

Chapter 4

Business Model

Introduction

Implementing a transportation infrastructure project of the high-speed rail (HSR) system's scope and complexity requires a business model that is implemented over time, as organizational relationships mature, as funding options materialize and progress, and as the system develops. Overall, the goal of establishing a business model is to assign responsibilities to the appropriate entity that can carry them out most efficiently and effectively. There will be different models at different stages of program implementation; some responsibilities will shift, and some will remain constant. For example, governance—ownership, oversight, and policy-setting—remains a public-sector responsibility throughout the life of the program; operations will be a private-sector responsibility. Capital investment begins with the public sector and then becomes shared with the private sector.

This chapter identifies the overall business model on which the Revised 2012 Business Plan (Revised Plan) and current system development activities are founded. The business model describes the overall roles of the key participants in managing, funding, developing, and operating California's HSR program including the various ways the private sector will be involved in the project.

The State of California will have the lead role by providing oversight and management for the delivery and ongoing operations of the system. The Authority will partner with the private sector through competitive procurement for the delivery, operation, and maintenance of system infrastructure and the operation of train service. As the Initial Operating Section (IOS) of the system begins to generate cash flow, private-sector capital will become available to help build other portions of the system. Five fundamental assumptions drive the business model:

- The high-speed rail system will neither be entirely a public works project nor will it be a fully privatized system. It will be a partnership between the public sector (federal, state, and local) and the private sector. This is an internationally proven business model and is common to almost all recent high-speed rail projects in the world.
- The partnership between the public and private sectors will evolve as the system is developed, moving from service and construction contracts to complex concession agreements with underlying private capital investment.
- Competition in procurement is one of the strongest drivers of value and cost management available to the state. The financial scale of the HSR system requires a series of private-sector agreements at a reasonable financial scale promoting national and international competition.
- Consistent with federal requirements, the system and its key components will be built in the United States while leveraging international technology and experience. Employment and manufacturing will be focused in California and the U.S. Most of the employment created will be in California to

support construction of the system and long-term operations and maintenance activities. A 30-percent goal has been established for contracting with small and disadvantaged businesses.

- Similar to other large infrastructure projects involving many public entities, successfully establishing the required intergovernmental agreements will promote private-sector confidence that translates into additional value and reduced costs when the public sector subsequently negotiates private-sector agreements.

Recent international high-speed rail projects

Transactions closed:

- **2011 France:** Tours to Bordeaux—public/private partnership—infrastructure and operations
- **2010 Portugal:** Poceiroa-Caia—public/private partnership—infrastructure
- **2010 U.K.:** HS1 London to Channel Tunnel—sale of infrastructure concession

Placed into service:

- **2007-11 People's Republic of China:** multiple routes—public-sector development and operations with technology transfer agreements with trainset manufacturers
- **2010 France and Spain:** Perpignan-Figueras—public/private partnership—design-build-finance and maintain in contract for tolled tunnel
- **2009 Netherlands:** Amsterdam to Belgian Border—public/private partnership-infrastructure
- **2007 Taiwan:** Taipei to Tsoying—public/private partnership—infrastructure and operations

Systems in France, Spain, and The Netherlands attracted private investment once ridership was established or by using availability-based public-private partnership structures where the government retained portions of the revenue risk. Both Taiwan and HS1 had private capital investment prior to commencing revenue operations, and early results did not support the anticipated private-sector returns. As discussed in this section, the experience of other international high-speed rail projects was an important input to the business model and anticipated timing of private-sector investment.

Business model principles

The business model for delivery of HSR was designed around the following key principles:

- **Compliance with Proposition 1A**—Proposition 1A contains guidance on the roles of the public and private sectors for developing and operating the high-speed rail system.
- **Integrate into a statewide rail plan**—A key state and Authority goal is the HSR's integration within a larger statewide rail strategy. The system's development strategy incorporates blended usage of existing commuter rail networks in urban areas and the business model includes working arrangements and agreements with other state agencies, regional transportation authorities, existing

commuter rail systems, and other transit systems. It is anticipated that regional authorities will lead the development of improvements in existing commuter corridors.

