supplying 25% of the alternate capacity and specified that this would require 115 new gates. Furthermore, Parsons Brinkerhoff placed the annual capacity of a new gate at 525,000 passengers.[5] A passenger utilizes two gates, one to board and a second to deplane. Therefore, it appears Parsons Brinkerhoff was envisioning new airport capacity for 30 million (115/2 x 525,000) passengers per year and additional highway infrastructure for

90 million new passengers traveling by automobile between San Francisco and Los Angeles.

As far as highway infrastructure was concerned, Parsons Brinkerhoff reported the 90 million new highway travelers would require an additional 6 lanes added to every major highway along multiple routes from Los Angeles to San Francisco. Table 5 *Summary of Highway Segments* in their report itemizes the impacted routes totaling a distance of 775.3 miles. (Attachment 1) It is only about 500 highway miles from Los Angeles to San Francisco along the proposed route of the train, but Table 5 segments include 275 additional miles because widening by 6 lanes of both SR-99 and I-5 through the Central Valley are included. Multiplying 775.3 by 6 lanes yields a result of 4652 highway lane miles. Parsons Brinkerhoff then adjusted this result downward to 4300 miles to account for Phase 1 Blended's capacity being lower than that of Full Build Phase 1.[6] No date was provided for the completion of these additional lanes, but the Authority's implied date for their need is 2029, the completion date for Phase 1 Blended.

Highway traffic count data acquired by Caltrans monitoring equipment helps to put the current and future situations in perspective. The prime automobile route between Los Angeles and San Francisco for persons interested in a short travel time, and therefore good candidates for diversion to high-speed rail, is Interstate 5 through the Central Valley. According to Caltrans, the lowest traffic volume on I-5 occurs between its junctions with Hwy 41 and Hwy 165. Along this 83 mile stretch of I-5 the sum of the traffic in both directions averages 32,600 vehicles per day.[7] Truck traffic (excluding 4 wheel light pickup trucks) amounts to 9,300 vehicles per day leaving only 23,300 automobiles and light trucks . Traffic is spread across four lanes or about 5800 automobiles and light trucks per lane per day. This represents the highest number of automobiles and light trucks on I-5 that could possibly be traveling between the end points of San Francisco and Los Angeles. Of course much of this traffic is headed elsewhere. Northbound traffic may be traveling locally or to Fresno or headed to Sacramento or further points north and it may have originated in San Diego or be from out of state. The same discussion can be made about southbound traffic. But for the sake of argument, the assumption will be made that all these automobiles and light trucks have endpoints of only San Francisco or Los Angeles. The Parsons Brinkerhoff cited occupancy of 1.4 persons per car is also assumed. This equates to, at most, approximately 6 million persons traveling annually each direction or 12 million traveling annually between San Francisco and Los Angeles along I- 5.

The Parsons Brinkerhoff report made the following assumptions for estimated highway capacity at any location:[8]

1,817 cars per lane per hour
1.4 passengers per car

Using 6 such lanes16 hours a day 365 days per year for travel between Los Angeles and San Francisco equates to the 90 million annual highway people carrying capacity of the Phase 1 Blended high-speed rail system . Assuming that automobile and light truck traffic along I-5 between its junctions with Hwy 41 and Hwy 165 is essentially nil between midnight and 8am, the Caltrans data indicates the current lane usage of 5800 automobiles and light trucks/day equates to 363 per hour. Yet Parsons Brinkerhoff, on behalf of the Authority, spent taxpayer money to prepare a report outlining a rationale for building three new lanes in each direction and each capable of accommodating more than 1800 cars per hour.

Clearly 6 new lanes are not necessary along I-5 and they will not be needed for the foreseeable future. Constructing the 120 million annual people moving capacity of Phase 1 Blended might be preferable to building alternative infrastructure with the same capacity, but this is a false choice. Even the Authority's annual ridership projections show only 26 million riders in 2040[9], roughly 1/5 of the people moving capacity of the Phase 1 Blended. Moreover, California's Department of Finance Demographic Research Unit currently predicts there will be only a 20% increase in the state's population between now and 2040.[10] This implies there would be about 21 million in ridership if the train were in service today. These 21 million potential riders are making due with today's infrastructure of highways and airports. By 2040 the state's highway and airport infrastructure needs to accommodate only 5 million more travelers between San Francisco and Los Angeles, not 120 million!

Part II Claims Made in the Authority's 2005 *California High-Speed Train Final Program EIR/EIS*:
Following the issuance of its 2000 Business Plan the Authority embarked on the first step in the environmental planning process, the development of the 2005 *California High-Speed Train Final Program EIR/EIS* (HST Program EIR) meeting the requirements of the federal NEPA and California's CEQA environmental regulations. Here the protection of the environment is paramount and state agencies are to regulate activities affecting the environment "so that major consideration is given to preventing environmental damage while providing a decent home and satisfying living environment for every Californian." [11]In attempting to strike a balance between protecting the environment and necessary economic development CEQA "declares that it is the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects".[12]

The Authority complied with these requirements when their HST Program EIR compared the environmental impacts and benefits of a statewide HST System to a No Project Alternative (no extraordinary transportation infrastructure construction efforts) and a Modal Alternative (construction of more than 2970 freeway lane miles, 90 new airport gates, and 5 new runways, most of which was projected to be needed and in service by January 1, 2016[13] [14]) and judged the Statewide HST System Alternative as preferable. Projected population growth made the No Project Alternative "neither a viable nor realistic alternative"[15] and the Modal Alternative was judged to be environmentally and structurally inferior to the HST system while costing more than twice as much to build.[16]

The Authority's Modal Alternative as it relates to highways is illustrated on the following page by the Figure 2-D-1 taken from Appendix 2-D of the Authority's HST Program EIR.
Table 2-D-1 accompanied the figure and listed each segment of highway and the lanes to be added. (Attachment 2)

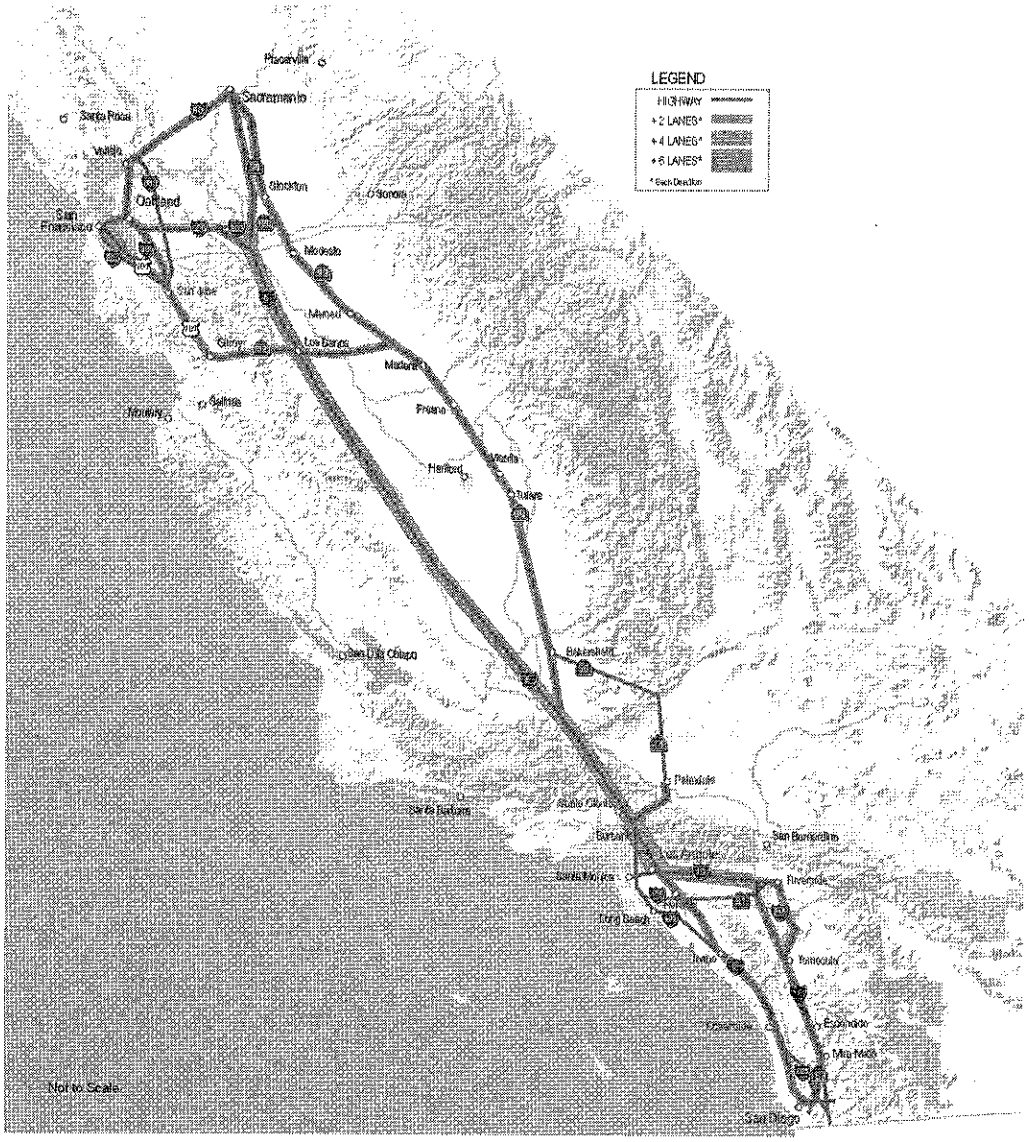


Figure 2-D-1
Highway Capacity Improvement Options—Year 2020
(2020 Intercity Travel Demand with Highway Expansion only)

The Modal Alternative was based on projected ridership on the high-speed train as opposed to the people carrying capacity of the train. Moreover, it was an alternative to the statewide high-speed rail system proposed in the HST Program EIR. As a result, the highway alternative shown in Figure 2-D-1 details routes south of Los Angeles and north of Stockton not included in the 4,300 miles of highway lanes currently being pushed by the Authority as an alternative to Phase 1 Blended. Ignoring these lane additions still leaves 2155 highway lane miles in Figure 2-D-1. These are itemized in Attachment 2. Focusing again on I-5 north of Los Angeles, the required additional lanes include 6 lanes running north to SR-14 and 4 additional lanes north from this point across the Tehachapis and through the Central Valley to I-580.

The decade between the development of the Authority's HST Program EIR and the issuance of its 2012 Revised Business Plan brought to light two important facts. First, Phase 1 Blended's costs would be at least twice that originally envisioned for the entire statewide system of high-speed rail. Second, I-5 had not been widened and traffic was still flowing over the Tehachapis and up the Central Valley at less than the highway's capacity.[17] With 2016 rapidly approaching, the No Project Alternative could be viewed as quite feasible and even the Authority's consultants would have been hard pressed to make a convincing case that the Modal Alternative as described in the HST Program EIR was now necessary or feasible. With the environmental and economic justification outlined in the HST Program EIR quickly disappearing, the Authority stopped making comparisons between high-speed rail and alternative infrastructure based on ridership. Instead, it began making comparisons base on capacity, whether that capacity was needed or not. Quoting directly from the April 2012 Parsons Brinkerhoff report:[18]

> "There are two fundamental changes to assumptions that make this a different study than the one conducted for the 2005 Program EIR/EIS.
>
> - The scope of the analysis is the 520-mile Phase 1 system, unlike the original analysis, which looked at the Full 800-mile System, including both Phase 1 and Phase 2. Although the Full System remains the complete plan for the HST program, the updated cost estimates in the Business Plan are for the Phase 1 system. This analysis was designed to provide a more direct comparison with the Phase 1 system and its costs.
> - The second major change in assumptions was a switch from estimating the needed capacity based on ridership to estimating it based on equivalent "people-carrying" capacity of the HSR system whereas the 2005 analysis was prepared based on a ridership projection."

This change in assumptions allowed the Authority to make the claim that Phase 1 Blended, costing twice what the statewide system was estimated to cost in the HST Program EIR, would cost only half what alternative highways and airport infrastructure of the same capacity would cost. It went unstated that this was a false choice in that alternative infrastructure of the same capacity was not necessary.

Part III - Earlier Attempts at Estimating Avoided Infrastructure Costs Related to Highways:

California High-Speed Rail Authority 2000 Business Plan:

The Authority's 2000 Business Plan showed capital costs of $25 billion (in 1999 dollars) for the entire statewide system.[19] The plan also laid out a sixteen-year project development and construction schedule for the statewide system.[20]

The 2000 Business Plan did not identify any highway infrastructure construction costs that would be avoided due to the construction of high-speed rail. However, it found urban and rural highway benefits associated with the construction of the statewide high-speed rail system in the form of fewer automobile accidents, fewer road delays, and less air pollution.[21]

Intercity High-Speed Rail Commission (1993-1996)

Formed in 1993, a time when the state's population was expected to increase from its current 32.7 million to 48.8 million by 2020, the Authority's predecessor agency, the Intercity High-Speed Rail Commission, worked through 1996 to develop a 20 year plan for implementing a statewide high-speed rail plan and to determine if such a plan was economically feasible. The Commission's findings were detailed in their *High-Speed Rail Summary Report and Action Plan* published in December 1996 The Commission determined the route of the statewide system, later adopted by the Authority, and found the statewide system to be economically feasible at a cost of 18.2 billion (1996 dollars) because the net present value of the benefits of the system over the 50 year period from 2000 to 2050 exceeded the net present value of its costs. Of some importance today is the fact that the Commission, for the same reason, found the "trunk line" connecting only San Francisco and Los Angeles to be not feasible.[22]

However, the Commission found zero benefits associated with the avoidance of highway infrastructure costs out to the year 2034 for the statewide high speed rail system. The Commission found that even though diverted highway trips would account for between 30% and 50% of all high-speed rail travel, the Los Angeles to Bay Area System would divert only 2.3% of trips to rail. With extensions to Sacramento and San Diego the system would divert 5.0% of intercity automobile trips. The Commission then looked at all the highway segments impacted by drivers diverting to a statewide high-speed rail system and determined that the construction of the statewide system would result in the avoidance or postponement of highway construction by more than one year in only two cases. The future need to widen by two lanes I-5 between Los Angeles and Bakersfield would be postponed from 2034 to 2038 and the widening of I-5 between Bakersfield and Stockton could be put off indefinitely.[23]

Attachment 3 provides some of the Commission's data showing HSR's minimal effect on highway volume to capacity ratios projected for the year 2020 associated with merely a Los Angeles to San Francisco system and with a system of high-speed rail including extensions to Sacramento and San Diego. A comparison of the two tables in Attachment 3 indicates that while the statewide high-speed rail system may put of widening of I-5 between Los Angeles and Bakersfield from 2034 to 2038, high-speed rail connecting only Los Angeles and San Francisco is of less benefit and pushes the need for expansion out to only 2036.

The Commission did identify less tangible benefits associated with the system connecting only Los Angeles and San Francisco amounting to $226 million[24] (in 1995 dollars) in the form of fewer automobile accidents, fewer road delays, and less air pollution for highway users in the year 2020. (Attachment 4)

Current State of Highway Travel Between Los Angeles and San Francisco

As it was with the Commission in 1996, the primary interest today to Californians relates to Phase 1 Blended's impact on travel along I-5 between the north end of the San Fernando Valley and the intersection of I-5 and I-580 south of Stockton. Caltrans Districts 7, 6, and 10 are involved with this route. Only Districts 6 and 10 are referenced in this paper because these two include portions of I-5 crossing the Tehachapis as well as representative portions of I-5 in the Central Valley north of the I-5/SR-99 junction where travel significantly decreases.

Caltrans uses six Level of Service (LOS) classifications ranging from A to F and Caltrans "endeavors to maintain a target LOS at the transition between C and D on State highway facilities, or whichever LOS is feasible to attain."[25] South of the I-5/SR-99 junction Caltrans currently rates the LOS along I-5 between C and D. North of the I-5/SR-99 junction and south of I-580 Caltrans rates the LOS along I-5 between B and D with most sections receiving a LOS of C. In other words, these sections of I-5 are currently operating within design capacity. Caltrans Traffic Count data along this route indicates that going back to 2002 there has been minimal change in overall traffic. Some locations show a slight increase and others a slight decrease. This is in line with Caltrans overall statewide traffic counts that indicate overall state highway traffic has risen at an annual rate of only .60%/year since 2002.

Thus the Commission's finding that high-speed rail would have little impact on infrastructure needs between Los Angeles and San Francisco by the year 2020 seems to be confirmed. In contrast, the Authority's forecast for an additional 4-6 lanes, reported in its HST Program EIR as being necessary by 2016, seems to be groundless. Finally, the Authority's more recent attempts to portray to the public that 4,300 miles of highway lanes are a reasonable alternative to Phase 1 Blended is at best a lie and at worst a criminal fraud being perpetrated on Californians.

Attachment 1

Table 5 Summary of Highway Segments
(Source: Parsons Brinkerhoff, *Comparison of Providing the Equivalent Capacity to High-Speed Rail through Other Modes*, dated April 2012, page 17)

Highway Corridor	Segment (From–To)	Urban/Rural	Miles
Bay Area to Merced			
US-101	San Francisco to SFO	Urban	11.3
US-101	SFO to Redwood City	Urban	13.8
US-101	Redwood City to I-880	Urban	19.7
I-880	US-101 to San Jose	Urban	0.9
US-101	San Jose to Gilroy	Urban	31.2
US-101	Gilroy to SR-152	Urban	1.4
SR-152	US-101 to I-5	Rural	40.8
SR-152	I-5 to SR-99	Rural	42.8
I-80	San Francisco to I-880	Urban	9.2
I-880	I-80 to I-238	Urban	13.8
I-580	I-880 to I-5 (via I-238)	Rural	52.7
I-880	I-238 to Fremont/Newark	Urban	14.5
I-880	Fremont/Newark to US-101	Urban	12.4
Merced to Bakersfield			
I-5	SR-152 to SR-99	Rural	186
SR-99	Merced to SR-152	Rural	21.5
SR-99	SR-152 to Fresno	Urban	33.4
SR-99	Fresno to Tulare/Visalia	Urban	46.4
SR-99	Tulare/Visalia to SR-58	Urban	68.9
Bakersfield to Los Angeles			
I-5	SR-99 to SR-14	Rural	65
I-5	SR-14 to I-405	Urban	2.5
I-5	I-405 to Burbank	Urban	15.3
I-5	Burbank to Los Angeles Union Station (LAUS)	Urban	7.4
SR-14	Palmdale to I-5	Urban	34.8
Los Angeles to Anaheim			
I-5	LAUS to I-10	Urban	0.8
I-5	I-10 to Norwalk	Urban	20.7
I-5	Norwalk to Anaheim	Urban	8.1
			775.3*

*Note included in original Table 5

Attachment 2

Table 2-D-1 Highway Capacity Improvement Options—Year 2020
(2020 Intercity Travel Demand with Highway Expansion only—Both Directions)

Bay Area to Merced		**Lanes**	**Miles****
US-101	San Francisco to San Francisco Airport (SFO)	2	11.3
US-101	SFO to Redwood City	2	13.8
US-101	Redwood City to I-880	2	19.7
I-880	US-101 to San Jose	2	.9
US-101	San Jose to Gilroy	2	31.2
US-101	Gilroy to SR-152	2	1.4
SR-152	US-101 to I-5	2	40.8
SR-152	I-5 to SR-99	2	42.8
I-80	San Francisco to I-880	2	9.2
I-80	I-880 to I-5 (Sacramento)	2	
I-880	I-80 to I-238	2	13.8
I-580	I-880 to I-5 (via I-238)	2	52.7
I-880	I-238 to Fremont/Newark	2	14.5
I-880	Fremont/Newark to US-101	2	12.4
Sacramento to Bakersfield			
I-5	I-80 to Stockton 2		
I-5	Stockton to I-580/SR-120	2	
I-5	I-580/SR-120 to SR-152	4	
I-5	SR-152 to SR-99	4	186
SR-99	I-5 to SR-58	2	
SR-99	Sacramento to SR-120	2	
SR-99	SR-120 to Modesto	2	
SR-99	Modesto to Merced	2	
SR-99	Merced to SR-152	2	21.5
SR-99	SR-152 to Fresno	2	33.4
SR-99	Fresno to Tulare/Visalia	2	46.4
SR-99	Tulare/Visalia to SR-58	2	68.9
Bakersfield to Los Angeles			
I-5	SR-99 to SR-14	4	65
I-5	SR-14 to I-405	6	2.5
I-5	I-405 to Burbank	6	15.3
I-5	Burbank to LA Union Station	6	7.4
SR-58/SR-14	SR-99 to Palmdale	0	
SR-14	Palmdale to I-5	2	34.8
Los Angeles–Orange County–San Diego			
I-5	Los Angeles Union Station to I-10	4	.8
I-5	I-10 to Norwalk	2	20.7
I-5	Norwalk to Anaheim	2	8.1
I-5	Anaheim to Irvine	2	
I-5	Irvine to I-405	2	
I-5	I-405 to SR-78	2	
I-5	SR-78 to University Town Center	2	
I-5	University Town Center to San Diego Airport	2	
I-8	SR-163 to I-5	2	

Notes:
US-101 = U.S. Highway 101
SR = State Route
I-5 = Interstate 5
* Represents the number of through lanes, in addition to the total number of lanes in the no-project highway network that approximate an equivalent level of capacity to serve the representative demand.
** Miles are shown for segments related to Phase 1 Blended and are the same as those shown in Attachment 1

Attachment 3
Source: Final Report – Economic Impact and Benefit/Cost of High Speed Rail[26]

The projected impact on highway congestion of only a trunk line system connecting Los Angeles to San Francisco (now termed Phase 1 Blended) or the Statewide System with Extensions to Sacramento and San Diego was summarized as follows:

Table I-3

	I-5 Bakersfield* to Stockton	**SR-99** Bakersfield to Stockton	**I-5** LA to Bakersfield*	**I-580** SF to I-5
No HSR	.75	1.20	.77	1.32
VHS LA to SF	.71	1.18	.74	1.30

