CALIFORNIA HIGH-SPEED RAIL AUTHORITY

Report to the LEGISLATURE

DECEMBER
2009

CALIFORNIA
High-Speed Rail Authority

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CALIFORNIA
High-Speed Rail Authority

Introduction / Purpose

The California high-speed train will dramatically change the face of our state – from our economy to our environment, to the communities the system passes through and the way we are viewed around the world. It will create jobs, spur the development of more livable and sustainable communities, help achieve our state's historic greenhouse gas reduction goals, and reinvent Californians' perception of the time and distance across our great state.

Today is an exciting time for high-speed rail development, as interest in the transportation option builds around the globe, and as the President of the United States pursues a vision of transportation in America in which high-speed trains play a leading role.

Over the course of the past year, a number of events have transformed California's high-speed train project from simply an idea into a viable infrastructure project. As such, the California High-speed Rail Authority is also evolving from an entity focused solely on planning a high-speed train project to one that must also build it.

Just over a year ago, the people of California said clearly[1] that they want a high-speed train system – a new transportation option – when they voted in favor of Proposition 1A. And interest in California's project – which has been in planning for some 13 years – has now reached an unprecedented level.

For these reasons, the Legislature rightly included in the 2009-10 State Budget language requiring the California High-Speed Rail Authority to submit a business plan document by Dec. 15, 2009. Subsequent legislation additionally was passed by the Legislature and signed by Governor Schwarzenegger requiring the Authority to submit a revised business plan every two years[2].

This document satisfies the requirement of the Budget Act of 2009[3] and lays out the path forward for California's high-speed rail project.

1 Secretary of State, Statement of Vote, November 2008 General Election, Proposition 1A, the Safe, Reliable High-Speed Train Bond Act
2 Assembly Bill 783 (Ashburn), Chaptered Oct. 11,2009
3 Assembly Bill 4x1, revisions to the Budget Act of 2009, SEC. 148. Item 2665-004-6043 of Section 2.00

Executive Summary

On Track to Create Jobs, Stimulate Our Economy, Improve California's Mobility, and Support the President's Vision

Inspired by successes of high-speed train systems around the world, California has for more than 13 years been planning a statewide high-speed rail line that will serve as a backbone and a needed alternative to the state's existing transportation network. Stretching initially from Anaheim/Los Angeles through the Central Valley to San Francisco, and later to Sacramento and San Diego, it will be capable of a 220 mph operating speed and a travel time between Los Angeles and San Francisco of under 2 hours 40 minutes. It will interconnect with other modes of transportation and provide an alternative, more environmentally friendly option to vehicle and air travel.

The California High-Speed Rail Authority is the state entity charged with planning, designing, building, and operating the planned system. To date, the Authority has existed largely as a planning organization, staffed by a small number of state employees, relying largely on contract services, and governed by a nine-member board of directors. However, now the Authority must transform into an implementation entity responsible for what will be the largest public works infrastructure project in state history.

A project of this magnitude will have a significant impact on our economy, in both the short and long terms, and will provide the job creation and stimulus our state needs in this difficult economic time. Construction startup by 2012 is expected to generate 600,000 jobs (one-year, full-time equivalents over approximately 8 years) and kick-start economic activity in design, construction and supply services.

The path from where California's high-speed train project stands today to initial revenue passenger service can be divided into three categories of major milestones: planning, implementation, and revenue service. This document describes the process, shows where the project is currently, and discusses the plan to achieve initial high-speed train service. An ideal timeline shows full, Anaheim/Los Angeles to San Francisco high-speed train service by 2020, with smaller sections opening for limited or shared-use service prior to that time.

Between today and passenger service, it is essential that the Authority conduct effective and thorough outreach to inform Californians about the project and its progress. Effective outreach is integral to achieving the goals of the high-speed train project, and it is incumbent upon the Authority to effectively engage the public in its mission to be transparent and accountable to the people of California. Already, the Authority is putting in place a plan to augment and improve its

outreach efforts, and between today and the commencement of construction, there will be ample and significant opportunities for public input and interaction.

Another stage in the lead up to construction is to refine ridership and revenue estimates. The ridership of a high-speed train system, the revenue it brings in, and its operations costs are all interconnected. Balancing the three elements determines the viability of the system as a business enterprise. This document describes the Authority's current ridership, revenues, and operations costs estimates, and the steps we are taking to further improve those numbers.

This document also updates the projected cost of building the system, describing for the first time the construction costs in terms of the year the dollars will be expended rather than today's current dollars. Previously, the cost of the project had been described in terms of the current year. However, the federal government, through the American Recovery and Reinvestment Act application process, required the description of a project's cost to be made in year-of-expenditure dollars; additionally, to talk about the Proposition 1A bond dollars is to talk in year-of-expenditure terms, as that dollar amount is not indexed to inflation and will remain static, at $9 billion available to the high-speed train project, whether it is expended in 2008, 2018, or even further into the future. This is a more credible manner by which to estimate the cost of the high-speed train project, as California clearly is not constructing the system today but will instead be constructing it over a period of time between 2012 and 2020. The updated cost estimate for the San Francisco-to-Anaheim initial high-speed rail system is $42.6 billion in year-of-expenditure dollars – the bulk of which is due to inflationary costs.

A plan for financing that project cost is included in this document. Bolstered by the unanticipated American Recovery and Reinvestment Act, the state bond dollars approved by California voters, and a new President publicly eager to help build high-speed rail networks in this country, the financial plan lays out a realistic scenario for paying for the system with a combination of state, federal, local, and private funds.

Never before has there been more interest and more momentum behind building a high-speed train system in the United States. Already in California, the Authority has experienced tremendous amounts of interest from private companies who work with train technology as well as construction, in addition to intense interest from foreign governments and consortiums with experience building and operating high-speed train systems overseas. The Authority has executed cooperative information-sharing agreements with a number of countries.

But of course there are risks to a project of this size, scope and nature – risks that could jeopardize the project's completion. Any frank discussion of the project and its planning must include these risks, and any credible plan for the project must address how these risks would be mitigated. This document does that.

Additionally, this document outlines the unprecedented amount of oversight – the comprehensive system of external controls, oversight and review – guiding the Authority's work. The uniqueness and enormity of the project make this scrutiny appropriate and provide greater assurance that the public's interest will be protected and that the project's success will be realized.

In summary, California's high-speed train project is on track and being pushed along by tremendous momentum from our partners in government, the private sector, and the people of our state who know that its construction will mean jobs and economic stimulus and its completion will mean a more mobile, vibrant, environmentally friendly, and interconnected California.

The Project and Its History

Inspired by successes of high-speed train systems around the world, California has for more than 13 years been planning a state-wide high-speed rail line that will serve as a backbone and a needed alternative to the state's existing transportation network. It is envisioned as a new system stretching initially from Anaheim/Los Angeles through the Central Valley to San Francisco, and later to Sacramento and San Diego. It will be capable of 220 mph operating speed and a travel time between Los Angeles and San Francisco of under 2 hours 40 minutes. It will interconnect with other modes of transportation and provide an alternative, environmentally friendly option to vehicle and air travel. Today, the system is more than a vision, it is a reality California is working toward with the support of the state's voters, labor, environmental, and business advocates, and the strong support of the governor and the President of the United States. S

The Project

California's high-speed rail project is a planned transportation backbone whose initial 500 miles will begin in Anaheim/Los Angeles, run through the Central Valley from Bakersfield to Merced, then head northwest into the Bay Area. It will travel up to 220 miles per hour and be able to make its journey from Los Angeles to San Francisco in under 2 hours and 40 minutes. Subsequent phases of the high-speed rail system are planned for a southern extension from Los Angeles to San Diego via the Inland Empire and an extension from Merced north to Sacramento.

The project's goal is to increase and maintain California's mobility, which is vital to our economy's health, as our population grows by a third – from 38 million today to a projected 50 million by 2035.

The project will employ train technologies like those used in other countries with established high-speed train systems (for example: Japan, France, Germany, Great Britain, Spain, Korea and China). That means steel-wheel-on-steel-rail technology, entirely electric power, state-of-the-art safety and signaling systems, and automated train control. This is not new technology – only new to North America. It was introduced in Japan in 1964, France in 1981, and in many other countries within the past two decades.

PHASE 1 OF PLANNED HIGH-SPEED RAIL SYSTEM

(Note: These two maps represent the work that has been conducted in the time between the submission of the 2008 Business Plan to the Legislature and Dec. 1, 2009. Subsequent to that date, the High-Speed Rail Authority took action that affects the Bay Area to Central Valley portion of the planned system and the related Program-Level EIR[4]. Also note that the dots on these maps represent station locations and optional station locations; the total number of stations on the system will not exceed 24, per Proposition 1A.)

PLANNED SUBSEQUENT HIGH-SPEED RAIL SECTIONS

The system will interface with and complement other modes of transportation – commercial airports, mass transit, the state's highway network, as well as bike paths and foot traffic. The system will be capable of many patterns of service and will compete – as it has in other countries – with air and automobile travel over medium distances.

The California high-speed train will operate primarily on exclusive track with portions of the route shared with other existing passenger rail operations. The route will be constructed at-grade, in an open trench, in a tunnel, or on an elevated guideway, depending on the terrain,

[4] See "Town of Atherton Lawsuit & the High-Speed Rail Line" in the following section within this chapter.

physical constraints, environmental impacts and community input along sections of the line. Extensive portions of the system will lie within, or adjacent to, existing rail or highway right-of-way (rather than new alignment) to reduce potential environmental impacts and minimize land acquisition.

It is a project supported by California's voters, its congressional delegation, environmental advocates, labor and business groups, the President of the United States, as well as transportation planners, who know that high-speed train technology has proven to be the safest and most reliable form of transportation.

History

Inspired by the successes of high-speed train systems in Asia and Europe, the state of California has for decades pondered the possibility of a high-speed passenger rail system in the Golden State.

It first pursued the idea of a Southern California high-speed corridor working with Japanese partners in 1981, under Governor Jerry Brown. Lynn Schenk[5] , who was at that time the Secretary of the state Business, Transportation and Housing Agency, went on to represent California in the U.S. Congress, where she wrote the bill creating the first five high-speed rail planning corridors in the country, including California's, and introduced the "High-Speed Rail Development Act of 1994," which was signed into law that year by President Clinton.

In the mid-1990s, as it became clear that California's increasing population was putting a strain on its highways, airports, and conventional passenger rail lines, investigation of the potential for a high-speed rail system began in earnest. Legislative Joint Resolution by then-Senator Quentin Kopp was adopted in 1993 and created the Intercity High-Speed Rail Commission, charged with the task of determining the feasibility of an intercity high-speed rail system in California. Working through the Business, Transportation and Housing Agency, the commission in September 1996 issued its "High-Speed Rail Summary Report and Action Plan," which concluded that such a project was indeed feasible.

Subsequently, that same year, the California High-Speed Rail Authority was created by the Legislature and Governor Pete Wilson. The Authority was tasked with preparing a plan and design for the construction of an economically viable high-speed train line linking major metropolitan areas that would help sustain the state's long-term mobility and economic growth.

Following release of the Authority's first business plan in 2000, the Legislature passed and Governor Gray Davis signed SB 1856 by then-state Senator Jim Costa in 2002 authorizing a $9.95 billion bond issue to finance a new high-speed train system in California. Submission of the measure to the state's voters was delayed several years by the Legislature as part of the state's budget process.

In 2004, the Authority together with its federal partner, the Federal Railroad Administration (FRA), issued a Draft Program-Level Environmental Impact Report/Environmental Impact Statement (EIR/EIS) (two volumes and 64 technical reports) that sought to describe the proposed system and describe its environmental impacts on a statewide scale. Through the public environmental review process, the Authority received and reviewed over 2,000 public and government agency comments on the draft document, which was used to determine preferred corridors and stations for the majority of the proposed line. The program-level EIR/EIS was certified in 2005. An additional program-level EIR/EIS was certified in 2008 that examined the path between the Central Valley and the Bay Area.

5 See Schenk biography in following section, "The High-Speed Rail Authority"

Town of Atherton Lawsuit & the High-Speed Rail Line

In August 2008, a group of petitioners filed a lawsuit in Sacramento County Superior Court claiming the Authority's Final Bay Area to Central Valley Program EIR violated the California Environmental Quality Act (CEQA) in numerous ways. (Town of Atherton, et al., v. California High-Speed Rail Authority, et al., Sacramento Superior Court Case No. 34-2008-80000022.) The Program EIR examined network alternatives for connecting the High-Speed Train system between the San Francisco Bay area and the Central Valley, particularly network alternatives involving the Altamont Pass and the Pacheco Pass.

In August 2009, the court issued a ruling upholding the Authority's program EIR in most respects. The court did, however, indicate the program EIR required revision and recirculation in the following areas to comply with CEQA:

- description of the alignment of HST tracks between San Jose and Gilroy;
- impacts to surrounding businesses and residences, the Monterey Highway, and Union Pacific freight operations between San Jose and Gilroy; and
- land-use impacts associated with Union Pacific's denial of the use of its right-of-way.

The court also found that the Authority's CEQA finding on vibration impacts was not supported by substantial evidence. A final judgment was entered on November 3, 2009, and a peremptory writ of mandate issued.

On December 3, 2009, the Authority approved resolution #HSRA 10-014[6] , as the first step in complying with the court judgment. This action rescinds the Authority's 2008 certification of the program EIR and related approvals. The Authority directed staff to prepare the necessary revisions to the program EIR and circulate them in accordance with CEQA for public comment. The Authority will consider the revised program EIR and the entire record of material before making a new decision to certify the revised final program EIR. The Authority will also make a new decision on a network alternative, preferred alignments, and preferred station locations for further study in project EIRs.

The Authority has begun the more specific, project-level environmental reviews for individual sections of the system in order to better manage the environmental review process. That is the stage the Authority is currently engaged in as of the submission of this Business Plan, along with the additional work on the Bay Area to Central Valley Program EIR to address issues cited by the court and discussed elsewhere in this report[7].

In 2008, the state Legislature approved and Governor Arnold Schwarzenegger signed Assembly Bill 3034 (Galgiani), which revised Senator Costa's SB 1856 of 2002, finally putting the $9.95 billion bond measure on the November 2008 ballot – $9 billion of which was targeted as partial financing of a high-speed rail system. Proposition 1A, as it was named on the ballot, was approved with 52.7 percent[8] of the vote. It became the country's first-ever voter-approved multibillion-dollar financing mechanism for high-speed rail.

Then, in 2009, newly elected U.S. President Barack Obama included $8 billion in funding within the American Recovery and Reinvestment Act (ARRA) to be directed to high-speed train projects throughout the country. Along with that inclusion, he set out a Vision of High-Speed Rail in America[9] that envisions a comprehensive high-speed intercity passenger rail network through a long-term commitment at both the federal and state levels.

6 http://www.cahighspeedrail.ca.gov/images/chsr/20091201141348_Agenda_Item_3_-_Resolution_HSRA10-012.pdf
7 On December 3, 2009, in order to comply with a Superior Court ruling, the California High-Speed Rail Authority Board voted to rescind the resolution certifying the 2008 EIR, and the Authority is pursuing additional studies prior to bringing the document back before the Board for consideration or recertification.
8 California Secretary of State's Office, Statement of Vote, 2008 General Election, http://www.sos.ca.gov/elections/sov/2008_general/57_65_ballot_measures.pdf
9 Obama Administration, U.S. Department of Transportation, Federal Railroad Administration, Vision of High-Speed Rail in America

As of the submission of this Business Plan, California stands to receive billions of dollars from the ARRA for the construction of high-speed rail. It has requested, through the Governor, nearly $6 billion from that $8 billion pot, $4.7 billion of which was requested specifically for the high-speed train project.

Guidance issued for ARRA funding, which may be announced as early as January 2010, sets a deadline of September 2012 to obligate the federal monies – meaning go to construction.

Project Expenditure History

Over the course of its 13-year history, the Authority's budget has varied and has come from a variety of funds, including those from regional partner transportation agencies. Below is a chart showing the Authority's funding since its inception, the sources of those funds, and the activities on which they were expended

FY	Administrative Expenses	2000 Business Plan	EIR/EIS	Imp. Plan	Outreach	BA/CV EIR/EIS	PE/EIR/EIS	Total	Source
1997/98	380,000	1,120,000						1,500,000	PTA
1998/99	854,000	2,146,000						3,000,000	PTA
1999/00	901,000	2,131,000						3,032,000	PTA
2000/01	926,000	100,000	5,000,000					6,026,000	TCRP
2001/02	1,021,000							1,021,000	PTA
2001/02			519,000					519,000	Prop 116
2001/02			2,498,000					2,498,000	CT/Reimb
2002/03	770,000							770,000	PTA
2002/03			5,750,000					5,750,000	SHA
2002/03			1,250,000					1,250,000	FTA
2002/03			158,000					158,000	CT/Reimb
2003/04	750,000		852,000	758,000	200,000			2,560,000	PTA
2003/04			800,000	242,000	200,000			1,242,000	FTA
2004/05	636,000		400,000		115,000			1,151,000	PTA
2005/06	1,176,000		500,000	500,000	50,000	1,420,000		3,646,000	PTA
2006/07	1,113,000					185,000	13,255,000	14,553,000	PTA
2007/08	1,476,000					218,000		1,694,000	PTA
2007/08							3,500,000	3,500,000	OCTA/Reimb
2007/08						754,000	14,746,000	15,500,000	Prop 116
2008/09	1,748,000						3,900,000	5,648,000	PTA
2008/09							3,500,000	3,500,000	OCTA/Reimb
2008/09							5,983,000	5,983,000	Prop 116
2008/09							29,100,000	29,100,000	Prop 1A
2009/10	2,225,000						136,955,000	139,180,000	Prop 1A
Total	**13,976,000**	**5,497,000**	**17,727,000**	**1,500,000**	**565,000**	**2,577,000**	**210,939,000**	**252,781,000**	

10 Budgeted

The High-Speed Rail Authority

The High-Speed Rail Authority Organization

Established in 1996 by state legislation, the California High-Speed Rail Authority (Authority) is the state entity responsible for planning, constructing, and operating a high-speed train system serving California's major metropolitan areas.

Per state law setting up the Authority, it is governed by a nine-member policy board. The Board members are appointed by the governor and the Legislature – five members appointed by the governor, two by the state Senate, and two by the state Assembly.

To date, the California High-Speed Rail Authority has been a planning organization, staffed by a small number of state employees, relying largely on contract services, and governed by a nine-member board of directors. However, now the Authority must transform into an implementation entity responsible for what will be the largest public works infrastructure project in state history. This section describes the current organization and the steps necessary to grow it into a state entity overseeing construction of the state's high-speed train system.

Board Members

Chairperson: Curt Pringle

Anaheim Mayor Curt Pringle was appointed to the High-Speed Rail Authority in 2007 by Governor Schwarzenegger and his term expires Dec. 31, 2010. He currently serves as Mayor of the City of Anaheim and president of Curt Pringle & Associates. Pringle has also served as an adjunct faculty member in the political science department at the University of California, Irvine since 2000, where he teaches California government. Previously, he served in the California State Assembly from 1988 to 1990 and 1992 to 1998. While in the Assembly, Pringle served as Speaker in 1996. His term on the High-Speed Rail Authority Board expires December 31, 2010.

Vice Chairperson: Tom Umberg

Thomas J. Umberg is an attorney with Manatt, Phelps & Phillips, LLP. In 1995 Umberg was an Assistant U.S. Attorney in Los Angeles and Orange County. In 1997 Umberg was nominated by the President and unanimously confirmed by the United States Senate as Deputy Director of the White House Office of National Drug Control Policy (ONDCP). Umberg served three terms in the California Legislature, most recently between 2004 and 2006. He serves as a colonel in the U.S. Army Reserve, and is currently on active duty in Afghanistan, where he participates in monthly Authority Board meetings by telephone. His term on the High-Speed Rail Authority Board expires December 31, 2011.

Board Members:

David Crane, of San Francisco, has served on the Board of the High- Speed Rail Authority since 2007, having been appointed by Governor Schwarzenegger. He currently serves as special advisor to the governor for jobs and economic growth. Before joining the Administration, Crane was a partner with Babcock & Brown, a financial services firm. His term on the High-Speed Rail Authority Board expires December 31, 2012.

Rod Diridon, Sr., of Santa Clara is a Governor's Office appointee to the Board. He has served on the Authority since 2001, serving two terms as chair. Additionally, Diridon serves as the executive director of the Mineta Transportation Institute. Previously, he served on the Santa Clara County Board of Supervisors from 1975 to 1995 and served as chair of the Board for six terms. Diridon is past chair of the Metropolitan Transportation Commission, American Public Transit Association, Bay Area Air Quality Management District and the Association of Bay Area Governments. He is the president and founder of the California Trolley and Railroad Corporation. His term on the High-Speed Rail Authority Board expires December 31, 2009.

Richard Katz, of Sherman Oaks, is the owner of a public policy and government relations firm based in Los Angeles, Richard Katz Consulting, Inc. Katz was California's lead negotiator for the landmark Colorado River Agreement between the State of California, the Federal Government, four California Water Agencies, and the six Colorado River Basin States. Shortly after his election in June of 2005, Los Angeles Mayor Antonio Villaraigosa appointed Katz to serve with him on the Governing Board of the Metropolitan Transportation Authority. In September 2008, following the tragic Metrolink crash, Mayor Villaraigosa appointed him to the Metrolink board in order to lead the effort to right the agency. Governor Davis appointed Katz as his Senior Advisor on Energy and Water issues in 2001. Also in 2001, Katz was appointed to the State Water Resources Control Board. Confirmed by the Senate, he served for five years, occupying the water quality seat on the State Board. Katz was first elected to the California State Assembly in 1980, serving continuously for 16 years, 10 of which were as Chair of the Assembly Transportation Committee. Katz' term on the High-Speed Rail Authority Board expires December 31, 2011.

Lynn Schenk is an attorney and senior corporate advisor who served as Chief of Staff to California Governor Gray Davis from 1999 to 2003. In 1992 she became the first woman elected to the United States House of Representatives to represent the San Diego area. From 1978 to 1983, Ms. Schenk served in the Cabinet of Governor Jerry Brown as California's Secretary of Business, Transportation and Housing (the first woman to hold this Cabinet post). Prior to her state Cabinet appointment, Ms. Schenk served as a Deputy Attorney General in the criminal division of the California Attorney General's office, followed by several years as an in-house lawyer to the San Diego Gas & Electric Company. In 1976, she was appointed a White House Fellow by President Ford serving as a special assistant to Vice-Presidents Nelson Rockefeller and Walter Mondale. A gubernatorial appointee to the High-Speed Rail Authority Board, her term expired in December 2004.

Fran Florez is a former City Council member and Mayor of the city of Shafter. Florez, who retired from the banking industry after 35 years, is one of the principals of Florez & Florez consulting firm and has contracted her services exclusively to Pacific Gas and Electric Company's Public Affairs Department. She served as Board chairperson from September 2005 until September 2006. Her term on the High-Speed Rail Authority Board expires December 31, 2012.

The Honorable Judge Quentin L. Kopp was appointed to the San Mateo Superior Court on January 1, 1999, by Governor Pete Wilson. Judge Kopp retired effective January 31, 2004, but was immediately accepted in the Assigned Judges Program of the California Judicial Council. On June 13, 2006, the state Senate appointed him to the California High-Speed Rail Authority. He served in the California State Senate from December 1, 1986, until December 7, 1998, and as a member of the City and County of San Francisco Board of Supervisors to which he was first elected in November 1971, and re-elected four times thereafter. Judge Kopp served as an ex-officio member of the California Transportation Commission from 1988 until 1998, as a member of the California Law Revision Commission from 1995 until 1998, and a member of the Little Hoover Commission from 1996 until 1998. As an elected local and state legislator for 27 years, Judge Kopp also served as a leader on virtually every regional governmental policy-making body affecting the Bay Area. His term on the High-Speed Rail Authority Board expires December 31, 2010.

Russ Burns is business manager of Operating Engineers Local 3, and was appointed to the Authority board by Assembly Speaker Karen Bass. He previously served on the Cal-OSHA Standards Board Subcommittee for Certification of Crane Operators. A third-generation operating engineer and Local 3 member, Burns started his career as a crane operator on a variety of high rises, bridges, refineries and large treatment plants throughout Northern California and Reno, NV. He joined the Local 3 staff in 1994. Burns was recently re-appointed to the Authority and his term expires December 31, 2013.

The Authority is staffed by a small number of state employees charged with oversight of the effort to build the high-speed train system in California. It currently has state budget authority for 11.5 personnel-year-equivalents (PYs).

However, due largely to major events over the past 13 months, it is now required that the Authority's organization change and grow.

- Additional state staff is needed to oversee and administer the federal and state bond dollars that are soon to be in hand, and additional staff is needed to increase public outreach and ensure adequate risk management over increasing amounts of work being conducted by contractors. A plan is already in place to augment the Authority's staff, and is laid out below.
- The Authority Board has a need to become more engaged in the project's details and progress. That transition is already taking place under newly elected Chairman Pringle.

- The contract Program Management Team must prepare to transition from a planning and environmental review phase to a construction phase. A plan for such a transition is laid out below.

Adjusting the Authority's organization to properly suit the project ahead of it will require the partnership and cooperation of several entities, including the Department of Finance, the Legislature, and the Governor's Office.

The Authority's staff organization currently consists of an Executive Director (Mehdi Morshed[11]), three Deputy Directors (Finance and Administration, Environmental and Planning, and Communications, Public Policy and Outreach), a small support staff, as well as a Chief Engineer contractor, a Project Management Oversight Management contractor, Government Relations Management contractor, a Program Management Team, and Regional Project Management Teams. Additionally, the Authority employs a financial consultant contractor and a public outreach and communications contractor. The California Attorney General's office provides legal support to the Authority on all matters including review of the environmental deliverables up to and including the Final Environmental Report (EIR) and the Notice of Determination (NOD). The current overall project organization is illustrated on the following chart.

The California high-speed train system is also sponsored by the Federal Railroad Administration (FRA). The FRA is the federal lead agency under the National Environmental Policy Act (NEPA) responsible for technical and legal review of the regional project Environmental Impact Statements (EISs). All environmental deliverables up to and including the Final EIS and Record of Decision (ROD) will be subject to FRA approval. Likewise, the Authority is the state lead agency responsible for preparation and certification of the regional project Environmental Impact Reports (EIRs) required under the California Environmental Quality Act (CEQA).

11 Morshed was the first person appointed to the High-Speed Rail Authority when it was created in1996. His biography can be read here: http://www.cahighspeedrail.ca.gov/about/mehdi-morshed.htm.

The Authority

Over the past 10 years the Authority's limited staff members have managed to oversee all the activities related to the planning and environmental work for a state high-speed train. During those years the Authority's budget has varied from $1.5 million to nearly $140 million annually, while the number of full-time-equivalent state positions (PYs) has grown only from 5 to 11.5 (see chart to right).

FY	Total Budget	PYs	Notes
1997/98	1,500,000	3	
1998/99	3,000,000	4.5	
1999/00	3,032,000	5	
2000/01	6,026,000	4.5	
2001/02	4,038,000	4	
2002/03	7,928,000	4	
2003/04	3,802,000	4	
2004/05	1,151,000	3.5	
2005/06	3,646,000	3.5	
2006/07	14,553,000	6.5	
2007/08	20,694,000	6.5	
2008/09	44,231,000	9.5	
2009/10	139,180,000	11.5	8.5PYs currently filled
Total	**252,781,000**		

With the passage of the $9.95 billion bond measure last November, the mission and the objective of the Authority, its staff, and its contractors changed significantly. The promise of federal American Recovery and Reinvestment Act (ARRA) funds additionally has changed the Authority's mandate. Put simply, the Authority is now building a high-speed train system, not just building the hopes of one. Instead of the gradual and intermittent planning and environmental studies to match limited funds, the Authority must now proceed toward construction and operation and do it as quickly as possible.

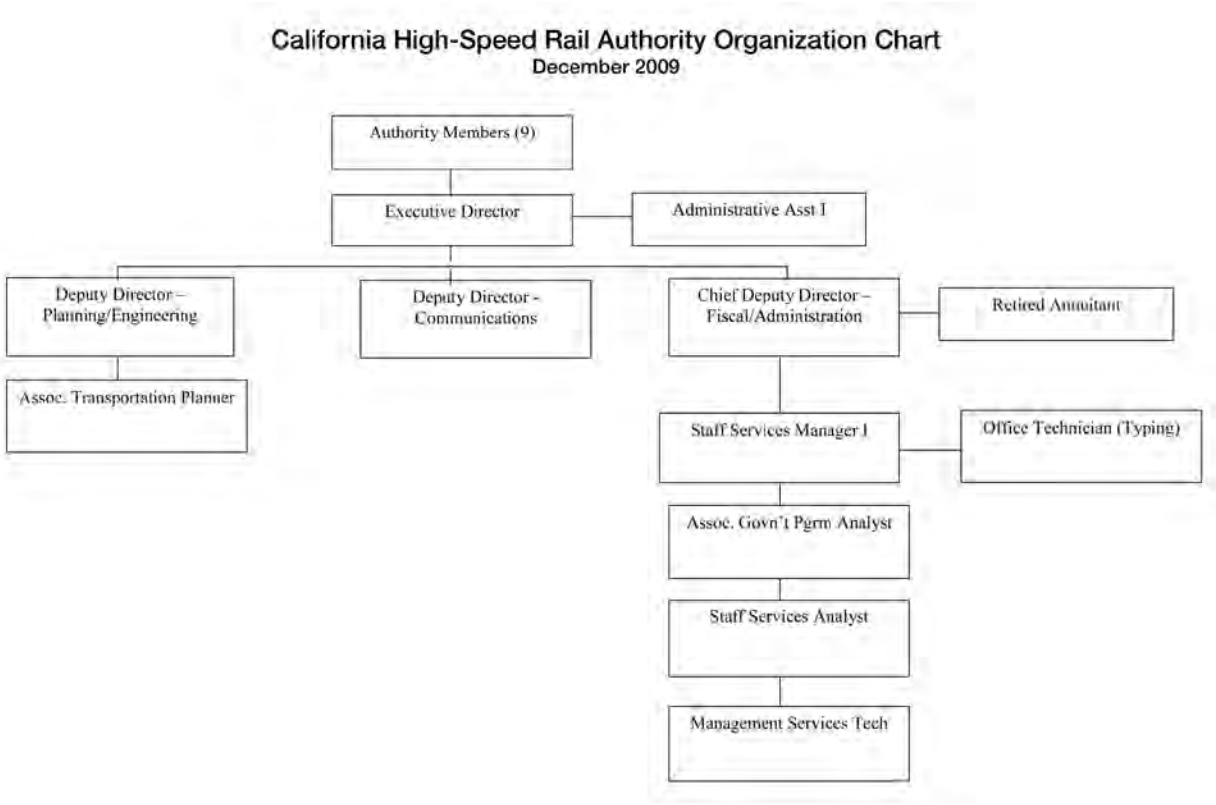
That means the Authority staff must be augmented to properly direct and oversee the work of its contractors moving forward in a manner that will preserve the intent of the project and protect public funds.

To systematically determine the personnel demand for the future activities, the Authority entered into a contract with the firm of KPMG to evaluate the current activities, the future needs, and the kind of organization and personnel that are necessary to carry out the required work. The KPMG report[12] is a good guideline on the kind of organizational structure that is necessary to implement the mission and objectives of the Legislature and the governor who placed the proposal before the voters, the voters who approved it, and the Authority. The recommendations of that report – currently being acted on by the Authority – are discussed in the following section.

12 Available at the High-Speed Rail Authority's Web site, at this URL: http://www.cahighspeedrail.ca.gov/images/chsr/20091103104811_11-05-09_Agenda_Item_11_attachment_to_Committee_Mtg_Item_2.pdf

Today's Organization

CURRENT STATE EMPLOYEE STAFF



Because of the lack of budget authority to hire additional staff, many key functions are currently being performed by contractors. Those functions include: oversight of the Program Management Team (contractor T.Y. Linn being brought on in December 2009); legal services (provided by the state Attorney General's Office and Nossaman LLC lawfirm); fiscal services (through the Department of General Services); personnel services (through Caltrans); legislative affairs (contractor); chief engineer (contractor); IT services (provided by contractor Paperless Knowledge); and regional director roles (two regional directors provided through joint agreements with Caltrans in the Central Valley and Caltrain in the Bay Area).

Moving Forward

As the California high-speed train project moves toward construction, the Authority's state staff must be augmented in order to ensure governance and decision-making in the public interest, as well as accountability and transparency.

The study conducted by KPMG and the resulting report provide a basis for necessary adjustments to the Authority's staff. With the input and approval of the Authority's Board, the Authority will immediately begin working to augment its staff.

The report pointed to the need to either create or bring in-house several key positions:

- **A "Chief Executive Officer" to lead the Authority in achieving its new mission**

  – Establishing a Chief Executive Officer position at the helm of the Authority will convey to the public, policy-makers, industry, and the markets that the Authority "means business" as it embraces this new phase

  – The CEO title is more widely used in certain local government and non-profit organizations, especially those that operate utilities or other "enterprises" that must attract and retain users in order to generate revenues, much like private businesses

- **An experienced, in-house "Chief Program Manager"**

  – The position is more than a "Chief Engineer" – encompassing responsibility for the Project life cycle, from planning and environmental, design and construction, to implementation and operation

- **An experienced, in-house "Chief Financial Officer"**

  – The Authority needs a highly-credible financial specialist for driving funding strategies and communicating with policy makers and the markets

- **A dedicated office for "Project Controls and Risk Management" (including quality assurance and health and safety)**

  – Importance of these functions warrants a direct line to the Chief Executive Officer

- **"General Counsel"**
- **"Regional Directors"**

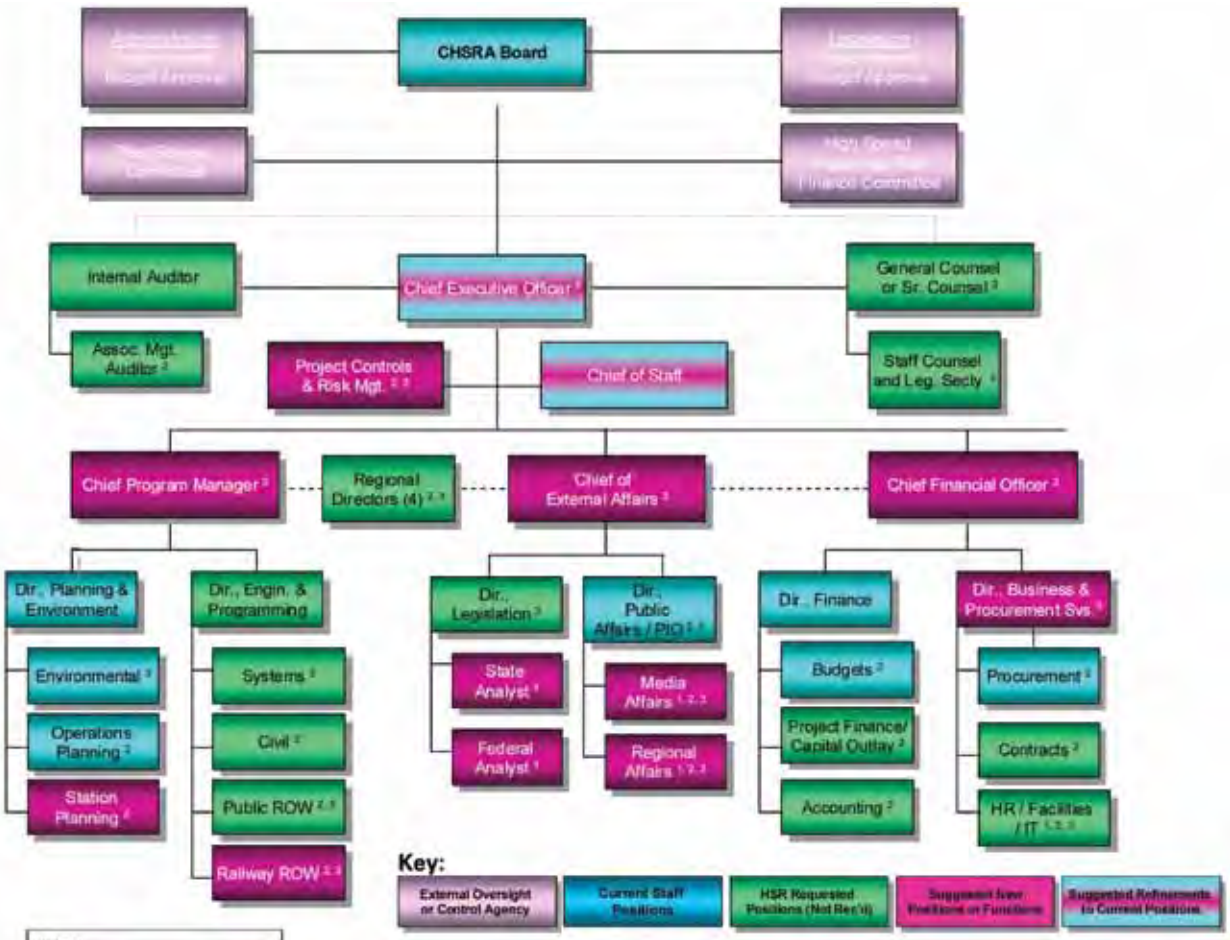
  – There is a need for additional regional directors, and the existing regional directors ought to be brought in-house

- **"Internal Auditor"**

Additional senior positions also are needed to perform mission critical functions, including both existing and new positions:

- **Director, Legislation**
- **Director, Engineering and Programming**
- **Director, Business and Procurement Services**

PROPOSED FUTURE STATE STAFF ORGANIZATION



Next Steps

In order to begin implementing these staffing changes, the Authority needs to initiate a number of important and time-sensitive actions, including:

- Secure support from the Administration, Legislature, and key stakeholders for the Authority's desired staffing, organizational structure, and timing. This should include the necessary legislative and executive actions to provide the Authority with additional exempt entitlements to facilitate the hiring of quality individuals from either inside or outside of state service at competitive salaries.
- Carefully manage the recruitment effort to attract world-class talent. This may include engaging a qualified search firm(s) or human resources consultant(s) to refine position parameters, identify appropriate classifications, and assess the competitive landscape, before establishing positions or commencing recruitment.

A Focus on Contracting

Rationale

It is a policy of the Authority's Board that the Authority rely on a relatively small core staff of state employees and employ contractors for the bulk of the project work. This policy marries well with a project of this nature, which requires highly specialized personnel for only short periods of time. For example, the project is currently in the environmental review phase, and therefore needs engineers and planners knowledgeable about state and federal environmental review processes. However, this phase of the project will be complete within the next couple of years, and those personnel and specific skills will no longer be needed by the Authority. So, it makes more fiscal sense to employ these personnel as contractors rather than establishing state employee positions that are finite in nature.

Using contractors also allows the Authority to quickly augment or reduce its staff as necessary. The alternative would be a rigid and slow state hiring process.

Recently, a reliance on contractors has assisted the Authority in maintaining its work schedule, as contract personnel are not subject to the governor-ordered three-days-per-month furloughs.

Contracts

The following is a summary of the scope of work, overall budget, and terms of all of the Authority's major contracts. All of the contractors, with the exception of the legal services contract, prepare and deliver an annual work program which is due to the Authority staff in early Spring. The annual work programs include a scope of work, list of deliverables, schedule, and budget which Authority staff review, comment and negotiate prior to the start of the fiscal year. Each contractor is provided a notice to proceed based on the negotiated annual work program immediately after the enactment of the state budget.

Program Management Contract

> Contractor Name:
> Parsons Brinckerhoff Quade & Douglas
>
> Agreement Total: $199,000,000.00
>
> Term: 11/20/2006 – 06/30/2013

The Program Management Team (led by Parsons Brinckerhoff) is providing day-to-day management of the program, working closely with the Authority staff and directing the work of other consultants. The work of Parsons Brinckerhoff (PB) includes development of project controls, design and engineering criteria, system specifications, environmental methodologies, working with the Federal Railroad Administration on compliance issues, as well as working with state and federal resource agencies in order to successfully obtain environmental clearances and permits. PB is

responsible for the development of a project implementation strategy and master plan, the launch and management of the project level environment work through a series of regional consultants, development of a right-of-way assessment and acquisition program, and the management of procurement, final design and construction, testing and commissioning, and revenue start-up activities. PB will establish the systems necessary to maintain control of the schedule, budget, documentation, procurement, construction contracting strategies, etc. so that project delivery tracks the established schedule and financial targets.

The work of the Program Management Team is discussed in more detail in a section later in this document.

Regional Contracts

Each regional contractor is responsible for developing engineering (15 percent - 30 percent), planning, and environmental data; for preparing one or more project site specific Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the high-speed train system in their respective corridors; and for providing the described right-of-way preservation and acquisition services in this corridor; as requested by the Authority. The project EIR/EIS will include engineering and environmental impact analysis of the high-speed train line and facilities, including station development, and connections with other modes of transportation. EIR/EIS process(es) will include the involvement of the public, interested groups, and appropriate local, state, and federal agencies, as determined in consultation with Authority staff.

Region: San Francisco to San Jose
Contractor Name: HNTB Corporation
Agreement Total: $55,000,000.00
Term: 10/16/2008 – 06/30/2014

Region: San Jose to Merced
Contractor Name: Parsons
Agreement Total: $55,000,000.00
Term: 11/12/2008 – 06/30/2014

Region: Sacramento to Fresno
Contractor Name: AECOM
Agreement Total: $83,400,000.00
Term: 11/20/2006 – 06/30/2013

Region: Fresno to Palmdale
Contractor Name: URS, Hatch Mott MacDonald & ARUP a Joint Venture
Agreement Total: $119,985,612.00
Term: 02/12/2007 – 06/30/2012

Region: Palmdale to Los Angeles
Contractor Name: Hatch Mott MacDonald, URS, & ARUP a Joint Venture
Agreement Total: $74,288,000.00
Term: 12/29/2006 – 06/30/2012

Region: Los Angeles to Orange County
Contractor Name: STV Incorporated
Agreement Total: $21,400,000.00
Term: 12/29/2006 – 06/30/2012

Region: Los Angeles to San Diego
Contractor Name: HNTB Corporation
Agreement Total: $94,805,692.00
Term: 02/12/2007 – 06/30/2012

Region: Altamont Corridor Rail Project
Contractor Name: AECOM USA Inc.
Agreement Total: $55,000,000.00
Term: 11/12/2008 – 06/30/2014

Other Contracts

Visual Simulation

Contractor Name:
Newlands & Company, Inc.
Agreement Total: $5,000,000.00
Term: 11/15/2006 – 06/30/2012

The Contractor is responsible for the development of realistic visual and audio simulations that will enable the public, agencies, and decision-makers to understand the virtual experience of a high-speed train system in California.

Financial Services

> Contractor Name: Infrastructure Management Group, Inc.
> Agreement Total: $4,000,000.00
> Term: 11/15/2006 – 06/30/2012

The Contractor is responsible for the preparation of a Financing Plan which includes a financing strategy and model for the implementation of the California high-speed train system. Additionally the Contractor will provide on-call advice and analysis to the authority on changes and new development to funding strategies, sources and availability.

Legal Services

> Contractor Name: Nossaman LLP
> Agreement Total: $500,000.00
> Term: 02/28/2009 – 06/30/2011

The Authority retained outside legal counsel to provide legal assistance concerning major infrastructure financing, implementation and project delivery, including public-private partnerships, as well as legal assistance concerning changes to and/or compliance with federal railroad regulations.

Oversight

In addition to contracting for a Program Management Oversight (PMO) team to oversee the work of the PMT, the Authority takes a series of steps that help ensure contracts are written to prescribe specific deliverables and that those items/services are indeed delivered. The Authority works with the state Department of General Services to executive effective contracts, and in addition to PMT monitoring of deliverables, Authority staff tracks invoices, deliverables, and program schedules. In the Authority's planned organizational changes, additional state staff positions are envisioned for oversight and risk management.

The Program Management Team

California's high-speed rail system is being developed with the assistance of a group of the world's leading experts in high-speed train planning, construction, and operation. These experts have guided the planning, construction, and/or operation of high-speed train systems around the world, representing hundreds of billions of dollars in infrastructure development. The Authority has enlisted many of the world's most experienced private engineering and planning firms to assist in:

- Program Management
- Project Engineering
- Economic Consulting
- Energy Consulting
- Environmental Services
- Infrastructure Design
- Systems, Operations and Ridership
- Right-of-Way and Land Use
- Specialty Engineering
- Transportation Planning
- Constructability Reviews
- Procurement
- Construction Management
- Testing & Commissioning
- Revenue Service Start-up

A brief summary of the Authority's consultant team experience is shown in the box below. In 2006, the Authority engaged Parsons Brinckerhoff[13] to provide program management services to oversee and manage the California High-Speed Rail Program. The Program Manager is providing program-level management and oversight of eight regional consulting firms that are performing detailed planning, preparing project-level environmental documents, conducting public outreach and engagement, and performing preliminary engineering design. Each of the regional consultants reports to a regional

13 In October 2009, Parsons Brinckerhoff was acquired by international engineering, construction and investment group Balfour Beatty.

manager from the program management team. The regional managers are directing the project-level environmental process and preliminary engineering design by the regional consultants, and will manage procurement, construction management, testing commissioning, and revenue start-up activities within their sections once this aspect of the program commences.

