CALIFORNIA High-Speed Rail Authority

2026 DRAFT BUSINESS PLAN

Transforming California's Future

CALIFORNIA
High-Speed Rail Authority

Photo: Crews prepare streetlight infrastructure at the Cesar Chavez Underpass in Fresno.

Cover: The Hanford Viaduct in Kings County will allow high-speed trains to cross over Grangeville Boulevard, San Joaquin Valley Railroad, and State Route 198.

Table of Contents

STATUTORY REQUIREMENTS

The following tables provide a list of requirements for the California High-Speed Rail Authority's (Authority) Business Plan. The Authority has provided page numbers identifying the locations in the Business Plan where the statutory requirements have been satisfied. A legal memo from the Authority's Acting Assistant Chief Counsel is contained in **Appendix A.**

Public Utilities Code Section 185033 Requirements	Response to Requirements and Location	Page(s)
The Authority shall prepare, publish, adopt, and submit to the Legislature, not later than May 1, 2014, and every two years thereafter, a business plan.	This is the Draft 2026 Business Plan.	
At least 60 days prior to the publication of the plan, the Authority shall publish a draft business plan for public review and comment.	Public comment period began February 28, 2026.	
The draft plan shall also be submitted to the Senate Committee on Transportation and Housing, the Assembly Committee on Transportation, the Senate Committee on Budget and Fiscal Review, and the Assembly Committee on Budget.	This Draft 2026 Business Plan was submitted to these committees on February 28, 2026.	
A description of the type of service the Authority is developing.	Chapter 2: Development of the System: Construction, Operation, and Service	Pages 11 to 21
The proposed chronology for the construction of the statewide high-speed rail system.	Appendix D: Project Schedules	Pages 63 to 69
The estimated capital costs for each segment or combination of segments of the high-speed rail system.	Chapter 2: Development of the System: Construction, Operation, and Service Appendix B: Forecasts and Estimates	Pages 12, 15, 18, 10 and 42 to 45

Public Utilities Code Section 185033 Requirements	Response to Requirements and Location	Page(s)
A forecast of the expected patronage, service levels, and operating and maintenance costs for the Phase 1 corridor as identified in paragraph (2) of subdivision (b) of Section 2704.04 of the Streets and Highways Code and by each segment or combination of segments for which a project level environmental analysis is being prepared for Phase 1. The forecast shall assume a high, medium, and low level of patronage and a realistic operating planning scenario for each level of service.	Chapter 2: Development of the System: Construction, Operation, and Service Appendix B: Forecasts and Estimates	Pages 11 to 20 and 46 to 47
Alternative financial scenarios for different levels of service, based on the patronage forecast in subparagraph (B), and the operating break-even points for each alternative. Each scenario shall assume the terms of subparagraph (J) of paragraph (2) of subdivision (c) of Section 2704.08 of the Streets and Highways Code.	Chapter 2: Development of the System: Construction, Operation, and Service Appendix B: Forecast and Estimates	Pages 11 to 20, 50
The expected schedule for completing environmental review and initiating and completing construction for each segment or combination of segments of Phase 1.	Letter from the CEO Appendix D: Project Schedules	Page XV, 63 to 69
An estimate and description of the total anticipated federal, state, local, and other funds the authority intends to access to fund the construction and operation of the system, and the level of confidence for obtaining each type of funding.	Chapter 3: Funding to Deliver California High-Speed Rail	Pages 25 to 27 and 31 to 33

Public Utilities Code Section 185033 Requirements	Response to Requirements and Location	Page(s)
Any written agreements with public or private entities to fund components of the high-speed rail system, including stations and terminals, and any impediments to the completion of the system.	Chapter 2: Development of the System: Construction, Operation, and Service Chapter 3: Funding to Deliver California High-Speed Rail	Pages 12, 17 and 28
Alternative public-private development strategies for the implementation of Phase 1.	Letter from the CEO Chapter 1: Corridor of Opportunity Chapter 3: Funding to Deliver California High-Speed Rail	Pages XIV, 1 to 8 and 32
A discussion of all reasonably foreseeable risks the project may encounter, including, but not limited to, risks associated with the project's finances, patronage, right-of-way acquisition, environmental clearances, construction, equipment, and technology, and other risks associated with the project's development. The plan shall describe the authority's strategies, processes, or other actions it intends to utilize to manage those risks.	Appendix C: Risk Register and Mitigation Framework	Pages 50 to 62

SB 198 (Chapter 71, Statutes of 2022) Statutory Requirements (Delivery Schedules)	Response to Requirements and Location	Page(s)
Completion of the 119-mile dual track segment from Madera to Poplar Avenue, which means Avenue 19 in Madera County to one mile north of the Tulare-Kern County line southward to north of Bakersfield, currently near Poplar Avenue.	Appendix D: Project Schedules	Pages 64 to 65
Completion of right-of-way, planning, and advance engineering for extensions to Merced and Bakersfield.	Appendix D: Project Schedules	Pages 64 to 65

SB 198 (Chapter 71, Statutes of 2022) Statutory Requirements (Delivery Schedules)	Response to Requirements and Location	Page(s)
Completion of an agreement or agreements between the state, the San Joaquin Joint Powers Authority, the San Joaquin Regional Rail Commission, and the Authority that details the role of each in planning, constructing, and funding the connection in the City of Merced.	Chapter 2: Development of the System: Construction, Operation, and Service	Pages 12 and 17
Completion of an agreement or agreements between the state, the San Joaquin Joint Powers Authority, the San Joaquin Regional Rail Commission, and the Authority covering the planning, funding, and operation of the proposed high-speed rail services from Merced to Bakersfield and the Authority and approval for the San Joaquin Joint Powers Authority to contract for the operation of the high-speed rail services.	Chapter 2: Development of the System: Construction, Operation, and Service	Pages 12 and 17
Provision of an updated cost estimate with a stated probability level, or levels, of its ongoing contracts and for the work it is funding and managing that is required to complete the Merced to Bakersfield segment extensions.	Appendix B: Forecasts and Estimates	Pages 42 to 46
Completion of a funding plan that includes any additional federal funding awards for the Merced to Bakersfield segment.	Chapter 3: Funding to Deliver California High-Speed Rail	Pages 25 and 27
Additional milestones required for the completion of the Merced to Bakersfield segment and the full Phase 1 System pursuant to subparagraphs (A) to (F), inclusive.	Letter from the CEO Appendix D: Project Schedules	Pages XIII and 64 to 69

SB 198 Statutory Requirements (Cost / Funding)	Response to Requirements and Location	Page(s)
Estimated and actual civil works costs of the Merced to Bakersfield segment.	Appendix B: Forecasts and Estimates	Pages 42 to 43
Estimated and actual right-of-way, acquisitions, utilities, and other third-party agreement costs.	Appendix B: Forecasts and Estimates	Pages 42 to 45
Estimates of contract costs, including contingencies to cover change orders.	Appendix B: Forecasts and Estimates	Pages 42 to 45
Other costs, estimated and actual, including, but not limited to, rolling stock, interim use, and stations.	Appendix B: Forecasts and Estimates	Pages 42 to 45
Costs reported in a manner that can be comparable across reports.	Appendix B: Forecasts and Estimates	Pages 42 to 45
Updates on the Authority's progress on achieving project milestones, as established in the project update report or the business plan adopted pursuant to Section 185033.	Letter from the CEO Appendix E: Construction Package Progress Maps	Pages XIV to XV and 70 to 73
Funding commitments beyond the Merced to Bakersfield segment, and spending to meet those commitments to date, including funding sources used to meet identified funding commitments.	Chapter 3: Funding to Deliver California High-Speed Rail	Page 27 to 28

AB 377 (Chapter 81, Statutes of 2025)	Response to Requirements and Location	Page(s)
An updated estimate of the funding gap for completing the segment.	Chapter 3: Funding to Deliver California High-Speed Rail	Pages 25 to 27
An itemized list of anticipated funds by source.	Chapter 3: Funding to Deliver California High-Speed Rail California High-Speed Rail	Pages 25 to 27
A timeline describing when each source of funds must be received in order to meet the authority's schedule for segment completion.	*Transforming California's Future* Chapter 3: Funding to Deliver California High-Speed Rail Appendix K: Cap-and-Invest Financing	Pages XXI-XXII, XXIV, 25 to 27 and 42
The estimated project delays that would result if any funding source fails to materialize, and a discussion of how work could be resequenced to minimize these delays.	Chapter 3: Funding to Deliver California High-Speed Rail Appendix C: Risk Register and Mitigation Framework	Pages 27 and 55
An assessment of the likelihood that each proposed source of funding will materialize, including the identification of any major risks for obtaining the funding and a plan for mitigating those risks.	Chapter 3: Funding to Deliver California High-Speed Rail Appendix C: Risk Register and Mitigation Framework	Pages 30 to 32 and 55

Photo: Soon-Sik Lee, Chief of Planning and Engineering; CEO Ian Choudri; and Emily Morrison, Chief of Contract Administration answer questions at the Authority's Green Energy Symposium in San Francisco in February.

Photo: CEO Choudri discusses the procurement process at the Green Energy Symposium.

LETTER FROM THE CEO

“The promise of high-speed rail is larger than fast trips between two endpoints. It is the opportunity to connect all the corridor’s communities — Gilroy, Merced, Fresno, Bakersfield, Palmdale, and others — to the state’s largest job centers and innovation hubs in ways that create new opportunities for millions of Californians.“

Ian Choudri
Chief Executive Officer

Over the past year, I have often been asked why I chose to step into the role of Authority CEO. My answer is simple: California must succeed — and the opportunity before us when we do is extraordinary. High-speed rail is not only about construction, its also about the creation of a new corridor of economic opportunities that can reshape how the state connects, competes, and grows.

Few markets in the world offer what California does. The San Francisco Bay Area and the Los Angeles Basin are among the most productive economies on the planet, and between them is one of the world’s most abundant agricultural regions, making this corridor one of the most compelling high-speed rail opportunities. It is positioned to deliver major public benefits and a robust foundation for long-term commercial performance, far beyond that of existing rail systems in the U.S.

Early commercial success matters because it creates a durable pathway to complete work in the Central Valley and expand the system without relying exclusively on new public funding. Once the system is generating revenue, the state can finance additional phases of development using tools that are not available to a program reliant only on appropriations — whether through bonding supported by future cash flows or through private investment that can take real revenue risk. Over time, that transition allows the system to pay for expansion, reducing long-term costs to the state and accelerating delivery of the full vision.

In a corridor of this scale, commercial success must go beyond ticket revenue alone. This 2026 Business Plan outlines the first true corridor-wide ancillary revenue strategy for the California high-speed rail project. By capturing the value generated by the buildout of the system from power generation to commercial partnerships, advertising, transit-oriented developments, express cargo, and more, the Authority can raise revenues to improve long-term financial performance and help the system grow. This feedback cycle will enable California to build, sustain, and grow a true high-speed rail network like other systems globally.

History shows this isn't hypothetical. On Japan's Tokaido corridor, high-speed rail cemented Nagoya's role as a true hub city, deepening its integration with Tokyo and Osaka and helping scale its employment base and commercial gravity. In Northern France, the arrival of TGV and Eurostar service repositioned Lille at the center of the Paris-Brussels-London triangle, and paired with deliberate station-area redevelopment, helped accelerate a broader shift from an old industrial identity toward a modern, service-oriented metropolitan economy.

Accelerating a revenue-positive system, as charted in this 2026 Business Plan, sets the foundation for meaningful public-private partnerships. With credible revenues to invest against, the private market can bring capital, innovation, and delivery capacity while taking on defined risks that would otherwise sit entirely with the public. Structured properly, these partnerships can accelerate schedules, strengthen cost discipline, and reduce the state's long-term exposure by shifting defined construction, performance, and revenue risks to the parties best positioned to manage them.

Just as important, a commercially viable system is the way we extend the benefits of high-speed rail beyond the endpoints and into the communities that connect with them.

The promise of high-speed rail is larger than fast trips between two endpoints. It is the opportunity to connect all the corridor's communities — Gilroy, Merced, Fresno, Bakersfield, Palmdale, and others — to the state's largest job centers and innovation hubs in ways that create new opportunities for millions of Californians. Around the world, high-speed rail has shown that when major economic centers are linked by fast, frequent, and reliable service, the regions along the route can grow into vibrant destinations.

California has the chance to deliver that kind of inclusive growth at a scale few places can match. The San Francisco Bay Area – Los Angeles/Anaheim corridor links two of the world's most productive economic regions with a chain of fast-growing communities in the state's interior. Its size, depth of demand, and capacity to convert travel-time savings into labor-market expansion, expanded housing, and new investment make it one of the strongest high-speed rail markets anywhere.

This 2026 Business Plan sets out the path forward: completion of the Merced – Bakersfield segment, expansion to major population centers for revenue-positive service, and early asset commercialization to generate additional revenue to build out high-speed rail. The plan addresses various policies and implementation tools needed to help avoid construction delays experienced on the 119 miles where approximately 80 entities held rights of approval and/or permitting. It examines the San Francisco – Los Angeles/Anaheim corridor and lays out a strategy grounded in a realistic delivery schedule, market fundamentals, and disciplined sequencing. It explains how we build from progress underway, prioritize investments that produce early and durable commercial benefits, and create the conditions for long-term financial strength and private-sector participation as the system expands.

High-speed rail is a once-in-a-generation investment in California's future. As this Business Plan shows, done right, it will strengthen our competitiveness, expand economic mobility, support housing and climate goals, and create a transportation spine that serves the state for the next century. This 2026 Business Plan is our roadmap to deliver that future — connecting California's economic powerhouses, ensuring the benefits reach the communities that link them.

Looking Ahead: Anticipated 2026 Milestones

This will be a defining year for California high-speed rail. Building on the successes of 2025, the Authority has entered a new era of construction: laying track across the Central Valley and electrifying the corridor. With the southern railhead in Kern County ready ahead of schedule, deliveries of steel, concrete ties, and ballast material can begin, and work can commence.

The Authority has set construction milestones for the 119-mile Central Valley segment and developed a procurement schedule to keep the project on pace for completion of the Merced – Bakersfield early operating segment in 2032.

Substantial completion of Construction Packages 1 and 2-3

8
Parcels to be obtained

39
Miles of guideway remaining with 28 underway

34
Structures remaining with 29 underway

The Authority expects to achieve several other procurement milestones in 2026, including:

- Selecting a private partner to advance a co-development agreement for commercial, technical, and financial solutions (Q2);
- Releasing a solicitation for design-build contracts for civil work along the Merced and Bakersfield extensions (Q3);
- Awarding a contract to a qualified contractor for the retrofitting and restoration of the historic Fresno Depot and soliciting a design-build contract for the Fresno Station (Q4);
- Soliciting bids for the operations control center (Q4); and
- Identifying contractors for a maintenance facility bid (Q4).

Other critical aspects of the program the Authority will advance in 2026 include:

- Identifying and evaluating potential private partners in response to the Request for Expressions of Interest (RFEI) in clean energy generation, energy storage, and grid integration, while soliciting industry feedback to further advance cost-efficiency, schedule acceleration, and system resilience (Q2); and
- Engaging with qualified entities that specialize in the construction aspects of tunnel delivery (Q4).

PROGRAM UPDATE

Funding & Financial

The Authority has achieved major financial and strategic milestones that strengthen the program's foundation and future growth, including:

- **$1 Billion Annual Cap-and-Invest Commitment Through 2045:** This allocation provides long-term funding stability to finalize project planning and leverage investment from future private partners. Details can be found in **Chapter 3**.
- **Ancillary Revenue Framework Established:** In the 2025 Supplemental Project Update Report, the Authority introduced its plan to generate revenue beyond ticket sales, including real estate partnerships and digital services, positioning the program for early commercial success. More details on this strategic initiative can be found in **Chapter 1**.
- **Bottom-Up Cost Review Unlocks $14 Billion in Savings:** The Authority applied updated Design Criteria Manual (DCM) optimizations as part of its bottom-up cost estimate review. This resulted in an initial $14 billion in savings for the Merced to Bakersfield segment helping offset inflation cost drivers.
- **$2.9 Billion in Economic Output:** This was generated across California through project expenditures in fiscal year 2024-2025, as reported on the Authority's *Economic Investment webpage*.

Strategic Procurement

Through innovative procurement methods and exploration of public-private partnerships, the program is unlocking new efficiencies and investment opportunities. Key efforts include:

- **Private Sector Partnerships:** The Authority issued a Request for Qualifications for a Co-Development Agreement in December 2025 to select a private partner by summer 2026 to support project delivery and early commercialization of project assets. Market interest has been robust, with about 400 industry experts attending the January 2025 Industry Forum and 30 responses to the subsequent RFEI released in June 2025. See Chapter 1 for details.
- **Multiple Award Task Order Contracts (MATOC):** In June 2025, the Authority launched an innovative contracting effort to establish MATOC, enabling faster and more reliable delivery of small construction projects in the Central Valley through multiple awards under a single solicitation.
- **Direct Materials Procurement Strategy:** Approved by the Board in August 2025, the direct procurement of long-lead materials such as rail, concrete ties, overhead contact system (OCS) poles, fiber-optic cable, and ballast ensures timely material availability, reduces contractor risk exposure, lowers overall project costs, and shortens the schedule.
- **Architectural & Engineering Indefinite Delivery/Indefinite Quantity (AE IDIQ) Contracts:** Launched in 2026, the AE IDIQ process accelerates task order delivery by establishing pools of architectural and engineering firms to deliver environmental, planning, engineering and/or architectural services, geotechnical engineering site-investigations, professional design support, and construction management services.

BUILDING SMARTER, FASTER, AND MORE ECONOMICALLY

Design & Construction

The Authority continues to advance construction in the Central Valley, achieving a major milestone with the launch of track and systems work. This includes one of the nation's largest rail infrastructure procurements: a $3.5 billion contract to deliver track, electrification, train control, communications, and safety systems across the 119-mile Central Valley Segment (CVS). This follows the completion of the 150-acre southern railhead facility in Kern County, which will serve as a hub for receiving and storing high-speed rail materials, including tracks.

The Authority has achieved several major civil works milestones along the 119-mile CVS bringing overall progress across key categories:

58	80	93%	99.7%
Structures completed and ready for rail	Guideway miles completed and ready for rail	Utilities relocated	Parcels delivered to the design-builders

For specific figures, see **Appendix E: Construction Package Progress Maps** for the 119-mile CVS.

Through refined sequencing and delivery strategies, the program is also achieving operational milestones while maintaining alignment with its long-term vision. Key actions include:

- **Merced to Bakersfield (M-B) Schedule:** The updated completion date for the M-B early operating segment is 2032. This one-year extension accounts for additional time for optimization and pending policy changes. Approval and implementation of these reforms, as outlined in *Transforming California's Future*, remain critical to maintain 2026 Business Plan schedules. For a detailed breakdown of program activities, see **Appendix D: Project Schedules**.
- **LA to Anaheim Environmental Clearance Advancing:** The *Draft Environmental Impact Report/ Environmental Impact Statement (EIR/EIS)* document for the 30-mile segment between Los Angeles and Anaheim was released in December 2025, marking a major milestone toward full environmental clearance for Phase 1, which will be completed in 2026, of the statewide high-speed rail system.