Volume/ Capacity Ratios
Los Angeles to Bay Area HSR---Year 2020

Table I-4

	I-5 Bakersfield* to Stockton	**SR-99** Bakersfield* to Stockton	**I-5** LA to Bakersfield*	**I-580** SF to I-5	**I-5** San Diego to LA	**I-5** Stockton to Sacramento	**SR-99** Stockton to Sacramento	**I-80** SF to Sacramento
No HSR	.75	1.20	.77	1.32	1.18	1.14	1.39	1.39
VHS LA to SF Plus Extensions	.68	1.18	.72	1.29	1.15	1.12	1.37	1.39

Volume/ Capacity Ratios
Los Angeles to Bay Area HSR + Extensions---Year 2020

* Bakersfield is interpreted as the junction of I-5 and SR-99
VHS or Very High Speed was the term used by the Commission for what is now termed High-Speed Rail

Attachment 4

Source: Intercity High-Speed Rail Commission High-Speed Rail Summary Report and Action Plan, December 1996

Table 7-2

Basic System L.A. to S.F.	**Highway Savings**
Highway User Delay	$75
Automobile Operating Costs	$81
Accidents	$61
Air Pollution	$9
	$226

Highway Cost Savings Summary (Year 2020)

(Expressed in $1995 Million

Endnotes:

[1] California High-Speed Rail Authority brochure dated June 2015 entitled *California High-Speed Rail Big Picture* http://www.hsr.ca.gov/docs/newsroom/fact%20sheets/Big_Picture_FINAL_060515.pdf

[2] Revised 2012 Business Plan, Chapter 3 Capital Costs, page 3-15 http://www.hsr.ca.gov/docs/about/business_plans/BPlan_2012_rpt.pdf

[3] Parsons Brinkerhoff report entitled *Comparison of Providing the Equivalent Capacity to High-Speed Rail through Other Modes*, dated April 2012, page 2 http://www.hsr.ca.gov/docs/about/business_plans/BPlan_2012CompareEquivalentCapacity.pdf

[4] Parsons Brinkerhoff report entitled *Comparison of Providing the Equivalent Capacity to High-Speed Rail through Other Modes*, dated April 2012, page 6

[5] Parsons Brinkerhoff report entitled *Comparison of Providing the Equivalent Capacity to High-Speed Rail through Other Modes*, dated April 2012, pages 7 and 9

[6] Parsons Brinkerhoff report entitled *Comparison of Providing the Equivalent Capacity to High-Speed Rail through Other Modes*, dated April 2012, page 18

[7] Caltrans 2013 Annual Average Truck Traffic on the California State Highway System, pages 19-20 This is the most current year for which truck and total traffic is available on the Caltrans website http://traffic-counts.dot.ca.gov/docs/2013_aadt_truck.pdf

[8] Parsons Brinkerhoff report entitled *Comparison of Providing the Equivalent Capacity to High-Speed Rail through Other Modes*, dated April 2012, pages 15

[9] Revised 2012 Business Plan, Chapter 5, Exhibit 5-10. Ranges of ridership and revenue across all Business Plan Scenarios and phases, page 5-16

[10] California Department of Finance Demographic Research Unit, Report P-1 (Total Population, State and County Population Projections, July 1 2010-2060 (5 year increments), dated Dec. 15, 2014 http://www.dof.ca.gov/research/demographic/reports/projections/P-1/documents/P-1_Total_CAProj_2010-2060_5-Year.xls

[11] California Environmental Quality Act as amended 2013, page 1 http://resources.ca.gov/ceqa/docs/2014_CEQA_Statutes_and_Guidelines.pdf

[12] California Environmental Quality Act as amended 2013, page 2

[13] *California High-Speed Train Final Program EIR/EIS*, Summary section, page S-4 http://www.hsr.ca.gov/docs/programs/eir-eis/statewide_final_EIR_vol1summary.pdf

[14] *California High-Speed Train Final Program EIR/EIS*, Economic Growth and Related Impacts section, page 5-5 http://www.hsr.ca.gov/docs/programs/eir-eis/statewide_final_EIR_vol1ch5.pdf

[15] *California High-Speed Train Final Program EIR/EIS*, Summary section, page S-8

[16] *California High-Speed Train Final Program EIR/EIS*, Summary section, page S-9

[17] Caltrans Interstate 5 Transportation Concept Reports for Districts 6 and 10 dated February 2013 and September 2012 respectively http://www.dot.ca.gov/dist6/planning/tcrs/i5tcr/i5tcr.pdf http://www.dot.ca.gov/dist10/divisions/Planning/advancedplanning/docs/TCR's/I-5webFinalsigned09182012.pdf

[18] Parsons Brinkerhoff report entitled *Comparison of Providing the Equivalent Capacity to High-Speed Rail through Other Modes*, dated April 2012, page 3

[19] 2000 Business Plan, Section 2.3, Table 2.1, Capital Cost by Segment. See 2000 Business Plan http://www.hsr.ca.gov/docs/about/business_plans/BPlan_2000_FullRpt.pdf

[20] 2000 Business Plan, Section 2.2, Figure 2.3, Implementation and Construction Schedule

[21] 2000 Business Plan, Economic Benefits section

[22] Intercity High-Speed Rail Commission *High-Speed Rail Summary Report and Action Plan*, December 1996, Section 7 Economic Impact of High-Speed Rail, Benefit Cost Methodology, pages 7-24 and page 7-27 http://www.hsr.ca.gov/docs/programs/eir-eis/Archives/statewide_EIR_vol2_attachD6_archive.pdf

[23] Intercity High-Speed Rail Commission *High-Speed Rail Summary Report and Action Plan*, December 1996, Section 7 Economic Impact of High-Speed Rail, Benefit Cost Methodology, page 7-5

[24] Intercity High-Speed Rail Commission *High-Speed Rail Summary Report and Action Plan*, December 1996, Section 7 Economic Impact of High-Speed Rail, Benefit Cost Methodology, page 7-4

[25] Caltrans District 6 Transportation Concept Report for I-5, February 2013

[26] Final Report Economic Impact and Benefit/Cost of High Speed Rail for Californian, Submitted to the Intercity High-Speed Rail Commission, Prepared by Economics Research Associates, Sept. 1996, page 34

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CalSonic High Speed Rail A
Attn: Draft 2016 Business Pl
770 L St., Suite 620 MS
Sacramento, CA
95814

2016 Business Plan RECORD DETAIL

Submission Date :	3/25/2016
Submission Method :	Letter
First Name :	Mark
Last Name :	Powell
Stakeholder Comments/Issues :	Letter entitled, " Comments on the Authority's Draft 2016 Business Plan." Also submitted via Biz Plan email on March 29, 2016
Notes :	
Attachments :	Powell_10-General_Comments_on_biz_plan_033816.pdf (370 kb)

Mark R. Powell
27840 Mount Triumph Way
Yorba Linda, CA 92887

March 28, 2016

California High-Speed Rail Authority
Attn: Draft 2016 Business Plan
770 L Street, Suite 620 MS-1
Sacramento, CA 95814

To Whom it May Concern:

Attached for the Authority's consideration is a Word document containing 10 general comments on their Draft 2016 Business Plan. It has been sent "Return Receipt" so that I will have proof of date of delivery and the name of the person to whom it was delivered.

This same document was also submitted by e-mail to the Authority at:
2016businessplancomments@hsr.ca.gov
It was sent via email as a Word document because it is heavily footnoted with links to the footnotes to make it easy for anyone to check my sources.

Sincerely,

Mark R. Powell

enclosures: 1 Comments on the Authority's Draft 2016 Business Plan

Comments on the Authority's Draft 2016 Business Plan

Submitted by Mark R. Powell
Yorba Linda, CA 92887
March 25, 2016

Issue 1: Ridership On IOS –North Between Bakersfield and San Francisco

Comment:

Please explain in your Final 2016 Business Plan the 600% variance between the Bakersfield to San Francisco Bay Area high-speed train ridership as forecast by your first ridership consultant and that of your current consultant.

Discussion:

The perceived need for a statewide high-speed rail system was conceived shortly following the issuance of a grossly inaccurate May 1993 report by the California Department of Finance's Demographic Research Unit (DRU) projecting that the state's population would rise from 30 million in 1990 to 49 million in 2020 and more than double to over 63 million by 2040. The Intercity High-Speed Rail Commission, established in 1993, and its successor agency, the California High-Speed Rail Authority, established in 1996, were charged with developing and implementing a 20 year plan for a statewide high-speed rail system to meet the needs of California's rapidly growing projected population.

Both the Commission and the Authority used the services of Charles River Associates (CRA) to conduct ridership studies on the proposed statewide HSR system. CRA's first study was completed in July 1996, *Independent Ridership and Passenger Revenue Projections for High Speed Rail Alternatives in California* (1996 CRA Study). Writing about their study, CRA said, "these forecasts and sensitivity analyses represent the most advanced state-of-the-art, comprehensive HSR ridership and passenger revenue forecasts and analyses ever carried out in California, and possibly anywhere."[1] The Commission added, "to ensure investment grade results, the forecasts were subjected to extensive peer review."[2] To date, the 1996 CRA Study is the only ridership and revenue study that either the Commission or the Authority has dubbed "investment grade".

In making their forecast CRA first broke up the path along the proposed HSR alignment into Origin/Destination Pairings (O/D Pairings). Origin and Destination Areas are referred to as "Catchment Areas" in the following table.

Area	Geographic Definition of Catchment Area
Los Angeles	Los Angeles-Riverside-Orange County, CA CMSA
San Francisco	San Francisco-Oakland-San Jose, CA CMSA
Sacramento	SACOG Planning Area
San Diego	San Diego, CA MSA
Bakersfield	Bakersfield, CA MSA
Fresno	Fresno, CA MSA
Merced	Merced, CA MSA
Modesto	Modesto, CA MSA
Monterey	Salinas, CA MSA
Stockton	Stockton-Lodi, CA MSA
Visalia	Visalia-Tulare-Porterville, CA MSA

Areas of Origin or Destination for Potential Users of a High-Speed Train
CMSA is a Combined Metropolitan Statistical Area
MSA is a Metropolitan Statistical Area

CRA then estimated the annual number of person-trips by various modes between the O/D Pairings along the route of the high-speed train and then factored in expected growth rates to arrive at an estimate of total person-trips between these O/D Pairings in 2015, a year when they believed the entire statewide system would have been in service for a few years. When making their forecast CRA was working with DRU's May 1993 population forecast predicting that California's population would be 45.7 million in 2015. In their most recent forecast the DRU now predicts that a population of 45.7 million will not be reached until 2035. In other words, the table below, assembled from O/D Pairings found in the 1996 CRA Study, might have been labeled "Forecast Trips in 2035" if CRA had been working with a more accurate population projection. Results from the 1996 CRA Study are shown below.

Forecast Trips in 2015					
O/D Pairing	Person Trips by Private Vehicle	Local Air Trips	Connect Air Trips	Amtrak Rail Trips	O/D Pairing Total
SFBA - Merced	1,618,146	3,704	17,345	16,291	1,655,487
SFBA - Fresno	3,734,266	64,636	216,051	53,965	4,068,918
SFBA - Visalia	167,460	1,723	7,005	19,192	195,380
SFBA - Bakersfield	850,206	9,900	43,671	31,827	935,604
Total SFBA to CV	6,370,079	79,963	284,071	121,276	6,855,388
Within Central Valley	3,492,123	249	-	59,438	3,551,810
Total	**9,862,202**	**80,212**	**284,071**	**180,713**	**10,407,198**

1996 CRA Study of Forecasted Travel by Mode in 2015 w/o High-Speed Rail

CRA forecast a percentage of travel from each existing mode diverted to the high-speed train and then added induced travel to arrive at a forecast of HST ridership. Results are shown below.

O/D Aggrigated Pairings	2015 Ridership (M)
LA Basin - Bay Area	6.4
San Joaquin Valley - LA Basin	1.7
San Joaquin Valley - SF Bay Area	1.4
Within San Joaquin Valley	0.5
Other	1.2
Total Base System SFBay Area - LABasin	**11.2**

CRA Forecast Ridership on Basic System
Millions of Riders in 2015

Note: Valley-LA Basin and Valley-SF Bay Area Prorated per Authority's Split in 2008 Business Plan as only a single figure for LA Basin/SF Bay Area to the Central Valley was contained in the 1996 CRA Report.

The Authority's Draft 2016 Business Plan forecast of 11.0 million riders on IOS-North (Bakersfield to San Francisco) in 2028[3] is nearly identical to the forecast ridership along the entire LA Basin to SF Bay Area alignment as forecast in the investment grade 1996 CRA Study. It is nearly six times CRA's forecast ridership of 1.9 million for a stretch of track running from the San Joaquin Valley to the SF Bay Area (i.e. IOS-North-Extended). Moreover, it is more than 100% of CRA's forecast ridership for ALL modes of travel forecast for 2015 (a reasonable proxy for 2035 given new population growth data) along the route of the Authority's Bakersfield to San Francisco initial operating segment.

Please explain in your Final 2016 Business Plan why your current ridership forecast is credible when it is so clearly at odds with the earlier forecast, the only forecast ever dubbed "investment grade".

Issue 2: Growth of Ridership On Phase 1 Blended

Comment:

Please explain in your Final 2016 Business Plan why you expect ridership growth on Phase 1 Blended connecting the Los Angeles Basin to the San Francisco Bay Area to increase at a rate of 1.1% per year in the years 2035-2060 (i.e. well after the initial ramp-up period), a rate more than twice the rate at which California's population is expected to grow during the same period.

Discussion:

Your Draft 2016 Business Plan shows ridership increasing at a rate of 1.1%/year[4] during the period 2035 to 2060. However, the California State Department of Finance's Demographic Research Unit (DRU), currently forecasts a declining rate of population growth from .75%/year to .33%/year during this same period or an average annual rate of population growth of .49%[5]. Moreover, the DRU is designated as the single official source of demographic data for state planning and budgeting[6]. Therefore, you must be using DRU's projections.

Please explain why your ridership numbers are expected to increase at more than twice the rate of population growth.

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California High Speed Rail Authority
Attn: Draft 2012 Business Plan
770 L St, Suite 620 MS-1
Sacramento, CA
95814

2016 Business Plan RECORD DETAIL

Submission Date :	3/28/2016
Submission Method :	Letter
First Name :	Mark
Last Name :	Powell
Stakeholder Comments/Issues :	Paper submitted entitled, "Pushing Back on the California High-Speed Rail Authority's Myths About High-Speed Rail - Paper 3: The Green Train."
Notes :	
Attachments :	Powell_Paper 3_The Green Train.pdf (707 kb)

Mark R. Powell
27840 Mount Triumph Way
Yorba Linda, CA 92887

March 28, 2016

California High-Speed Rail Authority
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To Whom it May Concern:

Attached for the Authority's consideration is a Word document submitted as a comment on their Draft 2016 Business Plan . It is entitled *Pushing Back on the California High-Speed Rail Authority's Myths About High-Speed Rail: Paper 3- The Green Train.* It has been sent "Return Receipt" so that I will have proof of date of delivery and the name of the person to whom it was delivered.

This same document was also submitted by e-mail to the Authority at:
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It was sent via email as a Word document because it is heavily footnoted with links to my sources making it easy for anyone to check my facts.

Sincerely,

Mark R. Powell

enclosures: 1 Comment on the Authority's Draft 2016 Business Plan: *Pushing Back on the California High-Speed Rail Authority's Myths About High-Speed Rail: Paper 3 - The Green Train*

Pushing Back on the California High-Speed Rail Authority's Myths About High-Speed Rail

Paper 3

The Green Train

by Mark R. Powell
December 8, 2015

Paper 3

The Green Train

Abstract

This paper focuses on claims made by the Rail Authority in its June 2013 report, *Contribution of the High-Speed Rail Program to Reducing California's Greenhouse Gas Emission Levels*. One claim is that there will be "zero net greenhouse gas emissions during construction" and the second is a "commitment to 100% renewable energy during operations".

This paper begins with the assertion that a new Supplemental HST Program EIR/EIS is called for at this time to address in an open and transparent way the claims being made about the train's "greenness".

In examining the first claim this paper seeks to roughly estimate total emissions (direct plus indirect) from the construction of the statewide high-speed rail system and concludes that the Authority's tree planting scheme to mitigate construction emissions would require more than 5 million trees, living in perpetuity, or roughly $1/6^{th}$ of all the trees in Oregon's private and public forests. However, without its own future operating profits capitalized in advance of construction activities, the paper concludes that the Rail Authority lacks any means to fund the GHG emission credit schemes mentioned in its report, however inadequate they may be.

The second part of this paper discusses the likely possibility that the Authority's train will not initially run on 100% renewable energy, but will in fact run on power generated entirely from fossil fuels, including coal. The paper then lays out steps the Authority would need to undertake, namely funding the construction of nearly 500 MW of new solar generating capacity at a cost of $2.2 billion, during the construction period and out to the year 2030 to make its claim a reality and concludes that a 30 cent/kWh "green power" electrical surcharge, as opposed to the Authority's 3 cent/kWh offer, might result in the train running on green power.

Pushing Back on the Authority's Myths About High-Speed Rail

California High-Speed Rail Authority Myth #3

This is a Green Train

According to the California High-Speed Rail Authority there will be "zero net greenhouse gas (GHG) emissions during construction" and the Authority is making a "commitment to (use) 100% renewable energy during operations"[1].

Introduction

The millions of tons of CO2e (carbon dioxide equivalent) in GHG emissions that will result from its construction and the actual use of coal and other fossil fuels to power the trains' operation are currently being hidden from the public. The Authority's 2005 *Final Program EIR/EIS for the Proposed California High-Speed Train System* predated California's Global Warming Initiative (AB 32). As a result, this important aspect of the high-speed rail program was never studied in a thorough and transparent way. This has opened the door for the Authority to make wild claims about its project's "greenness" that to date have largely gone unchallenged by the legislature, the public, and the media. It is just one more reason why all work should be halted on this project until a new statewide supplemental EIR/EIS is conducted and the truth about the greenness of this project, or lack-there-of , can be brought to light.

Part I – Net Construction Emissions:

Construction Emissions

The Authority has provided only limited information regarding construction emissions. Its June 2013 report, *Contribution of the High-Speed Rail Program to Reducing California's Greenhouse Gas Emission Levels* (2013 Emissions Report), itemizes 30,107 metric tons $CO2e^2$ of direct emissions "from off-road equipment used to build the infrastructure, GHG emissions from on-road vehicles transporting workers or material, and used load factors to account for the actual performance of equipment in the field"[3] for the first 29 mile construction segment (Construction Package 1). However, this figure does not include indirect GHG emissions associated with the manufacture and transport to the construction site of construction materials, primarily concrete, steel, and ballast, because the precise quantities, sources, and suppliers are not known[4]. This is at best a flimsy excuse for failing to report indirect GHG emissions.

The final deadline for contractors to submit proposals for Construction Package 1 was January 18, 2013. On April 17, 2013 Tutor-Perini announced:

> "Its joint venture's bid, valued at approximately $985 million, was recently identified by the California High-Speed Rail Authority (Authority) as the 'apparent best value' for the design and construction of the initial Madera to Fresno segment of the California high-speed rail system. The Authority's Board of Directors is expected to approve the design-build contract for this project in the coming weeks."[5]

It is not credible that a world class engineering firm would submit a $985 million bid without first estimating the tons of concrete, steel, and ballast that would be required to construct the

project. Furthermore, in preparing their in-house cost estimate of the project, Tutor-Perini would have had to assume sources and suppliers of the construction materials so as to estimate their delivered cost. In choosing to not disclose this emission source, one that must have been known to Tutor-Perini ten weeks before the Authority issued its 2013 Emissions Report, Tutor-Perini and the Authority are hiding from the public the main source of GHG emissions associated with construction of the first 29 miles of their project. Worse yet, Item 2665-306-6043 of the Budget Act of 2012 demanded of the Authority that it shall prepare a report before June 30, 2013 that "provides an analysis of the net impact of the high-speed rail program on the state's greenhouse gas emissions."[6] The plain language of the Budget Act requires the Authority to estimate total construction emissions from their entire project, direct and indirect emissions for both Phase 1 and 2. Yet the Authority publishes only "direct emissions" from the first 29 miles of Phase 1. The question of how much in the way of construction emissions is being hidden needs to be asked and answered.

No literature could be found giving the percentages of direct and indirect GHG emissions associated with the construction of high-speed rail systems throughout the world. However, a report prepared by the World Bank entitled *Introduction to Greenhouse Gas Emissions in Road Construction and Rehabilitation* concluded that the fabrication and transport of construction materials (i.e. indirect sources) accounted for approximately 90% of the GHG emissions associated with the construction of expressways and national roads.[7] Were this relationship to hold for construction of high-speed rail with its massive steel reinforced concrete viaducts, then total emissions of GHG associated with the first 29 mile construction section would be 301,000 metric tons CO2e or approximately 10,400 metric tons CO2e/mile. This extrapolates out to 5.2 million metric tons CO2e for the 500 mile long Phase 1 Blended system; an amount higher than what the Authority calculates as the cumulative GHG reduction due to operation of the system out to the year 2030[8]. When extrapolated out to 800 miles of construction to account for Phase 2, total construction emissions reach 8.3 million metric tons CO2e or 275 times the number provided by the Authority in their 2013 Emissions Report.

Mitigating Construction Emissions

With regard to the first 29 miles of construction, the Authority plans to mitigate construction emissions with a "multi-faceted forestry program (that) will introduce enough trees into the region where construction is taking place to honor the Authority's commitment to offset the direct GHG emissions associated with construction."[9] The Authority does not answer the question: How many trees is "enough"? However, the Authority does cite the California Air Resources Board, *Compliance Offset Protocol for Urban Forest Projects 2011*.

