

**DRAFT** ADDENDUM  
to the California High-Speed Rail Authority's  
"Report to the Legislature; December 2009"

ADDENDUM  
to the California High-Speed Rail Authority's  
"Report to the Legislature; December 2009"

**Page 7+**

UPDATE ON TOWN OF ATHERTON LAWSUIT TEXT BOX

On March 4, 2010, the "Bay Area to Central Valley Revised Draft Program Environmental Impact Report" was presented to the Authority Board of Directors at its monthly meeting, and the document was posted at the Authority's Web site. On March 11, 2010 a 45-day public comment period began (it will end April 26, 2010), at which point, all comments on the revised material will be incorporated into the document before being brought back to the Board for consideration.

ADDITIONAL INFORMATION REGARDING THE AUTHORITY'S ORGANIZATION STRUCTURE

**Current Status of CEO search**

In January, the Authority Board established an Executive Director Search Committee consisting of Chairman Pringle and Board member Rod Diridon. That committee first met on January 27, 2010 and has employed the services of an executive search firm to assist in gathering candidates. The candidate pool as of March 2, 2010 consisted of 42 individuals. As of this writing, interviews with candidates were scheduled for March 31 and April 1, 2010.

ADDENDUM  
to the California High-Speed Rail Authority's  
"Report to the Legislature; December 2009"

**Page 39+**

REVISED LANGUAGE TO COMPORT WITH OTHER LANGUAGE IN THE REPORT

It is anticipated that the environmental review could be completed for the Los Angeles to San Diego via the Inland Empire section by end of 2013, with construction dates to be established based upon available funding.

CLARIFICATION AND UPDATE TO PROJECT TIMELINE

RESPONSIVE TO LAO COMMENTS FROM "THE 2009 HIGH-SPEED RAIL BUSINESS PLAN":

*"Uninformative Timeline. The program management and project delivery timelines contained in the plan are very general and provide little opportunity for increased accountability. There are few deliverables or milestones included against which progress can be measured."*

*"Inconsistent Order of Events. Because the timelines in the plan are so general, it is unclear in what order various events will occur. For example, regulatory approvals are expected by 2018 but procurement is scheduled to be complete by 2014. This could mean the train technology and rolling stock will be procured before regulatory agencies approve their use."*

### **Clarification and Increased Detail on Project Timeline**

The timeline for the project is shown in two parts:

- 1) The period of work through the environmental approvals and completion of 15% design,
- 2) The work to obtain regulatory approvals, award contracts, acquire right-of-way construct the line, obtain and put in place systems and vehicles, verify and validate the correct functioning of the system, and open for revenue operation.

Table A1 shows

- Eleven milestones planned to be completed for seven sections of the initial phase of the system by September 2012;
- Three remaining sections of the full system by 2014;
- The planned date of completion of each step;
- The current forecast for when it will actually be finished; and
- The percent complete of each.

These dates and milestones provide more clarity than those provided in a chart in the original report to the Legislature. This presentation provides clear deliverables, measurable progress at a meaningful level of detail, and the ability to determine the status of the project for which the Authority is accountable.

As noted, the four sections which are eligible for the \$2.25 billion in Federal ARRA funds awarded in January 2010 are the farthest along, with Los Angeles 61% of the way to the Record of Decision/Notice of Decision (ROD/NOD) required before funds can be committed.

The other three sections Merced-Fresno, Fresno-Bakersfield, and San Francisco-San Jose are approximately one-third completed. All are currently expected to be able to meet the deadline to qualify for ARRA funding.

Table A1: Schedule of Milestones for Environmental and Design Work by Section of HST Line

Section/Activity		Scoping Report	Initial Board Briefing	Board Briefing to Approve Release of the AA Report	Release Preliminary AA Report	Board Briefing to Approve Supplemental AA Report	Release Supplemental AA Report	Admin Draft EIR/EIS	15% Design	Draft EIR/EIS	Final EIR/EIS	NOD/ROD	Complete Toward NOD/ROD	30% Design	
San Francisco - San Jose	Plan	May '09	Apr. 8, 2010	Apr. 8, 2010	Apr. '10	Jul. 1, 2010	Jul. '10	Sept. '10	Dec. '10	Dec. '10	July '11	Sep. '11	36%	Sept. '11	
	Actual/Forecast	Mar. '10													
	50 miles	% Complete	95%			90%		0%	25%	25%	20%	5%		0%	0%
San Jose - Merced	Plan	Oct. '09	Dec. 3, 2009	May. 6, 2010	May '10	Aug. 5, 2010	Aug. '10	Apr. '11	Dec. '10	July '11	Feb. '12	Apr. '12	29%	Mar. '12	
	Actual/Forecast	Mar. '10	Dec. 3, '09 A												
	120 miles	% Complete	95%			70%		0%	10%	30%	8%	0%		0%	0%
Merced - Fresno	Plan	Mar. '10	Dec. 3, 2009	Apr. 8, 2010	Apr. '10	Jun. 3, 2010	June '10	Aug. '10	Sep. '10	Nov. '10	June '11	Aug '11	39%	Aug. '11	
	Actual/Forecast	Apr. '10	Dec. 3, '09 A												
	65 miles	% Complete	95%			98%		0%	30%	30%	15%	2%		0%	0%
Fresno - Bakersfield	Plan	Sept. '10	Dec. 3, 2009	Dec. 3, 2009	Mar. '10	Jun. 3, 2010	June '10	Sept. '10	Aug. '10	Jan. '11	July '11	Sep. '11	33%	Aug. '11	
	Actual/Forecast	Mar. '10	Dec. 3, '09 A	Dec. 3, '09 A											
	110 miles	% Complete	95%			95%		0%	20%	25%	5%	0%		0%	0%
Bakersfield - Palmdale	Plan	Mar. '10	May. 6, 2010	Aug. 5, 2010	Aug. '10	Oct. 7, 2010	Nov. '10	Sept. '11	Nov. '11	Dec. '11	June '12	Sept. '12	15%	Sept. '12	
	Actual/Forecast	Apr. '10													
	85 miles	% Complete	95%			50%		0%	3%	5%	0%	0%		0%	0%
Palmdale - Los Angeles	Plan	June '09	May. 6, 2010	May. 6, 2010	May '10	Aug. 5, 2010	Aug. '10	Oct. '10	Oct. '10	Jan. '11	Aug. '11	Oct. '11	35%	Nov. '11	
	Actual/Forecast	Mar. '10													
	60 miles	% Complete	95%			90%		0%	25%	23%	20%	5%		0%	0%
Los Angeles - Anaheim	Plan	Aug. '09	Feb. 4, 2010	Feb. 4, 2010	Apr. 24 '09	Jun. 3, 2010	June '10	Sept. '10	Aug. '10	Jan. '11	July '11	Sep. '11	61%	July '11	
	Actual/Forecast	Apr. '10	Feb. 4, '10 A	Feb. 4, '10 A	Apr. 24 '09										
	30 miles	% Complete	95%			95%		30%	60%	60%	30%	20%		0%	0%
Los Angeles - San Diego	Plan	June '10	Feb. 4, 2010	Jul. 1, 2010	Jul. '10	Jan. 6, 2011	Jan. '11	Aug. '12	Aug. '12	Feb. '13	Sept. '14	Dec. '14	8%	Sept. '14	
	Actual/Forecast	June '10	Feb. 4, '10 A												
	167 miles	% Complete	90%			25%		0%	0%	0%	0%	0%		0%	0%
Merced - Sacramento	Plan	Feb. '10	Sep. 2, 2010	Feb. 3, 2011	Feb. '11	May. 5, 2011	May '11	Sept. '11	Oct. '11	Jan. '12	Nov. '12	Mar. '13	9%	Nov. '12	
	Actual/Forecast	Apr. '10													
	110 miles	% Complete	90%			10%		0%	0%	10%	0%	0%		0%	0%
Altamont Corridor Rail Project	Plan	Feb. '10	Jul. 1, 2010	Nov. 4, 2010	Dec. '10	Mar. 3, 2011	Mar. '11	Nov. '11	Dec. '11	Mar. '12	Sept. '12	Dec. '12	11%	Nov. '12	
	Actual/Forecast	Mar. '10													
	85 miles	% Complete	95%			22%		0%	0%	10%	0%	0%		0%	0%
A = Actual															

Figure A2 shows a revised summary schedule for Program Management Activities to accompany the Right-of-way (ROW) and Construction Activities summary schedule. In place of the single activity for each section in the Program Management Activities labeled “Regulatory Approvals” in the original Report to the Legislature, several key components of this activity are shown in order to clarify the sequence of events. Additionally, the single line for Construction and Procurement Bid Management has been divided into components for civil construction and vehicle and systems procurement.