Successful management of a very large and complex undertaking like California's high-speed train project requires thoughtful planning, proactive decision-making, timely execution, and regular monitoring. As delivery activities overlap and schedules compress, the challenge is to consider and manage a number of separate, often concurrent, activities for different geographical sections and delivery phases of the system, including:

- Planning, environmental review and permitting; preliminary engineering, land acquisition, and negotiations with existing railroads, public and local entities
- Procurement documents, design, construction, testing and commissioning; and training
- Revenue service operation and maintenance of the high-speed rail system

The Program Management Team (PMT) has established standards for design work, environmental protocols, and revenue and ridership analysis, and manages the regional consulting firms under direct contract with the Authority. These standards are based on worldwide state-of-the-art high-speed rail experience and U.S. federal and state regulatory requirements to build and operate the Nation's first very-

THE CHSTP TEAM

More than 600 persons are currently involved in the planning and engineering of the CHSTP, including more than 135 senior managers, planners, engineers, and operators with significant project work on one or more of the high-speed train projects in Europe and Asia, as well as the Northeast Corridor. Examples of some of these projects and corresponding number of team members are shown below:

British HSR Projects:	**21**
Chinese HSR Projects:	**1**
Taiwan-Taipei-Kaohsiung:	**23**
Korea-Seoul-Pusan:	**7**
USA-North East Corridor:	**65**
Boston-New Haven, Electrification:	**4**
French TGV Projects:	**2**
HSL Zuid-Belgium-Netherlands:	**2**
Germany-ICE HSR:	**2**
Denmark Storebaelt & Oresund Links:	**3**
Portugal Linha do Norte:	**2**
Spanish HSR Projects:	**3**

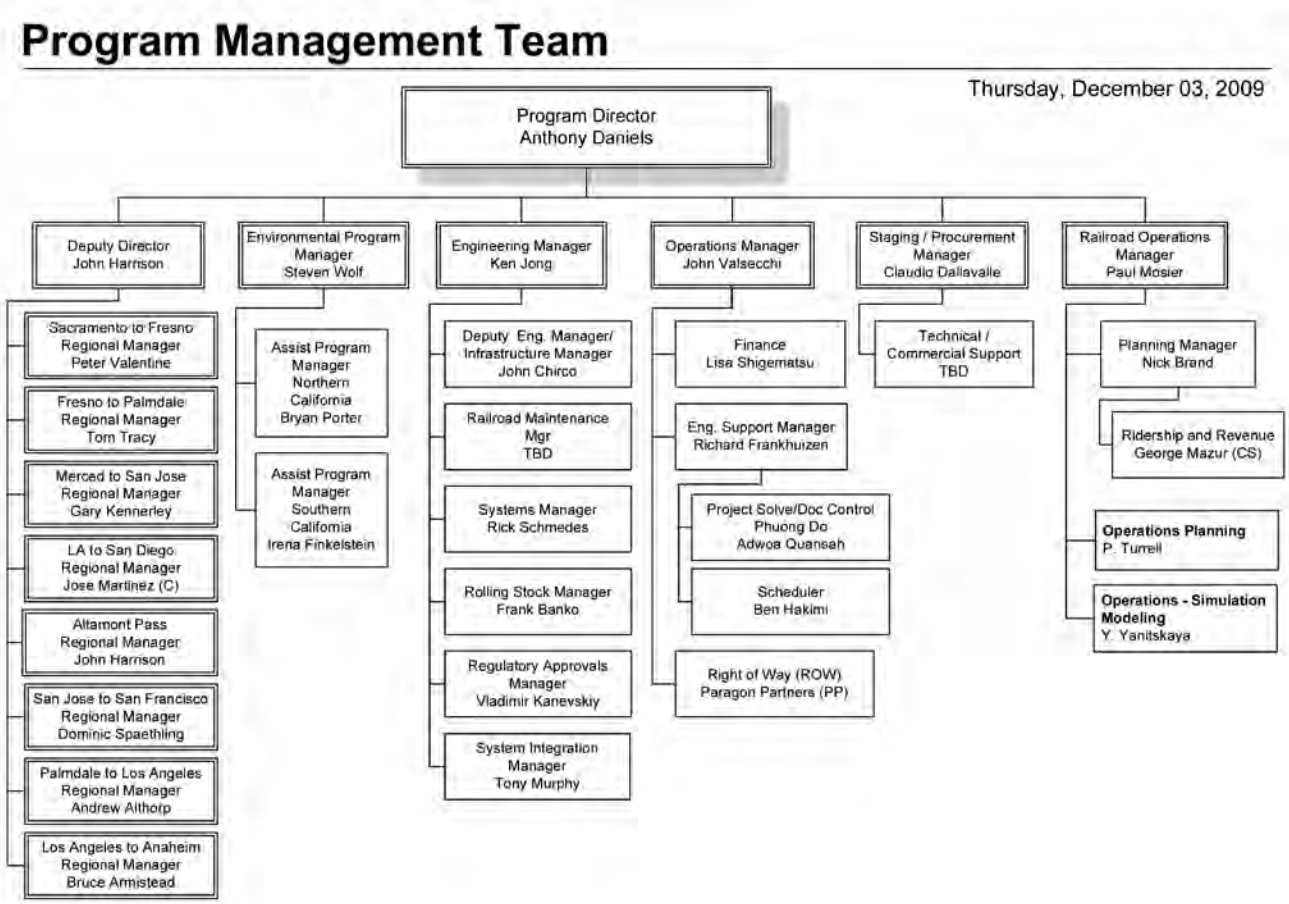
Experts on this project have guided the planning, construction and/or operation of HST systems around the world representing hundreds of billions of dollars in infrastructure development.

(View Appendix A to this section that shows the Program Management Team's personnel and their relevant experience on high-speed train projects around the globe.)

high-speed rail system. The PMT is responsible for taking the program from environmental assessment through preliminary engineering into procurement. A PMT will then follow the project into final design and construction, testing and commissioning, start-up, and revenue service. The overall schedule for the PMT's activities is shown later in this report.

The PMT, having established the standards and protocols, then reviews and confirms the work of the regional consulting firms for consistency and accuracy to ensure the system will function as intended. Once the project milestones are reached for 30 percent design and environmental approval, the PMT will create camera-ready documents for procurement of final design and construction contracts.

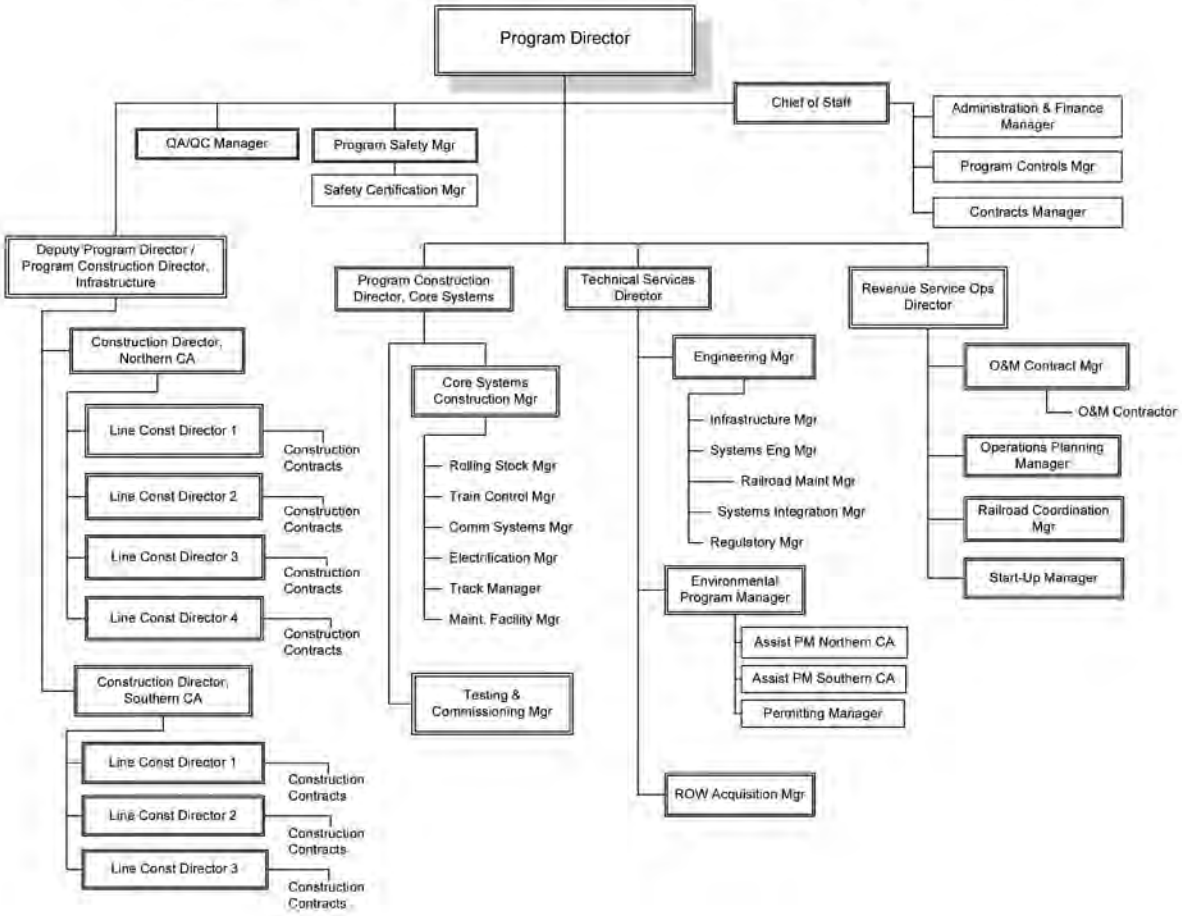
The current PMT organization is shown below. Led by Program Director (Daniels), reporting through Deputy Director (Harrison), eight Regional Managers oversee the Regional Consultants. Five other functional managers also report to the Director – an environmental program manager (Wolf); an engineering manager (Jong); an operations manager (Valsecchi); a staging/procurement manager (Dallavalle); and a railroad operations manager (Mosier). Each of these functional managers is supported by the staff shown.



The current organization will grow as necessary to carry out the needs of the project through project-level environmental review to 30 percent design completion. The Authority's program manager will manage project construction from 30 percent design through launch of revenue service. Discussed and shown below is one possible scenario in which the final design and construction management team builds from the existing base of the program management team. Regional Managers would remain in charge of the work in their section, acquiring additional staff as needed to manage the right-of-way work, the final design/construction, testing and commissioning and revenue service start-up.

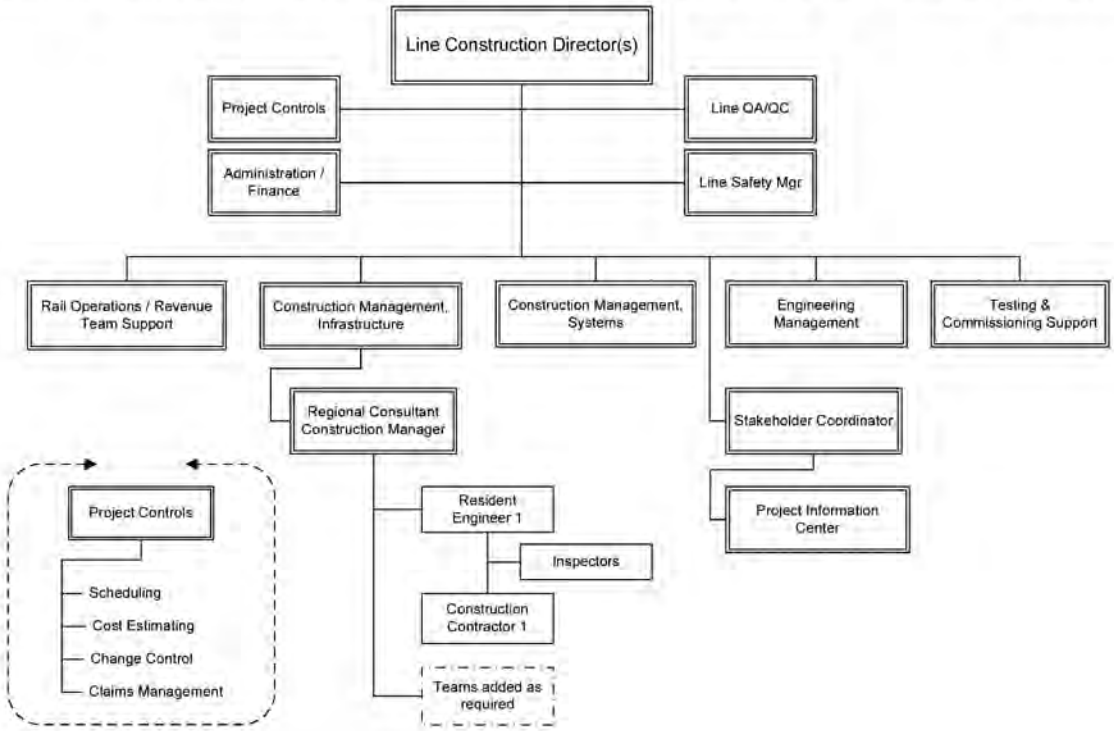
Led by a Program Director with seven direct reports, the PMT organization as depicted below for the final design and construction phase will be structured to provide both headquarters and field office staffs responsible for managing final design/construction and the operations & maintenance (O&M) contract procurement and administration, right-of-way (ROW) acquisition, construction management, engineering and environmental management, safety, quality assurance/quality control (QA/QC), program administration, program controls, testing & commissioning, revenue service start-up, and planning/oversight of the O&M of the completed system.

PMT Design & Construction Phase Organization



Design and construction of the core systems will be managed separately from the infrastructure design and construction. A core systems construction group will manage the rolling stock production, train control, communications systems, electrification, trackwork and maintenance facilities design and construction. A testing & commissioning group will also report to the Core Systems Program Construction Director. A Technical Services group will provide support to all the regions in the areas of engineering & design, environmental compliance & permitting, and right-of-way acquisition. Also a Revenue Service Operations Director will manage the O&M Contract, operations planning, railroad coordination, and start-up functions. System safety will be managed by a Program Safety Manager reporting to the Program Director. Configuration management will be the responsibility of the Program Controls Manager.

Typical Regional Construction Organizations for Initial Sections



Appendix A

Name	Company	Area of Expertise	Years of High Speed Rail Experience	UK France Channel Tunnel	UK Channel Tunnel Rail Link	UK East Main Line	UK West Coast Main Line	Brussels Liège Kaiserberg	Lorry Rail Point	USA North East Corridor	Rome New Fiumicino	Amsterdam High Speed Rail	Paris TGV Atlantic	Paris TGV East	Paris TGV North	INE Zaal - Belgium Netherlands	Spain HSR Madrid - Barcelona	Paris High Speed Rail	Paris High Speed Rail	Los Angeles San Diego (LOSSAN) - Vancouver	Denver Express (Fast Signs - Vancouver)	Germany ICE HSR	Los Angeles San Diego (LOSSAN)	Atlanta Marta	Pennsylvania HSR	Ohio (Cleveland-Columbus-Cincinnati)	South Africa HSR Projects in Johannesburg	Shanghai Railway Transportation, R&D	Japan Bullet Train	Taiwan High Speed Rail	Taiwan Railway Transportation, R&D	Greece Athens Thessaloniki	China Chongqing - Sichuan HSR Changsha	China Zhengzhou - Xuzhou HSR Wuhan	Italy Turin - Milan High Speed Rail	Italy Bologna - Florence High Speed Rail	Denmark Nordhavn and Oresund Links	Portugal Lisbon to Porto	Alicante to San Juan, Spain	Madrid Fuenlabrada
Anthony Daniels, C Eng	PB	Program Management, Engineering Operations, Testing and Commissioning	40					■■■	■■■		■■■	■■■						■■■	■■■	■■■			■■■		■■■															
John Harrison	PB	Program Management, Railroad Systems	40						■■■	■■■	■■■	■■■						■■■	■■■	■■■			■■■		■■■	■■■	■■■														
Jenny Tait	PB	High-Speed Rail Systems Maintenance Facilities	12						■■■																															
Al Chouiat	PB	Operations and Planning									■■■																													
Andrew Allitong	PB	Civil Engineer, Construction and Field Design	10	■■■	■■■	■■■																																		
Don Bakkel	PB	Scheduling	5									■■■																												
Bob Bannon	PB	Project & Environmental Management						■■■																																
Denny Arrowsmith	PB	Civil Engineer, Special Track Work	4								■■■																													
C. Lee Williams	PB	Operations and Planning									■■■																													
Chris Hampton, C Eng	PB	Electrical Engineer, Rolling Stock	5			■■■	■■■				■■■																													
Dominic Vassallo	PB	Planning, Project Management									■■■							■■■																						
Eric Nystrom, C Eng	PB	Electrical Engineer, Systems Design, Testing and Commissioning							■■■		■■■									■■■						■■■														
Frantz Wallinda	PB	Operations and Planning									■■■																													
Frank Hinkes	PB	Engineering, Rolling Stock, Testing and Commissioning	1								■■■																													
Gary Griggs, PE	PB	Highway Design, Feasibility									■■■								■■■						■■■															
George Harris, PE	PB	Civil Engineer, Alignment, Tunnelers, Track, Construction	9						■■■																															
Joe Miller	PB	Senior Engineer									■■■																													
Kate Jung, PE	PB	Engineer, Engineering Management						■■■																																
Paul Mosier	PB	Operations and Planning									■■■																													
Peter Valentine	PB	Design, Construction Management, Construction, Project Management	19	■■■	■■■	■■■	■■■							■■■																										
Rick Schwartz	PB	Electrical Engineer, MBA	12				■■■				■■■																													
Tom Murphy	PB	Signalling, Construction Management			■■■																																			
Nick Boyd	PB	HS Planning, Ridership & Revenue, PM	11						■■■		■■■		■■■					■■■	■■■				■■■			■■■														
Marilyn Duffey	Duffey Co	Environmental Work																		■■■			■■■																	
Alan Beaver	AECom	Environmental Manager																					■■■																	
Alan Silverstone, MBA	AECom	Global Resources Task Manager HS									■■■	■■■																												
Brent Dyke	AECom	Program & Regional Manager - Engineer Planner							■■■																															
Bruce Williams	AECom	Civil Engineering										■■■														■■■														
Craig Gleichmann, PE	AECom	Task Leader, Desert Express																		■■■																				
Jim Hoerl, PE	AECom	Civil Engineering							■■■																															
John Barrow	AECom	Program Manager/Funding									■■■																													
John Miller	AECom	Engineering Manager																			■■■																			
Rachel Vandenberg	AECom	Engineering Manager																					■■■																	
Ray Fillo, PhD	AECom	Financial Analysis & procurement, Planning									■■■								■■■																					
Robert Fisher, PE	AECom	Electrical Engineer				■■■					■■■					■■■																								
Thomas Dunning	AECom	Noise and Vibration EIS									■■■																													
Tim Colligan		HS Capital Cost Estimating							■■■																															
Alan Dyke	Arup	Managing Director Union Railways (North)			■■■																																			
Anthony Dixon	Arup	Heavy Civil / Tunnel Planning, Design and Construction		■■■					■■■																															
Arnold Lall	Arup	Project Management, Construction		■■■	■■■					■■■																														
Dwar Mc Fadzean	Arup	Processing Systems Manager												■■■																										
Don Phillips	Arup	Engineering Manager			■■■																																			
Harvey Leggett	Arup	Tunnel Design Engineer																			■■■																			
John Eddy	Arup	Seismic Design Independent Review							■■■																															
Lorna Sorell	Arup	Safety Cost and Approvals Manager			■■■																																			
Michael Willford	Arup	Structural Dynamics			■■■																																			
Peter Vorster	Arup	Tunnel Aerodynamics			■■■	■■■																																		
Richard Forster, C Eng	Arup	High-Speed Rail Operations		■■■	■■■		■■■																																	
Richard Gent	Arup	Noise and Vibration Engineering Lead			■■■		■■■																																	
Rob Saunders	Arup	Station Design, Project Controls			■■■																																			
Stephen Dixon	Arup	Maintenance Facilities and Stations		■■■	■■■																																			
Steve Clark	Arup	Track, Wheel Rail Interface				■■■	■■■																																	
Richard Dorsa	CH2M HILL	PRA NEPA									■■■																													
Ed Moylan	CH2M HILL	Structural Design							■■■																															
Michael Nunn	CH2M HILL	NEPA, alignment, FD/FE Coordinating									■■■								■■■																					
Thomas Eller	CH2M HILL	State and Federal wetland permitting									■■■																													
Spencer Cada	HMM	Transport Engineer								■■■																														
Alan Finch	HMM	Project Management, Tunnels		■■■	■■■																											■■■	■■■							
Alastair Duggett	HMM	Project Management, Tunnels		■■■																																				
Alex Lawson	HMM	Project Management, Tunnels		■■■					■■■																															
Bradford Townsend	HMM	Project Management, Tunnels							■■■																															
Brian Hughes	HMM	Tunneler							■■■																															
Carl Hansen, PhD	HMM	Mechanical Engineer, Acoustics																	■■■																					
Carson Eisner	HMM	General Engineering Services																	■■■																					
Charles Quinzel	HMM	General Engineering Services																	■■■																					
Colin Weeks	HMM	Project Management, Engineering		■■■	■■■																		■■■	■■■																
David Plate	HMM	Project Management, Rail							■■■																											■■■	■■■			
David Powell	HMM	Project Management, Tunnels																																■■■						
Farhad Vesthakhah, PE	HMM	Structural Engineer							■■■																															
Gary Tornatis	HMM	Rail Systems Engineer									■■■																													
Gordon MacDonald	HMM	System Safety Specialist									■■■																													
Jim Ong	HMM	Seismicity and Aerodynamics						■■■																																
Jim Rowbridge	HMM	Geotechnical Engineer											■■■															■■■												
John Hawley	HMM	Project Management, Tunnels		■■■	■■■																						■■■	■■■								■■■				
Mike Bell	HMM	Construction Management																																■■■						
Mike Leslie	HMM	Rail Practice Leader									■■■																													
Mike Murray	HMM	Tunnel Engineer							■■■																															
Nathan Hopkins	HMM	Rail Designer																							■■■															
Paul Jenkins	HMM	Project Management, Tunnels							■■■																						■■■									
Paul Chang	HMM	Rail Designer																												■■■										
Robert Wilson	HMM	Rail Systems Engineer																									■■■													
Stuart Warren	HMM	Geologist		■■■																																■■■				
Tony Dorsa	HMM	Project Management, Tunnels							■■■																															
Vincent M.	HMM	Design and Structures Engineering							■■■																															
Anthony Gaworzik	HNTB	Project Management, Engineering									■■■																													
Brian Maciejewski	HNTB	HSR TRACK DESIGN									■■■																													
Claudia DeBlasiis	HNTB	Engineering Management																	■■■																					
Dana Boone	HNTB	HSR SIGNAL/COMMUNICATIONS									■■■																													
David Eaton	HNTB	HSR SIGNAL/COMMUNICATIONS									■■■																													
David Holland	HNTB	HSR TRACK DESIGN									■■■																													
David Rainey	HNTB	HSR TRACK DESIGN									■■■																													
Eric D'Virgilio	HNTB	HSR TRACK DESIGN									■■■																													
Frank Miller	HNTB	HSR TRACK DESIGN									■■■																													
James Egbert	HNTB	Project Management																	■■■																					
James Michels	HNTB	Project Management, Facilities and Maintenance									■■■																													
James O'Keefe	HNTB	HSR SIGNAL/COMMUNICATIONS									■■■																													
James Pyne	HNTB	HSR SIGNAL/COMMUNICATIONS									■■■																													
John Corrigan	HNTB	HSR TRACK DESIGN									■■■																													
John Pando	HNTB	Project Management, Engineering									■■■																													
Joseph Gucci	HNTB	Project Management, Engineering and Maintenance									■■■																													
Kevin Mitchell	HNTB	HSR TRACK DESIGN									■■■																													
Margaret Pimental	HNTB	Electrification									■■■																													
Michael Michaels	HNTB	HSR TRACK DESIGN									■■■																													
Michael Romano	HNTB	Electrification									■■■																													
Michael Sudkoski	HNTB	Electrification									■■■																													
Paul Wing	HNTB	Electrification									■■■																													
Peter Clarke	HNTB	Program Management, Engineering						■■■																		■■■		■■■												
Peter Lloyd	HNTB	HSR TRACK DESIGN									■■■																													

Appendix A - continued

Name	Company	Area of Expertise	Years of High-Speed Rail Experience	UK Eurotunnel Channel Tunnel	UK Channel Tunnel Rail Link	UK East Main Line	UK West Coast Main Line	Taiwan Taipei Kaohsiung	Korea Seoul Pusan	USA North East Corridor	Russia New Electric Locomotive	South Korea High Speed Rail	France TGV Atlantique	France TGV Sud Est	France TGV Est Paris - Metz	France TGV Northern - Paris	NSW Park - Belgium Sidmundan	Mexico DF Mexico Toluca	Texas High Speed Rail	Florida High Speed Rail	Las Vegas - Los Angeles	Denver Denver Fire Night - Vancouver	Germany ICE FFM	Los Angeles San Diego 2004 Hindustan	Illinois Metra	Austin CO High Speed Rail	Pennsylvania HSR	Ohio Cleveland Columbus Cincinnati	North Africa HSR Projects in Johannesburg	Nigeria Kaduna Pennsylvania, PETI	New Brunswick High Speed Rail Ltd	San Jose Metro	Central Africa Diamondfa	China Guangzhou - Shenzhen - Hong Kong Link Changsh	Saudi Phosphate to Jubail High Speed Rail	Italy Rome - Milan High Speed Rail	Italy Bologna - Florence High Speed Rail	Denmark Stockholm and Oresund Links	Portugal Lisbon to Porto	Alicante to San Juan Spain	Middle East Industry
Ralph Nassiter	HNTB	HSR TRACK DESIGN								HSR																																
Rudolph Bell	HNTB	HSR SIGNAL/COMMUNICATIONS								HSR																																
Robert Tapkan	HNTB	Electrification								HSR																																
Steve Gaharan	HNTB	HSR TRACK DESIGN								HSR																																
Steve McGilligan	HNTB	HSR TRACK DESIGN								HSR																																
Tim Ryan	HNTB	ELECTRIFICATION								HSR																																
William Sullivan	HNTB	HSR TRACK DESIGN								HSR																																
William Wells	HNTB	HSR SIGNAL/COMMUNICATIONS								HSR																																
Gisardo Bueno Group	Parsons	Project Management & HSR Track Design																HSR																					HSR	HSR		
Rupert Price	Parsons	Systems																HSR																					HSR	HSR		
Jean Clarke	STV	Rail Engineering	8							HSR										HSR																						
Francesco Clarke, Pl.	STV	Engineering Manager, Preliminary Design								HSR										HSR																						
David Hanger	STV	Industrial Engineering	11							HSR										HSR																						
Carl Takvall	STV	Bridge Engineering	3					HSR																																		
Brian Johnson	STV	Industrial Engineering	7							HSR																																
Manny Zapatero	STV	Station Design	6							HSR																																
Mario Petersen	STV	Civil Engineering	3							HSR																																
Arthur Radfors	STV	Design and Construction Manager								HSR																																
Robert Hirschhorn	STV	Station Design	6							HSR																																
Tony Vismantas, PE	STV	Signals / Train Controls	6		HSR					HSR																																
Rob Schaefer	URS	Project Manager																HSR																								
Rob Greene	URS	Noise/Vibration/EMF																		HSR																						
Tom Rado	URS	Project Management, Environmental																HSR		HSR																						
111			Average	12	15	8	11	22	3	44	4	2	9	4	8	1	1	3	7	16	3	3	2	2	3	4	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1

From Today to Passenger Service

The path from where California's high-speed train project is today to initial revenue passenger service can be divided into planning and implementation stages. Over the coming two years, the project will begin transitioning from the planning stage into the implementation stage. This section will describe the planning process, show where the project is currently within the projected timeline, and discuss the plan to achieve initial high-speed train service from San Francisco to Anaheim by 2020.

The Process

The planning and implementation stages for the California High-Speed Train Project (CHSTP) include the following:

Planning

Statewide Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS), Conceptual Engineering (completed)

- Bay Area to Central Valley Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS), Conceptual Engineering (initially completed in 2008; additional work in progress based on court ruling)
- Draft HST Section Project EIR/EIS, 15% Design – Preliminary Engineering (in progress)
- Final HST Section Project EIR/EIS, 30% Design – Preliminary Engineering (to follow Draft EIR/EIS)
- Notices of Determination (NODs) / Records of Decision (RODs)

Implementation

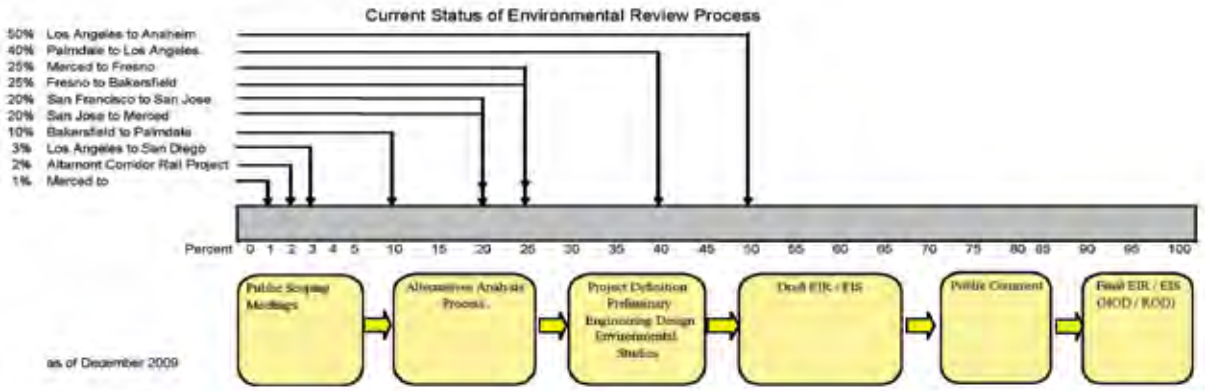
- Procurement Documents
- Permitting
- Land Acquisition and Right-of-Way Preservation
- Design and Construction
- Testing, Commissioning, and Training
- Start-up

Planning

Planning for California's high-speed train began more than two decades ago. The Program EIR/EIS documents approved by the Authority and the FRA in 2005 and 2008 establish a solid basis for the current regional Project EIR/EIS's and preliminary engineering currently underway. Described below are the remaining steps to complete the environmental reviews and prepare for construction.

Environmental Review

The environmental review process must be complete before a final project alignment can be chosen and before any construction can take place. The process is being conducted in accordance with the requirements of the National Environmental



Protection Act (NEPA) and the California Environmental Quality Act (CEQA). The federal lead agency responsible for NEPA compliance is the Federal Railroad Administration (FRA) and the California High-Speed Rail Authority (Authority) is the state agency responsible for CEQA. To satisfy both NEPA and CEQA, a combined environmental document is prepared – Environmental Impact Report (EIR) for CEQA and Environmental Impact Statement (EIS) for NEPA. The combined environmental document is referred to as an EIR/EIS.

Previously, largely due to the sheer size and scope of the high-speed train project, the Authority decided to conduct the environmental review in two parts – first with a statewide program-level review, and second with a more specific project-level review. After breaking the project into multiple sections, the project-level review is the current state of the project.

Two Program-Level EIR/EISs have already been prepared by the Authority: a Statewide EIR/EIS completed in 2005 and the Bay Area to Central Valley EIR/EIS completed in 2008[14]. These program level documents (available on-line at www.cahighspeedrail.ca.gov[15]) are the basis for the project specific environmental documents that are under preparation for the nine sections of the 800-mile high-speed train system and the Altamont Corridor Rail Project.

Process

The Project EIR/EIS process begins with SCOPING. The Authority and FRA conduct public meetings called "scoping meetings" at selected locations within the study area to present the Program-Level alternatives and optional station sites, explain the environmental process, and receive comments from the public and agencies regarding any issues or concerns they may have related to the high-speed train project.

Prior to the scoping meeting, a NOTICE OF INTENT (NOI) is prepared and published by FRA in the Federal Register. The NOI describes the project background, alternatives, and potential environmental issues and provides the locations and dates for the scoping meetings. Under CEQA a similar notice, NOTICE OF PREPARATION (NOP) is prepared and filed with the State Clearinghouse and advertised in local newspapers.

During the environmental process it is important to coordinate with local, regional, state, and federal agencies to understand their environmental approval and permitting requirements. An AGENCY COORDINATION PLAN is prepared that identifies these agencies. The plan outlines the roles and responsibilities of these agencies and the project information that will be shared with them for comment. Letters of invitation are sent to these agencies to

14 As described previously, the Authority is conducting additional program-level work on the Bay Area to Central Valley EIR in compliance with a court judgment and will consider the entire record before it prior to certifying the revised EIR and making a new decision on the Bay Area/Central Valley link for the high-speed train system.
15 http://www.cahighspeedrail.ca.gov/library.asp?p=8224

seek agreement on their participation and their role in the project. Similar plans are prepared to facilitate public outreach, coordination with Native American Indian Tribes, and outreach to low-income and minority populations.

An ALTERNATIVES ANALYSIS (AA) is conducted to help identify the alignments and station locations to carry forward in the environmental review. It begins with a more detailed look at alternatives identified in the program-level EIR/EIS and development of additional alternatives and design options based on input received from the scoping meetings. These alternatives are further refined based on feedback received from public outreach and local planning, transportation, and resource agencies. The intent of the AA process is to define potentially feasible project alternatives, design options, and station locations that can meet the NEPA Purpose and Need and CEQA project objectives while avoiding or minimizing environmental impacts. The Purpose and Need Statement is a part of the NEPA process to document why a project is undertaken. This documentation lays the foundation for identifying and evaluating a reasonable set of alternatives to be considered in engineering and environmental studies that are used in preparing an EIR/EIS. During the AA process the project study area will be defined and the baseline environmental studies started.

A draft of the PROJECT DEFINITION/DESCRIPTION is prepared when the AA process is finished and is updated as engineering design reaches 15 percent completion. The draft project description will allow the preparation of the environmental impact analysis which will be completed as the 15 percent engineering design is prepared. Then the Authority proceeds with the preparation of TECHNICAL REPORTS and with the development of baseline conditions, impact analysis, and mitigation measures for the Draft EIR/EIS.

The DRAFT EIR/EISs will be circulated for public and agency review. A review period of 45 to 60 days will be provided to receive comments on the project alternatives, the preferred alternative (if identified in the Draft EIR/EIS), 15 percent engineering design, environmental issues, and mitigation measures. In public hearings the results of the Draft EIR/EIS documents will be presented and will be accepted regarding the project. Responses will be prepared for the comments received on the Draft EIR/EISs. Both the comments and responses will be presented as part of the Final EIR/EIS.

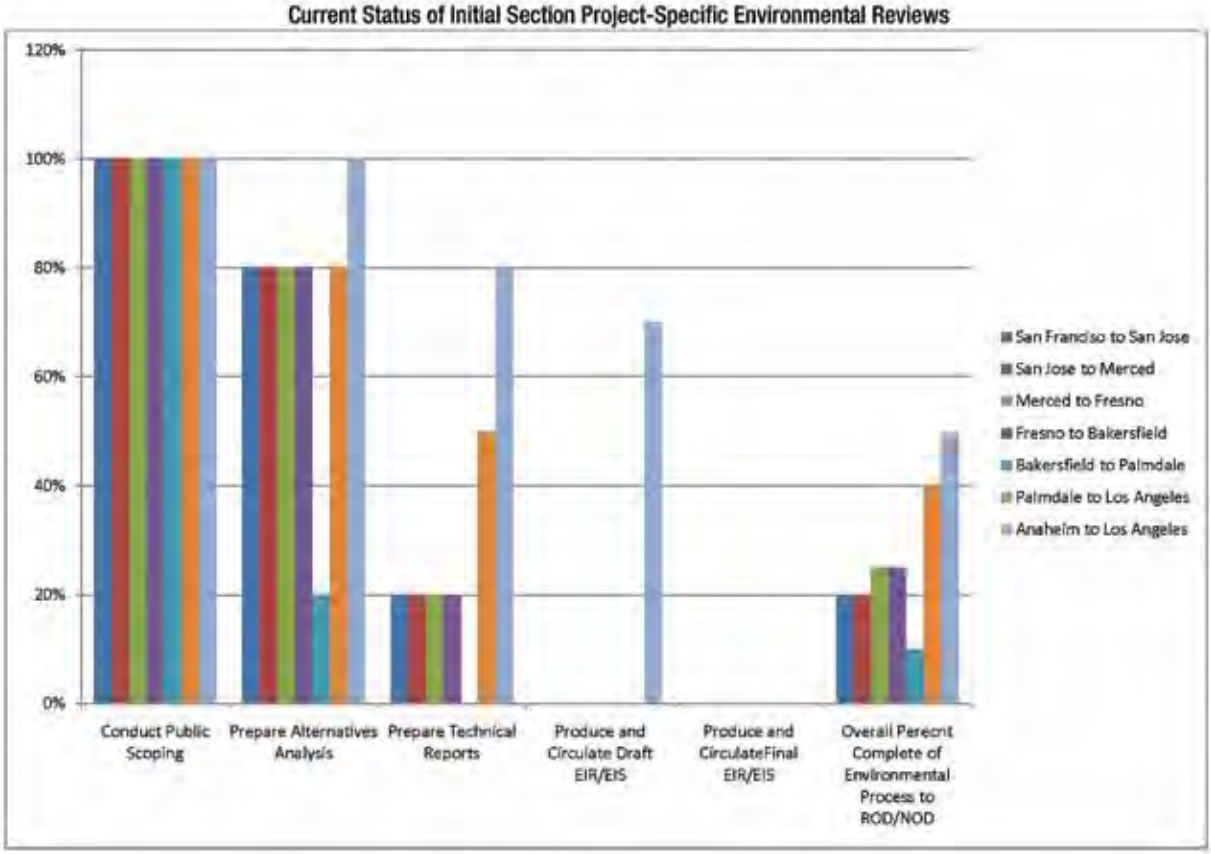
A FINAL EIR/EIS will be prepared for each high-speed train section. Upon being made available, the final EIRs/EISs will be ready for consideration and certification by the Authority at a noticed public meeting of the Authority board, in conjunction with decisions on final alignments and station locations for each section of the train system. At the conclusion of the process, the Authority will file a NOTICE OF DETERMINATION (NOD) for the decisions it makes related to each Final EIR. The FRA will make the Final EIRs/EISs available for a 30-day period prior to issuing a RECORD OF DECISION (ROD). The FRA's RODs and the Authority's final decisions will include commitments to mitigation measures to be implemented in the construction and operations of the project and will identify the subsequent environmental permitting that will be required during the next phases of design and construction.

Current Status of Project EIR/EIS

The environmental process for each of the high-speed train project sections in both initial and subsequent phases has been initiated. The status of the work prepared for each section as of December 1, 2009, is shown in the exhibits below and summarized as follows[16].

16 As noted above, the Authority is undertaking revision and recirculation of a portion of its Bay Area-to-Central Valley Program EIR and will consider the revised material prior to making a new programmatic decision for connecting the Bay Area to the Central Valley. The new decision has the potential to affect some project EIRs.

Exhibit 1:
Current Status of Initial Section Project-Specific Environmental Reviews



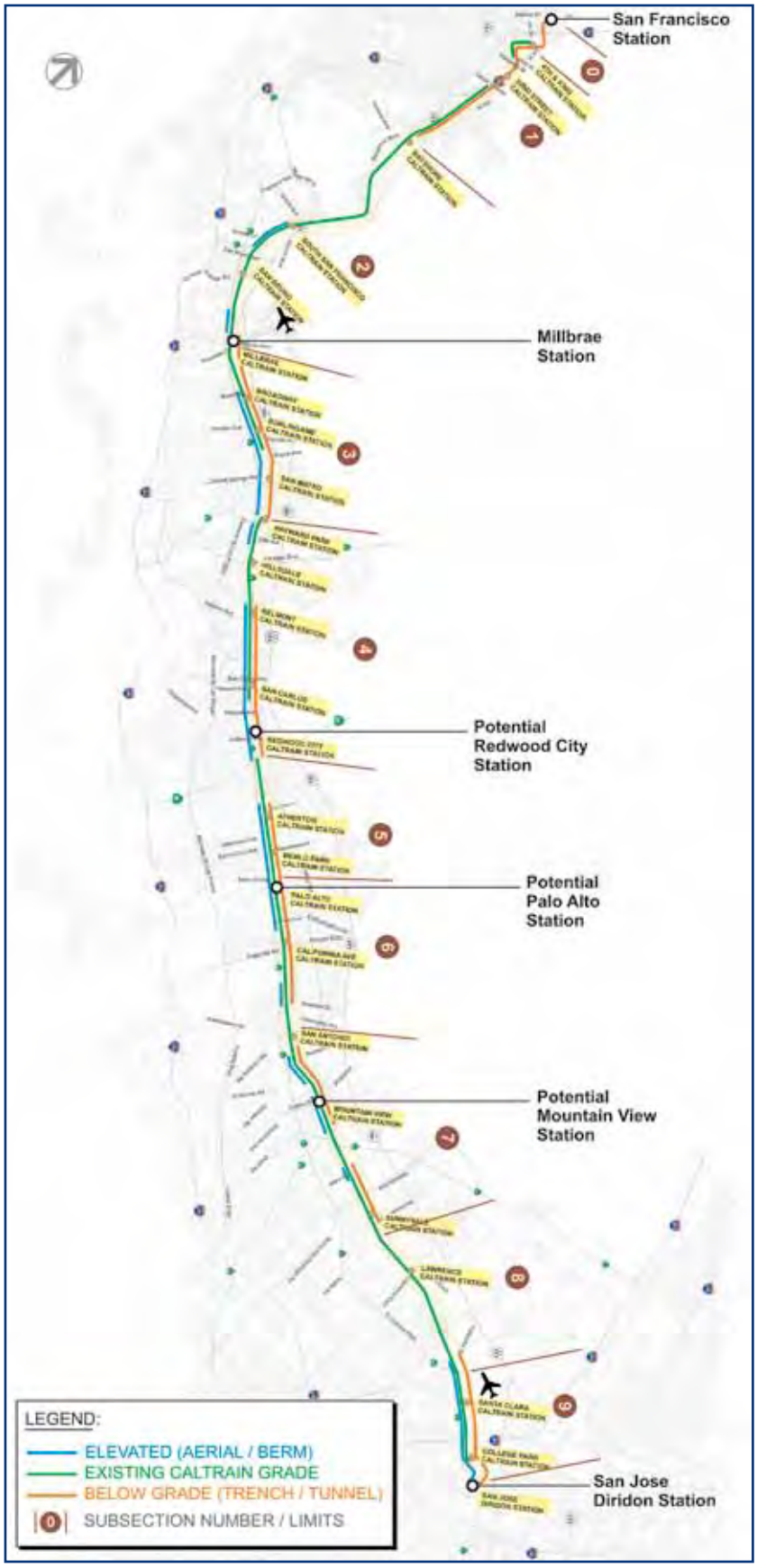
Phase 1 Sections

San Francisco to San Jose Section:

Scoping was initiated in December 2008. Three scoping meetings were held in San Mateo County, San Francisco, and Santa Clara County in January 2009. Since then, working in cooperation with the Peninsula Corridor Joint Powers Board (Caltrain), the Authority has benefited from significant community participation in the identification and refinement of alignment and at-grade, aerial and tunnel design options in this corridor, which extends from the planned Transbay Terminal in San Francisco to Diridon Station in downtown San Jose. Based on significant engineering, right-of-way and environmental work, these options have been evaluated using Authority criteria to identify a set of technically viable alternatives for study in the project EIR/EIS. Figure SFSJ shows the location of the alignments and options to be studied in the environmental document. The AA process is underway and is expected to be completed in early 2010.

Current overall percent complete to NOD/ROD is currently estimated to be 20 percent. Target NOD/ROD date: September 2011.

Figure SFSJ


San Francisco Station
Millbrae Station
Potential Redwood City Station
Potential Palo Alto Station
Potential Mountain View Station
San Jose Diridon Station
LEGEND:
ELEVATED (AERIAL / BERM)
EXISTING CALTRAIN GRADE
BELOW GRADE (TRENCH / TUNNEL)
SUBSECTION NUMBER / LIMITS

San Jose to Merced Section:

Scoping was initiated in March 2009. Scoping meetings were held in San Jose, Merced, and Gilroy in March 2009. Based on scoping and information from the Bay Area to Central Valley Program EIR/EIS, a large number of alignment and at-grade, vertical, and tunnel design options were identified. For ease of analysis, the section was divided into six subsections: downtown San Jose, Monterey Highway, Morgan Hill-Gilroy, Pacheco Pass, crossing the San Joaquin Valley, and the Wye connection near Merced.

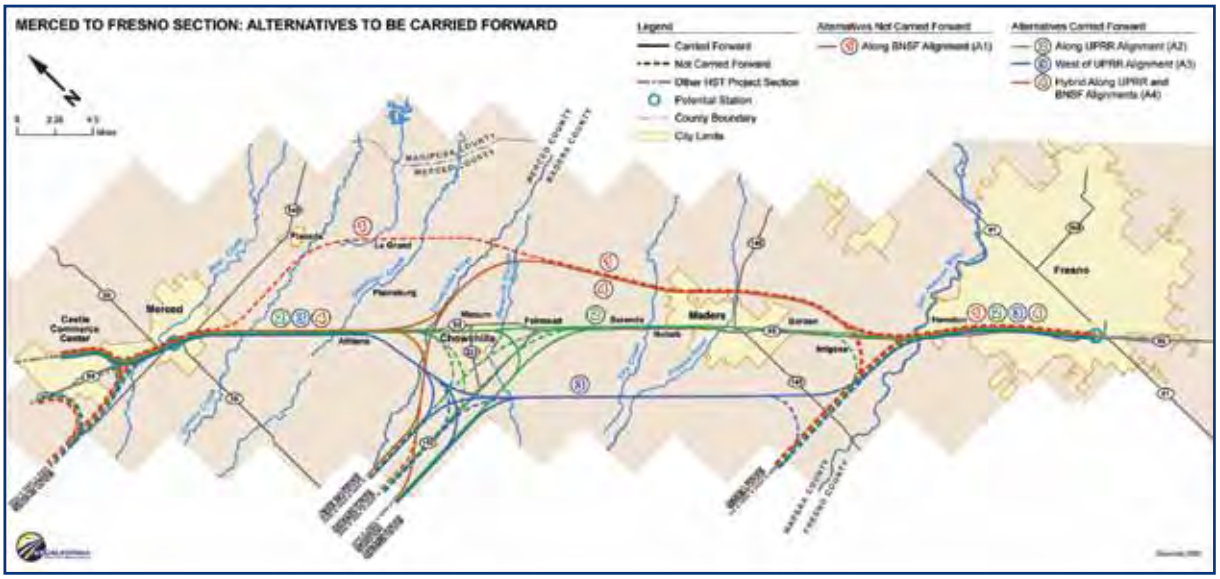
Engineering, right-of-way requirements, constructability issues, environmental constraints, and neighborhood concerns were all considered in sifting through more than 30 alignment and design options to arrive at a reduced set of alignment and options that the Authority and FRA have agreed be evaluated in the project EIR/EIS (see Figure SJM) The AA process is underway and is expected to be completed in early 2010. Current overall percent complete to NOD/ROD is estimated to be 20 percent. Target NOD/ROD date: March 2012.