- **Meet funding and financing needs**—The system’s funding and financing will include local, state, federal, and private sources that will become available at different times based on the development of the program. This business model reflects a variety of funding partners and their anticipated roles in its implementation.
- **Leverage international precedents and successes**—Successful high-speed rail systems around the world illustrate lessons learned and various options for public and private-sector roles. The Authority will rely on the private sector to construct, operate, and maintain infrastructure using models that have proven successful in other countries.
- **Align with market sounding and requests for expressions of interest**—As previously noted, to understand the private sector’s specific interest in this program, the Authority issued a Request for Expressions of Interest (RFEI) and received more than 1,100 responses. The responses identified the capability and interest of private entities related to development, financing, operations, project scale, risk appetite, and other factors. Following up on recent questions posed by stakeholders, the Authority reevaluated private-sector interest in early 2012 by interviewing a number of the respondents that indicated interest in investing in the project and through one-on-one interviews with firms that responded to the Request for Qualifications for the first construction package. Responses from the RFEI and recent discussions with interested companies confirmed the private sector’s interest in the project and the conditions and timing required to attract significant private-sector investment.

Business model summary

California’s program requires the combined capabilities of the public and private sectors. All high-speed rail projects in the world, including those in the People’s Republic of China, have leveraged private-sector expertise. The significant scale of these projects, combined with the technical complexity of signaling, safety, and other systems and rolling stock requirements, requires experienced private-sector organizations even in countries with significant experience implementing high-speed rail. This business model leverages these experiences.

A key consideration in the private-sector’s role is at what point the state should anticipate that private-sector parties will have the capability and interest to invest capital in the project based on potential cash flows and without additional state guarantees. Based on stakeholder questions related to the timing of private-sector investment, the Authority contacted a range of investors and firms that had responded to the RFEI to confirm investment timing and interest. The magnitude of construction, risks related to completion, and the unknowns surrounding actual levels of revenue were identified by investors as reasons why significant early investment in construction of the system should not be anticipated from the private sector. There was agreement that, absent state guarantees, there would be little private capital available to invest into the project until after completion of the IOS and a positive cash flow is

demonstrated. There was also agreement that once these conditions were met, substantial private-sector investment interest could be expected consistent with other systems in the world.

Given these precedents, the Authority's long-term business model is founded on a strong public-private partnership relying on the private sector to design, build, operate, and maintain a high-speed rail system that is funded by a combination of government investments and future revenues that support the investments of capital from the private sector. Elements of cost, schedule, and delivery risk are transferred to the private sector immediately beginning with design and construction, and the transfer of risk increases as the system is developed and opened to incorporate operating performance and profit and loss. The Authority will continue to assess private capital markets, as market conditions, financing tools, and expectations change over time.

Successful international projects have had a strong government partner that has both governed and helped fund the project. Projects in Taiwan, the U.K., and most recently Brazil have demonstrated that a fully private-sector solution, where the project or its investors are responsible from the outset for construction risks, operation, ridership, and funding, have not been financially successful.

Taiwan transferred development, finance, and operating responsibility to the private sector. The system generated operating profits but capital depreciation and interest costs created losses for the private sector from 2007 until 2011.

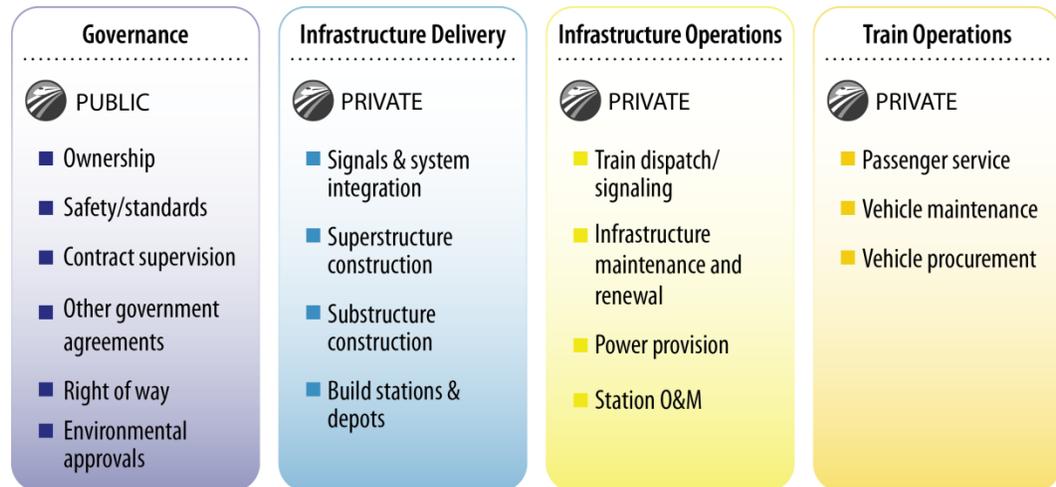
The U.K. transferred development, finance, and maintenance responsibility for HS1 to the private sector in 1996. The U.K. government took back control of the operating system in 2009 due to insolvency. Subsequently, the government successfully sold an operating concession for HS1 to the private sector in 2010.