Jobs & Training

Since construction began, the project has created more than 16,000 good-paying jobs. In 2025, an average of 1,400 workers report to high-speed rail construction sites across the Central Valley each day. The project has been a powerful generator of local jobs and training. Key efforts include:

- **Central Valley Training Center (CVTC):** The CVTC, which offers hands on, 10-week pre-apprenticeship training for careers in the construction trades, has surpassed a major milestone; delivering more than 100,000 hours of training to students. As of November 2025, more than 300 students completed the pre-apprenticeship program, ready for a career in transportation.
- **Workforce Development:** The Authority partnered with California colleges and universities to build a skilled local workforce — creating pathways to union jobs and lasting careers in transportation.

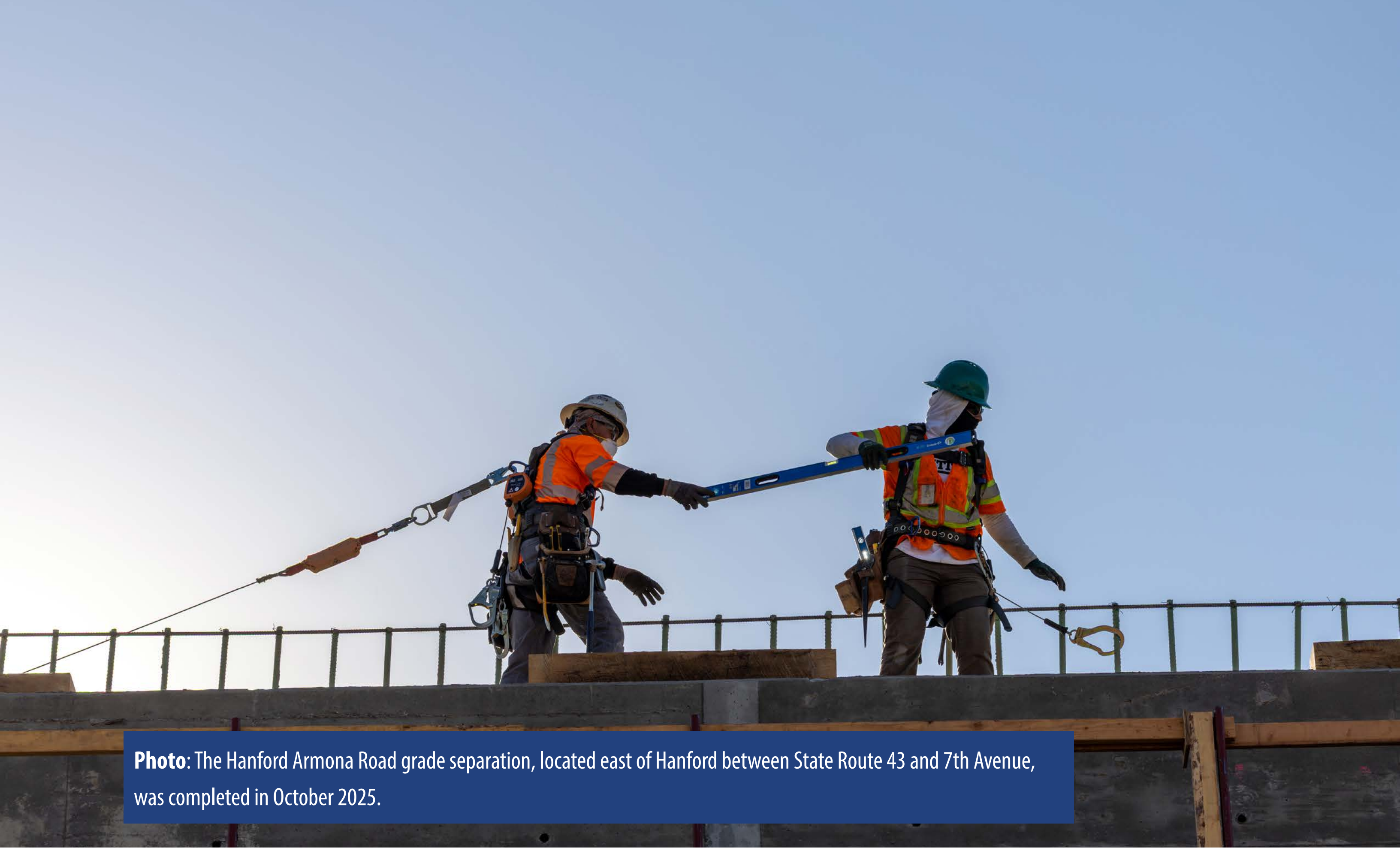


Photo: The Hanford Armona Road grade separation, located east of Hanford between State Route 43 and 7th Avenue, was completed in October 2025.

Photo: A banner celebrates completion of the Southern Railhead Facility in Kern County, which allows the Authority to begin receiving and staging materials needed to install high-speed rail track and systems along the California high-speed rail corridor.

TRANSFORMING CALIFORNIA'S FUTURE

Introduction

California high-speed rail represents a bold vision to transform the state's future by delivering fast, reliable, zero-emission train service. The benefits of high-speed rail extend beyond mobility; it is a catalyst for economic growth, environmental sustainability, and social equity to meet the needs of a growing population. By linking communities across the state, high-speed rail will expand access to jobs, education, and affordable housing, while reducing greenhouse gas emissions and providing an alternative to congested highways and airports.

Delivering this vision requires bold solutions. This 2026 Business Plan provides the most detailed and robust business case and roadmap yet for building California high-speed rail, including key drivers for change such as a corridor of opportunity, efficient delivery, and long-term funding and financial options.

Expanding California's Economic Position

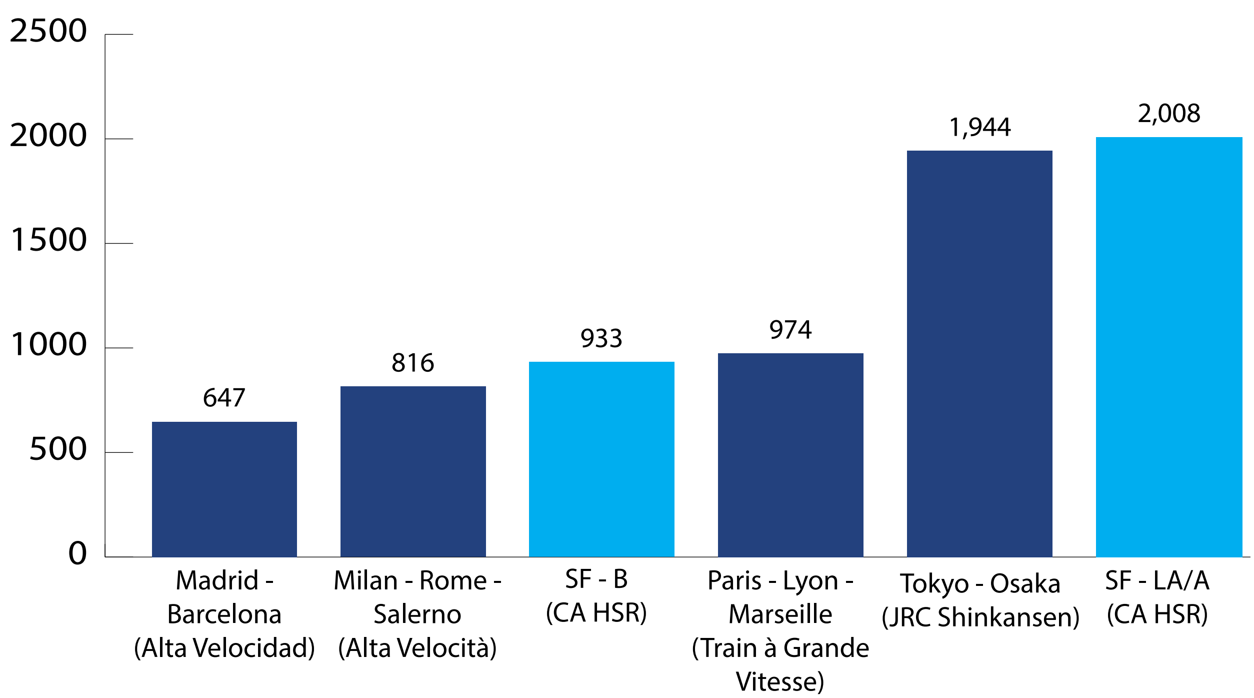
California is the world's fourth-largest economy, with a Gross Domestic Product (GDP) of approximately $4.1 trillion. High-speed rail's Phase 1 route, from San Francisco to Greater Los Angeles, travels along the state's most productive economic corridor.

This corridor connects two of the largest population centers in the U.S. and supports diverse and expansive economic sectors including the world's leading technology hubs, a vast professional services sector, a massive entertainment and media industry, and a formidable agricultural sector. By linking these regions through the Central Valley — which produces 25 percent of the nation's food and generates $17.0 billion annually — high-speed rail will expand and create new opportunities for commerce, workforce mobility, and job growth along the entire corridor. These industries rely on efficient, reliable transportation to sustain growth and compete globally, creating a dynamic corridor of innovative and productive businesses that further increases the need for high-speed rail connectivity between urban centers.

In Europe and Asia, high-speed rail is a significant driver of regional economic growth. Here in California, the GDP of the proposed San Francisco – Los Angeles/Anaheim corridor (Phase 1) is two to three times larger than notable high-speed rail corridors such as Paris – Lyon – Marseille and is comparable to Japan's Tokyo – Osaka corridor, where frequent high-speed rail service dominates intercity travel. Even the San Francisco – Bakersfield segment rivals the GDP of Madrid – Barcelona and Milan – Rome – Salerno (see **Exhibit 0.0**). European corridors with far smaller economies sustain robust high-speed rail usage: Barcelona – Madrid sees roughly 90 daily trains, while Milan – Rome – Salerno operates more than 160 trains per day.

For additional comparative data and analysis, see **Appendix J: California's Economic Corridor**.

Exhibit 0.0: Gross Domestic Product of High-Speed Rail Corridors ($ in millions)



More than a High-Speed Rail Project

Infrastructure projects across the state are reshaping California to be safer, cleaner, and healthier while driving inclusive economic growth. Guided by Governor Gavin Newsom's Build More, Faster – For All Infrastructure agenda, the state will invest nearly $180 billion over the next decade in projects including transportation, clean energy, water systems, broadband, and zero-emission technologies.

High-speed rail is the centerpiece of California's infrastructure strategy because it integrates multiple priorities into one transformative project. It delivers a major investment that stimulates regional economies while advancing clean energy goals by cutting greenhouse gas emissions and supporting zero-emission mobility. The Authority is exploring options to leverage its right-of-way corridor to expand broadband access, helping close the digital divide.

Equity, a core pillar of California For All, is also a guiding principle of the high-speed rail program and why construction began in the Central Valley. This region has long faced economic and environmental challenges, including some of the worst air quality in the nation. By starting here, the project ensures the communities most in need benefit first. More than half of California high-speed rail investments since 2006 have gone to disadvantaged areas, creating thousands of good-paying jobs and laying the foundation for future opportunities.

California high-speed rail is a strategic infrastructure investment that will generate long-term financial benefits and foster a thriving economy.

Transformative Benefits

Over the first 30 years of Phase 1 operation, California high-speed rail is projected to generate more than $118.3 billion in social, environmental, and economic benefits for both riders and non-riders. It will provide a fast, efficient transportation option while improving traffic safety and reducing emissions, and it serves as an equitable option for Californians who cannot drive due to age, physical limitations, or the costs of owning a vehicle. The creation of a true state rail network, with high-speed rail as its backbone, will also facilitate smoother operations by other rail systems like freight lines and state-supported intercity rail service (see **Exhibit 0.1**).

For many Californians, long-distance travel often means hours on the road or navigating busy airports. High-speed rail will change that. By cutting travel times, it opens the door to weekend trips, family reunions, and other visits. College students, including those from one of three major universities on the Merced – Bakersfield corridor, will be able to visit home and friends from other campuses conveniently. Future benefits also include major reductions in greenhouse gas (GHG) emissions due to a decline in vehicle miles traveled and flights between San Francisco and Los Angeles.

These benefits can be quantified economically, as shown in **Chapter 3** and **Appendix F: Benefit Cost Analysis**.

Exhibit 0.1: Phase 1 Social Benefits

Social Benefits of High-Speed Rail Service in California

$118.3 Billion in benefits through 30 years of future operation

$55.6B In Passenger Benefits	$35.2B In Wider Economic Benefits	$17.5B In Environmental & Safety Benefits	$10.0B In Additional Benefits
Travel time savings, reliability, passenger safety from avoided vehicle collisions, cost savings	Productivity benefits from better access to job opportunities by joining the economy of the Central Valley with Northern and Southern California	Emissions reductions, traffic congestion relief, and vehicle and pedestrian safety	Transportation network efficiency, reliability, residual value net of operating and repair costs, and new travel access

Key Drivers of Change

Building on the approach outlined in the *2025 Supplemental Project Update Report*, the 2026 Business Plan refines the strategies for asset commercialization, optimized construction, and longer-term funding to deliver the project sooner. This approach supports the Authority's overall plan to deliver the Merced – Bakersfield segment; expand project development beyond the Central Valley; and further commercialize assets where possible to generate ongoing revenue for continued development.

CORRIDOR OF OPPORTUNITY

High-speed rail is creating new opportunities for the communities along the Phase 1 route as well as new opportunities for partnerships between the state and the private sector to invest. Public and private investment will accelerate progress, boost communities, and drive long-term growth.

Chapter 1 describes the Authority's business-minded approach to tap commercial value in all aspects of the high-speed rail system. Following a robust three-part strategy to generate additional funding, the Authority is focused on extending high-speed rail to major population centers to achieve positive cashflow; entering partnerships to accelerate right-sized delivery and leverage private equity; and commercializing its assets as soon as possible — potentially even before trains are running.

Multiple uses of land along the right-of-way can generate early revenue to build out the system. Real-world examples of asset commercialization illustrate how building a utility and technology corridor for clean energy and broadband can generate long-term revenue streams. These efforts will diversify funding sources for the high-speed rail program while helping the state meet its economic growth, net-zero energy, and digital equity goals.

EFFICIENT DELIVERY

As introduced in the 2025 Supplemental Project Update Report, the Authority's strategy is to right-size each stage of project delivery to control costs and initiate service sooner. The Authority will then use operating profits to fully build out the system as demand grows. The strategy combines shared corridor upgrades with designs that preserve opportunity for future expansion. Practical modifications will keep initial costs lower while maintaining the system's fundamental purpose: reliable, high-speed service linking San Francisco and Los Angeles via the Central Valley.

Chapter 2 presents how this delivery strategy will optimize delivery of each of three scenarios representing stages of development of the high-speed rail system:

- **Merced – Bakersfield (underway)** includes streamlined stations and infrastructure to support initial service, but the ridership fares and ancillary income will not fully cover operation and maintenance costs, reinforcing the need for the next stage.
- **San Francisco – Bakersfield** extends north to Gilroy and enables through service to San Jose and San Francisco via electrification, signaling, capacity, and station upgrades. By reaching the Bay Area market, this would be the first California high speed rail service to generate an operational profit.
- **San Francisco – Los Angeles/Anaheim (Phase 1)** provides service between major population centers with two trains per hour. With Phase 1, dedicated high-speed infrastructure is extended to Palmdale. This Business Plan lays out a cost-effective early solution for connecting into the Los Angeles Basin with a combination of interim Metrolink line upgrades and a dedicated high-speed rail tunnel. This would attract passengers and generate substantial operational profit while connecting the state's two largest regions by frequent, reliable rail.

While Cap-and-Invest funding supports completion of the Merced – Bakersfield segment, additional actions, will need to be taken to secure additional funding for expansion, as presented in the 2025 Supplemental Project Update Report and in this 2026 Business Plan.

The cost estimates in **Chapter 2** and **Appendix B: Forecasts and Estimates** incorporate cost savings identified based on optimization measures presented in this chapter, which add up to billions of dollars. However, achieving some of these savings will depend on securing additional authority and advancing related policy and implementation measures. Absent those steps, overall project costs could increase by approximately 10 percent. Already, schedules have been extended by at least one year compared to dates published in the 2025 Supplemental Project Update Report.

LONG-TERM FUNDING AND FINANCIAL OPTIONS

The Cap-and-Invest program extension secured in 2025 provides a reliable funding stream of $1.0 billion per year through 2045. This funding, which the Authority is intending to leverage with low-cost financing, will be used to complete construction of the M-B segment, maintain the project schedule, and mitigate inflationary impacts. It will also fund early Phase 1 activities as permitted by SB 198 (Chapter 71, Statutes of 2022).

To enable the Authority to reach California's population centers sooner, allowing train services to become profitable and help fund expansion, low-cost financing and additional funding commitments are essential. Additional commitments will better position the high-speed rail program to be more attractive to private investment, achieve revenue-positive operations, and bring projected economic benefits to communities throughout the Central Valley.

If the opportunity presents itself in the future, the Authority will seek substantial federal funding to accelerate delivery and strengthen the program's long-term financial foundation.

Chapter 3 outlines the Authority's current funding position, future financing options, and strategies to accelerate cash flow by borrowing against future revenues. These measures are vital to achieving the goals set forth in this Business Plan. **Table 0.1** shows future buildout costs, funding, and profit based on scenarios presented in **Chapter 2**.

Table 0.1: Buildout Cost, Funding, and Profit Scenarios ($ in billions)

Buildout Scenario	Total Cost*	Net Cost**	Annual Funding Commitment***				40-Year Net Operating Profit^
			2042 (15 years)	2047 (20 years)	2057 (30 years)	2072 (45 years)	
San Francisco – Bakersfield	$60.34	$25.57	$1.78	$1.46	$1.20	$1.04	+42.23
San Francisco – Palmdale	$96.73	$61.97	$4.36	$3.59	$2.96	$2.56	+77.68
San Francisco – Los Angeles/ Anaheim (Phase 1)	$126.20	$91.43	$6.40	$5.25	$4.33	$3.75	+174.34

* Construction cost estimates include a P65 level of contingency.
** Funding needed during construction period. Net cost is derived by excluding the cost of $34.8 billion for Merced – Bakersfield which is alternatively funded (using Cap-and-Invest).
*** Annual Funding Commitment is assumed to commence in 2028, includes debt service, and is dependent on the source(s) of revenue pledge offered, as well as prevailing market conditions.
^ Cumulative operating profit is based on a service start year of 2040, if built using financing against long term state funding.

Policy and Funding Changes to Accelerate Project Delivery

With secure Cap-and-Invest funding and recent CEQA streamlining for stations and maintenance facilities, the Authority has made meaningful progress. However, additional policy actions remain critical to staying on schedule, reducing costs, and advancing the program efficiently.

In coordination with the Newsom Administration, the Legislature, and the Board of Directors, the Authority will continue to evaluate and pursue policies that maximize commercial and investment opportunities, consistent with proven global best practices.

The proposals below are organized around three priorities: (1) strengthening financing and delivery authority, (2) reducing construction risk and delay, and (3) enabling long-term commercial and local partnership opportunities.

STRENGTHENING FINANCING AUTHORITY

Since the 2016 Business Plan, the Authority has regularly outlined necessary authority to support financing using Greenhouse Gas Reduction Funds (GGRF). Even with dedicated funding provided under Cap-and-Invest reauthorization, the Authority continues to work with the administration and legislature on actions to ensure optimal financing including:

- Non-impairment language guaranteeing the state will not change the law in a manner that would impair any contracts entered into by the Authority secured by the GGRF revenues.
- Financing provisions in the Authority's enabling statute to facilitate implementation of bonds and other obligations and indebtedness, with conforming language for allowable uses of GGRF revenues.

See **Appendix K: Cap-and-Invest Financing** for more details.