#### Key Regulatory Steps

The first activity, now underway, is the development of the Federal and State regulations that will govern the system design and operations at 220 mph. The Project Management Team (PMT) is systematically reviewing each of the key concepts of the HST construction and operation with the Federal Railroad Administration prior to submitting a petition for a *Rule of Particular Applicability* for the HST project. Simultaneously, the PMT is reviewing with the California Public Utilities Commission what regulations will be needed to allow the installation of modern high-voltage propulsion system. Both reviews are scheduled to be complete in fall 2011, in time to allow finalization of the specifications for the core systems and the trainsets in the spring of 2012, and the selection of suppliers by the end of the year.

The development of State and Federal agency agreements and permits flowing from the completion of the environmental process are needed to allow construction to proceed, and construction bid documents need to be prepared. Both of these activities are currently underway and are scheduled over the next four years.

Verification & validation (V&V) is the formal process by which the Authority demonstrates to the regulatory agencies that the systems and construction are being designed, built, and installed to meet the regulations. This process begins as the initial sections of the line are built, as signaling, electrification, and other core systems elements are installed, and as first trainsets are delivered. The V&V leads to in-service testing and commissioning of the line segments.



ADDITIONAL DISCUSSION OF OUTREACH EFFORTS

### **New Outreach Efforts Since December 2009 Report**

The California High-Speed Rail Authority in late January 2010 retained Ogilvy Public Relations Worldwide ("Ogilvy") to support the Authority's public information program. Ogilvy is responsible for helping the Authority staff provide consistent and accurate information on a timely basis to the public. Previously, statewide outreach efforts reported up through the PMT as subcontractors. Now the outreach efforts report directly to the Authority and are coordinated by an Authority Deputy Executive Director.

Ogilvy began their work in February by conducting a thorough audit of the current communication tools, techniques and strategies that are being used by the Authority's regional project teams. This audit has already yielded preliminary results and is ongoing.

Preliminary findings informed the Authority's new protocols for managing requests for information and for disseminating information throughout the state.

The statewide communication program will include targeted efforts to reach the state's multi-cultural and specialized populations, along with the more traditional outreach tools.

The High-Speed Rail Authority Web site is now under construction to make it immediately more useful and user friendly, and will have a complete overhaul within the 2010 calendar year.

## **Ridership and Revenue Risk Analysis Overview**

### **Outside experts are working to develop updated ridership and revenue forecasting for the High-Speed Rail Authority.**

A joint effort is underway by Cambridge Systematics (CS), developer of the existing HSR ridership and revenue model, and UC Davis' ULTRANS (UCD), developer of the new Statewide Integrated Interregional Model (SIIM) for Caltrans is underway. This effort will produce ridership and revenue forecast ranges for the HSR system, and will include refining the current forecasting models, developing independent forecasts of critical inputs, and conducting a rigorous risk analysis to better understand the influence of key determinants of HSR ridership and revenue.

CS and UCD plan to use the existing ridership and revenue (R&R) model as the platform for a refined forecasting tool, updating key inputs for future year conditions, and selectively refining some model components to improve sensitivity to changes in HST operations, fare approaches, interaction with competitive and complementary service, and other issues raised by the CAHSRA, its financial advisers, and a peer review team.

Additionally, at the request of the Senate Transportation and Housing Committee, the High-Speed Rail Authority in March entered into a contract with the Institute of Transportation Studies at the University of California, Berkeley to peer review the Authority's past and current ridership forecasts and modeling.

#### CS/UCD Work Plan Concept

The first task, which is nearing completion as of this writing, is to develop a detailed work plan in a joint effort between CS/UCD, HSRA staff, and HSRA's Program Management Team and financial advisers.

The second step will be to establish an independent expert peer review panel to review and suggest improvements to the work plan, and to provide periodic review and assessment of work product throughout the development of the risk analysis.

The work plan will be structured so that improvements and refinements made in the first year may be available for additional forecast work and sensitivity analysis by the end of 2010.

Subject to the peer review, the likely work steps for the risk analysis include:

- An up to date review of international experience of existing HST services and the initial revenue forecasts made for these services and to provide insight into the major areas of risk and variability.
- Gathering additional recent data to more thoroughly explain in-state travel patterns and changes in response to the relatively wide range of economic conditions and travel conditions experienced over the past decade. Potentially, data will be collected from USDOT aviation and intercity passenger rail sources, regional household, cordon, and airport access surveys, and the 2008 National Household Transportation Survey. An additional round of recent traveller surveys may be conducted to gauge actual travel patterns during the current recession.
- Developing updated estimates of current travel against which to validate the model and re-validating the model.
- Refining ridership and revenue model components to provide enhanced sensitivity to key risk analysis issues, and thoroughly testing sensitivity of the refined model to key input assumptions..
- Systematically reviewing the socioeconomic and level-of-service assumption in the existing ridership & revenue model and Statewide Integrated Interregional Model (SIIM) model.
- Simplifying the model interface and quality control mechanisms, and revising model routines to improve reporting of results at the station-to-station and airport-to-airport level.
- Developing with outside experts a range of plausible macroeconomic, socioeconomic, transportation network, and modal competitive response (i.e. fares, schedules, etc. for air, conventional rail and other) scenarios that will feed into the risk analysis in the forecasting process
- Independently assessing proposed HSR system sequencing and construction phasing, operating plans, fares, and potential for extended service disruption in discrete segments (e.g. due to earthquakes, landslides, etc.).
- Assembling these alternate inputs into a handful of coherent and plausible scenarios of the future environment in which HSR might operate and conducting a risk analysis to produce a range of likely ridership and revenue over time.

### **Additional Ongoing Peer Review**

Additionally, at the request of the Senate Transportation & Housing Committee, the High-Speed Rail Authority in March entered into a contract with the Institute of Transportation Studies at the University of California, Berkeley to peer review the Authority's past and current ridership forecasts and modeling.

REITERATION OF TICKET PRICING IN BUSINESS PLAN REPRESENTING ONLY SCENARIOS AND NOT POLICY DIRECTION

**Ticket Pricing Scenarios**

As is indicated in the December 2009 Report to the Legislature, the average high-speed train fares are scenarios, and no policy decision has yet been made on how much a ticket will cost for the system. That decision will be made in the future, with input from the Authority's Board and any private entity contracted for the system's operations.

The Authority has looked at two scenarios for potential ticket pricing: one with high-speed train fares being set at 50 percent of airfare over the same distance and another at 83 percent.

The first scenario shows the broadest ridership, and therefore the largest environmental impacts. And for that reason, that scenario continues to be used by the Authority for environmental review and mitigation.

The second scenario is used to illustrate that with this increase in fares, ridership goes down but so do operations and maintenance costs, such that the revenue surplus actually increases. Since fewer passengers are carried, fewer long trains need to be operated, reducing operations and maintenance costs. The result is an increase in the bottom line cash flow projections.

In both scenarios, the system would generate a significant revenue surplus after the initial ramp up and would not require a government operating subsidy.

ADDITIONAL RIDERSHIP DISCUSSION TO EXPLAIN TABLE C

RESPONSIVE TO LEGISLATIVE STAFF BACKGROUND REPORT: "JOINT LEGISLATIVE INFORMATIONAL HEARING;  
CALIFORNIA HIGH-SPEED RAIL AUTHORITY'S 2009 BUSINESS PLAN":

*"Japan inaugurated the first high-speed rail service in the world...After forty-four years of service, the main trunk line from Tokyo to Osaka carried 150 million riders in 2008...it is unlikely that California will achieve anything similar to the Japanese in terms of ridership in the foreseeable future given the differences in demographics and land use patterns between Japan and California."*

### **How does the CAHST ridership forecast compare to the Japanese Shinkansen which serves much denser cities and populations?**

*The CAHST ridership forecast is far short of the Japanese experience, precisely because of the land use and population factors cited by the Legislative Committee Staff Background report. While the Shinkansen carried 357 million trips in 2008, the CAHST initial phase is forecast to carry 39.3 million trips in 2035 in the higher HST 83% fare scenario, a level of fare comparable to the Shinkansen. Even compared to Japan's initial phase of Tokyo-Osaka, which had 151 million passengers in 2008, the CAHST forecast of 39.3 million for 2035 is far less in both absolute terms, and in relationship to the populations and total travel of the corridors.*

RESPONSIVE TO LEGISLATIVE STAFF BACKGROUND REPORT: "JOINT LEGISLATIVE INFORMATIONAL HEARING;  
CALIFORNIA HIGH-SPEED RAIL AUTHORITY'S 2009 BUSINESS PLAN":

*"The initial line linking France's two largest metropolitan regions, Paris and Lyon, carried about 18 million riders annually after being in service for a decade. To be sure there are important differences between California, Great Britain and France, but the HSRA's forecast of 39.3 [sic] annual passengers in 2030, ten years after service begins, appears to be quite optimistic in light of the European experience."*

### **Why is the CA HST 2035 forecast of total riders higher than Paris-Lyon 1990s actual?**

The CAHST forecast includes more markets with a much larger population, and has much more local HST service and station stops in addition to limited stop express service.