In 2011, Brazil attempted to transfer development, operating, and substantial financing responsibility to the private sector for a new 300-mile high-speed rail link from Rio de Janeiro to Sao Paulo. No bids were received due to the level of risks the government sought to transfer.

Public- and private-sector roles

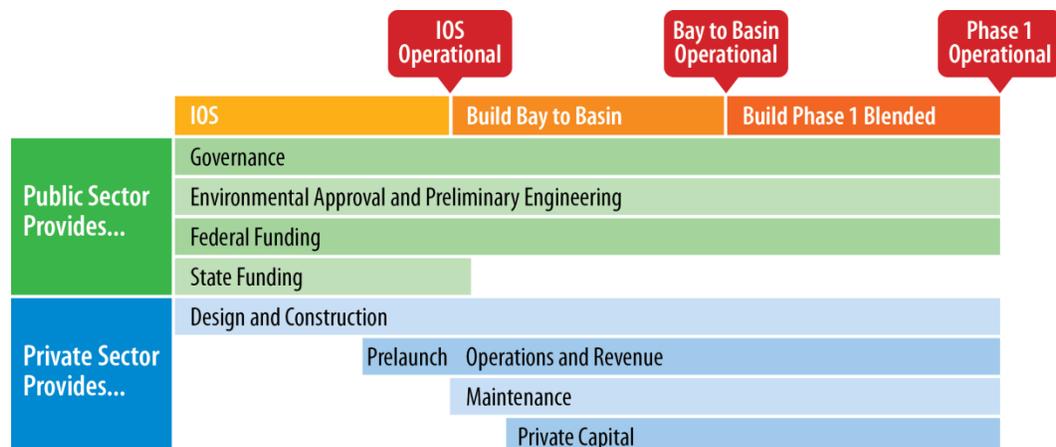
High-speed rail systems include four principal roles that are organized in different combinations around the world (Exhibit 4-1). These four roles form the foundation of the California high-speed rail business model.

Exhibit 4-1. High-speed rail organizational model



As stated earlier, the Authority will rely on the private sector for infrastructure delivery (e.g., construction, systems etc.), infrastructure operations, and train operations. The business structures under which these services will be provided will be implemented over time as the project moves from its early stages (construction of the IOS) to more advanced stages (rail operations and system maintenance). The underlying financial model will also be implemented over time as development risks are reduced and public funds can be augmented with private capital. Exhibit 4-2 illustrates the roles of the public and private sector as the program is implemented.

Exhibit 4-2. Public and private sector roles for program development



The state will have the lead organizational role, retaining ownership and governance functions. A number of other government organizations, including the federal government, local governments, and others, will provide funding, assistance, assets, and other support. Regional authorities will continue to be responsible for commuter rail systems used by high-speed operators. A series of agreements are required to align the various public participants in a manner that allows efficient development and operation by the private sector.

As described further in Chapter 7, Financial Analysis and Funding, construction of the IOS will be government funded through federal funds, state funds, and local funds. Once the IOS is complete and revenue operations commence, the Authority plans to use the project's cash flows to attract private-sector capital to assist with further construction.

The major delivery elements of the system will be performed by the private sector under contracts and/or concession agreements with the Authority. The Authority plans to contract with the private sector for infrastructure delivery, infrastructure operations and maintenance, rolling stock, and train operations under long-term concession agreements and other contracts with appropriate transfer of risks and financial responsibilities.