Project Delivery Challenges

Progress over the past decade of construction on the initial 119 miles in the Central Valley was impeded by the complexities inherent in developing a new right-of-way for high-speed rail. To initiate construction, the Authority needed to coordinate with 80 separate and unique entities along the linear corridor. Approval, permitting and/or consultation was necessary from five federal agencies, eight state departments, six cities, five counties, 31 utility owners, 22 quasi-governmental agencies, and three freight railroads. Each entity requires distinct standards, and has different priorities, needs, and approval timelines. Due to intricate interdependencies, any of these entities had the potential to create cascading delays to ongoing construction.

See **Appendix C: Risk Register and Mitigation Framework** for more information on how delayed action would impact program milestones.

REDUCING CONSTRUCTION RISK AND PROJECT DELAYS

The following proposals will support reducing construction risk and project delays.

Utility Relocation Streamlining and Third-Party Management

Relocation of utilities, communications infrastructure, and rail crossings remains one of the most persistent sources of delay and claims.

Advancing strengthened coordination frameworks, and, where appropriate additional authorities that provide reasonable timelines and performance standards in master and utility agreements would improve predictability and accountability. Taking steps now will not only support completion of the Central Valley segment but also position the program for more efficient delivery as it expands across the state in the years to come. The initial 119-mile segment alone required coordination with 31 utility owners, 22 irrigation and water-related agencies, and 3 railroads to complete relocations —underscoring the importance of establishing a more predictable framework going forward.

Prioritized Right-of-Way Court Dockets

With an estimated 500 additional parcels for the Merced and Bakersfield extensions, and thousands more to reach the Bay Area and Los Angeles Basin, including 12 counties and approximately 40 municipalities, a reliable and efficient adjudication process is essential to maintaining project momentum and controlling delivery costs.

To avoid delays in condemnation proceedings, the Authority is coordinating with the Judicial Council to secure the prompt assignment of designated judges for right-of-way cases. This coordination will help ensure timely case resolution and allow the Authority's Real Property team to move acquisitions forward without unnecessary delay.

Targeted CEQA Relief for Clean Power and Grid Interconnections

Traction power substations, feeders, and grid tie-ins are components that provide 100 percent clean high-speed rail operations, but face multiyear environmental and local permitting timelines. The state streamlined CEQA for sustainable transportation with SB 288 (Chapter 200, Statutes of 2020) and SB 922 (Chapter 987, Statutes of 2022) and expanded California Energy Commission (CEC) siting process through AB 205 (Chapter 61, Statutes of 2022), allowing qualifying clean energy projects to bypass local permitting in favor of a 270-day review timeline. A narrow, performance-based CEQA exemption for high-speed rail traction power and interconnection facilities — mirroring other transit exemptions and leveraging the CEC opt-in pathway — would accelerate delivery while providing robust public review and mitigation.

Encroachment Permitting Authority

Current law requires an encroachment permit for any activity within, under, or over state property rights-of-way, including utility installations, excavations, vegetation work, and surveys.

The Authority is in need of explicit authority to issue encroachment permits within its right-of-way, allowing utilities and businesses to build, install, or cross infrastructure on Authority property. Many organizations have already expressed the need for reliable access to the corridor.

This authority could be modeled after Caltrans and the Department of Water Resources authorities that would help streamline coordination, improve project efficiency, and support economic activity along the corridor.

Streamlining Environmental Permitting for Timely Delivery

Once fully operational, California high-speed rail is projected to eliminate more than 100 million metric tons of greenhouse gas emissions by shifting travelers from cars and airplanes to trains powered with 100 percent clean energy. The Authority's environmental mitigation efforts extend well beyond state and federal legal requirements.

At the same time, the project is subject to extensive environmental review and permitting processes, certain permit conditions and oversight practices have affected construction timelines and increased costs along the Central Valley's linear corridor.

To support timely and efficient project delivery while maintaining strong environmental protections, a range of policy options should be explored to improve interagency coordination and identify reasonable and prudent alternatives for endangered species compliance.

COMMERCIAL PARTNERSHIPS AND INVESTMENT OPPORTUNITIES

The following proposals will support commercial partnerships and investment opportunities.

Station Area Partnership and Investment Alignment

To maximize the economic and community benefits of high-speed rail station investments, it is important to strengthen partnership frameworks with local governments around land use planning and coordinated infrastructure investment. The objective is to align state and local efforts so that station-area development occurs in tandem with rail delivery and communities share long-term benefits.

Improving the collaborative use of tools such as Enhanced Infrastructure Financing Districts can provide a structured pathway for coordinated, multi-jurisdiction investment. These tools would allow co-investment strategies that support housing, jobs, and public improvements around stations.

Joint Development and Corridor Commercial Opportunities

In addition to coordinated state and local investments, the Authority is also interested in pursuing joint development and commercial opportunities that complement and enhance rail infrastructure. These strategies include air rights leasing, broadband, energy transmission and generation, integrated station development, and other infrastructure partnerships that support economic activity of the surrounding areas.

These efforts can generate long-term revenue, attract private participation, and strengthen the financial sustainability of the system.

Photo: The Dutch John Cut Bridge in Kings County will take high-speed trains over the Dutch John Cut waterway that connects to the Kings River.

CHAPTER 1:
CORRIDOR OF OPPORTUNITY

Introduction

CEO Ian Choudri has taken a business-minded approach to deliver the nation's first true high-speed rail program. Within his first year, he directed changes to the project's design criteria and sequencing to reduce capital expenditures and improve construction delivery schedules. He also helped secure a fixed annual appropriation of $1.0 billion per year in Cap-and-Invest funds, a clear demonstration of the state's commitment to the project. The next phase in the Authority's strategy is to bring in private investors and deliver the project with a commercial approach, using global best practices.

The 2025 Supplemental Project Update Report focused on asset commercialization and other ancillary revenues that could not only augment ridership revenue but also start generating revenue before train service begins, to help fund construction of future phases. This chapter builds on these efforts to advance a commercialization strategy.

The Authority's updated analysis of ancillary revenue covering services beyond farebox operations is provided in **Chapter 2** and **Appendix G: Ancillary Revenue Update**.

Public-Private Partnerships

Public-Private Partnerships (P3s) have been widely utilized across the United States to deliver major transportation and infrastructure projects. Notable examples include the Port of Miami Tunnel, Denver's Eagle P3 Commuter Rail Project, Pennsylvania's Rapid Bridge Replacement Program, and SR 400 express lanes in Georgia. In California, P3 models have successfully delivered the Presidio Parkway in San Francisco, the Long Beach Courthouse, and the 2020 UC Merced campus expansion.

P3s have a long history of use with high-speed rail. Two successful P3s delivered the United Kingdom's first high speed line that has been reliably carrying Eurostar trains from the Channel Tunnel to London since 2007. One P3 delivered the 110 km long high-speed track infrastructure and the other P3 delivered the electric system that provides power to the railway and trains. As the most expansive infrastructure project underway in the United States, California high-speed rail is a strong candidate for public-private partnerships.

Responses received through the Authority's Requests for Expressions of Interest (RFEIs) and participation in industry forums have surpassed expectations, yielding strong industry engagement and numerous active solicitations. A P3 partner will contribute financing and share risk for infrastructure, stations, maintenance facilities, and potentially train operations. This approach, by accelerating delivery, could also reduce public capital requirements.

To advance the phased delivery of the project, in December 2025 the Authority issued a *Co-Development Agreement (CDA) Request for Qualifications*. Under this agreement, a partner will work with the Authority to evaluate and provide a private sector perspective on service models and commercial opportunities. The agreement seeks P3s, for high-speed rail infrastructure and operations; commercialization of assets such as broadband, data centers, and transit-oriented developments; and other innovative technologies.

The Authority has initiated a P3 focused on energy generation and distribution to supply power to the rail system beginning as early as the testing phase, and to explore related commercial opportunities.

A Business-Minded Approach

The Authority's business strategy will enhance operating profits to generate new program funding. Its three key components are to extend high-speed rail to major population centers to achieve positive cashflow as soon as possible; enter partnerships to accelerate right-sized delivery; and commercialize its assets even before trains are running.

Discussions with private entities interested in partnership opportunities are informing the Authority's next step, which is to identify additional legislative, policy, or other updates that would create opportunities to reduce risks and enable the Authority to enter new business ventures. By adopting this business-minded approach, the Authority can attract private-sector investments at the earliest opportunity, which will accelerate progress. It will also drive long-term economic growth and create long-term value for the state and its residents.

European and Asian high-speed rail lines can serve as models for combining regulated infrastructure access with private investment in operations, retail, and real estate to create profitable revenue streams. These systems offset initial capital costs while remaining committed to communities, providing stable, good paying jobs and supportive of local unions.

The Authority is pursuing private participation and asset commercialization opportunities for clean energy and digital technology services along its economic corridor. Within this pursuit, the Authority intends to honor its commitment to labor partners as memorialized in existing and future labor agreements. Other strategies to monetize its assets consistent with state law will include station real estate development, retail concessions, and advertising. Some of these initiatives can generate revenues even before train service begins.

RETAIL AND REAL ESTATE OPPORTUNITIES

High-speed rail stations worldwide have evolved into major commercial hubs, generating non-train-ticket revenue through retail, dining, advertising, and real estate development. Retail opportunities include food and beverage outlets, convenience stores, and specialty shops, while real estate development often focuses on hotels and mixed-use complexes integrated with station areas.
With California's Phase 1 ridership projected to be between 23.6 and 30.6 million passengers per year, high speed rail stations would become magnets for economic activity and could provide powerful revenue streams. For details, see **Appendix I: Governance and Funding Models**.

Japanese Railroad Station Development

In 1971, Japan enabled railway companies to develop station real estate with shops, offices, restaurants, hotels, bus terminals, and parking facilities. With privatization of the Japanese National Railway in 1987, regional companies developed stations into city destinations, particularly those with high-speed Shinkansen services. Although the Japan Central Railway (JRC) earns only 4 percent of revenue from real estate, it is highly profitable with 26.3 percent earnings before interest and taxes in 2025. The East Japan Railway Company (JR East) earns substantial operating profit from station real estate, with 32 percent of earnings before interest and taxes from real estate and 16 percent from retail and services. JR East real estate and hotels have a strong 27 percent operating profit margin before interest and taxes.

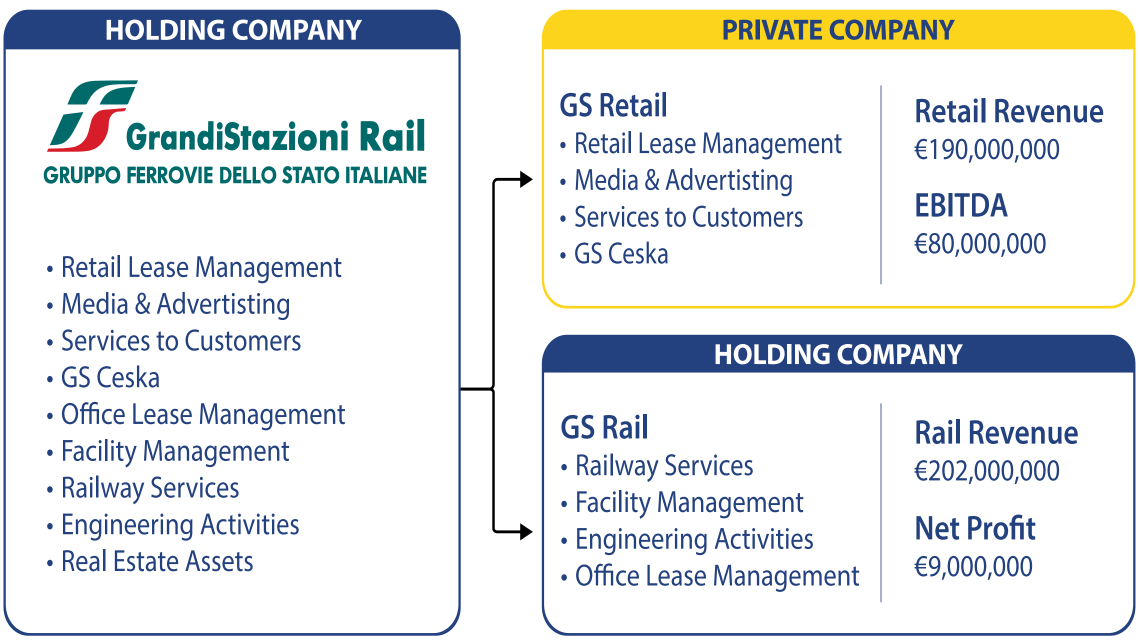
JR Koriyama Station in Fukushima is a key JR East hub linking Shinkansen and local lines, and a major gateway featuring shops and cafes. *https://creativecommons.org/licenses/by-sa/4.0/deed.en*

Commercialization of Station Retail in Italy

A powerful example of private-sector involvement in high-speed rail commercialization is the privatization of station retail activities in Italy. This process began over a decade ago when Ferrovie dello Stato Italiane, the national rail incumbent, separated its retail leasing, media, and advertising business — known as Grandi Stazioni Retail — from other core functions such as facility management and engineering services.

In 2014, the retail management of 14 major stations partially concessioned, with approximately 96,000 square meters (more than 1 million square feet) of commercial space leased to private operators. Over the following years, private investment drove substantial growth and modernization of these retail areas. By 2024, the company was sold to private funds, its leased area had doubled, and its estimated market value reached approximately $1.4 billion. This case demonstrates how strategic privatization of station retail can unlock commercial value, attract private capital, and transform stations into vibrant commercial hubs.

Exhibit 1.2: Bifurcated Revenues of Grandi Stazioni Retail and Railway Services



*Net profit and Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA) is approximately $97.9 million in 2024 dollars.

UTILITY AND TECHNOLOGY CORRIDOR

The Authority is advancing an asset commercialization strategy to develop energy and technology projects along the high-speed rail right-of-way and surplus land. By leveraging state-owned land for commercial development such as solar farms, battery storage, data centers, and fiber optic and transmission lines, the Authority can create new business income sources even before trains are operating, while also benefiting communities along the corridor. The strategy aligns with statewide priorities to support California's clean energy goals and meet its growing digital infrastructure needs while also strengthening financial stability for the program. (See **Appendix H: Asset Commercialization – Analysis and Evaluation Approach**.)

The California high-speed rail right-of-way is well configured to create a utility and technology corridor to generate long-term revenue, which will reduce the need for public funding and support statewide goals for clean energy and digital equity. By placing infrastructure along the rail alignment and using land parcels as assets, the Authority can generate recurring revenue, reduce the need for publicly funded capital and operating costs, and attract private investment through a two-part asset commercialization strategy:

- **Linear corridor:** Ideal for high-voltage transmission lines and fiber-optic networks to advance California's clean energy and broadband initiatives.
- **Non-linear parcels:** Well-suited for solar farms, battery storage, and data centers that provide recurring revenue.

Additionally, coordinating energy and technology investments during the civil works phase of the project will lower incremental costs and accelerate delivery by sharing construction access and environmental clearance permitting.

Asset commercialization is a strategic imperative to generate new revenue by developing a multifaceted utility corridor. The Authority explored more than 100 opportunities for asset commercialization and identified four that are best suited for the program to pursue:

1. Electric Transmission: developing a high-voltage direct current (HVDC) line within the Authority's unique infrastructure corridor.
2. Broadband: installing and leasing fiber optic cable.
3. Power Generation: developing utility-scale solar and battery storage on non-linear parcels, creating a long-term revenue source from energy sales and leases, reducing reliance on public funding.
4. Power-Related Facilities: Data Centers: leasing Authority land for data centers.

These commercial business concepts could expand into the massive markets already established in California. Global examples include the Italian rail group Ferrovie dello Stato Italiane, which plans to generate 1 GW of solar power by 2034 and France's rail group SNCF, which aims for 1 GW by 2030. California's corridor offers even greater potential for renewable energy generation, with solar yields 30 percent higher than Italy's. For details, see **Appendix I: Governance and Funding Models**.

Meeting State Clean Energy and Broadband Goals

The Authority has launched two parallel procurement efforts — a *Co-Development Agreement Request for Qualifications* (RFQ) and a *Clean Energy Request for Expressions of Interest* (RFEI) — that will serve as powerful entry points for private investment in electricity transmission and clean energy. These efforts will greatly advance the state's *net-zero energy* and *digital equity* goals.

Business concepts under evaluation include:

- **Electric Transmission:** The RFQ seeks private-sector input on development of high-voltage direct current (HVDC) lines along the Authority's infrastructure corridor. This revenue-generating concept is strongly aligned with state policy and the clean energy objectives of *SB 100* (Chapter 312, Statutes of 2018) for 100 percent clean electricity by 2045.
- **Broadband:** The RFQ asks respondents to evaluate the commercial opportunity of installing and leasing fiber optic cable, which may present an opportunity to generate revenue for the Authority while meeting state connectivity goals.
- **Power Generation:** The Authority's clean energy procurement will identify partners to develop utility-scale clean energy and energy storage systems on its nonoperational land, creating a long-term revenue source from energy sales and leases, in line with SB 100.

COMMERCIALIZING TRAIN INFRASTRUCTURE

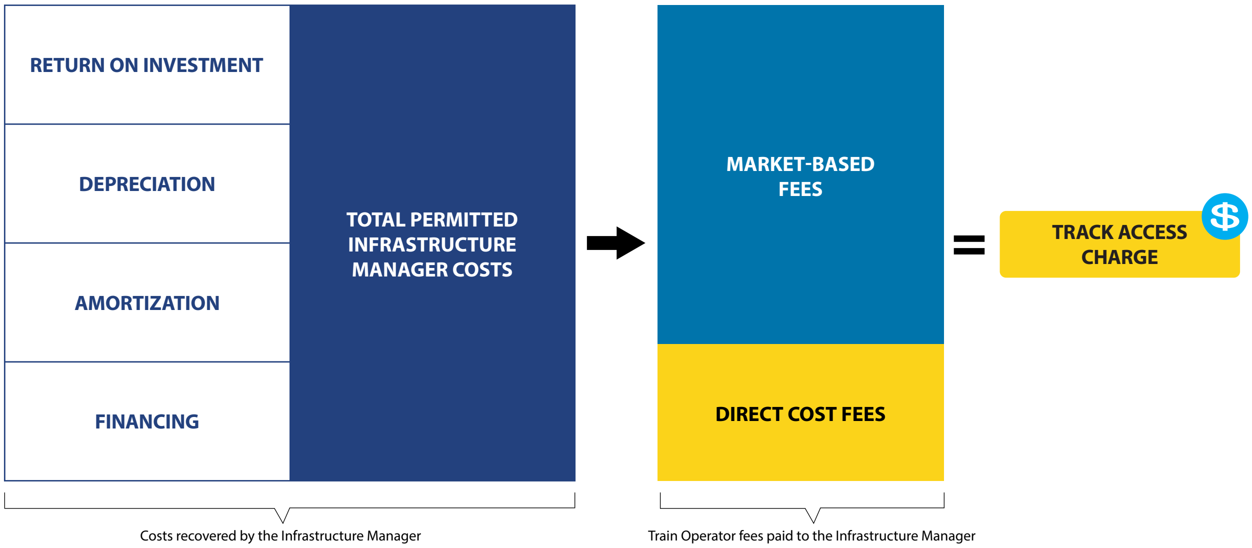
The Authority is exploring the applicability of the European model of railway governance for use in California. Europe has created a commercial structure that recognizes infrastructure management and train operations as two different types of enterprise. This model is made possible using Track Access Charges (TAC), which are the fees paid by train operators to use the infrastructure and that provide a predictable revenue stream for infrastructure managers. When structured effectively, a TAC can recover infrastructure operating costs, depreciation, and a portion of capital investment, creating financial stability and investor confidence in both infrastructure and train businesses.