The LA Basin already has 40% more people than the Paris area (14.9 million vs. 10.5)<sup>1</sup>, and the Bay Area is nearly four times larger than the Lyon metro area was in the 1990s. By 2035, urbanized LA is projected to have nearly 19 million people and the urban parts of the Bay Area 6.4 million, while Paris

<sup>1</sup> Demographia, April '09 at <http://www.demographia.com/db-worldua.pdf>

and Lyon stay about the same size . Additional markets served by the initial phase of the California HST include the San Joaquin Valley with another 4 million persons in 2030. In all, the initial phase of the California HST will serve at least twice the population as the 1990's TGV Southeast – nearly 30 million vs. 14 million.

CAHST also plans much more frequent service and many more stations than the TGV Southeast. The TGV Southeast generally ran hourly service to Lyon and less frequent service to Dijon and points beyond. The CAHST initial phase plan for 2035 is for up to 11 trains an hour.

The TGV generally does not carry local trips within the greater Paris *or Lyon* regions since its focus is on long-distance markets, whereas the CA HST forecast includes 12 million local trips, 4 million within the Peninsula and nearly 8 million within the LA region. The TGV had 1 infrequently served station between Paris and Dijon/Lyon, while the CA HST has 9 *stations with many stops* between downtown SF and LA Union Station. The TGV served half a dozen small cities beyond its main line on existing slow conventional lines beyond Lyon and Dijon; the CA HST will serve Orange and San Joaquin Valley counties directly with the new HS line.

*Moreover the European experience, which generated 18 million trips in the Paris-Lyon corridor with much less population and pre-existing travel than California, has proved successful enough to spur the construction in the last 15 years of a dozen or so additional high-speed lines in Spain, Italy, Germany, Belgium, Britain, and the Netherlands, each carrying major shares of the travel in its intercity markets.*

RESPONSIVE TO LEGISLATIVE STAFF BACKGROUND REPORT: "JOINT LEGISLATIVE INFORMATIONAL HEARING; CALIFORNIA HIGH-SPEED RAIL AUTHORITY'S 2009 BUSINESS PLAN":

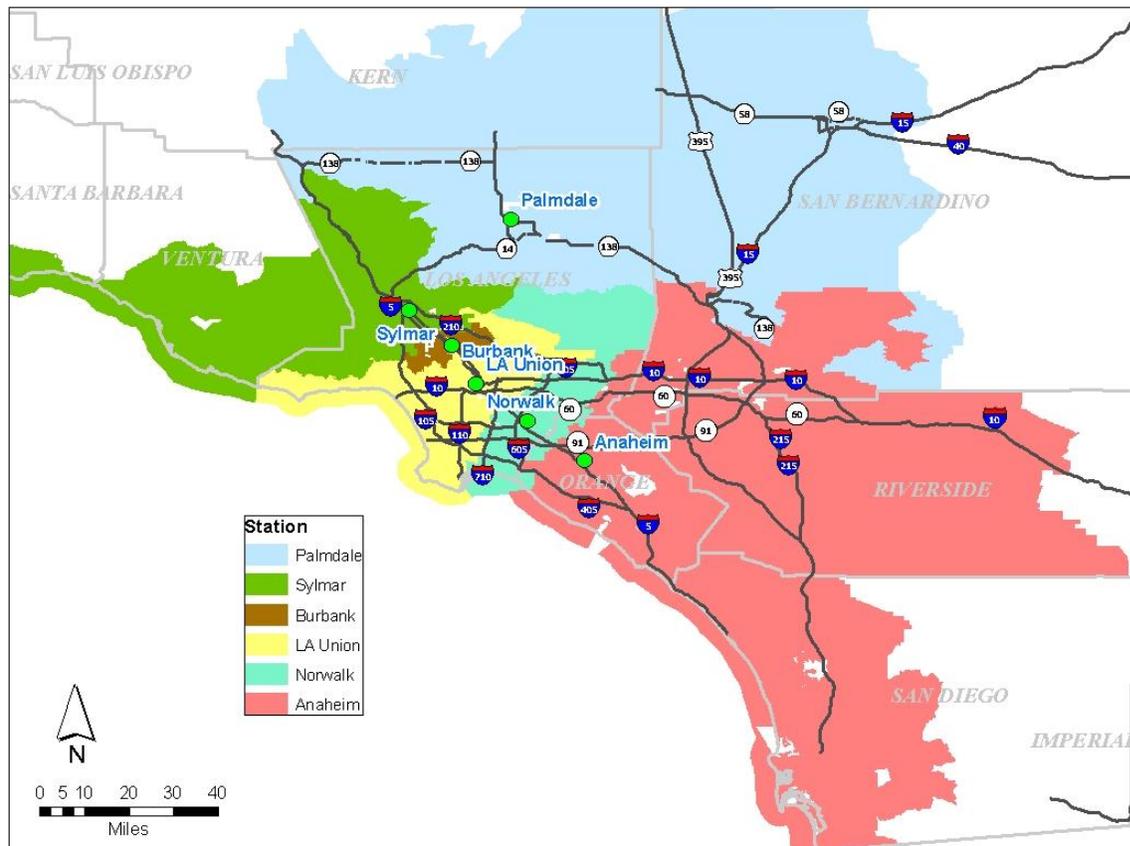
*"The second busiest projected station is Anaheim with 23,500 boardings, of which 18,200 are interregional. In contrast, Los Angeles, the largest city in the state, has only 14,100 daily boardings, with only 3,700 of them being interregional. The plan forecasts Los Angeles to have 10,400 local boardings. This is difficult to understand given that Los Angeles has 310,000 jobs in its downtown."*

### **Why is Anaheim so attractive compared to LA Union Station downtown?**

For Phase 1 of the HST system, Anaheim is the end of the line and like all of the terminal stations draws from a much wider area than an in-line station like LA Union Station (LAUS) Terminal stations (Anaheim, San Francisco and Merced) would have large ridership levels since terminal stations have very large catchment areas not shared with other stations.

As an example of the catchment area issue, the figure below illustrates that Anaheim's catchment area in the initial service phase encompasses Orange County, San Diego County, and a large portion of the Inland Empire. LAUS attracts only a portion of Los Angeles County, with four other stations with frequent service attracting the remainder – Norwalk, Burbank, Sylmar and Palmdale.

Figure A3: Areas from which Southern California HST stations draw passengers – Initial Phase forecast



Importantly, the survey and research work performed for this model shows that good auto access (roads and parking) is at least as big a factor in HSR station selection as transit access. Although LAUS has more extensive rail and bus connections within its catchment area, it remains very attractive to the average Los Angeles traveler to drive to a station in a car. LAUS is in one of the most congested areas of the region and is not as attractive for access by car as the other stations in the LA Basin.

RESPONSIVE TO LEGISLATIVE STAFF BACKGROUND REPORT: “JOINT LEGISLATIVE INFORMATIONAL HEARING; CALIFORNIA HIGH-SPEED RAIL AUTHORITY’S 2009 BUSINESS PLAN”:  
*“Inexplicably, Merced, projected to have 5,300 daily interregional boardings, has more interregional boardings than Los Angeles.”*

### Why is Merced inter-regional ridership so high compared to LA downtown?

There are three primary reasons for this ridership projection:

- In Phase 1, Merced is the northern terminal of the HST line in the San Joaquin Valley, and as in Anaheim, draws from a very large area.
- The Merced, Modesto, Stockton area does not have the frequent inexpensive air service available at Burbank & LAX, and HST has a strong competitive advantage in the north San Joaquin Valley.

- Even the shortest trips from the Merced station are “inter-regional”, such as to Fresno, a distance of 56 miles. A similar distance trip, from LA Union Station to Palmdale for example, is classified as “local,” and not included in “inter-regional” trips.

These reasons, and the position of LAUS as an in-line station discussed in the previous question, explain why Merced in Phase 1 has 5,300 “inter-regional” boardings, compared to the LA US 3,700 “inter-regional” boardings, and 14,100 total boardings.

In the full system forecasts, when stations and service are added at Modesto, Stockton, and Sacramento, the boardings at Merced fall to 2,500 daily, as riders divert to the more convenient northerly stations. In the Los Angeles region, the full system provides direct connection to the multiple San Diego region stations. At that point, LAUS boardings grow to 14,100 daily, more in line with the conventional expectations expressed in the question.