The cited protocol provides an example of the gross carbon sequestered by a 15.6m (51 foot) hackberry (*Celtis occidentalis*) tree; .477 metric tons of carbon[10]. Converting carbon to carbon dioxide yields 1.749 metric tons CO2e. Therefore, the gross carbon sequestration of 17,200 fifty-one foot tall hackberry trees would be "enough trees" to sequester the 30,107 metric tons CO2e of direct construction emissions calculated by the Authority for the first 29 miles of the system. However, 172,000 such trees would likely be needed to sequester total (direct plus indirect) construction emissions and 3 million such trees would be needed to sequester the

total emissions along the 500 miles of construction for Phase 1 Blended. Of course more trees would still be needed because against "gross sequestration" the protocol mandates that CO2 emissions from motor vehicles related to tree planting, care, and monitoring as well as CO2 emissions from equipment related to tree planting and care be subtracted from the amount of gross carbon sequestered. Lastly, more trees must be continually planted to account for the mortality of trees so that the Authority's forest of 3 million 51 foot tall hackberry trees could live in perpetuity. The additional 300 miles of construction associated with Phase 2 raises to total to nearly 5 million such trees living in perpetuity, an amount equal to 1/6th of all the trees in all of Oregon's privately and publicly owned forests. [11]

Certainly the planting of trees is an absurd means to mitigate total construction emissions and so the Authority has other plans to augment its tree planting program. Its Voluntary Emissions Reduction Agreement with the San Joaquin Air Pollution Control District involves the Authority providing funds for the "replacement of fossil fuel burning irrigation pumps with electric pumps, and the replacement of, or retrofit of vehicles with more efficient engines (that) have a GHG emissions benefit".[12] The number of engines to be replaced is of course not specified.

A larger question left unanswered involves the funds the Authority will use to pay for tree planting and engine replacement. Private industry must mitigate the environmental impact of a given project with the profits derived from that project. If mitigation makes the project unprofitable, then the project is not built. The Authority's mitigation efforts must be treated in the same fashion. Therefore, the only legitimate funds spent on mitigation efforts would be those derived from its anticipated operating profits, capitalized and provided upfront by private investment; a source of funds that does not exist. Worse yet, the Authority seeks to spend funds on mitigation that are derived from Cap-and-Trade fees whose sole purpose in the first place is to provide funds for the very same type of projects (i.e. GHG reduction projects) that the Authority claims it will provide. There is no reason to pass these funds through the hands of the Authority and then allow the Authority to claim it has mitigated its GHG emissions...even if it could.

Part II – The Illusion of a Train Powered by Renewable Energy Sources

The Authority claims that it will purchase power for the operation of its trains from a "renewable power mix of 20 percent solar, 40 percent wind, 35 percent geothermal, and 5 percent biogas converted to electricity."[13] It claims it can assure this supply by paying a 3 cent/Kwh premium for "green power". Again, this claim is absurd. Electric power generation accounts for 31% of all U.S. GHG emissions.[14] Assuming the same ratio hold true in California, then California could today meet its GHG reduction goals mandated by its Global Warming Act by merely asking each person and business to pay a 3 cent/KWh "green power" premium. For an average household this would only amount to about $20/month. Unfortunately, just paying more for power won't make the power any greener.

Electric power, aside from a small amount contained in batteries, cannot be stored for future use. Transmission lines don't store power. Rather, they nearly instantaneously move power

from a generator to a user. Electric power is consumed at the moment it is generated. Perhaps someday California's high-speed trains will be built and need electric power. On that day a new demand will be created instantaneously with the throwing of large circuit breakers and the starting up of high-speed train electric engines. At that exact moment the new demand must be met by a power provider. Some electric generator, idle at that moment, must come on line to meet the new demand. The generator coming on line may be a peaking power unit in California powered by natural gas or a coal burning power plant in Utah. The exact source is unknowable. But one thing is known. It will not be a wind or solar powered electric plant. Those plants are always running when wind or sunshine is available because they operate with almost no variable costs and because they are mandated to run whenever they can. Wind and solar sources will already be generating all the power they can produce when the train first requires power.

According to the Authority its trains will consume 253 million kWh during their first year of operation in 2022[15] and this will ramp up to 1,204 million kWh by 2030 when Phase 1 Blended is in service. Solar generated electrical energy is the fastest growing new source of renewable energy in California[16] and for that reason this paper will use solar generated electricity as a proxy for the Authority's "renewable sources".

The high-speed train's power requirements between 2022 and 2030 are best put in perspective by comparing the trains' usage to the generating capacity of a new utility scale solar generating plant. California Valley Solar Ranch, a single-axis photo-voltaic generating plant capable of generating 650 million kWh/year of electrical power built with a $1.2 billion dollar federal loan guarantee, was started up in San Luis Obispo County in 2013.[17] Nearly 40% of the capacity of a similar generating plant will be required by the Authority's trains in 2022 and nearly two such plants dedicated to the high-speed train system will be required by 2030 as the trains' need for power grows.

If the Authority is to make good on its claim that it will power its trains on 100% renewable electrical energy, then the Authority needs to be able to fund the construction of the necessary renewable power plants. A 3 cent/kWh premium for "green power" will not be enough. Again using the Authority's data, high-speed trains are projected to cumulatively consume 6,300 million kWh of electricity between the start of 2022 and the end of 2030. Using the example of California Valley Solar Ranch, $2.2 billion (2010$) must be raised in the form of a green premium so that the necessary solar generating capacity can be built. $2.2 billion spread out over 6,300 million kWh equates to a green premium of 30 cents/kWh after adjusting downward by 5 cents/kWh to account for solar generated power's lower variable costs compared to fossil fuel sources. This is still 10 times the 3 cent/kWh green premium offered by the Authority. Worse yet, more than 20% of this solar generating capacity costing almost a half a billion dollars must be constructed before the first trains run and the capital for this generating capacity must come from private investment in the high-speed rail system. This is of course a source of funds that does not exist.

Conclusion

The Authority's contractors have a vested interest, perhaps even more of an interest than the Authority Board Members themselves, in keeping this project alive and the accompanying cash flow that fills their corporate coffers. The high-speed train has been their gravy-train for nearly 2 decades. It is time for the Authority to ask their contractors some hard questions. What are the estimated direct and indirect CO2e construction emission that will result from one of the largest infrastructure programs undertaken in the United States? A program that according to the Authority's 2012 Revised Business Plan "includes installing potentially up to 2,200 miles of rail weighing 276,000 tons; 3.5 million square feet of buildings and facilities; 6,500 miles of electrical wires and cables; and approximately 190 grade separations. A significant portion of the project—approximately 190 miles—may be constructed on elevated structures or in tunnels."[18] And this is merely the scope of Phase 1 Blended.

Additionally, the Authority's contractors need to spell out where all the green energy to power the train will be sourced and when ,or if, it will become available. The Authority's contractors understand commodity pricing and the economics of supply and demand. They understand that the significant electrical power demand of high-speed trains will result in an immediate incremental supply of new power and they know that incremental source cannot be green.

It's time the Authority's highly paid contractors told the Authority and all Californians the unpleasant truth about their dirty train.

attachments (1)

Attachment 1 to Paper 3 The Green Train

Ridership, Revenue and O&M Costs taken from Medium Ridership Case -PB April 2012 Estimated Cost for CHSRA 2012 Business Plan

Year	2022	2023	2024	2025	2026	2027	2028	2029	2030		
Ridership (millions)	4	5.4	6.7	8.1	9.6	12.9	14.2	19.3	21.4		
Revenue (millions 2010$)	278	372	467	564	663	941	1040	1242	1380		
O&M Costs (millions 2010$)	196	247	258	334	358	480	503	568	627		
Ops. and Maint. of Equipment (See Note 1)	82	124	133	196	216	265	280	344	391		
Variable Costs/TSM (2009$)	20	20	20	20	20	20	20	20	20		
Variable Costs/TSM (2010$) (See Note 2)	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5		
TSM (Millions) (See Note 3)	4.0	6.0	6.5	9.6	10.5	12.9	13.7	16.8	19.1		
Trainset Elec. Consumption (millions of Kwh) (See Note 4)	236	357	383	564	622	763	806	990	1125	5845.3	
Station Electical Cosumption (millions of kWh) (See Note 5)	17	25	27	39	44	53	56	69	79	409.2	
Total Yearly Electrical Consumption (millions of kWh)	253	382	410	604	665	816	862	1059	1204	6254.5	
Capital Cost to Generate Needed millions of kWh in Millions of 2010$ (See Note 6)	455	688	738	1087	1198	1470	1553	1908	2169	2169	
Equivalent California Valley Solar Ranch Facilities	0.39	0.59	0.63	0.93	1.02	1.26	1.33	1.63	1.85		
Incremental Use of Electric Power (Millions of kWh)	253	129	28	194	62	151	46	197	145		
Incremental Capitalization Costs in Millions (2010$)	455	233	50	349	111	272	83	355	261	2169	
Average Green Charge Needed to Build Solar Generating Capacity ($/kWh) (See Note 7)										0.35	
Average Green Charge Needed After Adjusting for Variable Cost Differential Between Solar and Fossil Fuels										**0.30**	

Notes:

1 Authority treats Ops. and Maint. of Equipment as a variable cost at $20/Trainset Mile (TSM) in Tables 5 and 7 of April 2012 PB report *Estimating High-Speed Train Operating and Maintance Cost for the CHSRA 2012 Business Plan*

2 Adjust Variable Costs upward by 2.5% to convert from 2009$ to 2010$

3 Dividing Ops. And Maint. Of Equipment costs by total variable costs yields the driver of Ops. And Maint. Of Equipment Costs, Trainset Miles.

4 Electrical Consumption of 59 kWh/TSM found on page 7 of April 2012 PB report *Estimating High-Speed Train Operating and Maintance Cost for the CHSRA 2012 Business Plan*

5 7% allowance for station and maintenance facilities electricity consumption found on page 7 of April 2012 PB report *Estimating High-Speed Train Operating and Maintance Cost for the CHSRA 2012 Business Plan*

6. Use California Valley Solar Ranch as Proxy. Facility built with $1.2 billion federal loan guarantee awarded in 2011 adjusted downward by 2.5% to reflect 2010$. Facility expected to generate 650 million kWh per year.

7 A $.35/kWh surcharge for green energy could concievably pay for construction of the solar facilities.

8 Solar has a lower variable cost than fossil fuel of approximately $05/kWh according to a Penn State Engineering Department study. https://www.e-education.psu.edu/eme801/node/530

Endnotes

[1] *Contribution of the High-Speed Rail Program to Reducing California's Greenhouse Gas Emission Levels*, June 2013, page 6
http://www.hsr.ca.gov/docs/programs/green_practices/HSR_Reducing_CA_GHG_Emissions_2013.pdf
[2] *Contribution of the High-Speed Rail Program to Reducing California's Greenhouse Gas Emission Levels*, June 2013, page 13
[3] *Contribution of the High-Speed Rail Program to Reducing California's Greenhouse Gas Emission Levels*, June 2013, page 18
[4] *Contribution of the High-Speed Rail Program to Reducing California's Greenhouse Gas Emission Levels*, June 2013, page 14
[5] Tutor-Perini press release dated April 17, 2013
http://investors.tutorperini.com/press-releases/press-releases-details/2013/Tutor-Perini-Joint-Venture-Selected-for-985-Million-California-High-Speed-Rail-Design-Build-Contract/default.aspx
[6] SB 1029 Budget Act of 2012, SEC. 9
http://www.leginfo.ca.gov/pub/11-12/bill/sen/sb_1001-1050/sb_1029_bill_20120718_chaptered.pdf
[7] Introduction to Greenhouse Gas Emissions in Road Construction and Rehabilitation - Executive Summary, page 13
http://siteresources.worldbank.org/INTEAPASTAE/Resources/GHG-ExecSummary.pdf
[8] *Contribution of the High-Speed Rail Program to Reducing California's Greenhouse Gas Emission Levels*, June 2013, page 11
[9] *Contribution of the High-Speed Rail Program to Reducing California's Greenhouse Gas Emission Levels*, June 2013, page 13
[10] *Compliance Offset Protocol for Urban Forest Projects 2011*, Appendix B, page 35
http://www.arb.ca.gov/regact/2010/capandtrade10/copurbanforestfin.pdf
[11] Oregon Forest Facts& Figures 2015-16 published by the Oregon Forest Resources Institute, page 1
http://oregonforests.org/sites/default/files/publications/pdf/OFRI_FactsFigures_2015-16.pdf
[12] *Contribution of the High-Speed Rail Program to Reducing California's Greenhouse Gas Emission Levels*, June 2013, page 15
[13] *Contribution of the High-Speed Rail Program to Reducing California's Greenhouse Gas Emission Levels*, June 2013, page 10
[14] EPA website: Sources of Greenhouse Gas Emissions
http://www3.epa.gov/climatechange/ghgemissions/sources/electricity.html
[15] See Attachment 1 to this paper
[16] California Energy Commission's Energy Almanac website
http://energyalmanac.ca.gov/electricity/electricity_generation.html
[17] Energy.Gov Loan Programs Office, California Valley Solar Ranch
http://energy.gov/lpo/california-valley-solar-ranch
[18] Revised 2012 Business Plan, page 3-3
http://www.hsr.ca.gov/docs/about/business_plans/BPlan_2012_rpt.pdf

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Mark R Powell
27840 Alt Triumph Way
Yorba Linda, CA
92887

California High Speed Rail
Attn: Draft 2016 Business
770 L St, Suite 620 MS
Sacramento, CA
95814

2016 Business Plan RECORD DETAIL

Submission Date :	3/29/2016
Submission Method :	Letter
First Name :	Mark
Last Name :	Powell
Stakeholder Comments/Issues :	Submitted paper entitled, "A Reading of the Draft 2016 Business Plan Makes a Compelling Argument for a Supplemental Statewide HST Program Level EIR/EIS." Also submitted via Biz Plan email on 3/30/2016
Notes :	
Attachments :	Powell_A_Reading_of_The_DRAFT_Biz_Plan_Makes_for_Compelling-Argument_for_Supplemental_STatewide EIR-EIS.pdf (2 mb)

Mark R. Powell
27840 Mount Triumph Way
Yorba Linda, CA 92887

March 29, 2016

California High-Speed Rail Authority
Attn: Draft 2016 Business Plan
770 L Street, Suite 620 MS-1
Sacramento, CA 95814

To Whom it May Concern:

Attached for the Authority's consideration is a Word document submitted as a comment on their Draft 2016 Business Plan . It is entitled *A Reading of the Draft 2016 Business Plan Makes a Compelling Argument for a Supplemental Statewide HST Program Level EIR/EIS.* It has been sent "Return Receipt" so that I will have proof of date of delivery and the name of the person to whom it was delivered.

This same document was also submitted by e-mail to the Authority at:
2016businessplancomments@hsr.ca.gov
It was sent via email as a Word document because it is heavily footnoted with links to my sources making it easy for anyone to check my facts.

Sincerely,

Mark R. Powell

enclosures: 1 Comment on the Authority's Draft 2016 Business Plan: *A Reading of the Draft 2016 Business Plan Makes a Compelling Argument for a Supplemental Statewide HST Program Level EIR/EIS*

A Reading of the Draft 2016 Business Plan Makes a Compelling Argument for a Supplemental Statewide HST Program Level EIR/EIS

by Mark R. Powell
March 29, 2016

Argument for a Supplemental Statewide HST Program Level EIR/EIS

1. Environmental Statutes:

Both NEPA and CEQA Call for a Supplemental Program EIR of the Current HST Project

Both the Federal Government, through NEPA (National Environmental Protection Act), and the California State Government, through CEQA (California Environmental Quality Act), encourage the use of a tiered environmental analysis for large programs such as California's proposed statewide high-speed rail project. The Tier I level of analysis was provided by the *California High-Speed Train Final Program EIR/EIS* (Program EIR) certified in 2005. It broadly looked at the proposed project, compared it to alternatives (the No Project Alternative and the Modal Alternative) and certified that the High-Speed Train Alternative was the least damaging to the environment while still providing acceptable levels of transportation to the residents of California. Today, all the environmental damage caused by track alignments detailed in Tier II Project Level EIRs (the taking of homes and businesses, the destruction of farmland, emissions of greenhouse gasses due to construction itself, etc.) is justified by the findings in the Program EIR.

However, both CEQA and NEPA place limits on the continued use of an EIR and these limits are particularly applicable to the continued use of program level EIRs (or associated EIS in the case of NEPA). Section 21166 of CEQA discusses these limitations as does Section 1502.9 of NEPA. A February 2014 joint publication the Federal Government and the State of California entitled *NEPA and CEQA: Integrating Federal and State Environmental Reviews* concisely summarized these limitations and the need for supplemental statements.[1]

> **"Opportunities for Coordination:**
> Under both NEPA and CEQA, recirculation/supplementation is needed when any of the following occur:
> • substantial changes to the proposal itself;
> • a new alternative arises outside the range of those already analyzed; or
> • any other new information arises that would significantly change the analysis of impacts."

It is a supplemental program EIR that is clearly called for at this time, if not years ago, because of the significant changes to the project itself in timing and scope. Additionally, new information has arisen which would significantly change the analysis of impacts and the selection of alternatives to the proposed project if it were being studied today.

California's actual population is now known in years where the Program EIR could only speculate and new information has arisen regarding future population growth. All of this new data indicates a smaller population growing slower than the data available at the time the Program EIR was certified. The No Project Alternative to the high-speed rail project, deemed infeasible in the Program EIR because of population growth, has actually been implemented over the past decade by virtue of the fact that neither high-speed rail nor its modal alternative were built and Californians still travel with ease by either airplane or automobile between the Los Angeles Basin and the Bay Area.

Beginning in 2006 with passage of the Global Warming Initiative, Californians, through the legislative process, cited a need to limit GHG emissions. This concern was never dealt with in the Program EIR because it predated the new concern. Additionally, new technologies such as hybrid and electric vehicles, mandated by federal emission standards enacted after certification of the Program EIR, were not considered as alternatives to the high-speed train and yet their GHG footprint may less than that of the train. We just don't know for sure because they were never studied.

The following pages elaborate on these significant changes to the project, new alternatives that have arisen, and new information that has become available in an attempt to convince the reader that this project should be halted until a supplemental program EIR makes a convincing case that high-speed rail is currently right for California.

2. Changes Made to the Statewide High-Speed Rail Proposal

2.1 The Original Statewide Plan

The Authority started its environmental permitting efforts in 1998[2]. The formal environmental process began on April 6, 2001[3]. The final document, entitled *California High-Speed Train Final Program EIR/EIS* (Program EIR), was completed and approved at the federal[4] and state levels in November 2005.

In the years between 1998 and 2001 the Authority approved and published its 2000 Business Plan. It was this plan that deemed feasible a "700 mile-long high-speed train system capable of speeds in excess of 200 miles per hour on dedicated, fully-grade separated tracks with state-of-the-art safety, signaling and automated train control systems. The system would serve the major metropolitan centers of California in 2020."[5] Contained in the plan was a recommendation that the Governor and the Legislature take actions to "initiate a formal environmental clearance process with a state-level program environmental impact report (EIR)/federal-level Tier I environmental impact statement (EIS) on the high-speed train network described in the plan."[6]

The statewide high-speed train proposal approved in the Program EIR did closely resemble that which had been described in the 2000 Business Plan. A comparison of the two visions is shown below.

	2000 Business Plan	**HST Proposal Approved in Program EIR**
Completion Date	2020[7]	2020[8]
Cost	$25 Billion (1999$)[9]	$33-37 Billion (2003$)[10]
Travel Times[11] [12]		
SF to LA	2hr. 30min.	2hr. 25min.
Sacramento to LA	2hr. 9min.	2hr. 0min.
SF to San Diego	3hr. 29min.	3hr. 30min.

Comparison of Key Elements of 2000 Business Plan and the Program EIR

The 2000 Business Plan and Program EIR were consistent in one other important aspect. That is, both considered the proposed statewide HST system as one project that would be in full revenue service by the year 2020 at the latest. The Economic Growth and Related Impacts section of Program EIR was more specific with regard to completion of the statewide HST system.

> "For the HST Alternative, HST service along a trunk line between San Francisco and LAUS would begin on January 1, 2016, for all alignment options. Service to San Diego and Sacramento would begin on January 1, 2019, for all alignment options. For the Irvine alignment scenario, service from LAUS and Irvine would begin on January 1, 2019. For the East Bay alignment scenario, service between San Jose and Oakland would begin on January 1, 2016." [13]

A word search of the Summary section alone of the Program EIR finds more than two dozen references to the "HST System". The word "Phase" is never found as a proper noun referring to Phase 1 or Phase 2 of the HST System. To further stress the point that the Program EIR was for a statewide HST system one need only point to the numerous comparisons between the statewide HST system and the statewide No Project Alternative and statewide Modal Alterative. For instance, the Program EIR Summary section discusses the Modal Alternative as only a statewide alternative as illustrated below:

> "Overall, the highway improvements assumed under the Modal Alternative represent a total of over 2,970 additional lane miles (mi) (4,780 lane kilometers [km]). Two additional highway lanes would be required on most intercity highways, and as many as four additional lanes would be needed to meet forecasted demand in certain segments. Projected airport improvements would include over 90 new gates and five new runways statewide."[14]

The Program EIR could only present the building of high-speed rail as one statewide project because the Program EIR followed the project as outlined in the 2000 Business Plan. Nowhere in the 2000 Business Plan, not in the single cost estimate for the project[15], nor the construction schedule[16], or anywhere else, is there a discussion of building anything less than the statewide system.

2.2 The Possibility of Constructing Less than the Statewide System Becomes Apparent

Provisions of AB 3034 enacted into law with the voter approval of Proposition 1 A, *The Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century,* certainly do contemplate the possibility of building less that the statewide HST system envisioned in the 2000 Business Plan and more importantly as presented in the Program EIR. AB 3034 is replete with references to Phase 1," as adopted by the Authority in May 2007"[17], linking the San Francisco Transbay Terminal and Los Angeles Union Station and Anaheim. Moreover, the language in AB 3034 gives priority to building Phase 1 and specifically states that bonds authorized by the passage of Proposition 1A could only be used for other corridors after a finding by the Authority that such usage "would not have an adverse impact on the construction of Phase 1" [18]. AB 3034 even allows the use of bond funds on a project smaller than Phase 1, a "usable segment". This is defined as a "portion of a corridor that includes at least two stations".

Federal Grants were received by the Authority following the passage of Proposition 1A. These grants are/were tied to the construction of possibly a section smaller than a "usable segment", simply a project that upon completion possessed "operational independence"[19].