In Europe, TAC is typically regulated and often includes two components: a basic charge to cover direct network costs and an ability-to-pay charge to recover a portion of total costs efficiently (see **Exhibit 1.0**). The commercial structure can allow for competitive high-speed rail services. In European open access markets, the TAC can represent 30 to 55 percent of the total operating costs, making it a critical factor in pricing and profitability.

The LISEA high-speed line in France (Tours – Bordeaux) is an example of how TAC can also unlock private capital for infrastructure. France privately financed 49 percent of its $8 billion Tours – Bordeaux line. Financial investors in the private 50-year concession are repaid via a TAC on the rail group and future competitive operators. For details, see **Appendix I: Governance and Funding Models**.

By adopting the infrastructure company model and using TACs, the Authority can leverage track capacity and engage in P3 deals that ultimately capture stable, long-term revenue and maintain affordability for passengers through clear regulations. A multi-part tariff, indexed over time and tied to performance metrics such as reliability and capacity, could enable P3 financing for future construction phases while ensuring fair, open access for multiple operators. This approach would reduce reliance on state appropriations and create confidence for private investors. Use of the TAC model can also help enable a future integrated network in cooperation with other regional projects such as Brightline West and the High Desert Corridor.

Exhibit 1.0: Infrastructure Manager Cost Components of Track Access Charges



Coordination and Enabling Framework

Global experience demonstrates that commercially oriented infrastructure models can thrive when supported by clear regulation and operational autonomy. California has the opportunity to adopt similar principles, combining regulated infrastructure access with private investment in operations, retail, and real estate development.

The immediate next steps are the evaluation of responses to the Co-Development Agreement RFQ and the continued development of the clean energy delivery procurement. Moving forward, the Authority will focus on establishing a management framework and refining its commercialization plan based on private sector input and engagement with policymaker engagement.

The Authority is taking critical steps to establish internal structures and dedicated resources to manage this complex, multi-party process. This includes potentially establishing a Chief Commercial Officer role, which underscores the commitment to professionalizing and centralizing these efforts.

Photo: The Tied Arch Bridge in Fresno County will take high-speed trains over State Route 43.

CHAPTER 2: DEVELOPMENT OF THE SYSTEM: CONSTRUCTION, OPERATIONS, AND SERVICE

Introduction

This chapter presents the Authority's strategy to efficiently deliver a commercially viable high-speed rail system, initiate service as early as possible, grow the system to reach major population centers, and integrate operations with California's current transportation system.

The Authority presents three scenarios to build toward an operational high-speed rail system, illustrating how it will complete work in the Central Valley before expanding to connect Northern and Southern California. All scenarios follow key strategies of phased infrastructure development, strategic infrastructure sharing, and accommodations for further expansion to achieve environmental clearance of the Phase 1 system.

The costs presented reflect both further optimization, refined bottom-up cost estimates, schedule adjustments, and anticipation of policy changes aimed at improving delivery statewide. Each scenario presented is a self-contained package of infrastructure, service, and operations that provides needed service while supporting the next step of expansion:

- Merced – Bakersfield
- San Francisco – Bakersfield
- San Francisco – Los Angeles/Anaheim (Phase 1)

Merced – Bakersfield (Underway)

The Merced – Bakersfield (M-B) segment, currently under construction, will serve the Central Valley and form the spine of the Phase 1 alignment from San Francisco to the Los Angeles Basin. As part of the Authority's cost-saving strategy, this early operating segment prioritizes lower capital costs through streamlined station designs, infrastructure choices, and service levels (see **Exhibit 2.0**). The M-B early operating segment will include the infrastructure needed to run eight daily trains in each direction.

After the Federal Railroad Administration (FRA) terminated approximately $4 billion in federal funding, it became clear that the current federal administration is not a reliable partner, the Authority began working with communities to explore concepts to deliver high-speed rail with greater certainty and efficiency at a lower cost to mitigate cost and schedule impacts resulting from federal action. The Authority remains committed to working with local partners on potential adjustments to infrastructure delivery.

Stations in Merced, Fresno, Kings/Tulare, and Bakersfield will be designed to meet operational needs for initial service, with full buildout planned as the system grows. The Authority is continuing to explore and evaluate agreements covering the planning, funding, and operation from Merced to Bakersfield.

The estimated capital costs are now revised to $34.76 billion, which is a net reduction of approximately $2.0 billion since the 2025 Supplemental Project Update Report cost estimate. The Authority will release results of its ongoing procurement of high-speed trains and has thus updated the M-B schedule, which estimates a completion date of 2032. This one-year extension accounts for additional time for optimization and concepts identified in **Transforming California's Future**; however, it remains within the Authority's schedule window.

See **Appendix B: Forecast and Estimates and Appendix D: Project Schedules** for detailed capital cost tables and timelines. See **Appendix G: Ancillary Revenue** for updated ancillary revenue figures.

RIDERSHIP, REVENUE, AND OPERATIONS & MAINTENANCE

Projected annual ridership for the M-B scenario ranges from approximately 1.4 million to 1.9 million, while farebox revenue ranges from $35.2 million to $45.7 million, as shown in **Table 2.0**. For the M-B scenario, ancillary revenue is estimated at $19.3 million to $41.0 million. Ridership is lower than prior estimates due to several factors including lower train frequency and station locations.

Operation and maintenance costs are forecasted to fall between $155.0 million and $175.6 million annually. Based on these projections, the recovery ratio is 35 percent to 49 percent. The M-B corridor, operating as a standalone high-speed rail line with transfer connections to other rail services, would not generate sufficient revenue to cover its total operational expenses.

Exhibit 2.0: Merced – Bakersfield Service Map

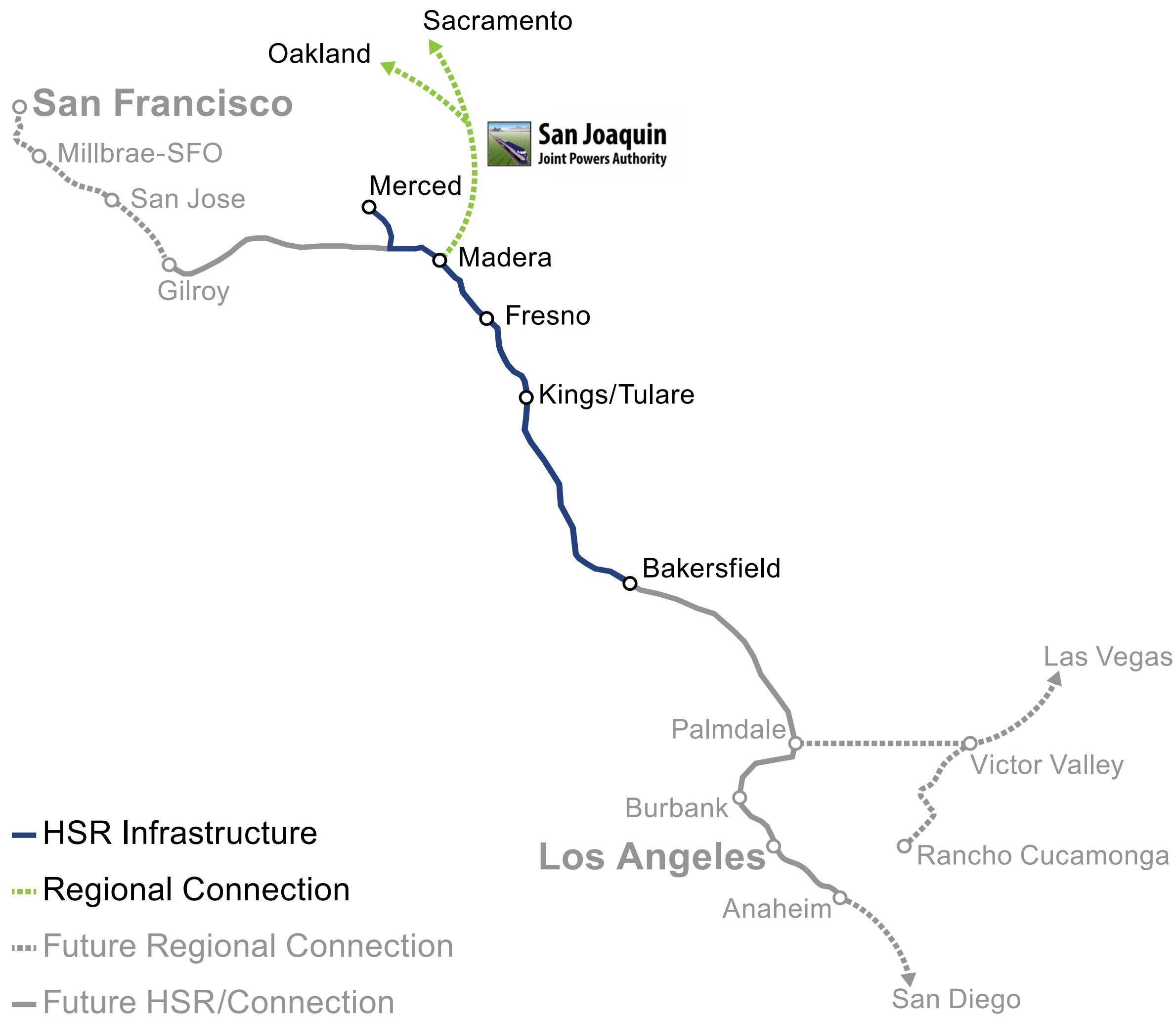


Table 2.0: Merced – Bakersfield 2033 Net Proceeds Outlook (YOE $ in millions)

Farebox Revenue	Ancillary Revenue Net Income	Operations and Maintenance	Recovery Ratio
$35.2 to $45.7	$19.3 to $41.0	$155.0 to $175.6	35% to 49%

*Figures are based on the first full year of service in 2033.
**Passenger revenue is based on only high-speed rail ridership of 1.4 to 1.9 million riders annually and does not include revenue from connecting services.

Immediate Economic Benefits

While ridership revenue and ancillary income for the M-B scenario will not fully cover its operating costs, it remains a vital investment for California. This is the backbone of California's high-speed rail system, transforming the Central Valley by connecting the state's mega regions. The project is already delivering immediate and tangible benefits to the region: construction of the initial 119-mile guideway has generated thousands of good-paying union jobs, supported small and diverse businesses, and boosted economic output and tax revenues for essential public services.

Exhibit 2.1: Economic Impact of California High-Speed Rail (2024-25 and Program Total to Date)

Fiscal Year 2024/2025 Total (July 2024 - June 2025)		Program Total to Date (July 2006 - June 2025)	
13,000	Job-Years Supported	121,910	Job-Years Supported
$1.3B	Labor Income	$9.5B	Labor Income
$2.9B	Economic Output	$24.6B	Economic Output
$430M	Total Tax Revenue		

Since 2006, the Authority has invested $14.6 billion statewide, which has resulted in $24.6 billion in economic output; every dollar California spends on high-speed rail generates an economic output of $1.68. Additionally, $2.5 billion of the Authority's expenditures has been directed toward certified small businesses, Disadvantaged Business Enterprises, and Disabled Veteran Business Enterprises.

For a detailed view of how the Authority measures both the economic activity generated from program expenditures and the societal benefits from future operations, see the Authority's *Economic Investment website*.

San Francisco – Bakersfield

The San Francisco – Bakersfield (SF-B) scenario, shown in **Exhibit 2.2**, builds on the M-B early operating segment by extending high-speed rail infrastructure northwest to Gilroy and enabling through-service to San Jose and San Francisco via upgraded shared corridors. Through service will be achieved with targeted infrastructure improvements such as electrification, signaling upgrades, track capacity improvements, and station upgrades. This approach provides early access to the Bay Area market, creating significant revenue opportunities, at a fraction of the cost of a fully dedicated alignment.

San Francisco will serve as the interim northern terminus at the existing 4th and King Street station, with an extension to Salesforce Transit Center once connecting infrastructure is complete. The service will include up to 18 trains daily, with service patterns to be coordinated with Caltrain to ensure efficient use of shared infrastructure.

A total of $60.34 billion in capital investments is needed to deliver SF-B by 2039. A coordinated state solution, in partnership with regional agencies, will also be required to access and improve the Union Pacific rail line between San Jose and Gilroy. Building on past investments in Caltrain electrification, and in partnership with regional agencies, a joint improvement and electrification of the rail line will be necessary to enable high-speed rail service to reach San Jose and San Francisco. The Authority is prepared to work with state and regional partners to define the extent of the improvements and the additional costs not included in the scenarios, which may range from $2.0 billion to $5.0 billion.

See **Appendix B: Forecast and Estimates and Appendix D: Project Schedules** for detailed capital cost tables and timelines. See **Appendix G: Ancillary Revenue** for updated ancillary revenue figures.

RIDERSHIP, REVENUE, AND OPERATIONS & MAINTENANCE

Similar to M-B, this optimized scenario is designed to control upfront costs while aligning benefits with travel demand. However, SF-B will be the first operating segment where revenues exceed costs, making private financing more viable. During its first full year of service, the expected ridership is between 11.1 million and 14.0 million riders annually, generating $1.1 billion to $1.3 billion in farebox revenue, as shown in **Table 2.1**

Ancillary revenue is estimated at $122.3 million to $277.9 million per year and annual maintenance costs are estimated at $699.0 million to $795.0 million. The SF-B scenario is a profitable business opportunity with a recovery ratio of 171 percent to 199 percent. This positive operating margin will better enable the Authority to finance later phases and make public-private partnerships more attractive. Strong operations improve credit quality and will help the Authority secure co-development and commercialization deals on better terms.

Exhibit 2.2: San Francisco – Bakersfield Service Map

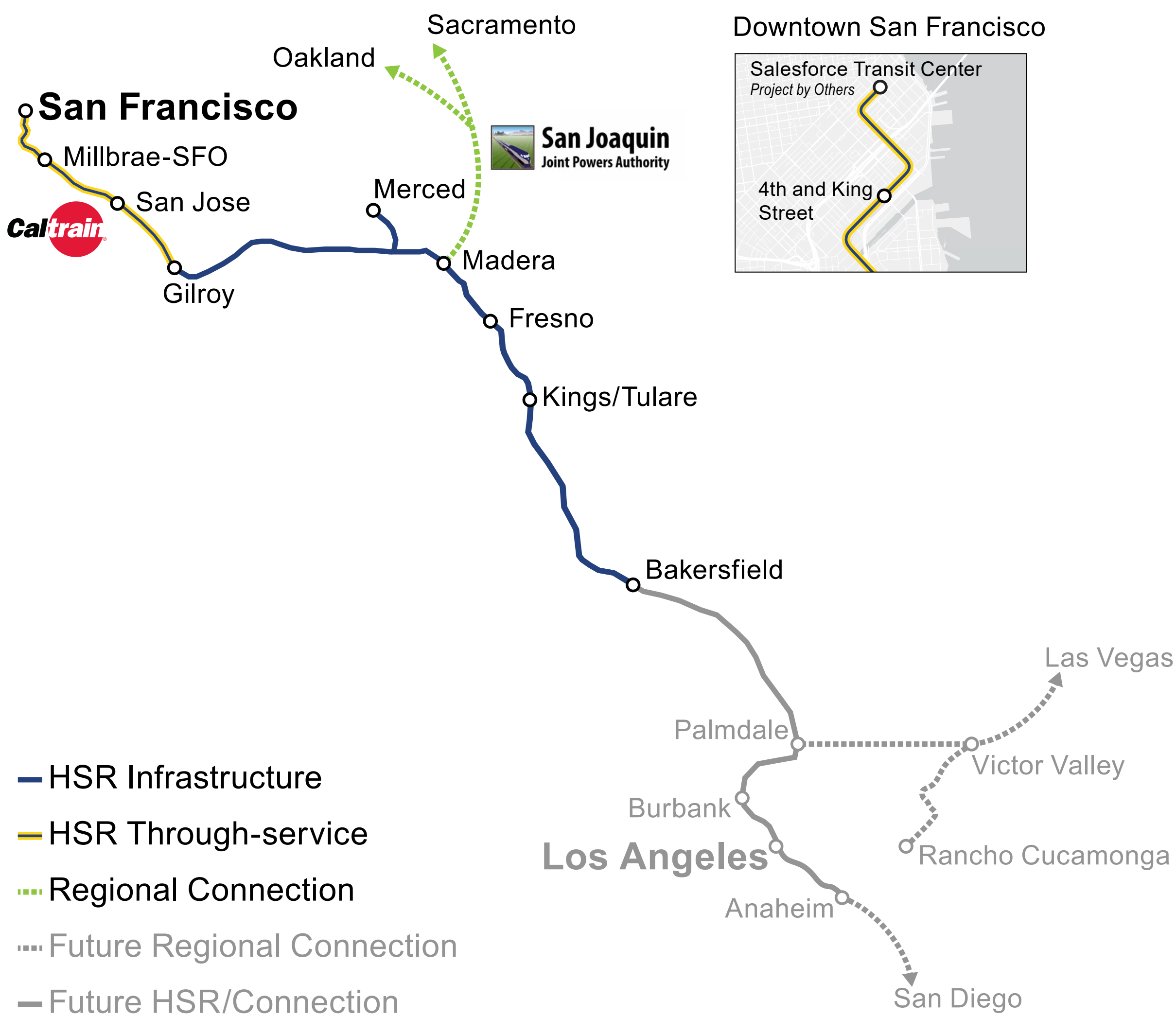


Table 2.1: San Francisco – Bakersfield 2040 Net Proceeds Outlook (YOE $ in millions)

Farebox Revenue	Ancillary Revenue Net Income	Operations and Maintenance	Recovery Ratio
$1,073.3 to $1,304.6	$122.3 to $277.9	$699.0 to $795.0	171% to 199%

*Figures are based on the first full year of service in 2040.
**Passenger revenue is based on only high-speed rail service ridership of 11.1 million to 14.0 million riders annually and does not consider other service models or projections from connecting services.
*** Farebox revenue and operations and maintenance includes a connecting bus service to Los Angeles.

Regional Transportation Partnerships

The Authority continues to work with regional transportation partners to advance the program, leverage regional expertise, and secure innovative funding solutions. These agreements are essential for integrating the high-speed rail system into California's broader transportation landscape and for delivering tangible mobility benefits to communities as early as possible. These partnerships include:

- Sustained coordination with *Caltrain* on high-speed rail through service to San Francisco. This includes key stations in the Bay Area elements and a solution for high-speed rail between San Jose and Gilroy.
- Partnership with the High Desert Corridor Joint Powers Authority to plan and develop the shared Palmdale station and *High Desert Corridor*, which would create a critical transportation link between the high-speed rail system in Palmdale and Brightline West's planned high-speed service to Las Vegas.
- Work with the *San Joaquin Joint Powers Authority (SJJPA*) on creating a fully integrated and seamless passenger rail network in the Central Valley is ongoing. The SJJPA station in Madera would allow for early, integrated service and seamless transfers for passengers connecting from the northern Central Valley and Sacramento to the high-speed rail system.

San Francisco – Los Angeles/Anaheim (Phase 1)

The Authority is developing an optimized Phase 1 approach to deliver service sooner and at a lower cost, without compromising safety or core performance. Instead of building every element to maximum specification before service commences, the Authority is considering an initial Phase 1 system following methods like those for other scenarios as outlined in the 2025 Supplemental Project Update Report.