RESPONSIVE TO LEGISLATIVE STAFF BACKGROUND REPORT: “JOINT LEGISLATIVE INFORMATIONAL HEARING; CALIFORNIA HIGH-SPEED RAIL AUTHORITY’S 2009 BUSINESS PLAN”:

*“Palmdale is expected to have 12,900 total boardings, of which 5,200 are interregional trips, again more than Los Angeles. With 7,600 daily boardings, San Jose has fewer total riders than Palmdale. Moreover, Palmdale has more interregional riders than San Jose, which is the epicenter of the international high tech industry. It is difficult to understand what might account for these discrepancies in the ridership forecasted for the various stations along the California high-speed rail route.”*

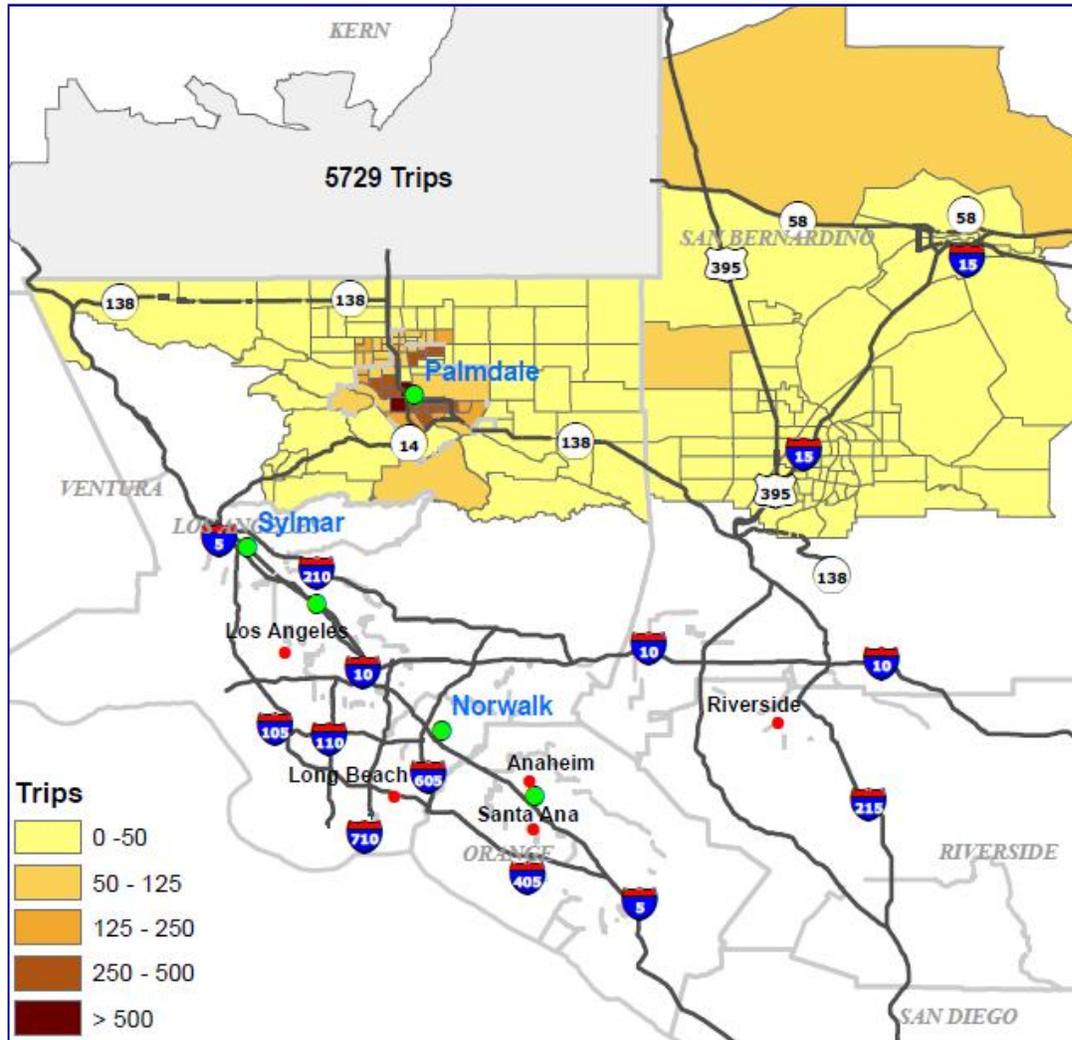
### **Why are Palmdale “inter-regional” boardings so high compared to LA Union Station’s “inter-regional” boardings?**

There are two primary reasons for this ridership forecast:

- Palmdale sits at the edge of the LA region, and any traveller from southern Kern County in a neighboring region who uses the Palmdale station is classified as “inter-regional,” even though their trip may be relatively short, for example to Burbank. As explained in the previous answer, a similar distance trip, from LA Union Station to Palmdale for example, is classified as “local,” and not included in “inter-regional” trips.
- The Palmdale airport has poor service frequency and is costly compared to downtown Los Angeles; consequently HST enjoys a strong competitive advantage.

Figure AA shows the origins of travellers accessing the Palmdale Station in a Phase 1 scenario in which there are 8,200 “inter-regional” boardings. Seventy percent of these “inter-regional” trips are from Kern County, most of them headed south into the LA Basin. A comparison of longer distance “inter-regional” trips would be more relevant, and for the ’09 Report scenario, there would be closer to 2,800 such daily boardings for Palmdale, compared to 3,700 for LA Union Station.

Figure A4 Origins of Boardings at Palmdale, Full System, 2030, HST Fares 50% of Air



### Why are Palmdale boardings (total and inter-regional) so high compared to San Jose?

There are three primary reasons for this ridership projection:

- The “inter-regional” boardings at San Jose (4,500) are actually higher than the longer-distance Palmdale boardings (~2,800) as explained in the previous answer.
- Additionally the relative advantage of HST in Palmdale compared to air contrasts even more strongly with the situation of San Jose, where the airport is within 5 miles of the HST station, and has frequent, and less expensive, flights to the LA Basin than other areas in the Bay Area.

- The HST is comparatively much more attractive to auto users around Palmdale, accounting for the higher total boardings. Palmdale's total boardings include 7,700 for local trips and ~3,400 for short "inter-regional" trips. These ~11,100 short distance boardings are three times higher than San Jose's 3,100 local trips, largely because Palmdale does not have the 10 Caltrain trains per hour to San Francisco and intermediate points that serve San Jose.

DRAFT

**Table D Daily Station Boardings, Initial Phase 2035, Fares 83% of air**

<b>Station</b>	<b>Total</b>	<b>Inter-regional</b>	<b>Local</b>
<i>San Francisco Transbay</i>	24,100	19,700	4,400
<i>Millbrae</i>	2,500	900	1,600
<i>Redwood City</i>	3,900	2,300	1,600
<i>San Jose</i>	7,600	4,500	3,100
<i>Gilroy</i>	4,700	3,600	1,100
<i>Merced</i>	5,300	5,300	-
<i>Fresno</i>	4,500	4,500	-
<i>Bakersfield</i>	5,100	5,100	-
<i>Palmdale</i>	12,900	5,200	7,700
<i>Sylmar</i>	5,100	3,100	2,000
<i>Burbank</i>	2,900	700	2,200
<i>Los Angeles Union Station</i>	14,100	3,700	10,400
<i>Norwalk</i>	4,500	2,900	1,600
<i>Anaheim</i>	23,500	18,200	5,300
<i>Daily</i>	120,700	79,700	41,000

Source: High-Speed Rail Authority Program Management Team, 2009

ADDITIONAL DISCUSSION OF OPERATIONS INSURANCE COSTS RELATED TO TABLE I

RESPONSIVE TO LAO COMMENTS FROM "THE 2009 HIGH-SPEED RAIL BUSINESS PLAN":

*"Operations Insurance. The plan anticipates the cost of insurance for operating the system would not be borne by the private operator. If the public sector pays for insurance, that would constitute an operating subsidy in violation of Proposition 1A."*

### Operations Insurance Costs

The Federal Government Accountability Office (GAO) is of the opinion that Federal law (under the Amtrak Act of 1997) limits liability from each accident to \$200 million for high-speed passenger railroads, although this limitation has not been tested in court.

The line item for insurance in the 2009 Report to the Legislature ('09 Report) was set at zero pending a review of insurance costs which had been estimated at \$100 million in the 2008 Report to the Legislature. While the review is not complete, enough information has been developed to confirm the reasonableness of using a cost of \$50 million (0.05 billion in 2009\$\$), although there are reasons to believe it could be lower (see below).

This cost would add slightly over 9% to the operating cost, and about 4% to the operating cash flow. This falls within the 10% contingency in the operating cost estimate, and within the 14% contingency in gross ridership revenue needed to support the assumed level of private financing in the '09 Report.

An issue for discussion arising from the review is California's current prohibition of the award of punitive damages against State entities, which may need to be extended to an operator who operates under a franchise awarded it. Similarly, a State cap on liability (as in other states) may be needed to achieve this level of cost.

GAO notes that the "extent of use", i.e. the volume of trains per day or passengers, has little effect on the cost of insurance to an agency.

The system is expected to provide a degree of safety similar to that of European and Asian systems. This is contrasted with Amtrak and commuter rail which operate in mixed traffic and commuter rail environments.

Amtrak maintains various insurance policies to cover its liability to employees and other parties for injury or damage from accidents and to cover Amtrak's loss resulting from damage to Amtrak property. The insurance policies contain large deductibles; losses within the deductibles are self-insured by Amtrak. The Amtrak Reform and Accountability Act of 1997 limits the amount railroad passengers may

recover from a single accident to an aggregate of \$200 million. Since non-passenger liability is not so limited, Amtrak purchases excess liability insurance limits beyond this statutory cap.