AB 3034 also contains language stating that it is the intent of the Legislature by enacting this chapter and the people of California by approving the bond measure to initiate construction of the of a high-speed train system that links the state's major population centers, including Sacramento and San Diego, consistent with the Authority's certified EIRs[20] of 2005 and 2008.

However, opening possibilities for construction of a very small project as long as it possessed "operational independence", or a slightly larger project deemed a "usable segment" of high-speed rail, or even Phase 1, are all at odds with the Program EIR as none of these options were ever studied or approved. Once these possibilities were opened up with the passage of Proposition 1A, and later by the receipt of federal grant money, a supplemental program EIR became necessary because any of these possibilities represent a significant change to the project approved in the Program EIR. The current shortage of funding to complete even the first usable segment, let alone all of Phase 1, coupled with the Authority's failure since the passage of Proposition 1A to even provide estimated costs and a completion date for the statewide system, make the possibility of an incomplete statewide system all the more likely and the need for a supplemental program EIR all the more pressing.

3. New Information Affecting Analysis of Impacts and Selection of Alternatives:

3.1 Actual Population Growth is Significantly Lower than Projected in the Project EIR

In the first pages of the Summary section of the Program EIR in subsection S.3 entitled Purpose of and Need for a High-Speed Train System in California the following passage is found:

> "The number of passengers traveling between cities in California is forecasted to increase up to 63% over the next 20 years, from 155 million passengers to as many as 253 million passengers. **The state's population is projected to increase by 31% by 2020**, with the highest growth rate expected in the Central Valley and the greatest increase in population expected in the Los Angeles metropolitan area."[21](emphasis added)

Mindful of the fact that the Authority began formally working on its Program EIR in April 2001 and in the context of the paragraph which seems to speak of a 20 year period from 2000 to 2020, it appears the Authority was using the State Department of Finance's Demographic Research Unit's (DRU) December 1998 P-1 Report (Total Population)[22] projecting a 31% increase from 34.7 million in 2000 to 45.4 million in 2020. See Attachment 1. Certainly the need for a high-speed rail project, as well as its eventual ridership and profitability, hinges on actual population growth. However, the latest population projection issued by the DRU in December 2014 now projects a population of 40.6 million in 2020, only a 16% increase over the population in 2000 or roughly one-half the population growth anticipated in the Program EIR.

Later in the Summary section of the Program EIR, in a subsection entitled Summary of Key Environmental Impacts and Benefits for System Alternatives[23], the Authority writes that the state's population under the No Project Alternative is expected to grow by 54% between 2002 and 2035. Once again this data fits well with the DRU report issued in December 1998. However, the most recent DRU report now projects only a 30% increase in the state's population over the same period resulting in a population nearly 10 million less than the train's need and ridership were based upon.

An even more striking comparison between DRU's December 1998 report and their December 2014 report is found in the 20 year period between the years 2020 and 2040, the first two decades when the Program EIR assumed the statewide high-speed train system would be in service.

Report	**Projected 2020 Population**	**Projected 2040 Population**	**% Change**
Nov.1989	39.6	-	
May 1993	49.0	63.3	+29
Dec. 1998	45.4	58.7	+29
Dec. 2014	40.6	47.2	+16

Summary of Population Projections Prepared by the DRU

Here we see that the population envisioned in the Program EIR for the year 2020 is now projected to arrive nearly two decades later. DRU's Nov. 1989 and May 1993 projections are shown in the above table to highlight two other facts.

First, population projections have been trending downward for more than two decades.

Second, the May 1993 report can now be seen as an anomaly.

However, it appears to have been viewed differently in 1993 when two months following DRU's 1993 report, Senate Concurrent Resolution 6, citing that the "population of the state and the travel demands of its citizens are expected to continue to grow at a rapid rate", was approved by the State's Assembly and Senate in July 1993 giving birth to the high-speed rail program and its first governing body, the Intercity High-Speed Rail Commission.

One final comment on DRU's current projection, it shows a declining rate of growth, particularly harsh in the years 2030 to 2060 (the last year projected) where the projected rate of growth declines from .80%/yr. to .33%/yr. as the population grows to 51.7 million. See Attachment 2. Even if the projected rate of population growth were to hold steady beginning in 2060, it would take until the end of this century before the DRU 1998 Report's projected 2040 population would be reached and it would be more than 100 years from now before the DRU 1993 Report's projected 2040 population of 63.3 million would be reached. See Attachment 1. The new data shows that a train originally envisioned in the past century as needed by early in this century may not be needed until the next century, if ever.

3.2 The Modal Alternative has Proven Unnecessary and the No Project Alternative has Proven Feasible

Focus on Freeway Lane Miles:

The Program EIR was written to meet the requirements of the federal NEPA and California's CEQA environmental regulations. Here the protection of the environment is paramount and state agencies are to regulate activities affecting the environment "so that major consideration is given to preventing environmental damage while providing a decent home and satisfying living environment for every Californian."[24] In attempting to strike a balance between protecting the environment and necessary economic development CEQA "declares that it is the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects".[25]

The Authority complied with these requirements when their Program EIR compared the environmental impacts and benefits of a statewide HST System to a No Project Alternative (no extraordinary transportation infrastructure construction efforts) and a Modal Alternative (the construction of 2970 freeway lane miles, 90 new airport gates, and 5 new runways, most of which was projected to be needed and in service by January 1, 2016[26] [27]) and judged the statewide High-Speed Train System Alternative as preferable. Projected population growth made the No Project Alternative "neither a viable nor realistic alternative"[28] and the Modal Alternative was judged to be environmentally and structurally inferior to the HST system while costing more than twice as much to build.[29]

The Authority's Modal Alternative, as it relates to highways, is illustrated on the following page by the Figure 2-D-1 taken from Appendix 2-D of the Authority's Program EIR.
Table 2-D-1 accompanied the figure and listed each segment of highway and the lanes to be added. (Attachment 3)

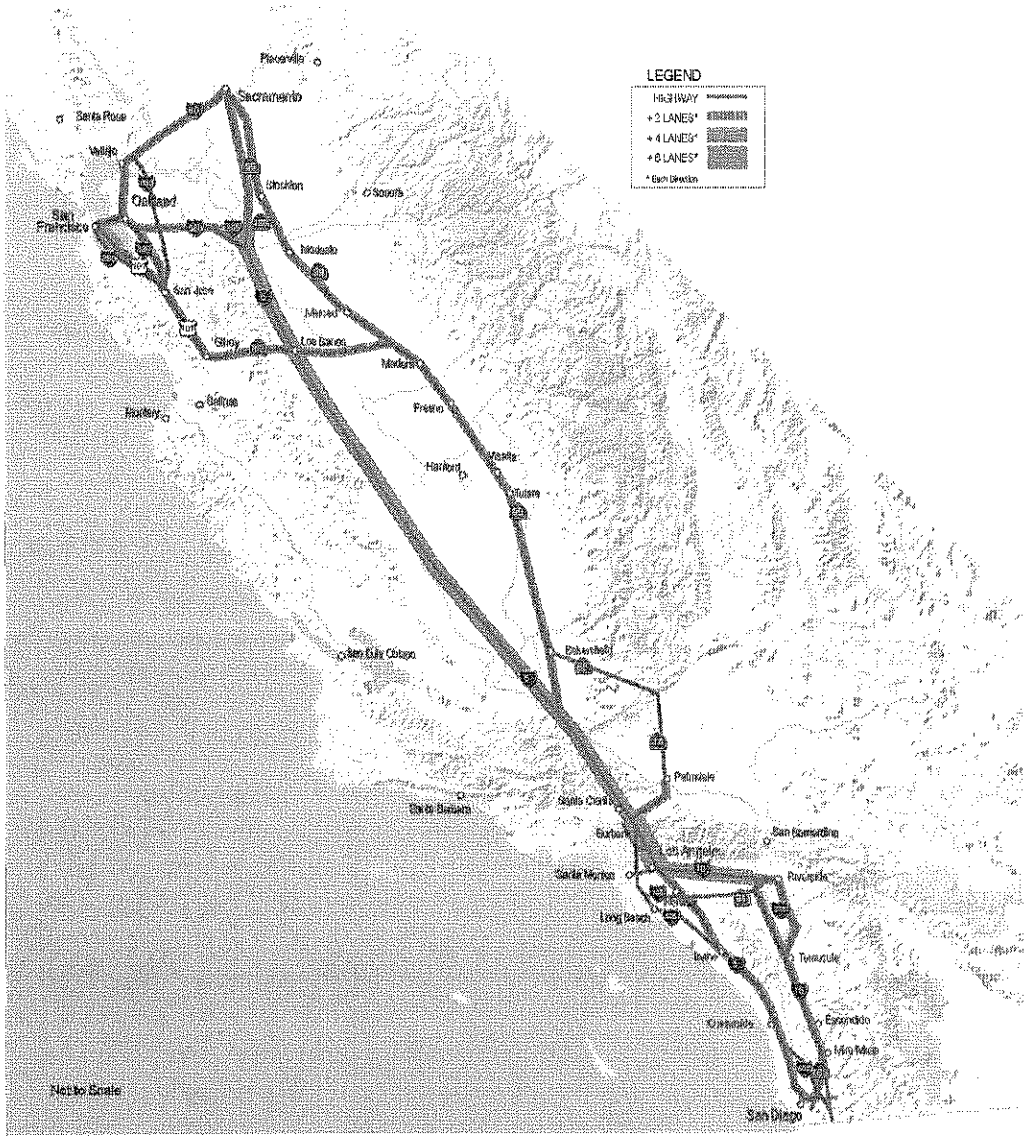

Figure 2-D-1
Highway Capacity Improvement Options—Year 2020
(2020 Intercity Travel Demand with Highway Expansion only)

The Modal Alternative was based on projected ridership on the high-speed train as opposed to the people-carrying capacity of the train. Moreover, it was an alternative to the statewide high-speed rail system proposed in the Program EIR. As a result, the highway alternative shown in Figure 2-D-1 details routes south of Los Angeles and north of Stockton that would not be impacted by the Authority's current project, Phase 1 Blended. Ignoring these lane additions still leaves 2155 highway lane miles in Figure 2-D-1. These are itemized in Attachment 3. Focusing again on I-5 north of Los Angeles, the required additional lanes listed in the Modal Alternative included 6 lanes north to SR-14 and 4 additional lanes north from this point across the Tehachapis and through the Central Valley to I-580.

The decade between the development of the Authority's Program EIR and the issuance of its 2012 Revised Business Plan brought to light two important facts.

First, Phase 1 Blended's costs would be at least twice that originally envisioned for the entire statewide system of high-speed rail.

Second, I-5 had not been widened and traffic was still flowing over the Tehachapis and up the Central Valley at less than the highway's capacity.[30]

With 2016 rapidly approaching, the No Project Alternative could be viewed as quite feasible and even the Authority's consultants would have been hard pressed to make a convincing case that the Modal Alternative as described in the Program EIR was now necessary or feasible. With the environmental and economic justification outlined in the Program EIR quickly disappearing, the Authority stopped making comparisons between high-speed rail and alternative infrastructure based on actual ridership. Instead, it began making comparisons base on the people-carrying capacity of the high-speed train system (trains with a double set of passenger cars, 70% occupied, leaving SF and LA every 5 minutes[31]), whether that capacity was needed or not. Quoting directly from the April 2012 Parsons Brinkerhoff report:[32]

> "There are two fundamental changes to assumptions that make this a different study than the one conducted for the 2005 Program EIR/EIS.
>
> - The scope of the analysis is the 520-mile Phase 1 system, unlike the original analysis, which looked at the Full 800-mile System, including both Phase 1 and Phase 2. Although the Full System remains the complete plan for the HST program, the updated cost estimates in the Business Plan are for the Phase 1 system. This analysis was designed to provide a more direct comparison with the Phase 1 system and its costs.
> - The second major change in assumptions was a switch from estimating the needed capacity based on ridership to estimating it based on equivalent "people-carrying" capacity of the HSR system whereas the 2005 analysis was prepared based on a ridership projection."

This change in assumptions allowed the Authority to make the claim that Phase 1 Blended, costing twice what the statewide system was estimated to cost in the Program EIR, would cost only half what alternative highways and airport infrastructure of the same people-carrying capacity (4300 miles of new freeway lanes[33], 5 new runways, and 115 new airport gates) would cost. Essentially every major highway between Los Angeles and San Francisco would need to be widened by 6 lanes for the equivalent people-carrying capacity of Phase 1 Full Build resulting in 4652 miles of highway lanes. See Attachment 4. This number was pared down to 4300 to equate to Phase 1 Blended's people carrying capacity. It went unstated that this was a false choice in that alternative infrastructure of the same capacity was not necessary.

Earlier attempts at studying how high-speed rail could reduce the need for transportation infrastructure had been completed both by the Authority and its predecessor, the Intercity High-Speed Rail Commission. These studies had correctly predicted that high-speed rail would have a much more modest impact on alternative transportation infrastructure needs.

The Authority's 2000 Business Plan did not identify any highway infrastructure construction costs that would be avoided due to the construction of high-speed rail. However, it found urban and rural highway benefits associated with the construction of the statewide high-speed rail system in the form of fewer automobile accidents, fewer road delays, and less air pollution.[34]

Formed in 1993, a time when the state's population was expected to increase from its current 32.7 million to 49 million by 2020 and to 63.3 million by 2040, the Authority's predecessor agency, the Intercity High-Speed Rail Commission, worked through 1996 to develop a 20 year plan for implementing a statewide high-speed rail plan and to determine if such a plan was economically feasible. The Commission's findings were detailed in their *High-Speed Rail Summary Report and Action Plan* published in December 1996 The Commission determined the route of the statewide system, later adopted by the Authority, and found the statewide system to be economically feasible at a cost of 18.2 billion (1996 dollars) because the net present value of the benefits of the system over the 50 year period from 2000 to 2050 exceeded the net present value of its costs. Of some importance today is the fact that the Commission, for the same reason, found the "trunk line" connecting only San Francisco and Los Angeles to be not feasible.[35]

However, the Commission found zero benefits associated with the avoidance of highway infrastructure costs out to the year 2034 for the statewide high speed rail system. The Commission found that even though diverted highway trips would account for between 30% and 50% of all high-speed rail travel, the Los Angeles to Bay Area System would divert only 2.3% of intercity automobile trips to rail. With extensions to Sacramento and San Diego the system would divert 5.0% of intercity automobile trips. The Commission then looked at all the highway segments impacted by drivers diverting to a statewide high-speed rail system and determined that the construction of the statewide system would result in the avoidance or postponement of highway construction by more than one year in only two cases. The future need to widen by two lanes I-5 between Los Angeles and Bakersfield would be postponed from 2034 to 2038 and the widening of I-5 between Bakersfield and Stockton could be put off indefinitely.[36] Benefits of a rail system connecting just Los Angeles and San Francisco would be even smaller. See Attachment 5. Interestingly, the Commission could only find these minimal infrastructure benefits in the timeframe of the year 2040 and the Commission was working with DRU data showing a population of 63.3 million in 2040. The current DRU projection indicates a population of only 47.3 million Californians in 2040 and a reasonable extrapolation of the current data indicates that a population of 63.3 million will not be reached until the year 2120!

The Commission did identify less tangible benefits associated with the system connecting only Los Angeles and San Francisco amounting to $226 million[37] (in 1995 dollars) in the form of fewer automobile accidents, fewer road delays, and less air pollution for highway users in the year 2020. (Attachment 6)

As it was with the Commission in 1996, the primary interest today to Californians relates to Phase 1 Blended's impact on travel along I-5 between the north end of the San Fernando Valley and the intersection of I-5 and I-580 south of Stockton. Caltrans Districts 6, 7, and 10 are involved with this route. Only Districts 6 and 10 are referenced in this paper because these two include portions of I-5 crossing the Tehachapis as well as representative portions of I-5 in the Central Valley north of the I-5/SR-99 junction where travel significantly decreases.

Caltrans uses six Level of Service (LOS) classifications ranging from A to F and Caltrans "endeavors to maintain a target LOS at the transition between C and D on State highway facilities, or whichever LOS is feasible to attain."[38] South of the I-5/SR-99 junction Caltrans currently rates the LOS along I-5 between C and D. North of the I-5/SR-99 junction and south of I-580 Caltrans rates the LOS along I-5 between B and D with most sections receiving a LOS of C. In other words, these sections of I-5 are currently operating within design capacity. Caltrans Traffic Count data along this route indicates that going back to 2004 there has been minimal change in overall traffic. Some locations show a slight increase and others a slight decrease. This is in line with Caltrans overall statewide traffic counts that indicate overall state highway traffic has been stable since the Authority certified its Program EIR, rising by only .6% in the last 10 years. See Attachment 7.

Thus the Commission's finding that high-speed rail would have little impact on infrastructure needs between Los Angeles and San Francisco by the year 2020 seems to be confirmed. In contrast, the Authority's forecast for an additional 4-6 lanes, reported in its HST Program EIR as being necessary by 2016, has been proven untrue. Finally, the Authority's more recent attempt to portray to the public that 4,300 miles of highway lanes are a reasonable alternative to Phase 1 Blended was best a cleverly-crafted misleading statement and at worst a fraud being perpetrated on Californians by the Authority.

Focus on New Airport Runways and Gates:

The avoidance of building new runways and gates are two areas where neither the Commission in its Summary Report or the Authority in its 2000 Business Plans saw any impact resulting from the proposed high-speed rail system. However, both documents saw some ancillary benefits such as reduced delay and improved air quality.

It was in the Authority's Program EIR where it was first postulated that 5 new runways and 90 new gates, most of which would be opened by January 1, 2016,[39] [40] were necessary components of the Modal Alternative if the High-Speed Train Alternative was not chosen. As was stated earlier with regard to highway lane miles, this type of comparison was necessary so that the High-Speed Train Alternative could be shown to be environmentally superior to the Modal Alternative. However, once again the Modal Alternative has not proven to be necessary and the No Project Alternative has proven quite adequate. The following table illustrates the change in enplanements at California's 10 largest airports serving the Bay Area, the Los Angeles Basin, and San Diego in the base year 2000 as well as the three most recent years for which data is available.

Airport Name	CY 2000 Enplanements	CY 12 Enplanements	CY 13 Enplanements	CY 14 Enplanements	% Change 2000-2014	Enplanement Change 2000-2014
Los Angeles International	32,167,896	31,326,268	32,425,892	34,314,197	6.7	2,146,301
SF International	19,556,795	21,284,236	21,704,626	22,770,783	16.4	3,213,988
San Diego International	7,898,360	8,686,621	8,878,772	9,333,152	18.2	1,434,792
Oakland International	5,196,451	4,926,683	4,770,716	5,069,257	-2.4	-127,194
Orange County	3,914,051	4,381,172	4,540,628	4,584,147	17.1	670,096
San Jose International	6,170,384	4,077,654	4,315,839	4,621,003	-25.1	-1,549,381
Sacramento International	3,979,043	4,357,899	4,255,145	4,384,616	10.2	405,573
Ontario International	3,197,795	2,142,393	1,970,538	2,037,346	-36.3	-1,160,449
Bob Hope Burbank	2,380,531	2,027,203	1,918,011	1,928,491	-19.0	-452,040
Long Beach Field	335,225	1,554,846	1,438,756	1,368,923	308.4	1,033,698
Total	84,796,531	84,764,975	86,218,923	90,411,915	6.6	5,615,384

Summary of Enplanements at California's 10 Major Airports CY 2000-2014[41]
Source: FAA Passenger Boarding (Enplanement) and All-Cargo Data for U.S. Airports

Total Enplanements are up 6.6% when comparing CY-2014 to CY-2000, but all of this increase can be attributed to one airport, Long Beach Field. Moreover, all of this increase took place due to a decision made in August 2001 when Jet Blue chose to make Long Beach Field its west coast hub, more than 4 years before the Program EIR was certified. Even with the increase of 1 million enplanements at Long Beach Field, Total Enplanements in CY-2012 and CY-2013 are almost identical to the base year. Additionally, Total Enplanements in CY-2014 at Oakland, San Jose, Ontario, and Burbank are down 3,288,000 from their totals in CY-2000. It therefore should come as no surprise to critics of the Authority and the contractors writing their environmental documents that these four airports were the same four airports mentioned in the Program EIR as NEEDING nearly $13 billion of the $16 billion cited in the Modal Alternative for airport infrastructure improvements[42].

The figures cited in this paper prove there must today be surplus capacity in existing infrastructure to accommodate over 3 million additional enplanements. To this unused capacity one still needs to consider the unused capacity of Palmdale Regional Airport, a facility shut down to commercial aviation in January of 2009 due to "difficulty developing air service in the high-desert city, where eight airlines have come and gone since 1971."[43]

Clearly the Modal Alternative with its massive and costly infrastructure additions to California's highways and airports was not necessary. And as January 1, 2016 passed into history, the date when much of this infrastructure was postulated to be in service if the Modal Alternative to high-speed rail had been chosen, it became clear that the No Project Alternative should have been the chosen alternative in the Program EIR instead of the High-Speed Train Alternative.

The Authority's Draft 2016 Business Plan, as was their 2014 Business Plan, is now silent on the issue of alternative transportation infrastructure that will be avoided if high-speed rail is built. The Draft 2016 Business Plan provides no benefit-cost analysis of their current proposals. Instead, it makes the statement that "benefit-cost analysis is not a requirement for the Business Plan" and refers the reader back to a source document for their 2014 Business Plan that performed a benefit-cost analysis[44]. The benefits in that analysis largely stemmed from alleged savings in travel time[45]. No benefit associated with avoided infrastructure costs was itemized. Thus, even the Authority itself now seems to agree that the "No Project Alternative" is a feasible alternative to its high-speed rail alternative.

3.3 Greenhouse Gas Emissions have Become a Serious Concern in California After the 2005 Program EIR was Certified

According to the California High-Speed Rail Authority there will be "zero net greenhouse gas (GHG) emissions during construction" and the Authority is making a "commitment to (use) 100% renewable energy during operations"[46]. These claims, originally made in their June 2013 report entitled *Contribution of the High-Speed Rail Program to Reducing California's Greenhouse Gas Emission Levels* (2013 Emissions Report), continue to be made in the Draft 2016 Business Plan[47].