Figure SJM

Merced to Bakersfield Section:

Scoping was initiated in February 2009. Scoping meetings were held in Merced, Madera, Fresno, Visalia, and Bakersfield in March 2009. Since then, FRA and the Authority determined that the environmental effects of the high-speed train from Merced to Bakersfield were more appropriately assessed in two separate documents – one for Merced to Fresno and another for Fresno to Bakersfield. As a result, an amended NOI and NOP were issued in October 2009. In June, the FRA and Authority agreed that four north-south alignments be carried forward and evaluated in the Alternatives Analysis process. The four north-south alignments and the five alignments under study by the San Jose to Merced section created 20 possible junction (wye) configurations. Based on additional field work, engineering, and environmental review, the alignments, wyes, station location and design options were further evaluated using more detailed evaluation criteria. The results of this work were then shared with the FRA and the Authority, resulting in an agreement that three north-south alternatives and four wye connections with the San Jose to Merced section be studied as part of the environmental evaluation process (see Figure MF)

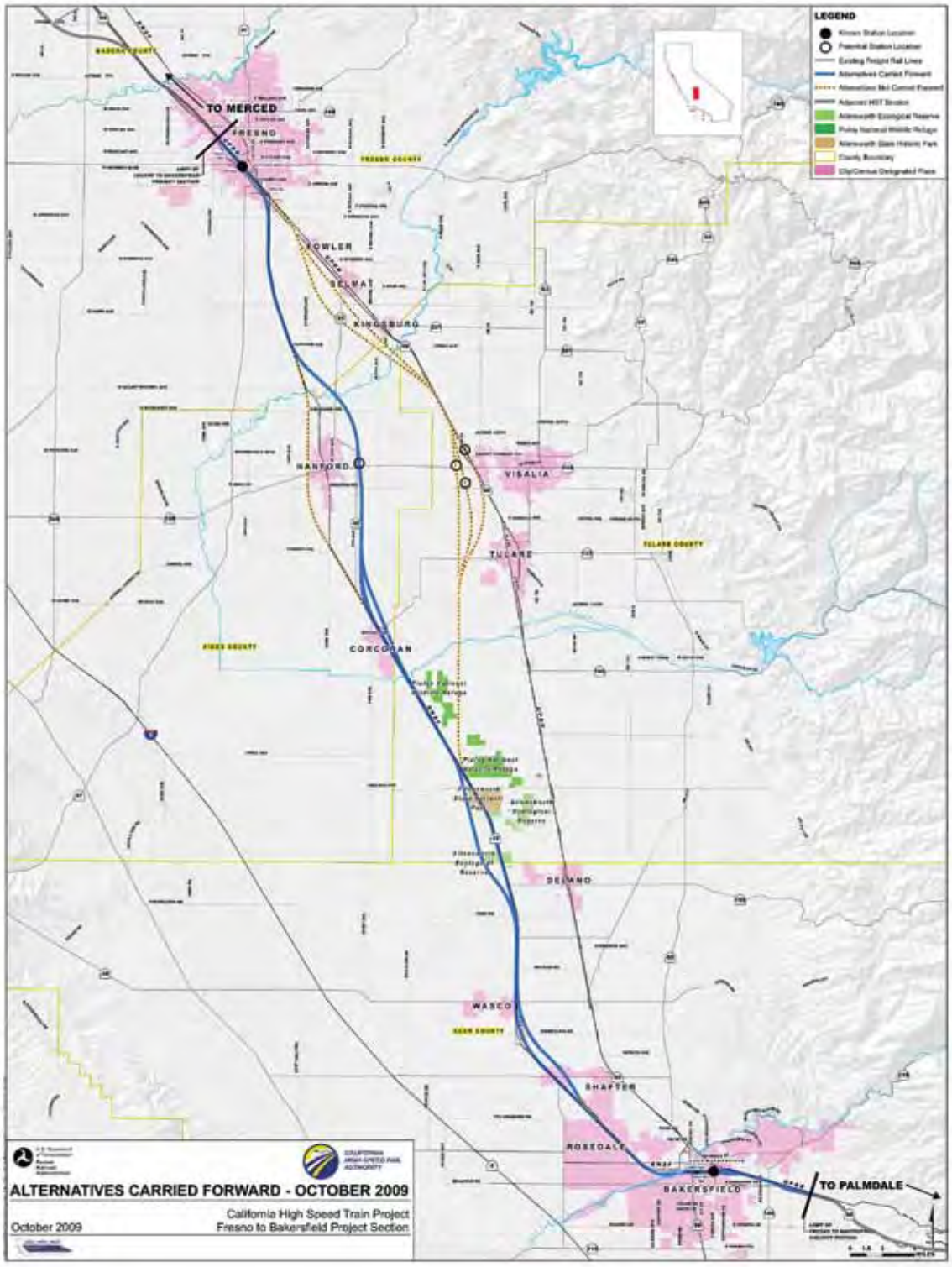
Figure MF



Fresno to Bakersfield Section:

A similar process was followed for the subsection between Fresno to Bakersfield. Through downtown Fresno, 12 alternative alignments – combinations of route and vertical profile (elevation) – were identified and studied. Between Fresno and Bakersfield, two corridors, three route alignments, and a number of design options were considered. Reaching Bakersfield, the project team considered two main route alternatives. Based on engineering analysis, consideration of environmental issues, and comments received from local officials, resources agencies, and the general public, the Authority and FRA agreed that two north-south alignments alternatives with some design options be evaluated in the EIR/EIS (see Figure FB). The AA process is underway for both the Merced to Fresno and Fresno to Bakersfield Projects and is expected to be completed in December 2009. Current overall percent complete to NOD/ROD for both projects is currently estimated to be 25 percent. Target both NOD/ROD dates: September 2011.

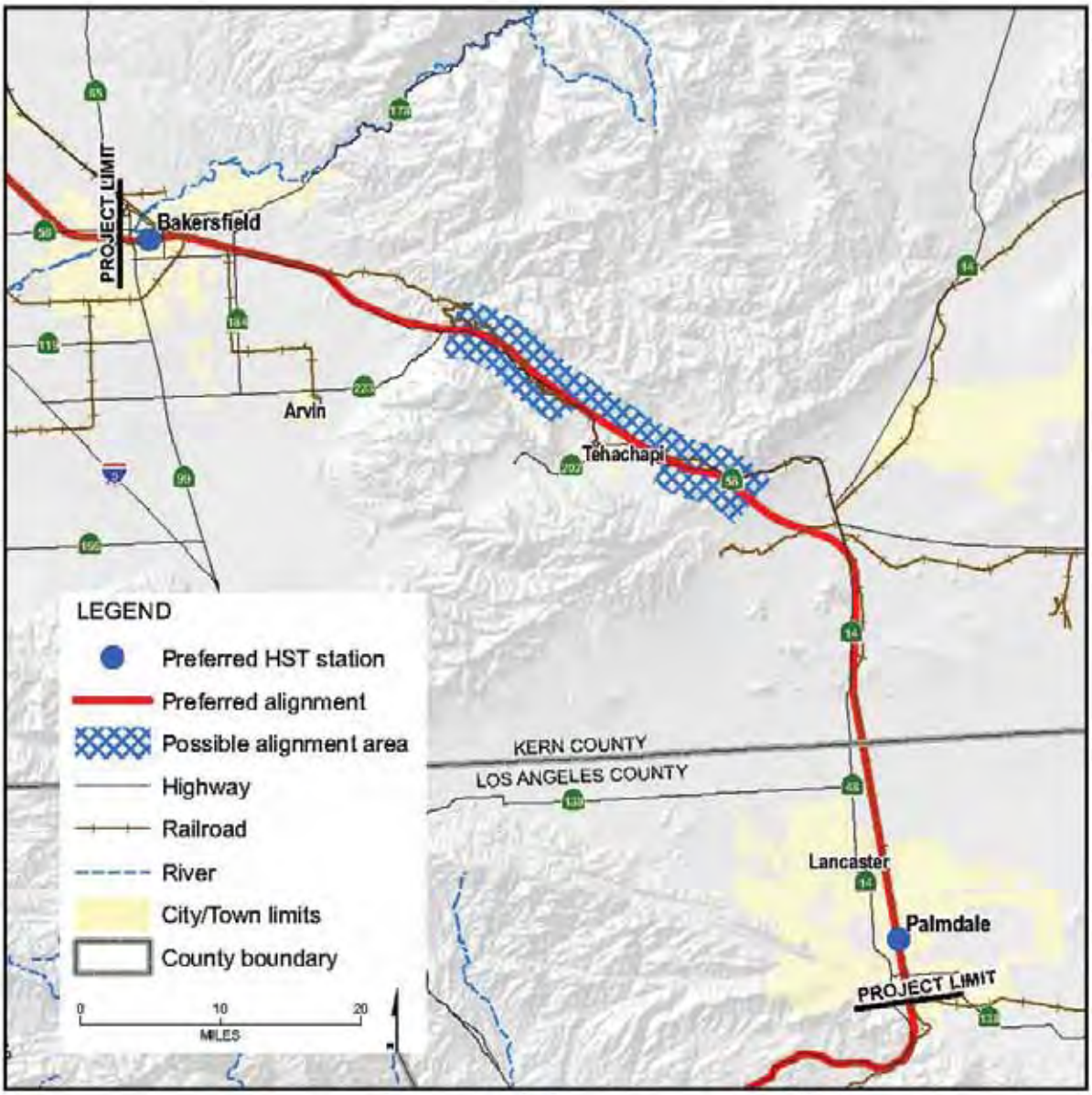
Figure FB


LEGEND
TO MERCED
FRESNO
FRESNO COUNTY
KOWLER
SELMA
KINGSBURG
HANFORD
VISALIA
TULARE
TULARE COUNTY
KINGS COUNTY
CORCORAN
DELANO
WASCO
KERN COUNTY
SHAFTER
ROSEDALE
BAKERSFIELD
TO PALMDALE
ALTERNATIVES CARRIED FORWARD - OCTOBER 2009
October 2009
California High Speed Train Project
Fresno to Bakersfield Project Section

Bakersfield to Palmdale Section:

Scoping was initiated in September 2009. Scoping meetings were held in Bakersfield, Tehachapi, and Palmdale in September 2009. From these scoping meetings as well as discussions with local officials and community groups, the project team is now defining the range of study alternatives to be considered during the Alternatives Analysis process. This section of the high-speed train system will require crossing the Tehachapi Mountains. As a result, significant engineering work has already occurred to identify alignment alternatives that meet the Authority's design criteria. Field work is also underway to identify environmental constraints associated with alignment and design options. Figure BP shows the alignments identified during the public scoping process. The AA process is expected to be completed in the summer of 2010. Current overall percent complete to NOD/ROD is estimated to be 10 percent. Target NOD/ROD date: October 2012.

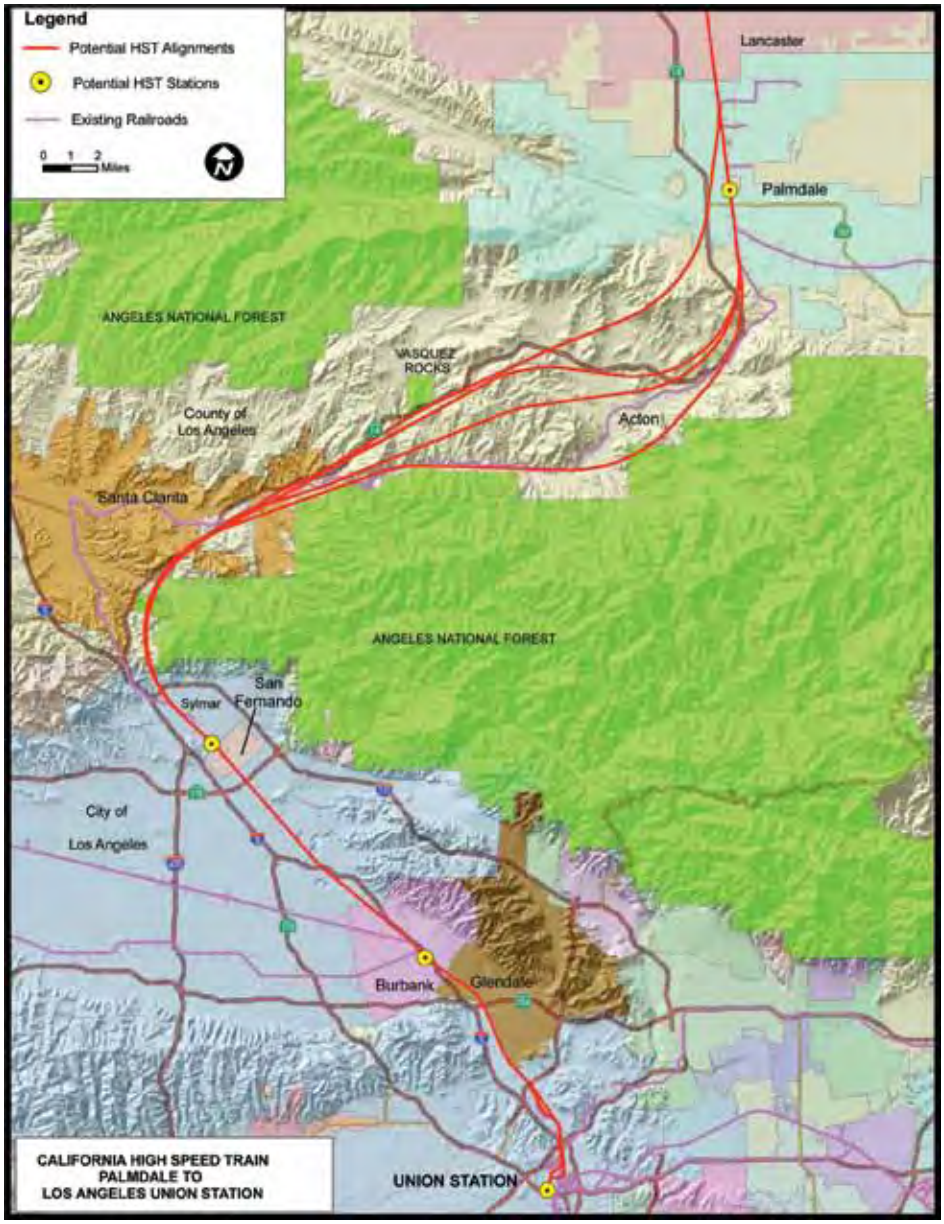
Figure BP



Palmdale to Los Angeles Section:

Scoping was initiated in March 2007. Scoping meetings were held in Los Angeles, Glendale, Sylmar, and Palmdale in April 2007. Since then, significant engineering and environmental work has been accomplished, including the evaluation of access into and out of Los Angeles Union Station. A combination of at-grade, aerial and tunnel options have been considered, resulting in the initial identification of 15 alignment and design options. Right-of-way constraints, potential land-use impacts, constructability issues, and other factors have resulted in the Authority and FRA identifying three basic alignments that are likely to be carried forward for analysis in the project EIR/EIS (see Figure PLA). The AA process is well underway and the environmental technical reports are being prepared. The Administrative Draft EIR/EIS is expected to be completed in December 2010. Current overall completion to NOD/ROD is estimated to be 40 percent. Target NOD/ROD date: December 2011.

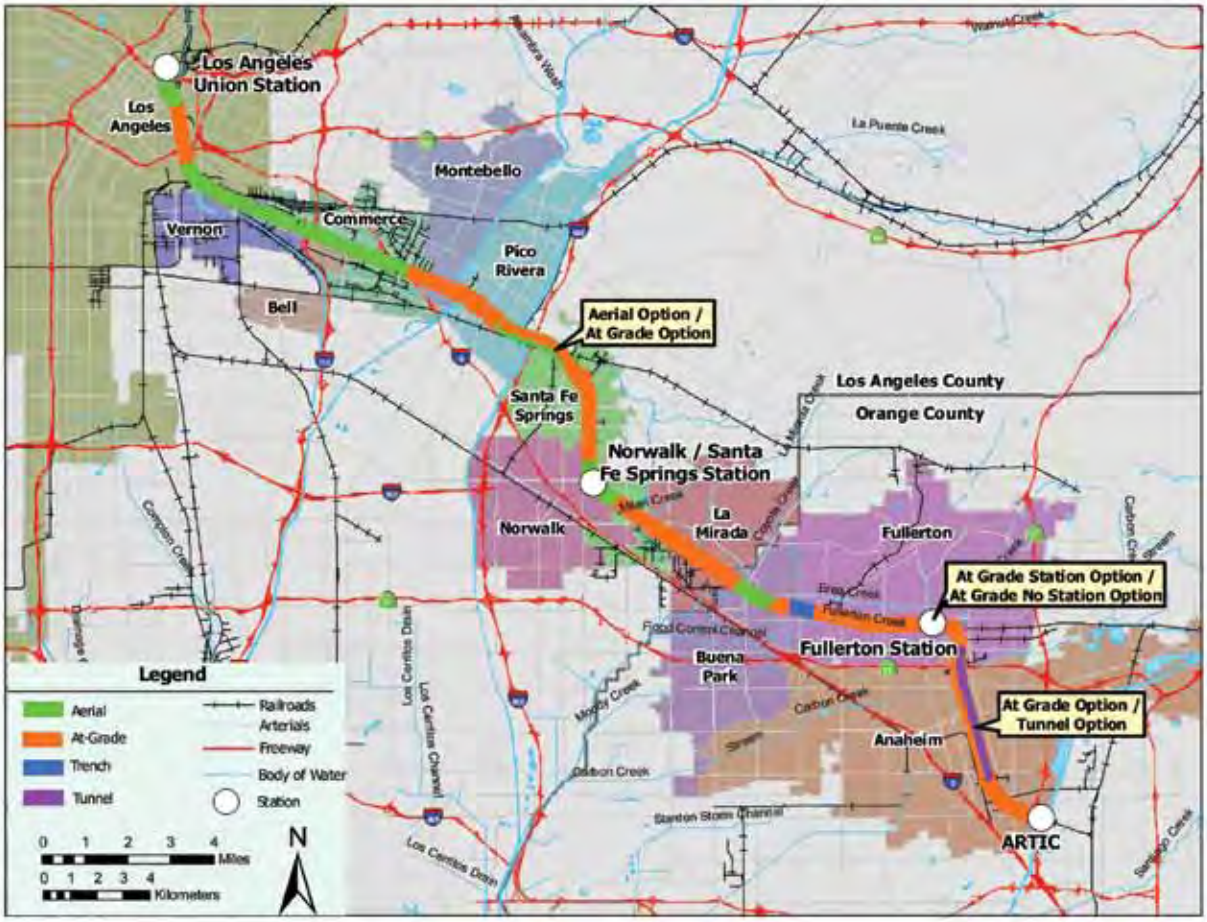
Figure PLA



Los Angeles to Anaheim Section:

Scoping was initiated in March 2007. Three scoping meetings were held in Los Angeles, Norwalk, and Anaheim in April 2007. Working in cooperation with LA MTA, significant engineering and environmental work has been accomplished to identify and evaluate existing and future rail passenger and freight operations within the section, access into and out of Los Angeles Union Station (LAUS), design options for connecting with the planned Anaheim Regional Transportation Intermodal Center (ARTIC), a possible station in Fullerton, and alternative maintenance facility sites near LAUS and ARTIC. The AA process and the environmental technical reports have been completed and the Administrative Draft EIR/EIS is in preparation, expected to be completed in January 2010. Current overall percent complete to NOD/ROD is estimated to be 50 percent. Target NOD/ROD date: March 2011. (see Figure LAA)

Figure LAA

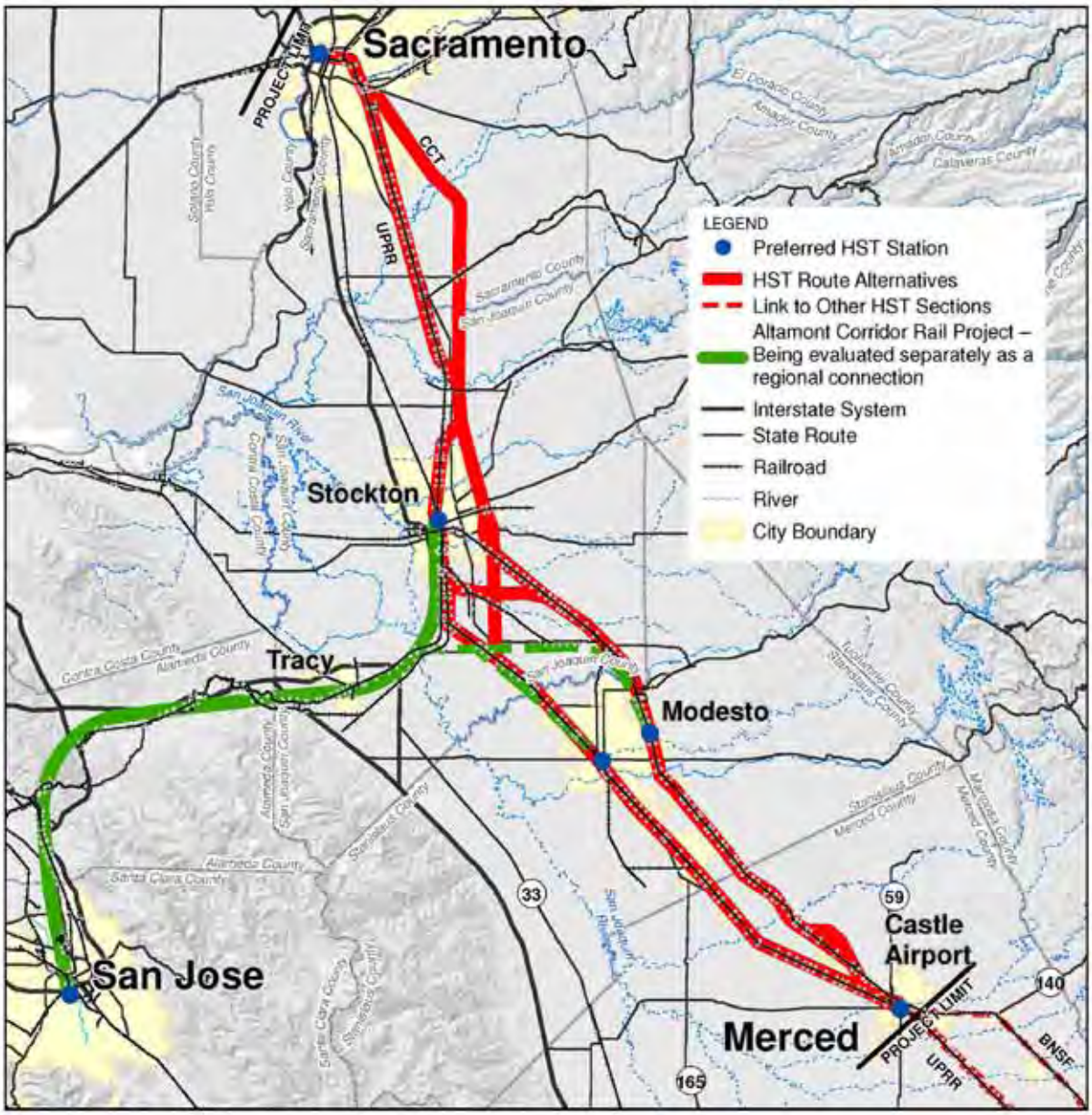


Subsequent Sections

Merced to Sacramento Section:

The NOI/NOP will be issued in December 2009. Scoping is planned to start in January 2010, with scoping meetings to be held in Sacramento, Stockton, Modesto, and Merced. Significant engineering and environmental work will then follow with the AA process to be completed in August 2010. Work will then be initiated on preparation of the project EIR/EIS. Current overall percent complete to NOD/ROD is estimated to be 1 percent. At this early stage, it is envisioned that the environmental review would be completed no sooner than 2014, with construction to begin no sooner than 2015. (see Figure MS)

Figure MS



Los Angeles to San Diego Section:

Scoping was initiated in October 2009. Scoping meetings were held in La Jolla, San Diego, Escondido, Murrieta, Corona, Riverside, Monterey Park, West Covina, El Monte, and Pomona in October 2009 and also Ontario and San Bernardino in November 2009. Public participation at these meetings was significant, with over 1,900 comments received addressing alignment, engineering, and environmental issues. Over the next year, substantial work will occur to identify the range of alternatives suitable for study in the project EIR/EIS. The AA process was started in November 2009 and will be completed in the fall of 2010. Current overall percent complete to NOD/ROD is estimated to be 3%. At this early stage, it is envisioned that the environmental review would be completed no sooner than 2016, with construction to begin no sooner than 2017. (see Figure LASD)

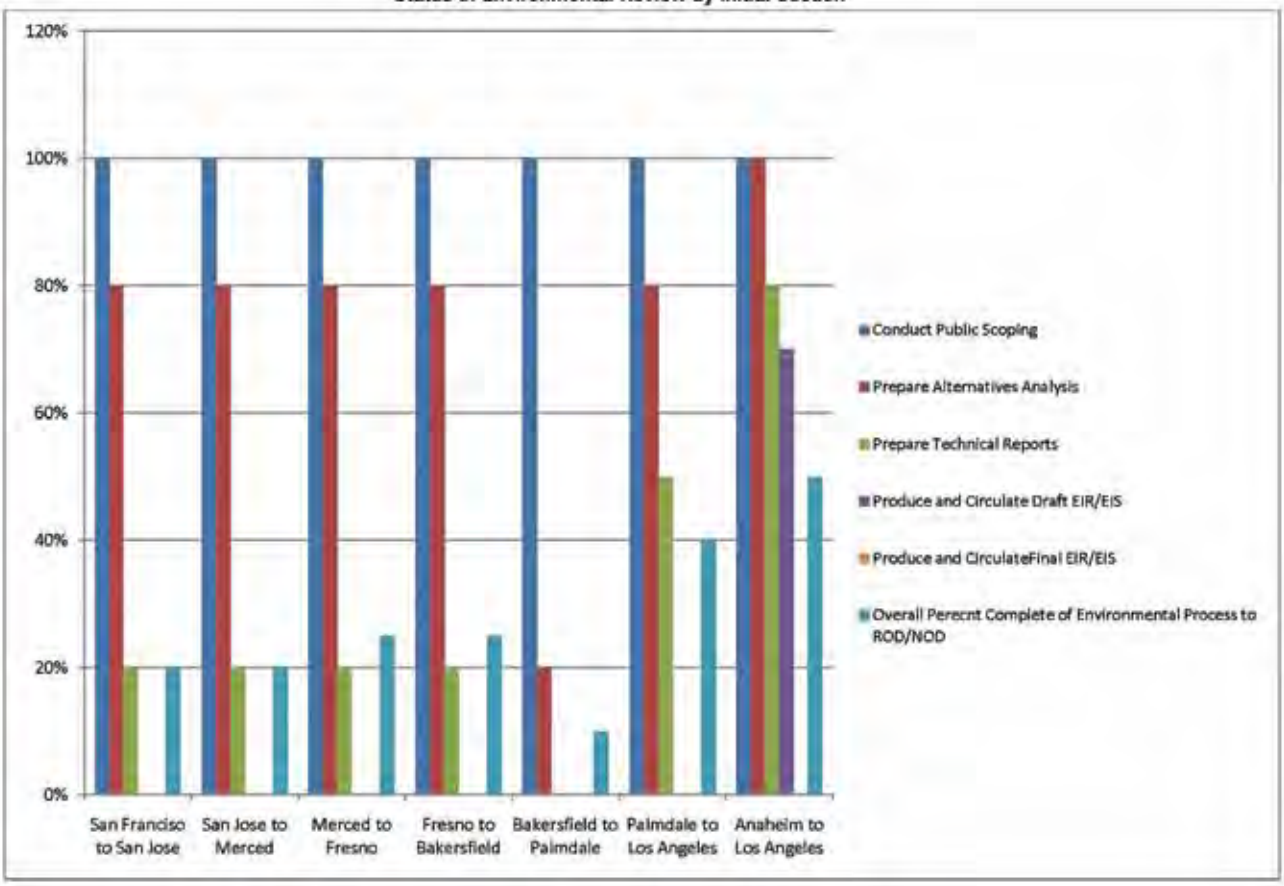
Figure LASD

Altamont Corridor Rail Project:

This is a partnership, separate from the high-speed train system, that the Authority is pursuing with local and regional transit agencies to develop a joint-use rail infrastructure project between the Central Valley and the Bay Area via the Altamont Pass. Scoping was initiated in November 2009, with sessions held in Livermore, Stockton, Fremont, and San Jose. The AA process will be initiated in December 2009 and is expected to be completed in the summer of 2010. Current overall percent complete to NOD/ROD is estimated to be 2%. At this early stage, it is envisioned that the environmental review would be completed no sooner than 2014, with construction to begin no sooner than 2015.
(see Figure ALT)

Figure ALT

Exhibit 2:
Status of Environmental Review by Initial Section



Engineering

The California high-speed train project will use proven technology developed and operated safely throughout the world over the past several decades, which will be brought to the United States through the FRA by way of what is known as a "Rule of Particular Applicability." There are three key considerations that define the technical requirements of the CHSTP. These include:

- A regulatory framework that sets the mandatory safety requirements to ensure public safety of the system, which is further discussed in the Regulatory Approvals section of this document.
- System performance objectives that define what service levels are required of the system, including intercity trip times, which are outlined in legislation (AB 3034, Proposition 1A) included in the California Streets and Highways Code as Chapter 20, Division 3.
- Design standards, and operations and maintenance plans that guide final design, construction, and revenue service operations, which are further expanded in the following sections.

Design Standards and Operations & Maintenance Plans

Developed to meet the federal and state safety regulations and provide for the performance objectives of the California high-speed train system, project design standards and operations & maintenance plans guide the final design, construction, and revenue service operations of the high-speed rail system.

At the program management level, the engineering efforts are focused on five key areas of activity, all of which are required to confirm that the designed high-speed rail system delivers the performance objectives. These key areas include:

System-Wide Design Elements

- CHSTP requirements and design for a network-wide 2x25 kV traction power supply system and coordination with the California Public Utilities Commission (CPUC) for approvals process.
- Standard designs for trackwork, overhead contact system (OCS) to ensure a consistent application across the CHSTP network.
- Train control and communications systems specifications that provide Authority requirements for performance, capacity, and safety and for consistent application across the CHSTP network.

Design Criteria and Standards

- Design criteria that support FRA safety standards and requirements, and the Petition for Rule of Particular Applicability (RPA), including trainsets, track alignment, bridge and viaduct design, tunnel design, building facility structural design, earthworks, drainage design, safety and security, geotechnical investigations and design, seismic considerations, traction power facility equipment, traction power system analysis, overhead contact system configuration, positive train control, system architecture and design requirements, system interfaces, and supervisory control and data acquisition (SCADA).
- Design criteria development is documented in drawings and technical memoranda and includes assessment of existing high-speed rail systems, analysis of what is appropriate for the California high-speed rail system, and design guidance for final design and construction. Design criteria and standards ensure all subsystems deliver a reliable and safe high-speed train system commensurate with industry standards and provide a consistent design approach to be applied to each CHSTP section.

- CHSTP Design Manual is the primary design reference for final design and construction. Standard specifications and special provisions will be developed for inclusion in the procurement documents.

Maintenance Plan

Program-wide maintenance concept plans for use in defining maintenance facilities, including general locations (but not specific sites), size, and activities of each facility.

Rolling stock inspection and maintenance plan includes activities, and frequency intervals (time or mileage as appropriate) typical for high-speed rail rolling stock for purposes of determining rolling stock facility requirements including types of facilities, activities at each of the facilities including major equipment, required frequency of inspection and maintenance, approximate location for each of the facility types, approximate size of each facility type, and rolling stock sitting time at each location.

Maintenance of track infrastructure, known as maintenance-of-way (MOW), inspection and maintenance activities and frequency intervals (time or mileage as appropriate) typical for high-speed rail infrastructure for purposes of determining MOW facility requirements, including activities at each site, equipment requirements, and approximate size and locations.

Operational Planning and Concept of Operations

- Operational planning support to confirm programmatic level studies and make regional project recommendations to optimize system performance.
- Operational concepts for the CHSTP, including operational objectives, mainline configuration, control of operations, rolling stock maintenance and repair.
- Operating design criteria including operating routes, operating speed and restrictions, design level of service, operating hours, operating schedule and station dwell times, normal and contingency modes of operations, recovery time, headways, and trainset length and seating requirements.

Rolling Stock

- Rolling stock specifications to support procurement and acceptance of trainsets that meet Authority performance and safety requirements including maximum operating speed, acceleration rate and braking rates (service and emergency), leading dimensions and clearances, trainset make-up, number of seats, number of trainsets, distributed power versus locomotive hauled, line voltage, radial steering trucks, HVAC requirements, coupling systems (internal and external), carbody materials, energy management systems, signal and train control technologies, and communications requirements.

Regulatory Approvals

In conjunction with the project-specific environmental reviews and preliminary engineering of each high-speed train section, there are a series of governmental requirements that must be satisfied to implement the CHSTP. These are summarized below, along with the steps being taken to comply.

U.S. and State Environmental Regulatory Agencies

In order to prepare for the necessary environmental regulatory approvals; the PMT is conducting statewide environmental resource agency coordination meetings. These meetings are held three times a year with the federal and state resource agencies, such as the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, U.S. EPA, CA Department of Fish and Game, State Historic Preservation

Office (SHPO), and others. The PMT role in this coordination is to provide early communication and coordination to assure that the technical review requirements of the approval agencies will be met in the environmental review process and subsequent applications, in some cases by preparing Memoranda of Agreement or Understanding, or Programmatic Agreements between these agencies and the Authority and FRA. The Authority will continue its meetings and consultations with these agencies as it moves toward seeking necessary approvals.

U.S. Department of Transportation / FRA

In April 2009, the U.S. Department of Transportation published "A Vision for High-Speed Rail in America" to build a network of high-speed rail corridors across America. Within this document, the U.S. DOT identified the "Need for High-Speed Rail Safety Standards" as one of five challenges inherent in advancing this new passenger rail vision. This Vision document also states that:

> "…the systems approach required to ensure safety of new high-speed rail corridors will necessitate consideration of additional changes in several regulations, including equipment, system safety, and collision and derailment prevention" and that this "opportunity to revise its safety approach in a manner that accelerates the development of high-speed rail while preserving and improving upon a strong safety regime...will be a challenge for the [FRA] as it seeks to administer its critical safety responsibility."

It is important to note that existing federal regulations support train speeds up to 150 mph and that introduction of modern high-speed rail revenue service operations in California and the United States depends on successful completion of a RPA for the CHSTP. The RPA and Notice of Proposed Rule Making (NPRM) is the federal process for introducing and adopting new safety regulations into the Code of Federal Regulations.

With California at the forefront of modern high-speed rail development in the United States, the Authority has taken the opportunity to move forward with the FRA and define how best to implement a system design approach and develop the required federal safety regulations and standards for high-speed rail with operating speeds up to 220 mph. Since September 2008, the Authority and its staff have met with FRA regularly to discuss and advance how the CHSTP will demonstrate compliance with existing federal regulations and, more importantly, how to develop high-speed rail safety regulations to be included in future federal safety regulations.

California Public Utilities Commission

The California Public Utilities Commission (CPUC) General Order (GO) 95 provides safety-related rules for electrified overhead line construction on transportation systems. As with the federal regulations and high-speed rail at 220 mph, there exists a similar challenge with GO 95 in that it does not address the 2x25kV traction power supply system required for modern high-speed rail. The Authority is meeting with the PUC to determine the best way to proceed in developing the 2x25kV traction power supply system required for high-speed rail operations.

California Department of Transportation

The CHSTP crosses the state highway right-of-way at dozens of locations including interstates and state routes. The Authority will be working with Caltrans as the owner and maintainer of the state's highway network in areas where proposed HST work would affect the highway right-of-way. To streamline and possibly expedite the review and approval process affecting state highway right of way, the Authority has executed a statewide Master Agreement with Caltrans to provide oversight, environmental document review, design support, and project approval.

EIR/EIS Management to NOD/ROD

In managing the EIR/EIS process through final approval of a NOD/ROD for each high-speed train section project, guidance has been prepared to ensure that each Regional Consultant will:

- Conduct public scoping meetings with presentation materials intended to inform the public of the CHSTP and have them understand the environmental process.
- Have adequate public, stakeholder, and agency outreach during the environmental process.
- Provide outreach to non-English speaking communities or groups.
- Conduct the AA process with the same level of detail and public/agency involvement needed to select the most reasonable and feasible options, which will avoid or minimize potential impact.
- Use the same study area limits to identify environmental baseline conditions.
- Use the same criteria and significance thresholds to identify potential impacts.
- Identify similar measures to avoid, minimize, and/or mitigate impacts.

During the preparation of the environmental deliverables and EIR/EIS documents by the Regional Consultants, the Authority and PMT staff provide technical and quality assurance/quality control (QA/QC) review to ensure that the guidance and standard methods adopted by the Authority and FRA are followed.

Preliminary Engineering

The Authority and PMT Engineering staffs are providing ongoing oversight of the Regional Consultants to assure design consistency across the system and compliance by the Regional Consultants with established design criteria and other requirements. While it is common engineering practice, and necessary, to break out large projects into sections for development, design, and construction, it is critical that all Regional Consultants are guided by a consistent set of design criteria and standards that have been established to ensure the CHSTP will operate as a single system. Design consistency will be achieved by strict adherence to these design criteria by the Regional Consultant teams as they develop their 15 percent Design and 30 percent Design submittals as follows:

> **15 percent Design** – Preliminary engineering to support a regional project EIR/EIS, provide a more detailed construction cost estimate, and conform with all requirements and commitments included in decision documents (FRA ROD; Authority resolution, CEQA findings, and Mitigation Monitoring and Report Plan) and the Final Statewide Programmatic EIR/EIS for the CHSTP, and the Final Program EIR/EIS for the San Francisco Bay Area to Central Valley portion of the high-speed train system. Generally, the level of engineering detail will be sufficient to determine the required footprint for the CHSTP facilities and identify environmental impacts.

> **30 percent Design** – Preliminary engineering to support procurement of final design and construction services, provide a more detailed and accurate construction cost estimate and in conformance with the regional project Final Environmental Documents. Generally, the level of engineering detail will identify all elements of the project to be constructed, but leave construction details and final placement for development during final design.

The engineering-related requirements generally fall into two categories, technical design requirements and safety requirements. Compliance with the technical design requirements is critical in ensuring that the California high-speed train system provides the performance mandated by the guiding legislation (AB 3034) and set forth by the Authority in policy documents. Compliance with the safety requirements, which will be embodied in the RPA for the CHSTP, is critical to securing FRA and CPUC certification to operate the California high-speed train in revenue service.

Procurement

Procurement activities include development of legal, commercial, and technical elements for bid documents, bid advertisement, bid evaluation, contractor selection, contract award, contract administration, and close-out.

Legal Provisions for Bid Documents.

The Authority will have legal and contract support from State resources as well as standard contract language for use in the procurement documents. The PMT will support development of legal provisions specific to the differences between standard state contractual language and procedures with the requirements for alternative project delivery, particularly with respect to liability and indemnification.

Commercial Provisions for Bid Documents.

In addition to supporting development of standard commercial provisions, such as progress reporting, and measurement and payment policies, the Authority and PMT staff will review commercial provisions that have been used on other projects to improve construction quality, reduce construction costs, promote worker safety, minimize disruption to the public and stakeholders, and improve project schedules.

Technical specifications and drawings for Bid Documents.

The majority of these documents are currently being produced by the PMT and the Regional Consultants. These technical documents include the 30 percent Design submittals, the CHSTP Design Manual, CHSTP Standard Specifications, CHSTP Standard Drawings, and Directive Drawings.

Bid Evaluation.

The Authority will manage the bid evaluation process with support from the PMT. An evaluation manual will be prepared and a training seminar will be conducted for the Bid Evaluation Team members. The PMT will provide technical support to the Authority in negotiations with the proposer that the Authority selects to enter into a contract. Project delivery strategies currently under discussion will be further assessed and procurement documents will be prepared and ready for distribution when the regional section NODs/ RODs are approved by the Authority and FRA.

Due to the size of the Program, procurement documents will likely include a range of contract types (e.g., Design/Bid/Build, Design/ Build, Design/Build/Finance, Design/Build/ Operate/Finance, Design / Build / Operate / Maintain / Finance) depending on the overall delivery strategy and schedule. Regardless, the contracting strategy will reflect the needs of the delivery schedule and operations and maintenance of a safe and reliable high-speed system.

Construction Management

Following the NODs / RODs and issuance of the procurement documents, projects will move on to the final design and construction stage. At this point, the Authority will procure Regional construction management (CM) contractors, who will manage the final design and construction to ensure compliance with the contract documents. The PMT will focus on oversight and support of the Regional CM contractors, the management of the core systems contractor, and the testing & commissioning program. Core system elements currently include the high-speed trainsets, heavy maintenance facility, train control/ signaling and communications systems, central control center, electrification/traction power systems, and track. The core systems contractor would design, build, demonstrate, test, validate, and verify the core system elements in a test section (at least about 100 miles long) of very-high-speed (250-mph) track in the Central Valley between Merced and , before the high-speed train systems elements are constructed elsewhere in the initial San Francisco to Anaheim route.

Given the number and value of active construction projects and contracts required to

deliver the California high-speed train system, multiple construction management teams will be required to oversee and manage the individual construction projects, similar to the Regional Consultant design teams. The PMT's Construction Manager will monitor and actively manage these Regional CM teams to confirm construction progress, budgets, schedules, quality, and compliance with standards and specifications. This will ensure that a Program-wide perspective is maintained for on-time delivery of revenue service, including development of schedule recovery plans as needed. During this phase, the design and construction contractor will likely bring forward alternative approaches and designs that provide economic benefits to the Authority. A change control process will be implemented to evaluate requested design variations against the published California high-speed train design criteria and standards to confirm any impacts to safety, reliability, and overall achievement of the system performance objectives. Where necessary, the PMT will also provide additional support to the Regional CM teams or take on special assignments to ensure delivery of the construction to meet schedule and revenue service target dates.

It is critical that construction management input be provided at the early stages in the development of the program documents to ensure a high level of efficiency and effectiveness during procurement for design and construction services, as well as during the construction activity itself. Areas where construction management input is critical includes review of Regional Consultant 15 percent Design submittal packages for constructability issues and review of Regional Consultant 30 percent Design submittal packages for both constructability and bidability issues.

Agency Agreements and Permitting

Statewide agency agreements will be prepared with environmental resource agencies to support the environmental permitting required during final design and construction. These agreements, Memorandum of Understanding (MOU), Memorandum of Agreement (MOA), or Programmatic Agreement (PA), will clearly identify the Authority's responsibilities in meeting the permitting requirements of the federal, state, and regional environmental resource agencies.

The Project's environmental permitting staff will manage the permitting process which begins during the preparation of the Final EIR/EIS. The major environmental permits that each of the HST Projects will require are:

- Section 404 permit under the Clean Water Act
- Section 401 water quality certification permit
- Section 4(f) and Section 6(f) Approvals
- National Pollution Discharge Elimination System (NPDES) Permits
- USF&WS Section 7 Consultation and Biological Opinion
- California ESA permits
- California Department of Fish and Game (DFG) Section 1602 Lake and Streambed Alteration Agreement
- Caltrans Encroachment Permits

Right-of-Way Preservation and Acquisition

The Authority, with PMT and Regional Consultant support, will lead the right-of-way preservation and acquisition tasks. This work will include identification of "at-risk" parcels, preparation of survey documents and legal descriptions, and preparation for property acquisition negotiations.

Identification of "at-risk" parcels. The Authority has the ability to take action to protect rights-of-way and preserve land for the future high-speed rail alignments using the Program EIR/EIS approvals, as available funding permits consensual acquisitions and consistent with environmental review requirements. This might be considered in areas where

development is rapidly occurring or where potential changes in land use could significantly increase construction costs.

Survey documents and legal descriptions. As the affected parcels are identified, specific data with respect to ownership, easements, parcel size, parcel requirements by the CHSTP need to be gathered and documented as a legal description to support negotiations.

Negotiation. Specific land acquisition by segment can begin upon issuance of the regional project NOD and ROD. Right-of-way acquisitions will conform to the state and federal relocation assistance requirements, and other state and federal provisions required at the time of acquisition. As part of the right-of-way process and where shared use with existing railroad corridors is confirmed, the Authority will negotiate terms of access for shared rights-of-way with railroad owners and operators.

Program Implementation

Implementing initial revenue service by 2020 will require setting many wheels in motion in 2010. This section outlines a series of pre-construction activities, commencing within the next year, essential to achieving that goal. The project's near-term focus must be to advance and complete the required environmental reviews and preliminary engineering for each of the seven CHSTP initial sections between San Francisco and Anaheim. In parallel with producing these environmental review and preliminary engineering documents, the Authority must also commence a series of activities in preparation for the start of construction as outlined below.

Pre-Construction Activities

One of the first steps in planning for the design and construction of the initial system is to develop and maintain a Project Master Schedule, detailing the myriad of activities required to implement the CHSTP. The master schedule will include established milestones for the NOD and ROD for each section and planned design/construction/testing/commissioning/start-up activities in each geographic section and project-wide. The master schedule will be based on a series of supporting plans, including:

- ROW acquisition and relocation plans, section-by-section
- Contract packaging plan section-by-section and system-wide
- Procurement plan, including early work, core systems, D/B infrastructure and system-wide construction contracts, and system operator
- Testing & Commissioning plan, and
- Revenue Service Start-up plan

The work plan must take into account the schedule requirements and milestones established by the FRA for ARRA Track 2 grant funded projects.

The master schedule will identify early construction work – utility relocation, ROW clearing, railroad track relocation, building demolition, major grade separations, and other "early work" to reduce construction risks. The vast majority of the heavy construction work will be procured and delivered through large design-build (D/B) contracts, but early work will be contracted using the best available means, including traditional design-bid-build and railroad force account, as appropriate, as well as through smaller D/B contracts. In each case, a financial package from the private sector will be part of the contract approach.

Another key near-term activity is procurement of the system operator. There are a number of options for how the operations and maintenance (O&M) contract could be structured. It could be packaged with the core systems procurement or separately as a long-term (multi-year) concession. The exact timing and structure of this procurement has not been decided yet; however, an initial Request for Expression of Interest (RFEI) for the system operations and maintenance contractor, along with RFEIs for the major civil infrastructure, core systems/trainset contractors, and financing, was issued in 2008. Since then, the Authority

has continued to reach out to the private sector to gauge interest in the project as well as seek guidance on technical and procurement issues. In the future, draft contract documents will be sent for industry review to selected respondents, and the industry feedback will be used in preparing the final Requests for Proposals and contract documents for the major contract procurements to follow.

In 2010, the Authority will develop draft RFPs for industry review of the core systems. The proposed approach involves contracting with a consortium – a single contract team – to design, build, demonstrate, test, validate, and verify the core system elements in a test section (at least about 100 miles long) of very-high-speed (250-mph) track in the Central Valley between Merced and Bakersfield, before the high-speed train systems' elements are constructed elsewhere in the initial route. The roles and responsibilities of the O&M and core systems contractors are fundamental to achieving a safe, reliable, maintainable and profitable high-speed rail service.

Prior to the possible hiring of a core systems consortium, individual sections of the Phase 1 HST final design and infrastructure construction will commence as environmental reviews are completed, and as funding is available, very likely starting with the ARRA-funded program corridors. Applications for ARRA-funded corridor design and construction programs were submitted for the San Francisco-San Jose, Merced-Fresno, Fresno-Bakersfield, and LA-Anaheim sections. The funding levels and timing of the ARRA-program work will affect how soon construction can start and which sections are built first. Various scenarios can be envisioned for implementing pieces of the system, and connecting them into operable segments. The scenario ultimately adopted will depend in part on the outcome of the ARRA Track 2 grant requests and negotiations, and which sections will have near-term committed funding by the High-Speed Rail Authority Board.

The infrastructure contractors may install the track and electrification systems outside of the test track area; the core systems contractor will install all other systems elements project-wide. As part of the core systems contract, the heavy maintenance facility (HMF), to be built adjacent to the high-speed test track, will be needed in time to receive trainsets for final assembly, testing and commissioning. The HMF likely will house the central control center for the entire system.