Amtrak proposed (July 09) to Metrolink (SCCRA) several alternate insurance pack-ages as part of operating the service. Range of cost bounded by:

- Metrolink to insure the first \$200 million of all operating liability; Amtrak to insure the next \$200 million – Cost \$2 million/year
- Metrolink to insure the first \$100 million, and Amtrak to take next \$200 million; cost \$4 million a year
- Virginia Railway Express (VRE) (DC suburbs commuter rail)
- US law caps liability per accident at \$200 million; VRE seeking to include 3rd party claims in cap; various state caps in place as well
- VRE maintains Insurance Trust Fund overseen by VA Division of Risk Management. Annual payment stands at \$5 million annually as of 2009.

DRAFT

UPDATED FUNDING SOURCES SUMMARY

**Paying for the System**

The following summary chart has been updated to show the range in the total to correlate with the ranges in the individual funding sources.

Funding Sources Summary (YOE \$ M)

Federal grants	\$17,000-\$19,000
State grants	\$9,000
Local grants	\$4,000-5,000
Private funding	<u>\$10,000 - \$12,000</u>
Total Range	\$40,000 - 45,000

### **Federal Stimulus Funding Award Update**

Since the 2009 Report to the Legislature went to press, the Authority has been awarded \$2.25 billion federal ARRA funding. Funding has been awarded to begin work on parts of Phase 1 including: purchasing right-of-way, constructing track, signaling systems, and stations, and completing environmental reviews and engineering documents. The Authority has already begun working with the FRA to determine the federal requirements for project selection and timeline for funding availability and spending. The Authority is in the process of finalizing these grant agreements with FRA.

DRAFT

ADDITIONAL DISCUSSION OF A "REVENUE GUARANTEE"

RESPONSIVE TO LAO COMMENTS FROM "THE 2009 HIGH-SPEED RAIL BUSINESS PLAN":

*"Revenue Guarantee. The plan assumes some form of revenue guarantee from the public sector to attract private investment. This generally means some public entity promises to pay the contractor the difference between projected and realized revenues if necessary. The plan does not explain how the guarantee could be structured so as not to violate the law."*

### **The Potential Use of a "Revenue Guarantee"**

The revenue guarantee is discussed on pages 101-106 in the 2009 Business Plan. From page 103 of the Business Plan it is described as follows:

*Implicit in these assumptions is some form of a revenue guarantee that would guarantee to private sector participants that a minimum level of revenues would be received in the event that system revenues are significantly lower than forecast.*

Additionally, on page 104, the Authority stated:

*Without some form of revenue guarantee from the public sector, it is unlikely that private investment will occur at this level until demand for California's high-speed rail is proven.*

We believe that this revenue guarantee should be further defined as follows:

- The revenue guarantee would not be used as an operating subsidy in the Authority's funding plan, which is prohibited by law according to the language in Proposition 1A. Such an operating subsidy implies that the system is not projected to generate sufficient revenues to cover operating costs. Unlike transit systems that often require long-term operating subsidies, the Authority's current ridership and revenue projections show that the project will in fact generate operating surpluses.
- Rather, the minimum revenue guarantee would be modeled in the funding plan as a limited term contingent liability to support up-front capital investments. In addition, the minimum revenue guarantee would likely only be used in contracts that require shifting of significant revenue risk.

This proposed structure would make it distinct from an operating subsidy in the following ways:

- As a contingent liability, it would only be made available to fund a portion of previously identified financing and capital costs when certain benchmarks are not met. For instance, this could be calculated as a percentage of projected net revenues, e.g., 80 percent, that would balance the goal of incentivizing efficient high quality service by the operator with the risk profile of the lenders given market conditions at the time of receipt of bids.
- The Authority could structure the revenue guarantee mechanism in its agreement with the operator such that the operator would still be required to cover project operating expenses from project revenues or reserves, but could be eligible to have part of its capital related costs defrayed. This type of capital cost-only limitation has been employed both in federal and state highway and transit projects and cannot in any sense be considered an “operating subsidy.” Historically, the USDOT through FHWA, there is a history of GARVEE structures allowing public sponsors to borrow against future grant revenue for capital and debt only. In addition, the USDOT offers loan and loan guarantee programs through the Transportation Infrastructure Finance and Innovation Act (TIFIA) and the Railroad Rehabilitation & Improvement Financing (RRIF).
- Enforcement of this requirement could involve a number of measures, including 1) the requirement that the recipient of the revenue guarantee certify that the funds have only been used for capital costs and/or 2) that the recipient’s financial accounts could be audited by an a third-party appointed by the Authority, and/or 3) that the parties refer to a financial model that would be produced either by the Authority or the selected operator (yet audited by a third-party) that would determine the guarantee amount based calculations established at signing of the concession.
- Unlike transit that often requires long-term guarantees, the revenue guarantee would be designed to be limited in duration (5-10 years) to demonstrate demand forecasts during ramp up period for new high-speed mode.

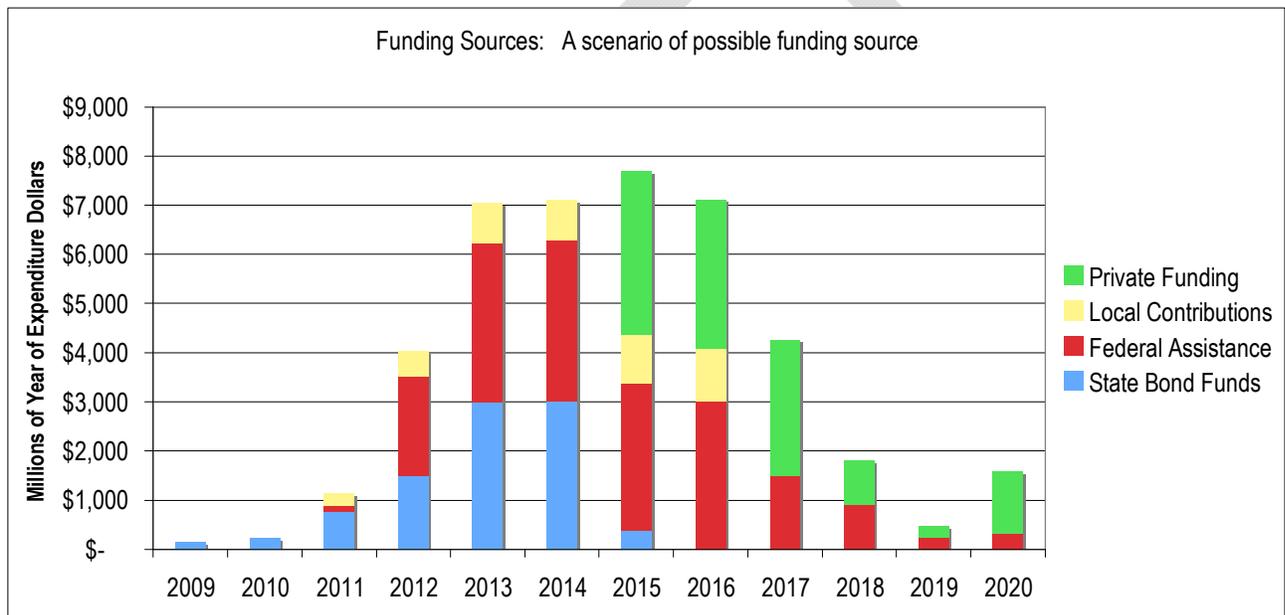
The minimum revenue guarantee should be seen within the context of the overall proposed procurement and risk transfer strategy, which will include:

- Shifting of major construction cost and delay risk on a creditworthy contractor under a design-build contract
- Shifting of some long-term operations and maintenance risk to private parties. This would include using an “availability payment” (AP) structure for some segments of the project. Under an AP, the winning bidding group receives a set payment during a specified period of time, during the construction and operation period, based on the successful meeting of certain construction, operations and maintenance milestones and other requirements. Most likely the AP source of funding would be a combination of state and federal funding sources.

UPDATED BAR CHAT ILLUSTRATION

**Timing and Phasing of Funds**

The following chart illustrates one way in which the various funding sources could be utilized to support project development. The chart illustrates how public funds could be used in the early segments with private dollars coming in after major construction has already begun. The chart is designed to be illustrative of possible funding sources.



ADDITIONAL DISCUSSION OF FUNDING RISKS AND MITIGATION

RESPONSIVE TO LAO COMMENTS FROM "THE 2009 HIGH-SPEED RAIL BUSINESS PLAN":

*"Federal Funding Expectations Highly Uncertain. The plan assumes between \$17 billion and \$19 billion from federal funds by 2016, or nearly \$3 billion per year for the next six years. In comparison, over the past five years California has received roughly \$3 billion per year of formula funding for the state's entire highway system, which is primarily funded through federal gas tax collected in the state."*

### **Federal Funding Expectations**

California's high-speed train project was awarded \$2.25 billion in federal ARRA stimulus act dollars in 2010. That leaves an expectation of between \$14.75 and \$16.75 billion over the coming ten calendar years – not \$3 billion for each of the next six years, but instead averaging \$1.475-1.675 billion annually through FY2020. While the Authority recognize there is work to do to ensure that expectation is met, we believe there is reason for these targets.