As described in Chapter 2, The Implementation Strategy: Blending, Phasing, Investing in Early Benefits, the IOS will be developed before the Authority initiates high-speed passenger service. In the initial years

A concession agreement is a mutually beneficial arrangement between a government entity and a private-sector company, or joint venture. The private entity enters into an agreement with the government for the right to perform a variety of services which can include designing, constructing, operating, maintaining, and/or financing a specific piece of public infrastructure for a given number of years.

of construction, the private sector will be retained under design-build contracts to build portions of the IOS with elements of cost overrun and other risks transferred to the private sector. As portions of the track are completed, they will be made available to existing passenger rail carriers for use under operating agreements that include fees for track usage and maintenance.

As the IOS is moving toward completion, the Authority will procure infrastructure operations and maintenance and a high-speed train operator to launch and operate the high-speed rail service. The role of the operator pre-launch will include activities to create a strong sense of anticipation and demand for the high-speed rail service. These initial operating contracts will be structured to support the Authority's plan for granting a long-term operating concession after the IOS is in operation and

early ridership is proven. The long-term operating concession will include up-front concession payments to the state and be timed to create a competitive environment that captures good value for the state.

Governance and management capacity

Under the business model, the Authority will have the lead governance role and will have overall responsibility for delivering the program and its operation. The business model recognizes that the HSR program has a large number of public stakeholders and, as discussed further below, proposes to leverage the private sector's expertise in building and operations. This will require an inter-related set of

complex contracts and other agreements that must be developed, procured, negotiated, and managed within a strategic framework for a long-term, financially successful program. While many elements of the state and federal government will have roles in program governance, it is critical for the Authority to continue to develop and obtain resources to provide the management and support structure to support a multi-billion program development and operating program.

Currently the Authority has approximately 54 state staff positions, although a number remain vacant. Completing the Authority's organizational development is a key requirement of the business model and one of the risks identified in Chapter 8, Risk Identification and Mitigation.

The Authority is actively seeking to hire additional resources with experience with high-speed rail systems and to transfer state staff with key development experience. Given the size and scale of the phased projects, the Authority will interact daily with senior leaders of private and public-sector agencies having significant high-speed rail experience. It is critical that the state retain the level of expertise within state service that allows it to plan, assess, negotiate with, and manage organizations with decades of high-speed rail experience.

Public-sector partners

In addition to the Authority's role in providing program governance, a wide range of other public-sector entities also has a role in the program's development, such as the following:

- **Other California state agencies, including the California Department of Transportation, the Department of Finance, the State Treasurer's Office, and others**—The Authority is part of the State of California and will partner with a number of other state agencies to meet state transportation and environmental program goals and implement the program successfully. The Authority will work closely with Caltrans, which manages existing intercity rail routes that will connect with HSR.
- **U. S. Federal Railroad Administration and Department of Transportation**—The Federal Railroad Administration (FRA) is a key partner for funding and approvals. The Authority will continue to work closely with FRA in relation to safety and other development standards, environmental clearances, key statutory and regulatory provisions, required systems testing, funding programs, federal financing programs, and other support.
- **Regional transportation agencies**—The various regional transportation agencies (RTA) that connect with portions of the system are active program participants. In many cases, for example in Los Angeles, Orange County, and San Francisco, RTAs have development projects underway for multi-modal stations that can incorporate high-speed rail service. Based on asset ownership structures, joint-operating agreements for high-speed rail service to these multimodal assets will be developed, as required. These agreements also can address topics such as joint funding, cost sharing, right-of-way, and related opportunities to accelerate HSR and support related RTA projects.
- **Regional commuter rail systems**—The high-speed rail system will be integrated with existing commuter rail systems in urban areas (see Chapter 2, The Implementation Strategy: Blending, Phasing, Investing in Early Benefits). The Authority will work with local authorities to develop

operating plans and supporting agreements to define the inter-relationships between existing and new rail systems and how they integrate into a larger statewide rail strategy.

- **Cities**—The various cities with proposed stations will also be important partners in the program. Decisions related to transit-oriented development, joint funding, cost sharing, and related opportunities to accelerate the development of high-speed rail will be documented over time in additional memoranda of understanding and joint-operating agreements.
- **International governments**—Among the key partners in the planning of California’s high-speed rail program are various international governments with successful high-speed rail programs. The Authority has existing agreements with nine international agencies with high-speed rail programs. The Authority will continue these relationships and, over time, become an exporter of knowledge related to California’s successful program.