Depending on the ARRA grant determination, infrastructure in the LA-Anaheim, Merced-Bakersfield, and San Francisco–San Jose sections of the route might be constructed first, followed by the San Jose to Merced, Bakersfield to Palmdale and Palmdale to LA sections.
Other pre-construction activities include:

- Developing draft construction RFP documents and construction contract documents: General Provisions, Special Provisions, Standard and Directive Drawings and Standard Specifications
- Identifying Construction Management (CM) requirements and preparing RFPs for procuring Regional CM consultants
- Commencing ROW acquisition, particularly "protective" acquisitions
- Obtaining all necessary environmental permits
- Applying for FRA and CPUC safety waivers and approvals, including the FRA "Rule of Particular Applicability" for the CHSTP

Construction Staging

Upon receiving environmental approvals and finalizing funding agreements, the Authority will issue construction RFPs, continue ROW acquisition, and procure CM services. Early work will commence while the major D/B contracts are being advertised and awarded. Early work will include site clearing and grubbing, railroad track and facilities relocation, building demolition, environmental remediation work, and utility relocation in coordination with the major D/B contract schedules. The Contract Procurement Plan will be updated as the timing of additional environmental approvals and funding sources becomes known. The Project

Master Schedule will be updated monthly to incorporate contractors' approved CPM schedules and monthly updates. The general sequence of construction is envisioned to be as follows:

- Advertise, bid and award ARRA-funded design and construction
- Advertise, bid and award other early work, section-by-section
- Advertise, bid and award core systems in the Merced to Bakersfield section
- As environmental approvals are received and funding is available, advertise, bid and award other major D/B infrastructure contracts
- Develop and implement integrated systems testing, verification and validation of the core systems design
- Complete the test track, HMF, central control and other core systems elements
- Receive trainsets, continue integrated testing, "burn-in" and vehicle acceptance
- Incorporate and integrate the test track verification and validation results with the line section track, electrification and regional "systems" elements and with the system-wide systems contracts (train control/signaling and communications, SCADA, and central control contracts)
- Administer early work and D/B contracts, including field changes, change orders, claims management, and contract close-outs
- As facilities are completed, the Authority will commission stations, facilities, and systems to achieve operational readiness in conjunction with the integrated testing of each section
- The Authority will obtain CPUC and FRA safety approval prior to commencing revenue service in Minimum Operable Segments, which will be further defined as the Project Master Schedule is further developed
- Once the operable segments are connected and sufficient high-speed trainsets have been accepted, and system-wide testing, commissioning and training are completed, full Initial revenue service can commence

Independent Utility

Infrastructure in the LA-Anaheim, Merced-Bakersfield, and San Francisco–San Jose sections as proposed in the federal grant applications would have independent utility even if the entire CHSTP were not completed.

The LA-Anaheim corridor program will fully grade-separate the existing right of way, expand the width of the right-of-way where needed, construct the alignment and track needed for separate 110 mph operation to standards that would allow the operation of the high-speed train and lightweight DMU equipment, and improve stations at Anaheim and Los Angeles. The grade separation of this busy line, with projected 60 freight trains, 22 intercity Amtrak Surfliner trains, and 32 Metrolink trains daily, will greatly enhance crossing safety for rail and road users, decrease the causes for delays, and allow faster operations schedules.

In the Central Valley, the Authority is proposing to build the rural sections of high-speed track between Fresno and Bakersfield and between Merced and Fresno in a way that would provide independent utility to Amtrak's San Joaquin service between those cities, if for whatever reason the rest of the High-Speed Rail system were not completed at the same time. The grade separations would greatly enhance crossing safety for both passenger and freight trains in the corridor, and the new high-speed trackage would be configured so that it could be connected to the existing Amtrak stations in Merced, Fresno and Bakersfield, if the system were not completed at the same time.

In the San Francisco – San Jose corridor, the Project would help implement long-standing plans to electrify the corridor, and to grade-separate several high-priority road rail crossings in order to prepare the ground for high-speed train service, and allow Caltrain to operate more reliably and quickly. As in the other projects above, the grade separations would greatly

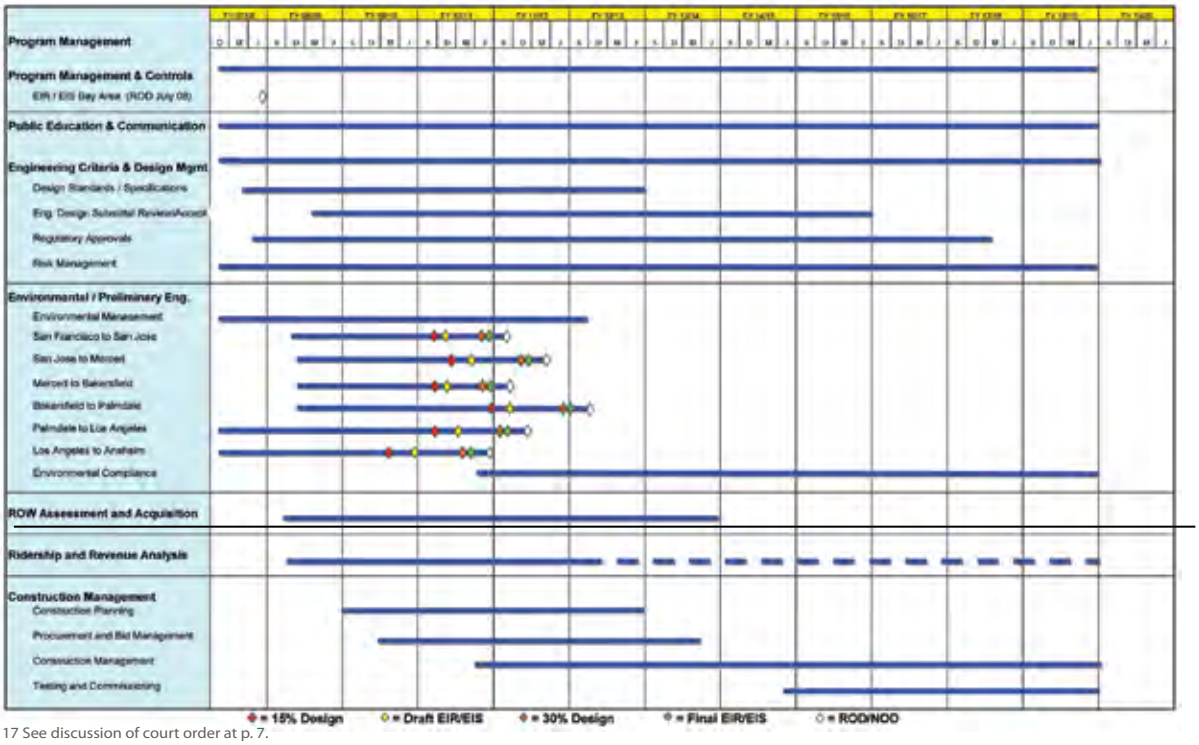
enhance crossing safety for rail and road users. Moreover, the speed-up that Caltrain estimates is possible as a result of these improvements would enhance the attractiveness of the Capitol Corridor trains and the Starlight, which use the San Jose Diridon station, as well as save time for those in the northern part of the Peninsula who access the Amtrak Capitol Corridor trains at Emeryville via Caltrain and the dedicated bus link from the Caltrain 4th & King Street station.[17]

Funding permitting, all sections of the route could be under construction by the 2012–2014 timeframe. As individual sections are completed and tested they could be operated as "minimum operable segments." For instance, once the San Jose-Merced section is completed, it could be connected to the Merced-Bakersfield section and initial service could commence between San Jose and Bakersfield. Likewise, once the line is built and tested through the Tehachapi Mountains, initial service could be extended to Palmdale. Incremental construction and connection of operable segments would continue until the entire San Francisco-to-Anaheim system is fully operational.

Schedule

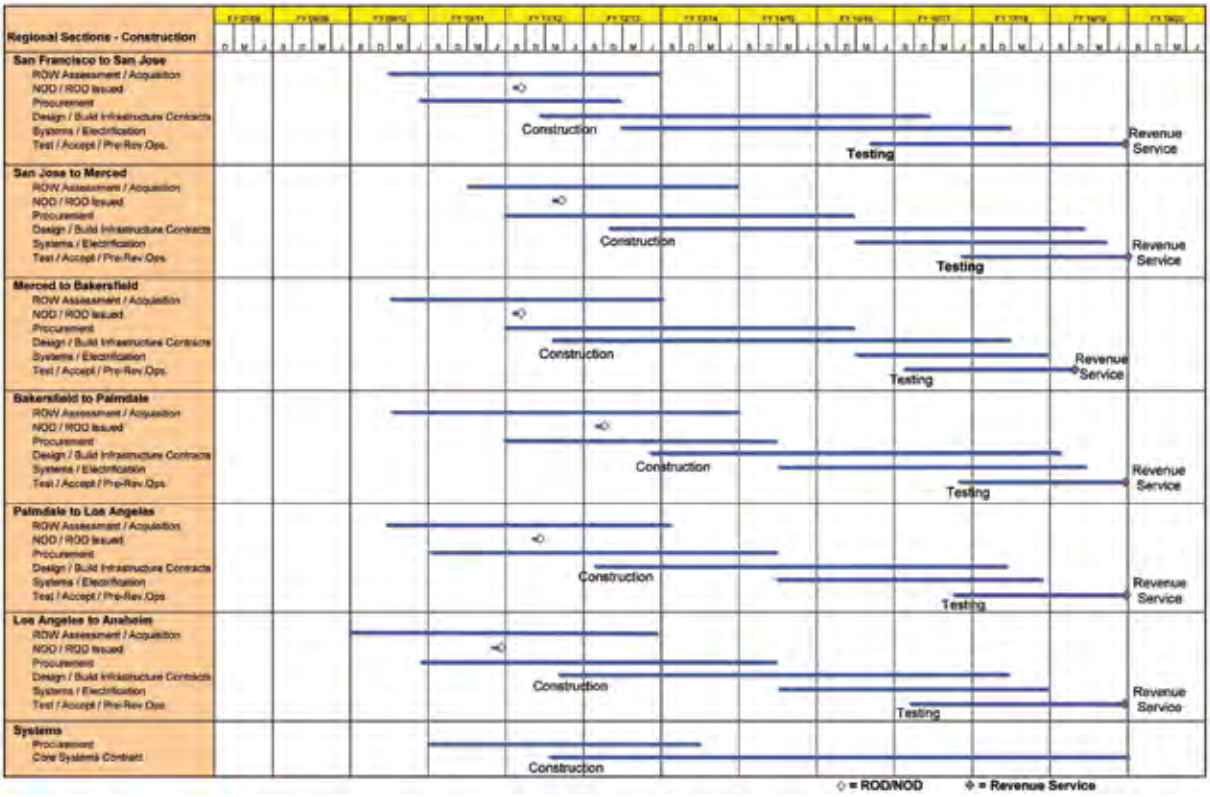
The following Master Summary Schedule for the San Francisco to Anaheim portion of the CHSTP is split in two parts: program management activities and right-of-way acquisition and construction activities. Together they show major program management activities and currently projected timelines for the regional project-level environmental review/preliminary engineering, target NOD/ROD milestones, procurement activities, final design/construction durations, testing/acceptance, and pre-revenue operations leading to the start of initial revenue service in 2020. This schedule will be updated as the project advances and as funding is secured to support the final design/construction of the Project.

SAN FRANCISCO–ANAHEIM MASTER SUMMARY SCHEDULE – Program Management Activities



17 See discussion of court order at p. 7.

SAN FRANCISCO–ANAHEIM MASTER SUMMARY SCHEDULE – ROW and Construction Activities



Outreach

California High-Speed Rail Authority's Outreach Program

Effective outreach is integral to achieving the goals of the high-speed train project, and in its mission to be transparent and accountable to the people of California it is incumbent upon the Authority to effectively engage the public.

Events over the past 13 months have necessitated that the Authority's outreach efforts turn from educating Californians about high-speed rail's opportunities to a new level of informational outreach that engages and empowers the broader public as they become stakeholders in a project that is moving toward construction. With the higher visibility that will accompany construction start-up – potentially as early as 2011 – the Authority's responsibility to keep Californians fully informed becomes even more demanding.

Moving forward, the Authority plans to increase the amount, and improve the quality of outreach efforts – to reach more Californians with more information – through refocusing its regional outreach teams and upgrading outreach tools such as Web-based interactive tools, outreach to ethnic communities, and partnerships with legislators and local government agencies.

Between today and the commencement of construction, there will be ample and significant opportunities for public input and interaction. These opportunities are detailed in the following section.

Outreach to government agencies, stakeholders, the news media and the public has been and continues to be a significant obligation and mission of the California High-Speed Rail Authority. Statewide and section-level outreach efforts communicating plans and benchmarks for the project assure transparency, provide a platform for local stakeholder input, and help build strategic partnership alliances that will result in collaborative operation of the system.

Outreach Efforts to Date

To date, the California high-speed train project's outreach and public information efforts have been coordinated primarily by subcontractors[18]– at the statewide level by a subcontractor (Deutschman Communications Group) directed and managed by the Parsons Brinckerhoff Program Management Team (PMT), and on a regional level by subcontractors to each of the Regional Project Management teams.

Outreach has been focused on broad public project awareness and on the outreach and public engagement required within state and federal environmental review processes.

Through the environmental review process, outreach has relied heavily on the project's regional-focused engineers and environmental planners, who have interacted with regional transportation agencies, cities, counties, legislative staff, and the public through public meetings and written materials.

Moving Forward

Events over the past 13 months necessitate increased outreach efforts. Those events include:

- Passage of Proposition 1A
- Inclusion of high-speed rail funding within the American Recovery and Reinvestment Act
- Increased interest and demand for information from California residents, local governments, legislators, and the media
- Significant project planning milestones including public scoping meetings and entering the alternatives analysis process within several project sections

18 Detailed below within discussions of each regional section

Recognizing the need for increased outreach efforts, the Authority in August 2009 created the position of Deputy Director for Communications, Policy and Public Outreach, and Governor Schwarzenegger appointed a person to fill that role. The goal of creating the position was to bring outreach activities under the direct control of the Authority, to streamline the outreach program, and to increase the quantity and quality of outreach activities. To that end, the Authority also initiated the procurement process to bring aboard a new Statewide Communications and Outreach contractor. Ogilvy Public Relations Worldwide was chosen in November as that new contractor, and is expected to begin work with the Authority in January 2010, following the approval by the Department of General Services of a contract.

Overall Communications Strategy

It is the Authority's goal to reach as many stakeholders and interested parties as possible with thorough, accurate information about the planned high-speed rail system and its progress. Those stakeholders and interested parties range from California residents and community groups to elected officials, the financial industry, international governments, and private businesses.

The Authority's outreach efforts occur on dual but complementary tracks. The first is the public engagement required as vital steps within the environmental review and planning process. This occurs on a section-by-section local level. The second track is general public awareness of the project, managed at the statewide level.

To achieve its outreach goals, the Authority employs a number of tools, outlined below.

Public Engagement

The Authority's outreach program is responsible for engaging and responding to the public. It accomplishes that by directly dealing with the public in public meetings, through written correspondence, person-to-person interaction, and other modes of communication. It also engages the public through partnering with regional transportation agencies, through local governments, through legislators, and through the news media.

Moving forward, the Authority and its new streamlined outreach organization plan to increase the amount and quality of public engagement by refocusing regional management outreach staff and by improving its Web-based public interaction tools.

News Media Relations

The Authority must rely on the news media as a primary source of communication to the public, since it does not currently employ advertising or other costly mass-marketing options. The outreach team writes and distributes all press releases and media advisories, prepares and places articles in state and national publications, responds to requests for information from journalists, and schedules media interviews with appropriate representatives. In addition, the team writes or prepares all communication instruments for the Board and project, including regional outreach materials and press relations for Authority Board meetings and activities.

Guided by the deputy director for communications and public outreach, outreach team and PMT members handle virtually all international, national, statewide and regional media relations for the Authority, responding to nearly 1,000 media inquiries in the past year alone. This work has generated significant coverage of California's high-speed train system in recent months, including coverage by CBS Sunday Morning, PBS Television, National Public Radio, the New York Times Sunday Magazine, Wired Magazine and dozens of other national, state and local print and broadcast media.

Because of the changing nature of the news media, the outreach program makes significant efforts to reach public and news media audiences through Web-based communications vehicles.

In recent months, due to interest in available ARRA stimulus funding and to progress in the California high-speed rail project's development, interest from media outlets has increased and will bring more awareness to the project.

Web Site Strategy and Content Management

The Authority's Web site is a vital tool for providing project information and details to interested parties and for providing another means of contacting the Authority. The Web site houses all documents developed by and for the Authority – from reports and studies to Board meeting agendas, project details, environmental documents, etc.

The Authority is currently reviewing, updating and reprogramming its Web site, focusing on making the site more user-friendly. A key goal is to regionalize available information to provide better project understanding for local stakeholders. Responsibilities include regular updates to the Web site and posting of new information such as EIR/EIS materials, Board meeting documents, program media statements, press releases, and more. The site now includes Webcast capabilities for Board meetings, providing stakeholders an easier way to participate and obtain information.

Additionally, the Authority has begun to employ social media tools to provide information and a means of interaction where today's Internet-users are congregating.

National and International Stakeholder Presentations

The Authority receives dozens of requests every year from national and international leaders and organizations to provide information and presentations about the status and details of California's high-speed train. Recent presentations were prepared for U.S. Secretary of Transportation Ray LaHood, the Federal Railroad Administration, dozens of business, transportation and environmental groups throughout the state, and national and international conferences such as the American Public Transit Association and the Cordoba Conference on high-speed train development in Spain.

The Authority already has experienced a significant increase in demand from national and international sources for information and contact – an important element of the outreach program because of the interconnectivity of high-speed train planning, design and production resources and programs around the world.

Presentation and Printed Materials

Important to any statewide project of this scope are printed materials that help communicate key project details. The outreach program prepares such materials as:

- Statewide and region-specific brochures and fact sheets.
- PowerPoint presentations for CHSRA speakers.
- E-Newsletters and Alerts, sent to the CHSRA stakeholder databases of thousands of individuals.

The Authority has created visual simulations over the past several years to help the public and stakeholders better understand the proposed system – what it will look like, where it will go, how it will interconnect with regional transportation networks and how it will affect local communities. Those simulations play a valuable role in establishing understanding and context for environmental analysis, local planning and partnership development.

Moving forward, the Authority will focus its printed and other materials at a regionalized and intensely local level, to provide Californians information about the train project in very intimate terms of how its development, construction, and ultimate service will affect their communities and daily lives.

Ethnic and Diverse Communities Outreach

Statewide and regional outreach efforts have always included significant steps to engage, inform and take input from California's diverse communities. Multilingual printed materials and legal advertising have been a compulsory part of the Authority's outreach. Staff and contractors regularly interact with ethnic and diverse audiences and stakeholders. Moving forward, as the demands of public outreach increase, the Authority intends to add a specific ethnic outreach component to the statewide communication plan and team, as a member of the Ogilvy team being brought on board. That person will advise the Authority on ethic outreach strategies and lead the effort to implement them.

Partner Agencies

The Authority will increasingly rely on partner agencies with established contacts and interaction with their communities to assist the Authority on spreading information about the high-speed rail project. Those agencies include regional transportation agencies such as the Orange County Transportation Authority and SamTrans. Through its newly appointed deputy director for communications and public outreach, the Authority is beginning to more directly engage those partner agencies with its outreach efforts, in addition to its planning efforts.

Legislative Outreach

Partnering with members of the Legislature and their staffs is a critical piece of reaching Californians with information about the high-speed train project and also of hearing their voices. Legislators have their fingers on the pulse of their communities, and are an established viaduct of communication from local communities into the state capital. The Authority, led by its newly elected Board Chairman, is taking steps to better inform legislators of the train project's progress and more effectively engage legislators and their staffs in the public outreach process.

Communications Protocols

The outreach team regularly updates detailed communications protocols to standardize outreach among and within sections, which ensures consistent communication formats, styles and language. Similar protocols have been developed for the CHSRA board of directors and other project partners to ensure consistent and accurate information is distributed to the public and to create a framework for more efficient interagency activities.

Additionally, the Authority's program management team has committed to training its regional managers in Context Sensitive Solutions, an outreach tool being employed with the communities in the Bay Area's Peninsula that is a collaborative, interdisciplinary approach that ensures input from all stakeholders. By ensuring that the high-speed rail project's regional managers are trained in this collaborative public engagement mindset, the Authority believes outreach efforts will improve in quality.

Regional Outreach Efforts

As it had done for the public unveiling of the Program-Level EIR/EIS for the majority of the high-speed train line, the outreach program continues to manage the development and implementation of a communications strategy to support the public release of the project-level documents for the planned system.

Under direction of the deputy director for communications and public outreach, the statewide outreach team closely collaborates with the PMT and nine section teams to develop and carry out section-specific public outreach programs in key areas around the state to inform stakeholders and the media about public hearings, board meetings and other relevant issues related to the project. The Authority manages the review and approval process for all regional public-education and project-level EIR/EIS material.

OPPORTUNITIES FOR PUBLIC INPUT / ENGAGEMENT / OUTREACH

The Authority's responsibility for outreach associated with project-level environmental review requires use of a comprehensive set of tools to ensure all parties are heard and opinions considered, both to comply with state and federal law and to meet the Authority's goal of transparency. Those tools include:

- Establishment of a single point of contact to ensure access and openness
- Briefings/meetings with existing community and civic organizations (i.e., business groups, service clubs, neighborhood associations, etc.)
- Organized and highly publicized community wide meetings
- Regular updates for local elected officials, both one-on-one and at regularly scheduled public meetings
- Outreach to key local agency management, planning and engineering staff
- Direct mail/print ads where necessary to communicate project information and to meet CEQA legal requirements
- Cooperative outreach and communications with local jurisdictions (i.e., utility bill inserts, newsletters, etc.)
- Communication support for high-speed train Technical Working Groups
- Design workshops (to be held in cities identified for potential future HSR stations)
- Electronic access to information (i.e. Web site, e newsletter, on-line town hall, etc.)
- Specialized translations of communications materials into multiple languages
- News media outreach (alerts, editorial board presentations, news releases, etc.)
- Cable TV access to information and events

Local Outreach Activities

The Authority provides oversight for all local outreach, including public affairs consultation with local government agencies and elected leaders, outreach to local community organizations, news media relations and coordination of activities with the Authority staff when Board activities touch their regions.

Working with the PMT, regional outreach team members monitor and participate in CHSRA's regional Technical Working Group meetings to assist local engineering and environmental teams on the high-speed train project. Below is a summary of public outreach activities, organized by broader region.

Following is a description of the regional outreach teams and lists of groups, entities, and individuals they have interacted with regarding the project to date.

Bay Area Outreach

Responsible Outreach Contractors:

CirclePoint, EDAW-AECOM, Garvey Communications

This region includes the preferred Pacheco Pass route through Gilroy to San Jose and the San Jose-to-San Francisco section. Outreach activities in the sections within this region have focused on city-specific strategies appropriate to a proposed high-speed train line that crosses so many different communities. This region has experienced a high concentration of attention from diverse groups with acute sensitivities to the design of the system – from individual cities to environmental organizations to regional transportation agencies.

CONTEXT SENSITIVE SOLUTIONS (CSS)

In the Bay Area's Peninsula, the Authority, the project management team and its regional management team have pursued a structured decision-making approach to better fit the high-speed train to the local communities it serves. Known as Context Sensitive Solutions, and offered as a tool by members of the local community, it is a collaborative, interdisciplinary approach that ensures input from all stakeholders. It is an approach that helps preserve and enhance scenic, aesthetic, historic, community, and environmental resources, while improving or maintaining safety, mobility, and infrastructure conditions.

In cooperation with the PMT, the local outreach team has coordinated and prepared documents and presentations for scores of meetings related to the project and will continue to do so until the start of construction and eventual revenue operation. In the past year alone, the team has coordinated outreach to nearly 100 individual organizations, chambers of commerce, public agencies and stakeholder groups. Groups and events over the past year have included but are not limited to (in alphabetical order):

- ACE
- Alameda CMA
- Altamont Working Group
- Assemblymembers: Ruskin, Hill, Ma, Yee, Ammiano and Leno
- Audubon Society
- BART and BART Board of Directors
- Bay Area Council
- Breathe California Clean Air Awards
- CalTrain
- CalTrans – District 4
- CalTrans – Cal Mentor Program
- Capitol Corridor
- Chambers of Commerce of: Berkeley, Mountain View, Concord, San Mateo, San Francisco (Global Warming Summit), Palo Alto and Menlo Park
- Cities of: San Francisco, San Jose, Millbrae, Atherton, Redwood, Menlo Park, South San Francisco, San Bruno, Brisbane, Santa Clara, Palo Alto, Sunnyvale, Fremont, Morgan Hill, Gilroy, Los Banos and Chowchilla
- City Councils of: Menlo Park, San Bruno, Burlingame, Mountain View, Sunnyvale, Millbrae, South San Francisco and San Francisco
- Committee for Green Foothills
- Community Club of Rossmoor
- Downtown San Mateo Association
- East Bay Engineers Club
- Grasslands Water District
- Greater Gardner Community Association
- Green Career Fair
- Greenbelt Alliance
- Lake Merritt Breakfast Club
- Latino Issues Forum
- Monterey County
- Nature Conservancy
- North Willow Glen Neighborhood Association
- Palo Alto – Southgate Community Meeting
- Palo Alto Transportation Department
- Peninsula Cities Coalition
- Railway Industrial Clearance Association
- SAMCEDA
- San Bruno Leadership
- San Delmas Park Neighborhood
- San Francisco Building and Construction Trades Council
- San Francisco Labor Council

- San Francisco Transportation Authority
- San Joaquin Council of Governments
- San Joaquin Partnership Meeting
- San Jose Chamber of Commerce/ Downtown Association/Convention & Visitors Bureau
- San Mateo Building Trades Council
- San Mateo Transportation Authority
- Santa Clara Valley Transportation Authority
- Sierra Club, Loma Prieta Chapter
- Silicon Valley Land Trust
- Silicon Valley Leadership Group
- Silicon Valley Projections Conference
- SPUR
- Stanislaus COG
- Sustainable San Mateo
- TALC and ACEC-CELSOC
- Transbay Groundbreaking
- Transit Camp Regional Planning Conference
- Tri-Valley Policy Advisory Committee
- WTS – East Bay Construction Specification Institute

Within the past year, the outreach program also has assisted in building alliances with numerous regional and national organizations and government leaders, including:

- Speaker of the House Nancy Pelosi
- San Francisco Mayor Gavin Newsom
- San Francisco Board of Supervisors' President Aaron Peskin
- San Jose Mayor Chuck Reed
- Rep. Jackie Speier
- Rep. Anna Eshoo
- San Francisco Chamber of Commerce
- State Senator Carol Migden
- Silicon Valley Leadership Group
- Valley Transportation Authority
- Capitol Corridor
- Sierra Club

Central California Outreach

Responsible Outreach Contractors:

The Forhan Company, Endicott Communications, Gene Tackett Consulting Services, URS

This region encompasses a broad swath of the state, with widely separated communities each with widely divergent character and need. Some of the earliest and most important elements of the system – the test track and heavy maintenance facilities – will be located in this region.

Outreach in this region has included a wide variety of groups and events, including but not limited to (in alphabetical order):

- Altamont Working Group – regular participant
- American Public Works Association, Central Valley Chapter
- Antelope Valley Board of Trade
- Association for Commuter Transportation (Sacramento)
- Bakersfield Breakfast Rotary Club
- Bakersfield Mayor Harvey Hall and his staff
- Breathe California (Sacramento)
- California Partnership for the San Joaquin Valley – attend quarterly board meetings
- CalTrans Corridor Project
- Central California Hispanic Chamber of Commerce (Fresno)
- Chambers of Commerce of: Stockton, Manteca, Lodi, greater Merced, Sacramento Metro, Atwater, Elk Grove, Turlock, Galt, Taft, Tracy, Orange Grove, Auburn, Ripon, Rancho Cordova, Greater Stockton, Fresno (Transportation Committee) and Bakersfield
- Chowchilla Lions Club
- Chowchilla Rotary Club
- Cities of: (provided presentations or study sessions to) Hanford, Visalia, Corcoran, Wasco, Shafter, Tulare, Fresno, Madera and Merced
- Counties: provided presentations to Board of Supervisors in Fresno, Kings, Tulare (individual meetings), Madera and Merced
- Clean Air Partnership
- Clovis Rotary Club
- Downtown Sacramento Partnership
- Downtown Stockton Alliance
- Folsom Transportation Panel Discussion
- Fresno Council of Governments
- Fresno Downtown Station Planning Meeting
- Fresno Economic Development Corporation
- Fresno Mayor Ashley Swearengin (elected Nov. 2008) and Former Fresno Mayor Alan Autry (through December 2008)
- Fresno Revitalization Corp. Board of Directors
- Fresno Technical Assessment Group (consisting of city, county and COG staff)
- Great Valley Center (Modesto) – assisted in Authority's role as major sponsor of annual conference in Sacramento – April 2009 – staffed Authority booth and arrangements for panel session on HST project
- Hanford Kiwanis Club
- HST Consolidation TAG Meeting
- Highway 50 TMA
- Kaiser Commuter Group
- Kern County Resource Management Team
- Kings County Board
- Leadership Fresno
- Legislators (State): Assembly Republican Leader Mike Villines, Senate Republican Leader David Cogdill, Ashburn, Denham (Chief of Staff), Perata (Staffer) and George Runner
- Madera City Councilmembers: Robert Poythress, Gary Svanda and Mayor Sam Armentrout

- Madera County Supervisors: Bigelow, Rodriguez, Moss and Wheeler
- Madera County Transportation Commission
- Modesto Rotary Club
- Modesto Sons in Retirement
- Oildale Rotary Club
- Placer County Transportation Planning Agency
- Point West Area Transportation Management Agency
- Port of West Sacramento
- Porterville Lions Club
- Rancho Cordova Economic Development Department
- Reedley Kiwanis Club
- Sacramento Air Quality Management District
- Sacramento Area Council of Governments (SACOG)
- Sacramento Area Trade and Commerce Organization (SACTO)
- Sacramento Chamber of Commerce's Perspectives 2008 Event (attended by more than 1,000 leaders)
- Sacramento Convention and Visitors Bureau
- Sacramento Mayor Kevin Johnson and his staff
- Sacramento Metropolitan Air Quality Management District
- Sacramento Rotary Club
- Sacramento Transportation Authority
- San Joaquin Council of Governments
- San Joaquin County Partnership
- San Joaquin Valley Regional Policy Council – COG Directors for the Central Valley Counties
- Senator Darrell Steinberg's Office
- Sierra Oakhurst Kiwanis Club
- South Natomas TMA
- Stockton Alliance
- University of the Pacific (UOP)
- Valley Vision
- Yolo County Supervisors: Thompson and Rexroad
- Yolo Transportation District

Southern California Outreach

Responsible Outreach Contractors :

VMA Communications, Arellano Associates, Consensus Inc., Katz and Associates

Outreach activities in the sections within this region are perhaps the most complex on the system. The team must meet the needs of early development of the system in an area with an existing but still-developing regional commuter rail system, multiple well-established regional transportation planning agencies and a diverse timetable for construction of several intercity sections on the system. Additional ongoing responsibilities attend the need to help negotiate sensitivities around use of historic Union Station and development of a new hub transportation terminal in Anaheim.

As in other regions, the Southern California outreach team has worked closely with the PMT and regional management teams, regularly coordinating meetings, presentations, materials and personal contacts with scores of groups and events, including but not limited to (in alphabetical order):

- Access Los Angeles
- Alhambra Rotary Club
- American Planning Association – California Chapter
- Anaheim Green Expo
- Anaheim State of the City
- Anaheim Transportation Network Board
- Assemblymembers: Silva, Solario, Tran and Eng
- Beverly Hills Realtors Association
- Brookhurst Community Center
- Buena Park Senior Center Meeting
- Burbank Rotary Club
- CalTrans – District 11
- Chambers of Commerce of: Universal City, North Hollywood, Burbank, Quartz Hill, Montebello, Anaheim, OCBC, Los Angeles, Southeast Regional, City of Commerce Industrial Council, San Diego, San Fernando, VICA, Bell Gardens, Ontario and Riverside
- Cities of: Bell, Palmdale, Escondido, Tustin, Buena Park, Pomona, Temecula, Murrieta, San Bernardino, Rancho Cucamonga, Anaheim, Santa Clarita, Upland, Claremont, San Fernando, Burbank, Glendale, Orange, Montebello, Commerce, Pico Rivera and Los Angeles – more than 140 cities were briefed
- CMAA Owner's Night
- County of San Bernardino
- Culver City Music Festival (July and August 2008)
- Design Workshops conducted or participated in: Los Angeles, Norwalk, Vernon, Fullerton, Santa Fe Springs, La Mirada, Bell, Buena Park and El Monte
- Downey Kiwanis Club
- Downtown Los Angeles Neighborhood Council
- Earth Day Market Festival
- Electric Vehicle Association
- Fullerton Municipal Airport Noise & Safety Committee
- Fullerton Sunrise Rotary Club
- Gateway Cities Council of Governments
- Green LA Transportation Working Group
- Hollywood Community Police Advisory Board
- I-710 Technical Advisory Committee
- Knott's Berry Farm
- LA-32 Neighborhood Council Meetings
- La Mirada Rotary Club
- Laguna Canyon Conservancy

- Lincoln Heights Neighborhood Council
- Little Tokyo Community Council
- Los Angeles City Council & LA City Council Ad Hoc Committee
- Los Angeles City – District 9 Planning Team
- Los Angeles Councilmembers
- Los Angeles County Metropolitan Transit Authority (MTA)
- Los Angeles Mayor's Transportation Staff
- Los Angeles Parks & Recreation
- Los Angeles Regional Team Meeting
- Los Angeles County Supervisors
- Los Angeles Technical Group
- LOSSAN Board
- Los Amigos
- LULAC
- METROLINK
- Metro Gold Line Construction Authority
- Palmdale/Antelope Valley Chamber of Commerce
- Montebello Concert Series
- Mobility 21
- MOU Partnering Agencies for the SD-LA Section – SANDAG, SANBAG, SCAG, RCTC and SDRAA
- North Hills West NBHD Council
- Northridge West Neighborhood Council
- NRDC
- Ontario APA – Rebuilding America
- Point Loma Town Hall Meeting
- RailPAC
- Rio Honda Rotary Club of Bell Gardens
- Riverside County Transportation Commission
- Riverside County Supervisor Bob Buster
- San Bernardino Association of Governments
- SANDAG Transportation Committee
- San Diego Metropolitan Transit System (MTS)
- San Diego Regional Airport Authority
- San Gabriel Valley Economic Partnership
- San Gabriel Valley Council of Governments
- Santa Clarita Council Study
- Southern California Association of Governments (and their Transportation Committee)
- Sierra Club
- SOAR Appreciation Night
- Southern California IT Professionals
- Southern California Transit Advocates
- STV-LA Union Station Webinar
- Los Angeles, San Diego, San Bernardino, Riverside and Orange County County Staff
- Taxpayers' Association Meeting
- Tustin-Santa Ana Rotary ClubVICA Local Officeholders Luncheon
- UCR Technical Team
- Urban Land Institute
- Women's Environmental Council
- WTS Leadership and WTS Luncheon

Other outreach efforts in this region include working with the Los Angeles mayor's office to develop a working group meeting with appropriate city department heads as part of the environmental screening process and holding briefings for all transportation, city, and environmental agencies relevant to the project.

Ridership, Revenue and Operations

Overview of Forecasts and Operations Planning

The ridership of a high-speed train system, the revenue it brings in, and its operations costs are all interconnected. Balancing the three elements determines how viable the system is as a business enterprise.

Ridership is a critical element. The Authority has previously sought ridership estimates of its planned system and is again working to develop updated ridership figures. Predicting ridership is a function of the state's projected population, future gasoline prices and airfare costs, and numerous other factors related to the physical design of the train system. Ridership, of course, is a determining factor, along with the cost of operations and maintenance of the system, in developing revenue. These figures will be critical in developing interest from private investors in the California high-speed train project.

This section discusses these important elements of the project.

The forecasts of high-speed train riders and revenue are developed from predicted future travel volumes and conditions within California and future high-speed train operations planned. Being highly interdependent, the operations plans and the revenue forecast have been repeatedly refined to ensure consistency of assumptions and workability of the high-speed train service.

At the very beginning, a preliminary operations plan was drawn up with stations in major cities and trains running as often as in overseas systems serving similarly sized cities. Train fares were assumed to be somewhere between the cost of driving and of taking an airplane or train. Parking costs at stations were set at prevailing levels, and transit services that could connect at the stations were identified. Running times between stations were calculated from the specifics of the rail line grades and curves, the power, weight of the train, and top speeds of 220 miles-per-hour where the track is straight enough.

At the same time, a detailed picture of current and future trip-making in California without the high-speed train was developed. The volume of present travel among cities and rural regions was estimated from highway traffic counts, federal data on air trips, existing and new surveys of origins and destinations of trips, Caltrans data, and many other sources. The cost and speed of travel by air, car, and train, including getting to stations and airports and parking at destinations, was developed. Growth in traffic was projected from state forecasts of population, employment, and household income growth, and existing known relationships of these factors with travel volumes.

The end result was a computer-based model with the state divided into 4,500 zones with population, employment, and types of household classified by size, income, number of cars and other characteristics relevant to the choice of travel by car, air, or train. The time and cost of travel to every one of the other zone is included, as well as the number of trips made between the zones. There are over 10 million zone-to-zone pairs in the model for which specific conditions of travel can be calculated.

High-speed train operating speeds and cost were then added as a travel option to each of the zone-to-zone pairs and the number of trips attracted to the train was estimated. An extensive U.S. and international body of re-search and experience exists on why people pick cars, planes, transit, or other ways to travel for a specific trip. To develop the forecast model, over 4,000 existing surveys of California inter-regional travelers were combined with 2,700 new surveys collected in 2005 specifically to determine

their sensitivity to cost, speed, and convenience. Zone-to-zone trips attracted to the high-speed train are summarized by 14 major markets for ease of understanding, and are assigned to stations and trains.

The volume of high-speed train trips was then compared to the number of seats available in the operations plan. A relatively standard length of trains has evolved in Europe and Asia of around 660 feet. The number of seats ranges between 400 and 650, depending on seat spacing and whether the train is single or double level. Two sets can be coupled together to provide 800-1300 seats; the double trainset can be operated as a single. Where even two trainsets coupled together did not provide enough seats to carry the forecast traffic, trains were added to the preliminary operations plan. And where excess capacity was provided, consideration was given to reducing the frequency of service.

These changes in service can affect the attractiveness of the high-speed train, and to ensure compatibility, the ridership was re-forecast when service patterns were changed. This process has produced an operating plan that has enough capacity to handle the forecast.

This forecast and operating plan for an initial phase of service between Anaheim and San Francisco are based on using single-level trainsets either singly with 450-500 seats each or two sets coupled together with 900-1,000 seats. In the year 2035, 270 trains operate throughout the day, in a mix of express non-stop service and shorter-distance limited service. The fastest running times meet legislative mandates, such as the 2 hours and 40 minutes time between San Francisco and Los Angeles. In the peak hours eight trains an hour are operating in each direction between Los Angeles and San Francisco, with another two trains an hour each way on the Merced segment, one to LA and the other to San Francisco. Four trains an hour in each direction run through to/from Anaheim.

High-speed train fares are a key factor in the level of ridership and the revenue forecast. Forecasts for the programmatic EIR/EIS work used fares based on an LA – SF fare at half (50 percent) of the 2005 air fare, and varied proportionally with distance for other trips. This "50 percent" fare level generates relatively large passenger flows without requiring operating subsidy, and creates large public benefits from the public investment, e.g., air quality improvements, energy consumption reductions, and travel time savings. It also ensures that local and regional impacts of the high-speed train on items such as traffic, parking, sensitive lands, and water resources are not understated.

Tests of the sensitivity of riders and revenue to fare levels 33 percent higher and 66 percent higher than the "50 percent" base level showed progressively higher revenue, although lower ridership. The 66 percent higher case (which becomes the "83 percent" of air fare case) appears to be near the level that will generate the highest revenue, and reduces the operating costs and the number of trainsets needed. Because of the importance of increasing the amount of private sector funding in the construction and procurement of the project, the 83 percent fare scenario was adopted for this business plan. The fare is calculated in the same manner as the 50 percent, but is anchored by an LA-SF HST fare at 83 percent of the air fare, or in 2009 dollars a high-speed train fare of $105 vs. a $125 air fare, and a $118 cost to drive.

Riders and revenues are presented below for the year 2035, as well as for start-up in the year 2020. Although early service may be possible on certain segments, no such revenues or operations have been included in this plan.

The remainder of this section presents more detail on the methodology and results for the ridership and revenue, the detailed operations plan, the operations costs, and the resulting cash flow for the initial phase between Anaheim and San Francisco.

Schematic Operations Plan for Ridership and Revenue Forecasting

In order to prepare a ridership and revenue forecast, a schematic operations plan is needed,

providing how often trains will run, which stations they will stop at, and how long they take between station stops. This is done both for the peak morning and afternoon travel times, and for an off-peak period for the remainder of the day. Table A shows the schematic operations plan developed from ongoing ridership and operations planning for the initial phase of service in the peak period southbound. The northbound service plan mirrors the southbound.

This peak-period plan features different trains to serve the many different ridership markets in the initial service phase. Many different combinations are possible because of the flexible design of the alignment that lets express trains pass local trains in stations. This pattern has evolved incrementally and provides the highest ridership levels to date. An hourly non-stop train (pattern "0") provides the fastest possible service between San Francisco downtown and Los Angeles downtown, taking 2 hours and 40 minutes, the legislatively-mandated time. A second San Francisco – Anaheim express (Pattern "2") provides rapid service to San Jose, and continues to Anaheim. Pattern "1" provides San Francisco and the mid and southern Peninsula stations with rapid service to Los Angeles, Norwalk, and Anaheim. Pattern "4" provides Fresno and Bakersfield with half-hourly semi-express service to San Jose, San Francisco, and Los Angeles. Pattern "6" serves the northern LA basin stations as well as the line to Orange County. Patterns "7" & "8" provide service to Merced from the Bay Area and from the south. In all, nine patterns of service are provided in this scenario, eight starting in San Francisco and one in Merced. It is designed to provide at least several trains per hour between all possible station pairs, while offering non-stop service between the major markets and a frequent mix of local and few-stop services within the constraints of the system's capacity.

This peak schematic pattern provides 57 trains in each direction in 6 hours, for an average of just under 10 trains per hour. The off-peak for the initial phase of service provides 71 trains in each direction over a 10-hour period, for an average of 7 trains an hour.

TABLE A – Initial Section Schematic Operations Plan for Ridership Forecasting-Peak Period, Southbound

Pattern#	0	1	2	3	4	5	6	7	8
Frequency of service (mins)	60	120	60	120	30	60	120	40	40
	Run times from start in minutes								
San Francisco	0	0	0	0	0	0	0	0	
Millbrae	|	|	|	15	15	|	|	15	
Redwood City / Palo Alto	|	20	|	25	|	20	20	25	
San Jose	|	35	30	40	35	35	35	40	
Gilroy	|	51	|	56	|	51	|	56	
Merced								91	0
Fresno	|	|	|	97	87	|	|		22
Bakersfield	|	|	|	136	126	|	|		61
Palmdale	|	|	|	|	|	151	145		95
Sylmar	|	|	|	|	175	|	167		117
Burbank	|	|	|	|	|	179	176		126
Los Angeles Union Station	160	175	163	194	189	188	185		135
Norwalk		188	|	207			198		148
Anaheim		200	184	219			210		160
# of trains	6	3	6	3	12	6	3	9	9

For each pattern of service, the time for each train service was calculated from the curvature and grade of the current preferred programmatic EIR/EIS alignment, and the ability of a standard high-speed train set currently in revenue service elsewhere in the world to accelerate, maintain top speeds, and brake comfortably and safely. Time was added at stations for picking up and dropping off passengers depending on the expected size of the flows, and in some cases, to allow overtaking by express trains while stopped trains are at the station platforms. Finally, a little extra time was added to allow for unexpected delays in boarding or operation. This operations recovery time is equal to roughly 3.5 percent of the normal trip time. The resulting run times are realistic and achievable with high reliability and with the expected performance improvements from the next generation of high-speed trains being brought into revenue service in Europe and Asia.

The high-speed trains operating on this pattern are assumed to be of the standard length of around 660 feet that has evolved in Europe and Asia, with a single level and seating comfortable by U.S. standards, resulting in either a single set with 450-500 seats, or two such sets coupled together, for a total seated capacity of 900-1,000. At this schematic stage, capacity for each pattern was not specified, but the later matching of forecast ridership to a detailed timetable verified that this schematic pattern was able to accommodate growth in demand to 2035, as well as to provide full initial system service in earlier years.

Ridership and Revenue Forecasts

The high-speed line and stations are shown in the map below, along with fourteen regions into which the state was divided for purposes of reporting the results of the ridership and revenue forecast model. The model forecasts trips among 4,667 smaller zones for the year 2030, which are then factored to 2035 by the projected growth in population and employment of the various regions of California.

Base forecasts of riders and revenue for the high-speed train were developed from 2005

to 2009 by Cambridge Systematics (CS), a national leader in transportation economics and modeling, with extensive current experience in transportation issues throughout California.

CS developed a detailed 4,667-zone model for the entire state to forecast travel between regions. The economic and household characteristics were forecast for each zone in the year 2030 based on data and forecasts from state, regional, and local government agencies.

A detailed description of system capacity, speeds, service levels, cost, and traffic congestion for the highway and local transit networks was developed for 2030 from the fiscally constrained long-range transportation plans of each regional planning agency.

Finally, future air and intercity conventional rail service reflecting current service levels and planned investments were incorporated.

The high-speed train line and stations were added using fares, travel times between stations, and time between trains, provided by the Authority and validated by an independent peer review panel.

In 2005, data on travel conditions and patterns were collected from California agencies, and 3,170 state-of-the-art surveys were taken of air, auto and intercity rail travelers who had recently made an intercity trip in California.

The data were used to develop sensitivities for each of over 1,200 separate types of traveler and trip, involving combinations of:

- Purpose of the trip (Business, Commute, Recreation, and Other)
- Trip distance and size of metro area (More than 100 miles; less than 100 miles and from large metro area; less than 100 miles and from small areas)
- Household characteristics
  - size (1 person, 2, 3, and 4 or more)
  - income (Low, Medium, and High)
  - autos owned (None, 1, and 2 or more)
  - number of workers (0, 1, and 2 or more)
- Travel party size (Alone, and With others)

For all travelers, cost, trip time, and frequency of departure are the more important variables, and reliability is a smaller, but significant, influence on the mode chosen to make a trip.

For forecasting high-speed train travel within the greater LA basin and the Bay Area, the existing urban transportation models for each of the regions were updated in 2008 and high-speed train service was added as an option.

Travel within San Diego County was forecast using an extrapolation methodology because of the relatively low number of expected high-speed train trips.

A peer review panel of local, national, and international travel model and high-speed train experts reviewed and commented on the modeling assumptions, methodologies, and results during each stage of model development. The panel concurred with the approach and reasonableness of results.

In the year 2000, more than half a billion trips were made among California's regions, 95 percent by car, 4 percent by air, and 1 percent by intercity conventional rail, (San Joaquin, ACE, Capital Corridor and Pacific Surfliner). Between 2000 and 2030, population is forecast to grow by 42 percent to 48 million, and employment will grow by about 51 percent. This growth will increase total interregional travel by 65 percent to 911 million trips a year, with auto keeping its lion's share, but with a nearly five-fold increase in conventional rail trips.