Optimization efforts show tremendous potential savings of an early-build incremental solution compared to the eventual full Phase 1 build-out as specified in the 2024 Business Plan. The Authority used methods from bottom-up cost estimating to re-estimate the full Phase 1 buildout at approximately $231.3 billion in today's dollars. The optimized approach presented below lowers threshold capital investment necessary to reach the Los Angeles basin to approximately $126.2 billion while preserving strong ridership and positive revenue results. This represents $105 billion in program-wide savings, including previously identified savings presented in the 2025 Supplemental Project Update Report.

Phase 1

The Phase 1 scenario marks a dramatic shift in service with the operation of two trains per hour between San Francisco and the Los Angeles Basin, totaling 36 trains per day. Half of these would provide hourly SF-LA express service, as shown in **Exhibit 2.3**.

Building off SF-B infrastructure, the Authority would extend its dedicated high-speed rail system to Palmdale and add incremental capacity across the system. The Authority would partner with LA Metro and Metrolink to upgrade lines used by regional, intercity, and freight rail services to connect riders from Burbank to Los Angeles and Anaheim.

If it were initially constructed in full as a dedicated high-speed rail alignment, the Palmdale – Burbank segment would require 26 miles of tunneling. A promising initial approach involves improving and leveraging Metrolink's Antelope Valley Line, similar to the Authority's Caltrain investment in the Bay Area that would save tens of billions of dollars in initial investment while still delivering billions of dollars in operating profit. The Authority's analysis found that by using the Antelope Valley Line from Palmdale to Soledad Canyon with one dedicated high-speed rail tunnel section, high-speed rail service can begin prior to completion of the full Phase 1 buildout.

Phase 1 includes all major stations delivered as part of M-B and SF-B, as well as new stations at Palmdale, Burbank Airport, LAUS, and Anaheim. The Palmdale station will serve as a connection point to the proposed High Desert Corridor, which would link the Antelope Valley to Victor Valley. In combination with Brightline West services to Las Vegas and Rancho Cucamonga, these projects collectively will form the backbone of a broader Southwest high-speed rail network.

Completing an optimized solution from Palmdale to Burbank and continuing to Los Angeles offers a fiscally responsible interim solution that enables earlier delivery of Phase 1 service. By leveraging existing infrastructure and making targeted investments, this approach strikes a balance between capital costs and ridership and revenue potential while allowing for future full Phase 1 buildout. It represents a prudent path forward for the state to deliver a commercially viable high-speed rail system that can attract investment and generate revenue for future expansion.

Phase 1 will require a total capital investment of $126.2 billion, with completion set for 2039 and full service to start in 2040. The Authority has also identified certain shared-benefit elements, such as roadway grade separations, for joint investment by partner state and regional agencies, at an additional $9 billion (see **Table B.5**). See **Appendix B: Forecast and Estimates** and **Appendix D: Project Schedules** for detailed capital cost tables and timelines. See **Appendix G: Ancillary Revenue** for updated ancillary revenue figures.

RIDERSHIP, REVENUE, AND OPERATIONS & MAINTENANCE

Phase 1 will drive ridership and revenue higher due to increased service of two trains per hour and express service (see **Table 2.2**). Annual ridership is forecasted between 23.6 million and 30.6 million, generating approximately $3.0 billion to $3.8 billion in farebox revenue. For comparison, the 2024 Business Plan projected 28.4 million annual riders for a full Phase 1 build-out.

Ancillary revenues will further strengthen financial performance, even as operations and maintenance costs rise to $1.2 billion to $1.4 billion annually. Projected ancillary income of $185.8 million to $466.3 million per year, combined with a recovery ratio of 264 percent to 315 percent, represents a significant revenue outcome that can be reinvested into the system to support future expansion and increase service across the high-speed rail system.

Exhibit 2.3: San Francisco - Los Angeles / Anaheim (Phase 1) Service Map

Table 2.2: Phase 1 2040 Net Proceeds Outlook (YOE $ in millions)

Farebox Revenue	Ancillary Revenue Net Income	Operations and Maintenance	Recovery Ratio
$3,007.3 to $3,844.7	$185.8 to $466.3	$1,210.3 to $1,367.1	264% to 315%

*Figures are based on the first full year of service in 2040.
**Passenger revenue is based on only high-speed rail service ridership of 23.6 to 30.6 million riders annually and does not consider other service models or projections from connecting services.

EARLY INVESTMENT IN THE LOS ANGELES BASIN

Early investments in the Los Angeles Basin, such as upgrading shared corridors, could be completed concurrent to work connecting the Central Valley to the Bay Area. This would provide benefits to the Southern California region even before high-speed rail service arrives. Such investments would help prepare for future high-speed rail through-service, as did the 2024 electrification of the Caltrain corridor, which the Authority helped fund. Caltrain improvements have already greatly increased ridership while lowering greenhouse gas emissions.

Moving forward with these early investments in Southern California will depend on available funding and establishing strong regional partnerships. While Caltrain electrification was funded before this legislative action, similar new investments along Metrolink lines could provide comparable benefits for Southern California.

INTERIM SERVICE TO PALMDALE

As a potential interim stage, if the segment between Bakersfield and Palmdale is completed before a route into the Los Angeles Basin, high-speed rail service could begin between San Francisco and Palmdale, relying on completed SF-B infrastructure. As with Phase 1, two hourly high-speed trains would operate from San Francisco to Palmdale (SF-P), one as a limited express service.

With completion of the High Desert Corridor, one train per hour could continue to Victor Valley, where passengers could connect with Brightline West service to Rancho Cucamonga and Las Vegas. At Palmdale, a connecting Metrolink/Surfliner express service to Los Angeles and San Diego could give passengers a preview of a truly statewide service.

The SF-P scenario is projected to cost $96.73 billion, with completion in 2039 and full service beginning in 2040. It is expected to serve 16.3 million riders and generate approximately $1.86 billion in farebox revenue. Annual operations and maintenance costs are estimated at $871.7 million, with ancillary revenue of $200.2 million. Overall, SF-P is projected to achieve a recovery ratio of 236 percent, representing a healthy profit margin when all inputs are considered. (see **Table 2.3**).

See **Appendix B: Forecast and Estimates** and **Appendix D: Project Schedules** for detailed capital cost tables and timelines. See **Appendix G: Ancillary Revenue** for updated ancillary revenue figures.

Table 2.3: San Francisco – Palmdale 2040 Net Proceeds Outlook (YOE $ in millions)

Farebox Revenue	Ancillary Revenue Net Income	Operations and Maintenance	Recovery Ratio
$1,858.8	$200.2	$871.7	236%

*Figures are based on the first full year of service in 2040.
**Passenger revenue is based on only high-speed rail service ridership of 16.3 million riders annually and does not consider other service models or projections from connecting services.

Future Phase 1 Economic Impacts

California's investment in high-speed rail is more than a transportation project: it is a powerful engine for jobs, growth, and long-term economic prosperity. Construction spending has already delivered substantial benefits to employment and economic activity statewide, particularly through work on the Merced – Bakersfield section.

Completion of Phase 1 will provide an even greater boost to California's economy and workforce. Based on the total Phase 1 costs presented in this 2026 Business Plan, the combined impacts — past and future — are projected to be five to six times greater than the economic impacts achieved since the program began in 2006.

Phase 1 is projected to generate $173 billion in total economic output, including $70 billion in income flowing directly to California households, while supporting nearly 798,200 job-years of employment. These impacts reflect not only direct construction activity but also the extensive ripple effects across supporting industries and the additional economic activity created as workers spend their earnings in communities throughout the state.

Exhibit 2.4: Phase 1 Economic Impact

Completed Phase 1

798,200	$70.1B	$173B
Job-Years Supported	**Labor Income**	**Economic Output**

Photo: When completed, the Road 26 Grade Separation in Madera County will take traffic and pedestrians over BNSF and high-speed rail tracks.

Photo: The Shaw Avenue Grade Separation in Fresno will take traffic over the existing rail and future high-speed rail lines, improving safety and traffic flow.

CHAPTER 3: **FUNDING TO DELIVER CALIFORNIA HIGH-SPEED RAIL**

Introduction

This chapter presents the Authority's current funding position and examines benefits, costs, and funding strategies for expansion beyond Merced – Bakersfield (M-B). With the M-B early operating segment funded and construction underway, the Authority plans to invest at least $500 million to advance Phase 1 activities beyond the Central Valley. Such activities would include geotechnical investigations for tunnels through the Tehachapi Mountain range and Pacheco Pass, and strategic right-of-way activities and utility relocations.

Additionally, this chapter addresses critical program needs for securing stable, long-term funding for the northern and southern segments — areas that will generate the majority of the system's future ridership and revenue. The policies and implementation tools, as outlined at the beginning of this report, will be essential to enable the Authority to streamline delivery and maximize the benefits of public-private partnerships. These measures are critical to delivering a modern high-speed rail system on time and within budget.

Current Funding

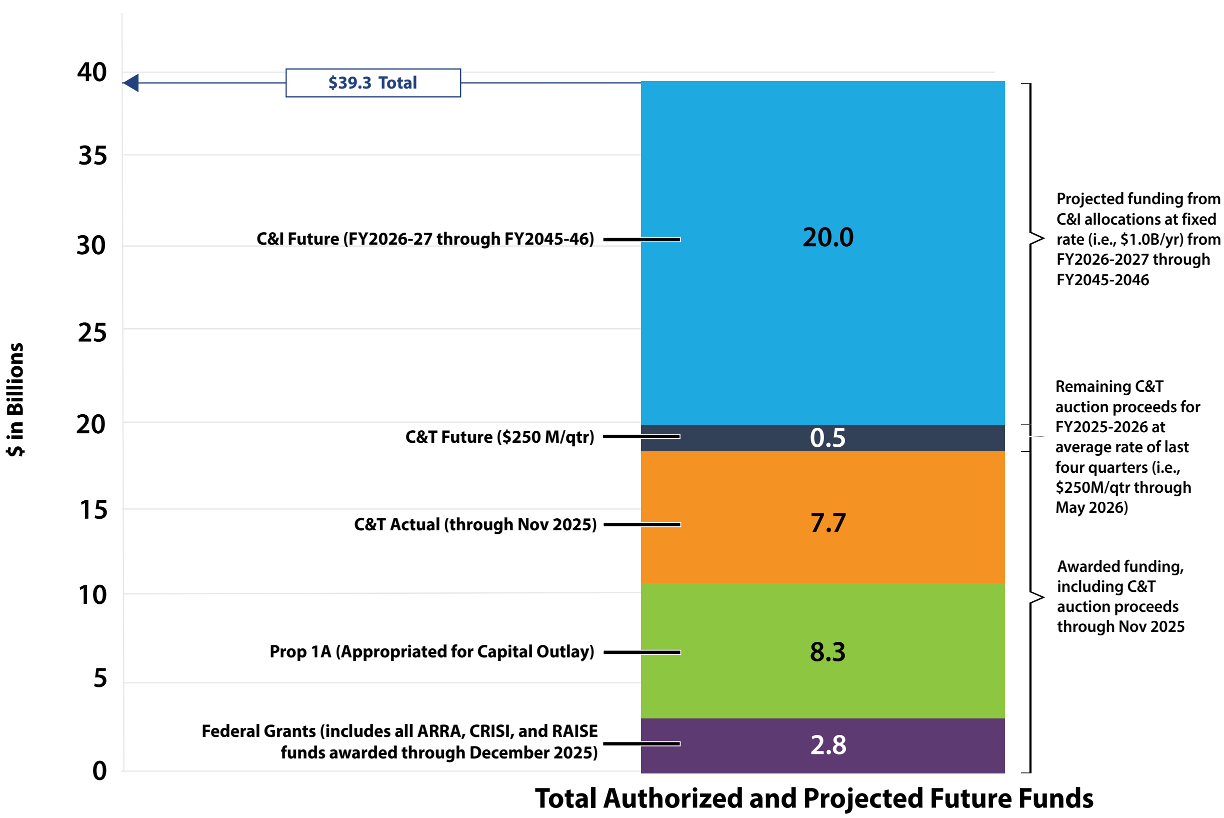
California high-speed rail is primarily funded by two major state funding sources: Proposition 1A, which has been mostly expended, and Greenhouse Gas Reduction Funds. Since the 2025 Supplemental Project Update Report, the Authority's state funding outlook has improved. The extension of the Cap-and-Invest program replaced the previous 25 percent auction-based allocation, set to end in 2030, with a fixed annual appropriation of $1.0 billion through 2045. This change provides long-term revenue certainty and a stable foundation for planning and financing.

The Authority removed from its budget calculations approximately $4.0 billion in federal funding, including the $3.1 billion Federal-State Partnership cooperative agreement and $928.6 million from earlier Federal Railroad Administration (FRA) awards from 2010 and 2011. While the Authority initially challenged the FRA's termination of these funds, the Authority ended its litigation in December 2025 after it became clear that the current federal administration is not a reliable partner. As a result, federal funding now accounts for less than 10 percent of the program's total budget, far below international norms for nationally significant investments in high-speed rail such as this investment in California.

The Authority forecasts $39.3 billion in capital funding through 2045 (see **Exhibit 3.0**). The estimated capital cost for the M-B section is $34.76 billion. However, to maintain the construction schedule and achieve the planned completion date of 2032, the Authority will need the policies and implementation tools outlined in the preface *Transforming California's Future* to capitalize out-year funds to bring cash proceeds into the program sooner.

Table 3.0 provides an overview of funding available based on funding sources and includes the total expended as of December 2025. For a breakdown of expenditures to date by scope element, see **Appendix B: Forecast and Estimates**

Exhibit 3.0: Currently Available, Authorized, and Future Funding



*Totals may not sum due to independent rounding.
**C&T is net of funds for project support activities.
***Prop 1A is net of funds for administrative and project support activities.
****Following enactment of SB 850 and AB 1207, auction proceeds for fiscal years after September 19, 2025, are designated as C&I funding rather than C&T.

Table 3.0: Summary of Total Funding Available and Total Funds Expended ($ in Millions)

Funding Source	Total Funding A	Total Expended B	Total Remaining C = A - B
Federal Funds			
ARRA Construction	2,079	2,079	0
ARRA Planning	466	466	0
CRISI - Shafter Grade Separation	202	0	202
RAISE SR 46, Merced Design, Fresno Depot	69	25	44
Brownfield + Corridor ID + Other	2	2	0
State Funds			
Proposition 1A Project Development	607	607	0
Proposition 1A Central Valley Segment Construction	6,624	6,624	0
Proposition 1A Bookends	1,100	656	444
Proposition 1A Capital Outlay Support	219	219	0
Proposition 1A Administration	450	270	180
Cap-and-Trade Received through November 2025	8,199	4,533	3,666
Future Cap-and-Trade through May 2026	500	0	500
Cap-and-Invest FY 2026-27 through FY 2045-46	20,000	0	20,000
Total Available Funding through 2045-46	**40,517**	**15,481**	**25,036**
Reserved for Future Administration	(450)	(270)	(180)
Reserved for Future Capital Outlay Support	(719)	(388)	(331)
Total Available Capital Funding Through 2045	**39,348**	**14,823**	**24,525**

Note: Expenditure totals are through December 2025 and may not sum due to independent rounding.

FUNDING PLAN FOR MERCED – BAKERSFIELD

Completing the M-B segment remains the Authority's first priority. This segment benefits from a fixed allocation of $1.0 billion per year through 2045. While the identified funding through 2045 is $39.3 billion, and current estimated cost for the segment is $34.76 billion, revenue service for the M-B segment is targeted to begin in 2033. The result is a projected cash flow alignment issue that must be resolved.

To maintain the schedule and avoid costly delays, the Authority anticipates needing to accelerate the availability of funds through a low-cost financing solution using the existing funding commitment from GGRF. This financing approach would help keep construction moving and mitigate inflationary impacts, which could otherwise add billions to total costs and delay the introduction of service by at least a decade under a pay-as-you-go-model.

The Authority also remains optimistic federal funds will become available for the project at a future date.

Bookend Projects

Under SB 198 (2022), the Authority is limited to $500 million in new capital expenditures outside the Central Valley, excluding prior commitments. Commitments for bookend investments, made before SB 198, include the following:

- **Caltrain Electrification:** $714 million from the Authority leveraged with other funds; now providing clean, electrified service and supporting future high-speed rail.
- **San Mateo Grade Separation:** $84 million from the Authority toward a $206 million project, now completed and improving safety.
- **Rosecrans / Marquardt Grade Separation:** $77 million from the Authority toward a $156 million project, now completed and improving safety.
- **Los Angeles Union Station (LinkUS):** $423 million from the Authority leveraging $527 million in other funds; this future project is under review for cost due to inflation, contingencies, escalation, and mitigation measures.

Benefit Cost Analysis

In 2025, the Authority conducted a benefit-cost analysis (BCA) for the program to quantify the value of California high-speed rail. More than a dozen societal and environmental benefit categories were considered, such as increased traffic safety and reduced vehicle emissions. BCAs provide tools to convert benefits to a common monetary value, allowing for a clear comparison based on a consistent metric. By comparing its expected benefits against program costs, a BCA helps determine whether a project is a sound economic investment.

The Authority evaluated each stage of the program, as presented in **Chapter 2**, for benefits such as time savings, improved safety and accessibility, reduced emissions, and job opportunities while considering the initial and long-term costs of building, operating, and maintaining the system. The result of this analysis is expressed as a Benefit-Cost Ratio (BCR), which indicates the level of return on investment. Costs and benefits related to commercialization of Authority assets are not quantifiable at this time and would significantly increase the BCR.