The Obama Administration changed the landscape for high-speed and intercity passenger rail funding in the U.S. An unprecedented level of funding and support has been demonstrated on the federal level starting with \$8 billion in American Recovery and Reinvestment Act funds. The Administration has indicated that the initial \$8 billion funding for high-speed and intercity passenger rail is only a "down payment" for investing in our passenger rail future. An additional \$2.5 billion has been appropriated to the High-Speed and Intercity Passenger Rail Program (HSIPR) under the U.S. DOT's FY2010 appropriations. In addition, U.S. House of Representatives Transportation and Infrastructure Committee's surface transportation authorization proposal includes \$50 billion for high speed and intercity passenger rail funding. The surface transportation authorization bill will likely require a dedicated funding stream.

The creation and development of new transportation systems like the US highway system or urban transit systems have been coupled with strong levels of federal support. Ongoing maintenance and some capital improvement funds through federal formula grants from FHWA is a not a direct comparison to the type of Greenfield development occurring with high-speed and intercity passenger rail in this country. The Authority is advocating for a dedicated long-term funding source through the next surface transportation authorization.

The risks of not obtaining these funds on the proposed schedule means a project that could take longer to construct.

ADDITIONAL DISCUSSION OF PRIVATE FUNDING SENSITIVITIES TO OPERATING REVENUE MODELING

**Operations**

The model includes sensitivities for the level of Public-Private Partnership (P3) funding that are largely based on system revenues. An estimate of \$10-\$12 billion in P3 revenues is based on ridership and revenue projections as described in previous sections. A 14% reduction in the gross ridership revenue forecast, with operations and maintenance costs held constant, could still attract the same level of P3 financing (please refer to Paying for the System for a full discussion of assumptions).

DRAFT

ADDITIONAL DISCUSSION OF FUNDING RISKS AND MITIGATION

RESPONSIVE TO LAO COMMENTS FROM "THE 2009 HIGH-SPEED RAIL BUSINESS PLAN":

*"Funding Risks. The plan identifies the following types of financial risks, and how these risks would be addressed:*

*"Credit Approval Risk. To avoid the risk of failing to win credit approval from investors, the authority's strategy is 'to clearly communicate the project and obtain up-to-date feedback.'*

*"Overall Market Risk. To mitigate the risk that financial markets shut down and stop lending, the authority 'has to continually monitor the market and develop strong back-up strategies such as project segmentation.'*

*"Government Funding Risk. The authority plans to avoid the risk that governments are not able to follow through on their commitments 'by carefully assessing how each government funding source affects the build-out of each segment.'"*

## **Funding Risks**

The project will likely face three major types of financial risks which are typical to projects of this size and of any financing that seeks capital in the U.S. and international markets.

### **Credit Approval Risk (low-medium risk)**

To overcome the risk that the project will not receive credit approval, the Authority needs to be in a continuous dialogue with market players to understand their needs and communicate the Authority's project and financial objectives. The project will face this risk when the first segment seeks capital market financing outside of the State GO bond proceeds and federal funds.

- **Assumptions:** The Authority will work through an iterative process with the market to ensure the project wins credit approval. This iterative process includes open communication with commercial and investment banks, bond underwriters, credit rating agencies and other financial intermediaries, discussing the factors that contribute to credit approval which are expected to include project development plans, passenger and ridership forecasts, construction and operating contracts, environmental approvals and permitting, technological risks, among others. This dialogue will provide guidance to the Authority in how it approaches the development of Phase 1 segments, including how these segments are bundled and the procurement process is managed.
- **Rationale:** True high-speed rail as is envisioned in California is essentially a new mode of transportation in the U.S. The bank, capital and equity markets have experience working with these types of projects internationally. However, experience in the U.S. is limited. Although the Authority is not currently facing this particular risk, financial advisors and the Authority have already begun to work on establishing close ties with industry through an extensive education

process through regular meetings, outreach and public documents to explain this new transportation mode as part of the credit approval process. These meetings are conducted with individual firms, industry groups or associations, informal concession teams. In addition, the Authority and advisors regularly respond to inquiries about financing the project.

- Implications for HSR: Mitigating this risk will require on-going communications efforts with the financial markets and the ability of the project team to adapt the project to requirements of the lenders and equity providers.

### **Overall Market Funding Risk (medium risk)**

Overall market funding risk is something that every project in the U.S. faces. The Authority will begin to face overall market risk when the project goes into procurement for the first phases of construction. The level of this risk will depend on how each segment is procured. In the early segments, the project could face this type of risk in two ways: 1) if the project is procured with public funds and the State cannot issue GO bonds; or 2) if the project is procured as a P3 when a contractor tries to obtain financing for construction of a segment. However, in this case, that particular segment would face market risk if financial markets collapse. To mitigate the risk that financial markets do not function as expected or are unable to finance Phase 1 as planned, the Authority has to continually monitor the market and develop strong back-up strategies such as project segmentation. For example, if a segment is slated to begin construction, but financial markets collapse and the State cannot issue GO bonds to cover a portion of the project costs, that segment may be funded through other sources or be temporarily disrupted.

- Assumptions: This type of risk refers to the crisis experienced in the financial markets in 2008 where lending and typical sources of credit and debt were shut down for projects like this one. Risk mitigation strategies include: 1) being able to segment the project, including reducing the segment sizes needed to receive market funding, 2) being able to delay certain segment financing until the markets recover, 3) using public grant funding sources, where possible, instead of capital market dependant sources during this period of financial disruption, 4) where possible, fund certain segments ahead of actual project start, keeping the funds in low-interest money-market style accounts, until they are deployed.
- Rationale: As the markets and the overall economy continue to recover, the likelihood of another systemic crisis is reduced. However, individual state solvency and credit ratings may become an issue for California. Timing of debt issuance may be temporarily disrupted. Per the requirements of the Bond Act, each segment must have a complete plan of finance before construction begins. If one funding source is temporarily unavailable, the Authority will seek to supplement funds with other sources.
- Implications for HSR: Market risks tend to be exogenous and difficult for one entity to control. The Authority's risk mitigation plan for this type of risk has been outlined above and can be summarized to be as flexible as possible on which segments it funds and when.

## **Government Funding Risk (medium)**

The Authority plans to avoid the risk that governments are not able to follow through on their commitments by carefully assessing how each government funding source affects the build-out of each segment.

- **Assumptions:** Both the federal and California state governments' financial conditions are not positive, given the recession and large deficits. On the federal side, the key risks are that budget pressures reduce future grant funding, including for 2010 grant funding and the transportation funding re-authorization. A lesser risk is that current commitments in the ARRA program are not fulfilled. On the California side, this includes California's ability to issue state GO bonds as authorized under Proposition 1A. To mitigate the federal risk, the Authority needs to continue to monitor the federal budget process and adapt the project as discussed above, through segmentation or delay segment implementation as needed. To mitigate the state risk, the Authority needs to monitor both the state's overall financial situation and its continued ability to sell GO bonds.
- **Rationale:** As with overall funding risk, these risks are exogenous to the project and so that the Authority needs to mitigate these indirectly through project flexibilities as discussed.
- **Implications for HSR:** Before the 2008 recession, these in general were expected to be minimal risks. Given California's current financial situation, the Authority must continually focus on this risk.

ADDITIONAL DISCUSSION OF RISKS AND MITIGATION

RESPONSIVE TO LAO COMMENTS FROM "THE 2009 HIGH-SPEED RAIL BUSINESS PLAN":

*"Unknown Confidence in Projections. The plan does not provide any numerical ranges nor confidence intervals for projections contained in the plan (such as cost, revenues, or ridership). Without this information, the risk of not realizing the forecasted ridership, revenues, or costs is unknown."*

### **Capital Cost Contingencies, Confidence Intervals, and Ranges**

The capital cost estimates take the standard construction cost practice to guard against over-runs of adding contingencies to cover unknown risks. The capital cost estimates in the 2009 Report to the Legislature include contingencies of approximately \$8.3 billion or 27% of the pre-contingency construction-related cost.

As stated in the report, contingencies on construction-related items ranged from 20% to 30% depending on the estimated uncertainties in each category. For example structures, whose extent and designs are more liable to change as the design progresses, were assigned 30% contingency. Items such as track, electrification, and systems, which are relatively standardized, and whose length has little potential for variation, were assigned 20% contingency. Only trainsets, whose cost was based on recent procurements, were not assigned a contingency because it is usual bid practice to include contingencies in the price.