The forecast population and economic growth will also increase travel within the three major metropolitan areas that have several high-speed train stations. Within the Los Angeles/Orange region, over 20 billion auto trips will be made in 2030, 34 percent more than in the year 2000, and conventional rail trips will grow fivefold. In 2030 the Bay Area will see over 7 billion auto trips and the San Diego region over 8 billion trips. Conventional rail traffic will grow much faster than auto trips but from a much smaller base.

Highway, transit and air capacity are not projected to keep pace with the expected increase in trip making, leading to increases in driving times within and between regions. In particular, peak period travel within and through major urban areas will take longer. Airplanes and trains are likely to become more crowded, and air travel times may continue to slow as airport congestion grows.

With high-speed trains in service in 2030, air travel will take about the same amount of time and be as frequent as it was in 2005. Air travelers will also continue to arrive at the terminal approximately 75 minutes before scheduled closing of airplane cabin doors as indicated in 2005 air traveler surveys. Flight reliability will also remain at 2005 levels, with about 95 percent of flights arriving within an hour of schedule. The forecasts assume that high-speed train travelers will not face airport-style security checks and processing time, in line with practice in the Washington-New York-Boston 150-mph Acela train services, and all but one of the high-speed train services overseas[19].

In 2030, Amtrak and other conventional rail trips between regions will take the same time and have as many trips as in 2005. The wait time for trains will be in line with the current 15 minutes, with no airport-style security measures. For rail service within regions, future running times and frequencies will be improved to the levels in each region's long-range transportation plan.

The baseline year 2030 air, auto, and conventional rail costs were developed based on the relative competitive situation of 2005, and assumptions about future trends as described below. A baseline high-speed train fare structure was set by the Authority and reviewed for reasonableness by an independent peer review panel.

The cost of driving is assumed to increase in line with general inflation, and to remain at 2008 levels (8 percent higher than the 2005/6 levels in real terms, or 24 cents per mile for each auto traveler (2005 dollars) reflecting gasoline at just over $3 per gallon (2005 dollars). Bridge tolls were assumed to remain at 2005 real levels. Auto trips were assumed to pay market-based parking charges ranging from $0 to $35 per trip, depending on employment density at the destination. These driving and parking costs also apply to air, conventional rail and high-speed train travelers who drive a private vehicle or rental car from the station to/from their final destination.

Air fares were obtained for 2005 from the Federal Aviation Administration 10 percent sample of collected tickets for each of the airport pairs in California. Parking costs at airports were assumed to remain at their 2005 levels in real terms.

Conventional rail fares for the baseline in 2030 were assumed to be equal to the per-ride cost of a current multi-ride ticket, except for the Amtrak San Joaquin and Pacific Surfliner Routes, for which full one-way ticket costs were assumed. Parking costs at stations were assumed to be similar to 2005, in real terms.

Baseline high-speed train fares for trips between regions were originally set so that the LA-to-San Francisco fare would be half of the average air fare from the LA Basin airports to Bay Area airports, or $55 in 2005 dollars. Fares for other trips between regions were then calculated using a formula derived from this fare, with a fixed boarding charge of $15 plus a per-mile cost of 9 cents. For trips wholly within the Los Angeles Basin, San Diego County, or Bay Area, a lower fare was set with a $7 boarding fee plus 6 cents per mile.

Parking costs for inter-regional high-speed train travelers were set from $3 for the smaller, less urban stations to a high of $32 for San Francisco Transbay Terminal. For interregional travel, parking was set at $3. Work is underway to better reflect actual market rates for private structured parking in mixed use areas similar to the anticipated development around each station and airports in the 2030-2035 horizon.

 19 Only the Paris-London service using the 20-mile English Channel Tunnel screens passengers and bags, because of the unique combination of length, shared use with freight trains carrying cars and trucks, and deep underwater factors.

Before actual revenue service begins, the Authority will make a decision on fares based on market conditions, including a determination of the point at which higher fares reduce ridership enough to be no longer cost-effective. For the 2009 business plan, we have chosen a single relatively high train fare for purposes of presenting a revenue and ridership scenario. Fares are assumed to be 83 percent of the average air fare for the LA-SF market, and other fares are set proportionally to distance[20]. This scenario generates more revenue than the 50 percent of air fare scenario presented in the 2008 business plan and the operating costs are lower, thus increasing the operating surplus. Additionally, fewer trainsets are needed to generate the revenue and the amount of private financing that could be attracted is increased. The resulting fares and air and auto costs are shown in Table B.

AVERAGE HST & AIR FARES, AND AUTO COSTS IN 83% FORECAST, SELECTED MARKETS (2009 $$)

Travel Market	Miles	HST	Air	Auto
San Francisco – Los Angeles	432	$104.75	$125.75	$118.50
Anaheim – San Jose	417	$102.50	$105.25	$114.50
Bakersfield - Burbank City	131	$51.25	n.a.	$42.00
Fresno - Millbrae	174	$58.75	n.a.	$47.75
Merced -Sylmar	287	$77.75	n.a.	$78.75

Table B

The 83 percent level is in the middle of a wide range of experience in similar-length markets outside of California, based on prices examined in 2007[21]. At the top end, weekend Acela fares in the New York to Washington market were higher than air fares, and on the Japanese Shinkansen fares were 108 percent of air fares for Tokyo-Osaka (322 miles) and 114 percent Tokyo-Hakata (722 miles). London – Paris Eurostar HST fares were 80 percent of air fares, both peak and off-peak. Madrid – Sevilla (333 miles) AVE fares were 71 percent of air, and Paris Lyon (244 miles) 71 percent of air. In the Paris Brussels market (191 miles) where HST has 95 percent of the air/rail market, and airlines are primarily connecting to long-distance flights, (similar to Central Valley service to San Francisco or San Diego-Los Angeles flights) air fares are very high, and HST fares were only 39 percent of air fares.
Fares for each trip continued to be expressed as a single average fare. Future modeling will reflect the ability to vary fares according to types of service and peak periods, in the way that air fares worldwide, high-speed train fares overseas, and Washington-New York-Boston train fares are varied today. Typically this will increase passenger revenue, encourage travel before or after peak traffic periods and on less heavily loaded trains, reducing operating costs due to peaking. It also has the advantage of making high-speed train travel more affordable to those willing and able to shift their travel in time and use trains that stop more frequently.

Additional work was done to extend the time horizon of the forecast to 2035 for purposes of the environmental analysis. Since most metropolitan planning entities in the state have not yet completed updating their long-term transportation plan from 2030 to 2035, and some have not yet completed population and employment forecasting updates to 2035, the full model was not rebuilt, but a region-by-region forecast of growth was made from available government and private forecasts[22] and applied to the model forecasts of 2030. Notably growth from 2030 to 2035 is forecast to slow to below 1 percent per annum compared to 1.5 percent forecast for the prior decade.

Using this approach and assumptions, forecasts were developed for an initial phase of service between San Francisco, San Jose, the Central Valley including Merced, Los Angeles, and Anaheim. The riders are shown in Figure 1 for both the 50 percent and the 83 percent of air fare scenarios; the revenues are shown in Figure 2. In addition to a year 2035 forecast, growth is shown from 2020, the first full year of service for the initial phase.

20 However, the assessment of environmental impacts and mitigations continues to be based on the 50 percent scenario, because it carries more riders and represents the reasonable maximum impact scenario required to be analyzed.
21 "HSR diversion of traffic from air," Brand, N., working paper, July 5, 2009.
22 For AMBAG, MTC, Kern, and SCAG, forecasts of regional population, total employment, and households were obtained from the respective MPOs. Since 2035 MPO forecasts had either not been produced or adopted for the remaining regions, 2035 regional forecasts for those regions were developed using information from Woods and Poole Economics, Inc.

Figure 1 Passengers per year – Initial Phase

Just as they have following startups of high-speed train services overseas, riders and revenues are assumed to ramp up from the first year of service to the 4th. From 2025 to 2035 volume grows at the rates described in the previous paragraph.

With fares at 50 percent of air, 58 million passengers are forecast in 2035; with the higher fares at 83 percent of air, 1/3 fewer passengers use the service, or 41 million per year.

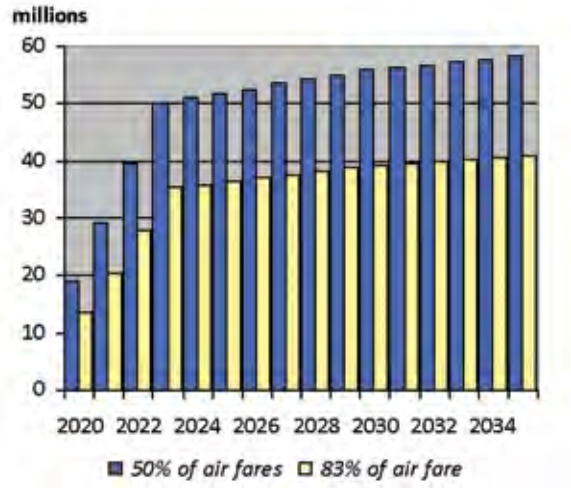


Figure 2 Revenues per year – Initial Phase

But because fares increase more than riders decline, the 83 percent fare level produces 13 percent more revenue, $2.87 billion in 2035 (2009 dollars), compared to $2.4 billion for the 50 percent fare scenario.

Interregional trips account for more than 70 percent of the trips and 90 percent of the revenue, as seen in Table C. Local trips within the LA Basin and within the Bay Area are much shorter than between-region trips, and have a lower per-mile fare, which accounts for the lower revenue from each local traveler.

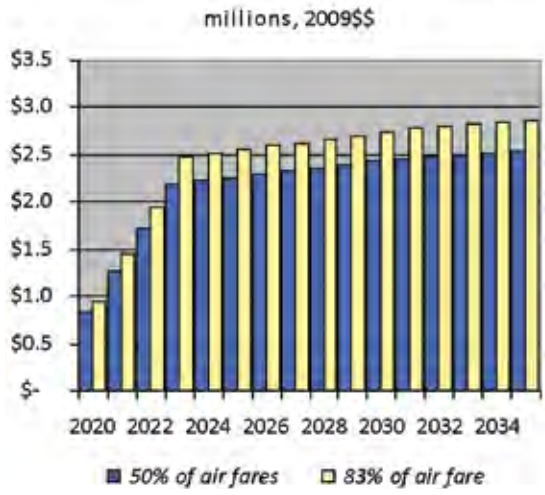


Table C RIDERS & REVENUES BY MARKET, INITIAL PHASE, 2035, Fares 83% of Air

Market Pairs (Ultimate trip ends)	Riders (millions)	Revenues (millions, 2009$$)
LA Basin – Bay Area, with intermediate markets	**23.4**	**$2,095**
LA Basin- Bay Area	*7.9*	*$900*
San Joaquin Valley - LA Basin	*6.3*	*$467*
Bay Area - San Joaquin Valley	*5.8*	*$458*
Monterey Bay /Central Coast - LA Basin & Bay Area	*2.9*	*$238*
Within San Joaquin Valley	*0.5*	*$32*
San Diego region - Bay Area	2.0	$234
LA basin – Sacramento region	1.2	$143
Other Inter-regional	1.5	$86
North & Sierra regions - LA Basin	0.5	$43
Sacramento region - San Joaquin Valley	0.5	$42
Inter-regional subtotal	***29.1***	***$2,643***
within LA basin	7.9	$152
within Bay Area Peninsula	4.0	$76
Local within-region subtotal	***11.9***	***$228***
Total Initial Phase	**41.0**	**$2,871**

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

Table D DAILY STATION BRAIDINGS, INITIAL PHASE 2035, Fares 83% of Air

Station	Total	Inter-regional	Local
San Francisco Transbay	24,100	20,600	4,400
Millbrae	2,500	900	1,600
Redwood City	3,900	2,400	1,600
San Jose	7,600	4,700	3,100
Gilroy	4,700	3,800	1,100
Merced	5,300	5,600	-
Fresno	4,500	4,700	-
Bakersfield	5,100	5,300	-
Palmdale	12,900	5,500	7,700
Sylmar	5,100	3,300	2,000
Burbank	2,900	800	2,200
Los Angeles Union Station	14,100	3,800	10,400
Norwalk	4,500	3,000	1,600
Anaheim	23,500	19,100	5,300
Daily	120,700	79,700	41,000

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

Boardings by station by local and interregional travelers are shown in Table D. In the initial system San Francisco and Anaheim attract over 24,000 boardings daily with 80 percent interregional travelers. The second tier of stations includes Palmdale and Los Angeles Union Station with over 12,000 passengers boarding daily, more than half of whom make shorter trips within the Los Angeles Basin. The three Central Valley stations serve only interregional travelers, with between 4,700 and 5,600 daily boardings. The other stations, ranging from San Jose with 7,500 boardings at the upper end to Millbrae at the lower with 2,300 boardings, serve predominantly interregional travelers.

Table E shows the growth of riders and revenue by year. Riders and revenues are assumed to ramp up from 2020, the first full year of service to the 2023, similar to start ups of high-speed rail service overseas. Until 2030, traffic volume continues to grow by 1.5 percent per year, and from 2030 to 2035 is forecast to slow to below 1 percent per annum. Although not included in the table, some of initial phase sections may be able to start earlier in 2019, and would generate small amounts of riders and revenue.

Table E INITIAL PHASE RIDERS & REVENUE BY YEAR, Fares 83% of Air

Year	Riders (millions)	Revenues (billions 2009$$)
2019	0	$0.00
2020	13.5	$0.95
2021	20.6	$1.44
2022	27.9	$1.95
2023	35.4	$2.48
2024	35.9	$2.51
2025	36.5	$2.55
2026	37.0	$2.59
2027	37.6	$2.63
2028	38.1	$2.67
2029	38.7	$2.71
2030	39.3	$2.75
2031	39.6	$2.77
2032	40.0	$2.80
2033	40.3	$2.82
2034	40.7	$2.84
2035	41.0	$2.87
Source: High-Speed Rail Authority Program Management Team, 2009		

The Detailed Operations Plan

The detailed operations plan incorporates the schematic operating pattern shown earlier for ridership forecasting. The types of trains in the pattern (express, local, limited stop) were arranged into a repeating hourly "clock-face" pattern to make the service more regular and predictable, and to reduce the number of different kinds of overtakings (i.e. express trains passing limited trains) that would be required. The minimum time between trains following each other past a given point was set at three minutes, based on the practical capacity of the signal and train control system. Overtakes were arranged at intermediate stations, with local stopping trains pulling off the main track to the platform, allowing the non-stop train to pass. Although stations stops were swapped among some of the local and limited stop trains to make the schedule work better, the service levels between station pairs were kept at the same level. Figure 3 shows a typical morning peak hour of the detailed operational timetable, running south from San Francisco Transbay and the spur from Merced joining the main line north of Fresno.

Figure 3 Initial Section Typical A.M. Peak Hour Timetable, Southbound

Key:

- Peak Express Services (San Francisco-Los Angeles-Anaheim)
- Hourly Limited Express Service (Bay Area-Los Angeles-Anaheim)
- Limited Stop Services (Bay Area-Los Angeles, skipping selected stations in Central & San Fernando Valleys)
- All-Stop Service (San Francisco-Los Angeles-Anaheim)
- Merced-San Francisco Services
- Merced-Los Angeles Basin Services

Bay Area to L.A. Basin
Bay Area to Merced
Merced to L.A. Basin
SOUTHBOUND

Southbound Station		Direction →	SB	SB	SB	SB	SB	SB	SB	SB	SB	SB
		Trainset →	T18	T19	T22	T9	T20	T21	M1	T23	T24	T25
		Train No. →	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
		Pattern →	1	29	2	15	28	4	21	18	14	1
		Service Type →	Limited Express	Limited	Express	Merced All-Stop	Limited	All-Stop	Limited	Limited	Merced All-Stop	Limited Express
SFT	**S.F.-Transbay**	Dep	**7:00**	**7:03**	**7:27**		**7:08**	**7:11**	**7:33**	**7:37**	**7:52**	**8:00**
SFO	Millbrae	Dep	--	--			7:23	7:26	--	7:52	8:07	--
RWC	Redwood City	Dep	7:21	7:24			7:31	7:34	--	8:00	8:15	8:21
SJC	San Jose	Dep	7:35	7:38			7:45	7:48	8:05	8:14	8:29	8:35
GLY	Gilroy	Arr										
		Dep	7:50	7:53			8:00	8:03	8:21	8:29	8:44	8:50
MCD	**Merced**	Dep.									9:19	
MCD	**Merced**	Dep				7:59						
FNO	Fresno	Arr						8:40				
		Dep				8:20	8:38	8:45		9:07		
BFD	Bakersfield	Arr				8:56						
		Dep				9:01	--	9:21	9:30	--		
PMD	Palmdale	Arr					9:40	9:52				
		Dep		9:30		9:34	9:43	9:54	10:03	10:10		
SYL	Sylmar	Arr										
		Dep		9:46		9:50	--	10:10	10:18	--		
BUR	Burbank	Arr				9:56						
		Dep		--		9:59	--	10:17	10:25	10:29		
LAU	**L.A. Union Station**	**Arr**	**9:47**	**9:58**	**10:05**	**10:08**	**10:10**	**10:26**	**10:34**	**10:38**		**10:47**
		Dep	**9:48**	**10:00**	**10:06**	**10:09**	**10:11**	**10:27**	**10:35**	**10:39**		**10:48**
NSF	Norwalk	Arr	9:55		10:13	10:16	10:20	10:34				10:55
ANA	**Anaheim**	Arr	**10:10**		10:28	10:32	**10:35**	**10:49**				**11:10**

To help ensure that the timetable could be operated reliably and efficiently, a "string-line diagram" was plotted, showing the path of each train from start to finish (vertical axis) over time (horizontal axis). This diagram is especially useful in ensuring that express trains overtake local trains running in the same direction at a station. Figure 4 shows the morning's start of operation on the main line in both directions between San Francisco (top) and Anaheim (bottom). A good example of overtaking is the first train from Anaheim (red line), leaving at 5:05 a.m. northward (up & to the right) to San Francisco. It overtakes a northbound local train (in yellow) that is stopped at Bakersfield at 6:20 a.m. (Incidentally, the first southbound train from Merced (green) passes through the station at the same time on the other express track.) The express also catches up to and overtakes a northbound (blue) train stopped at Gilroy at 6:35 a.m. Working with the timetable and stringline diagram produced a realistic detailed operational timetable for operations and the basis for estimating how many trainsets are required.

Determining the number of trainsets required for the service involved three separate calculations:

1. the basic number of trainsets needed to handle this timetable
2. how many of those trainsets would need two sets to handle the ridership demand, and finally,
3. the number of sets needed to cover service while others are in periodic preventive maintenance as well as to provide back-up to cover mechanical and other problems

The basic number of trainsets to handle the timetable was calculated by assigning each departure to a specific trainset, noting the trainset arrives at the destination, and assigning it another departure in the other direction.

At the start of the day, each departure will require a different trainset, but after several hours, trains will have arrived from the other end, and will be available to handle a departure after being inspected and cleaned.

The standard minimum times needed at each station for disembarking passengers, trainset cleaning & safety work, and boarding a new load of passengers are shown in Figure 5. They are derived from high-speed train servicing requirements from overseas operators and manufacturers, U.S. practices in serving and marshalling customers, U.S. experience in organizing staff and their work, and likely U.S. regulatory requirements. They do not assume the large cleaning staff and race-car pit-stop-style operation at peak hours in busy stub stations like Tokyo South, where up to 13 trains leave in one hour from two platforms.

Figure 4 Initial Section String-line Diagram Excerpt

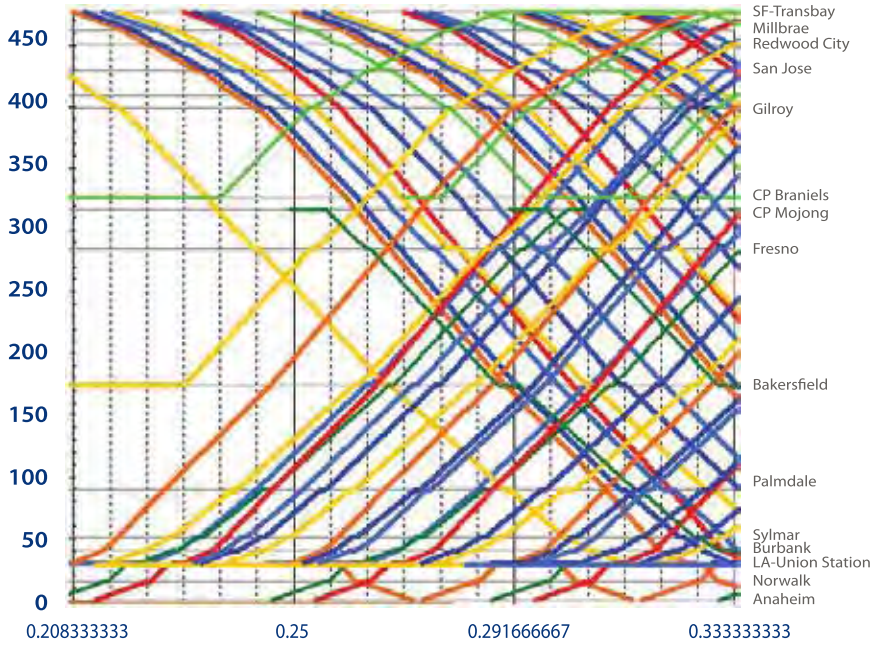


Figure 5 Trainset Turnaround Time Assumed

Code	Station	Minimum Scheduled Layover Time (mins)
SFT	S.F.-Transbay	30
LAU	L.A. Union Sta.	40
ANA	Anaheim	40
MCD	Merced	40

Trainsets arriving in the station from servicing at the maintenance facility, typically at the start of each peak, need only about half of this time in the station before departure.

Most trainsets are able to make 3-5 trips between the Bay Area and Los Angeles basin in a day. Operations to Merced turn for the next available departure to the alternate terminal (i.e., a San Francisco-Merced train will turn for a Merced-Anaheim train). A total of 65 trainsets are needed to handle the service, before accounting for second sets, spare sets to provide service in case of mechanical problems, and out-of-service maintenance needs. The next step was to determine how many trains required the doubling of capacity by coupling a second trainset. The forecast daily 2035 ridership for the 83 percent fare scenario was distributed to each hour of the day, using factors from experience with high-volume rail traffic in the Northeast Corridor New York to Washington, high-speed services overseas, and California travel patterns. Separate factors were developed for the peak morning and afternoon hours, the hours before and after those peaks ("peak shoulder" hours), and off peak hours.

Table F shows the percentage of traffic assigned to each of these hours for the three major high-speed train markets. To illustrate, interregional traffic, which is more evenly spread out through the day than traffic within the Bay Area or the LA Basin, has 12 percent of the day's traffic assigned to each peak hour, whereas the more commuter-oriented local markets have 15-17 percent in each peak hour. Over half of the traffic is expected in the 6 peak hours for each of the market type, and the remainder is in the 10 off-peak hours.

Table F Ridership Peaking Factors for Capacity Calculations

Travel Market	Peak hour % of daily (each)	Peak Shoulder hour % of daily (each)	6 hours peak period % of daily	10 hours off-peak period % of daily
Inter-regional trips	12%	10%	54%	46%
Within-MTC trips	17%	11%	67%	33%
Within SCAG trips	15%	10%	61%	39%

Higher capacity is needed in both the MTC and SCAG regions because a peak direction can be expected, based on existing flows of traffic. The strongest peaks are in the local MTC traffic, which is heavier out of San Francisco in the afternoon (and into the city in the morning) and requires 20% more seats than the average of both directions would have indicated. Traffic in the Los Angeles basin (SCAG) is expected to need 10% more seats in one direction than the average. On the other hand, the inter-regional traffic is equally heavy in both directions at the peak, and no additional seats are required. The cumulative effect of these peaking assumptions is to require nearly three times as many seats at the peak hour in the peak direction as would be indicated by the use of an average hour during the day.

For each of the three types of hours above, ridership was assigned to the available service patterns operating during those hours. Trips were first assigned to the fastest trains available, i.e. Los Angeles – San Francisco passengers were

23 Capacity was defined as 95 percent of the available seats at the peak point in a train's trip, a reasonable average at this planning stage allowing for daily fluctuation. Use of demand management systems and capacity related pricing will be needed to implement this, as is done today on HST and airlines worldwide.

assigned to the non-stop express train, San Jose to Anaheim to the two limited stop trains, Fresno – Norwalk to the pattern 28 limited train and so forth. The loads were then compared to the capacity[23] to determine whether one set (500 seats) or two (1,000 seats) were needed.

Where this initial assignment resulted in even two-set trains being over capacity, the overflow passengers were reassigned to the next fastest trains with available seating capacity operating within the same hour.

Figure 6 shows the results of the loadings for a peak hour in 2035 when the traffic is heaviest. In all cases, passenger loads can be kept within the 1,000 seat capacity of a double trainset. The express services require double trainsets all day long. The Central Valley limited-stop trains and the Anaheim-Merced local trains also have sufficient peak passenger loads to need double trainsets. The all-stop local is at the edge of needing two sets, but the remaining services can be handled with a single trainset. Northbound services mirror the southbound with the am and pm peaks reversed.

Figure 6 Initial Section train loadings for peak evening hour southbound, 2035, HST Fares 83 % of Air

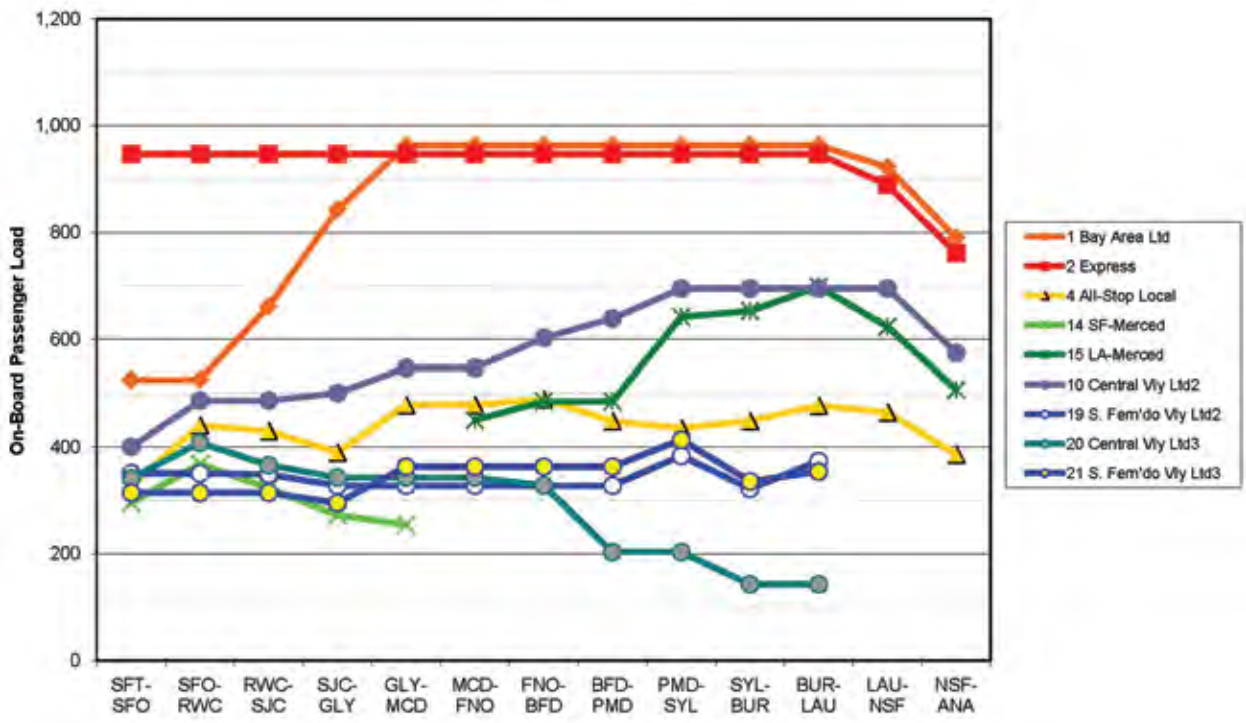


Figure 7 Initial Section train loadings for Off-peak north & southbound, 2035, HST Fares 83% of Air

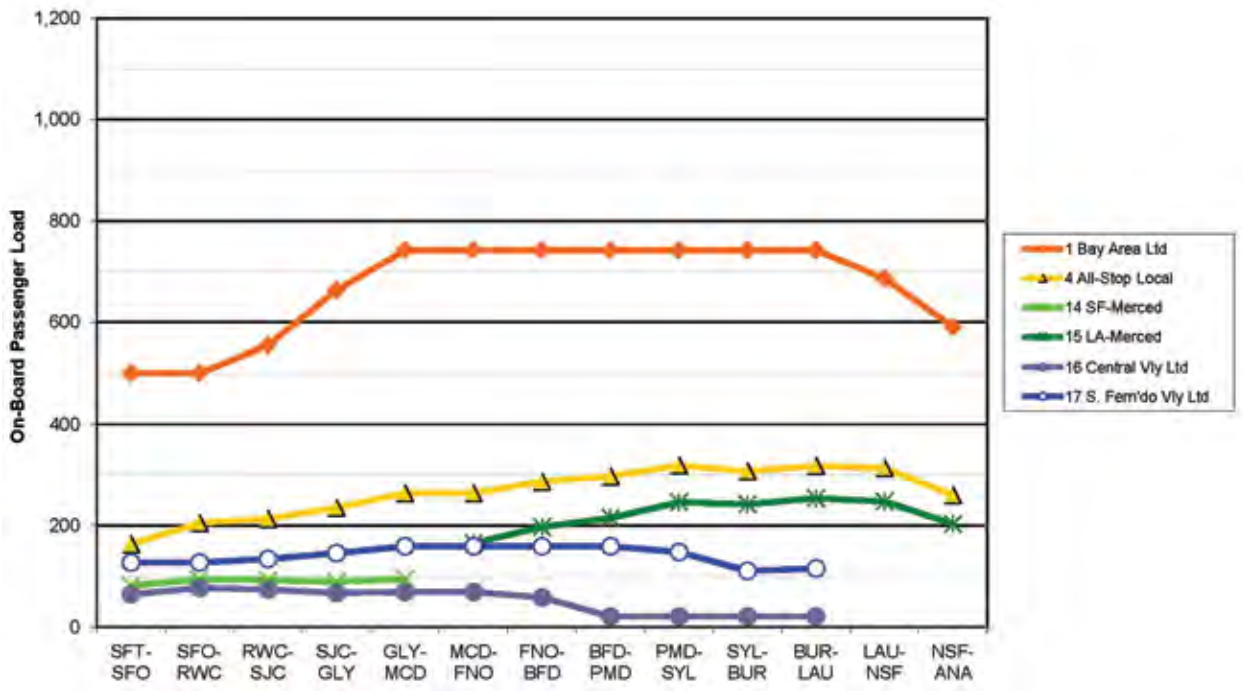


Figure 7 shows the same information for the off-peak service pattern and loadings, where it is clear that significant additional capacity is available. All off-peak trains other than the hourly limiteds have passenger loads under 95 percent of the 500 seats and can be accommodated on single set 660 foot-long trainsets.

In all, 23 additional trainsets are required to provide double trainset operation with 1,000 seats at the peak hours. When added to the base operating requirement of 67 sets, the total number of sets needed for service during the day is 90.

In addition to the sets needed for each day's operations, additional sets must be available to account for the time that is needed to periodically inspect and maintain the trainsets, to perform less frequent but longer overhauls, and to a lesser extent to provide spares to assure operation in case of mechanical failure of a set. The conventional approach at this stage of planning is to add a number of sets calculated as a percent of the total, typically 10 percent. An additional check was made to ensure that the average number of miles operated by each trainset was reasonable given the specifics of the California operation, estimated as 430,000 miles per set per year. This resulted in a requirement for an additional 10 sets to cover maintenance and operations protection needs in 2035, or a total of 100 trainsets in the fleet.

The operating plan was completed by identifying where trainsets would be stored overnight and at midday, some at stations, some in stations, and some in the maintenance facilities. Table G below shows the minimum requirements for overnight storage for the initial

Table G Location for Overnight Storage, 2035, Initial Section, HST Fares 83% of Air

Maintenance Facility / Station	# of single trainset equivalents
San Francisco	36
Merced	11
Los Angeles	20
Anaheim	23
Heavy Maintenance Facility	10

phase.
This snapshot of 2035 operations and trainset needs with fares at 83 percent of air was adapted to handle to handle much less traffic in the first years of service (2020-2022) as explained below. This particular operations plan clearly has much room for improvement from peak period pricing, better matching of off-peak trains to the forecast loads, but the levels of activity that are shown provide a sufficient basis for the operating costs needed to handle the forecast level of traffic.

Extrapolation of the 2035 plan to the lower levels of traffic of earlier years was made by changing train miles, train-sets required, and trains operated in ratios related to the expected ridership. Table H shows the evolution of these variables. In the period from 2035 back to 2030, operations decrease 4 percent in line with the small change in passenger traffic. From 2030 back to 2020, ridership is forecast to change more rapidly, at 1.5 percent lower each year due to the growth in population, employment, and personal income in California. Operations are decreased at half that rate, reflecting a greater difficulty of achieving a 1-for-1 change in operating cost in response to larger changes in ridership. Moreover, as a consequence of starting new service in a new market, ridership is assumed to ramp up in a manner observed with high-speed train service introductions overseas. In 2020, the first year of operation, traffic is assumed to be a further 60 percent lower than the 1.5 percent decrease per year from 2030. In the second year, the ramp up amount is 40 percent less, in the third year, 2022, 20 percent less, and only in 2023 reaching 100 percent of its forecast for the year. In each of those start up years, the savings in operations are only half as large as the drop in ridership, i.e. 30 percent, 20 percent, and 10 percent lower than the steady state.

Table H Key operations parameters Initial Phase, 2035, HST Fares 83% of Air

Year	Trainset miles per year (millions)	Train operations per day	Trainsets required
2020	19.3	121	45
2021	27.8	174	65
2022	35	219	82
2023	39.2	245	91
2024	39.5	247	92
2025	39.8	249	93
2026	40.1	251	93
2027	40.4	253	94
2028	40.7	255	95
2029	41	257	96
2030	41.3	259	96
2031	41.6	261	97
2032	42	263	98
2033	42.4	265	99
2034	42.7	268	100
2035	43.1	270	100

Operations, Costing & Cash Flow

The costs of operations and maintenance (O&M) are based on the statistics of the detailed operations plan just described, on California and U.S. costs and labor requirements, and on California's specific alignment, stations, and natural environment, and on experience of maintenance frequency and magnitude from high-speed rail systems throughout the world. How each of these was used is explained in the discussion of each component of the operating cost below.

Figure 8 Operations cost by year - Initial Phase (2009$$)

	Operating Cost (billions 2009$$)
Year	83% of Air
2017	$0.02
2018	$0.07
2019	$0.20
2020	$0.68
2021	$0.82
2022	$0.94
2023	$1.01
2024	$1.01
2025	$1.02
2026	$1.02
2027	$1.03
2028	$1.03
2029	$1.04
2030	$1.04
2031	$1.05
2032	$1.05
2033	$1.06
2034	$1.07
2035	$1.07

Costs are first incurred in 2017, three years before revenue service begins, in order to test trainsets and systems at increasing speeds and with increasing frequency, and to ensure that all the high-speed train parts work together properly. Key technical staff is hired to help in the testing; they will be the nucleus of the operating and maintenance staff for day to day service. In 2019, the full staff needed for the first year's operation is brought on board and the last half of the year sees train operations growing to the levels to be operated with passengers in 2020.

Operating costs strongly ramp up from 2020 to 2023, with 65 percent of the 2030 operations cost incurred in the first year when 37 percent of the passenger traffic is expected, to 97 percent of 2030 when 90 percent of the passenger traffic is expected. In the following years, costs move up at 2/3 the rate of growth in operations, which itself is slightly slower than traffic growth until 2030, and matching traffic growth after 2030.

In each of these years a 5 percent contingency has been added for unknowns, in addition to contingencies on labor for overtime, consumables, and other non-routine expenses.

Calculation of the high-speed train operating cost uses an average cost per employee for the entire operation of $34 per hour (2009 dollars), resulting in an average salary of approximately $71,000, well above the average salary of the highest California metro area[24], and only slightly below the wages of an average employee of the seven largest freight railroads in the US[25]. An additional 32 percent was assumed for total cost to the high-speed train operator, including Social Security, Medicare, and other government payments, health and savings plans, paid vacation, holidays and sick leave resulting in an all-in hourly rate of $45, equivalent to $93,600[26] per year. In addition, a contingency was added to all labor costs of 15 percent for drivers and on-board train crew, and of 10 percent for all other labor.

24 http://www.city-data.com/forum/general-u-s/318570-us-metro-areas-ranked-average-annual.html; need better, more direct reference to US Commerce Dept. Bu reau of Economic Analysis data.
25 "Class 1 Railroad Statistics", American Association of Railroads, September 10, 2009 http://www.aar.org/~/media/AAR/Industry%20Info/Statistics%2020090910.ashx
26 Class 1 freight railroad employee total compensation was 38 percent higher than the direct compensation per site above. The differ-ence is primarily due to the higher cost of railroad retirement benefits, a legacy cost that is not expected to apply to HST employees.

Operations costs are estimated at 53 percent of total costs in 2035, and are divided into seven categories as shown in Table I.

Table I Initial Section Operating cost by category, 2035, HST fares 83% of Air

Category	2009 $$ in millions
Operations	
Train Driving & Staffing	$101.60
Station Services & Security	$57.40
Sales, Marketing, & Reservations	$64.20
Control Center Operations	$4.10
General /Admin Support	$16.70
Power / Energy – w/ Green surcharge	$321.20
Insurance	$0.00
Total Operations Cost	$565.40
Maintenance	$0.00
Maintenance of Way (MOW) Labor	$38.80
MOW Materials & Contracts	$64.00
Maintenance of Trainsets & Vehicles	$351.80
Total Maintenance Cost	$454.60
Program Contingency	$51.00
Total O&M Cost	**$1,071.00**

Train Driving and Staffing includes one driver per train and four crew members per trainset (i.e., eight for a double trainset train). The number of hours worked includes time spent driving and serving on the train, punching in, daily briefings, checking out the train, shut down at the end of the day, training refreshers, time between trains and similar non-revenue service time. Train Driving and Staffing accounts for 9 percent of total cost.

Station Services & Security plus Sales, Marketing, & Reservations include station management, ticketing and customer service representatives, security and crowd control staff, janitorial services, and other specialty services. Three shifts are manned by management and security, and 2 shifts of 10 hours are assumed for the full staff. 17 staff per shift are assumed at nine stations, 25 for the largest five stations. These two categories account for 11 percent of total cost.

Control Center Operations include a staff of eight persons for three shifts to plan for daily operations, to control train dispatching & power distribution, and to restore normal service in case of disruption.

General / Administration Support for Operations is calculated at 10 percent of the costs for the above categories amounts, with its own 10 percent labor contingency. Operations General/Admin plus the Control Center operations account for 2 percent of total cost.

Power / Energy – w/ Green Surcharge is calculated from costs of 17.5 cents per kwh (2009 dollars), 3.5 cents of which covers the cost of using 100 percent renewable energy sources. This average was derived from PG&E's 2008 commercial rates in California. The rate is applied to power consumed by the trains, calculated for the specific California operating alignment and speeds from manufacturer and high-speed train operations information at 0.089 kw/seat mile, and to the much smaller power consumption of stations. Power accounts for 30 percent of the total cost.

Insurance is assumed to be handled by the Authority and the State in the initial phase, through an owner-controlled insurance program (OCIP).

The maintenance costs of way (infrastructure, track, & systems), and vehicles are increasingly convergent, and a growing body of international evidence is being added to the U.S. experience. Costs in this model were drawn primarily from French experience with high-speed operations and maintenance, but are within the range of costs provided by other national railways and transport ministries[27].

Maintenance of way labor is based on ratios per mile of track or right of way, resulting in a total of nearly 340 personnel in multiple specialized mechanized teams over two shifts. For track maintenance, more labor and maintenance intensive ballasted track was assumed throughout because the extent of slab track on the California high-speed line has not been decided. Maintenance of way materials is based on percentages of the capital cost per year, varying according to the expected life of the investment, and with an allowance for tools and equipment. In total, maintenance of way accounts for 10 percent of the total cost.

Maintenance of trainsets and other vehicles is based on a materials cost of per trainset mile per year, for routine maintenance, and labor in two shifts spread throughout the facilities around the state. The heavy overhauls are costed with materials at $1.02 per trainset mile per year and additional staff in 2 shifts, all at the Central Valley heavy maintenance facility. An administrative staff of 120 persons is added as well. In total, 2,000 persons will be working on vehicle maintenance and cleaning. The maintenance of rolling stock category accounts for 33 percent of the total cost.

Finally a program contingency of 5 percent for unknown costs is added.

The costs are adjusted as explained above for lower levels of riders and activity in prior years, and with the addition of inflation of 3 percent per year, provided by the Authority's financial consultant, results in the year of expenditure (YOE) cash flow shown in Table J below.

Table J

Initial Phase Operating Results,
83% of air fares, Year of Expenditure $$*

	83% of Air - (YOE$$ billions)		
Year	Revenue	Cost	Surplus (deficit)
2017	$0.00	$0.03	($0.03)
2018	$0.00	$0.09	($0.09)
2019	$0.00	$0.27	($0.27)
2020	$1.31	$0.94	$0.37
2021	$2.06	$1.17	$0.89
2022	$2.87	$1.37	$1.49
2023	$3.75	$1.52	$2.23
2024	$3.92	$1.57	$2.34
2025	$4.10	$1.63	$2.47
2026	$4.28	$1.69	$2.60
2027	$4.48	$1.75	$2.73
2028	$4.68	$1.81	$2.87
2029	$4.89	$1.87	$3.02
2030	$5.12	$1.94	$3.18
2031	$5.31	$2.01	$3.31
2032	$5.52	$2.08	$3.44
2033	$5.73	$2.15	$3.58
2034	$5.96	$2.23	$3.72
2035	$6.19	$2.31	$3.88

** Inflation 3% per year from 2009*

27 The maintenance costs are drawn from the professional and academic literature on HST maintenance costs, the experience within the PM team of HST costing in Taiwan, Korea, and the UK, and the CHSRA-hosted seminars by Japanese, French, German, & Spanish government & railway experts on the specifics of their high-speed railways, including maintenance practices &costs. High-speed train systems in Asia and Europe have seen a more-than-forty-year progression of experience in maintaining high-speed tracks, fixed systems, and infrastructure, and similar growth of experience in maintaining high-speed trainsets. Initially the original Japanese Shinkansen and the first French TGV exhibited numerous differences in trainset configuration, staffing, and material costs. However as both systems have expanded, other countries have built their own HST lines, and technical exchanges of best practice have diminished the focus on national systems, the approaches and costs have begun to converge.

Infrastructure Replacement Funding

In the public transit and U.S. conventional rail sectors, which typically do not generate operating surpluses for the operator (although they create significant public benefits), replacement of capital items is a public sector responsibility and cannot be financed from future cash flow of the operation. High-speed train services, on the other hand, generate positive cash flows around the world, including in the Northeast Corridor[28] . As a result, catenary would cost roughly twice their YOE acquisition and installation cost, or in the range of $20 billion (2045 dollars).

In Table K, 20 percent of the net cash flow is set aside beginning in 2031, 15 years before replacement of 25 year assets would begin. Interest of 4 percent per year from the accumulated amounts adds to this fund each year. In total, this level of set-aside would provide approximately $16 billion. The remaining 25 percent of the capital could be leveraged from the private sector with the by-then-well-demonstrated cash flow of the operation. Starting a set-aside part-way through the life of the asset increases early cash flows to the operator, and increases the potential for private sector investment. See Table K at right.

replacement of trainsets, signaling, overhead power systems, and other relatively short-lived 25-30-year assets, can be financed from the future cash flow that they would produce, akin to corporate bonding of capital improvements in the private markets.

Nonetheless a prudent business plan should provide some reserve for capital replacement as well as for rainy day contingencies, and one approach is to set aside a portion of the cash flow. Replacing the 25-30 year life elements of trainsets, signaling, communications, and

Table K Potential cash flow before and after capital replacement funds at 20 percent of surplus beginning 2031, YOE $$ in billions, initial phase, fare 83% of Air

Year	Surplus (deficit) before capital replacement	Annual deduction for capital replacement	Net surplus (deficit)	Annual deduction for capital replacement	Interest on accumulated amounts	Combined capital replacement fund amount
2017	($0.03)	$0.00	($0.03)			
2018	($0.09)	$0.00	($0.09)			
2019	($0.27)	$0.00	($0.27)			
2020	$0.37	$0.00	$0.37			
2021	$0.89	$0.00	$0.89			
2022	$1.49	$0.00	$1.49			
2023	$2.23	$0.00	$2.23			
2024	$2.34	$0.00	$2.34			
2025	$2.47	$0.00	$2.47			
2026	$2.60	$0.00	$2.60			
2027	$2.73	$0.00	$2.73			
2028	$2.87	$0.00	$2.87			
2029	$3.02	$0.00	$3.02			
2030	$3.18	$0.00	$3.18			
2031	$3.31	$0.66	$2.65	$0.66	$-	$0.66
2032	$3.44	$0.69	$2.75	$0.69	$0.03	$0.72
2033	$3.58	$0.72	$2.87	$0.72	$0.05	$0.77
2034	$3.72	$0.74	$2.98	$0.74	$0.08	$0.83
2035	$3.88	$0.78	$3.10	$0.78	$0.11	$0.89
2036	$4.03	$0.81	$3.23	$0.81	$0.14	$0.95
2037	$4.20	$0.84	$3.36	$0.84	$0.18	$1.02
2038	$4.37	$0.87	$3.49	$0.87	$0.21	$1.08
2039	$4.55	$0.91	$3.64	$0.91	$0.24	$1.15
2040	$4.73	$0.95	$3.78	$0.95	$0.28	$1.23
2041	$4.92	$0.98	$3.94	$0.98	$0.32	$1.30
2042	$5.12	$1.02	$4.10	$1.02	$0.36	$1.38
2043	$5.33	$1.07	$4.26	$1.07	$0.40	$1.46
2044	$5.55	$1.11	$4.44	$1.11	$0.44	$1.55
2045	$5.77	$1.15	$4.62	$1.15	$0.49	$1.64
Total				13.3	$3.33	16.63

28 Based on Federal GAO studies, the Pew Charitable Trust calculated $40.50 "profit" (i.e. positive cash flow) per passenger on Acela higher-speed services, after depreciation and other unallocated costs. See http://subsidyscope.com/transportation/amtrak/.

Cost of the System

Cost Estimate Summary

The most recent prior estimate of the capital cost of the San Francisco-to-Anaheim high-speed rail system was expressed in 2008-year dollars at approximately $33.6 billion. The following section will for the first time describe the estimated cost of the project in year-of-expenditure (YOE) dollars, as was required in the application for American Recovery and Reinvestment Act funds, and as compares to the $9 billion in bond funds made available by the passage of Proposition 1A. This way of preparing the estimate provides a more credible view of the cost of the project in the year in which it is expected to be constructed, and the projected cash flow by year.