Exhibit 3.1: Phase 1 30-Year Social, Environmental, and Economic Benefits

HSR Passenger Benefits		Benefits to the Broader Community	
$17.0B	**Travel Time Benefits** Saved travel time for HSR passengers	$33.7B	**Wider Economic Benefits for Workers** Greater access to job opportunities
$14.0B	**Vehicle Operating Cost Savings** Savings on fuel, maintenance, tires, and depreciation	$13.2B	**At-Grade Rail Crossing Removals** Benefits from grade crossing eliminations and improvements
$8.2B	**Reliability Benefits** Reduced variability in arrival times for HSR passengers	$4.3B	**Environmental Benefits** Reductions in CO_2, PM2.5, NOx, and SOx emissions
$10.0B	**Station Amenity Benefits** Benefits from improvemens to stations and trains	$1.5B	**Wider Economic Benefits for Firms** Increased firm profits from greater connectivity
$6.4B	**Safety Benefits** Benefits from avoided vehicle crashes, injuries, and fatalities	$1.6B	**Noise, Road Congestion, and Pavement Maintenance Savings** Reduced noise, congestion, and pavement wear and tear from reduced VMT
$6.0B	**New Traveler Benefits** Benefits experienced by new travelers on trips they would not have taken	$2.3B	**Residual Value, Net of Operation and Repair Costs** Remaining value of asset net of operation and maintenance costs and repair and rehabilitation costs

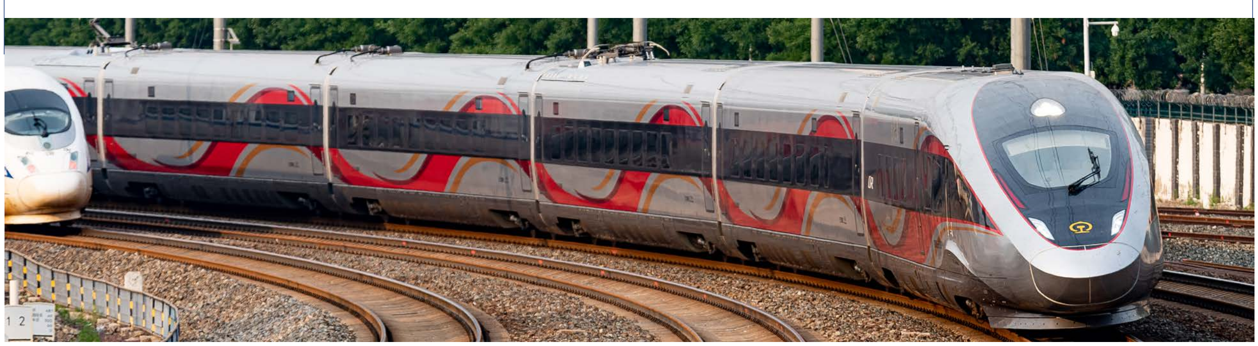
- **Merced – Bakersfield (M-B):** The societal benefits generated by M-B improvements are estimated to be $15.0 billion in discounted 2023 dollars over a 30-year benefits analysis period. The total capital costs (net of indirect taxes) are calculated to be $26.0 billion in discounted 2023 dollars. The difference in the discounted benefits and costs equals a net present value of negative $10.9 billion in discounted 2023 dollars, resulting in a benefit-cost ratio (BCR) of 0.6.
- **San Francisco – Bakersfield (SF-B):** The societal benefits generated by the SF-B improvements are estimated to be $50.4 billion in discounted 2023 dollars over a 30-year benefits analysis period. The total capital costs (net of indirect taxes) are calculated to be $39.9 billion in discounted 2023 dollars. The difference in the discounted benefits and costs equals a net present value of $10.5 billion in discounted 2023 dollars, resulting in a BCR of 1.3.
- **San Francisco – Los Angeles/Anaheim (Phase 1):** The societal benefits generated by Phase 1 improvements are estimated to be $118.3 billion in discounted 2023 dollars over a 30-year benefits analysis period. The total capital costs (net of indirect taxes) are calculated to be $74.3 billion in discounted dollars. The difference in the discounted benefits and costs equals a net present value of $44.0 billion in discounted 2023 dollars, resulting in a BCR of 1.6.

See **Appendix F: Benefit Cost Analysis** for more details including the analysis of specific impacts.

Lessons from Global High-Speed Rail Investment

If the U.S. funded high-speed rail at levels comparable to that of peer nations, the scale and pace of delivery would be dramatically different. Countries such as France, Japan, China, and Germany have historically committed sustained funding for rail transportation comparable to national spending on highways. Each country has dedicated multi-decade funding streams for high-speed rail, often backed by national infrastructure programs and long-term financing mechanisms. These commitments have enabled rapid network expansion, reduced delivery risk, and ensured operational profitability. For example:

- **France:** National government funding covers approximately 50 to 70 percent of capital costs of high-speed lines, supplemented by regional contributions and long-term debt financing. This approach has delivered more than 1,500 miles of high-speed rail since the 1980s.
- **Japan:** Central government investment and dedicated rail development funds have supported continuous Shinkansen expansion for more than five decades, with financing structured to minimize annual budget impacts. The national government typically pays for 50 percent of the cost of new Shinkansen lines, with the rest funded and financed by the railroad with local support.
- **China:** A highly centralized funding model, leveraging state-backed financing and bond issuance, has enabled the construction of more than 25,000 miles of high-speed rail in less than 20 years while incurring hundreds of billions of dollars in debt.
- **Germany:** High-speed rail infrastructure is funded primarily by the federal government, typically covering 80 to 100 percent of capital costs through long-term national transport programs. Incremental corridor upgrades and selective new-build lines have delivered more than 1,000 miles of high-speed and high-performance rail integrated with the conventional network.
- **Spain:** The development of high-speed rail was funded 35 percent by the national government, 25 percent by the European Union, and 40 percent financed by the European Investment Bank and use of green bonds. With nearly 2,500 miles in service and over 400 miles in development, passenger traffic has grown to more than 40 million annually.



Beijing–Shanghai High-Speed Railway (China) *creativecommons.org/licenses/by-sa/3.0/*

Future Funding

Additional stable funding is needed to fully extend high-speed rail to California's major population centers and to achieve commercial profitability that will help underwrite expansion as the system grows. This section outlines current and potential funding opportunities under consideration. Implementing some of these funding strategies will require additional statutory authority, as outlined in the opening section of the report, to allocate new resources, authorize financing mechanisms, and enable public-private partnerships.

BOND FUNDING

Approved by voters in 2008, Proposition 1A authorized $9 billion for planning and constructing Phase 1 of California's high-speed rail system, plus $950 million for local connectivity projects. At this point, the majority of Prop 1A bond funds have been expended for planning, design, and construction with high confidence in accessing the remaining funds for local projects and state operations.

STATE GRANT PROGRAMS

State grant programs support improvements to intercity passenger rail, transit systems, and roadways, all of which can also advance high speed rail related elements. The Authority can support local and regional entities in seeking state grants for dual-benefit projects like roadway grade separations and stations.

GENERAL FUND

The Authority has never received direct General Fund support. Under Proposition 2, when the Rainy-Day fund reaches its 10 percent cap, excess revenues must be directed to infrastructure investments.

While other General Fund surpluses in 2022 and 2023 were directed to various transportation Infrastructure programs, none of those funds were allocated to high-speed rail. When the state budget again enters years of budget surpluses, the high-speed rail project is an appropriate use of surplus state funds and could be considered for allocation.

CAP-AND-INVEST

Since 2014, the Authority has received a continuous appropriation of 25 percent of Cap-and-Trade auction proceeds. Based on past allocations, the Authority expects to receive an estimated total of $8.7 billion through Fiscal Year 2025-26. The Authority has reserved $509.0 million for past and future support costs, leaving $8.2 billion for capital construction, as shown in the two Cap-and-Trade items in **Exhibit 3.0**. In 2025, new legislation reauthorized the program as Cap-and-Invest, establishing a fixed annual allocation of $1.0 billion through 2045 starting fiscal year 2026-27. This shift provides a stable funding source, eliminating reliance on fluctuating quarterly auction results. Confidence in this funding source is high for the near future; long-term, however, this funding source could become volatile, and revenues could decline.

FEDERAL FUNDING

When voters approved Proposition 1A in 2008, the state anticipated federal participation would cover up to one-third of initial program costs. To date, California's high-speed rail system has received $6.8 billion in federal funding, which is about 20 percent of total costs. That amount fell to $2.8 billion after the Trump-Vance Administration rescinded $4.1 billion in previously awarded federal funding, leaving federal support for the Authority's program at less than 10 percent.

As part of its comprehensive grant management and project oversight role, the Federal Railroad Administration (FRA) has historically conducted quarterly and annual monitoring reviews to ensure that federal funds have been used appropriately and in compliance with awarded grants. In August 2024, the FRA conducted an in-depth monitoring review of the Authority's program. The Authority spent four days with FRA officials, three of those onsite in the Central Valley at project locations and provided more than 80,000 pages of cooperative agreement compliance documentation. In October 2024, the FRA issued its findings, confirming that no fraud, waste, abuse, or other significant issues would impact project completion or compliance with the cooperative agreements. See **Appendix C: Risk Register** for details on oversight and audits of the program.

The Authority remains committed to pursuing future federal funding, recognizing that strong federal support will accelerate system delivery. While confidence in obtaining near-term federal funding is low, federal grants have historically been dependable once awarded, and the Authority is optimistic that the previously strong state-federal partnership can be restored in the future.

LOCAL AND REGIONAL FUNDING

Shared corridors create funding opportunities that combine local, regional, state, and federal resources while preparing for future high-speed rail service. These investments allow the Authority to leverage other funding sources to deliver early joint benefits while building the backbone of the high-speed rail system.

Capturing incremental value of investments in stations, facilities, air rights leasing, and joint development would be enhanced by enabling the Authority to initiate and lead Enhanced Infrastructure Financing Districts, with local partners, and related tax increment tools across city and county boundaries.

PRIVATE SECTOR PARTICIPATION

In December 2025, the Authority launched a solicitation to bring on a private partner consortium by summer 2026 under a Co-Development Agreement. This partnership, supported by stable funding of $1.0 billion per year in Cap-and-Invest allocations, will help deliver high-speed rail faster and more economically by leveraging private innovation and financing. **Chapter 1** provided an overview of opportunities for California high-speed rail to combine public infrastructure or operations with private investment.

Funding Options for San Francisco – Bakersfield and Phase 1

The Authority is exploring the funding needed to deliver high-speed rail to the Bay Area and Greater Los Angeles. Both connections have great opportunities to generate substantial revenues. To accelerate delivery and avoid further cost escalation for this phase of the system, the Authority will require additional funds beyond Cap-and-Invest, along with additional financing tools and public-private partnerships (P3s). From a funding standpoint, the San Francisco – Bakersfield (SF-B) and Phase 1 scenarios both provide opportunities to leverage completed Central Valley infrastructure.

- The SF-B scenario is a cost-effective initial goal. It minimizes upfront costs by leveraging shared corridors while delivering early revenue service and strong financial performance. The segment is projected to begin operations with ridership and revenue sufficient to cover operating costs and generate positive returns.
- Phase 1 provides the highest revenue potential and statewide connectivity by linking San Francisco to Los Angeles/Anaheim. Revenue projections are very strong, but capital costs are significantly higher than SF-B.

To illustrate the financial requirements for these sections, **Table 3.1** provides an updated outlook for capital costs, funding needs, and financing assumptions. These figures reflect a revised start date for design and construction of FY26-27.

Table 3.1: Buildout Cost, Funding, and Profit Scenarios ($ in billions)

Buildout Scenario	Total Cost*	Net Cost**	Annual Funding Commitment***				40-Year Net Operating Profit^
			2042 (15 years)	2047 (20 years)	2057 (30 years)	2072 (45 years)	
San Francisco – Bakersfield	$60.34	$25.57	$1.78	$1.46	$1.20	$1.04	+42.23
San Francisco – Palmdale	$96.73	$61.97	$4.36	$3.59	$2.96	$2.56	+77.68
San Francisco – Los Angeles/ Anaheim (Phase 1)	$126.20	$91.43	$6.40	$5.25	$4.33	$3.75	+174.34

* Construction cost estimates include a P65 level of contingency.
** Funding needed during construction period. Net cost is derived by excluding the cost of $34.8 billion for Merced – Bakersfield which is alternatively funded (using Cap-and-Invest).
*** Annual Funding Commitment is assumed to commence in 2028, includes debt service, and is dependent on the source(s) of revenue pledge offered, as well as prevailing market conditions.
^ Cumulative operating profit is based on a service start year of 2040, if built using financing against long term state funding.

Photo: The pre-cast girders have been placed on the Corcoran Highway structure.

APPENDIX A:
2026 BUSINESS PLAN STATUTORY REQUIREMENTS AND LEGAL MEMO

Note from California High-Speed Rail Acting Assistant Chief Counsel

DATE: February 27, 2026

TO: File

FROM: Allison Post Harris, Acting Assistant Chief Counsel

SUBJECT: Review of draft 2026 Business Plan and Appendices

As part of the process of following the statutory requirements for producing the California High-Speed Rail Authority's draft 2026 Business Plan, I have reviewed the draft 2026 Business Plan and Appendices, and I confirm that it includes the elements required under California Public Utilities Code sections 185033, 185033.7 and 185033.8.

The Authority's governing statutes are established in the California Public Utilities Code sections 185000-185038; Section 185033 lays out the requirements for the Business Plan.

In 2022, Senate Bill (SB) 198 added a new Section 185033.7 to the Public Utilities Code to specify additional information in future Project Update Reports and Business Plans. In 2025, Assembly Bill (AB) 377 added a new Section 185033.8 to the Public Utilities Code requiring a detailed funding plan for the Merced to Bakersfield segment.

Section 185033 requirements for the Business Plan are as follows:

(a) The authority shall prepare, publish, adopt, and submit to the Legislature, not later than May 1, 2014, and every two years thereafter, a business plan. At least 60 days prior to the publication of the plan, the authority shall publish a draft business plan for public review and comment. The draft plan shall also be submitted to the Senate Committee on Transportation and Housing, the Assembly Committee on Transportation, the Senate Committee on Budget and Fiscal Review, and the Assembly Committee on Budget.

(b) (1) The business plan shall include, but need not be limited to, all of the following elements:

(A) A description of the type of service the authority is developing and the proposed chronology for the construction of the statewide high-speed rail system, and the estimated capital costs for each segment or combination of segments.

(B) A forecast of the expected patronage, service levels, and operating and maintenance costs for the Phase 1 corridor as identified in paragraph (2) of subdivision (b) of Section 2704.04 of the Streets and Highways Code and by each segment or combination of segments for which a project level environmental analysis is being prepared for Phase 1. The forecast shall assume a high, medium, and low level of patronage and a realistic operating planning scenario for each level of service.

(C) Alternative financial scenarios for different levels of service, based on the patronage forecast in subparagraph (B), and the operating break-even points for each alternative. Each scenario shall assume the terms of subparagraph (J) of paragraph (2) of subdivision (c) of Section 2704.08 of the Streets and Highways Code.

(D) The expected schedule for completing environmental review, and initiating and completing construction for each segment or combination of segments of Phase 1.

(E) An estimate and description of the total anticipated federal, state, local, and other funds the authority intends to access to fund the construction and operation of the system, and the level of confidence for obtaining each type of funding.

(F) Any written agreements with public or private entities to fund components of the high-speed rail system, including stations and terminals, and any impediments to the completion of the system.

(G) Alternative public-private development strategies for the implementation of Phase 1.

(H) A discussion of all reasonably foreseeable risks the project may encounter, including, but not limited to, risks associated with the project's finances, patronage, right-of-way acquisition, environmental clearances, construction, equipment, and technology, and other risks associated with the project's development. The plan shall describe the authority's strategies, processes, or other actions it intends to utilize to manage those risks.

(2) To the extent feasible, the business plan should draw upon information and material developed according to other requirements, including, but not limited to, the pre-appropriation review process and the pre-expenditure review process in the Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century pursuant to Section 2704.08 of the Streets and Highways Code. The authority shall hold at least one public hearing on the business plan and shall adopt the plan at a regularly scheduled meeting. When adopting the plan, the authority shall take into consideration comments from the public hearing and written comments that it receives in that regard, and any hearings that the Legislature may hold prior to adoption of the plan.

SB 198 (2022)

STATUTORY SCHEDULES REQUIREMENTS

In 2022, SB 198 modified the requirements for the information that is to be included in the Business Plan. SB 198 added a new Section 185033.7 to the Public Utilities Code, and this new section specified that a set of delivery schedules be added to the Project Update Report and the Business Plan.

As set forth in Section 185033.7 (b) (1), As part of the business plan that is due on or before May 1, 2024, pursuant to Section 185033.5, the authority shall develop schedules related to the delivery of all of the following tasks:

(A) Completion of the 119-mile dual track segment from Madera to Poplar Avenue, which means Avenue 19 in the County of Madera to one mile north of the Tulare-Kern county line southward to north of Bakersfield, currently near Poplar Avenue.

(B) Completion of right-of-way, planning, and advance engineering for extensions to Merced and Bakersfield.

(C) Completion of an agreement or agreements between the state, the San Joaquin Joint Powers Authority, the San Joaquin Regional Rail Commission, and the authority that details the role of each in planning, constructing, and funding the connection in the City of Merced.

(D) Completion of an agreement or agreements between the state, the San Joaquin Joint Powers Authority, the San Joaquin Regional Rail Commission, and the authority covering the planning, funding, and operation of the proposed high-speed rail services from Merced to Bakersfield and the authority and approval for the San Joaquin Joint Powers Authority to contract for the operation of the high-speed rail services.

(E) Provision of an updated cost estimate with a stated probability level, or levels, of its ongoing contracts and for the work it is funding and managing that is required to complete the Merced to Bakersfield segment extensions.

(F) Completion of a funding plan that includes any additional federal funding awards for the Merced to Bakersfield segment.

(G) Additional milestones required for the completion of the Merced to Bakersfield segment and the full Phase 1 System pursuant to subparagraphs (A) to (F), inclusive.

(2) The delivery schedules developed pursuant to paragraph (1) shall be included and updated in each subsequent business plan adopted pursuant to Section 185033 and project update report prepared pursuant to Section 185033.5.

STATUTORY COST/FUNDING REQUIREMENTS (SB 198): BUSINESS PLAN

In 2022, SB 198 modified the requirements for the information that is to be included in the Business Plan. SB 198 added a new Section 185033.7 to the Public Utilities Code; this new section specified that a set of cost and funding requirements be added to the Project Update Report and the Business Plan. The required information pursuant to 185033.7(c) (1) includes

As set forth in Section 185033.7 "(c) (1), In order to demonstrate reasonable likelihood of adequate funding to complete the Merced to Bakersfield segment, the authority shall provide all of the following information in the project update report that is due on or before March 1, 2023, pursuant to Section 185033.5:

(A) Estimated and actual civil works costs of the Merced to Bakersfield segment.

(B) Estimated and actual right-of-way, acquisitions, utilities, and other third-party agreement costs.

(C) Estimates of contract costs, including contingencies to cover change orders.

(D) Other costs, estimated and actual, including, but not limited to, rolling stock, interim use, and stations.

(E) Costs reported in a manner than can be comparable across reports.

(F) Updates on the Authority's progress on achieving project milestones, as established in the project update report or the business plan adopted pursuant to Section 185033.

(G) Funding commitments beyond the Merced to Bakersfield segment, and spending to meet those commitments to date, including funding sources used to meet identified funding commitments.

(2) The information specified in paragraph (1) shall be included and updated in each subsequent business plan adopted pursuant to Section 185033 and project update report prepared pursuant to Section 185033.5.

Assembly Bill 377 (2025)

In 2025, AB 377 updated Authority requirements, as part of the Business Plan that is due on or before May 1, 2026, to provide a detailed funding plan for the Merced to Bakersfield segment that includes certain information, including an updated estimate of the funding gap for completing the segment and a strategy for addressing the funding gap.

As set forth in Section 85033.8 (a) As part of the business plan that is due on or before May 1, 2026, pursuant to Section 185033, the Authority shall provide a detailed funding plan for the Merced to Bakersfield segment that includes all the following information:

(1) An updated estimate of the funding gap for completing the segment.

(2) A strategy for addressing the funding gap that includes all of the following:

(A) An itemized list of anticipated funds by source.

(B) A timeline describing when each source of funds must be received in order to meet the authority's schedule for segment completion.

(C) The estimated project delays that would result if any funding source fails to materialize, and a discussion of how work could be resequenced to minimize these delays.

(D) An assessment of the likelihood that each proposed source of funding will materialize, including the identification of any major risks for obtaining the funding and a plan for mitigating those risks.

(3) Options for initiating service on the segment described in subparagraph (A) of paragraph (1) of subdivision (b) of Section 185033.7 and the estimated schedule and costs associated with the service.

(b) For purposes of this section, "Merced to Bakersfield segment" has the same meaning as defined in Section 185033.7.

APPENDIX B: **FORECASTS AND ESTIMATES**

Introduction

For the 2026 Business Plan, the Authority has prepared a detailed analysis for each scenario presented in this report. These results are presented in the appendices and were developed pursuant to statutory requirements and include:

- Capital cost estimates (shown in a range)
- Ridership and revenue forecasts (high, medium, and low)
- Operations and maintenance (O&M) cost estimates (high, medium, and low)
- Cash flow estimates (high, medium, and low)
- A breakeven analysis (prepared with a Monte Carlo analysis to evaluate three scenarios)

To prepare its forecasts and estimates, the Authority must make assumptions regarding the phasing of the system. Detailed methodologies and assumptions for all forecasts are included in supporting technical documents posted on the Authority's website.