Even the Authority's Peer Review Group has taken issue with the claim that the Authority's trains will run on 100% mix of renewable energy. In their August 14, 2013 letter, attached to the 2014 Business Plan, the Peer Review Group addresses the Authority's claim.

> "The current project does not include an allowance for the investment needed to construct and operate the necessary additions to generating and transmission capacity and there is no clear way that the Authority can ensure that the planned mix actually happens."[48]

In fact, the millions of tons of CO2e (carbon dioxide equivalent) in GHG emissions that will result from its construction and the actual use of coal and other fossil fuels to power the trains' operation are currently being hidden from the public. The Authority's Program EIR predated California's Global Warming Initiative (AB 32). As a result, this important aspect of the high-speed rail program was never studied in a thorough and transparent way. This has opened the door for the Authority to make wild claims about its project's "greenness" , such as the one quoted above, that to date have largely gone unchallenged by the legislature, the public, and the media. It is just one more reason why all work should be halted on this project until a new supplemental program EIR is conducted and the truth about the greenness of this project, or its lack-there-of , can be brought to light.

Focus on Construction GHG Emissions:

The Authority has provided only limited information regarding construction emissions. Its June 2013 report, *Contribution of the High-Speed Rail Program to Reducing California's Greenhouse Gas Emission Levels* (2013 Emissions Report), itemizes 30,107 metric tons $CO2e$[49] of direct emissions "from off-road equipment used to build the infrastructure, GHG emissions from on-road vehicles transporting workers or material, and used load factors to account for the actual performance of equipment in the field"[50] for the first 29 mile construction segment (Construction Package 1). However, this figure does not include indirect GHG emissions associated with the manufacture and transport to the construction site of construction materials, primarily concrete, steel, and ballast because the Authority said the precise quantities, sources, and suppliers were not known[51]. This is at best a flimsy excuse for failing to include indirect GHG emissions. While the Authority's reasoning may have been true when the 2013 Emissions Report was issued, recent testimony by the Authority's CEO clearly indicates that it is no longer true.

Speaking before the Assembly Budget Committee responsible for High-Speed Rail Oversight on January 27, 2016 the Authority CEO, Jeff Morales, spoke at length on how cost estimates are arrived at. The budget process he described includes the assemblage of 200,000 individual line items. These include line items for concrete, steel, dirt, electrical, etc. and each line item includes a unit cost which is multiplied by the units required to build the system.[52] Concrete and steel rails were specifically cited by Mr. Morales.

The Authority is proposing to build one of the largest infrastructure projects ever built in the world. Much of the project will be built on raised concrete viaducts and every mile will require tons of steel rebar embedded into the concrete and steel rails resting on the concrete. According to the EPA, roughly one ton of carbon dioxide is emitted into the atmosphere for every ton of concrete produced making concrete production responsible for nearly 2% of all the carbon dioxide emissions in the United States.[53] This figure does not take into account the carbon dioxide emissions from vehicles transporting concrete between the production facility and the construction site. And yet, without ever quantifying total GHG emissions associated with construction, the Authority makes the bold claim that there will be "zero net greenhouse gas (GHG) emissions during construction".

With regard to the first 29 miles of construction, the Authority plans to mitigate construction emissions with a "multi-faceted forestry program (that) will introduce enough trees into the region where construction is taking place to honor the Authority's commitment to offset the direct GHG emissions associated with construction."[54] The Authority does not answer the question: How many trees is "enough"? However, in a recent interview televised on KCRA News in Sacramento CEO Morales did provide the exact number of trees planted since construction activities began one year ago…ZERO.[55]

The Authority does promise other means to mitigate construction emissions. Its Voluntary Emissions Reduction Agreement with the San Joaquin Air Pollution Control District involves the Authority providing funds for the "replacement of fossil fuel burning irrigation pumps with electric pumps, and the replacement of, or retrofit of vehicles with more efficient engines (that) have a GHG emissions benefit".[56] The number of engines to be replaced is of course not specified. The Draft 2016 Business Plan does however make the embarrassing claim that is has

mitigated 26 tons of pollution through the replacement of 35 engines[57]. This amount is less than 1/10th of 1 percent of the 30,107 metric tons of CO2 in simply the direct emissions due to the construction of the first 29 miles of the system. In other words, the Authority's Draft 2016 Business Plan touts emissions mitigation that is not even up to the level of a rounding error. It amounts to nothing.

A larger question left unanswered involves the funds the Authority will use to pay for tree planting and engine replacement. Private industry must mitigate the environmental impact of a given project with the profits derived from that project. If mitigation makes the project unprofitable, then the project is not built. The Authority's mitigation efforts must be treated in the same fashion. Therefore, the only legitimate funds spent on mitigation efforts would be those derived from its anticipated operating profits, capitalized and provided upfront by private investment, a source of funds that does not exist. Worse yet, the Authority seeks to spend funds on mitigation that are derived from Cap-and-Trade fees whose sole purpose in the first place is to provide funds for the very same type of projects (i.e. GHG reduction projects) that the Authority claims it will provide. There is no reason to pass these funds through the hands of the Authority and then allow the Authority to claim it has mitigated its GHG emissions…even if it could.

Focus on Operations GHG Emissions:

This is also an area never studied thoroughly and transparently in the Program EIR making it possible for the Authority to make wild claims about their proposed train's operation. The Authority claims that it will purchase power for the operation of its trains from a "renewable power mix of 20 percent solar, 40 percent wind, 35 percent geothermal, and 5 percent biogas converted to electricity."[58] It claims it can assure this supply by paying a 3 cent/kWh premium for "green power". This claim is absurd. Electric power generation accounts for 31% of all U.S. GHG emissions.[59] Assuming the same ratio hold true in California, then California could today meet its GHG reduction goals mandated by its Global Warming Act by merely asking each person and business to pay a 3 cent/kWh "green power" premium. For an average household this would only amount to about $20/month. Unfortunately, just paying a little more for power won't make the power any greener.

Electric power, aside from a small amount contained in batteries, cannot be stored for future use. Electric power is consumed at the moment it is generated. Perhaps someday California's high-speed trains will be built and will need electric power. On that day a new demand will be created instantaneously with the throwing of large circuit breakers and the starting up of high-speed train electric engines. At that exact moment the new demand must be met by a power provider. Some electric generator, idle at that moment, must come on line to meet the new demand. The generator coming on line may be a peaking power unit in California powered by natural gas or a coal burning power plant in the Southwest. The exact source is unknowable. But one thing is known. It will not be a wind or solar powered electric plant. Those plants are always running when wind or sunshine is available because they operate with almost no variable costs and because they are mandated to run whenever they can. Wind and solar sources will already be generating all the power they can produce when the first train requires power.

According to the Authority its trains will consume 253 million kWh during their first year of operation in 2022 and this will ramp up to 1,204 million kWh by 2030 when Phase 1 Blended is in service. See Attachment 8. Solar generated electrical energy is the fastest growing new source of renewable energy in California[60] and for that reason this paper will use solar generated electricity as a proxy for the Authority's "renewable sources".

The high-speed train's power requirements between 2022 and 2030 are best put in perspective by comparing the trains' usage to the generating capacity of a new utility scale solar generating plant. California Valley Solar Ranch, a single-axis photo-voltaic generating plant capable of generating 650 million kWh/year of electrical power built with a $1.2 billion dollar federal loan guarantee, was started up in San Luis Obispo County in 2013.[61] Nearly 40% of the capacity of a similar generating plant will be required by the Authority's trains in 2022 and nearly two such plants dedicated to the high-speed train system will be required by 2030 as the trains' need for power grows.

If the Authority is to make good on its claim that it will power its trains with 100% renewable electrical energy, then the Authority needs to be able to fund the construction of the necessary renewable power plants. A 3 cent/kWh premium for "green power" will not be enough. Again using the Authority's data, high-speed trains are projected to cumulatively consume 6,300 million kWh of electricity between the start of 2022 and the end of 2030. Using the example of California Valley Solar Ranch, $2.2 billion (2010$) must be raised in the form of a green premium so that the necessary solar generating capacity can be built. $2.2 billion spread out over 6,300 million kWh equates to a green premium of 30 cents/kWh after adjusting downward by 5 cents/kWh to account for solar generated power's lower variable costs compared to fossil fuel sources. This is still 10 times the 3 cent/kWh green premium offered by the Authority. Worse yet, more than 20% of this solar generating capacity costing almost a half a billion dollars must be constructed before the first trains run, and the capital for this generating capacity must come from private investment in the high-speed rail system. This is of course a source of funds that does not exist.

The Authority and its contractors would probably disagree with the analysis of their train's "greenness" as presented in this paper. They could not disagree with the assessment that its construction "includes installing potentially up to 2,200 miles of rail weighing 276,000 tons; 3.5 million square feet of buildings and facilities; 6,500 miles of electrical wires and cables; and approximately 190 grade separations. A significant portion of the project—approximately 190 miles—may be constructed on elevated structures or in tunnels.(Authority 2012 Business Plan)"[62] And this is merely the scope of Phase 1 Blended. Nor could they disagree with the statement that GHG emissions from construction and operation of the train were not thoroughly and transparently addressed in the Program EIR. This issue alone probably warranted a supplemental Program EIR at the moment AB 32, California's Global Warming Initiative, was enacted. The fact that this issue was not studied in 2006 makes it long overdue for a study in 2016.

3.4 CAFE Standards Will Soon be Twice the Efficiency of Those Analyzed in the Program EIR

High-Speed Train ridership assumptions detailed in the 2012 Business Plan showed 75%[63] of the train's ridership coming from passengers switching from automobile ridership and the Program EIR showed energy savings of the HST Alternative equivalent to between 2.0 and 5.2 million barrels of oil annually when compared to the No Project Alternative.[64]

GHG Emissons from Trains and Cars							
				CO2 Emissions per Passenger Mile (Nat. Gas Elec.)			
Today's Cars		MPG	Mi/Kwh	1 Passenger	1.4 Passenger	2.4 Passenger	4 Passenger
Electric							
2016 Ford Focus All Electric			3.13	0.387	0.276	0.161	0.097
2016 Tesla S (70 kwh battery)			2.63	0.460	0.329	0.192	0.115
Hybrid							
2016 Prius Hybrid		50		0.393	0.281	0.164	0.098
2016 Lexus 300H Hybrid		40		0.491	0.351	0.205	0.123
2025 Passenger Vehicle							
Car Meeting New CAFE Standards		56		0.351	0.251	0.146	0.088
				25% Capacity	40% Capacity	63% Capacity	75% Capacity
High-Speed Train				0.678	0.424	0.269	0.226

Comparison of CO2 Emissions per Passenger Mile
Electric and Hybrid Automobiles vs High-Speed Train
MPG and Mi./Kwh Data from EPA Website

The calculations involved in developing the above table are explained fully in Attachment 9, but it is worth noting here that all electricity used by both electric automobiles and the electric train are assumed to be generated by natural gas fired electric power plants. The column for 1.4 passengers corresponds with assumptions in the Authority's 2012 Business Plan[65]. The column for 2.4 Passengers and a train at 63% capacity corresponds with Authority assumptions regarding intercity travel in their Program EIR[66] [67].

The table above indicates that even with a load factor of 75% of its capacity (338 passengers on a trainset with a maximum capacity of 450[68]), the high-speed train has more CO2 emissions/passenger mile than all the modern automobiles shown carrying 2.4 or more passengers. The train operating with load factor of 63% is a bigger CO2 polluter than an automobile meeting the 2025 CAFE Standards carrying 1.4 passengers. Operating at a load factor of 40% causes he train to become a bigger polluter per passenger mile than some 1 passenger vehicles on the road today as well as all the average of all cars and light trucks meeting the new CAFE Standard in 2025, four years before Phase 1 Blended will be in service. The plain truth of the matter is that the train, as studied in the Program EIR, was only marginally less polluting than the 2.4 passenger car meeting the then current CAFE Standards.[69] Newer cars and the cars that must meet the new CAFE Standards adopted in 2012 and to be fully in effect by 2025, effectively doubling the standard, will be much less polluting than the train using load factors contained in the Program EIR.

One final comment, the Program EIR saw most HST passengers switching from airline travel and the Authority now sees most passengers switching from automobile travel…at least according to the Draft 2016 Business Plan where riders of the train on the "Valley-to-Valley"

segment will be traveling between regions where there is essentially no local air travel at present. This is just one more reason why a supplemental program EIR is required and why all work should be halted on this project until that study is completed and Californians can decide if the high-speed train is right for California.

4. Conclusion

The 2005 Program EIR studied ONLY a statewide high-speed rail system connecting the Bay Area to the Los Angeles Basin with extensions to Sacramento and San Diego and, based on assumptions made while writing the 2005 Program EIR, found the statewide high-speed rail system preferable to the Modal Alternative and the No Project Alternative. However, all of the Authority's business plans written over the past decade, including the Draft 2016 Business Plan, are completely silent on how the approved statewide system would be financed, how much it would cost, and when it might be completed. Lacking even committed funds to build from Bakersfield to San Francisco, the Authority must know, but refuses to admit, that it lacks the funds and the will to ever build the approved statewide high-speed train system.

Moreover, every key assumption made in justifying the statewide high-speed train system over the No Project and Modal Alternatives has proven to be false…and false in a way that destroys the rational for justifying the statewide high-speed train project in the first place. Projected population growth has not materialized and future growth rates are expected to decline further. The Modal Alternative was not built and the No Project Alternative has proven satisfactory in meeting the needs of California's intercity travelers. New technology may make the train dirtier in terms of greenhouse gas emissions than the new cars of the 2020's and greenhouse gas emission due to construction of the system, never studied in the 2005 Program EIR, may never be mitigated.

A supplemental program level EIR is long overdue that looks at what high-speed train system might credibly be built, compares that system to today's transportation alternatives, weighs the benefits and impacts of each and in an open and transparent fashion concludes what is right for Californians in the coming decade. Any doubters as to whether a supplemental program level EIR is long overdue need only read the Summary section of the 2005 Program EIR and then read the Draft 2016 Business Plan. The contrasts are indeed stark.

Attachment 1

Forecast and realized population: California, 1990--2060

Publication date:	SEP 83	DEC 86	NOV 89	APR 91	MAY 93	APR 97	DEC 98	JUN 01	MAY 04	JUL 07	MAY 12	JAN 13	DEC 14**
Most recent Census:	1980	1980	1980	1990	1990	1990	1990	2000	2000	2000	2010	2010	2010
1980	23,771	23,775											
1985	25,998	26,365											
1990	27,990	28,771		29,976	29,976		29,942						
1995	29,820	30,956		33,373									
2000	31,414	32,853		36,259	36,444	34,704	34,653	34,480	34,043	34,105	34,001		
2002							35,714			35,246			35,246
2005	32,838			38,980				37,474	36,854	36,957			
2010	34,248				42,408	40,939	39,958	40,262	39,247	39,136	37,313	37,309	37,342
2015	35,615							42,711	41,571	41,573	38,926	38,801	38,897
2020	36,861	39,619	39,619		48,977	47,507	45,449	45,822	43,852	44,136	40,818	40,644	40,619
2025			41,720						46,041	46,720	42,722	42,452	42,373
2030			43,218		56,100		51,869		48,111	49,241	44,575	44,279	44,086
2035			44,543				55,300		49,875	51,747	46,330	46,083	45,748
2040					63,343		58,731		51,539	54,266	47,984	47,690	47,233
2045									53,161	56,846	49,514	49,109	48,574
2050									54,778	59,508	51,014	50,365	49,779
2055												51,552	50,818
2060												52,694	51,664
2065													52,524
2070													53,398
2075													54,288
2080													55,191
2085													56,110
2090													57,045
2095													57,994
2100													58,960
2105													59,942
2110													60,940
2115													61,954
2120													62,986

Notes:

* Census result is April 1 population forecasted (by DRU) to July 1 of the same year.
* Population counts are 1000s
* Data not checked for typos or definitiveness; additional data may exist.

Inferences and Interpolations Shown in Purple

Extrapolations shown in Red

** Link to Dec 2014 DRU Report

http://www.dof.ca.gov/research/demographic/projections/documents/P-1_Total_CAProj_2010-2060_5-Year.xls

Attachment 2

5 Year Period	Annual Growth Rate
2010-2015	.82
2015-2020	.87
2020-2025	.85
2025-2030	.80
2030-2035	.75
2035-2040	.64
2040-2045	.56
2045-2050	.49
2050-2055	.41
2055-2060	.33

Annual Growth Rates Calculated from
California Department of Finance December 2014 Report P-1 State and County Total Population Projections for the period 2010-2060 (5-year increments)[70]

Attachment 3

Table 2-D-1 Highway Capacity Improvement Options—Year 2020
(2020 Intercity Travel Demand with Highway Expansion only—Both Directions)

Bay Area to Merced		**Lanes***	**Miles****	**Lane-Miles****
US-101	San Francisco to San Francisco Airport (SFO)	2	11.3	22.6
US-101	SFO to Redwood City	2	13.8	27.6
US-101	Redwood City to I-880	2	19.7	39.4
I-880	US-101 to San Jose	2	.9	1.8
US-101	San Jose to Gilroy	2	31.2	62.4
US-101	Gilroy to SR-152	2	1.4	2.8
SR-152	US-101 to I-5	2	40.8	81.6
SR-152	I-5 to SR-99	2	42.8	85.6
I-80	San Francisco to I-880	2	9.2	18.4
I-80	I-880 to I-5 (Sacramento)	2		
I-880	I-80 to I-238	2	13.8	27.6
I-580	I-880 to I-5 (via I-238)	2	52.7	105.4
I-880	I-238 to Fremont/Newark	2	14.5	29.0
I-880	Fremont/Newark to US-101	2	12.4	24.8
Sacramento to Bakersfield				
I-5	I-80 to Stockton	2		
I-5	Stockton to I-580/SR-120	2		
I-5	I-580/SR-120 to SR-152	4		
I-5	SR-152 to SR-99	4	186	744
SR-99	I-5 to SR-58	2		
SR-99	Sacramento to SR-120	2		
SR-99	SR-120 to Modesto	2		
SR-99	Modesto to Merced	2		
SR-99	Merced to SR-152	2	21.5	43.0
SR-99	SR-152 to Fresno	2	33.4	66.8
SR-99	Fresno to Tulare/Visalia	2	46.4	92.8
SR-99	Tulare/Visalia to SR-58	2	68.9	137.8
Bakersfield to Los Angeles				
I-5	SR-99 to SR-14	4	65	260
I-5	SR-14 to I-405	6	2.5	15.0
I-5	I-405 to Burbank	6	15.3	91.8
I-5	Burbank to LA Union Station	6	7.4	44.4
SR-58/SR-14	SR-99 to Palmdale	0		
SR-14	Palmdale to I-5	2	34.8	69.6
Los Angeles–Orange County–San Diego				
I-5	Los Angeles Union Station to I-10	4	.8	3.2
I-5	I-10 to Norwalk	2	20.7	41.7
I-5	Norwalk to Anaheim	2	8.1	16.2
I-5	Anaheim to Irvine	2		2155.3
I-5	Irvine to I-405	2		
I-5	I-405 to SR-78	2		
I-5	SR-78 to University Town Center	2		
I-5	University Town Center to San Diego Airport	2		
I-8	SR-163 to I-5	2		

Notes:
US-101 = U.S. Highway 101
SR = State Route
I-5 = Interstate 5
* Represents the number of through lanes, in addition to the total number of lanes in the no-project highway network that approximate an equivalent level of capacity to serve the representative demand.
** Miles are shown for segments related to only Phase 1 Blended and are the same length as those shown in Attachment 4

Attachment 4

Table 5 Summary of Highway Segments
(Source: Parsons Brinkerhoff, *Comparison of Providing the Equivalent Capacity to High-Speed Rail through Other Modes*, dated April 2012, page 17)

Highway Corridor	Segment (From–To)	Urban/Rural	Miles
Bay Area to Merced			
US-101	San Francisco to SFO	Urban	11.3
US-101	SFO to Redwood City	Urban	13.8
US-101	Redwood City to I-880	Urban	19.7
I-880	US-101 to San Jose	Urban	0.9
US-101	San Jose to Gilroy	Urban	31.2
US-101	Gilroy to SR-152	Urban	1.4
SR-152	US-101 to I-5	Rural	40.8
SR-152	I-5 to SR-99	Rural	42.8
I-80	San Francisco to I-880	Urban	9.2
I-880	I-80 to I-238	Urban	13.8
I-580	I-880 to I-5 (via I-238)	Rural	52.7
I-880	I-238 to Fremont/Newark	Urban	14.5
I-880	Fremont/Newark to US-101	Urban	12.4
Merced to Bakersfield			
I-5	SR-152 to SR-99	Rural	186
SR-99	Merced to SR-152	Rural	21.5
SR-99	SR-152 to Fresno	Urban	33.4
SR-99	Fresno to Tulare/Visalia	Urban	46.4
SR-99	Tulare/Visalia to SR-58	Urban	68.9
Bakersfield to Los Angeles			
I-5	SR-99 to SR-14	Rural	65
I-5	SR-14 to I-405	Urban	2.5
I-5	I-405 to Burbank	Urban	15.3
I-5	Burbank to Los Angeles Union Station (LAUS)	Urban	7.4
SR-14	Palmdale to I-5	Urban	34.8
Los Angeles to Anaheim			
I-5	LAUS to I-10	Urban	0.8
I-5	I-10 to Norwalk	Urban	20.7
I-5	Norwalk to Anaheim	Urban	8.1
			775.3*

*Note included in original Table 5
775.3 x 6 = 4652 to equal people-carrying capacity of Phase 1 Full Build
4652 adjusted downward to 4300 to account for Phase 1 Blended's slightly reduced capacity

Attachment 5
Source: Final Report – Economic Impact and Benefit/Cost of High Speed Rail[71]

The projected impact on highway congestion of only a trunk line system connecting Los Angeles to San Francisco (now termed Phase 1 Blended) or the Statewide System with Extensions to Sacramento and San Diego was summarized as follows:

Table I-3

	I-5 to Stockton	**SR-99** Bakersfield* to Stockton	**I-5** Bakersfield to Bakersfield*	**I-580** LA SF to I-5
No HSR	.75	1.20	.77	1.32
VHS LA to SF	.71	1.18	.74	1.30

Volume/ Capacity Ratios
Los Angeles to Bay Area HSR---Year 2020

Table I-4

	I-5 Bakersfield* to Stockton	**SR-99** Bakersfield* to Stockton	**I-5** LA to Bakersfield*	**I-580** SF to I-5	**I-5** San Diego	**I-5** Stockton to to LA	**SR-99** Stockton to Sacramento	**I-80** SF to Sacramento
No HSR	75	1.20	.77	1.32	1.18	1.14	1.39	1.39
VHS LA to SF Plus Extensions	68	1.18	.72	1.29	1.15	1.12	1.37	1.39

Volume/ Capacity Ratios
Los Angeles to Bay Area HSR + Extensions---Year 2020

* Bakersfield is interpreted as the junction of I-5 and SR-99
VHS or Very High Speed was the term used by the Commission for what is now termed High-Speed Rail

Attachment 6

Source: Intercity High-Speed Rail Commission High-Speed Rail Summary Report and Action Plan, December 1996

Table 7-2

Basic System L.A. to S.F.	**Highway Savings**
Highway User Delay	$75
Automobile Operating Costs	$81
Accidents	$61
Air Pollution	$9
	$226

Highway Cost Savings Summary (Year 2020)
(Expressed in $1995 Million

Attachment 7

Increase in Traffic Volumes on California State Highways Over the Past 10 Years

Year	% Inc. Over Previous Year	Increase as a Decimal	Traffic per 100 in Base Year 2004
2014	2.64	1.0264	100.614
2013	1.86	1.0186	98.02608
2012	0.24	1.0024	96.23609
2011	-1.1	0.9890	96.00568
2010	-0.2	0.9980	97.07349
2009	-0.6	0.9940	97.26802
2008	-3.5	0.9650	97.85515
2007	0.1	1.0010	101.4043
2006	0.3	1.0030	101.303
2005	1	1.0100	101.000
2004			100.000

Sources:

2014 Traffic Volumes on California State Highways reported by Caltrans,

5 Year Traffic Trend, page ii

http://traffic-counts.dot.ca.gov/docs/2014_aadt_volumes.pdf

2009 Traffic Volumes on California State Highways reported by Caltrans,

5 Year Traffic Trend, page ii

http://traffic-counts.dot.ca.gov/docs/2009_aadt_volumes.pdf

Note: An error was reported on the Traffic Volumes on California State Highways Years 2009, 2010, 2011, and 2012. Located in the Preface (Page ii), Traffic Trend on Year 2008 over 2007 reads +3.5%. This Note is found on the Caltrans website linking to the Year Traffic Volumes cited above. Instead, this number should be reported as -3.5%.