The updated cost estimate for the San Francisco-to-Anaheim initial high-speed rail system in current year dollars is $35.7 billion. This reflects inflation costs between 2008 and 2009, as well as section cost updates. Adjusting the project cost for YOE dollars brings an updated cost estimate of $42.6 billion. Almost 80 percent of that cost change is attributable to inflation. In other words, only about 20 percent of the estimated cost increase is due to real cost growth due to refinements in estimated unit costs and updated quantities attributable to updated section configurations and to other revisions described below.

The capital costs of the San Francisco-Anaheim portion of the high-speed train system were updated from the 2008 Business Plan estimate to reflect refinements in assumptions, better information, cost escalation from 2008-2009 and projected cost escalation from 2009 to the projected year of expenditure. The cost estimate tables shown below provide details.

- **Table 1** provides a breakdown of estimated infrastructure capital costs, by section, plus estimated rolling stock costs.
- **Table 2** provides estimates of capital costs by year of expenditure by major cost category.
- **Table 3** provides the same information as Table but by section. Table 4 provides program implementation costs including the cost of environmental work and program management.
- **An additional table** shows a cost estimate comparison from 2008 to 2009 dollars and to Year-of-Expenditure Dollars by section and total for the San Francisco to Anaheim portion of the system. A description of the cost increases/decreases from 2008-2009 is provided in the "Regional Section Cost Updates" section below. The footnotes to this third table are important to note:
    - Updated cost estimate in 2009$ includes an estimated $711 million in escalation over 2008$ (2.4%). In real dollar terms, the estimated cost growth from 2008 to 2009 is 7.2%.
    - The San Francisco-San Jose estimate includes an allowance of approximately $1 billion for the CHSTP contribution to the Transbay Terminal cost.
    - Year-of-Expenditure costs were computed by distributing and escalating the 2009$ estimate for each section to the year of planned expenditure. (See accompanying Cash Flow charts for details.)

The methodology and assumptions used in preparing these cost estimates follows these tables.

TABLE 1
CAPITAL COSTS BY SEGMENT
YEAR OF EXPENDITURE, MILLIONS

SAN FRANCISCO TO ANAHEIM	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2025	2028	2031	2034	TOTAL
SAN FRANCISCO TO SAN JOSE			41	1,416	1,763	860	326	328	150										5,084
SAN JOSE TO MERCED				71	1,371	1,156	1,131	1,166	573	151									5,271
MERCED TO FRESNO			57	342	467	503	442	533	28										2,212
FRESNO TO BAKERSFIELD			160	566	681	652	676	629	286										3,582
BAKERSFIELD TO PALMDALE					696	935	996	944	532										3,922
PLAMDALE TO LOS ANGELES				264	213	1,465	1,931	1,397	486	49									6,505
LOS ANGELES TO ANAHEIM			275	321	1,084	899	936	949	152	59									4,775
SYSTEMS AND ELECTRIFICATION					47	165	575	1,324	1,402	820	45								4,470
TESTING AND COMMISSIONING									3	32	51	27							116
VEHICLES			96	184	148	192		173	288	592	252	22	44	44	348	348	348	348	3,310
PROGRAM IMPLEMENTATION	133	228	473	386	312	379	383	265	376	172	103	47							3,347
TOTAL	133	228	1,136	4,023	7,045	7,107	7,692	7,113	4,264	1,815	463	96	44	44	348	348	348	348	42,594

TABLE 2
CAPITAL COSTS BY ITEM
YEAR OF EXPENDITURE, MILLIONS

ITEM	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	TOTAL
Program Implementation	133	228	473	386	312	379	383	265	376	172	103	47	3,347
Final Design			41	314	393	379	165	60					1,353
Right-of-Way			637	899	915	246	214	53					2,892
Environmental Mitigation						328	435	225	84				1,070
Rail and Utility Relocations				314	368	344	177						1,173
Earthwork				63	674	886	927	638	400				3,998
Structures				1,150	2,553	2,620	2,752	1,342	586				11,503
Buildings				422	629	824	782	809	866	59			4,387
Grade Separations				321	539	645	553	581	124				2,634
Track					139	290	532	690	589	150			2,342
Electrification						167	384	734	751	216			2,195
System Elements					47	49	243	590	680	601	45		2,275
Testing and Commissioning									3	32	51	27	116
Total Construction	133	228	1,040	3,879	6,901	6,915	7,692	6,940	4,056	1,223	201	74	39,284

TABLE 3
CAPITAL COSTS BY SEGMENT BY ITEM
YEAR OF EXPENDITURE, MILLIONS

SAN FRANCISCO TO SAN JOSE

ITEM	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	TOTAL
Program Implementation	22	37	77	66	51	61	63	56	62	28	17	8	548
Final Design			41	53	68	45	12						217
Right-of-Way				192	199								391
Environmental Mitigation						75	77						152
Rail and Utility Relocations				133	83	57							274
Earthwork				16	17	9	5	6					57
Structures				569	723	321	221	115	119				2,097
Buildings				422	510	226	156	162					1,477
Grade Separations					27	24	14	4					69
Track					139	122	36	37	19				391
Electrification						167	74	64					244
System Elements					47	49	56	62	34				252
Testing and Commissioning									3	7	3		13
TOTAL	22	37	118	1,481	1,858	1,096	713	497	257	35	20	8	6,142

SAN JOSE TO MERCED

ITEM	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	TOTAL
Program Implementation	25	42	57	73	57	68	70	65	69	32	19	9	616
Final Design				71	84	76	13						247
Right-of-Way					35	38	37	36					146
Environmental Mitigation						91	44	58					193
Rail and Utility Relocations					37	37	38						112
Earthwork					252	261	279	212	62				1,065
Structures					504	625	647	262	111				2,549
Buildings								80	82				162
Grade Separations					58	66	62	64	35				310
Track								142	244	101			487
Electrification								167	284	55			506
System Elements								126	165	166	45		525
Testing and Commissioning										6	13	7	26
TOTAL	25	42	57	144	1,128	1,224	1,201	1,514	1,063	422	77	16	6,943

MERCED TO FRESNO

ITEM	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	TOTAL
Program Implementation	10	18	36	30	24	28	29	27	29	13	8	4	257
Final Design				33	35	35							103
Right-of-Way			97	92	32								221
Environmental Mitigation						35	37						72
Rail and Utility Relocations				27	28	29							84
Earthwork				10	11	11	11						43
Structures				119	141	146	71						476
Buildings					150	162	167	173					658
Grade Separations				62	84	86	68	71					331
Track						19	88	89	28				225
Electrification							62	77	82	38			258
System Elements							43	78	81	64			267
Testing and Commissioning										7	7	4	14
TOTAL	10	18	133	372	491	531	576	515	220	119	15	7	3,008

FRESNO TO BAKERSFIELD

ITEM	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	TOTAL
Program Implementation	17	29	60	50	46	47	48	45	48	22	13	6	424
Final Design				41	42	44	45						172
Right-of-Way			150	151	156								457
Environmental Mitigation							61	63					124
Rail and Utility Relocations				55	55	57							168
Earthwork				21	21	22	23						87
Structures				166	201	210	216	220					1,053
Buildings					75	78	80	83	86				402
Grade Separations				124	128	133	137	142					664
Track						108	112	116	120				455
Electrification							129	171	169	39			523
System Elements							102	180	166	91			538
Testing and Commissioning										7	14	7	28
TOTAL	17	29	210	638	721	699	952	1,025	606	158	27	13	5,094

BAKERSFIELD TO PALMDALE

ITEM	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	TOTAL
Program Implementation	16	31	63	53	42	50	51	48	51	23	14	6	450
Final Design					45	46	48	50					189
Right-of-Way					12	12	13	13					50
Environmental Mitigation						47	52	29					128
Rail and Utility Relocations					24	24	25						72
Earthwork					289	298	309	319	331				1,545
Structures					264	242	299	293	106				1,402
Buildings													
Grade Separations					63	65	67	70					265
Track							89	89	93				271
Electrification							95	99	105				299
System Elements							74	98	75	62			311
Testing and Commissioning										4	8	4	16
TOTAL	16	31	63	53	738	885	1,216	1,086	767	109	22	10	4,996

PLAMDALE TO LOS ANGELES

ITEM	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	TOTAL
Program Implementation	25	43	88	74	58	69	71	66	70	32	19	9	624
Final Design				69	62	65	67						254
Right-of-Way				154	190	197	204						775
Environmental Mitigation							58	64	63				183
Rail and Utility Relocations					40	41	42						123
Earthwork					270	280	289	300					1,139
Structures					230	347	337	693	291				2,678
Buildings						185	191	198	205				779
Grade Separations					50	52	53	55	57				267
Track							88	81	79	49			307
Electrification								98	104	46			247
System Elements							24	37	64	132			256
Testing and Commissioning										4	6	3	14
TOTAL	25	43	88	318	871	1,534	2,026	1,596	844	263	26	12	7,645

LOS ANGELES TO ANAHEIM

ITEM	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	TOTAL
Program Implementation	17	29	61	51	46	47	48	45	48	22	13	6	429
Final Design				56	57	58							171
Right-of-Way			279	291	291								851
Environmental Mitigation						107	111						219
Rail and Utility Relocations				68	101	70	72						341
Earthwork				14	15	15	16						61
Structures				276	367	329	262	54					1,249
Buildings					84	173	197	213	152	50			909
Grade Separations				139	140	145	150	156					728
Track							121	125					246
Electrification							29	71	18				119
System Elements								40	42	44			126
Testing and Commissioning										2	2	2	6
TOTAL	17	29	340	872	1,094	946	1,008	700	300	118	15	8	5,454

TABLE 4
PROGRAM IMPLEMENTATION COSTS

YEAR OF EXPENDITURE, MILLIONS

SAN FRANCISCO TO ANAHEIM

ITEM	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	TOTAL
PE/Environmental	102	175	230	150									717
Program Management	29	48	81	96	152	158	163	169	112	77	53	28	1,145
Construction Management			116	144	149	193	290	165	242	74	31		1,313
Agency Cost	3	4	6	8	11	19	20	21	21	20	19	20	172
TOTAL	133	228	473	396	312	370	383	355	376	172	103	47	3,347

Methodology and Assumptions

INTRODUCTION

The projected capital costs of the California High-Speed Train Project were last updated in preparation of the 2008 Business Plan and reflected preferred alignment as was established by the Programmatic EIR/EIS documents approved by the Authority and FRA in 2005 and 2008. As work on project-specific EIR documents and 15 percent level design is being advanced forward by the Regional Consultants, the capital costs were updated to reflect the current project configuration. This capital cost update will cover the initial phase of the system broken down in the following sections:

- San Francisco to San Jose
- San Jose to Merced
- Merced to Fresno
- Fresno to Bakersfield
- Bakersfield to Palmdale
- Palmdale to Los Angeles
- Los Angeles to Anaheim

QUANTITIES UPDATE

The estimate is structured to collect quantities on major work items in the following cost categories:

- Track Items
- Earthwork Items
- Structures, Tunnels, Walls
- Grade Separations
- Building Items
- Rail and Utility Relocation
- Right-of-Way Items
- Environmental Mitigation
- Systems Items
- Electrification Items

Each cost category is further divided in to specific cost elements represented in linear, area, volumetric or each units of measure. Regional Consultants have estimated quantities of individual cost elements based on current level of design of each respective segment. Depending on the engineering advancement of each segment, the level of quantity updates varied accordingly.

UNIT COSTS

The unit costs used in this estimate represent composite costs of each work element derived from detailed estimates of similar work elements constructed as part of major freeway, urban rail transit and water infrastructure projects in California. In January 2009, the unit costs were independently reviewed and updated by the PMT from the 2008 estimate to be more reflective of current conditions and are the basis of this update. Unit cost estimates of 77 different cost items were developed and applied:

- Track - 11 items
- Earthwork - 8 items
- Structures, Tunnels, Walls - 18 items
- Grade Separations - 8 items
- Buildings - 5 items
- Rail and Utility Relocation - 8 items
- Right of Way - 10 items
- Environmental Mitigation - 1 item
- System - 3 items
- Electrification - 2 items
- Other - 3 items

Each of the items is supported by a set of back-up sheets that provide the basis of the unit price including sources, assumptions, and other adjustments. While it varies from item to item, each item also includes a further breakdown of costs to develop the unit price. For example, a Track Section item would consist of sub-ballast, ballast/ties/fasteners/rail, and drainage elements. The composite unit costs are each based on detailed estimates containing on average 15 specific sub-unit costs from a unit cost data pool of over 1,100 items that ultimately support the capital cost estimate.

CONTINGENCIES

This estimate update continues to be preliminary in nature reflecting design levels that vary between concept levels through approaching 15 percent level. Therefore, there

are many work elements that are lacking quantitative definition at this time, thus requiring contingency reserves to account for these costs. In general, 30 percent contingency level has been assigned to all of the cost categories with an exception of the following cost categories that have been assigned 20 percent level of contingencies:

- Track
- Systems Items
- Electrification

This reduction in contingency levels on the cost categories listed above is attributed to more detailed definition of the scope of work and the quantity. In addition, further 5 percent reduction in assumed levels of construction contingencies were taken on earthwork cost categories specifically in the following segments to account for economy of scale and unrestricted access to the alignment in the areas of earthmoving operations:

- San Jose to Merced
- Bakersfield to Palmdale
- Palmdale to Los Angeles

IMPLEMENTATION COSTS

Engineering, management and administrative costs associated with program implementation have been estimated as following percentages of the total construction costs (including contingencies but excluding right-of-way costs):

- Program Management – 3.5 percent
- Environmental / Preliminary Engineering – 2.5 percent
- Final Design – 4.5 percent
- Construction Management – 4.0 percent
- Agency Costs – 0.5 percent

It should be noted that final design costs are considered to be part of the construction costs and reflected in construction costs subtotal, while the rest of the implementation costs are presented as a separate cost category. There are no contingencies applied on the implementation costs.

VEHICLES COSTS

The costs of vehicles is established based on publicly available data on recent sales of comparable equipment to other high-speed rail undertakings around the world as well as based on informal consultations with the manufacturers. The costs of vehicle procurement have been divided in to two parts:

- Opening Day demand (assumed 60 trainsets at 2020)
- Optional Orders based on increasing ridership demand (assumed 40 trainsets between 2025 and 2035)

The costs of vehicles required for the Opening Day included an escalation to the year of contract procurement (2011) by 6.61 percent (two years at 3.0 percent and 3.5 percent annual inflation rates). The payment schedule to the vehicle manufacturer reflects anticipated manufacturer annual costs; i.e., no manufacturer financing is assumed.

The option order price of $34.8 million per trainset for the 40 additional trainsets (the assumed price negotiated at the time the base order is placed) includes a 16 percent escalation factor over 2009 costs.

INFLATION

Published Cost Index Data

In review of the Engineering New Record (ENR) published Construction Cost Index (CCI) inflation recorded between August of 2008 and August 2009 are:

CCI (Aug, 2008) = 8362

CCI (Aug, 2009) = 8564

The resulting recorded inflation rate between 2008 and 2009 based on ENR CCI is 2.42 percent.

Also, as a check, California Construction Cost Index (CCCI) was reviewed for the same time period:

CCCI (Aug, 2008) = 5142

CCCI (Aug, 2009) = 5265

The resulting recorded inflation rate between 2008 and 2009 based on CCCI is 2.39 percent. The assumed rate inflation between years 2008 and 2009 in this estimate update is 2.40 percent.

Forecasted Inflation Rates

Following IMG Team's recommendation to the Authority regarding long-term annual construction cost inflation of 3.50 percent, and taking into account recorded construction inflation rates, the following inflation rates were assumed:

2009 to 2010 – 3.0 percent
2010 and on – 3.5 percent

YEAR OF EXPENDITURE COSTS

The cost estimate is compiled in 2009 dollars designated as a Base Year. Based on projected ROD/NOD dates for each segment, expected construction durations and generally accepted sequence of major construction activities, the Base Year costs were distributed across implementation years while escalating each allocation from the Base Year dollars to each respective Year of Expenditure dollars. The summation of all distributed and escalated costs for each cost category results in total Year of Expenditure cost. There was no further escalation assigned on the vehicle costs beyond what was described above in Vehicles Costs.

Section Cost Updates

Cost Estimate Comparison from 2008 to 2009$ and to YOE$ Estimate by Section

	Length (Miles)	2008 Estimate (2008$ in Millions)	Updated Estimates (2009$ in Millions)	Increase / (Decrease) ($ in Millions)	YOE$ (in Millions)
San Francisco-San Jose	50	$4,651.0	$5,282.0	$631.0	$6,142.2
San Jose to Merced Wye	120	$5,688.0	$5,666.7	($21.3)	$6,943.1
Merced-Bakersfield	175	$6,916.8	$6,754.9	($161.9)	$8,100.3
Bakersfield-Palmdale	85	$4,280.3	$4,089.9	($190.4)	$4,997.9
Palmdale-Los Angeles	60	$5,942.7	$6,278.1	$335.4	$7,646.3
Los Angeles-Anaheim	30	$2,156.0	$4,628.0	$2,472.0	$5,454.3
Total w/o Vehicles	**520**	**$29,634.8**	**$32,699.6**	**$3,064.8**	**$39,284.1**
Vehicles		**$4,000.0**	**$3,000.0**	**($1,000.0)**	**$3,310.1**
Total SF-Anaheim HST System Cost		**$33,634.8**	**$35,699.6**	**$2,064.8**	**$42,594.2**

Notes:

1. Updated cost estimate in 2009$ includes an estimated $711 million in escalation over 2008$ (2.4%). In real dollar terms, the estimated cost growth from 2008 to 2009 is 7.2%.
2. The San Francisco-San Jose estimate includes an allowance of approximately $1 billion for the CHSTP contribution to the Transbay Terminal cost.
3. The 2008 Vehicles cost was based on the fleet size to handle the 50% airfare HST fare. The 2009 estimate is based on a fleet size needed to handle 83% airfare HST fare.
4. Year-of-Expenditure costs were computed by distributing and escalating the 2009$ estimate for each section to the year of planned expenditure. (See accompanying Cash Flow chart for details.)

12.03.09

The Cost Comparison Table on the previous page lists the estimated increases and decreases in costs from the 2008 estimate to the current estimate. A brief summary of what was behind these changes in cost estimate by Section is provided below.

San Francisco – San Jose

The net cost increase in this segment is $631 million principally attributed to the following items:

- higher trackwork costs to reflect an increase in composite unit costs ($160 million)
- increase in aerial structure quantity and increase in projected unit costs ($1,144 million) (Note: this cost is more than offset by a reduction in the number of grade separations ($1,350 million decrease)
- increase in right-of-way acquisition cost, principally for the maintenance facility ($337 million)
- increase in building costs due to moving the cost of Diridon Station into the San Francisco-to-San Jose section and retrofitting of 3 Caltrain stations ($211 million)
- increase in rail and utility relocation costs due to relocation/removal of existing tracks and major utility relocation within the corridor ($219 million)
- increase in electrification costs due to adjusted composite unit costs ($36 million)
- decrease in earthwork volumes ($125 million decrease)

San Jose – Merced via Pacheco Pass
(Preferred Alternative, additional work underway on Program EIR)

The capital cost of this segment has decreased in aggregate by $21 million compared to 2008. This decrease is attributed to the following:

- Moving cost of Diridon Station and Light Maintenance Facility out of San Jose-to-Merced section and into San Francisco-to-San Jose section;
- Update of right-of-way quantities;
- Update of unit costs;

Merced – Bakersfield

The capital cost of this segment has decreased in aggregate by $162 million compared to 2008. This decrease is attributed to the update of unit costs, specifically reduction in projected costs of undeveloped land.

Bakersfield – Palmdale

The capital cost of this segment has decreased in aggregate by $190 million compared to 2008. This decrease is attributed to the update of unit costs, specifically reduction in projected costs of undeveloped land.

Palmdale – Los Angeles

The total cost increase in this segment is $336 million, principally attributed to the increases in the composite unit costs for trackwork and structures offset by reduction in grade separation costs and shifting the LA Union Station cost to the Los Angeles-to-Anaheim section.

Los Angeles – Anaheim

The total cost increase in this segment is $2,446 million due to major changes in scope as following:

- increase in single track construction to accommodate "4+2" corridor configuration ($133 million), also combined with increases in composite unit costs
- increase in earthwork costs reflecting additional cost of urban demolition associated with additional right-of-way acquisitions in support of "4+2" track configuration ($51 million)

- increase in aerial structure quantities and addition of twin bore and cut and cover tunnels, also compound by increase in composite unit costs ($1,095 million)
- increase in building costs associated with addition of LA Union Station (LAUS) to this segment, and additional costs for traffic mitigation and site development at LAUS, Norwalk, and Anaheim stations ($507 million)
- increase in rail and utility relocation costs due to relocation/removal of existing tracks and high voltage power line relocations within the corridor ($280 million)
- increase in cost of anticipated environmental mitigation due to overall increase of construction costs ($161 million)
- increase in right-of-way costs to account for land acquisitions in support of "4+2" corridor configuration and maintenance facility site ($334 million)

These increases are offset by decreases in grade separation costs due to reclassification of grade separation types from urban to suburban types ($120 million)

Paying for the System

Financial Plan Overview

California has a unique opportunity in that it is armed with a $9 billion, voter-approved, general obligation bond to provide critical state proceeds for high-speed rail construction. The following financial plan will outline each of the various funding sources with details on the Authority's financial assumptions, including the $9 billion from state funds available through Proposition 1A; approximately $17-$19 billion in federal funding that includes, in part, money from the American Recovery and Reinvestment Act; $4-$5 billion in local support and through public-private partnerships (P3s) such as transit-oriented development, parking concessions and naming rights opportunities; and $10-$12 billion in P3 funding. As outlined in previous sections, the cost of that system in this financial plan is adjusted for the year when costs will actually be expended, allowing the Authority to have a more accurate projection of the overall costs in the year funds will be needed.

California faces a unique opportunity to create one of the first high-speed rail systems in the country. The state is armed with a $9 billion, voter-approved, general obligation bond to provide critical state proceeds for high-speed rail construction. In addition, the $8 billion appropriated by the American Recovery and Reinvestment Act (ARRA) dramatically changed the funding landscape for high-speed and intercity passenger rail in the United States. California's high-speed rail financial plan focuses on four primary funding sources for the initial San Francisco-to-Anaheim portion of the project: state, federal, local and private.

The following financial plan will outline each of the various funding sources with details on the Authority's financial assumptions. This includes $9 billion from state funds, available through the Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century, approved by California voters as Proposition 1A in 2008. The Authority is also seeking approximately $17-$19 billion in federal funding. Part of the overall federal input includes the American Recovery and Reinvestment Act (ARRA) based on the Authority's recently submitted ARRA application totaling $4.7 billion for four different construction sections and additional environmental and engineering funds. The Authority is targeting $4-$5 billion in local support and through public-private partnerships (P3s) such as transit-oriented development, parking concessions and naming rights opportunities.

As demonstrated in the previous section on ridership and revenue, the initial San Francisco-to-Anaheim portion of the project is expected to generate significant operating surpluses even after accounting for operations and maintenance costs and renewal and replacement reserves. This dedicated and significant revenue stream after full San Francisco-to-Anaheim operation begins will provide the Authority with an opportunity to seek innovative P3s to provide capital funding to help complete the system. The Authority is targeting $10-$12 billion in P3 funding.

As outlined in previous sections, the cost of that system, adjusted for the year when projects will actually be constructed (year of expenditure dollars or YOE), and taking into account project changes outlined in the previous chapter, is estimated by the Authority to be $42.6 billion. This allows the Authority to have a more accurate projection of the overall costs in the year funds will be needed.

Funding Sources Summary (YOE $ M)	
Federal grants	$17,009 - $19,000
State grants	$9,000
Local grants	$4,000 - $5,000
Private funding	$10,000 - $12,000
Total	$42,600

A detailed look at the Authority's Financial Plan for building the high-speed train project follows.

State Funding

Introduction

The State of California historically has played a major role in the development of passenger rail service in California. Consistent with this role, the Financial Plan for the San Francisco-to-Anaheim portion of the California High-Speed Rail Project anticipates $9 billion in state funds for its development. The source of state support has come from the Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century (the Bond Act)[29], which voters approved in November 2008. The passage of the Bond Act demonstrated California's financial and political commitment for the high-speed train, which are critical in generating necessary financial support from federal, local and private sources.

Bond Measure

The Bond Act, Proposition 1A on the November 4, 2008 California ballot, authorized the state to issue $9.95 billion of general obligation bonds, $9 billion of which would be used to develop a high-speed train system. The remaining $950 million raised under the Bond Act will be allocated for capital improvements to commuter and intercity rail lines, which will connect to the high-speed train system.

Bond Provisions Summary

As specified in the Bond Act, bond proceeds may be used for preliminary engineering, right-of-way acquisition, and the construction of tracks, structures, power systems and stations. Additionally, rolling stock and related equipment, as well as other capital related facilities and equipment can be purchased with these funds. However, proceeds of bonds described above shall not be used for more than 50 percent of the total cost of construction of each corridor or usable segment thereof of the high-speed train system. In addition, the Bond Act establishes caps on the amount of funds that can be expended for preliminary engineering, planning and environmental studies to 10 percent of proceeds and not more than 2.5 percent on administrative expenses (subject to increase by the Legislature, up to 5 percent). The bill requires that, among other considerations, the Authority gives priority in selecting corridors that are expected to require the least amount of bond funds as a percentage of total cost of construction. Additional details on the Bond Act can be found at the link below.

29 http://www.cahighspeedrail.ca.gov/images/chsr/20081118153017_Source%20Document%2010%20AB%203034.pdf

Plan to Leverage the State's dollars

The Bond Act passage represents a significant and important investment in high-speed rail development as California voters approved the measure. The Authority plans to leverage these critical bond proceeds to match federal grant funds, local investment as well as potential private sector interest. The Authority's ARRA grant application, for example, proposes a 50 percent match to federal grant funds, which could include state, local and other funding as matching sources. The state was able to propose this dollar-for-dollar match offer because of the existence of the Bond Act funds, and the Authority believes this offer makes California's application more competitive than those of other states to win a significant portion of the ARRA funds.

ARRA Funding Dollar-for-Dollar Match

Project	Total Capital Costs (YOE$ M)	Requested ARRA Funds	Matching State Funds
Initial Phase PE/NEPA/CEQA	$388	$194	$194
Subsequent Sections NEPA/CEQA	$120	$60	$60
Altamont Corridor NEPA/CEQA	$45	$22.5	$22.5
Total PE/NEPA/CEQA Projects	$553	$276.5	$276.5
Project	Total Capital Costs (YOE$ M)	Requested ARRA Funds	Matching State, Local, Private Funds
SF-San Jose Design-Build	$1,960	$980	$980*
Merced-Fresno Design-Build	$932	$466	$466
Fresno-Bakersfield Design-Build	$1,639	$819.5	$819.5
LA-Anaheim Design-Build	$4,375	$2,187.5	$2,187.5
Total Design-Build Projects	$8,906	$4,453	$4,453
Total - All Projects	$9,459	$4,730	$4,730

*Includes $336 M in committed local funding

Federal Funding

Introduction

Federal support, both financial and regulatory, is a key component to the success of California's high-speed train project. The financing plan for the San Francisco-to-Anaheim system targets approximately $17-$19 billion from federal sources. Although a portion of this funding may come from existing federal transportation programs including the Passenger Rail Investment and Improvement Act (PRIIA), the creation of new programs designed specifically to advance high-speed rail projects will likely be necessary to achieve this level of support.

This section will explain the basis for the targeted $17-19 billion from federal sources. Federal funding sources will likely be drawn upon during the early stages of the project, as the majority of private sector support is likely to occur only after much of the targeted federal funding has been secured. The development of specific federal high-speed train programs or the commitment of federal funds for California's high-speed train project, in particular, are key signals that would encourage private participation in the project.

Historically, federal funds have supported approximately 50 to 80 percent of many major transportation projects including highway, transit, and aviation sector related projects. In the early years of transit funding, developing transit programs was a federal priority and funding for such projects was approximately 80 percent federal. Although the scale of California's high-

speed train project is much larger than a typical major transportation project, there is precedent for substantial federal support for large and nationally significant transportation projects. In addition, the authorizing grant program established in Section 501 of PRIIA sets the statutory maximum federal contribution at 80 percent.

ARRA Projects and Funding Plan

A critical and immediate piece of federal funding was granted during the American Recovery and Reinvestment Act (ARRA)[30], which appropriated $8 billion to high-speed rail, intercity rail and congestion grants. This opened the door to fund major corridor development as well as environmental and planning programs for high-speed and intercity rail corridors throughout the country.

The Authority has requested ARRA funding assistance for a subset of independent utility projects that will help to further the Authority's longer-term goal of establishing service from San Francisco-to-Anaheim. All of these projects were under the FRA's "Track 2" umbrella, which allows for construction to be completed by 2017. This has a longer time frame than the "stimulus" portions of this provision ("Track 1") to allow states the necessary lead and construction time to successfully complete these projects.

The costs for the Authority's "Track 2" sections totals $9.459 billion in YOE dollars. The Authority requested a 50 percent federal funding share for each of these projects and providing a 50 percent match with state, local or other sources. As outlined in the table on the previous page , for the $553 million in PE/NEPA/CEQA projects, the Authority plans to match $276.5 million in federal funds with an equal amount of state bond funds. For the $8.906 billion in design-build projects, the Authority proposes to match $4.453 billion in federal funds with local and private funding as part of the $4.453 billion match in addition to state bond proceeds.

As explained in the previous chapters, successful receipt of federal funding would result in the completion of much of the required environmental and engineering work necessary for the initial San Francisco-to-Anaheim project as well as the construction of a substantial portion of the underlying infrastructure. The federal ARRA funding is consistent with the Authority's plan of funding the initial project with a combination of federal, state, local, and private funding.

Existing Federal Programs and Available Funding

The American Recovery and Reinvestment Act (ARRA) dramatically changed the landscape for high-speed rail funding in the United States. Prior to ARRA's passage, funding for high-speed trains was limited to an authorized $1.5 billion in PRIIA. ARRA appropriated $8 billion to three different grant programs within PRIIA including the high-speed rail program. In addition to the authorizing grant mechanism under PRIIA, relevant federal programs that could provide support to high-speed trains include Transportation Infrastructure Finance and Innovation Act of 1998 (TIFIA), the Railroad Rehabilitation and Improvement Financing Program (RRIF), and Private Activity Bonds (PABs).

Key Grant Program Mechanism

Passenger Rail Investment and Improvement Act (PRIIA or P.L 110-432)

Signed into law on October 16, 2008, PRIIA primarily authorizes appropriations for Amtrak over the next five years. However, the law also includes language that created the first grant mechanism for high-speed passenger rail and it authorized $1.5 billion in grants over five years for high-speed rail corridor development to states or Amtrak to finance the construction and equipment for California and 10 other federally designated high-speed rail corridors under Title 5 (PRIIA Section 501). The federal

30 See the FRA's "Interim Program Guidance" at www.fra.dot.gov/us/content/2243 for additional details

share for these projects is capped at 80 percent with the Secretary of Transportation awarding these grants on a competitive basis based on economic performance, expected ridership, and other factors. The ARRA appropriation of $8 billion used the grant mechanism established under Section 501. PRIIA's Section 501 represents the first federal grant program dedicated to high-speed rail funding.

Federal High-Speed Rail Appropriations

ARRA appropriated $8 billion to three different grant vehicles authorized under PRIIA (described below). This represented the first appropriated funds to high-speed rail development for the country. The maximum federal contribution outlined in the statute could be a maximum of 100 percent. However, the Authority's board voted to propose a dollar-for-dollar match with federal grant funds. The Authority submitted a grant application for "Track 2" funds under the High-Speed and Intercity Passenger Rail program totaling $4.7 billion. As mentioned above, the Authority selected projects based on the ARRA funding requirements for its ARRA application.

INNOVATIVE FINANCE AND LOAN PROGRAMS

Annual Appropriations

In addition to ARRA, the President's January FY2010 Budget proposed an additional $1 billion per year over a five-year period for investment in high-speed trains nationally. The President's proposal demonstrates significant support for their development. The House and Senate have taken the President's proposed $1 billion annually and recommended $4 billion in the House transportation bill and $1.2 billion in the Senate. The House bill includes the possibility of shifting $2 billion (of the $4 billion) to a National Infrastructure Bank should one be created. These proposals have passed their respective chambers and are awaiting Conference Committee meetings.

Innovative Finance and Loan Programs

The Authority's plan of finance includes grant funding for the major federal funding components and innovative finance mechanisms for the P3 piece. The federal government currently sponsors a few different innovative finance programs that could be useful to the Authority as it seeks P3 funding for the project. The following innovative finance and loan programs represent mechanisms that the Authority or a P3 concessionaire may employ to reduce the cost of borrowing.

Transportation Infrastructure Finance and Innovation Act of 1998 (TIFIA)

TIFIA is an established federal credit assistance program for eligible transportation projects of national or regional significance. These include transit and passenger rail facilities, such as the California project. Under TIFIA, the U.S. Department of Transportation (DOT) can provide three forms of credit assistance to eligible projects. These means of assistance include secured (or direct) loans, loan guarantees, and standby lines of credit.

The fundamental goal of TIFIA is to leverage federal funds to attract substantial private and other non-federal co-investment into projects that provide critical improvements to U.S. surface transportation. Principal amounts of credit assistance provided by TIFIA are limited to 33 percent of eligible project costs. Additionally, interest rates for TIFIA loans generally reflect the government's borrowing costs, and the terms of repayment are generally favorable to project sponsors.

The Authority's Financial Plan envisions the use of the TIFIA loan program as subordinate debt for the P3 portion of the program funding. Further details on assumptions and possible

uses of TIFA are provided in further detail in the P3 section of this chapter.

Railroad Rehabilitation and Improvement Financing Program (RRIF)

The RRIF program is a revolving loan and loan guarantee program that is administered by the Federal Railroad Administration (FRA). It is legislatively enabled to issue up to $35 billion in loans. The program originally was established by the Transportation Equity Act for the 21st Century (TEA-21), and was amended by the Safe Accountable, Flexible and Efficient Transportation Act: a Legacy for Users (SAFETEA-LU).

Funding from RRIF may be used to acquire, improve or rehabilitate intermodal or rail equipment or facilities, including track, components of track, bridges, yards, buildings, and shops. Funds also may refinance outstanding debt incurred for those purposes listed previously, or may be allocated to develop or establish new intermodal railroad facilities.

Attractive interest rates, similar to those available under TIFIA, also exist under RRIF. This program is able to fund up to 100 percent of a project's costs, allows for a five-year grace period, and requires the payment of an up-front risk premium.

As RRIF is typically senior debt, a RRIF loan could be combined with a TIFIA subordinate loan. It is important to note that these sources are loans and will need to be repaid. The Authority's Financial Plan includes scenarios that assume a possible combination of RRIF and TIFIA loans as both senior and subordinated debt under the P3 funding package. The maximum TIFIA contribution is 33 percent of total project costs.

Private Activity Bonds (PABs)

Private Activity Bonds are tax-exempt bonds that are issued by the state or local government on behalf of a private entity. Their purpose is to facilitate private investment for projects that generate public benefit. PABs allow for the private sector to borrow at tax-exempt rates resulting in lower overall financing costs. Currently any PABs issued for high-speed trains would be subject to a volume cap of the respective state; however, a new category of exempt facilities was created under SAFETEA-LU that allows projects receiving Title 23 and under certain conditions Title 49 funds, to qualify for the $15 billion in transportation PABs[31]. The Secretary of Transportation and the US DOT are responsible for the allocation of these PABs.

PABs are highly attractive to private investors in conjunction with a public-private partnership (P3) program that includes equity investment, design-build, and operations involvement and could be used in conjunction with TIFIA/RRIF. For instance PABs were recently used in the financing of the $1.9 billion Capital Beltway project in Northern Virginia, one of the first variable toll rate congestion pricing projects in the U.S.

Some of the Authority's Financial Plan scenarios for the P3 funding portion includes the use of PABs as senior debt coupled with a subordinated TIFIA structure.

Changes Needed to Existing Programs and New Legislation

New funding sources, specifically for high-speed rail, along with the expansion of existing transit programs, will need to be created in order to provide adequate support for the high-speed train. Project proponents argue that a focus on investing in America's overall transportation system, as opposed to individual modal investments, would encourage more efficient allocation of transportation dollars and likely increase the proportion of funding provided for rail projects. As mentioned above, short term funding for high-speed trains is

31 Specifically, the new category includes: 1) any surface transportation project receiving Title 23 funds, 2) a project for an international bridge or tunnel for which an international entity authorized under federal or state law is responsible and which receives Title 23 funds: and 3) facilities for the transfer of freight from truck to rail or rail to truck which receives federal assistance under Title 23 or Title 49. Title 23 and 49 are U.S. Code governing federal funding for highways and transportation.

anticipated through the annual transportation appropriations process as a new transportation authorization has yet to come to the floor. The surface transportation reauthorization provides the opportunity for the Authority and other states developing high-speed rail to seek a long-term dedicated funding source. In fact, the Authority has already begun to advocate for dedicated federal funding for high-speed trains, working with members of California's congressional delegation.

Expansion of existing federal funding programs, as well as significant new initiatives, will be required to support California's high-speed train at the levels assumed in this financing plan. Modification of existing federal financing terms and restrictions also would make the project more attractive to private investors, thereby facilitating achievement of the targeted private sector funding levels, as well.

Transportation Reauthorization: Re-Authorization of Safe Accountable, Flexible and Efficient Transportation Act: A Legacy for Users (SAFETEA-LU)

SAFETEA-LU addresses many of the challenges that face today's transportation system, including improving safety, reducing traffic congestion, improving efficiency in freight movement, increasing inter-modal connectivity, and protecting the environment, as well as laying the groundwork for addressing future challenges. It promotes more efficient and effective federal surface transportation programs by focusing on transportation issues of national significance, while giving state and local transportation decision makers more flexibility for solving transportation problems in their communities.

The reauthorization of this legislation sets key transportation funding priorities. The current SAFETEA-LU expired on September 2009. Reauthorization, however, is expected to take place over the next eighteen months. This reauthorization process is seen as a vehicle for modifications to existing programs that could support high-speed trains. Specific modifications that would benefit high-speed trains include:

- Create a dedicated funding mechanism similar to the highway trust fund,
- Extend terms for TIFIA and RRIF debt to more closely match the useful lives of the infrastructure,
- Reduce or modify the RRIF credit risk premium,
- Create a new-mode contingent liability program to mitigate greenfield ridership risks,
- Explicitly enable high-speed projects to use the $15 billion in PABs authorized under SAFETEA-LU for transportation projects.

Chairman Oberstar's proposal for transportation reauthorization attempts to address the funding challenge high-speed rail faces on the federal front and includes a proposed authorization of $50 billion.

New Legislation

While legislation introduced to date addresses many of the needs for high-speed trains, a key financing mechanism that will help support private sector investment will be in the creation of a type of contingent liability program that allows a potential private sector operator to share some of the start-up risks associated with ridership. In Europe and Asia, rail entities have developed extensive experience with intercity and high-speed rail ridership demand forecasting. However, the United States does not have an established rail culture nor experience with such forecasts. As such, the level of assurance a private investor, credit rating agencies and bond markets may have in ridership projections may make P3 financing a challenge. The Authority is currently investigating ridership risk sharing structures used in greenfield transportation infrastructure projects as well as considering proceeding with an "investment grade" ridership forecast.

Local Support

Introduction

Local support will provide an important funding source for high-speed rail development. Targeted local support for the project can be divided into two main parts: 1) cost sharing or local government support, and 2) private participation in station or area development. The Authority's Financing Plan for the Anaheim to San Francisco system targets $4-$5 billion in local financial support. Local support is estimated to be between $2-$3 billion and is based on population and possible contribution levels from communities across the state. In addition, the Authority is targeting opportunities such as naming rights and P3 development around stations totaling another $1-$2 billion. As such, the Authority is estimated between $4-$5 billion in local support for the project.

The Authority plans to develop plans to solicit and develop a process for formalizing local support over the next several months.

Cost Sharing with Local Agencies and Governments

The Authority has been engaged in preliminary discussions with transportation authorities in several areas of the state and identified a number of projects where costs might be shared between the Authority and local agencies. To date, the Authority has focused on those projects that would benefit commuter rail service in addition to high-speed rail. The San Francisco to San Jose and Los Angeles to Anaheim corridors are two examples where the Authority believes significant cost sharing opportunities may exist.

As mentioned above, the Authority has targeted approximately $2-$3 billion in local funding support from local communities across the state. This estimate was calculated using an estimate of self-help county contributions to transit as a proxy. However, self-help counties were merely used as a guide to estimate possible contributions that could come in numerous forms including from Transit Oriented Development, Benefit Assessment Districts (or Community Facilities Districts), Tax Increment Financing, general funds, etc. As mentioned above, the Authority is currently working on plans to develop a methodology to work with local governments and agencies to provide support for project development.

During the ARRA funding process, many communities along the alignment pledged support for the project. However, the Authority understands that competing requests for limited local and regional transportation funds make it difficult for other local communities to set funding priorities at this time, especially given the locals' needs to retain contingencies for potential cost increases for existing local projects. The Authority expects that as the project timeline, requirements, and other funding are refined, local funding commitments will be made. As discussed below, cost sharing with local agencies and locally generated revenues from transit-oriented development will be negotiated over time.

Locally Generated Revenues from Transit-oriented Development and Community Facilities Districts

One way for local governments to realize significant local revenues from real estate appreciation along the alignment is through Transit-Oriented Development (TOD). TOD would allow local governments to benefit from the development of high-speed trains with increased real estate tax revenues from increased density without burdening the balance sheets of local governments. The Financial Plan presumes that the Authority would work closely with each local agency to explore and adopt TOD agreements. As past experience has shown, TODs must be carefully crafted to local conditions and revenue benefits are often realized after the project is completed.

In addition to TOD, the implementation of publicly established benefit assessment districts and the Mello Roos districts near

a transit or rail facility are alternative ways to raise development-related revenues that can be financed. However, the formation of benefit assessment districts and Mello Roos districts require local approval, and cannot be implemented by the Authority directly. In addition, a benefit assessment district or Mello Roos district must be a relatively large geographic area in order to provide a significant contribution to the project's capital costs from any given local bond issue or program. Furthermore, as these types of financing vehicles are real estate development driven, ratings agencies and investors may view them as speculative, thereby limiting the amount of up-front bond funding that can be generated for early-stage development of high-speed rail. Regardless of the challenges associated with assessment districts, successful transportation projects have been implemented using benefit assessment districts either immediately surrounding a transit station or along an entire alignment as was seen in the Dulles Metrorail extension in Virginia.

Commercial Concessions at CHSR Stations

Commercial concessions at stations are important tools to realize additional locally generated revenues. These concessions include retail stores, advertising, parking, and other commercial revenues. The Financial Plan presumes that the Authority would work closely with appropriate local agencies to explore and adopt station commercial concessions before stations are built. These types of revenues and related agreements may be viewed by the market as speculative, thereby limiting the amount of upfront funding that can be generated for early-stage development of high-speed rail.

Cooperative Funding Arrangements with Local Transportation Authorities

California law allows "self-help" counties to elect to dedicate an increase in local sales tax for local transportation projects. The current and future self-help county sales tax revenue streams can be used on a "pay as you go" basis or can be pledged as a source of payment for sales tax revenue bonds. California's self-help counties have collectively issued billions of dollars of sales tax revenue bonds.

At least 20 California counties have passed sales tax measures for transportation for specific time periods ranging for 10 years to 30 years. Los Angeles County has a permanent 1 percent sales tax increment dedicated toward transportation projects. In addition, Los Angeles County successfully passed an additional 0.50 percent sales tax (Measure R) for transportation on the November 2008 ballot. The self-help counties have specific expenditure plans about how the sales tax revenues must be spent, which must be consistent with the measures approved by local voters.

Each self-help county expenditure plan is different and reflects local transportation policy and goals. The self-help counties along the high-speed rail alignment may have the ability to pledge a portion of their sales tax for project capital costs. The Authority has begun to preliminary work to negotiate with the relevant local transportation authorities to explore their interest in providing financial support in order to facilitate or expedite implementation of the project in their respective regions.

The Authority already has worked closely with several local transportation authorities on joint development challenges. For example, the Orange County Transportation Authority (OCTA) signed a memorandum of understanding with the Authority in 2007 that calls for OCTA to contribute $7 million toward development costs for High-Speed Rail in Orange County between Anaheim and the Los Angeles county line.

Local Cooperation: OCTA Example

OCTA is committed to dramatically increasing transit options in Orange County. OCTA already uses Measure M sales tax revenues to fund transit projects throughout the county. In November 2006, Orange County residents voted to extend Measure M until 2046. Although OCTA has covenanted to spend some of its Measure M sales tax revenues on specified freeway projects, OCTA also has a wide degree of flexibility in spending remaining Measure M sales tax revenues on transit projects, including rail. Additionally, OCTA and the City of Anaheim have formed a joint powers authority, the Anaheim Regional Transportation Intermodal Center (ARTIC) that is pursuing a public-private partnership for development of an intermodal transportation center that can accommodate freeway, bus, Metrolink, Amtrak, and high-speed rail access.

Private Funding / Public-Private Partnerships

Introduction

One of the ways the Authority would like to leverage public funds for this project is through pursuing public-private partnerships. High-speed rail, unlike most transit services, is expected to generate significant operating surpluses. These operating surpluses are the basis for the Authority's plans to engage private sector support. Private funding through public-private partnership arrangements is an increasingly accepted method to support the development of infrastructure projects. Based on this premise, the Authority's Financial Plan is targeting $10 to $12 billion (in year of expenditure dollars) from potential private sources for the San Francisco-to-Anaheim segment. This investment is primarily backed by the high-speed rail's projected future operating surpluses as well as some type of revenue guarantee and is based on a level of risk and capital markets terms that the team believes are appropriate for this type of project. To gain a better understanding of private interest in the project, the Authority issued a Request for Expressions of Interest (RFEI) in the Spring of 2008. Since that time, the Authority has continued to reach out to private industry leaders with experience in High Speed Rail and other large infrastructure projects. Results of the RFEI have shown that private sector interest is strong and diverse; however, public support, both financial and political, is needed to generate private funding commitments.

Background on Private Investment in Infrastructure

Historically, major transportation infrastructure projects in the United States have been funded primarily with federal funds (as much as 80 percent), with state funding comprising the remaining share. This paradigm is based substantially on the construction of the interstate highway system in the 1950s. Since that time, the increasing cost of public works projects has not been matched by the public funds available to pay for them. For example, federal shares of major infrastructure projects have decreased to approximately 30 percent for some programs, and states have had to make tough decisions to prioritize the expenditure of their funds. Increasingly, U.S. project sponsors have followed international trends and are turning to private funding sources to develop certain projects.