Capital Cost Estimates

Capital costs are presented below in **Table B.0** through **Table B.4**. This estimate uses the Authority's "bottom-up" estimating approach, which replaces prior parametric methods to deliver greater transparency and accuracy. The estimates cover the scenarios presented in Chapter 2: Merced–Bakersfield (M-B), San Francisco–Bakersfield (SF-B), and San Francisco–Anaheim (Phase 1) and an interim service to Palmdale option. These costs incorporate the Authority's updated strategy to deliver more efficiently and economically, incorporating design optimizations, updated escalation and contingencies. For details on methodology, scenario breakdowns, and risk modeling, see the technical supporting document Capital Cost Basis of Estimate Report.

The Authority also identified certain shared-benefit elements, such as grade separations, for joint investment by partner state and regional agencies. See **Table B.5**.

While the Authority continues to advance the project into the track laying phase, improvements on scope and design requirements are continuously reviewed and updated. As result, the M-B Early Operating Segment capital expenditure plan improved favorably by nearly $2.0 billion or 6 percent. This reflects the Authority's commitment to delivering a system in the most economical manner with limited resources.

Table B.0: 119-Mile Central Valley Segment Capital Cost Estimates (YOE $ in millions)

Scope Element	2025 PUR Estimate	2026 Business Plan Estimate	Expenditures[1]
Central Valley Construction	11,334	11,494	8,993
Central Valley Right-of-Way	1,857	1,827	1,554
State Road Projects (SR99 & SR46)	468	468	317
Track & Systems and Commodities	2,745	3,486	96
Project Reserve	46	46	0
Interim Use	162	162	54
Unallocated Contingency	318	318	0
Subtotal Central Valley Segment Construction	**16,930**	**17,800**	**11,013**
Project Development, Management, and Support and Other	177	177	177
Program Wide Support and Other	2,091	2,137	937
Total[2]	**19,198**	**20,115**	**12,127**

1. Total Expended shown above is through December 2025.
2.Totals may not sum due to independent rounding and represent a probability confidence level of 65% in accordance with historic practices.

Table B.1: Merced – Bakersfield Capital Cost Estimates (YOE $ in millions)

Scope Element	2025 PUR Estimate	2026 Business Plan Estimate	Expenditures[1]
Central Valley Segment	19,198	20,115	12,127
Project Development Balance	127	127	127
Merced Extension	3,177	2,418	102
Merced Extension Utility Relocation	336	287	0
Merced Extension Right-of-Way	555	565	6
Bakersfield Extension	3,135	1,320	71
Bakersfield Extension Utility Relocation	396	276	0
Bakersfield Extension Right-of-Way	739	280	10
Stations	1,051	1,106	59
Track & Systems and Commodities Balance	1,478	1,427	0
Solar and Utility Interconnection	75	162	0
Trainsets and Facilities	839	976	0
Program Wide Support and Contingency Balance	1,550	1,726	600
Subtotal Merced to Bakersfield	**32,654**	**30,783**	**13,103**
Project Development Balance (Phase 1)	543	543	524
Program Wide Support and Other	2,254	2,144	341
Bookend	1,298	1,298	854
Total[2]	**36,750**	**34,768**	**14,823**

1. Expenditures are through December 2025.
2. Totals may not sum due to independent rounding and represent a probability confidence level of 65% in accordance with historic practices.

Table B.2: San Francisco – Gilroy – Bakersfield Capital Cost Estimates (YOE $ in millions)

Scope Element	2025 PUR Estimate	2026 Business Plan Estimate	Expenditures[1]
San Francisco to Gilroy Blended Approach[3]	593	1,273	0
Gilroy to Central Valley Wye	18,702	18,619	0
Merced to Bakersfield	29,552	30,783	13,103
Merced to Bakersfield Balance[4]	-	900	0
Program Wide Support, Trainsets, and Other Balance	9,256	8,764	1,720
Total[2]	**58,102**	**60,338**	**14,823**

1. Expenditures are through December 2025.
2. Totals may not sum due to independent rounding and represent a probability confidence level of 65% in accordance with historic practices.
3. Cost for the San Jose to Gilroy segment is not included. Estimates for this shared benefit project segment range from $2 billion to $5 billion.
4. The M-B balance is comprised of additional scope to expand the system to accommodate additional ridership with connection to San Francisco, such as additional build-out of power generation, station(s), track and systems, and maintenance facilities.

Table B.3: San Francisco to Palmdale Capital Cost Estimates (YOE $ in millions)

Scope Element	2025 PUR Estimate	2026 Business Plan	Expenditures[1]
San Francisco to Gilroy Blended Approach[3]	593	1,291	0
Gilroy to Central Valley Wye	18,702	18,866	0
Merced to Bakersfield	31,692	30,783	13,103
Merced to Bakersfield Balance[4]	-	4,966	0
Bakersfield to Palmdale	25,602	26,351	0
Program Wide Support, Trainsets, and Other Balance	14,258	14,477	1,720
Total[2]	**90,847**	**96,735**	**14,823**

1. Expenditures are through December 2025.
2. Totals may not sum due to independent rounding and represent a probability confidence level of 65% in accordance with historic practices.
3. Cost for the San Jose to Gilroy segment is not included. Estimates for this shared benefit project range from $2 billion to $5 billion.
4. The M-B balance is comprised of additional scope to expand the system to accommodate additional ridership with connection to San Francisco, such as additional build-out of power generation, station(s), track and systems, and maintenance facilities.

Table B.4: San Francisco – Los Angeles/Anaheim (Phase 1) Capital Cost Estimates (YOE $ in millions)

Scope Element	2024 Business Plan Estimate[5]	2026 Business Plan Estimate	Expenditures[1]
San Francisco to Gilroy Blended Approach[3]	15,140	1,291	0
Gilroy to Central Valley Wye	19,363	18,866	0
Merced to Bakersfield	30,784	30,783	13,103
Merced to Bakersfield Balance[4]	-	4,989	0
Bakersfield to Palmdale	20,740	26,351	0
Palmdale to Burbank	24,428	15,936	0
Burbank to Los Angeles	3,405	861	0
Los Angeles to Anaheim	3,352	7,607	0
Program Wide Support, Trainsets, and Other Balance	10,722	19,513	1,720
Total[2]	**127,933**	**126,196**	**14,823**

1. Expenditures are through December 2025.
2. Totals may not sum due to independent rounding and represent a probability confidence level of 65% in accordance with historic practices.
3. Cost for the San Jose to Gilroy segment is not included. Estimates for this shared benefit project range from $2 billion to $5 billion.
4. The M-B balance is comprised of additional scope to expand the system to accommodate additional ridership with connection to San Francisco, such as additional build-out of power generation, station(s), track and systems, and maintenance facilities.
5. 2024 Business Plan costs presented by scope element are based on prior parametric methods for capital cost. Using current bottom-up methodology, costs of the 2024 Business Plan full Phase 1 scope are estimated to have increased to $231.3 billion.

Table B.5: Phase 1 Shared Benefit Element Costs (YOE $ in millions)

Segment	Shared Benefit Element Costs
Gilroy-Wye	43
Merced Extension	406
119-Mile CVS	410
Bakersfield-Palmdale	607
Los Angeles – Anaheim	7,445
Total[1]	**9,092**

1. Totals may not sum due to independent rounding.

Ridership, Revenue, Operations and Maintenance, and Profit

The estimated ridership, revenue, operations and maintenance (O&M), and profits levels for M-B, San Francisco-Bakersfield, San Francisco-Palmdale and Phase 1, shown in **Table B.6** through **Table B.9** illustrate substantial benefits to California riders and the state economy. Below outlines how these figures were developed.

RIDERSHIP AND REVENUE

The California Rail Ridership Model (CRRM) is a four-step travel demand model encompassing California and travel links to neighboring states. Developed by the Authority with Caltrans, it uses updated data and a pivot process based on 2018 observations to forecast ridership and revenue for scenarios in **Chapter 2**. Forecasts are comprehensive but approximate and subject to refinement. For details, see the CRRM documentation and Ridership and Revenue Technical Report.

OPERATIONS AND MAINTENANCE

This appendix summarizes updates to O&M cost assumptions for the 2026 Business Plan based on Early Train Operator (ETO) review and latest data. Key changes include an optimized service plan with adjusted staffing, inflation-related cost increases, removal of track and station access fees, updated energy costs from expanded solar and battery storage, and streamlined bus service costs. A Monte Carlo simulation was used to assess risks and derive high- and low-cost ranges. For details, see the O&M Cost Model Documentation and Service Planning Methodology technical reports.

Table B.6: 2033 Merced – Bakersfield High, Medium, and Low Ridership, Revenue, Operations & Maintenance and Profit (Loss) (YOE $ in millions)

	Ridership	Farebox Revenue	Ancillary Revenue	O&M	Operating Profit/(Loss)
High	1.88	45.67	41.03	175.59	(88.88)
Medium	1.60	39.10	29.12	160.55	(92.33)
Low	1.41	35.16	19.32	155.02	(100.54)

*Figures are in 2033 tax dollars and based on the first full year of service in 2033.

Table B.7: 2040 San Francisco – Bakersfield High, Medium, and Low Ridership, Revenue, Ancillary Revenue, Operations & Maintenance and Profit (YOE $ in millions)

	Ridership	Farebox Revenue	Ancillary Revenue	O&M	Operating Profit
High	13.99	1,304.56	277.93	794.96	787.53
Medium	12.52	1,193.33	174.61	726.67	641.27
Low	11.10	1,073.34	122.25	699.00	496.59

*Figures are in 2040 tax dollars and based on the first full year of service in 2040.
**Farebox revenue and operations and maintenance includes a connecting bus service to Los Angeles.

Table B.8: 2040 San Francisco – Palmdale Medium Ridership, Revenue, Ancillary Revenue, Operations & Maintenance and Profit (YOE $ in millions)

	Ridership	Farebox Revenue	Ancillary Revenue	O&M	Operating Profit
Medium	16.29	1,858.82	200.19	871.66	1,187.36

*Figures are in 2040 tax dollars and based on the first full year of service in 2040.
**Farebox revenue includes completion of the High-Desert Corridor where one train per hour continues to Victor Valley, connecting passengers with Brightline West service to Rancho Cucamonga and Las Vegas.

Table B.9: 2040 Phase 1 High, Medium, and Low Ridership, Revenue, Ancillary Revenue, Operations & Maintenance and Profit (YOE $ in millions)

	Ridership	Farebox Revenue	Ancillary Revenue	O&M	Operating Profit
High	30.63	3,844.65	466.25	1,367.05	2,943.85
Medium	28.03	3,663.25	270.25	1,255.04	2,678.46
Low	23.55	3,007.30	185.76	1,210.26	1,982.80

*Figures are in 2040 tax dollars and based on the first full year of service in 2040.

Net Operating Cash Flow

The estimates in **Table B.10** through **Table B.16** illustrate the potential net cash flow that could be available from operations and could be applied to future development costs or future financing. Net operating cash flow is determined by calculating total operating revenue minus operations and maintenance (O&M) costs. Revenues include those generated from high-speed rail passenger service (farebox revenue), and feeder and connecting bus service, as well as ancillary revenues. Because full funding for the system has not been identified, the phasing assumptions used for developing the forecasts and estimates are for illustrative purposes.

For more information on this analysis, see the High, Medium and Low Cash Flow Analysis technical supporting document.

Table B.10: Net Operating Cash Flow San Francisco to Bakersfield High Case (YOE $ in millions)

Year	Year 1	Year 2	Year 3	Year 4	Year 5
Total Revenue	1,582	1,620	1,658	1,697	1,737
Minus: O&M	(795)	(811)	(828)	(845)	(862)
Net Cash Flow from Operations	788	809	830	853	875

Table B.11: Net Operating Cash Flow San Francisco to Bakersfield Medium Case (YOE $ in millions)

Year	Year 1	Year 2	Year 3	Year 4	Year 5
Total Revenue	1,368	1,400	1,433	1,467	1,502
Minus: O&M	(727)	(742)	(757)	(772)	(788)
Net Cash Flow from Operations	641	659	677	695	714

Table B.12: Net Operating Cash Flow San Francisco to Bakersfield Low Case (YOE $ in millions)

Year	Year 1	Year 2	Year 3	Year 4	Year 5
Total Revenue	1,196	1,224	1,253	1,283	1,313
Minus: O&M	(699)	(713)	(728)	(743)	(758)
Net Cash Flow from Operations	497	511	525	540	555

Table B.13: Net Operating Cash Flow San Francisco to Palmdale Medium Case (YOE $ in millions)

Year	Year 1	Year 2	Year 3	Year 4	Year 5
Total Revenue	2,059	2,109	2,160	2,212	2,265
Minus: O&M	(872)	(890)	(908)	(927)	(946)
Net Cash Flow from Operations	1,187	1,218	1,251	1,285	1,319

Table B.14: Net Operating Cash Flow Phase 1 High Case (YOE $ in millions)

Year	Year 1	Year 2	Year 3	Year 4	Year 5
Total Revenue	4,311	4,417	4,525	4,636	4,750
Minus: O&M	(1,367)	(1,396)	(1,425)	(1,455)	(1,486)
Net Cash Flow from Operations	2,944	3,021	3,100	3,181	3,264

Table B.15: Net Operating Cash Flow Phase 1 Medium Case (YOE $ in millions)

Year	Year 1	Year 2	Year 3	Year 4	Year 5
Total Revenue	3,934	4,030	4,129	4,231	4,335
Minus: O&M	(1,255)	(1,281)	(1,308)	(1,336)	(1,364)
Net Cash Flow from Operations	2,678	2,749	2,821	2,895	2,971

Table B.16: Net Operating Cash Flow Phase 1 Low Case (YOE $ in millions)

Year	Year 1	Year 2	Year 3	Year 4	Year 5
Total Revenue	3,193	3,272	3,352	3,435	3,519
Minus: O&M	(1,210)	(1,236)	(1,262)	(1,288)	(1,316)
Net Cash Flow from Operations	1,983	2,036	2,090	2,146	2,204

Breakeven Analysis

The Breakeven Analysis measures the likelihood that farebox revenue is equal to or greater than operations and maintenance costs in a given operating year. **Table B.17** and **Table B.18** summarize the results of this analysis for the reference year 2040.

For the Merced to Bakersfield segment, farebox revenues will be well below operations and maintenance costs therefore further analysis is not needed. Analysis of San Francisco to Bakersfield and Phase I show they are anticipated to break even.

These figures will continue to evolve as operating costs are further refined, as ridership estimates change and as the schedule for construction becomes more certain.

Table B.17: San Francisco to Bakersfield Breakeven Future Year 2040 (YOE $ in millions)

Probability Distribution	Operating Surplus
10%	249
25%	324
Median	423
75%	541
90%	665

Chance of Profitability: 100%

Table B.18: Phase 1 Breakeven Future Year 2040 (YOE $ in millions)

Probability Distribution	Operating Surplus
10%	1,370
25%	1,678
Median	2,044
75%	2,432
90%	2,792

Chance of Profitability: 100%

APPENDIX C: RISK REGISTER AND MITIGATION FRAMEWORK

Introduction

Large infrastructure projects, such as the high-speed rail system, are inherently exposed to a broad range of risks due to their scale, complexity, and reliance on numerous internal and external stakeholders. These risks can arise from multiple sources and may significantly impact cost, schedule, and the achievement of intended outcomes. To manage these uncertainties, the Authority maintains a mature Enterprise Risk Management (ERM) Program designed to systematically identify, assess, and manage the most significant risks to its strategic goals and objectives. The ERM program provides a consistent, organization-wide framework for anticipating potential threats and opportunities, prioritizing risk responses, and integrating risk considerations into decision making at all levels, thereby supporting effective governance and long-term success.

The ERM program provides assurance to Authority stakeholders that public resources are efficiently utilized through effective risk management practices. Oversight of the program is assigned to the Enterprise Risk Committee (ERC), which is responsible for establishing and maintaining the Authority's enterprise risk register and evaluating the effectiveness of risk controls. The ERC identifies and prioritizes the most significant enterprise level risks, provides guidance on mitigation strategies or opportunity realization, and reviews management risk responses to ensure they are sufficient, appropriate, and complete.

Oversight, Transparency, and Assurance at Multiple Levels

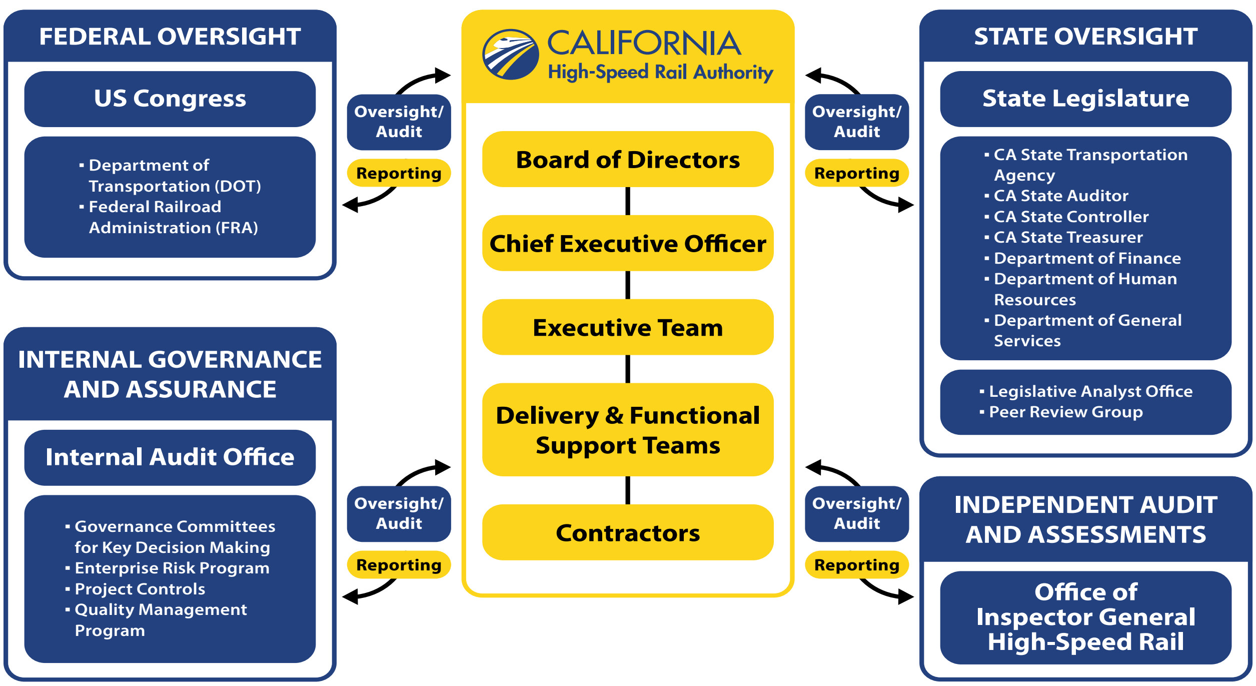
This Authority has a long history of rigorous oversight. In just the past year, the Authority has undergone 14 external and internal audits demonstrating the Authority's commitment to accountability. This extensive oversight makes California high-speed rail one of the most audited and transparent entities in California government broadly, with a level of commitment to transparency rarely seen in programs of this magnitude. This governance framework, illustrated in **Exhibit C.0** ensures accountability, transparency, and confidence in the program through multi-layered, comprehensive oversight and clear checks and balances.