Attachment 8 Power Requirements of the HST

Operations and Maintenance of Equipment costs taken from Medium Ridership Case -PB April 2012 Estimated Costs for CHSRA 2012 Business Plan

Year	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Ops. and Maint. of Equipment (See Note 1)	82	124	133	196	216	265	280	344	391	
Ops. and Maint. of Equipment/TSM (2009$) (See Note 2)	20	20	20	20	20	20	20	20	20	
Ops. and Maint. of Equipment/TSM (2010$) (See Note 3)	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	
TSM (Millions) (See Note 4)	4.0	6.0	6.5	9.6	10.5	12.9	13.7	16.8	19.1	
Trainset Elec. Consumption (millions of KWh) (See Note 5)	236	357	383	564	622	763	806	990	1125	5845.3
Station Electical Cosumption (millions of kWh) (See Note 6)	17	25	27	39	44	53	56	69	79	409.2
Total Yearly Electrical Consumption (millions of kWh)	**253**	**382**	**410**	**604**	**665**	**816**	**862**	**1059**	**1204**	6254.5
Capital Cost to Generate Needed millions of kWh in Millions of 2010$ (See Note 7)	455	688	738	1087	1198	1470	1553	1908	2169	2169
Equivalent California Valley Solar Ranch Facilities	0.39	0.59	0.63	0.93	1.02	1.26	1.33	1.63	1.85	
Incremental Use of Electric Power (Millions of kWh)	253	129	28	194	62	151	46	197	145	
Incremental Capitalization Costs in Millions (2010$)	455	233	50	349	111	272	83	355	261	2169
Average Green Charge Needed to Build Solar Generating Capacity ($/kWh) (See Note 8)										0.35
Average Green Charge Needed After Adjusting for Variable Cost Differential Between Solar and Fossil Fuels										**0.30**

Notes:

1 Authority calculates Ops. and Maint. of Equipment by Multiplying Op. and Maintenance of Equipment/TSM by TSM. Values shown were found Medium Case Service Parameters found on page 12 of April 2012 PB report *Estimating High-Speed Train Operating and Maintance Cost for the CHSRA 2012 Business Plan* (Plan Costs)

2 Op. and Maint. Of Equipment/TSM (2009$) found in Table 7, page 8 of Plan Costs

3 Adjust Variable Costs upward by 2.5% to convert from 2009$ to 2010$

4 Dividing Ops. And Maint. Of Equipment costs by the associated variable cost yields the driver of Ops. And Maint. Of Equipment Costs, Trainset Miles.

5 Electrical Consumption of 59 kWh/TSM found on page 7 of Plan Costs. Multiply 59kWh/TSM by TSM

6 7% allowance for station and maintenance facilities electricity consumption found on page 7 of Plan Costs

7 Use California Valley Solar Ranch as Proxy. Facility built with $1.2 billion federal loan guarantee awarded in 2011 adjusted downward by 2.5% to reflect 2010$. Facility expected to generate 650 million kWh per year.

8 A $.35/kWh surcharge for green energy could concievably pay for construction of the solar facilities.

9 Solar has a lower variable cost than fossil fuel of approximately $05/kWh according to a Penn State Engineering Department study. https://www.e-education.psu.edu/eme801/node/530

Attachment 9 Greenhouse Gas Emissions from Cars and Trains

GHG Emissons from Trains and Cars							
				CO2 Emissions per Passenger Mile (Nat. Gas Elec.)			
Today's Cars		MPG	Mi/Kwh	1 Passenger	1.4 Passenger	2.4 Passenger	4 Passenger
Electric							
2016 Ford Focus All Electric			3.13	0.387	0.276	0.161	0.097
2016 Tesla S (70 kwh battery)			2.63	0.460	0.329	0.192	0.115
Hybrid							
2016 Prius Hybrid		50		0.393	0.281	0.164	0.098
2016 Lexus 300H Hybrid		40		0.491	0.351	0.205	0.123
2022 Hybrid							
Car Meeting New CAFE Standards		56		0.351	0.251	0.146	0.088
				25% Capacity	40% Capacity	63% Capacity	75% Capacity
High-Speed Train				0.678	0.424	0.269	0.226
Pounds of CO2/Kwh Generated							
Natural Gas Power Plant	1.21						
Distillate Oil (No. 2)	1.67						
Bituminus Coal	2.07						
50/50 DO/BC	1.87						
Pounds of CO2/Gallon of Gasoline	19.64						
Train Energy in KWh/TSM	63						
TS Capacity	450						

Sources:
US Energy Information Administration
Pounds of CO2/kWh Generated
https://www.eia.gov/tools/faqs/faq.cfm?id=74&t=11
Pounds of CO2/Gallon of Gasoline (burned)
http://www.eia.gov/tools/faqs/faq.cfm?id=307&t=11
Train Energy in Kwh/TSM (Trainset Mile)
See Attachment 8
Trainset Capacity
Estimating High-Speed Train Operating & Maintenance Cost for the 2012 Business Plan

Calculations:
Electric Car CO2 Emissions: [1.21 pounds of CO2/kWh]/Appropriate Miles/kWh Value
Hybrid Car CO2 Emissions: [19.64 pounds of CO2/Gal. of Gasoline]/Appropriate MPG

Endnotes:

[1] *NEPA and CEQA: Integrating Federal and State Environmental Reviews*, page 36
http://energy.gov/sites/prod/files/2014/03/f9/NEPA_CEQA_FinalHandbook_February2014_0.pdf
[2] *California High-Speed Train Final Program EIR/EIS*, Summary section, page S-2
http://www.hsr.ca.gov/docs/programs/eir-eis/statewide_final_EIR_vol1summary.pdf
[3] *California High-Speed Train Final Program EIR/EIS*, Summary section, page S-2
[4] *California High-Speed Train EIR/EIS Record of Decision*, U.S. Department of Transportation, Federal Railroad Administration, November 18, 2005
http://www.hsr.ca.gov/docs/programs/eir-eis/Federal%20Railroad%20Administration%20Record%20of%20Decision%20for%20Final%20Program%20EIR_EIS.pdf
[5] 2000 Business Plan, Executive Summary, page 1
http://www.hsr.ca.gov/docs/about/business_plans/BPlan_2000_FullRpt.pdf
[6] 2000 Business Plan, Executive Summary, page 3
[7] 2000 Business Plan, Executive Summary, page 1
[8] Highlights of California HST System Final Program EIR/EIS, page 4
http://www.hsr.ca.gov/docs/programs/eir-eis/statewide_EIR_EIS_brochure.pdf
[9] 2000 Business Plan, Section 6.2, Table 6.1
[10] *California High-Speed Train Final Program EIR/EIS*, Chapter 4 – Costs and Operations, Section 4.2.2, page 4-3
http://www.hsr.ca.gov/docs/programs/eir-eis/statewide_final_EIR_vol1ch4.pdf
[11] 2000 Business Plan, Route and Alignment section, Table 2.2 Express Travel Times
[12] *California High-Speed Train Final Program EIR/EIS*, Chapter 4 - Costs and Operations, Table 4.3-1 Optimal Express Trip Times
[13] *California High-Speed Train Final Program EIR/EIS*, Economic Growth and Related Impacts section, page 5-5
http://www.hsr.ca.gov/docs/programs/eir-eis/statewide_final_EIR_vol1ch5.pdf
[14] *California High-Speed Train Final Program EIR/EIS*, Summary Section, page S-4
http://www.hsr.ca.gov/docs/programs/eir-eis/statewide_final_EIR_vol1summary.pdf
[15] 2000 Business Plan, Section 2.3 Capital Costs
[16] 2000 Business Plan, Section 2.2 Implementation Process and Construction Phases, Figure 2.3 Implementation and Construction Timeline
[17] AB 3034 paragraph 2704.04(b)(2)
http://www.leginfo.ca.gov/pub/07-08/bill/asm/ab_3001-3050/ab_3034_bill_20080826_chaptered.pdf
[18] AB 3034 paragraph 2704.04(b)(3)
[19] Federal grant FR-HSR-0009-10-01-00 as amended, Attachment 3A, Background and Key Assumptions section, page 47
http://www.hsr.ca.gov/docs/about/funding_finance/funding_agreements/FRA-HSR-0009-10-01-01.pdf
[20] AB 3034 as Chaptered, Article 2, section 2704.04. (a)
[21] *California High-Speed Train Final Program EIR/EIS*, Summary section S.3 Purpose of and Need for a High-Speed Train System in California, page S-2
[22] No links were found to older DRU Reports. A summary of reports was received from the DRU and is shown in Attachment 1 along with a link to their most recent report, December 2014. Data incorporated into Attachment 1 was received via email from Ethan Sharygin of the DRU on Sept. 14, 2015 (not and official document)
[23] *California High-Speed Train Final Program EIR/EIS*, Summary section, page S-16
[24] California Environmental Quality Act as amended 2013, Section 21000(g), page 1
http://resources.ca.gov/ceqa/docs/2014_CEQA_Statutes_and_Guidelines.pdf
[25] California Environmental Quality Act as amended 2013, Section 21002, page 2
[26] *California High-Speed Train Final Program EIR/EIS*, Summary section, page S-4
http://www.hsr.ca.gov/docs/programs/eir-eis/statewide_final_EIR_vol1summary.pdf
[27] *California High-Speed Train Final Program EIR/EIS*, Economic Growth and Related Impacts section, page 5-5
http://www.hsr.ca.gov/docs/programs/eir-eis/statewide_final_EIR_vol1ch5.pdf
[28] *California High-Speed Train Final Program EIR/EIS*, Summary section, page S-8

[29] *California High-Speed Train Final Program EIR/EIS*, Summary section, page S-9
[30] Caltrans Interstate 5 Transportation Concept Reports for Districts 6 and 10 dated February 2013 and September 2012 respectively
http://www.dot.ca.gov/dist6/planning/tcrs/i5tcr/i5tcr.pdf
http://www.dot.ca.gov/dist10/divisions/Planning/advancedplanning/docs/TCR's/I-5webFinalsigned09182012.pdf
[31] 2012 Business Plan Source Document: Comparison of Providing the Equivalent Capacity to High Speed Rail through Other Modes, page 6
http://www.hsr.ca.gov/docs/about/business_plans/BPlan_2012CompareEquivalentCapacity.pdf
[32] Parsons Brinkerhoff report entitled *Comparison of Providing the Equivalent Capacity to High-Speed Rail through Other Modes*, dated April 2012, page 3
[33] Parsons Brinkerhoff report entitled *Comparison of Providing the Equivalent Capacity to High-Speed Rail through Other Modes*, dated April 2012, page 18
[34] 2000 Business Plan, Economic Benefits section, Table 4.2, page 32
[35] Intercity High-Speed Rail Commission *High-Speed Rail Summary Report and Action Plan*, December 1996, Section 7 Economic Impact of High-Speed Rail, Benefit Cost Methodology, pages 7-24 and page 7-27
http://www.hsr.ca.gov/docs/programs/eir-eis/Archives/statewide_EIR_vol2_attachD6_archive.pdf
[36] Intercity High-Speed Rail Commission *High-Speed Rail Summary Report and Action Plan*, December 1996, Section 7 Economic Impact of High-Speed Rail, Benefit Cost Methodology, page 7-5
[37] Intercity High-Speed Rail Commission *High-Speed Rail Summary Report and Action Plan*, December 1996, Section 7 Economic Impact of High-Speed Rail, Benefit Cost Methodology, page 7-4
[38] Caltrans District 6 Transportation Concept Report for I-5, February 2013
[39] *California High-Speed Train Final Program EIR/EIS*, Summary section, page S-4
[40] *California High-Speed Train Final Program EIR/EIS*, Economic Growth and Related Impacts section, page 5-5
[41] FAA Website, Passenger Boarding (Enplanement) and All-Cargo Data for U.S. Airports
http://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/
[42] *California High-Speed Train Final Program EIR/EIS*, Appendix 4-B Capital Cost: Aviation Component of Modal Alternative, page 4-B-1
http://www.hsr.ca.gov/docs/programs/eir-eis/statewide_final_EIR_vol3appendix4.pdf
[43] Los Angeles Times, January 27, 2009, *Commercial operations to close at Palmdale Regional Airport*
http://articles.latimes.com/2009/jan/27/local/me-palmdale27
[44] Draft 2016 Business Plan, section entitled Comparison of 2014 Business Plan to Draft 2016 Business Plan, pg. 99
[45] 2014 California High-Speed Rail Benefit-Cost Analysis, pages 28-30
http://www.hsr.ca.gov/docs/about/business_plans/BPlan_2014_Sec_7_CaHSR_Benefit_Cost_Analysis.pdf
[46] *Contribution of the High-Speed Rail Program to Reducing California's Greenhouse Gas Emission Levels*, June 2013, page 6
http://www.hsr.ca.gov/docs/programs/green_practices/HSR_Reducing_CA_GHG_Emissions_2013.pdf
[47] Draft 2016 Business Plan, page 32
[48] August 14, 2013 Letter from PRG Chairman Lou Thompson to Senators Steinberg and Huff, Assemblymen Perez and Assemblywoman Conway, attachment entitled Comments on Presentation, final page
http://www.hsr.ca.gov/docs/about/business_plans/BPlan_2014_Business_Plan_Final.pdf
[49] *Contribution of the High-Speed Rail Program to Reducing California's Greenhouse Gas Emission Levels*, June 2013, page 13
[50] *Contribution of the High-Speed Rail Program to Reducing California's Greenhouse Gas Emission Levels*, June 2013, page 18
[51] *Contribution of the High-Speed Rail Program to Reducing California's Greenhouse Gas Emission Levels*, June 2013, page 14
[52] Authority CEO Jeff Morales testimony before the Assembly Budget Committee responsible for High-Speed Rail Oversight on January 27, 2016, YouTube Video 25-27 minutes into the video
https://www.youtube.com/watch?v=gg-lRSn-QVg
[53] Concrete CO2 Fact Sheet February 2012© Copyright, National Ready Mix Concrete Association, page 6
http://www.nrmca.org/sustainability/CONCRETE%20CO2%20FACT%20SHEET%20FEB%202012.pdf

[54] *Contribution of the High-Speed Rail Program to Reducing California's Greenhouse Gas Emission Levels*, June 2013, page 13

[55] KCRA New Sacramento YouTube video, December 8, 2015
https://www.youtube.com/watch?v=IclcPa9z5_E

[56] *Contribution of the High-Speed Rail Program to Reducing California's Greenhouse Gas Emission Levels*, June 2013, page 15

[57] Draft 2016 Business Plan, page 27

[58] *Contribution of the High-Speed Rail Program to Reducing California's Greenhouse Gas Emission Levels*, June 2013, page 10

[59] EPA website: Sources of Greenhouse Gas Emissions
http://www3.epa.gov/climatechange/ghgemissions/sources/electricity.html

[60] California Energy Commission's Energy Almanac website
http://energyalmanac.ca.gov/electricity/electricity_generation.html

[61] Energy.Gov Loan Programs Office, California Valley Solar Ranch
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[62] Revised 2012 Business Plan, page 3-3
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[63] 2012 Business Plan Source Document, *Comparison of Providing the Equivalent Capacity to High-Speed Rail through Other Modes*, Parsons-Brinkerhoff, April 2012, page 7
http://www.hsr.ca.gov/docs/about/business_plans/BPlan_2012CompareEquivalentCapacity.pdf

[64] *California High-Speed Train Final Program EIR/EIS*, Summary section, Table of Key Environmental Findings, Energy Use, page S-13

[65] 2012 Business Plan Source Document, *Comparison of Providing the Equivalent Capacity to High-Speed Rail through Other Modes*, Parsons-Brinkerhoff, April 2012, page 15

[66] *California High-Speed Train Final Program EIR/EIS*, Energy Section 3.5, Footnote b on Table 3.5-4, page 3.5-15
http://www.hsr.ca.gov/docs/programs/eir-eis/statewide_final_EIR_vol1ch3part2.pdf

[67] *California High-Speed Train Final Program EIR/EIS*, Energy Section 3.5, Footnote d on Table 3.5-5, page 3.5-16

[68] 2012 Business Plan Source Document, *Estimating High-Speed Train Operating & Maintenance Cost for the CHSRA 2012 Business Plan*, Parsons-Brinkerhoff, April 2012, Table 9-Capacity, Load-factor, and Service Level Assumptions, page 9
http://www.hsr.ca.gov/docs/about/business_plans/BPlan_2012EIREstimateOperatMaintCost.pdf

[69] *California High-Speed Train Final Program EIR/EIS*, Energy Section 3.5, page 3.5-1

[70] California Department of Finance December 2014 Report P-1 State and County Total Population Projections for the period 2010-2060 (5-year increments)
http://www.dof.ca.gov/research/demographic/reports/projections/P-1/documents/P-1_Total_CAProj_2010-2060_5-Year.xls

[71] Final Report Economic Impact and Benefit/Cost of High Speed Rail for Californian, Submitted to the Intercity High-Speed Rail Commission, Prepared by Economics Research Associates, Sept. 1996, page 34

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rk
ud at Trumpet Way
bo Linda, CA
92587

California High Speed Rail Authority
Attn: Draft 2016 Business Plan
770 L St, Suite 620 MS-1
Sacramento CA, 95814

2016 Business Plan RECORD DETAIL

Submission Date :	3/28/2016
Submission Method :	Letter
First Name :	Mark
Last Name :	Powell
Stakeholder Comments/Issues :	Submitted paper entitled, "Pushing Back on the California High-Speed Rail Authority's Myths About High-Speed Rail: Paper 4 - The Truth About Public and Private Financing for the California HSR System."
Notes :	
Attachments :	Powell_paper_4_The Truth_About_Public_and_Private_Financing_for_HSR.pdf (628 kb)

Mark R. Powell
27840 Mount Triumph Way
Yorba Linda, CA 92887

March 28, 2016

California High-Speed Rail Authority
Attn: Draft 2016 Business Plan
770 L Street, Suite 620 MS-1
Sacramento, CA 95814

To Whom it May Concern:

Attached for the Authority's consideration is a Word document submitted as a comment on their Draft 2016 Business Plan . It is entitled *Pushing Back on the California High-Speed Rail Authority's Myths About High-Speed Rail: Paper 4- The Truth About Public and Private Financing for the California HSR System.* It has been sent "Return Receipt" so that I will have proof of date of delivery and the name of the person to whom it was delivered.

This same document was also submitted by e-mail to the Authority at:
2016businessplancomments@hsr.ca.gov
It was sent via email as a Word document because it is heavily footnoted with links to my sources making it easy for anyone to check my facts.

Sincerely,

Mark R. Powell

enclosures: 1 Comment on the Authority's Draft 2016 Business Plan: *Pushing Back on the California High-Speed Rail Authority's Myths About High-Speed Rail: Paper 4 - The Truth About Public and Private Financing for the California HSR System*

Pushing Back on the California High-Speed Rail Authority's Myths About High-Speed Rail

Paper 4

The Truth About Public and Private Financing for the California HSR System

by Mark Robert Powell
January 25, 2016

Paper 4

The Truth About Public and Private Financing for the California HSR System

Abstract

For the better part of two decades the California High-Speed Rail Authority has promised Californians that the California High-Speed Rail System would be funded substantially by the Federal Government and by private funding.

This paper traces the likelihood of federal and private funding for California's high-speed rail project going back nearly twenty years to the days of the Intercity High-Speed Rail Commission in the 1990's and forward to today's quest for funding. It details how the Commission recognized that federal and private funds would not be a significant funding source as well as the Commission's outgoing recommendations to the incoming California High-Speed Rail Authority on how best to proceed towards securing a prime funding source.