The PMT has implemented a formal Risk Management Program as a systematic process for identifying, assessing, evaluating, managing, and documenting risks that could jeopardize the success of the Project. The Risk Management Program's objectives are to:

- Link risk and returns
- Provide the means to achieve an acceptable level of CHSTP cost estimate and schedule certainty and establish levels of confidence associated with each
- Rationalize resources
- Exploit opportunities
- Reduce surprises and losses
- Report with greater confidence
- Satisfy legal and regulatory requirements

A copy of the current Risk Register is attached as Appendix B.

The suggested approach of estimating confidence intervals or ranges of cost could also be undertaken in the next report, at the level of major categories of the cost estimate.

DRAFT

ADDITIONAL DISCUSSION OF RISKS AND MITIGATION

RESPONSIVE TO LAO COMMENTS FROM "THE 2009 HIGH-SPEED RAIL BUSINESS PLAN":

*"Ridership Risk. The plan addresses the risk of incorrectly forecasted ridership with one sentence, stating the risk "would be mitigated by policies that continue to draw people to reside in California and encourage high-speed rail as an alternative mode of transportation."*

### **Ridership, Revenue, and Operating Cost Risks and Possible Mitigation**

Changes in ridership, revenue, and/or operating cost may affect the project's projected cash flow<sup>2</sup> and thus the planned financing. This section first describes the major categories of potential risk for these cash flow contributors, and possible mitigations of them. After that, a perspective on the reasonableness of the ridership and revenue forecast is provided.

The Authority's projected cash flow for the financing plan in the 2009 Report to the Legislature has several contingencies underlying it as a first broad mitigation:

- Gross ridership revenue could be 14% lower than currently projected and still be sufficient to attract the private sector funding anticipated in the plan. (Refer to "Paying for the System" for details on assumptions.)
- The revenue could be 50% of the projection and not create a need for operating subsidy. If shorter distance trips were the major source of the reduction, an even greater ridership drop would still not require operating subsidy.
- The ridership and revenue forecasts do not include the full potential of several niche travel markets, the positive effects of yield management, nor ancillary revenues from sources such as on-board advertising, naming rights, or small package carriage. These could add 10% in revenue.
- The operations cost has a 5% program contingency added to the calculated costs.

The Authority has initiated a substantial effort to more quantitatively understand the magnitude and nature of ridership and revenue risk (see summary above on pages 10 & 11). Completion of the entire ridership and revenue risk analysis effort will take another 15 to 18 months, although initial products from this effort may be available as early as December 2010.

---

<sup>2</sup> Cash flow is calculated as passenger and ancillary revenues minus costs to operate the system, maintain the fixed plant and the trainsets, and manage & insure the operation.

A similar effort will be undertaken for the operating cost, in addition to continuing the usual practice of adding contingencies to cover *unforeseen* costs and risks that was followed for the business plan.

DRAFT

## **RISKS THAT COULD REDUCE RIDERSHIP AND REVENUE AND POSSIBLE MITIGATIONS**

Four primary areas contribute to the risks that ridership and revenue projections would not be met:

- slower or less favorable patterns of growth, leading to a smaller overall travel market,
- more attractive conditions for air and auto travel than anticipated,
- less traveler willingness than expected to pay the assumed fares, and
- less attractive HST service, delays in starting HST service or service interruptions.

### ***Slower Growth or Less Favorable Growth Patterns***

Economic growth risks may arise at the regional, state, national and international levels, and could include items such as Gross Domestic Product (or Gross State Product), general inflation, fuel costs, income, migration rates, land use patterns, and the like. Economic factors influence the total amount of travel that people make, particularly intercity travel. Economic factors also directly affect the cost of travel, and may have different effects for air, auto, conventional rail, and HST travel options.

The Authority has no control over state, national and international economic growth, and as such has little ability to mitigate associated ridership and revenue risks. However, since economic growth assumptions are periodically revised by economic and demographic experts, the Authority can update the input assumptions used for ridership and revenue forecasts so that they always reflect recent projections.

Specific mitigation for the possibility of a smaller than forecast future travel market is present in the current ridership and revenue forecast by the fact that it does not fully include several niche markets including auto-based tourism travel, airport access by HST for overseas or out-of-state flights, or travel to sporting or other special events. These are not negligible markets (tourists for example spend an amount equivalent to 5% of the state's economy) and will be reviewed in the ridership forecast upgrade work underway.

The Authority, in cooperation with other state agencies, can work to mitigate the risk of lower growth by committing to economic and social policies that build a strong economy, a sound fiscal State condition, and a vibrant committed citizenry. In particular, the Authority can support efforts by state and local governmental agencies to create a strong economy in the HST service area, and to assure compatible land use policies and practices in close proximity to HST stations. These latter are good tools for encouraging compact and efficient growth providing competitive advantage for businesses and easy access to a well-educated labor force.<sup>3</sup> In short, the Authority, in cooperation with local partners, has many mitigation tools available to create a positive economic environment at sub-regional and station-site levels.

The ultimate mitigation for smaller travel markets is for the Authority to continue its current practice of providing contingencies in its financing plan to allow it to work with less revenue than forecast.

---

<sup>3</sup> See growth inducement analysis for the Bay Area-Central Valley Program-*Level EIR/EIS, Chapter 5*.

### ***More Attractive Air and Auto Conditions***

Airlines in the current forecast have been assumed to keep frequency and fares at pre-HST levels. However, competitive responses from airlines have occurred in markets where HST was introduced in the last several decades, including dropping fares to compete on price, cutting back on frequency of flights, and downsizing aircraft to maintain the frequency of flights. The responses have been quite different by market, with HST and flight times being major influences. The responses have also varied over time, such as a period of competition on fare, followed by capacity and fare adjustments as relatively stable market shares have become clear. The ongoing revenue risk analysis forecast work described above will focus on the range and probabilities of these potential responses.

Driving conditions, i.e. congestion, tolls, and per mile cost and parking, have been assumed to remain the same as 2005-2008, despite a forecast near-doubling in inter-regional auto travel from 2000 to 2030, and less extensive capacity increases to the road network. Gasoline prices and en-route delay may work together to make auto travel more difficult than assumed, or cost reductions in driving vehicles might make it more attractive, with or without decreases in auto size and capacity. Tolls or parking may be raised or rescinded, changing the cost of driving. The forecast upgrade work will assign probabilities to each of these situations to quantify the range of potential effects on the HST ridership volumes.

The Authority can also establish policies and practices, such as its policy on procuring electricity from renewable energy sources that could partially mitigate ridership and revenue risks from large energy cost increases; in so doing, the Authority may be able to create a competitive advantage over air and auto travel options.

Ultimately, mitigation for lower revenue due to increased attractiveness of air or auto travel would be for the Authority to continue its current practice of providing contingencies in its financing plan to allow it to work with less revenue than forecast.

### ***Less Willingness to Pay Assumed Fares***

The willingness of travelers to pay the specified level of fare is clearly a risk as well as an upside opportunity for ridership. If on the downside fewer travelers actually materialize at a given fare, prices can be lowered to attract more riders. (The Business Plan fare at 83% of air fare has considerable leeway for this without requiring operating subsidies.) If more riders materialized, fares could be raised to meet the projected ridership goal, and exceed the revenue goal. The ongoing revenue risk analysis forecast work described above will focus on the range and probabilities of these potential responses.

In the current forecast in the 2009 Report to the Legislature, this risk is mitigated partially by the current forecast approach of testing a single fare for each trip. In the real world, yield management techniques have evolved in the last 30 years that vary the price charged by the class of service, time of day, express vs. stopping trains, season of the year, time in advance of purchase, and other factors.

Yield management techniques have been reported to add 5% to revenues compared to more traditional pricing practices.<sup>4</sup>

The ultimate mitigation for reductions in revenue due to fare weakness is for the Authority to continue its current practice of providing contingencies in its financing plan to allow it to work with less revenue than forecast.

### ***Less Attractive HST Service, Delays in Start-Up, or Service Interruptions***

HST service quality risks potentially affecting revenue remain in decisions now being made in the project-level EIR/EIS and 15% engineering work. These risks include items such as longer alignments than currently anticipated, constraints on speeds from slow curves and high sustained grades, and stations that might not be located or sized as assumed. Since these elements are to be decided within the next several years and then will remain constant, they will not be dealt with in the probability analysis of the forecast upgrade work, but as larger one-time issues in the development of the project requiring significant course corrections by the HST project.

The assumed HST service package has elements that are largely proven and controllable by the Authority, such as the technology to reach top speeds, the interior layout and comfort of the train, and the ability to operate complex operations patterns with express and local services.

However, other assumptions about using the HST service are less controllable and may change in the future, such as not requiring HST traveller security screening, short times to reach the platform, large amounts of parking at the station, or provision of transit to the station. If such advantages are not maintained, there would be a drop in ridership and revenue needing mitigation. The likelihoods and importance of such factors will be examined in the ridership forecast upgrade work as well.

If the start-up of HST service were delayed, the beginning of operations expense and positive cash flow would be delayed. The public sector financing would not be significantly affected, but private funding could see a reduction in its returns.