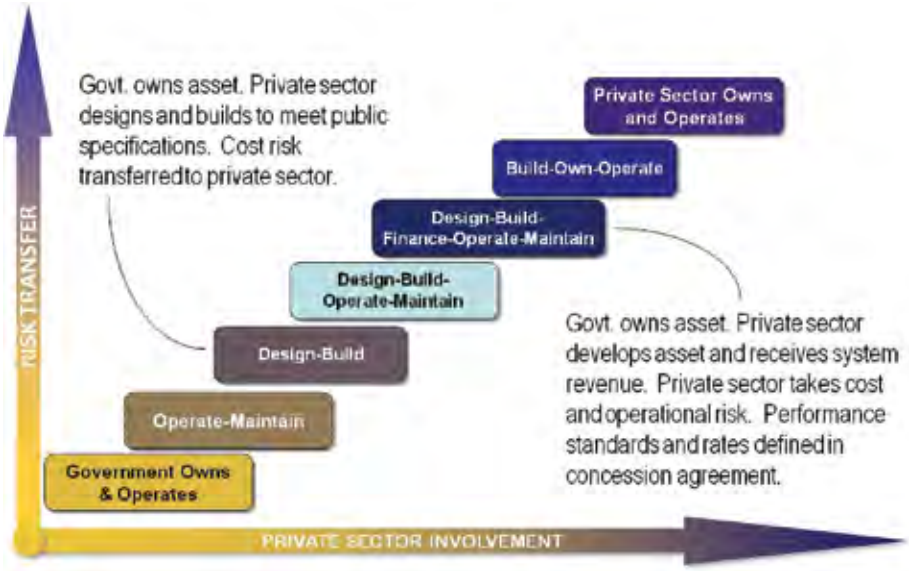
This trend has been intensified by the active interest of private investors, partially driven by pension funds, in the infrastructure sector. These investors have been attracted to long-term assets with stable cash flows. These tend to be 'brownfield' or developed projects with a revenue history. In the United States,

toll roads have been the major focus. Some key examples of private investment in toll roads are the long-term lease of the Chicago Skyway and the Comprehensive Development Agreement (CDA) toll roads in Texas. However, the assets of private equity funds interested in infrastructure investment far exceed the value of stable, brownfield investments available, which has encouraged these firms to invest in non-toll road infrastructure. In addition, given the large capital expenditures contemplated in many infrastructure projects, engineering and equipment firms have been willing to invest in projects to participate in project-related contracts.

The level and timing of private participation is dependent on the perceived risks associated with private investment. The main risks associated with the high-speed train project are environmental, regulatory, legislative, construction, technological, ridership and operational. For a P3 arrangement to be successful, these risks need to be shared between the public and private sectors. In general, costs are lower when a risk is assigned to the party with the best ability to manage that specific risk. The private sector will expect to be compensated for any risks that it assumes. Therefore, the more risk that the public sector chooses to address, the higher the level of upfront private investment that can be attracted to a given project. In some cases, for example, with environmental and regulatory risks, the public sector may need to significantly mitigate the risk before the private sector will invest.

Alternative Delivery Approaches

The Authority is considering a wide variety of project delivery approaches to optimize the allocation of risks. These approaches can range from less private participation to more private sector involvement as depicted in the figure below. Each approach is associated with a different risk allocation scheme.



Some of these project delivery methods are defined below:

Design-Bid-Build (DBB): In this traditional form of project delivery the design and construction of the facility are conducted by different entities. As a result, the DBB process is divided into two separate phases for design and construction.

Design-Build (DB): Unlike DBB, the DB approach combines design and construction phases into one fixed-fee contract.

Design-Build-Operate-Maintain and Build-Operate-Transfer (DBOM and BOT): Under a DBOM or BOT, the contractor is responsible for the facility's design, construction, operation, and maintenance for a defined/agreed period of time. This category includes "Availability Payments" discussed below.

Design-Build-Finance-Operate-Maintain (DBFOM): The DBFOM is a variation of the DBOM approach. The major difference is that, in addition to the design, construction, operation and maintenance of the project, financial risks are transferred to the private partner. While the project sponsor retains ownership of the facility, the DBFOM approach attracts private financing for the project that can be repaid with revenues generated during the facility's operation. Utilizing long-term public sources of revenue to pay down privately financed projects allows the public sector to enjoy the benefits associated with a leveraged project without issuing bonds or otherwise incurring debt on its balance sheet.

Build Own Operate (BOO): Under a BOO, the design, construction, operation, and maintenance of a facility are the contractor's responsibility. The major difference between BOO and other P3s is that with a BOO approach, the private partner owns the facility and is assigned all operating revenue risk and any surplus revenues for the life of the facility.

Availability Payments (AP): This mechanism accomplishes performance-based compensation in an asset that does not necessarily generate sufficient revenue to encourage private investment and can be used in conjunction with other P3 mechanisms where ongoing O&M responsibility exists. An AP requires private firms to accept risk related to the ongoing performance in the project's design, construction, and O&M. Concessionaires would receive periodic payments based solely on the condition and/or performance of the facility. Besides international examples, the $1.76 billion Florida I-595 project and the recent $1.2 billion Port of Miami Tunnel are two notable projects procured as APs and have generated intense interest among project sponsors both because it works with projects with weak revenue streams and because more controversial toll- or fare-setting and return on equity issues do not need to be considered.

Public-Private Partnership Funding

The Authority's Financing Plan for the San Francisco-to-Anaheim system targets $10.0 to $12.0 billion in private sector participation. This projection is based on estimated construction and operating costs, independent ridership and revenue projections, and other available funding sources. This Financing Plan assumes normalized long-run market conditions. There are several different methods through which such investment could be obtained.

The targeted $10.0-$12.0 billion level of private sector investment is based largely on the amount of project-based debt ($7.5-$8.5 billion) the Authority believes could be supported based on future revenues. These estimated revenues were based on independent ridership forecasts available in November of 2009 and capital market conditions at that time. 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. 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. While capital markets have tightened since the initial projections, changes in certain variables, including increased gas prices, have resulted in higher projected ridership. P3 concessions would also benefit from depreciation tax treatment, which could also have a substantial impact on the level of private investment.

Likely Risk Profiles for Investment in High Speed Rail				
Participant	Environmental	Construction	Ridership	Operational
Construction Firm	No	Yes	No	No
Vendor	No	No	Some	No
Operator	No	No	Some	Some
Equity Investor	No	Limited	Some	Some

In addition to considering private investment in exchange for future project revenues, there are other mechanisms for private participation that would support the project. Vendor financing is a key mechanism to consider given the equipment needs of the project. Such a mechanism would reduce the amount of up front borrowing required and could reduce the cost of financing. Depending on the tax regulations applicable to the equipment owner, additional pricing benefits could accrue to the Authority through the vendor's capture of depreciation benefits. This technique would reduce construction costs through a small subsidy that export credit agencies could provide as part of vendor financing. Overall this technique would allow for more substantive private participation earlier in the development of the system and it would allow the Authority to achieve a higher level of risk transfer.

Design-build contracting and other project delivery mechanisms also are vehicles that would allow the Authority to transfer significant design, construction and technical risk to the private sector entities best in the position to manage these risks. Although this may not generate up-front investment, these mechanisms can significantly reduce or eliminate the risk associated with increases in costs during construction or equipment development. Including operations and/or maintenance in a design-build contract (i.e., design-build-operate-maintain arrangements) also would allow for the transfer of operational risks associated with the project. If payment is based on performance or tied to operating revenues, such contracts provide considerable incentive for the private sector to run the facility as efficiently as possible. Private sector firms tend to be most willing to accept risk in those areas where they hold the most experience, leading such arrangements to require a multiparty private sector consortium, in most cases.

RFEI Process and Results

In March 2008, the Authority issued a Request for Expressions of Interest (RFEI). The intent of the RFEI was to gain a better understanding of how the Project could benefit from private sector participation and to gauge the level of private interest in the Project. The Authority received written responses from 30 private firms, including construction firms, system and equipment providers, financial institutions, and operators. These respondents included major firms in each of these categories, providing a good sample from which to draw initial conclusions about private sector experience and preferences for involvement[32]. Their responses supported the Financial Plan's assumption of private sector interest in a P3 arrangement for the high-speed train project. In addition, the Finance team has conducted ongoing interviews with private sector participants to address changing market conditions especially after the passage of the American Recovery and Reinvestment Act and the CA State GO bond act.

32 For a more in-depth discussion of RFEI results, please see the 2008 RFEI Report. http://www.cahighspeedrail.ca.gov/images/chsr/20081118152745_Source%20document%209%20rfei.pdf

Respondents to the RFEI and subsequent telephone surveys were interested in participating through a variety of mechanisms, many of which would require integration of project components outside of their individual area(s) of expertise. Many respondents expressed concern about integration among the various project components and indicated that a design-build-finance-operate-maintain (DBFOM) or a design-build-operate-maintain (DBOM) approach could resolve these issues. Given the size of the Project, multiple project delivery mechanisms likely will be necessary, particularly for civil works contracts.

Respondents also discussed factors that would influence the level of private investment and participation. This discussion indicated that private parties are interested in investing in the project, however, the overall level of private investment and participation is highly dependent on the amount of risk to be transferred to the private sector entity. The most important factor was the level of commitment from public funding sources. Without strong state and federal support, many participants indicated they would not participate. Another critical factor was the need for a public policy mandate for the Project and clear P3 legal authorization. Many policy, legislative and state funding challenges have been addressed with the passage of the Bond Act in November 2008. In addition to the mitigation of these risks, respondents indicated that all environmental risk and right-of-way acquisition must be handled by the public sector.

Once the above factors have been addressed, the specific risks associated with individual contracts will become critical. There are a variety of issues with contracts including, among others, performance guarantees and the timing and source of repayment. Specific concerns centered on the extent to which private investment is to be repaid through ridership revenues. Respondents perceive a high level of risk in such repayment due to the unique nature of the project and the lack of comparable modes of transport in the United States. While respondents indicated that some ridership risk is acceptable, due to a private party's expected role in increasing revenues, there is limited appetite for investment that would be repaid largely through ridership revenues without any type of revenue guarantee or availability payments from the project sponsor at this time. Investors' willingness to take on greater amount of ridership risk will increase as initial segments are completed and ridership meets or exceeds those projections.

Since the RFEI in 2008, the Authority has continued to reach out to the private sector to gauge interest in the Project as well as seek guidance on technical and procurement issues. In total, over 40 firms have expressed their interest in participating in the Project in their given area of expertise or as part of a bidding consortium. The Authority has also obtained memoranda of understanding from Chinese, French, German, Spanish, Japanese and Italian train manufacturers to encourage international cooperation. As the Project moves into 2010, the Authority is once again planning to consult the private sector as it moves forward with the beginnings of a procurement process. The Authority plans to give interested private firms the ability to comment on its planned Request for Qualifications (RFQ) process, before moving ahead with the formal RFQ. The Authority has begun to take this feedback and interest into account as it develops the Project in order to maximize private participation in the funding and construction of the system.

The Authority recognizes that there are a number of issues that remain to be resolved before the exact role and extent of private sector participation can be determined. However, such challenges are to be expected with a Project of this size, complexity, risk profile, and duration of development. For example, there will be risk and reward trade-offs, and various phasing and funding timing requirements, to consider before contracts for any given portion of the Project are undertaken. It is important to note, though, that the unknowns concerning private sector participation present an opportunity for the project, as the Authority can encourage competition within the private sector and

design P3 scenarios that are favorable to the project. As further information about specific Project sections is developed, the Authority will focus on designing P3 contract opportunities that achieve its goals and are attractive investments for the private sector.

Timing and Phasing of Funds

Introduction

The Financial Plan Team, in conjunction with the Authority's engineering consultants, has developed estimates for sources and uses of funds for the San Francisco-to-Anaheim Project

totaling approximately $42.6 billion (in year of expenditure dollars). The Authority expects to fund the $42.6 billion in total cost through targets of $17-$19 billion in federal grants, $9 billion in state funds, $10.0- $12.0 billion from public-private partnerships, and $4.0- $ 5.0 billion in local funding assistance and cost sharing.

Timing and Staging of Investment for the Anaheim to San Francisco High-Speed Train System

The Authority's Financial Plan expects initial environmental studies and right of way acquisition for the project to be funded with public dollars from federal, state, and local sources. Initial contracts, including those funded through the ARRA stimulus package, would also be paid for largely with public dollars, although the Authority will leverage opportunities for private participation early in the Project through design-build contracts and other mechanisms. Although it may be feasible to achieve a partial ridership risk transfer early in the Project, it is probable that a firm or consortia accepting substantial compensation based on future operating surpluses will invest in the middle to later term of Project's construction period. This investment is based on ridership and will likely require some form of minimum revenue guarantee for private participants until demand for high-speed rail is proven in the United States and California. After several years of proven ridership, private participants are likely to accept a greater percentage of compensation subject to ridership risk.

Several respondents to the Authority's Request for Expressions of Interest indicated that although they were willing to accept some payment based on future operating revenues, they would be more likely to do so later in the Project's development. As a result, it will be important to secure the federal government as a partner early in the development process to provide funds to be coupled with state and local monies and fund early construction.

California High Speed Rail Authority Business Plan: Discussion of Financial Model Used to Estimate Project Funding Sources

Overview

The current California High-Speed Rail Project financial model includes scenarios for a 50-year, 75-year and 99-year concession beginning in 2010 and demonstrates the feasibility of the Project as a long-term public-private partnership. The model is developed as a public-private partnership or a concession and it assumes that the concession could take the form of a design-build-finance-operate-and-maintain (DBFON). The first part of the model focuses on the construction costs. As discussed above, the P3 portion of Project funded is estimated to be between $10-12 billion. The $10-12 billion will be made up of senior debt financing, a subordinate TIFIA loan, and a private equity contribution. The private funding capacity is sized based on the projected cash flows and assumptions regarding cost and structure of financing, associated with the timing of future cash flows and the risks associated with the project. It is assumed that remaining project funding will come from federal, state, and local grants.

Capital Expenditures

Total upfront capital expenditures include costs for construction, systems and electrification, program implementation costs, and vehicle costs as shown below:

Upfront Capital Costs (YOE $s)	
Construction	$31,300
Vehicle costs	3,300
Systems and electrification	4,600
Program implementation costs	3,400
Total	$42,600

As outlined in the previous sections, the construction costs are provided by section for the following seven sections:

- San Francisco to San Jose
- San Jose to Merced
- Merced to Fresno
- Fresno to Bakersfield
- Bakersfield to Palmdale
- Palmdale to Los Angeles
- Los Angeles to Anaheim

The construction costs are incurred over the years 2011 to 2018; vehicle costs are incurred over the years 2011 to 2035; systems and electrification costs are incurred from 2013 through 2019; and finally, program implementation costs are incurred over the years 2010 through 2020.

In addition to upfront capital expenditures, provisions are made for ongoing renewal and replacement costs.

Operations

Operating revenues are earned beginning in year 2020 and operations and maintenance expenses are incurred beginning in year 2017 as preliminary testing and minimal operations may begin in 2017. The assumptions used for net operating cash flows are described in detail

in the ridership and revenue section of this Business Plan and are summarized below:

Operating Cash Flows (YOE $ Ms)

	2020	2025	2030	2035	2040
Operating revenues	1,310	4,100	5,120	6,190	7,459
Operations and maintenance expenses	940	1,630	1,940	2,310	2,678
Net operating surplus	370	2,470	3,280	3,180	4,781

Based on the operating plan and the ridership and revenue figures presented in previous sections, the operating revenues are summarized in the chart above. Operations and maintenance expense assumptions are also laid out in the previous chapter and summarized in the chart above. In the first year the net operating surplus is approximately $370 million and increases to almost $3.9 billion in 2035. These represent significant operating surpluses. The above assumptions are based on fares being set to 83 percent of average airfares for comparable routes[33].

Funding and Financing

The breakdown of total funding sources of upfront capital costs is shown below:

Funding Sources Summary (YOE $ M)

Federal grants	$17,009 - $19,000
State grants	$9,000
Local grants	$4,000 - $5,000
Private funding	$10,000 - $12,000
Total	$42,600

Private Sources

The model assumes that the private sources of funding include senior debt in the form of Private Activity Bonds (PABs), a subordinate TIFIA loan, and private equity. In order to maximize borrowing amounts, minimum required debt service coverage ratios are assumed to be 1.40 for senior debt service, and 1.10 for aggregate debt service. However, it is also assumed that lenders will require a minimum equity contribution of 20 to 25 percent of the private funding amount. Therefore, since this requirement is the constraining factor for debt issuance, the actual minimum debt service coverage ratios are in fact higher than the required minimum ratios (2.22 for senior debt service, and 1.44 for aggregate debt service). It is assumed that the TIFIA issuance amount cannot exceed the senior debt amount; therefore, these two issuance amounts are equal. Additionally, the TIFIA loan amount is considerably less than 33 percent of total project costs. Finally, in order to calculate the total private funding capacity, an after-tax equity internal rate of return (IRR) or investment hurdle rate of 16 percent has been assumed. Based on this model, a sample breakdown of privately funded sources of upfront capital costs is shown below:

Sample Breakdown of Private Sources (YOE $ Ms):

Senior debt	35.3%	$4,260
TIFIA debt	35.3%	4,260
Private equity	29.4%	3,539
Total	100.0%	$12,059

State, Local, and Federal Grants

It is assumed that the balance of the funding requirement will be met by government grants. Since the state has already authorized up to $9 billion, it is assumed that the state's contribution will remain constant at this amount. It is also assumed that local sources will fund $4-$5 billion of the upfront capital costs. Finally, it is assumed that the remaining need of $17-$19 billion will be met by grants from the federal government.

33 Refer to Table B within the Ridership, Revenue & Operations Chapter

Economy / Climate Right Now

ARRA and Other Federal Funding

President Obama has launched a national high-speed train initiative with $8 billion in new stimulus funding under the American Resource and Recovery Act and another $1 billion a year for high-speed trains over the next five years in the federal budget. California is the best-prepared state to receive and maximize the benefit of ARRA funds for high-speed train development and is expected to be a leading candidate for a significant share of stimulus funding. It's the only high-speed train project that can meet three major tests in qualifying for those funds:

- Billions of dollars in voter-approved state funding committed to the project
- Significant environmental clearances completed or underway
- Construction projects that can break ground by 2012

Congress also has indicated its interest in financing development of high-speed train systems in America and key congressional leaders have said they want to expand on the president's call for investment of an additional $1 billion a year over the next five years.

Demand for New Transportation Alternatives

California's culture and economy are built on mobility. When voters approved Proposition 1A in 2008, they demonstrated their support for a new 21st century option that would ensure they maintain that mobility.

Over the next two decades, California's high-speed train will alleviate the need to spend more than $100 billion to build:

- 3,000 miles of new freeway
- Five airport runways
- 90 departure gates

Economic and Social Impact of a High-Speed Train

In tough financial times, a project of this magnitude will have a significant impact, even in the short term. Construction start-up of ARRA-funding-related sections by 2012 is expected to generate 130,000 early jobs and kick-start economic

In the face of unprecedented worldwide interest in high-speed trains, President Obama's financial and political commitment to create a system in the United States, and California voters' approval of a $9 billion state bond fund for such a project, have positioned California to be at the leading edge of public and private investment in high-speed rail.

California's system will help meet the state's historic demand for mobility. But what's more, it will create jobs, stimulate the economy, and provide new opportunity for private investment at a time when our state need it most.

Despite a worldwide economic downturn over the past two years, American and international companies and consortiums have strongly voiced interest in investment in California's system. Early in 2010, the Authority plans to step up efforts to identify potential public-private partners (P3).

activity in design, construction and supply services. Over the longer term, California's high-speed train will mean:

- Nearly 600,000 construction-related jobs
- 450,000 permanent jobs
- Improved movement of people, goods and services
- Faster travel times for many
- Congestion relief for freeways and airports
- Improved air quality and related-health care costs
- More energy efficiency – only 1/3rd the energy of airplanes, 1/5th the energy of passenger cars
- Reduced dependence on foreign oil by 12.7 million barrels a year
- 12 billion fewer pounds a year in greenhouse gases
- Revitalization of many of the communities around new transportation terminals

Job Creation

California's unemployment rate stands today at a historically high level, especially in certain regions of our state such as the Central Valley. Infrastructure projects have been proven as job creators that have the ability to help to pull economies out of recessionary times.

California labor leaders support the high-speed train project and have begun to do so vocally because they understand the job creation that would come along with such an infrastructure project. President Obama has focused on the available ARRA funding for high-speed intercity rail as a significant job creator.

In California, the initial system is projected to create the equivalent of 600,000 full-time, one-year jobs over the course of its construction. While the calculation is a bit more complex, a simplified and conservative version puts the creation of both direct and indirectly related jobs for an infrastructure project of this sort at 20,000 total generated per $1 billion of construction. So, roughly, that means the California high-speed train projects job creation, broken down by region of the project, would be:

- San Francisco – San Jose: 105,000
- San Jose – Merced: 112,000
- Merced – Bakersfield: 135,000
- Bakersfield – Palmdale: 81,000
- Palmdale – Los Angeles: 125,000
- Los Angeles – Anaheim: 92,000

Current Interest In High-Speed Rail in General and California's Plan in Particular

Interest in investing in high-speed trains appears to be at unprecedented levels both in America and around the world. Numerous countries including Russia, Poland and Brazil are investing in establishing high-speed train lines, while others are adding to their existing systems. Private companies and foreign governments are gearing up to invest in doing so here. This is due in part to President Obama's commitment to high-speed rail development in the United States. In California, it is also due in large part to the voters' approval of $9 billion in state bond funds for the project. Other factors raising interest in high-speed rail investment are the job creation of such an infrastructure project and the view that infrastructure investment and public-private partnerships are more sound investments in the current economy than the financial markets.

While the Authority's previous work formally gauging private-sector interest was conducted largely before the passage of Proposition 1A and the president's stimulus plan announcement, continued interest from and contact with private entities and foreign consortiums tell us that this interest has increased. The Authority plans to, in the early months of 2010, prepare a process by which interested private entities can express their interest in participating in the California high-speed rail project, lay out their qualifications for doing so and their envisioned role.

Private Sector Interest

Over the past two years, the Authority has undertaken extensive work to gauge and encourage private sector interest in the High-Speed Rail project. In March 2008, the Authority issued a Request for Expressions of Interest ("RFEI"). The purpose of the RFEI was to gain a better understanding of how the Project could benefit from private sector participation and to gauge the level of private interest in the Project. Responses were received from 30 private firms, including construction firms, system and equipment providers, financial institutions, and train system operators. Respondents included major firms in each of these categories, providing a good sample from which to draw initial conclusions about private sector experience and preferences for involvement[34].

Some interested respondents to the RFEI expressed concern that participation would require integration of project components outside of their individual area(s) of expertise. But many indicated that a design-build-finance-operate-maintain ("DBFOM") or a design-build-operate-maintain ("DBOM") approach could resolve these issues. Given the size of the Project, multiple project delivery mechanisms likely will be necessary, particularly for civil works contracts.

While the majority indicated that they would make a financial investment in a project like California's high-speed train, respondents pointed out that the type and amount of their participation would depend on the level of risk associated with such an investment. Clear public funding commitments, well-defined projects, and proper allocation of project risks ranging from construction and environmental to technical and future ridership were cited as vital to a private firm's decision to invest in the project. The Authority has begun to take steps to encourage private investment, but these topics will be further developed as the project moves forward.

Since the RFEI in 2008, the Authority has continued to reach out to the private sector to gauge interest in the project as well as seek guidance on technical and procurement issues. In total, over 40 firms have expressed their interest in participating in the project in their given area of expertise or as part of a bidding consortium. The Authority has also obtained memoranda of understanding from French, German, Japanese, and Italian train manufacturers to encourage international cooperation. The Authority is once again planning to consult the private sector as it moves forward with the beginnings of a procurement process in 2010. The Authority plans to give interested private firms the ability to comment on its planned RFQ process before moving ahead with any formal RFQs. The Authority has begun to take this feedback and interest into account as it develops the project in order to maximize private participation in the funding and construction of the system.

The Authority recognizes that there are a number of issues, including the level of risk facing investors, that remain to be addressed before the exact role and extent of private sector participation can be determined. Nevertheless, private investment interest is expected to be strong and key to long-term success of California's system. A variety of challenges are to be expected with a project of this size, complexity, risk profile, and duration of development. For example, there will be risk and reward trade-offs, and various phasing and funding timing requirements to consider before contracts for any given portion of the project are undertaken. As further information about specific project segments is developed, the Authority will focus on designing P3 contract opportunities that achieve its goals and are attractive investments for the private sector.

34 For a more in-depth discussion of RFEI results, please see the 2008 RFEI Report.

Subsequent Sections

Los Angeles to San Diego via the Inland Empire

In addition to the Initial system described in depth in this document, the High-Speed Rail Authority is planning and conducting environmental reviews on additional sections that would result in a total system about 800 miles in length linking Sacramento, the San Francisco Bay Area, the Central Valley, Los Angeles, Orange County, the Inland Empire, and San Diego. Additionally, the Authority is working on a separate "Altamont Corridor Rail Project" which complements the high-speed train system. The Altamont Corridor Rail Project is being done in partnership with the San Joaquin Regional Rail Commission (SJRRC) and other local and regional agencies to improve passenger train service over the Altamont Pass.

Proposition 1A provides that the Los Angeles to San Diego via the Inland Empire and the Merced to Sacramento sections, as well as the Altamont Corridor Rail Project, can also compete for and use the bond for capital costs with available funding as long as there is no adverse impact on the Phase 1 priority section.

This section gives an update on the progress of the Los Angeles to San Diego via the Inland Empire, Merced to Sacramento sections, and the Altamont Corridor Rail Project. Each are currently in the very early stages of project-level environmental review, however significant progress has been made to move each of these corridors forward toward implementation.

Since 2008, the Authority has collaborated with the Southern California High-Speed Rail Inland Corridor Group (SoCal ICG), which was formed by a Memorandum of Understanding (MOU) signed by the Authority and Southern California Association of Governments, Los Angeles Metro, San Diego Association of Governments, San Bernardino Associated Governments, the Riverside County Transportation Commission, and the San Diego County Regional Airport Authority. One of the purposes of the SoCal ICG is to demonstrate partnership with regional entities and to assist the Authority with the review of the Program EIR/EIS alternative alignments and station locations and in identifying additional alternative project alignments and optional station locations to be studied in the Los Angeles to San Diego via the Inland Empire Project EIR/EIS. The Authority has consulted with the SoCal ICG on a monthly basis since the summer of 2008.

To support the development of the Los Angeles to San Diego via the Inland Empire section of the high-speed train system, the SoCal ICG partner agencies formed four Technical Working Groups (TWGs) in Los Angeles, Riverside, San Bernardino, and San Diego Counties. The TWGs met with the Authority in November, 2008, February, 2009, and July/August, 2009 to identify additional alternative alignments and optional station locations to be further considered in the Project EIR/EIS along with the alignment alternatives and station locations selected with the 2005 Program EIR/EIS. In addition, alternative sites for right-of-way maintenance, train storage facilities and a train service and inspection facility will be evaluated in the LA-SD Section via the Inland Empire of the project area.

The Los Angeles to San Diego via the Inland Empire Section would extend from Los Angeles through the San Gabriel Valley, to Ontario Airport and the Inland Empire, and terminating in San Diego. The alignment corridor alternatives include the following as listed in the three sub-sections below:

Los Angeles to Ontario Sub-Section

- UPRR
- UPRR Adjacent
- State Route 60
- Interstate 10
- Holt Boulevard
- Metro/Metrolink

Ontario to Murrieta Sub-Section

- UPRR
- BNSF
- SANBAG/Metrolink
- Milliken Avenue/Interstate 15
- Interstate 215

Murrieta to San Diego Sub-Section

- Interstate 15
- Carroll Canyon Road
- Miramar Road
- LOSSAN / Interstate 5

The candidate station stops in the Los Angeles to San Diego via the Inland Empire Section have been identified include the following:

- San Gabriel Valley (El Monte, West Covina, City of Industry, Cal Poly Pomona, Pomona)
- Ontario Airport
- San Bernardino
- Riverside
- March Air Reserve Base
- Corona
- Murrieta
- Escondido
- University City
- San Diego (Downtown, Lindbergh Field)

Current Process

The Los Angeles to San Diego via the Inland Empire section completed the public scoping comment period in November 2009. The team is currently evaluating scoping comments that include additional alternative alignments in Los Angeles and San Diego counties. These alignment alternatives include Interstate 10 west of Interstate 605 to Los Angeles Union Station and an alternative Interstate 15 alignment from Mira Mesa to Lindbergh Field. Alternatives will be refined as the project continues.

Currently, the team is developing a draft scoping report and initiating the alternatives analysis (AA) process, to be completed by the end of 2010. During the AA process, SoCal ICG and TWGs will continue in each of the four counties to review and provide input into the development of the alignment and station alternatives. This process also includes coordination with Caltrans (District 11, 8, and 7), Resource Agencies, 100+ cities within the Section, and local agencies and stakeholders. Each partner represented by the SoCal ICG also participates in a Public Relations and Policy coordination effort and meets on a regular basis.

Timeline

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.

Merced to Sacramento

Description

The Merced to Sacramento section would extend north from Merced – where the train system backbone (Phase 1) turns west to reach the Bay Area – and connect to the capital city generally following a UPRR or BNSF / short line railroad alignment terminating at the existing Amtrak and light rail intermodal terminal at the historic Southern Pacific railyard site in downtown Sacramento.

Four candidate stops have been identified: Merced, Modesto, Stockton and Sacramento. The environmental process which is underway for the Fresno – Merced section has narrowed down the station location in Merced to a preferred site along the UPRR. There are two alternative station options for Modesto, a downtown site along the UPRR and a suburban site currently served by Amtrak along the BNSF. A downtown location near the existing ACE station along the former Southern Pacific (now UPRR) is preferred and the local preference in Sacramento is for the existing historic depot in downtown in that city as well.

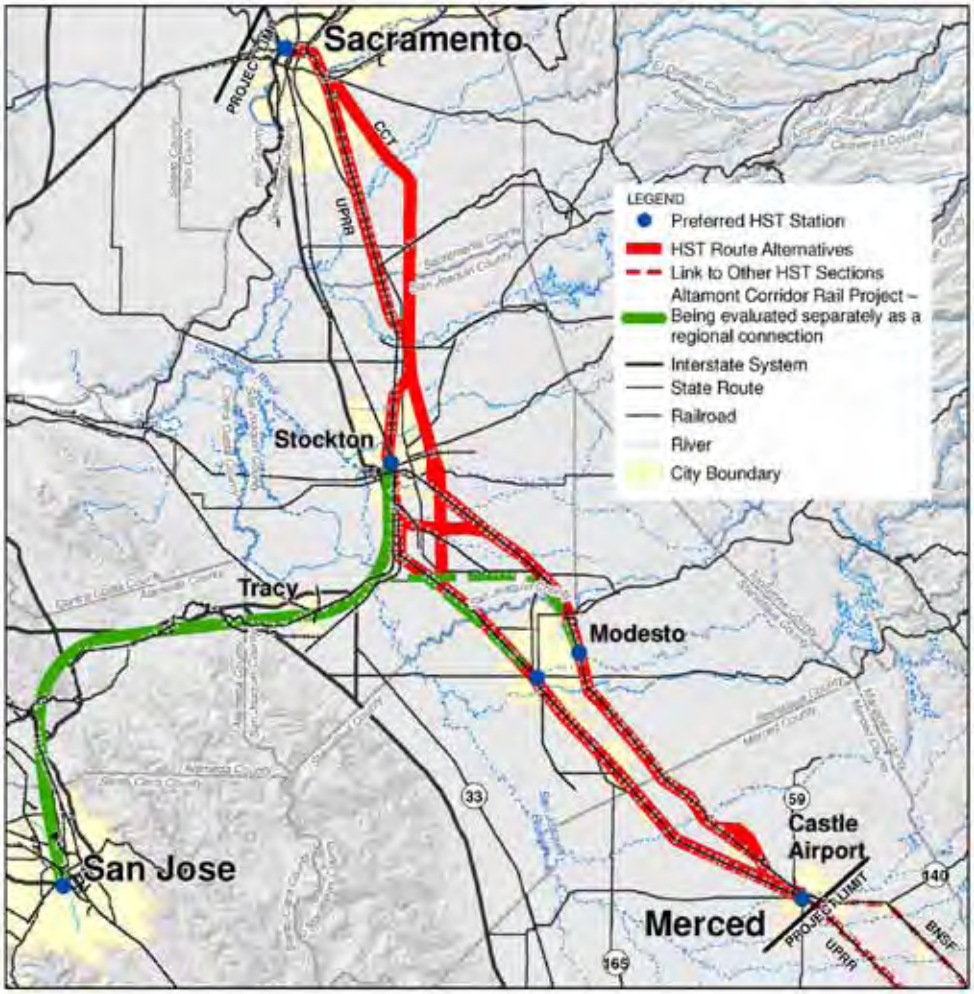
In addition to supporting operation of statewide HST trains, this segment could support regional intercity services which would include additional stops of significance within the region. Also these regional services could be provided both north-south along the Central Valley main spine of the HST system as well as connecting services via the Altamont Pass route which is being developed as a complementary regional route in conjunction with the statewide HST system.

The Authority has signed Memoranda of Understanding (MOU) with both the City of Sacramento as well as the SJRRC which is owner and manager of the ACE intercity and commuter rail service.

The City of Sacramento has expressed strong sentiment to support developing the entire length of the corridor and bringing the line all the way to downtown where it would meet the Regional Transit LRT system (including an airport connection presently under development), Amtrak long-haul passenger trains, and the Capitol Corridor intercity rail service which would serve as a feeder to the HST system.

SJRRC has a vision to operate regional intercity services along the segment which would serve the four HST stops as well as additional regional stops located between the HST stops which could be supported with additional investment such as providing four track stations with station tracks to avoid delays to the HST services along the main line. Accordingly, SJRRC has signed a MOU with the Authority to jointly plan the infrastructure and is assembling sources of local funds to augment the planning, design and construction effort being undertaken by the Authority.

Work to date has been accomplished in this corridor to answer resource agency questions regarding water quality impacts along the UPRR north of Stockton as well as preliminary layouts for the Sacramento terminal to provide input into the City of Sacramento ongoing process of refining the master plan for the intermodal station area.



Current Process

The Federal Railroad Administration has agreed to allow the formal environmental process commence in early 2010 with issuance of a Notice of Intent / Notice of Preparation (NOI/NOP) and scoping meetings to engage the public, staffs and policy makers in the corridor. In anticipation of the issuance of the NOI/NOP the Authority has initiated a comprehensive effort including agency coordination as well as public outreach to engage the participants in the environmental clearance process.

It is anticipated that funding for the balance of FY09/10 will allow the project to follow up on the scoping meetings with development of an alternatives analysis which will identify the most promising alignments and station locations to be evaluated in the EIR/EIS.

Timeline

It is anticipated that environmental review could be completed for the Merced to Sacramento section by 2014 with construction dates to be established based upon funding availability. Although this is a "Phase 2" section, the funding outlook includes the potential for future federal funding for both intercity as well as commuter rail, and local transportation funding such as may be assembled by SJRRC working in conjunction with the Authority and potential state level funding.

Altamont Corridor Rail Project

Description

The Altamont Corridor Rail Project will develop a new regional rail passenger corridor supporting intercity and commuter services which will upgrade the existing ACE service owned and managed by the SJRRC in the near term as well as be compatible with the statewide HST system in the long term. While this project is not part of the high-speed train system, this corridor is formally recognized as eligible for funding through Proposition 1A funds and California included the Altamont Corridor Rail Project in its request for funding under the high-speed rail provisions of the American Revitalization and Reinvestment Act (ARRA) "stimulus" initiative.

As a joint-use corridor, the Altamont Corridor Rail Project can be improved incrementally by providing new, higher-speed passenger tracks for existing ACE equipment or "second generation" ACE consists capable of higher maximum speeds. The corridor has the potential to attract significant intercity and commuter ridership as it occupies a key topographic "gateway" between the Bay Area and northern San Joaquin Valley through which existing travel is focused. In addition, the corridor can serve as a feeder to the statewide HST system by connecting to the Merced – San Jose – San Francisco section of the main line in San Jose as well as to the Merced – Stockton – Sacramento phase two main line in Stockton and Modesto.

The Authority has developed the Altamont Corridor Partnership which includes more than a dozen regional transportation, planning and government entity partners which through the venue of the Altamont Corridor Partnership Working Group have developed consensus on the overall route, key objectives, planning principles, and major project elements including the general route location, candidate stations, key project features, as well as phasing and staging considerations.

The Authority has signed Memoranda of Understanding (MOU) with three entities which engage this corridor including Caltrain, SJRRC and the City of Sacramento, and approved the signature of an MOU with BART.

Under the venue of the various MOU's, the Authority and its partners are seeking to develop a linkage to the BART system to extend the coverage beyond the immediate corridor route principally in the East Bay, linkages with the Caltrain system to serve the Peninsula, and most importantly, the agreement with SJRRC recognizes the interest of that entity to operate regional intercity and commuter services along the Altamont Corridor which could extend beyond onto the high-speed train mainline tracks in the Central Valley such that operation of a Sacramento to San Jose train via the Altamont route may be possible.

The Authority developed a specific description of the initial project description as well as the goals, purpose and benefits which was considered by the FRA and which led to the FRA agreeing to serve as the lead federal agency (with the Federal Transit Administration as a cooperating agency) for the NEPA process. In addition, SJRRC has agreed to be a responsible agency under CEQA in conjunction with the environmental process.

The extensive agency coordination which was accomplished to develop the consensus within the Working Group to advance the project was supplemented with a large outreach effort culminated with four scoping meetings held along the 80+ mile corridor to kick off the formal environmental process.

Current Process

The Authority is reviewing the input received at the scoping meetings and will consider this information along with prior information developed during preparation of the Bay Area to Central Valley Program EIR/EIS to delineate and make a preliminary assessment of candidate alignments and station locations. This will result in the completion of a Draft Alternatives Analysis by June of 2010.

Special focus is being given on informing the parallel progress being made by BART on the BART to Livermore EIS. BART recently circulated a Draft EIS/EIR which includes nine alternatives for extending to Livermore with various opportunities for providing a joint intermodal station with ACE and the future Altamont HST line. The Authority had previously identified numerous candidate segments within the Tri Valley area for HST through the 2005 Statewide EIS/EIR and 2008 Bay Area to Central Valley EIS/EIR. The focused work will provide input to the BART process leading to the narrowing of BART alternatives ultimately designating a preferred option concurrent with the Authority substantially completing its alternatives analysis for the same area.

Timeline

It is anticipated that environmental review could be completed for the Altamont Corridor by 2014 with construction dates to be established based upon funding availability. Although Altamont Pass is not part of the "Phase 1" main line between Los Angeles and San Francisco, it is eligible for state bond funding and local partner SJRRC is assembling sources of funds to support not only the planning and environmental process but also right of way acquisition and construction of near term beneficial phases in conjunction with anticipated future federal funding. The actual construction dates will depend upon the magnitude of the specific improvements and available funds.

Risks and Mitigation

Risks That Could Jeopardize Project Completion

For the purpose of this report to the Legislature, and at this current juncture in the development of California's high-speed train project, it is important to ask the question, "What factors exist that could derail the project and delay or prevent its ultimate completion?" Any infrastructure project faces its share of risk, and this project is no different. The California High-Speed Rail Authority believes it is aware of the existing risks and is taking, or has plans to take if necessary, the appropriate steps to prevent and mitigate those threats. Below is a discussion of those existing risks and how the Authority would guard against them impacting the delivery of a high-speed train system.

A project of this size, scope and nature faces a number of risks that could jeopardize its completion. Any frank discussion of the project and its planning must include these risks, and any credible plan for the project must address how these risks would be mitigated. This section describes those risks in a frank manner and notes the manner in which the Authority plans to mitigate them. General categories of risk include funding, politics, litigation, federal regulations, construction, and unpredictable events.

Funding

The Project will likely be exposed to three major types of financial risks, typical of projects of this size and of any financing that seeks capital in the U.S. and international markets. The most basic risk is that the project does not win the credit approval from the financial institutions, including banks, credit rating agencies, funds and underwriters that will provide the capital directly or as an intermediary to the project. In addition, the project may not receive approval from the investment oversight committees of the respective strategic investors (such as construction firms, vendors).

The second set of risks are overall market risks. As we have experienced in 2008 and 2009, the financial markets may essentially "shut down" for all but the highest creditworthy financings. This may apply to both bank financings as well as capital markets transactions. Furthermore, the capital of strategic investors may also be constrained as they focus on maintaining liquidity.

The third set of risks are that governments are not able to follow through on their grant and loan commitments. For instance, Congress could delay funding transportation programs, such as the TIFIA program, which could imperil part of the financing, since this may become a key funding source. Or as California is experiencing now, California's credit ratings could affect the project's ability to issue GO bonds.

To mitigate these risks, the Authority will consider a number of mitigation techniques. For the first risk – credit and approval risks – the Authority and its financial team will work closely with the financial markets and investors to clearly communicate the project and obtain up-to-date feedback. The Authority should have a very clear idea if approval can be obtained and what kind of changes need to be made for the markets to accept the project.

For the second type of risk – overall market risks – the Authority has to be continually monitoring the market and develop strong "back-up strategies." For one, this means following a dual bank/capital markets strategy, so that if one market closes, the Authority can access the other one. In addition, the Authority may want to develop project segmentation strategies that allow for the development of certain segments even if other segments are delayed due to turbulence in the financial markets. In essence, this is what the Authority is already considering with the proposed ARRA segments that will be built to ensure independent utility in case the connecting segments are delayed. In a similar way, the Authority needs to plan for the third set of risks – lack of government follow-through – by carefully assessing how each government funding sources affects the build-out of each segment.

Politics

Political support is critical to a project of this size, scope, and its corresponding funding needs. To be successful, the Authority must build strong partnerships with state, local, and federal legislators.

A valid risk to completion of this project is a lack of political support and will to see it through to completion.

However, when speaking of mitigating the risk of waning political support, it's important to note that political support currently is doing the exact opposite – it is increasing exponentially. The most notable example of that is President Obama's inclusion of funding within the American Recovery and Reinvestment Act for high-speed intercity rail, and his publicly laid-out vision for building a network of high-speed train lines in this country.

The President's support of high-speed rail has served as a catalyst to build political support for the project at all levels. Members of California's congressional delegation have publicly expressed support for the project, as have local governments and several California state legislators.

To mitigate the risk of losing political support, the Authority will work diligently to build partnerships with elected officials and to inform them regularly about the project's progress. This goes for our representatives in Washington, D.C., our state Legislature, and locally elected officials.

Additionally, the Authority will strive to maintain a project that is on track, on budget, and that places a premium on accountability and transparency. Through this, political support will remain.

Legal Action

Legal action being brought against the Authority is a likely risk. Negative rulings in such lawsuits have the ability to set the project's timeline back or even halt the project or sections of it for a time.

The possibility of lawsuits is likely centered on environmental work or public outreach related to construction and mitigation factors. So, to mitigate against the likelihood of such lawsuits and the merit behind such lawsuits, the Authority is committed to thorough and more-than-adequate environmental work. By conducting solid environmental studies, the Authority substantially reduces the risks associated with possible legal action.

Additionally, the Authority is committed to copious amounts of public outreach, and in fact in recent months has taken steps to augment and improve its outreach efforts. By providing thorough, frequent, adequate, and easily accessible information about the project's details and progress, we are confident that we can mitigate any possible risk that would result from inadequate outreach.

Another legal difficulty could arise within the design and construction phase (licenses; patent rights; outsider suit; insider suit; force majeure;

contractual issues due to misinterpretation, misunderstanding, failure, inappropriate strategy or contract) and is discussed within the design and construction risks section below.

Ridership Factors

Solid ridership projections are necessary to build support in the private sector for the high-speed rail project. If it were to be projected that potential ridership on the system would be low, private entities would be less willing to provide funding for the project, and since our financial plan requires private participation, that would represent a threat.

The Authority's ridership projections are based on a number of factors that could possibly change between today and the construction phase, and which would then increase or depress ridership projections. This is not a highly likely risk but is worth mentioning.

Ridership estimates are in part based on population projections and on the cost of competing modes of transportation at the time that the system is operational. California's population is expected to grow by a third, to 50 million people, by 2030. If California's population over the next couple of years was instead to begin to decrease, that would materially affect high-speed rail ridership estimates. Also, the price of gasoline could drop dramatically and affect the ridership estimates; or, medium-distance airlines could improve efficiency and drop prices while adding additional routes, which would affect ridership projections.

These possibilities would be mitigated by policies that continue to draw people to reside in California and that encourage high-speed rail as an alternative mode of transportation preferable to other modes.

Federal Regulations

The Authority is coordinating closely with the Federal Railroad Administration and high-speed rail industry to develop U.S.-based High-Speed Rail Express regulations and standards. Implementation of HSR Express in the United States requires a thorough assessment of the technical and operational safety risks, and application of best practices from existing systems to mitigate these risks. This is particularly critical as the California high-speed train project will be the first HSR Express system to be constructed and operated in the U.S. It is also important that the technical standards reflect an overall set of guiding principles, or system requirements, to ensure that all aspects of a high-speed rail network are addressed and integrated.

As we work to develop these standards, there is the possibility that necessary standards will be rejected, or that they will not be established in the timeframe necessary to match our timeframe for passenger service. However, mitigation for that possibility is already well underway. The Federal Railroad Administration is agency that sets the safety standards to be met and is the Authority's federal partner for environmental work on the California high-speed rail project. The FRA works with the Authority on a daily basis, is well-versed on the details of our project and its regulatory needs prior to service, and will serve as a vital partner in the process of pursuing and establishing these standards – standards that will serve subsequent high-speed rail lines in other states as well.

Technical Peer and Industry Review

The California High-Speed Train Project, with operating speeds up to 220 mph, will be the first modern high-speed rail system in the United States to exceed speeds of 150 mph. This requires the development of technical standards for the design and construction to accommodate the higher speeds. The technology leading to 220 mph high-speed train service has been in development for decades around the world with most systems operating at 200 mph and two systems (Spain,

China) operating or soon-to-be operating at 220 mph. Many of these systems can be referenced for the development of U.S.-based technical standards.

For the past decade, the California High-Speed Rail Authority has been in regular discussion with nearly all of the operating high-speed rail operators and many of the manufacturers of high-speed train equipment around the world. These discussions include technical working groups to solicit technical peer and industry review in two primary areas: technical feasibility and manufacturing practicality. High-speed train systems are made up of highly technical subsystems which are optimized to work together to maximize safety and reliability. To confirm that the California project's technical approach is consistent with state-of-art practice, dozens of reviews and discussions have taken place during the development of the California high-speed train project. These include operators, infrastructure owners, international high-speed rail technical services organizations and manufacturers from France, Japan, Germany, Spain, China, Taiwan, and Korea.

Right-of-Way Preservation and Acquisition

The high-speed train project, of course, hinges on the ability to obtain the right-of-way in which to build it. Inability to obtain adequate right-of-way would delay or prevent the system from being built. Primarily, any delay would come in the form of lawsuits seeking to prevent the Authority from acquiring a property.