The paper then discusses how the Authority disregarded the advice of the Commission and the warnings of its own financial consultants, never secured a prime funding source, and by continuing to mislead Californians about funding prospects has brought all Californians to the brink of a high-speed rail construction quagmire.

Lastly, the paper summarizes monies spent to date, the huge unspent remaining costs, and suggests a way out of the current predicament.

Pushing Back on the Authority's Myths About High-Speed Rail

Paper 4 - The Truth About Public and Private Financing for the California HSR System

1993-1996 The Commission's Honest Appraisal of Funding Sources:
Twenty-three years ago Senate Concurrent Resolution 6 (Kopp) created the Intercity High-Speed Rail Commission. It cited the need for *"the preparation of a 20-year high-speed intercity rail plan similar to California's former freeway plan"* and *"an entity with stable and predictable funding sources to implement the plan"*.[1] SCR 6 tasked the Commission with preparing a financing plan that would include, but not be limited to, private funds, state general obligation bonds, revenue bonds backed by incremental increases in the gasoline tax, airport funds, and potential alternative public funding sources.[2]

The nine members of the Commission with backgrounds in construction, finance, banking, law, engineering, railroads, and some experience in the public sector[3] completed five technical studies and a Public Participation Program[4] in addition to a report summarizing the Commission's work; *The High-Speed Rail Summary Report and Action Plan*, released December 13, 1996. The Commission recommended a network of high-speed rail similar to the one presented to the voters nearly 12 years later; a segment linking the centers of San Francisco and Los Angeles, mostly following State Highway 99 through the Central Valley before swinging southeast to run through Palmdale and with additional segments connecting to Sacramento and San Diego. It was estimated to cost between $12.1 and $16.5 billion for the San Francisco to Los Angeles segment and between $19.8 and $24.6 billion (in 1996 dollars) for the entire statewide system.[5]

The Commission sought to establish a "base funding source" that could reliably furnish 70-85%[6] of the capital required for construction. Quoting from the Summary Report:

> "In order to qualify as a base funding source, the source must be able to substantially finance the construction of the system, secure debt against the revenue source, and provide funding irrespective of the construction status or operational readiness of the system. In addition, the source must have a stable and reliable revenue growth potential." [7]

After analyzing sales taxes, gas taxes, airport taxes, highway tolls, federal funding, and state funding, the Commission found that only a 5 cent increase in the state's gasoline tax, or a ¼% increase in the state sales tax levied statewide, or a ½% increase in the state sales tax levied only in counties served by high speed rail met the Commission's criteria to "provide a realistic means of funding the project".[8] Of these options, the Commission seemed to favor a sales tax because of their concern over Section 1(b) of Article 19 of the California Constitution limiting the purposes for which gasoline taxes may be used.[9] However, the Commission left it up to the incoming California High-Speed Rail Authority to make the final decision.

Private funding was not considered a possibility because of the project's risk, but was thought of as a way to finance extensions to Sacramento and San Diego once the San Francisco to Los Angeles portion was shown to be profitable.[10] In other words, future profits of a proven operating line could be sold to investors in return for a portion of the capital needed to construct the extensions. The Commission also noted that federal high-speed rail programs amounted to only $15 to $25 million per year under the then-current authorizations that were scheduled to end in 1997 and therefore could not be considered a significant or predictable funding source.[11]

With no private or federal support for the initial Los Angeles to San Francisco route, the Commission recognized an obvious fact; if Californians wanted a high-speed rail system, they would have to pay for it themselves. To implement the system, the Commission's first recommendation was that the Authority secure the statutory authority and the base funding source for the system. Quoting from the Commission's 1996 report: "There can be no significant progress on high-speed rail implementation nor can a private partner be selected until the voters have approved a source of base funding." [12]

1997 – 1999 The California High-Speed Rail Authority:
Beginning in 1997 and continuing through 1999 the Authority, using many of the same contractors used by Commission, repeated the Commission's work and came to largely the same conclusions. With the December 1999 deadline for release of the 2000 Business Plan approaching, the Authority was forced to select a preferred funding strategy. It did not choose wisely. Resolution HSRA 99-8 *Motions on Recommendations to the Authority to Become Part of the Business Plan* detailing a preferred funding strategy was brought up at the November 17th Board Meeting and approved unanimously (9-0).[13] The motion "recommended to the Governor and the Legislature that California not proceed to fund the project fully in 2000, either through legislative action or by placing a full-funding proposal on the November 2000 ballot for the voters to decide." Instead, it called for "incremental development and funding of the project" coupled with "an aggressive statewide effort to increase federal funding for both conventional and high-speed trains in California."

Notably missing from HSRA 99-8 was any mention of the prospect of private funding. However, this should come as no surprise as the Authority's financial consultant, Public Financial Management Inc., wrote in 1999, "as impressive as the HSR operating surpluses are (projected to be)....private equity would insist upon a minimum return of between 15% and 20%. This effectively reduces the equity that can be supported (by operating surpluses) to approximately $808 million[14]. Only parking facilities at station sites and concessionaire and vendor areas within the stations were identified as areas were private vendor financing might be appropriate[15].

A potential state sales tax to fund the project was mentioned in the 2000 Business Plan, but only the recommended strategy of incremental funding has been followed by the Authority since 2000. Stating that Californians would perhaps need to pay for "only about one-third of the total project cost"[16], although totally unsupported in the plan, fit well with subsequent legislation scheduling a vote on the issuance of $9 billion in high-speed rail bonds in November 2004.[17] The Authority's hoped-for significant private funds or grants from non-existent federal programs to create a "phased-funding plan" ignored the Authority's mandate still found in Section 185010 of the Public Utilities Code[18], which reads as follows:

> "185010(h) *In order for the state to have a comprehensive network of high-speed intercity rail systems by the year 2020, it must begin preparation of a high-speed intercity rail plan similar to California's former freeway plan and designate an entity with stable and predictable funding sources to implement the plan."*

Leery of levying more taxes on Californians, Governor Gray Davis never supported a sales tax that could have created a stable and predictable funding source to pay for high-speed rail. Instead, he would support the "car tax" to help solve the state's fiscal woes and be recalled from office in 2003.

The Authority's 2008 Business Plan:

In March of 2008, eight months prior to the issuance of the 2008 Business Plan, the Authority's financial consultant, Infrastructure Management Group, Inc., issued a *Request for Expressions of Interest for Private Participation in the Development of a High-Speed Train System in California*. The primary purpose of this RFEI "was to better understand how the private sector could assist in developing and financing all or portion(s) of the project."[19] Thirty responses were received and summarized in IMG's *Report of Responses to the RFEI* and also rolled into IMG's *Financial Plan for the CHSRA San Francisco to Anaheim Segment* which was also published in October 2008. In this financial plan IMG concluded:

Private funds would most likely come after the initial operating portions (i.e. SF to LA) were showing a profit.[20] Furthermore, private funds were in general conditioned upon a "revenue guarantee" or "availability payments"[21]

IMG's Financial Plan dealt with possible federal funding by stating that "new funding sources specifically for high-speed rail, along with an expansion of existing transit programs, will need to be created in order to provide adequate support for the HSR Project"[22]

In the face of these sobering statements made by its own financial consultant, the Authority's 2008 Business Plan was released shortly thereafter touting a financial plan for the San Francisco to Anaheim Segment (Phase 1 of the statewide system) projected to cost $33.6 billion (2008$) that showed roughly a third of the necessary funding coming from private sources, a third from non-existent federal programs, and the remaining third from the recently passed Proposition 1A bond measure.[23]

2008-2015 The Authority's Attempts at Securing Federal and Private Funding:
No new federal programs to support the high-speed rail project, other than one-time funds allocated as part of a nearly trillion dollar federal stimulus spending bill passed by Congress in 2009, were enacted. The one-time federal funds allocated to California's project, about $4 billion, did not even cover projected cost increases since 2008 as the cost of Phase 1 ballooned to $98-$118 billion before the project was trimmed back to "Phase 1 Blended" shown in the 2012 Business Plan as costing between $68 and $80 billion.[24]

Private funding also failed to materialize. Still searching for private funds in 2015 the Authority issued a second *RFEI for Delivery of an Initial Operating Segment* on September 28, 2015[25]. Thirty-six replies were received and none showed a willingness to provide private funding. It is worth noting that of the thirty-six respondents, only nine had also responded to the Authority's 2008 RFEI. Twenty-seven were new respondents and now brought to fifty-seven the total number of private firms to publicly decline to invest in California's high-speed rail project.

A Path Out of Today's High-Speed Rail Quagmire:
There is still a substantial minority of California's population that would like to see a high-speed rail system built in California. However, many of these people and the groups who represent them (ex. Californians Advocating Responsible Rail Design – CARRD) want to see high-speed rail "built right" and may have lost faith that the current effort will lead to a successful system. Moreover, a recent Hoover Institution Golden State Poll shows that "continuing the state's high-speed rail project" polls last of twenty-one issues surveyed when Californians are asked if this should be a "top priority" of the state[26].

It has been nearly eleven years since the Authority certified its 2005 *Final Program EIR/EIS for the Proposed California High-Speed Train System* (2005 Program EIR) which openly and transparently studied the need for, and the benefits and costs (monetary and environmental) of the proposed statewide system. To date, nearly $1.5 billion[27] has been expended with very little to show for it. Project Level environmental clearances for Phase 1 Blended are still years in the offing[28] and as this paper is being written the public is learning that the Authority is reversing nearly four years of planning and will now seek to build its Initial Operating Section north from Bakersfield to the Bay Area rather than south from Merced to the Los Angeles Basin.

The $1.5 billion spent to date will not have been wasted if Californians someday reconstruct this project on a more stable financial and environmental footing. But before that can happen and before more funds are spent, the new information gained about the need for, and costs of, a high-speed rail system need to be examined in a new statewide program EIR.

Much has been learned since the 2005 Program EIR was certified by the Authority. California's population failed to increase at the rate envisioned in the 2005 Program EIR. Consequently the projected need for additional freeway lanes and airport infrastructure failed to materialize. In the 2005 Program EIR it was envisioned that the "core segment" connecting Los Angeles and San Francisco would be completed by January 1, 2016 with the remainder of the system completed by January 1, 2019[29]. In the last ten years the former date has been pushed off thirteen years and the Authority does not even know by how much the latter date has been delayed. Increased construction costs coupled with the lack of federal or private funding now may result in Californians' expenditure for HSR rising to the level of our state's currently unfunded state employee pension liability, and Californian's may wish to reconsider their decision to invest in HSR. But one new need for a high-speed rail system has come to light. That need stems from today's increased awareness of the potential cost of greenhouse gas emissions from automobiles and airplanes. Unfortunately this concern has come to the forefront after 2005 and was never studied in the 2005 Program EIR nor was the proposed train system designed to minimize GHG emissions.

Surely it would take immense political courage for the Authority, or an individual board member, to call for a suspension of work coupled with a proposal for a new statewide program EIR, but in light of today's financial and environmental questions about high-speed rail this may be the best option for moving forward and the best hope for the eventual construction of a high-speed rail system in California.

[1] Senate Concurrent Resolution 6, Filed with Secretary of State July 20, 1993, Whereas Section, paragraph 9. See http://www.leginfo.ca.gov/pub/93-94/bill/sen/sb_0001-0050/scr_6_bill_930720_chaptered

[2] Senate Concurrent Resolution 6, Filed with Secretary of State July 20, 1993, Resolved Section, paragraph 13, items 1-5

[3] *High Speed Rail Summary Report and Action Plan*, Published by Intercity High-Speed Rail Commission December 13, 1996, Appendix B, Document available at Claremont Colleges, Honnold/Mudd Library, Claremont, CA.

[4] *High Speed Rail Summary Report and Action Plan*, Published by Intercity High-Speed Rail Commission December 13, 1996, Executive Summary, page 1

[5] *High Speed Rail Summary Report and Action Plan*, Published by Intercity High-Speed Rail Commission December 13, 1996, Capital Cost Summary Tables, pages 3-25 and 3-27

[6] *High Speed Rail Summary Report and Action Plan*, Published by Intercity High-Speed Rail Commission December 13, 1996, Major Secondary and Supplemental Funding Sources, pages 5-7 to 5-10, Secondary Funding Sources expected to each contribute less than 2% to the construction costs and Supplemental Funding Sources each expected to contribute less than 1% to the construction costs, the total was expected to close the funding gap left by the base or "primary funding source".

[7] *High Speed Rail Summary Report and Action Plan*, Published by Intercity High-Speed Rail Commission December 13, 1996, Overview of Funding Sources, page 5-2

[8] *High Speed Rail Summary Report and Action Plan*, Published by Intercity High-Speed Rail Commission December 13, 1996, Base Funding Options, page 5-3

[9] *High Speed Rail Summary Report and Action Plan*, Published by Intercity High-Speed Rail Commission December 13, 1996, Base Funding Options, page 5-5

[10] *High Speed Rail Summary Report and Action Plan*, Published by Intercity High-Speed Rail Commission December 13, 1996, Financing the System – Introduction, page 5-1

[11] *High Speed Rail Summary Report and Action Plan*, Published by Intercity High-Speed Rail Commission December 13, 1996, Base Funding Options, page 5-6

[12] *High Speed Rail Summary Report and Action Plan*, Published by Intercity High-Speed Rail Commission December 13, 1996, Executive Summary, page ES-16

[13] FAX from Executive Director Mehdi Morshed to Congressman Jim Costa, Resolution HSRA 99-8 *Motion on Recommendations to the Authority to Become Part of the Business Plan.* Located in California State Archives and not found on the Authority's website.

[14] Financial Plan Prepared by Public Financial Management Inc, November 2, 1999, page 4 http://www.hsr.ca.gov/docs/about/business_plans/BPlan_2000_TS_FinPlan.pdf

[15] Financial Plan Prepared by Public Financial Management Inc, November 2, 1999, page 15

[16] Cover Letter to 2000 Business Plan http://www.hsr.ca.gov/docs/about/business_plans/BPlan_2000_FullRpt.pdf

[17] Senate Bill 1856 (Costa), Safe Reliable High-Speed Passenger Train Bond Act, Division 3 of Streets and Highway Code, Chapter 20, Article 3, SEC. 4(a) See: http://www.leginfo.ca.gov/pub/01-02/bill/sen/sb_1851-1900/sb_1856_bill_20020919_chaptered.pdf

[18] California Public Utilities Code, Section 185010(h) http://codes.findlaw.com/ca/public-utilities-code/puc-sect-185010.html

[19] Report of Responses to the Request for Expressions of Interest for Private Participation in the Development of a High-Speed Train System in California, prepared by IMG, Inc., October 2008, page 1 http://www.hsr.ca.gov/docs/about/business_plans/BPlan_2008_SRC_ExpressInterest.pdf

[20] Financial Plan prepared by Infrastructure Management Group, Inc., Oct. 27, 2008, page 12 http://www.hsr.ca.gov/docs/about/business_plans/BPlan_2008_SRC_FinPlan.pdf

[21] Financial Plan prepared by Infrastructure Management Group, Inc., Oct. 27, 2008, page 11

[22] Financial Plan prepared by Infrastructure Management Group, Inc., Oct. 27, 2008, page 5 http://www.hsr.ca.gov/docs/about/business_plans/BPlan_2008_SRC_FinPlan.pdf

[23] 2008 Business Plan, page 21, Figure 26 http://www.hsr.ca.gov/docs/about/business_plans/BPlan_2008_FullRpt.pdf

[24] 2012 Revised Business Plan, page 3-11, Exhibits 3-7 and 3-8 http://www.hsr.ca.gov/docs/about/business_plans/BPlan_2012_rpt.pdf

[25] Expression of Interest in the Delivery of an Initial Operating Segment, Sept. 28, 2015 http://www.hsr.ca.gov/docs/about/doing_business/EOI/EOI_Barclays_Bank_PLC.pdf

[26] Hoover Institution Golden State Poll, conducted Nov. 30-Dec.13, pages 25-26 http://www.hoover.org/sites/default/files/hoover_gsp_january_2016_release_public_results_final_011216.pdf

[27] Authority Finance Committee Exhibit, Total Project Expenditures with Forecasts, Dec. 2015

[28] Authority Finance Committee Exhibit, Environmental Milestones Schedule, Dec. 2015

[29] *California High-Speed Train Final Program EIR/EIS*, Economic Growth and Related Impacts section, page 5-5 http://www.hsr.ca.gov/docs/programs/eir-eis/statewide_final_EIR_vol1ch5.pdf

540 Mt Triumph Way
Yuba City, CA
95987

7015 1730 0001 0260 4542

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95814

California High Speed Rail Authority
Attn: Draft 2016 Business Plan
770 L St, Suite 620 MS-1
Sacramento, CA
95814

2016 Business Plan RECORD DETAIL

Submission Date :	3/28/2016
Submission Method :	Letter
First Name :	Mark
Last Name :	Powell
Stakeholder Comments/Issues :	Paper submitted entitled, "Paper 1 - Population Growth and the Need for High-Speed Rail."
Notes :	
Attachments :	Powell_Paper_1_Population-growth_and_the_Need_for_HSR.pdf (517 kb)

Mark R. Powell
27840 Mount Triumph Way
Yorba Linda, CA 92887

March 28, 2016

California High-Speed Rail Authority
Attn: Draft 2016 Business Plan
770 L Street, Suite 620 MS-1
Sacramento, CA 95814

To Whom it May Concern:

Attached for the Authority's consideration is a Word document submitted as a comment on their Draft 2016 Business Plan . It is entitled *Pushing Back on the California High-Speed Rail Authority's Myths About High-Speed Rail: Paper 1- Population Growth and the Need for High-Speed Rail.* It has been sent "Return Receipt" so that I will have proof of date of delivery and the name of the person to whom it was delivered.

This same document was also submitted by e-mail to the Authority at:
2016businessplancomments@hsr.ca.gov
It was sent via email as a Word document because it is heavily footnoted with links to my sources making it easy for anyone to check my facts.

Sincerely,

Mark R. Powell

enclosures: 1 Comment on the Authority's Draft 2016 Business Plan: *Pushing Back on the California High-Speed Rail Authority's Myths About High-Speed Rail: Paper 1- Population Growth and the Need for High-Speed Rail*

Pushing Back on the California High-Speed Rail Authority's Myths About High-Speed Rail

Paper 1 - Population Growth and the Need for High-Speed Rail

by Mark R. Powell
October 5, 2015

Paper 1-Population Growth and the Need for High-Speed Rail

Abstract

The Authority's most recent hype touting of the need for high-speed rail, a June 2015 brochure entitled *California High-Speed Rail Big Picture,* makes indefensible claims about population growth, airport capacity constraints, thousands of miles of new freeway lanes that will be needed if high-speed rail is not built, California's geography being perfect for high-speed rail, and high-speed rail's effect on greenhouse gas emissions.

Predicting population growth correctly is critical in terms of planning for new infrastructure and so Paper 1 in this series focuses on this issue. The work of the California Department of Finance's Demographic Research Unit, solely responsible for estimating and predicting California's population, is used throughout the paper. Going back nearly 40 years the paper traces how underestimating population growth in the 1980's resulted in a vast over prediction of population growth in DRU's reports of the early 1990's. Within two months of DRU's issuance of its May 1993 Report, which predicted California's population would expand by 19 million between 1990 and 2020 and would more than double between 1990 and 2040, the State Legislature authorized a commission to begin studying high-speed rail and to develop a twenty-year plan for its implementation; work which has been carried on since 1997 by the California High-Speed Rail Authority.

Ensuing reports issued by the DRU over the last 22 years have consistently revised downward the estimated population growth of California. DRU's latest report, issued in December 2014, now predicts a population growth of only 10.7 million between 1990 and 2020 and a growth to only 47.2 million in the year 2040, more than 16 million below the 63.3 million envisioned in the May 1993 Report. This paper documents this trend and illustrates how the California High-Speed Rail Authority has been slow to accept the newer findings of the DRU while preferring to use older DRU reports to create a perceived need for high-speed rail.

Paper 1- Population Growth and the Need for High-Speed Rail

California High-Speed Rail Authority Myth #1

"Over the next 30 to 40 years, California will add the current population of New York state to its current 38 million residents. Meeting the transportation demands associated with that growth will require major infrastructure investments. The question is not if those investments need to be made, but how those investments can provide the greatest benefits. It's clear that California cannot provide an effective transportation system for 50 million to 60 million residents with a 'more of the same' approach."[1] (Source: CHSRA's *California High-Speed Rail Big Picture* brochure dated June 2015)

Background

For decades the California Department of Finance (DOF) has been charged with estimating the state's population annually, statewide and by county, to fairly allocate state funds, and with making long term population projections for state planning and budgeting (see table on next page). The Demographic Research Unit (DRU) of the DOF is designated as the single official source of this demographic data[2]. The DRU publishes long term projections every few years beginning with the last official U.S. Census. In the 1980's their projections went out as far as 40 years from the last census. The 1980's saw California's population rise sharply at more than 2%/year and DRU began seeing a trend develop where their model underestimated population in the near term while remaining unaware that it did predict population fairly accurately in the distant years.

In 1993 DRU over corrected their model causing it to over predict population even in the near term and to unknowingly vastly over predict population in the distant years. Simultaneously, DRU began for the first time to project out 50 years from the most recent census. In the more than two decades that have passed since 1993 the DRU has continually refined their model and brought downward the predicted population in the decades to come. For instance, the 1993 model's prediction of 49.0 million and 63.3 million souls residing in California in the years 2020 and 2040 has plummeted by more than 8 million in 2020 and by more than 16 million in 2040. Two months following DRU's 1993 report, Senate Concurrent Resolution 6, citing that the "population of the state and the travel demands of its citizens are expected to continue to grow at a rapid rate" was approved by the State's Assembly and Senate in July 1993 giving birth to the Intercity High-Speed Rail Commission.