The working model for agreements between government participants is well defined and includes memoranda of understanding, operating agreements, and grant funding agreements. These processes and agreements are not further described in this Revised Plan; however, they remain key activities in the program’s development and are included in the program’s work plan.

California High-Speed Rail Authority International MOUs and Cooperation Agreements

- UK Trade and Investment, United Kingdom, MOU on Cooperation, dated May 17, 2011
- Belgian Federal Public Service Foreign Affairs, Foreign Trade and Development Cooperation, Kingdom of Belgium, Cooperation Agreement, dated July 7, 2010
- French Ministry for Ecology, Energy, Sustainable Development, French Republic, Cooperation Agreement, dated August 28, 2009
- The Federal Ministry of Transport, Building, and Urban Affairs, Federal Republic of Germany, Memorandum of Understanding, dated March 9, 2010
- Ministry of Land, Transport and Maritime Affairs, Republic of Korea, Memorandum of Understanding, dated February 11, 2010
- Ministry of Railways of the People’s Republic of China, Memorandum of Understanding, dated December 3, 2009
- Ministry of Land, Infrastructure and Transport of Japan, Memorandum Concerning Cooperation, dated September 28, 2009
- Italian Ministry of Infrastructures and Transportation, Italy, Cooperation Agreement, dated September 3, 2009
- Spanish Ministry of Development, Spain, Cooperation Agreement, dated July 31, 2003

Private-sector expertise

The Authority has used the planning services of the international organizations described above in developing and reviewing design elements, costs, and other portions of the system. It is recognized that early involvement of potential operators could help identify options that could improve service and revenue potential. The Authority has developed an agreement with the International Union of Railways, the international organization of high-speed rail developers and operators, to provide assistance in the form of peer review. This will allow structured international review and input without a specific focus on one type of system or technology until such technical decisions are made in conjunction with competitive procurements by the state. Given the potential conflicts of relying on one potential operator for advice during early planning, the Authority does not believe that the role of operating advisor should be exclusive to a single operating company at this early point in the project. However, the Authority does recognize the importance of the operator being appointed well in advance of the launch of high-speed operations to assist in both technical decisions and in building market awareness and demand prior to operations as described later in this section.

Small and disadvantaged business goals

A key element of the Authority's strategy is local job creation, which encourages the support of small and disadvantaged businesses. The Authority understands the importance of diversity and its benefits to the California economy. To further this initiative, the Authority signed an assurance to comply with best practices of the U.S. Department of Transportation Disadvantaged Business Enterprise (DBE) Program and the Civil Rights Act, as well as establishing a Small and Disadvantaged Business Program. Additionally, in November 2011, the Authority created and subsequently adopted a policy to diversify the types of firms involved in developing the high-speed rail system. The policy aims to provide work to small and disadvantaged businesses in the amount of at least 30 percent of the total price for a given contract. Qualified firms in any combination and at any tier level who are certified as Small Businesses (SB) inclusive of DBEs, Disabled Veteran Business Enterprises (DVBES), and Microbusinesses (MBs) will be encouraged to participate.

Planned approach by phase

Initial Operating Section

The IOS will be developed as follows:

- Construction and electrification, control systems, and other infrastructure will be implemented by the private sector under fixed-cost contracts that transfer design-build completion risk to an appropriate extent. The scale of the IOS is too large for a single competitive construction contract and will therefore encompass multiple design-build and other contract packages.
- The management and maintenance of systems and other infrastructure to support high-speed operations will be retained under one or more long-term infrastructure maintenance and management contract(s). The Authority will seek to use availability-based contracts that will be paid for from track access fees paid by operators (as described below).

- A private-sector train operator will be selected to initiate early passenger service on a contract basis. The operator will have input on the optimal service specification, marketing, the vehicles, and final station designs and will be selected two to three years prior to completion of the IOS. This contract will be structured to allow the Authority to move operations to a concession structure once early ridership has been proven and significant private-sector interest is available to allow the state to capture strong up-front value. Under the planned concession approach, the operator will pay an up-front concession fee for the rights to operate the service and collect revenues. Consistent with other international high-speed rail systems, the operator will also pay track access fees for use of the infrastructure. For planning purposes, costs for the rolling stock are included in capital cost estimates, although lease-based financing and service contracts are common structures in other high-speed rail systems and will be considered when equipment decisions are made.