The Authority plans to mitigate this risk through negotiations and by offering fair prices for right-of-way property. The Authority aims to settle disputes through negotiation and through transactions that are satisfactory to all parties. However, while it is not a tool the Authority wishes to employ nor will employ lightly, it should be noted that eminent domain is a tool the Authority has.

The Authority, with program management team and regional consultant support, will lead the right-of-way preservation and acquisition tasks. This work will include identification of "at-risk" parcels, preparation of survey documents and legal descriptions, and preparation for property acquisition negotiations.

Design and Construction Risk

Design and construction risk is generally associated with delays in construction and increases in construction costs. To reduce and limit the Authority's exposure to these risks, the Authority will take the necessary steps to share and/or transfer this risk with their private partners through innovative procurement and contracting methods. These contracting methods should ensure on-time delivery at a high level of performance by contractors by linking a large amount of their compensation to meeting project completion and performance standards, to cost overruns and delays in completion subject to significant penalties.

Effective design and construction risk management is essential to achieving a successful overall project. Therefore, incorporating risk analysis as an integral part of project delivery is key to project success. Risk management begins with identification of risk, developing a thorough understanding of their impact, and finally implementing risk mitigation measures into the procurement and project development process. To manage systematically with the various risks encountered on projects, a detailed listing of key project design- and construction-related risks are presented below grouped according to the primary source of risk rather than their associated effects:

EXTERNAL RISK

- Regulatory Risk (unanticipated government intervention in dealing with: environmental issues; design and/or production standards; site selection and location; or special requirements)
- Natural Hazards Risk (such as: corridor location; storms and/or floods; and earthquake)

- Completion Failure (failure of the supporting infrastructure due to others, such as design failure, or, execution of supply contracts due to bankruptcy or receiverships, etc.)
- Other Potential Risks include but are not limited to (vandalism; sabotage; indirect effects such as environmental and/or social; failure to provide financial support through the end of the project; or the lack of final project acceptance by the Authority)

EXTERNAL PREDICTABLE RISK

- Market Risks (availability of materials; material escalation; demand on critical elements; or economic unrest)
- Operational Risk (such as not properly identifying or dealing with maintenance needs; safety issues; or fitness for purpose)
- Environmental; Social Inflation; and Taxation Risks

TECHNICAL RISK

- Changes in Technology (rendering parts obsolete; discontinuation of parts; new technology complexity on the existing system rendering it obsolete)
- Performance (compromised quality and reliability due to design inadequacies; or sheer size and complexity of the project)

NON-TECHNICAL RISK

- Managerial Risk (lack of organizational structure; lack of appropriate policies and procedures; inadequate project management; staff changes; and inadequate planning and unrealistic completion schedule)
- Schedule Risk (delays and time overruns due to: regulatory approvals; labor shortages; productivity; stoppages; material shortages or late deliveries; unforeseen site conditions; accident or sabotage; scope changes)
- Cost Risk (overruns due to: schedule delays; inappropriate procurement strategies; contractor claims; management and/or workforce inexperience)

Cash Flow Risk

LEGAL (generally controllable)

- Difficulties arising from any of the following: licenses; patent rights; outsider suit; insider suit; force majeure; contractual issues due to misinterpretation, misunderstanding, failure, inappropriate strategy or contract

With different project delivery options at our disposal the Authority will develop and employ strategies to evaluate and select the appropriate procurement methodology and approach. While many of the traditional evaluation criteria for procurement of engineering services still apply, the ability to evaluate contractors on more than a "reasonable and responsive bid" will introduce myriad new challenges to the procurement process. To facilitate a smooth procurement process, and ultimately successful delivery, it is important to maintain two closely linked processes moving forward.

The ideal project delivery method and procurement strategy should result in a high-quality facility at the earliest possible time for the lowest overall lifecycle cost (construction and operations and maintenance). So how will the Authority find this optimal strategy? As the owner of the facility, the Authority is in the best position to evaluate the specific issues surrounding the project. Things such as stakeholders, schedule, budget constraints, the ability to manage, and the level of the Authority's involvement are all taken into consideration in selecting a delivery method and procurement strategy. The project delivery methods and procurement strategies evaluated for our efforts included:

- Design-Bid-Build
- Construction Management at Risk
- Design-Build
- Progressive Design-Build
- Multiple Prime Contracts
- Performance-Based Delivery

The DESIGN-BID-BUILD procurement and contracting strategy is the most common contracting strategy in use today, and could be used if:

- The Authority were seeking the lowest initial capital cost as exhibited by low bid and, the project were not schedule sensitive
- Major changes to the project were unlikely due to the completeness of the plans and specifications, and creativity (or best value) is not sought from proposers/bidders
- The Authority wants to exercise complete control over the design efforts, and thereby assume major portions of the risks (the Authority warrants the sufficiency of the plans and specifications to the contractor)
- The delay in knowing actual construction costs and cash flow requirements were not critical (low bid is not know until after construction bid opening. Re-bid may be required should the bids exceed the Authority's budget)

CONSTRUCTION MANAGEMENT at RISK was reviewed and deemed best if:

- The compression of the overall project schedule was important or the schedule is difficult to define
- The Authority needs to maintain a set budget number or needs to know the financial cost guarantee earlier in the process
- Early construction input was needed because the construction is expected to be difficult to manage, and the Authority also wishes to influence selection of equipment, material or subcontractors
- The Authority was looking to ultimately transition to D-B format; or an open-book and joint decision-making with contractor is desired

The DESIGN-BUILD procurement and contracting approach is believed best if:

- The Authority were seeking potential cost reductions (the D-B contractor performing the design has a better feel for the constriction cost of various alternatives, i.e., value engineering occurs throughout the proposal process)
- Shortened project completion timeframes were desired(fast-track construction is possible)
- Reduced exposure to claims was desired (the D-B entity is responsible for preparing the plans and specifications and may also be responsible for differing site conditions)
- The Authority was looking for innovation and incorporation of new technologies, possibly through paying a stipend to get the intellectual property and creative design ideas from unsuccessful proposers to incorporate into the project
- The project had significant complexities and the Authority was seeking to assign the risk to an entity better able to manage it (eliminates contractor claims to the owner for field issues that result from design or constructability issues)

PROGRESSIVE DESIGN-BUILD is a variation on Construction Management at Risk and was considered:

- Progressive Design-Build is a relatively new design and construction management concept whereby the design and construction of the project are procured from a single entity primarily based on qualifications
- The selected design builder completes the design to between 30 to 60 percent and then submits a lump sum or guaranteed maximum price for the project to the Authority for approval.

– A significant feature of **Progressive Design-Build** contract is the fact that should the Authority and design-builder not be able to reach agreement on an acceptable price, the Authority could then:
    - Negotiate with another qualified design-build team, or
    - Take the partially completed design and use it as the basis for completing the design, or
    - Complete the design and proceed with a Design-Bid-Build procurement

MULTIPLE PRIME CONTRACTS as presented below were viewed as not being viable procurement and project delivery methods for this project for the following reasons:

- Multiple Prime contracts are typically used on vertical construction where an owner divides the project in parts or phases and enters into separate contracts for each part or phase (e.g., site development, excavation, structural, mechanical, electrical).
- Additionally, multiple prime contracts require careful coordination because multiple contractors are involved, and no single contractor is responsible for the entire project.

PERFORMANCE-BASED procurement and project delivery is a variation of Design-Build designed to streamline the procurement cycle. Performance Based procurements efforts focus their efforts on defining the purpose of the work to be performed, as opposed to either the manner in which the contractor must perform the work or the means and methods that must be used by the contractor.

- Performance-based contracting holds the Authority accountable for establishing clear performance expectations and the contractor accountable for achieving those expectations
- With the performance-based design-build procurement, the Request for Proposals generally does not include design drawings. But rather it sets forth standard construction specifications to establish minimum quality standards and focuses as much as possible on, measurable performance criteria or objectives, rather than on specific design approaches to achieve those objectives. Allowing for creativity while providing the Authority with access to the innovative and cost-effective commercial services or products.

With careful planning and good management some inherent risks in the project development process can be substantially reduced or virtually eliminated. The Authority's steps towards achieving this goal include:

- Incorporating a thorough and realistic appraisal of the project concept and scope, conducting a realistic estimate of time and costs for the defined scope and quality, and making contingency allowances where scope or work is uncertain
- Development of a sound procurement strategy designed to optimize performance that is supported by the appropriate organization structure and responsibility distribution. This effort includes:
    – Examining the contract documents for risk, clarity and potential sources for misunderstanding
    – Seeking innovative but practical solutions to offset potential risk areas
    – Recognizing that risk and reward go together
    – Preparing contingency action plans and work-arounds
        - The Authority will also use more traditional performance bonding to create incentives for its contractors to fulfill the contractual obligations. If such obligations are not met or fulfilled, then the Authority would seek payment for damages under the performance bond

As presented herein, the appropriate design and construction procurement strategy selection depends on the type of project, its particular emphasis on scope, quality, time and cost, and the degree of uncertainty associated with each. The Authority's approach to risk management consists essentially of four process phases, namely:

Phase-I	Risk Identification
Phase-II	Risk Assessment
Phase-III	Risk Response
Phase-IV	Action Documentation

Therefore, the selection of the right contract requires:

- The identification of specific risks
- Determination of how they should be shared between parties, and
- The insertion of clear language in the contract documents to put it into effect.

Unpredictable Events

Though impossible to predict, it's worth mentioning the threat of significant events such as natural disasters that, if they occurred, could delay or stop the high-speed train project. A large-scale earthquake or historic wildfire that destroys significant amounts of existing infrastructure could divert state and local infrastructure investment funding toward repair and rebuilding and away from new projects such as high-speed rail.

The Authority does not have plans to prevent against such a disaster, and in such an event would support rebuilding and repairing California's existing infrastructure as a priority over high-speed rail development.

Oversight

Project Oversight and Controls

Authority Board and Appointments

The Authority's nine-member Board of Directors is the main, regular oversight of the Authority's activities. The appointment of Board members is made by a trio of entities – the governor (5 appointees), the Assembly (2) and the Senate (2). This body provides the first level of public transparency and accountability. The Board is subject to California's open public meetings laws, and therefore the Authority's monthly Board meetings, agenda and notice requirements, along with the opportunity for public participation and comment at those meetings, complement the appointment procedures and responsibilities and provide a transparent view of the project's progress, policies and administration.

Legislation and Initiatives

The high-speed train project and the actions of its Board, staff and contractors are controlled and governed by a series of legislatively enacted statutory provisions, both general and specific to the project, and the extensive requirements of the voter-approved Proposition 1A.

Senate Bill 1420 (1996), the Authority's enabling statute, and subsequent legislative vehicles charge the Authority with developing and implementing intercity high-speed rail service that is fully integrated with the existing intercity rail and bus network, commuter and rail transit lines and other transit services at common facilities. As prescribed in the statutes, the Authority previously submitted a number of feasibility, business and financial plans to the Legislature. It also prepared and crafted with the Legislature and Governor Schwarzenegger a plan for the construction and operation of a high-speed train system in the form of Assembly Bill 3034, that was placed before and approved by state voters in November 2008 as Proposition 1A (Prop. 1A).

Proposition 1A

Prop. 1A is comprehensive and prescriptive in terms of oversight and accountability of the state's high-speed train project. By the proposition's enactment by state voters, Prop. 1A establishes a host of mandatory financial, service, regulatory and review procedures and requirements.

The Authority must establish an independent peer review group to analyze and comment on the elements of the individual

The California High-Speed Rail Authority and the state's high-speed train project are subject to a comprehensive system of external controls, oversight and review – more so perhaps than any other capital or construction project in the history of the state. Over the 13-year life of the Authority and its work in developing the train project, there has been and continues to be more analysis, discussion and review of the project than that of any other single or comparable large-scale public transportation project in the state. The uniqueness and enormity of the project, makes this scrutiny appropriate and provides greater assurance that the public's interest will be protected and that the project's success will be realized.

corridor funding plans, with specific members of the eight-person peer review group designated by the state Treasurer, the Controller, the Director of Finance, and the Secretary of Business, Transportation and Housing.

Ninety days before submitting an initial request to the governor and the Legislature for bond funds to pay the capital costs on a project segment, Proposition 1A requires that the Authority must first approve and submit a detailed funding plan for the corridor to the Director of Finance, the peer review group, and the transportation policy and fiscal committees of the Legislature. The plan must include myriad specific items and project information for legislative and administrative review (subject to an exception for certain limited costs). The Authority also must submit a second funding plan to the Director of Finance and the Joint Legislative Budget Committee that covers topics and project items similar to those in the first report plus any material changes in that report's information since its submittal. In addition, the Authority must provide a report by an independent firm or firms verifying that the project can be constructed as proposed. Only after the Director of Finance finds that the plan is likely to be successful can the Authority commit funds for construction and real property and equipment acquisition (subject to an exception for certain limited costs).
Finally, the Authority must inform the governor and the Legislature of any material changes in the plan that would jeopardize its success.

Budgetary Oversight

Oversight of the Authority and the high-speed train project extends to the annual state budget process and involves a collection of control entities, including the Department of Finance (DOF), Governor's Office, Legislative Analyst's Office (LAO) and the Budget Committees of the Legislature.

Like other state agencies, the Authority annually must prepare a proposed budget for the next fiscal year, accompanied by a program of work activities for review and approval by the DOF and inclusion in the January governor's proposed budget. The budget's release is followed by the preparation and publication of the LAO's analysis and recommendations on the Authority's proposed expenditures and work programs. Subsequently, the respective budget subcommittees of the two houses conduct hearings on the budget and the LAO's recommendations before taking action on an appropriation amount and potential controls on the expenditure of the budget funds. These actions may be repeated in some measure after the release of the governor's May Revise of the original budget proposal.

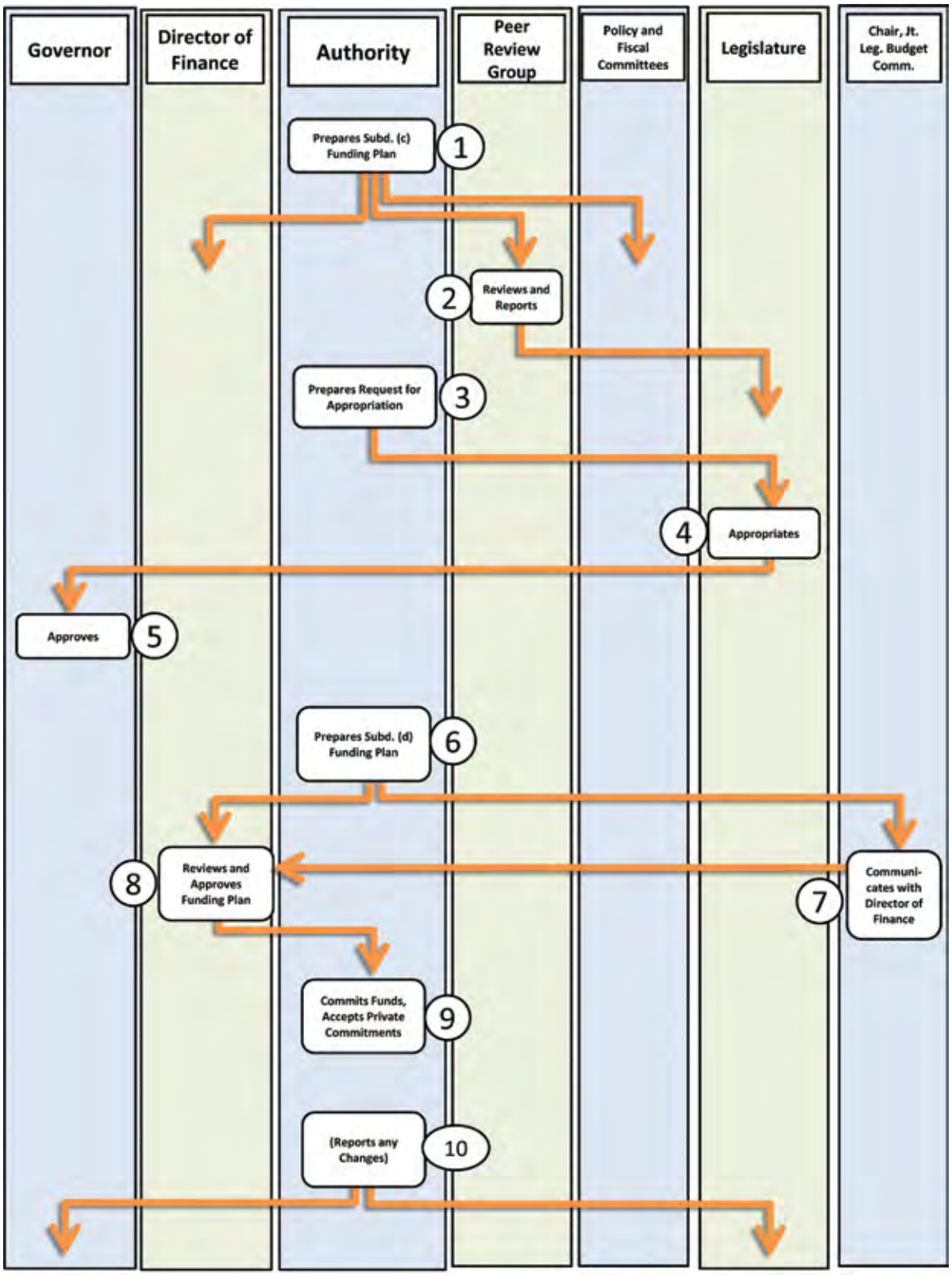
The Legislature exercises further collective oversight of the Authority's finances through the Budget Conference Committee which considers and resolves any differences in the two houses' recommended budget actions. The conference body produces a final budget that in turn must be approved by both houses of the Legislature and ultimately be submitted to the governor for final review and approval, including possible reductions in the Authority's individual appropriation.

Legislative Policy and Fiscal Oversight

The Authority is also subject to review by the standing policy and fiscal committees of the Legislature which exercise their own oversight and assessment of the Authority's operations. Informational and oversight hearings of the transportation policy committees, especially, provide forums for focused and in-depth supervision of the high-speed train project's progress.

There are special select committees on transit and rail that conduct their own meetings and inquiries and the operations of the Joint Legislative Audit Committee that also serve to monitor the progress of the state's high-speed rail development. In addition to such examinations, the several committees regularly request and are provided specific information or responses to written and verbal inquiries about the Authority's operations and project activities.

FUNDING PLAN REVIEW AND APPROVAL PROCESS



FUNDING PLAN REVIEW AND APPROVAL PROCESS

The Peer Review Group, described in Public Utilities Code section 185035, reviews the corridor funding plans which the Authority must prepare and that must be submitted to the Peer Review Group at least 90 days before the Authority makes its initial request for an appropriation of bond proceeds. (Sts. & Hwys C. sec. 2704.08, subd. (c).) However, the Authority must prepare a second corridor funding plan, which must then be approved by the Director of Finance, prior to committing the bond proceeds. (Sts. & Hwys C. sec. 2704.08, subd. (d).)

The attached chart is based on (1) provisions contained in the above-cited sections, (2) inferences drawn from those provisions, and (3) other provisions of law governing the appropriation process.

1. The Authority must submit its first funding plan for a corridor or usable segment thereof (the "subdivision (c) funding plan") to the Peer Review Group, to the Director of Finance, and to the Policy and Fiscal Committees at least 90 days before the Authority submits its initial request for an appropriation. (Sts & Hwys C. section 2704.08, subd. (c)(1).)

2. "The peer review group shall evaluate the authority's funding plans and prepare its independent judgment as to the feasibility and reasonableness of the plans, appropriateness of assumptions, analyses, and estimates, and any other observations or evaluations it deems necessary." (Public Utilities C. section 185035, subd. (c).) "The peer review group shall report its findings and conclusions to the Legislature no later than 60 days after receiving the plans." (Public Utilities C. section 185035, subd. (e).)

3. The Authority submits an initial request for appropriation to the Legislature and to the Governor at least 90 days after the subdivision (c) corridor plan is submitted. (Sts & Hwys C. section 2704.08, subd. (c)(1).)

4. By operation of law, the Legislature appropriates the requested bond proceeds (or chooses not to do so).

5. By operation of law, the Governor approves the appropriation (or chooses not to do so).

6. Even after the bond proceeds have been appropriated, the Authority cannot commit the funds, nor can it accept commitments from private parties. Instead, it must first prepare another corridor funding plan (the "subdivision (d) funding plan") which it submits to the Chairperson of the Joint Legislative Budget Committee and to the Director of Finance. The plan is accompanied by reports, "prepared by one or more financial services firms, financial consulting firms, or other consultants," concerning the viability of the plan. (Sts & Hwys C. section 2704.08, subd. (d).) These firms or consultants must be "independent of any parties, other than the authority, involved in funding or constructing the high-speed train system." (Ibid.)

7. The Joint Legislative Budget Committee can communicate with the Director of Finance if it chooses to do so. (Sts & Hwys C. section 2704.08, subd. (d).)

8. The Director of Finance reviews the subdivision (d) funding plan within 60 days after it is submitted, considers any communications received from the Joint Legislative Budget Committee, and determines whether "the plan is likely to be successfully implemented as proposed." (Sts & Hwys C. section 2704.08, subd. (d).)

9. If the Director determines that "the plan is likely to be successfully implemented as proposed," the Authority may commit bond proceeds and accept offered commitments from private parties. (Sts & Hwys C. section 2704.08, subd. (d).)

10. "Subsequent to approval of the detailed funding plan required under subdivision (d), the authority shall promptly inform the Governor and the Legislature of any material changes in plans or project conditions that would jeopardize completion of the corridor as previously planned and shall identify means of remedying the conditions to allow completion and operation of the corridor." (Sts & Hwys C. section 2704.08, subd. (e).)

Note: The above-described process does not apply to up to 7.5% of bond proceeds used for certain specified purposes. See Sts & Hwys C. sec. 2704.08, subdivision (g).

Finally, the policy and fiscal committees provide review and oversight during hearings on individual legislative measures when such bills come before the committees for consideration and action.

Control Agency Review

The Authority's operations and project work are conducted under the usual supervision of a number of state control agencies, the same regulation and administration as that for other state departments and entities. In addition to the budget-approval and monitoring role of the Department of Finance, the Authority must adhere to the various legal procedures and requirements administered by the Department of General Services (contracts), State Treasurer's Office (bond requirements), Department of Transportation (personnel), State Controller's Office (claims and payments), and so on. The Attorney General provides legal oversight and counsel on myriad Authority matters and activities and as previously mentioned, the State Auditor provides formal audit supervision and review as approved through the Joint Legislative Audit Committee.

Peer Review

AB 3034 created an eight-member independent peer review group to review the planning, engineering financing and other elements of the Authority's plans, and will provide the Legislature with an analysis of the appropriateness and accuracy of the project's assumptions and the plan's viability. The Treasurer, Controller, Director of Finance, Secretary of Business, Transportation and Housing are responsible for designating specified members of the peer review group according to the expertise and experience requirements in AB 3034 Other peer review arises from the exchange of information and consultation with the Authority's numerous international partners under memoranda of understanding with other countries' federal transportation, and rail (including high-speed train) ministries, as well as those for development, energy, ecology, and infrastructure, etc. The agencies, and private rail-related companies associated with the various government entities, provide a steady stream of evaluation and expertise to the Authority staff and the board members to foster and facilitate the successful development of the California high-speed train project.

Ongoing/Future Reporting Requirements – SB 783

The Authority and the high-speed train project will continue reporting to the Legislature as a result of the enactment of Senate Bill 783 (Ashburn, 2009). SB 783 requires the Authority to prepare, publish, adopt and submit to the Legislature after public hearings, additional business plans beginning January 1, 2012 and every two years thereafter. Like the current plan, the future reports will address the finances, patronage, right-of-way acquisition, environmental clearances, construction, equipment, operations and a host of additional subjects that comprise the project and its implementation.

At present time, only three slots on the eight-member review group are filled. Those members are John Chalker, Founder of LM Capital Group, LLC; Lou Thompson, Principal of Thompson, Galenson & Associates, LLC; and Will Kempton, CEO of the Orange County Transportation Authority.

Program Management Oversight and Local Agreements

The Authority is committed to further professional and expert oversight through the retention of an independent program management oversight (PMO) team. The PMO reports directly to the Authority and is responsible for monitoring and reviewing

the performance of the program manager (Parsons Brinckerhoff), determining the PM's compliance with the agreed project budget, services and schedule objectives and assessing the appropriateness of procedures and methods used to implement and complete the project.

The Authority also has a growing number of local cooperative agreements that provide a means to ensure the consideration and implementation of the best project alternatives in each community served by the high-speed train project. The agreements enunciate objectives, establish working groups, and enumerate tasks and responsibilities to share and coordinate the Authority's and local agencies' respective resources toward implementation of a phased joint program of high speed rail and commuter rail rapid transit services. The agreements serve to provide cooperation and coordination as well as adequate oversight and the effective use of available financial and personnel resources in each project area.

Recovery Act Oversight

Additionally, the awarding of American Recovery and Reinvestment Act (ARRA) funding triggers an extensive series of reporting and oversight requirements prescribed by the federal government. The Authority anticipates being awarded a portion of the $8 billion set aside within the ARRA for high-speed intercity rail. That will necessitate that the Authority submit detailed reports not just to the Federal Railroad Administration and the U.S. Department of Transportation, but also be subjected to oversight by the federal Government Accountability Office and congressional committees and subcommittees.

The California Governor's Office has established a Recovery Act Task Force, and the Authority would also have to report to that entity, with another vigilant layer of oversight in the Office of the Inspector General, a position created by Governor Schwarzenegger to watchdog stimulus funds in California and ensure they are spent appropriately.

Other steps will be taken to maintain transparency and offer opportunity for on-going oversight:

- Public meetings
- Weekly executive summaries
- Posting of materials/documents on Web site
- Consultation with legislative staff

Conclusion

This document serves as a snapshot in time of a dynamic project that will continue to evolve as it moves from one phase to the next. It shows that the state's high-speed train project is on track, and that it has gained additional momentum in recent months.

The Authority is committed to regularly updating this document to ensure legislators and the general public are informed about the progress and changes to the plan to design, build and operate a high-speed rail system in California.

Outside of this document, the Authority is committed to frequently updating the public and the Legislature on the project's progress, which it will do through a variety of means including regular email communication, its Web site, public meetings and more.

A high-speed rail system is needed in California. As Proposition 1A shows us, it is wanted in California. Examples from around the world tell us such a system is viable here. And building such a system will bring hundreds of thousands of jobs now, when our state and economy needs them most.

For additional updates and information on the California High-Speed Train Project, please visit the Authority's Web site at

www.cahighspeedrail.ca.gov

or contact the Authority at

California High-Speed Rail Authority

925 L Street, Suite 1425, Sacramento, CA 95814

or by telephone at (916) 324-1541.

AB 4x1 Checklist

Below is language directly from the Budget Act of 2009 and the corresponding language, elsewhere in this document, responding to the bill language.

Assembly Bill 1 from the 4th extraordinary session of the state Legislature, the Budget Act of 2009, requires that the Authority submit … ***a revised business plan to, and a 30-day review by, the Joint Legislative Budget Committee that, among other things, addresses, at a minimum:***

- ***a plan for a community outreach component to cities, towns, and neighborhoods affected by this project ,***

✔ "Between today and the commencement of construction, there will be ample and significant opportunities for public input and interaction. These opportunities are detailed in the section below."

(From Section "Outreach," Page 53)

✔ "Ogilvy Public Relations Worldwide was chosen in November as that new contractor, and is expected to begin work with the Authority in January 2010."

(From Section "Outreach," Page 54)

✔ "To achieve its outreach goals, the Authority employs a number of tools, outlined below."

(From Section "Outreach," Page 54)

✔ "Additionally, the Authority's program management team has committed to training its regional managers in Context Sensitive Solutions, an outreach tool being employed with the communities in the Bay Area's Peninsula that is a collaborative, interdisciplinary approach that ensures input from all stakeholders. By ensuring that the high-speed rail project's regional managers are trained in this collaborative public engagement mindset, the Authority believes outreach efforts will improve in quality."

(From Section "Outreach," Page 56)

- ***further system details, such as route selection and alternative alignment considerations ,***

✔ "The environmental process for each of the high-speed train project sections in both initial and subsequent phases has been initiated. The status of the work prepared for each section as of December 1, 2009, is shown in the exhibits below and summarized as follows."

(From Section "From Today to Passenger Service," Page 29)

- ***a thorough discussion describing the steps being pursued to secure financing ,***

✔ "New funding sources, specifically for high-speed rail, along with the expansion of existing transit programs, will need to be created in order to provide adequate support for the high-speed train. Project proponents argue that a focus on investing in America's overall transportation system, as opposed to individual modal investments, would encourage more efficient allocation of transportation dollars and likely increase the proportion of funding provided for rail projects. As mentioned above, short term funding for high-speed trains is anticipated through the annual transportation appropriations process as a new transportation authorization has yet to come to the floor. The surface transportation reauthorization provides the opportunity for the Authority and other states developing high-speed rail to seek a long-term dedicated funding source. In fact, the Authority has already begun to advocate for dedicated federal funding for high-speed trains, working with members of California's congressional delegation.

(From Section "Paying for the System," Page 97)

✔ "Expansion of existing federal funding programs, as well as significant new initiatives, will be required to support California's high-speed train at the levels assumed in this financing plan. Modification of existing federal financing terms and restrictions also would make the project more attractive to private investors, thereby facilitating achievement of the targeted private sector funding levels, as well."

(From Section "Paying for the System," Page 98)

✔ "The Authority plans to develop plans to solicit and develop a process for formalizing local support over the next several months."

(From Section "Paying for the System," Page 99)

✔ "One way for local governments to realize significant local revenues from real estate appreciation along the alignment is through Transit-Oriented Development (TOD). TOD would allow local governments to benefit from the development of high-speed trains with increased real estate tax revenues from increased density without burdening the balance sheets of local governments. The Financial Plan presumes that the Authority would work closely with each local agency to explore and adopt TOD agreements. … In addition to TOD, the implementation of publicly established benefit assessment districts and the Mello Roos districts near a transit or rail facility are alternative ways to raise development-related revenues that can be financed."

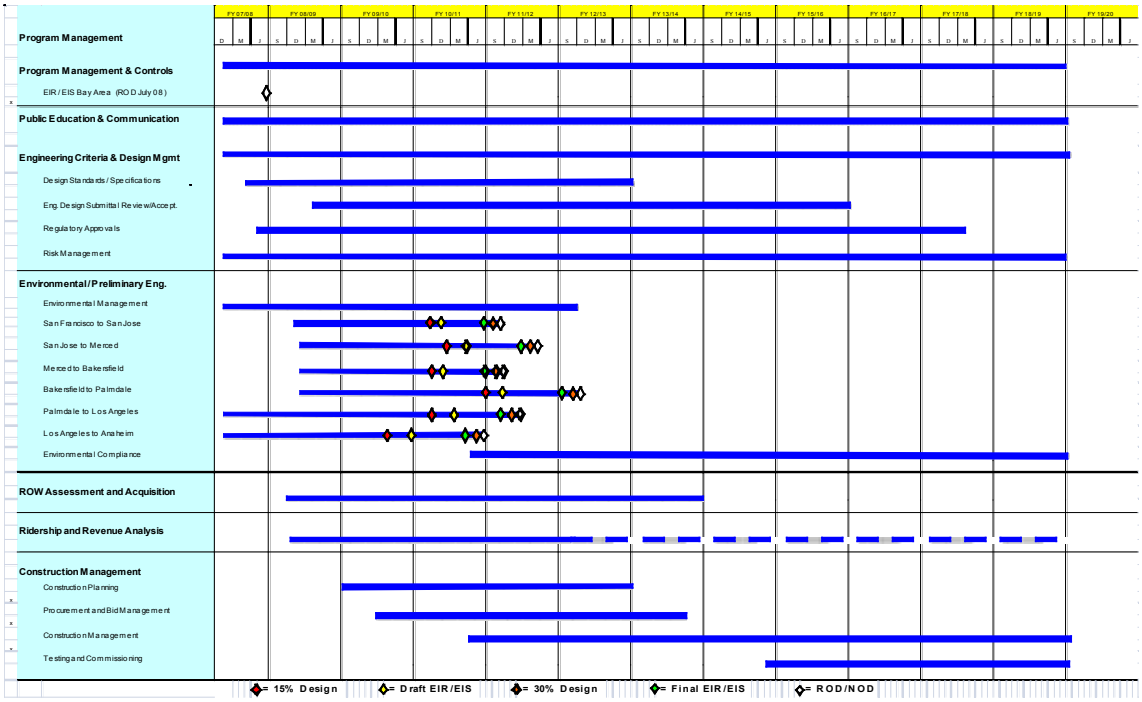
(From Section "Paying for the System," Page 99)

✔ "Commercial concessions at stations are important tools to realize additional locally generated revenues. These concessions include retail stores, advertising, parking, and other commercial revenues. The Financial Plan presumes that the Authority would work closely with appropriate local agencies to explore and adopt station commercial concessions before stations are built."

(From Section "Paying for the System," Page 100)

- ***a working timeline with specific, achievable milestones , and***

✔ **"San Francisco – Anaheim Master Summary Schedule – Program Management Activities**



(From Section "From Today to Passenger Service," Page 51)

- ***what strategies the authority would pursue to mitigate different risks and threats .***

✔ "A project of this size, scope and nature faces a number of risks that could jeopardize its completion. Any frank discussion of the project and its planning must include these risks, and any credible plan for the project must address how these risks would be mitigated. This section describes those risks in a frank manner and notes the manner in which the Authority plans to mitigate them. General categories of risk include funding, politics, litigation, federal regulations, construction, and acts of God."

(From Section "Risks and Mitigation," Page 119)

- ***The revised business plan shall also provide additional information related to: funding ,***

✔ "The following financial plan will outline each of the various funding sources with details on the Authority's financial assumptions. This includes $9 billion from state funds, available through the Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century, approved by California voters as Proposition 1A in 2008. The Authority is also seeking approximately $17-$19 billion in federal funding. Part of the overall federal input includes the American Recovery and Reinvestment Act (ARRA) based on the Authority's recently submitted an ARRA application totaling

$4.7 billion for four different construction sections and additional environmental and engineering funds. The Authority is targeting $4-$5 billion in local support and through such public-private partnerships (P3s) such as transit-oriented development, parking concessions and naming rights opportunities.

From Section "Paying for the System," Page 92)

✔ "As demonstrated in the previous section on ridership and revenue, the initial San Francisco-to-Anaheim portion of the project is expected to generate significant operating surpluses even after accounting for operations and maintenance costs and renewal and replacement reserves. This dedicated and significant revenue stream after full San Francisco-to-Anaheim operation begins will provide the Authority with an opportunity to seek innovative P3s to provide capital funding to help complete the system. The Authority is targeting $10-$12 billion in P3 funding."

(From Section "Paying for the System," Page 92)

- ***project development ,***

✔ "The environmental process for each of the high-speed train project sections in both initial and subsequent phases has been initiated. The status of the work prepared for each section as of December 1, 2009, is shown in the exhibits below and summarized as follows."

(From Section "From Today to Passenger Service," Page 29)

- ***schedule,***

✔ "The following Master Summary Schedule for the San Francisco to Anaheim portion of the CHSTP is split in two parts: program management activities and right-of-way acquisition and construction activities. Together they show major program management activities and currently projected timelines for the regional project-level environmental review/preliminary engineering, target NOD/ROD milestones, procurement activities, final design/construction durations, testing/acceptance, and pre-revenue operations leading to the start of initial revenue service in 2020."

(From Section "From Today to Passenger Service," Page 51)

- ***proposed levels of service,***

✔ "In order to prepare a ridership and revenue forecast, a schematic operations plan is needed, providing how often trains will run, which stations they will stop at, and how long they take between station stops. This is done both for the peak morning and afternoon travel times, and for an off-peak period for the remainder of the day. Table A shows the schematic operations plan developed from ongoing ridership and operations planning for the initial phase of service in the peak period southbound. The northbound service plan mirrors the southbound."

(From Section "Ridership, Revenue & Operations," Page 65)

- ***ridership,***

✔ "Riders and revenues are presented below for the year 2035, as well as for start-up in the year 2020."

(From Section "Ridership, Revenue & Operations," Page 65)

- ***capacity,***

✔ "This forecast and operating plan for an initial phase of service between Anaheim and San Francisco are based on using single-level trainsets either singly with 450-500 seats each or two sets coupled together with 900-1,000 seats. In the year 2035, 270 trains operate throughout the day, in a mix of express non-stop service and shorter-distance limited service."

(From Section "Ridership, Revenue & Operations," Page 65)

✔ "A total of 65 trainsets are needed to handle the service, before accounting for second sets, spare sets to provide service in case of mechanical problems, and out-of-service maintenance needs. The next step was to determine how many trains required the doubling of capacity by coupling a second trainset."

(From Section "Ridership, Revenue & Operations," Page 76)

- ***operational plans,***

✔ "This peak schematic pattern provides 57 trains in each direction in 6 hours, for an average of just under 10 trains per hour. The off-peak for the initial phase of service provides 71 trains in each direction over a 10-hour period, for an average of 7 trains an hour."

(From Section "Ridership, Revenue & Operations," Page 66)

✔ "The detailed operations plan incorporates the schematic operating pattern shown earlier for ridership forecasting. The types of trains in the pattern (express, local, limited stop) were arranged into a repeating hourly "clock-face" pattern to make the service more regular and predictable, and to reduce the number of different kinds of overtakings (i.e. express trains passing limited trains) that would be required. The minimum time between trains following each other past a given point was set at three minutes, based on the practical capacity of the signal and train control system. Overtakes were arranged at intermediate stations, with local stopping trains pulling off the main track to the platform, allowing the non-stop train to pass. Although stations stops were swapped among some of the local and limited stop trains to make the schedule work better, the service levels between station pairs were kept at the same level. Figure 3 shows a typical morning peak hour of the detailed operational timetable, running south from San Francisco Transbay and the spur from Merced joining the main line north of Fresno."

(From Section "Ridership, Revenue & Operations," Page 74)

✔ "Table H - Key operations parameters Initial Phase, 2035, HST fares 83% of air"

(From Section "Ridership, Revenue & Operations," Page 79)

✔ "Figure 8 - Operations cost by year – Initial Phase (2009$$)"

(From Section "Ridership, Revenue & Operations," Page 80)

✔ "Table I - Initial Phase Operating cost by category, 2035, HST fares 83 % of air"

(From Section "Ridership, Revenue & Operations," Page 81)

✔ "Table J - Initial Phase Operating Results, 83% of air fares, Year of Expenditure $$"
(From Section "Ridership, Revenue & Operations," Page 82)

- ***cost,***

✔ "The following section will for the first time describe the estimated cost of the project in year-of-expenditure (YOE) dollars, as was required in the application for American Recovery and Reinvestment Act funds, and as compares to the $9 billion in bond funds made available by the passage of Proposition 1A. This way of preparing the estimate provides a more credible view of the cost of the project in the year in which it is expected to be constructed, and the projected cash flow by year.

(From Section "Cost of the System," Page 84)

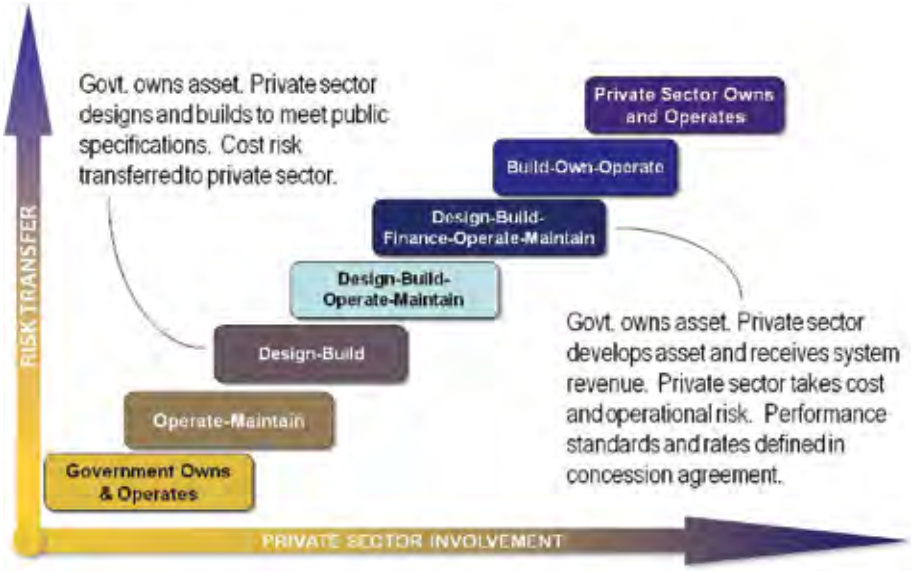
✔ "The updated cost estimate for the San Francisco-to-Anaheim initial high-speed rail system in current year dollars is $35.7 billion. This reflects inflation costs between 2008 and 2009, as well as section cost updates. Adjusting the project cost for YOE dollars brings an updated cost estimate of $42.6 billion. Almost 80 percent of that cost change is attributable to inflation. In other words, only about 20 percent of the estimated cost increase (about $2.3 billion) is due to real cost growth due to refinements in estimated unit costs and updated quantities attributable to updated section configurations and to other revisions described below."

(From Section "Cost of the System," Page 84)

- ***private investment strategies,***

✔ "One of the ways the Authority would like to leverage public funds for this project is through pursuing public-private partnerships. High-speed rail, unlike most transit services, is expected to generate significant operating surpluses. These operating surpluses are the basis for the Authority's plans to engage private sector support. Private funding through public-private partnership arrangements is an increasingly accepted method to support the development of infrastructure projects. Based on this premise, the Authority's Financial Plan is targeting $10 to $12 billion (in year of expenditure dollars) from potential private sources for the San Francisco-to-Anaheim segment. This investment is primarily backed by the high-speed rail's projected future operating surpluses as well as some type of revenue guarantee and is based on a level of risk and capital markets terms that the team believes are appropriate for this type of project. To gain a better understanding of private interest in the project, the Authority issued a Request for Expressions of Interest (RFEI) in the Spring of 2008. Since that time, the Authority has continued to reach out to private industry leaders with experience in High Speed Rail and other large infrastructure projects. Results of the RFEI have shown that private sector interest is strong and diverse; however, public support, both financial and political, is needed to generate private funding commitments."

(From Section "Paying for the System," Page 101)



(From Section "Paying for the System," Page 102)

"Over the past two years, the Authority has undertaken extensive work to gauge and encourage private sector interest in the High Speed Rail project. In March 2008, the Authority issued a Request for Expressions of Interest ("RFEI"). The purpose of the RFEI was to gain a better understanding of how the Project could benefit from private sector participation and to gauge the level of private interest in the Project. … Since the RFEI in 2008, the Authority has continued to reach out to the private sector to gauge interest in the project as well as seek guidance on technical and procurement issues. … The Authority is once again planning to consult the private sector as it moves forward with the beginnings of a procurement process in 2010."

(From Section "Economy/Climate Right Now," Page 111)

- ***staffing , and***

"To date, the California High-Speed Rail Authority has been a planning organization, staffed by a small number of state employees, relying largely on contract services, and governed by a nine-member board of directors. However, now the Authority must transform into an implementation entity responsible for what will be the largest public works infrastructure project in state history. This section describes the current organization and the steps necessary to grow it into a state entity overseeing construction of the state's high-speed train system."

(From Section "The High-Speed Rail Authority," Page 9)

- ***a history of expenditures and accomplishments to date .***

"Over the course of its 13-year history, the Authority's budget has varied and has come from a variety of funds, including those from regional partner transportation agencies. Below is a chart showing the Authority's funding since its inception, the sources of those funds, and the activities on which they were expended."

(From Section "The Project and Its History," Page 8)

- ✔ "The program-level EIR/EIS was certified in 2005."

  (From Section "The Project and Its History," Page 6)

- ✔ "An additional program-level EIR/EIS was certified in 2008 that examined the path between the Central Valley and the Bay Area."

  (From Section "The Project and Its History," Page 6)

- ✔ "San Francisco to San Jose Section: Scoping was initiated in December 2008. Three scoping meetings were held in San Mateo County, San Francisco, and Santa Clara County in January 2009."

  (From Section "From Today to Passenger Service," Page 30)

- ✔ "San Jose to Merced Section: Scoping was initiated in March 2009. Scoping meetings were held in San Jose, Merced, and Gilroy in March 2009."

  (From Section "From Today to Passenger Service," Page 32)

- ✔ "Scoping was initiated in February 2009. Scoping meetings were held in Merced, Madera, Fresno, Visalia, and Bakersfield in March 2009."

  (From Section "From Today to Passenger Service," Page 33)

- ✔ "Bakersfield to Palmdale Section: Scoping was initiated in September 2009. Scoping meetings were held in Bakersfield, Tehachapi, and Palmdale in September 2009."

  (From Section "From Today to Passenger Service," Page 35)

- ✔ "Palmdale to Los Angeles Section: Scoping was initiated in March 2007. Scoping meetings were held in Los Angeles, Glendale, Sylmar, and Palmdale in April 2007. Since then, significant engineering and environmental work has been accomplished, including the evaluation of access into and out of Los Angeles Union Station."

  (From Section "From Today to Passenger Service," Page 36)

- ✔ "Los Angeles to Anaheim Section: Scoping was initiated in March 2007. Three scoping meetings were held in Los Angeles, Norwalk, and Anaheim in April 2007. Working in cooperation with LA MTA, significant engineering and environmental work has been accomplished to identify and evaluate existing and future rail passenger and freight operations within the section, access into and out of Los Angeles Union Station (LAUS), design options for connecting with the planned Anaheim Regional Transportation Intermodal Center (ARTIC), a possible station in Fullerton, and alternative maintenance facility sites near LAUS and ARTIC. The AA process and the environmental technical reports have been completed."

  (From Section "From Today to Passenger Service," Page 37)

- ✔ "Los Angeles to San Diego Section: Scoping was initiated in October 2009. Scoping meetings were held in La Jolla, San Diego, Escondido, Murrieta, Corona, Riverside, Monterey Park, West Covina, El Monte, and Pomona in October 2009 and also Ontario and San Bernardino in November 2009."

  (From Section "From Today to Passenger Service," Page 39)

✔ "Altamont Corridor Rail Project: … Scoping was initiated in November 2009, with sessions held in Livermore, Stockton, Fremont, and San Jose."

(From Section "From Today to Passenger Service," Page 40)

- ***AB 4x1 also states: In developing this revised business plan, the authority shall: work in consultation with the appropriate legislative policy committees and the Legislative Analyst's Office to respond to specific aspects in the plan .***

✔ Before beginning to develop this business plan document, staff from the Authority started by meeting with legislative staff to seek input and ideas. Through September and October, the team met with:

- Staff of both Senate and Assembly Transportation Committees
- Staff of both Senate and Assembly Budget/Fiscal Committees
- Staff to key interested legislators and legislative leadership
- The Legislative Analyst's Office
- The Governor's Office

Using input from those meetings, the team assembled an outline, which was circulated to the legislative staff and Governor's Office for further input and comments. Staff of the Authority continued to have e-mail dialogue with a number of legislative staff to continue to refine and gather input on the document.

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