Once HST is in service, mitigation of the effects of lower than expected ridership and revenue can be achieved by reducing the operating plan to properly serve the actual traffic. Sustainable actions that would not have a major impact to service quality include reducing the number of trains with double sets of cars to single sets, operating fewer trains at times of low ridership, and reducing staffing and management to match ridership needs. These actions would reduce operating costs as would the accompanying reductions in operating crews, maintenance of trains, and electric power consumption. The percent of cost saved would be less than the percent of revenue loss, but would reduce the loss in operating cash flow. Break-even operations could be possible even with actual passengers only 50% of the forecast in the year 2030.

Service interruptions are possible from major earthquakes or other natural events.

---

<sup>4</sup> E.g. Metzler, Jean Marie, SNCF Consulting Director TGV Developments, "Testimony" a presentation to the Committee on Transportation and Infrastructure, Sub Committee on Railroads, Pipelines and Hazardous Materials, US House of Representatives, Washington, DC, April 19, 2007.

## **RISKS THAT COULD INCREASE OPERATING COSTS AND POSSIBLE MITIGATIONS**

Cash flows that support the financing plan could be affected by operating costs that were higher than forecast. This could be created by uncertainty over future prices for labor and materials, the possibility of unexpected difficulties in operation or maintenance of the system requiring more personnel or work than anticipated,, unexpected regulatory requirements, or other unknowns.

The Authority's operating costs include a program contingency of 5%, equal to \$100 million in YOES\$ for 2030 cost.

The start-up of service also assume a significant learning curve *in* operation, resulting in 2020 costs twice as high per dollar of revenue as in 2030. Trains will therefore early on not have the same optimal load factors as in 2030, and more staff will be needed for a given level of activity. After 2030, no further efficiencies are assumed, and costs rise proportionally to the increases in activity.

In addition to the contingency approach, it will be possible to more quantitatively understand the risk profile of the forecasts. Probabilities can be assigned to a range of possible variations for each of many variables, e.g. higher or lower labor costs, different power costs, or different levels of activity, and the cumulative likelihood of changes in the forecast can be calculated. This can be included in the next report to the Legislature.

However, ultimately the mitigation for over-runs in operations cost is for the Authority to continue its current practice of providing contingencies in the financing plan to allow it to work with less cash flow than forecast.

### **Overview of Ridership and Revenue Forecast Reasonableness**

Ridership and revenue forecasts have been prepared using a state-of-the-practice transportation demand model that was developed in a joint effort of the Authority and the Metropolitan Transportation Commission (MTC). Model development occurred in a peer-reviewed process that followed industry standards. The resulting forecasts are based on consensus assumptions by outside experts about future economic conditions, population, employment, land use patterns, and highway and transit investments. The forecasts also rely on observed routes, schedules and fares for in-state air travel. Travel demand was first predicted without a high-speed train, and then with a high-speed train under various initial assumptions of alignments, station locations, fares, and operating plans. This model has been used consistently to prepare ridership and revenue forecasts since early 2007. See Appendix C for more information on the model and development activities.

The model and results have been repeatedly scrutinized and shown to consistently produce reasonable results that have appropriate sensitivity to changes in input variables. During the alternatives analysis conducted for the Bay Area to Central Valley Program EIR/EIS, ridership forecasts for the full statewide system were shown to range between 80 million and 96 million (depending upon the alternative) under base assumptions.<sup>5</sup> Continued forecasting work since that time has produced consistent results

---

<sup>5</sup> Forecasts up to 117 million annual riders were obtained under assumptions of higher airfares and auto operating costs.

when the same assumptions are used. When assumptions are changed, such as the HSR fare for the 2009 Business Plan, ridership and revenue forecast results change in a reasonable manner.

Importantly, results have shown that HST revenue tends to vary within a relatively small range under the assumptions that have been analyzed to date. In some cases, higher HST fares have been shown to generate larger system wide revenue even while ridership decreases. This result, which indicates the potential for pricing power in HST's key markets, was exhibited in results presented in the 2009 Business Plan as well in various sensitivity tests conducted in past years.

The ridership and revenue forecasts reflect in-state travel by California residents for typical work and non-work reasons. As such, the forecasts reflect the vast majority of travel that occurs in California. Nonetheless, there may be additional niche traveler markets for which HST might compete strongly. Some examples of these markets include:

- Business and recreational travel by non-residents of California,
- Travel to special tourist destinations or to major sporting events and festivals; and,
- HST in lieu of short-haul flights for connections to transcontinental and international flights.

Accordingly, the forecasts developed to-date by the Authority may not be reflective of HST's ultimate upside ridership and revenue potential.

The 2009 Report to the Legislature ('09 Report) summarized the process of data collection, model development, and key assumptions about future travel conditions and California population<sup>6</sup>. The following list recaps the assumptions used in the Business Plan forecasts for several key variables:

**Population growth** - forecasts from Federal, State, regional and private economists. Statewide population in 2030 at 48 million, up 30% from 2009, or average growth of 1.1% per year. Growth of last 10 years 1.4% per year.

**Fare levels at 83% of air** - in the middle of a range for similar-length markets outside of California including NY – DC (60-100% of air, depending on day of week), London – Paris (80% of air), Madrid – Seville (70% of air), Tokyo-Osaka (108%).<sup>7</sup>

**Future auto cost & congestion** – all-in driving costs at 27 cents per mile per person in 2009\$, tolls at 2005 levels, no new high-occupancy-toll or other toll lanes. Construction of new HOV and mixed flow lane miles in accordance with adopted 2030 long range plans, offset by growth in traffic. Broadly, congestion remains at today's levels.

**Future air service and fares** – air fares assumed to remain at 2008 real levels, parking costs at 2005 real levels. Air service continues at 2005 frequencies.

**Ridership and revenue during initial years of operation** – the first full year of HST service In 2020 is assumed to generate only 33% of the year 2035 riders and revenue, due to the newness of service and difference in economic and demographic projections between 2020 and 2035; 2021 is assumed to

---

<sup>6</sup> See pp. 67-70 of 2009 Report to the Legislature ('09 Report).

<sup>7</sup> See discussion and related footnote, p. 70 of '09 Report

grow to 50%, 2022 to 68%, 2023 to 86%. From there to 2030 HST growth is 1.5% per year, slowing to 0.75% per year from 2030 to 2035.<sup>8</sup>

California HST is projected to generate substantial ridership and, especially, revenue in some key intercity markets. For example, HST is forecast to carry a third (33%) of intercity travel between the LA Basin and Bay Area in 2035 in the 83% of air fare scenario, or 8 million trips.<sup>9</sup> HST, auto, and air would roughly split the market equally. This is similar to with the shorter NY – DC market where Amtrak (Acela + Conventional trains) carries roughly the same share as air, albeit with much slower average speeds (80 mph Acela vs. over 150 mph CA HST).

In like-distance European and Asian markets, HST attracts generally larger shares than is projected for LA Basin – Bay Area, because of higher urban densities and government policies favoring rail (driving distances except as noted)<sup>10</sup>:

- Spain's AVE has 53% of total air/rail/road traffic on the Madrid-Seville route (335 miles).
- The Thalys between Paris and Brussels (183 miles) holds 52% of the total market; after the high-speed rail line went into service, airlines discontinued locally oriented flights Paris-Brussels – the only competition remaining is road.
- The Shinkansen, even though more expensive than air, carries seven times the passengers as air, (86%) of the air+rail market, Osaka – Tokyo (322 miles).
- Eurostar has more than 70% of London - Paris air+rail market (244 miles), 64% on London-Brussels (204 miles).
- Madrid – Barcelona now carries more than 45% of the travel market, more than air<sup>11</sup>
- Taipei – Kaohsiung (225 miles) now has air service only on Friday & Sunday, peak travel days, whereas peak period hourly shuttle service was the norm every day prior to HST. (Aircraft shifted to longer cross-straits service to mainland China.)

---

<sup>8</sup> See Figures 1 & 2 and accompanying discussion, p. 71; Table E, p. 73; Table J, p. 82 of '09 Report.

<sup>9</sup> Currently in 2009/2010 trips in this market are estimated at 16 million, 9 million by air, 7 million by auto, growing to 22 million in 2035. See Appendix A "Forecast HST Share of Market LA Basin to Bay Area", Feb 16, 2010 for more detail.

<sup>10</sup> Brand, N., "HSR diversion of traffic from air", working paper, July 5, 2009

<sup>11</sup> "High Speed Rail Gains Traction in Spain", Elizabeth Rosenthal, NY Times, March 16, 2010,

ADDITIONAL PEER REVIEW COMMITTEE APPOINTMENTS

In January 2010, Treasurer Bill Lockyer appointed Walter Bell to serve on the Independent Peer Review Committee.

In March 2010, Controller John Chiang appointed Diane Eidam to serve on the Committee.

As of this writing, there remain three members of the committee to appoint, including another by the Controller, one by the Secretary of the Business, Transportation and Housing agency, and one by the Treasurer.

DRAFT