The first construction segments for the IOS will be procured under design-build contracts and potentially several small advance works design-bid-build contracts. The use of design-build to provide high-speed rail infrastructure is a common contract delivery method across Europe, in particular dating back to the origination of the networks in France, Germany, and the completion of the Channel Tunnel Rail Link in the U.K.

Early use of the IOS as described in Chapter 2, *The Implementation Strategy: Blending, Phasing, Investing in Early Benefits*, will be based on contracts that include usage fees and maintenance payments to cover costs. Maintenance services will be provided under contract and aligned with usage and fees collected.

Based on discussions with private-sector investors described earlier in this chapter, construction of the IOS will require state and federal funding until the section is completed. Once operations commence, the IOS will not require a state subsidy as operating costs are covered by operating revenues, as further described in Chapter 7, *Financial Analysis and Funding*. A well-established train operator market exists in Europe and includes SNCF, Deutsche Bahn, Virgin Rail, and others. The growing international passenger train market provides a strong base of experienced operators to drive competition and value for the state.

Future phases—Bay to Basin/Phase 1 Blended

As with the IOS, the Bay-to-Basin phase consists of the development of additional track and systems through a mountain range. The Bay to Basin addresses three travel markets: the San Francisco Bay Area to the Los Angeles Basin; the San Francisco Bay Area to the Central Valley; and the Los Angeles Basin to the Central Valley. As a result, it has much stronger ridership than the IOS, as discussed in Chapter 5, *Ridership and Revenue*.

Value from ridership revenue

Ridership and financial projections illustrate that IOS revenues cover operating costs. In addition, there is an increase in the system's financial performance when the San Francisco Bay Area is connected with the Los Angeles Basin. As identified in Chapter 7, *Financial Analysis and Funding*, revenues begin to support funding of capital costs (in addition to covering operating costs). While these revenues will not completely cover all future capital costs for build-out of the remainder of Phase 1 and Phase 2, they can

be an important contributor. This project-based financing opportunity provides for additional flexibility in procurement models.

As further described in Chapter 7, Financial Analysis and Funding, significant private-sector financial interest is expected upon completion of the IOS, and proving early ridership and project revenues are expected to assist in funding portions of the construction of the Bay to Basin, Phase 1, and Phase 2.

Train and equipment operations

As the system is extended, additional or extended concession agreements will be required for equipment operations and maintenance, as well as for train operations. With each extension, the value of the system to the state will be enhanced. Each new or extended concession will provide an additional opportunity for the state to negotiate increased concession-based payments that can be applied to capital needs or other purposes. Through a gain/share requirement, the Authority will ensure that there is no loss of future value from the network through upside revenue sharing mechanisms within any concession-based agreement.

Consideration will be given to the fact that an operator for the IOS will likely already have been selected and therefore the role to operate the Bay to Basin could either be an extension of the IOS blended operations role or a competition for a new operator. This will require sufficient flexibility in the initial train operating contract for the IOS prior to completing the Bay to Basin.

Conclusion

As has been discussed in previous chapters, California's HSR program will be implemented in stages, based in part on how and when funding becomes available. The timing and structure of private participation will evolve with the phasing plan, all under the governance of the state. The earliest section, which is well into design and for which funding is identified, has a well-defined procurement plan. As the project progresses over time, procurement flexibility will be retained within the business model. Planned approaches for each phase are as follows:

- **Initial Operating Section**—This is the first section for high-speed rail operations. Construction will use design-build approaches, and infrastructure management and maintenance will be performed under contract. Operations will be provided under a concession agreement.
- **Bay to Basin/Phase 1 Blended**—The system development will be mature enough to support greater private-sector participation in operations and maintenance and various forms of private finance. The Bay to Basin and future sections will follow a course similar to the IOS, although the additional flexibility of revenues to support project-based financing allows other public-private partnership structures to also be considered as procurement options.
- The completion of the system through Phase 2 will leverage similar approaches.