Year Issued	1980	1990	2000	2010	2020	2030	2040	2050	2060
Sept 1983	23.8	28.0	31.4	34.2	36.9				
Dec 1986	23.8	28.8	32.9		39.6				
Nov 1989					39.6	43.2			
May 1993		**30.0**	**36.4**	**42.4**	**49.0**	**56.1**	**63.3**		
April 1997			34.7	40.9	47.5				
Dec 1998		29.9	34.7	40.0	45.4	51.9	58.7		
June 2001			34.5	40.3	45.8				
May 2004			34.0	39.2	43.9	48.1	51.5	54.8	
July 2007			34.1	39.1	44.1	49.2	54.3	59.5	
May 2012			34.0	37.3	40.8	44.6	48.0	51.0	
Jan 2013				37.3	40.6	44.3	47.7	50.4	52.7
Dec 2014				37.3	40.6	44.1	47.2	49.8	51.7

Projected State Population (millions)[3]
Per Reports Issued by California Department of Finance, Demographic Research Unit

High-Speed Rail Agencies Use of Population Projections

The Intercity High-Speed Rail Commission, the precursor to the California High-Speed Rail Authority, worked from 1993 through 1996 and was tasked with creating a 20 year plan for high-speed rail development and assessing whether such a plan was economically feasible. Using the most recent DRU report, the Commission's *Summary Report and Action Plan* published in December 1996 stated, "California's population is projected to grow from the current 32.7 million to 48.8 million by 2020, representing a 49 percent increase."[4] It is worth noting that even with this rapid growth in expected population of 1.68%/year the Commission found that only the statewide system of high-speed rail estimated to cost $18.2 billion (1996 dollars) was economically feasible and it could not justify what the Commission termed the "Basic System" merely connecting the Bay Area to the Los Angeles Basin[5].

The California High-Speed Rail Authority in publishing its 2000 Business Plan in December 1999 appeared to be looking at the same population growth as had the Commission when it wrote about meeting "the intercity travel needs of 45 to 50 million Californians in 2020"[6] even though two more recent reports had the 2020 population prediction trending down to only 45.4 million.

With DRU reports trending downward in terms of projected population growth, the Authority chose to use DRU's 1998 report rather than its May 2004 report in its November 2005 certified statewide *California High-Speed Train Final Program EIR/EIS*. By using older data the Authority could claim that statewide population was expected to grow by about 54% between 2002 and 2035[7] or from 35.7 million to 55.3 million while the newer DRU report predicted only 49.9 million residents in 2035.

Using DRU's most recent report the Authority's 2008 Business Plan cited California Department of Finance forecasts showing the state's population would grow by 40% to 50 million by 2030[8] in line with a DRU report issued in July 2007 predicting 49.2 million residents in 2030.

In its 2012 Business Plan the Authority would have still been accessing the DRU's 2007 report when it wrote "to put this additional demand in perspective, by 2050 California will add more people than now live in New York state."[9] In making this statement the Authority was claiming that California's population would exceed 57.7 million in 2050. This is in line with the 2007 DRU report predicting 59.5 million Californians in 2050. DRU's 2007 report, issued in the year prior to passage of Proposition 1A, can now be seen as being at odds with the previous report and with subsequent reports where the projected population in 2050 dropped to 51.0 million, 50.4 million , and 49.8 million in DRU's May 2012, January 2013, and December 2014 reports respectively. It is worth noting that state agencies can request timely reports from the DRU and this appears to be done somewhat routinely by the Department of Water Resources. It appears the Authority chose to use the old 2007 DRU report in its 2012 Business Plan because of the ongoing downward trend in DRU's predictions of population growth.

The Authority's 2014 Business Plan, which could have referenced the 2013 DRU report, was silent on the issue of population growth. Other promotional literature published by the Authority is not silent, but today still uses DRU's 2007 report when in their *California High-Speed Rail Big Picture* brochure dated June 2015 they again claim that "over the next 30 to 40 years, California will add the current population of New York state (20 million) to its current 38 million residents." [10]

The table on the following page summarizes all of these claims about population growth and notes by how many years each claim precedes the date most recently predicted by the DRU of when that population will be reached. For example, the first row of data details how the Intercity High-Speed Rail Commission in their *High-Speed Rail Summary Report and Action Plan* issued in December 1996 anticipated a state population of 48.8 million in the year 2020 whereas the Demographic Research Unit of the California Department of Finance now predicts that a population of 48.8 million will not be reached until the year 2046, twenty-six years later than anticipated by the Commission.

Agency/Document	Population(M)	Agency Assumption Year	Current DRU Prediction Year	Difference (Yrs.)
Commission/Summary Report 1996	48.8	2020	2046	26
Authority/2000 Business Plan	45-50	2020	2033-51	13-31
Authority/2005 Program EIR	55.3	2035	2081*	46*
Authority/2008 Business Plan	50	2030	2051	21
Authority/2012 Business Plan	57.7	2050	2093*	43*
Authority/2015 Big Picture Brochure	58	2045-2055	2095*	40-50*

Agency Over-Prediction of California's Population

*Beginning in the year 2020 the DRU of the California Department of Finance predicts a declining growth rate down to .33% annually in the last 5 year period predicted (2055-2060). Years marked with an asterisk are beyond the DRU's last predicted year and assume growth rate holds steady at .33% annually. If the growth rate is allowed to trend down in the years 2060-2100 as it does in the years 2020-2060 the population prediction would never be reached. California would reach a maximum population of 54 million in the year 2080. See table below.

5 Year Period	Annual Growth Rate
2010-2015	.82
2015-2020	.87
2020-2025	.85
2025-2030	.80
2030-2035	.75
2035-2040	.64
2040-2045	.56
2045-2050	.49
2050-2055	.41
2055-2060	.33

Annual Growth Rates Calculated from
California Department of Finance December 2014 Report P-1 State and County Total Population Projections for the period 2010-2060 (5-year increments)[11]

It is now a near certainty that California will only realize 8 million of the 16 million persons envisioned by the Commission in 1996 to be added to California's population by 2020. Likewise, it is now predicted that only about 10 million of the additional 20 million persons predicted in the Authority's *California High-Speed Train Final Program EIR/EIS* will actually be living in California in 2035. In other words, the population envisioned by the Commission to exist in 2020 is now not likely until 2046. Worse yet, the most current DRU report indicates that the population envisioned by the Authority in 2005 in its statewide *California High-Speed Train Final Program EIR/EIS* to exist in 2035 may never materialize. It is no wonder that the future infrastructure needs of Californians as envisioned by the Authority in their *California High-Speed Train Final Program EIR/EIS* have not materialized. This new infrastructure, exaggerated by the Authority in the first place, is now clearly not needed in California because many of the people once expected to live in California are now, or will soon be, living elsewhere. Paper 2 in this series builds on this paper and exposes the Authority's myth about new highway lane miles that would be needed in the absence of a high-speed rail alternative.

Endnotes

[1] California High-Speed Rail Authority brochure dated June 2015 entitled *California High-Speed Rail Big Picture* http://www.hsr.ca.gov/docs/newsroom/fact%20sheets/Big_Picture_FINAL_060515.pdf

[2] California Department of Finance website http://www.dof.ca.gov/research/demographic/dru/index.php

[3] California Department of Finance, Demographic Research Unit Reports

[4] Intercity High-Speed Rail Commission *High-Speed Rail Summary Report and Action Plan*, December 1996, Executive Summary, page ES-4

[5] Intercity High-Speed Rail Commission *High-Speed Rail Summary Report and Action Plan*, December 1996, Section 7 Economic Impact of High-Speed Rail, Benefit Cost Comparison, pages 7-24 and 7-27

[6] 2000 Business Plan, Cover Letter addressed to Governor Davis http://www.hsr.ca.gov/docs/about/business_plans/BPlan_2000_FullRpt.pdf

[7] *California High-Speed Train Final Program EIR/EIS*, Summary section, page S-16 http://www.hsr.ca.gov/docs/programs/eir-eis/statewide_final_EIR_vol1summary.pdf

[8] 2008 Business Plan, page 6 http://www.hsr.ca.gov/docs/about/business_plans/BPlan_2008_FullRpt.pdf

[9] Revised 2012 Business Plan, Chapter 1High-Speed Rail's Place in California's Future, page 2 http://www.hsr.ca.gov/docs/about/business_plans/BPlan_2012_rpt.pdf

[10] *California High-Speed Rail Big Picture* brochure June 2015 http://www.hsr.ca.gov/docs/newsroom/fact%20sheets/Big_Picture_FINAL_060515.pdf

[11] California Department of Finance December 2014 Report P-1 State and County Total Population Projections for the period 2010-2060 (5-year increments) http://www.dof.ca.gov/research/demographic/reports/projections/P-1/documents/P-1_Total_CAProj_2010-2060_5-Year.xls

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95814

rk K
401 Ironwood Way
ba Linda, CA
92887

Cal. Sonia High Speed Rail Auth
Attn: Draft 2016 Business Plan
770 L St, Suite 620 MS-1
Sacramento, CA
95814

2016 Business Plan RECORD DETAIL

Submission Date :	4/4/2016
Submission Method :	Website
First Name :	Simon
Last Name :	Choi
Stakeholder Comments/Issues :	Please build top-notch railroad systems that will make California look like Germany or France. Allow passengers to transport their cars at the rear end of the train. Also, build more subways and light rails that can connect major airports such as LAX, SFO, SJC, and SNA with the main high-speed lines. Build more light rails that can transport commuters from Inland Empire to LA and OC. Connect major UC Campuses with rails, so college kids won't have to buy cars to move around within California. I have a very high hope, please build decent public transportation systems throughout the state.
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	4/5/2016
Submission Method :	Website
First Name :	rob
Last Name :	greer
Stakeholder Comments/Issues :	cool cool cool cool I love this state!
Notes :	

2016 Business Plan RECORD DETAIL

Submission Date :	4/1/2016
Submission Method :	Letter
First Name :	Steve
Last Name :	Heminnger
Stakeholder Comments/Issues :	
Notes :	
Attachments :	MTA_Comment_Letter_040116.pdf (557 kb)

METROPOLITAN
TRANSPORTATION
COMMISSION

Joseph P. Bort MetroCenter
101 Eighth Street
Oakland, CA 94607-4700
TEL 510.817.5700
TTY/TDD 510.817.5769
FAX 510.817.5848
EMAIL info@mtc.ca.gov
WEB www.mtc.ca.gov

April 1, 2016

Dan Richard, Chair
California High-Speed Rail Authority
770 L Street, Suite 1160
Sacramento, CA 95814

Dear Mr. Richard:

Please find attached MTC's comments on the California High-Speed Rail Authority's (CAHSRA) Draft 2016 Business Plan, which were approved by the Commission at its March 23, 2016 meeting.

Most significantly, we applaud the Authority for the achievement of a number of important milestones not the least of which is your transition from a planning agency to a project delivery/construction management organization.

Overall, MTC applauds the 2016 Draft Plan's direction as the Bay Area welcomes the opportunity to work closely with you and your board, with the High-Speed Rail Authority staff, and with other agencies to realize the full potential of the project and its important local transit connections.

We have focused specific comments on key areas where we are hopeful that the Authority can strengthen the 2016 Plan in order to achieve its outlined objectives.

Please do not hesitate to contact me if we at MTC can assist you in your work in any way.

Sincerely,

Steve Heminger
Executive Director

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Our proposed comments on the Draft Plan are focused in the following nine areas:

1. We strongly support the Bakersfield to San Jose line as the first operational segment.
2. We urge the CAHSRA to seek additional alternative revenue sources to advance the initial operating segment into San Francisco and to the new Transbay Transit Center.
3. We believe that additional investment in all three stations from San Jose to San Francisco (Diridon, Millbrae, and the Transbay Transit Center) will be critical to the success of High Speed Rail.
4. We ask that that CAHSRA redouble its effort to engage the Bay Area on the efforts needed to complete the Caltrain Electrification project, including securing full funding for that project and addressing other managerial issues. It is vital that this project enter construction in 2016.
5. We request that CAHSRA strengthen connections to the BART system to ensure that east bay connectivity is achieved. In particular, the underground connection from the Transbay Transit Center to Embarcadero Station will be a key Bay Area connection.
6. We recommend that CAHSRA continue its role and strengthen its efforts in assisting station site communities all along the initial segment, with respect to the important land use decisions that will certainly emerge as the rail line forges new transportation connections. This effort should support California's economic development while revitalizing communities, and preserving agricultural lands and open space.
7. We recommend that CAHSRA expand efforts to strengthen relationships between the regions and Metropolitan Planning Organizations (MPOs) along the corridor – so that lessons learned, impacts and synergies related to land use and station area planning – key to building strong communities and retaining farmland and open spaces – can be understood, shared and implemented in a positive manner.
8. We support the expeditious construction of the line to the Los Angeles Basin to achieve the CAHSRA vision of connecting California's two largest mega-regions.
9. We recommend additional refinement and sensitivity analysis with respect to the capital and operating cost assumptions, based on Bay Area experience in building and operating large capital transit systems.

First Operational Segment: Bakersfield to San Jose

Seeking to connect high-speed rail to the vibrant economy of the Silicon Valley and the San Francisco Bay Area, with its large and growing transit ridership and the existing and future transit connectivity features of the San Jose Diridon station, will best position the initial segment for strong ridership. In addition, the much lower construction cost supports the CAHSR's recommendation to build the first segment to San Jose as the best option to achieve the most successful service as soon as possible for California.

Among future California high-speed rail stations, the Diridon Station in San Jose is already a major transit hub with Amtrak, Altamont Commuter Express (ACE), Caltrain and Santa Clara Valley (VTA) light-rail and bus service. With the addition of Bay Area Rapid Transit (BART) and High Speed Rail Service – both anticipated in 2025 – and expanded Caltrain, ACE and Capitol Corridor service, Diridon Station will become one of the busiest multi-modal stations in North America. MTC, the City of San Jose, VTA, CAHSRA and Caltrain staff are already

working cooperatively on planning efforts, including environmental clearance under CEQA to pave the way for a broad mix of transit-supportive, high-intensity land uses in and around the station area. Investment in Diridon Station should be prioritized to ensure that the new station is positioned to be a pre-eminent transportation hub and is fully operational when High Speed Rail Service commences.

Connecting to San Francisco's Transbay Transit Center

We agree that connecting the initial operating segment to San Francisco should be the goal. We also recognize that relying primarily on federal funds may be risky. We therefore urge the Authority to consider an alternative funding plan for the San Francisco connection, should anticipated federal rail funds not materialize as expected. This alternative could be a combination of private investment, additional Cap-and-trade funds, local funds and other state support.

In recent years, the travel patterns between San Francisco and Silicon Valley have grown steadily in each direction. Major corporations have developed multiple locations from Downtown San Francisco to the South Bay and many locations in between. Caltrain is breaking ridership records each month, and Highway 101 and I-280, the main routes of travel on the San Francisco Peninsula, are each burdened by growing congestion. Continuing high speed rail service to San Francisco and ensuring high quality connections to the San Francisco International Airport through investments at the Millbrae Station will provide CAHSRA with a certainty of growing consumer demand and success.

And, the connection in San Francisco eventually must go all the way to the Transbay Transit Center. This transit hub is currently under construction, and already includes a federally-funded "train box" platform level that will allow for connection to Caltrain and High Speed Rail. The region has already invested close to $2 billion in the Transbay Transit Center and its long-term future should include high speed rail. The Transbay Transit Center, located in the heart of downtown San Francisco, will also afford connections to other key regional transit systems such as BART, San Francisco Muni, and numerous other regional bus services. In particular, the Transbay Transit Center will be a primary connection point to High Speed Rail from Oakland and the East Bay. A new underground pedestrian link between the Transbay Transit Center and Embarcadero Station will be key to this connectivity. The Downtown Extension of the Caltrain line from its current terminus at 4th and King streets to the Transbay Transit Center is one of the Bay Area's key regional projects and is a federal New Starts priority for the region.

We look forward to the state's support of the Downtown Extension project and related connections to the BART system and the East Bay as key to supporting a successful high-speed rail line into San Francisco.

Funding Plan for Electrification

Building on the comment above it is critical that full funding for the Caltrain electrification project be secured, and quickly, so that the project can move ahead in time to meet the arrival of high-speed rail.

Our region's Regional Transportation Plan/Sustainable Communities Strategy, Plan Bay Area, assessed hundreds of transportation projects. High performing projects were defined as projects with high benefit-cost ratios and strong performance target scores related to measures such as greenhouse gas reduction. Caltrain Electrification, which will provide electrified service for high-speed rail blended with expanded Caltrain service, was a high scoring project in our regional plan, and is one of MTC's highest priorities in terms of regional funding and as a candidate for federal Core Capacity/New Starts funding

We applaud the strong and longstanding partnership of the CAHSRA, formalized in 2012 through a nine-party memorandum of understanding, and underscored through its $600 million commitment to the electrification project, currently estimated to cost $1.8 billion. The Draft Plan provides new urgency to start construction on this important project before the close of 2016. There remain a number of outstanding issues related to costs, funding, and service integration, and we look forward to the CAHSRA playing an important role, alongside the regional partners, to resolve these matters and close the funding gap.

Station Area Planning

As pointed out in the Draft Plan, "connecting the Silicon Valley to the Central Valley will usher in a new era of transportation and have a transformative effect as it creates new connections and access. The impact of this line will be inestimable in terms of the economic impacts within each region."

To that end, we recommend that CAHSRA continue its role and strengthen its efforts in assisting station site communities all along the initial segment, with respect to the important land use decisions that will certainly emerge as the rail line forges new transportation connections. This effort should support California's economic development while revitalizing communities, and preserving agricultural lands and open space.

Today, the Bay Area and the Central Valley have dramatically different economic strengths and challenges. While the Bay Area is the global center of technological innovation, the Central Valley is the nation's single most important agricultural region. Prioritizing the development of the Bay Area to Bakersfield HSR segment has the potential to provide tremendous economic benefits to both regions. Reducing the trip time between San Jose and Fresno from three hours in a car today to one hour via high-speed rail in 2025 will usher in a new era of connectivity between the Bay Area and the Central Valley.

The actions to-date by the CAHSRA – establishing high speed rail station principles and guidelines and providing station area planning grants – are laudable. To fully realize the benefits of high-speed rail, communities that will serve as locations for stations should be supported through a comprehensive station area planning program, appropriately scaled and funded at a level commensurate with the transformative nature of the planned service. It would also be highly beneficial for CAHSRA to engage MPOs and regions along the corridor in an effort to foster communication between regions to share best practices related to economic development and focused growth. We recommend that the CAHSRA continue to engage with local

communities and regional agencies well in advance of the launch of High Speed Rail Service in 2025, and MTC stands ready to assist in this regard as needed.

Cost Analysis

The following preliminary comments are offered on the operating and capital cost assumptions contained in the Draft Plan and its supplemental reports. There is much detail summarized in these reports, and we look forward to working with CAHSRA staff to fully review and understand the basis for the estimates.

Capital Costs and Funding:

We commend the Authority for the extensive value engineering that they have done to reduce the overall cost of the project. Cost containment is important both at the outset of the project as well as throughout construction. In its technical supporting document detailing capital costs used in the Draft Plan, the CAHSRA estimates a cost of $3.1 billion for the San Francisco to San Jose segment, and $4.4 billion for the San Jose to Gilroy segment. These estimates include small amounts (<5%) of general contingency, and varying levels of contingency (10-25%) for the specific cost categories. Based on other large construction projects in the region that MTC staff is familiar with, the level of general contingency seems low given the complexity of the project and the fact that it is the nation's first high-speed rail line.

We also observe that the capital cost figures include significant proposed scope and funding changes, which include a reduction of funding support for the Transbay Transit Center/Downtown Extension project from $2 billion to $0.5 billion, the removal of aerial guideways at the San Jose station, and the removal of dedicated guideway at Millbrae. Additionally it appears that all of the high-speed rail cap-and-trade funds are being used for the high-speed rail line itself. We would like to better understand these decisions and the potential impacts on the high-speed rail project as well as on the related Caltrain Electrification project, the Diridon Station, and the Downtown Extension. We acknowledge the challenge of building an infrastructure project of the scope and scale of high speed rail in a constrained revenue environment. However, we believe that the high speed rail system itself would benefit from the completion of the Transbay Transit Center/Downtown Extension project, and that the benefits warrant an increased CAHSRA investment in that project more on the order of $2 billion than $0.5 billion.

Finally, regarding potential funding sources, it appears that the Authority intends to consider or seek funding from the competitive and formula freight programs that were enacted in the FAST Act. There will almost certainly be strong competition for these funds, from within the state and from other states. It also appears that the Authority may seek a loan from the federal Transportation Infrastructure Finance and Investment Act (TIFIA) program. The region has some experience with this program, and we would advise the Authority to learn from the region's experience and to enter into the program carefully so as not to hinder their financial capacity in the future.

Operating Costs:

The Draft Plan assumes a very low rate of operations cost growth after the first five years of operations. For Phase 1 (2030 – 2060), the annual real growth (not including inflation) in operating costs is less than one-half percent per year. In MTC's experience, this may be an optimistic assumption. Over the last five years, real growth in operations costs per service mile for heavy-rail operators in the MTC region has averaged 2.6 percent per year.

Given the disparity in cost growth assumed in the Draft Plan versus the Bay Area's actual cost growth, MTC recommends that CAHSRA consider refining the assumptions related to real growth for several components of the Plan, or increasing the allocated contingency assumed in the "medium" forecast of operations cost.

Additionally, ridership and fare revenue are exceedingly difficult to project past a five-year horizon. The Draft Plan attempts to estimate ridership and farebox revenue over many decades. Factors such as fuel price, fuel economy and high-speed rail ticket prices will have a significant effect on ridership rates and fare revenue potential.
The Draft Plan currently combines the "Medium Revenue" scenario with the "Medium Cost" scenario as the basis of its break-even analysis. To address uncertainty in both the operating costs and forecasted revenue from operations, MTC recommends additional sensitivity analysis that uses either a "Low Revenue"/"Medium Cost" scenario or a "Medium Revenue"/"High Cost" scenario in order to provide for a more conservative break-even point.

Conclusion

MTC staff applauds the 2016 Draft Plan's overall direction, and looks forward to continuing to work in close cooperation with CAHSRA and other involved agencies to realize the full potential of the project and its connections.