- At the federal level and in addition to the general oversight of the U.S. Congress, the Department of Transportation and Federal Railroad Administration provide direct oversight – including quarterly and annual reporting, monthly progress meetings, and audits/monitoring reviews that assess grant compliance, project risks, schedules, and financials to provide assurance of prudent uses of taxpayer funds.
- At the state level and in addition to the general oversight of the Legislature, the California State Auditor audits the financial statements of the Authority annually, the State Controller Offices' audits the Authority for financial management and oversight of public funds, and the State Treasurer Office oversees the treasury function. The California Human Resources department oversees the Authority's Human Resources function, and the Department of Finance and Legislative Analyst Office oversees the funding and budget function.
- In addition, the State created an Office of Inspector General for California High-Speed Rail whose sole role is oversee the Project and is tasked with improving oversight and accountability of the Project by conducting independent, objective reviews and investigations of the Authority's planning, delivery, and operation of the Project.
- Beyond the listed state departments, there is a statutorily required oversight body, the Peer Review Group that provides an additional level of assurance whose duty is to evaluate the Authority's funding plans and prepare its independent judgment as to the feasibility and the reasonableness of the Authority's plans, appropriateness of assumptions, analyses and estimates, and any observations or evaluations the Group deems necessary.
- At the department level, the Authority is overseen by a Board of Directors which consists of nine members: five members appointed by the Governor, two members appointed by the Senate Committee on Rules, and two members appointed by the Speaker of the Assembly. Each Board member represents the entire state and serves a four-year term. In addition, there are two Ex-Officio Board Members which are sitting Assembly and Senate members.
- The Authority Board is supported by an Independent Audit Office within the Authority that conducts audits of federal funds for contract compliance, performance audits, and pre-award audits all in effort to provide an independent level of assurance that reports publicly to the Board of Directors.

- The California State Transportation Agency (CalSTA) develops and coordinates California's transportation policies and programs to achieve the state's mobility, safety, equity and environmental sustainability objectives. CalSTA oversees the policies and activities of California's eight state organizations, including the California High-Speed Rail Authority Program that deliver transportation-related programs and services and support the movement of people and goods throughout the state.

Over multiple audit cycles — internal, external, state and federal — the Authority has demonstrated consistent compliance with applicable laws, regulations, and professional standards. Any audits findings and/or recommendations made have been promptly addressed, and no significant non-compliance issues have surfaced. This robust audit record underpins the strong governance and responsible management of public funds.

Exhibit C.0: California High-Speed Rail Authority Oversight, Audit and Reporting Structure



RISK ASSESSMENTS AND RISK REGISTER

All organizational functions across the Authority are responsible for managing their respective risk portfolios, including the implementation of the necessary controls and risk responses. Established reporting channels enable management and staff to identify and escalate risks and internal controls deficiencies to executive leadership or the ERC. On an annual basis, designated projects and functions are required to report their risks and controls as part of the Authority's formal enterprise risk assessment process. In addition to enterprise-level oversight, project risks and controls are continuously monitored and reported by Authority staff and contractors through project and program meetings, supporting timely coordination of mitigation actions and protection of objectives and the program baseline.

The Authority's annual enterprise risk assessment process culminates in the development and adoption of an Enterprise Risk Register and associated mitigation plans. The Enterprise Risk Register represents the highest priority risks to achieving the Authority's stated goals and objectives and is overseen by the Authority's ERC. The committee recently established the prioritized risk register and continues to monitor progress, as well as the effectiveness of mitigations and controls assigned to each risk to improve outcomes. The top risks and their key mitigations and controls are further discussed below.

	2026 Enterprise Risk Register
1	Funding Uncertainty
2	Procurement Strategy Execution and Timeline Adherence
3	Third-Party Relationships
4	On Time Right-of-Way Acquisition and Delivery
5	Environmental Clearance and Permitting
6	Design/Alignment Change Impact on Program Objectives
7	Integrated Schedule Adherence
8	Stakeholder Alignment
9	Legislative Impact and Policymaker Support
10	Track and Passenger Rail Rights
11	Designing for Staff/Passenger Safety and Security
12	Transition to Rail Operations
13	Infrastructure and Asset Maintenance

Funding Uncertainty

If program funding targets are not met, it could result in projects not starting or slowdowns, scope reductions, cash shortfalls, and inability to attract private sector investment. Ultimately, this risk impacts the Authority's ability to deliver on its mission.

ESTABLISHED MITIGATIONS AND CONTROLS

- Established and updated funding plans with bottom-up and up-to-date estimates. Provided various long-term funding scenarios to key decision-making stakeholders to deliver the high-speed rail system under the building block approach.
- Actively monitored projected revenue and expenditures against forecasted or planned targets, as well as cash utilization to mitigate any potential short-term funding issues.
- Submitted high-quality and timely financial deliverables and reports to key stakeholders. Implemented effective stakeholder engagement strategy and education efforts to increase understanding of the Authority's financial position.
- Collaborate with the Administration to secure funding from the Cap-and-Invest program (extended through 2045) with an annual appropriation backstop, which would provide the Authority with a stable source of funding, providing an opportunity for the conversion of future revenues into immediate capital to expedite project delivery and attract private sector participation.

MITIGATIONS AND CONTROLS IN PROGRESS

- Actively engage with state legislators to identify legislative changes that will enhance pathways for private sector investment participation.
- The Authority is exploring bonding legislation to convert long-term revenues into immediate capital, enabling timely project delivery and enhancing access to federal and private funding, while ensuring that Greenhouse Gas Reduction Fund (GGRF) funds are effectively utilized for loan repayment through 2045.
- The Authority is pursuing a Co-Development Partner to assist in evaluating opportunities for a private sector partner to design, build, operate, finance, and maintain one or more segments or elements of the Program. Private sector engagement would accelerate project delivery, lower long-term costs, and increase flexibility through alternative delivery methods.

Procurement Strategy Execution and Timeline Adherence

The Authority has several procurements scheduled to be delivered within a shortened timeframe. These procurements require enhanced planning, coordination, and prioritization to ensure effective execution. Without the completion of necessary predecessor activities and sufficient alignment of resources and schedules, risk procurement outcomes may fall short of organization's objectives or its long-term commitments.

ESTABLISHED MITIGATIONS AND CONTROLS

- The Authority centralized contract management and capital procurement divisions under one office to streamline planning (scope, documentation, timelines, etc.), execution of procurements, and effective contract administration.
- In response to current market conditions, and the uncertainty presented by tariffs, the Authority undertook measures to directly purchase commoditized rail materials necessary for track and systems construction. Purchasing these long lead items directly will result in cost and schedule savings.
- The Authority received approval from the Board to establish its accelerated procurement strategy, pre-qualifying a pool of contractors in a formal MATOC/IDIQ to support design, construction, and other necessary services.

MITIGATIONS AND CONTROLS IN PROGRESS

- The Authority develops and maintains a high-level strategic procurement roadmap defining the sequential order of procurements in alignment with the Master Program Schedule and staggers procurement, so the labor market is not limited or constrained.

Third-Party Relationships

If the Authority is unable to effectively coordinate interface, dependencies, changing conditions, and approvals related to third parties, there is substantial risk to the design and construction of the project, leading to additional work or requirements that can potentially delay the program schedule, or design/scope changes that could negatively impact the program budget.

ESTABLISHED MITIGATIONS AND CONTROLS

- Third-party strike force meetings are held weekly to record, deliberate, and address critical risks and issues affecting construction progress. This team also implemented an issue tracker to systematically document and track the resolution of potential third-party conflicts during construction.
- A focused team was organized to manage third-party relationships in each region. This team regularly engages with third parties to share Authority plans and progress to address potential conflicts, capture changed conditions and negotiate resolutions that are fair and reasonable for all sides.

MITIGATIONS AND CONTROLS IN PROGRESS

- The Authority seeks legislative support to enhance engagement and enforcement by ensuring third parties actively participate in scheduled meetings with the Authority and adhere to established timelines. This would allow the streamlining of approval and permitting processes to reduce unnecessary delays and create clear expectations for all stakeholders.

On Time Right-of-Way Acquisition and Delivery

- If the Authority is unable to efficiently procure and deliver right-of-way for the 171-mile program per the needs of the Master Program Schedule, there is potential for significant disruptions to construction and rail operations.

ESTABLISHED MITIGATIONS AND CONTROLS

- The Authority's right-of-way team works with functional areas to identify, and survey required high-speed rail parcels, and coordinate with the Authority's engineering program to understand parcel limits, so an acquisition plan can be developed that aligns with the program master schedule.
- Right-of-way progress is reported monthly to executive management, where mitigations and decisions are reached to address key right-of-way risks and issues.
- Where warranted, if landowner offers remain unaccepted and parties are unable to reach a mutually acceptable settlement, the Authority initiates condemnation to prevent early works and construction delays and to ultimately meet statewide goals and commitments.

MITIGATIONS AND CONTROLS IN PROGRESS

- The Authority is actively coordinating with the Judicial Council to secure prompt assignment of designated judges to ensure timely case handling of right-of-way court cases. This will allow the Authority to accelerate property acquisition cases, ensuring timely resolutions for the Authority, property owners, and local agencies coordinating parallel work.
- The Authority is proposing to develop and implement a formal encroachment permit process that authorizes and regulates activities within the Authority's right-of-way. This process would include clear guidelines, approval workflows, and compliance monitoring to protect infrastructure and maintain operational integrity.

Environmental Clearance and Permitting

If the Authority is unable to manage key relationships, conflicts, and/or changed conditions with local and environmental agencies, there is substantial risk to completing the design and delivery of the program on schedule and within its allocated budget.

ESTABLISHED MITIGATIONS AND CONTROLS

- The Authority has a dedicated environmental program guided by procedures and supported with templates and technology that identify, monitor, and manage conflicts and risks to negotiate and achieve environmental clearance/permitting where required for future construction and rail operations.
- The project teams and environmental program work closely with key third parties in weekly external coordination meetings to share project progress and plans, identify potential conflicts or changing conditions, and resolve issues for projects in advanced design or active construction.

MITIGATIONS AND CONTROLS IN PROGRESS

- To help reduce delays associated with environmental review, and accelerate the integration of clean energy solutions, the Authority is seeking to partner with the Legislature to streamline elements of the existing California Environmental Quality Act requirements to better enable clean power interconnection. This would help California reach its climate goals by promoting the use of renewable energy for electrification, but also lower costs and improve project feasibility, encouraging investments in sustainable infrastructure.

- The Authority also seeks to partner with the Legislature to streamline environmental permitting through fair and reasonable legislative alternatives or compromises that support both environmental agency and Authority objectives to constituents. This would enable more timely construction delivery and more prudent use of limited state resources.

Design/Alignment Change Impact on Program Objectives

If value engineering opportunities or stakeholder requirements cause the Authority to pursue design or alignment changes, there may be significant impacts to the program baseline (schedule and cost) if the changes require additional right-of-way, third-party agreements, environmental examinations, or other approvals.

ESTABLISHED MITIGATIONS AND CONTROLS

- A configuration committee was established to review and approve proposed design or alignment changes and alternatives analyses. Key stakeholders within the Authority are included in the meetings for awareness and to provide input.
- Stakeholder coordination and approvals are conducted and reached as required, if changes to the design or alignment lead to sizable adjustments to schedule milestones, budget, or other stakeholder requirements.
- A Design Criteria Manual (DCM) has been established to define technical standards, performance requirements, and quality benchmarks for all design activities. DCM incorporates industry best practices and service-proven technologies to ensure reliability and maintainability. In addition, the Authority completed rail engineering technical specifications for rail systems included in rail procurements/contracts.

MITIGATIONS AND CONTROLS IN PROGRESS

- The Authority is exploring a unified digital design platform to consolidate information from multiple existing systems and serve as a single source of truth for all design information, design change tracking, and approvals.

Integrated Schedule Adherence

- If the Authority cannot effectively align, arbitrate, and reconcile the delivery timelines of different contractors, third-party stakeholders, and other agencies involved in executing the integrated Program Master Schedule, then optimal execution will not be possible with likely impacts of costly delays.

ESTABLISHED MITIGATIONS AND CONTROLS

- The Authority established internal governance committees with designated powers to review and approve any changes to the master program schedule and oversee mitigation strategies to remediate potential schedule risks raised by project delivery teams.

- The Authority's program controls function also holds monthly schedule coordination meetings with project teams and functional directors to understand potential schedule risks that could impact key program schedule milestones and ultimately align management actions to maintain schedule fidelity and commitments.

MITIGATIONS AND CONTROLS IN PROGRESS

- The Authority documents lessons learned and schedule performance reviews to refine scheduling processes, leading to improved forecast accuracy and decision-making. Subsequently, contractual terms and conditions incentivize on-time delivery.
- The Authority is in the process of finalizing a settlement with one of its primary construction contractors to enhance schedule certainty and reduce project risk. Upon execution, the change order will resolve outstanding claims, confirm the remaining scope of work, and establish certainty for substantial completion of CP 2-3 by 2026. This milestone represents a significant step toward maintaining the Authority's overall schedule for track laying.

Stakeholder Alignment

- Through early and consistent engagement and communication with internal/external stakeholders (e.g., stakeholders, funding partners, local communities, etc.), the Authority seeks to understand and manage stakeholder needs that could improve project support, advance operations, and support future funding opportunities.

ESTABLISHED MITIGATIONS AND CONTROLS

- The Authority adopted technology and tools providing a single source for stakeholder events and information at all levels to give visibility to stakeholder needs and drive a consistent Authority response. Weekly internal meetings on stakeholder engagement are conducted by External Affairs and Communications leads to align on a strategy and approach to meet stakeholder needs and address concerns.

MITIGATIONS AND CONTROLS IN PROGRESS

- The newly formed External Affairs and Communications Office is developing a strategy, approach, and outreach plan for key funding partners, legislators, and community members to share project plans, benefits, and progress.

Legislative Impact and Policymaker Support

If the Authority is unable to effectively partner with the legislature, align objectives and activities with legislative priorities, and respond to policy and budget developments that support delivery, then funding stability, continuity, and long-term outcomes may be at risk.

ESTABLISHED MITIGATIONS AND CONTROLS

- The Authority continues to engage with state officials and their staff by providing regular updates, legislative briefings, information on key milestones, and project tours to build ongoing support.

- The Authority partakes in efforts to strengthen congressional backing and secure additional funding by engaging with supportive members and staff through briefings on project progress, needs, and funding priorities.
- The Authority participates in legislative hearings and responds to project inquiries with transparent information and a thorough analysis of milestones, progress, key challenges, funding, risk assessment, and several other details that provide information to help assess the status of the project.

MITIGATIONS AND CONTROLS IN PROGRESS

- The Authority is working with the Administration on legislative proposals necessary to help control costs and maintain timelines.

Track and Passenger Rail Rights

If the Authority cannot obtain shared passenger rail rights and the ability to construct in existing rail corridors owned by other entities, then the Authority cannot operate trains there.

ESTABLISHED MITIGATIONS AND CONTROLS

- For Northern California passenger railways, agreements are established with Caltrain that will lay the foundation for more specific agreements the Authority will need, from an integration standpoint, to operate passenger trains. The Authority will continue to work with the Administration and local partners on efforts to secure key agreements critical for the project to advance beyond Gilroy into San Jose.
- The Statewide Regional Office is currently working with the California State Transportation Agency (CalSTA) to identify needs and mutually beneficial agreements with railroad companies as well as local passenger railways.

MITIGATIONS AND CONTROLS IN PROGRESS

- The Authority will work with CalSTA to identify funding opportunities to make corridor improvements and secure passenger rail rights along the high-speed rail alignment in the north and south.

Designing for Staff/ Passenger Safety and Security

If the Authority does not establish preventative/ corrective controls and detailed protocols, it could result in safety and security incidents resulting from construction and rail operations.

ESTABLISHED MITIGATIONS AND CONTROLS

- A comprehensive Safety and Security Management Plan is maintained by the Safety and Security Office in coordination with the Planning and Engineering office which outlines key roles, responsibilities, and processes for identifying, reporting, and mitigating potential safety hazards throughout the lifecycle of the program.
- A DCM was established to define technical standards, performance requirements, and quality benchmarks for all design activities. The DCM incorporates industry best practices and service-proven technologies to ensure reliability and maintainability. In addition, the

Authority completed rail engineering technical specifications for rail systems included in rail procurements/contracts.

MITIGATIONS AND CONTROLS IN PROGRESS

- While emergency response procedures are in place for CPs and state staff, additional procedures will be developed for rail operations in alignment with federal, state, and local regulations, and in coordination with key stakeholders such as emergency services, law enforcement, and regulatory bodies.

Robust cybersecurity policies, procedures, training, and technology to prevent physical safety incidents and to protect sensitive passenger data.

Transition to Rail Operations

If the Authority fails to effectively manage delivery of the early-operating segment through enterprise-wide coordination, and develop the required institutional expertise to appropriately integrate required systems, the transition to rail operations may be delayed.

ESTABLISHED MITIGATIONS AND CONTROLS

- The Authority documents its delivery strategy, construction plans, and operating model in Business Plans, Project Update Reports, and its Master Program Schedule to prepare the organization to deliver projects on time and transition cohesively to rail operations, beginning with the early operating segment.
- The Authority significantly reduced risk of rail system integration by centralizing all critical rail operation activities under a single track and systems contractor, who will be accountable for the track and overhead contact system, as well as design and construction for high-speed rail systems, including traction power, train control, and communication.
- The Authority's IT and program functions developed delivery and management manuals for all upcoming contracts as part of the technology and data strategy.

MITIGATIONS AND CONTROLS IN PROGRESS

- The Authority is updating procedures and checklists to effectively and efficiently transition through the various stages of project delivery (preliminary design, environmental clearance, early works, construction, testing and commissioning, and project closeout).
- The Authority's IT and Delivery functions hold regular coordination meetings to develop a program digital integration master plan for track and systems.
- The Authority is continuing efforts to fill its remaining executive level vacancies, including its Chief of Rail Operations.

Infrastructure and Asset Maintenance

If the Authority does not have a clear interim and long-term approach and allocated funds to maintain all property and infrastructure assets in Authority possession, the program could face safety and security risks that could lead to lawsuits, damage to infrastructure, and/or negative public press.

ESTABLISHED MITIGATIONS AND CONTROLS

- The Authority established an Infrastructure Maintenance Office whose primary function is asset management and maintenance. Efforts are underway to identify required staffing and key positions to ensure the office is fully resourced and operational.
- The Authority executed several agreements with contractors to conduct activities related to oversight, security, maintenance, and repairs to protect against threats to Authority property. These contractors will assist in safeguarding Authority assets.

MITIGATIONS AND CONTROLS IN PROGRESS

- The Authority is in the process of developing a Strategic Infrastructure Management Plan and Strategic Asset Management Plan aligned with its Asset Management Policy and Operations & Maintenance Policy to drive accountability, define roles and responsibilities, and establish mechanisms for managing Authority-owned assets and infrastructure (by asset class).

Conclusion

The Authority's strives to reduce the risks inherent to this type of infrastructure project and accepts the responsibility to continuously improve by addressing newly recognized risks and revising risk mitigation strategies as appropriate. The above enterprise risks and mitigations reflect a proactive and disciplined approach to risks management. Through a strong internal control environment and monitoring system, the Authority seeks to reduce the likelihood and impact of adverse events while enhancing the organization's ability to achieve its strategic goals and objectives.

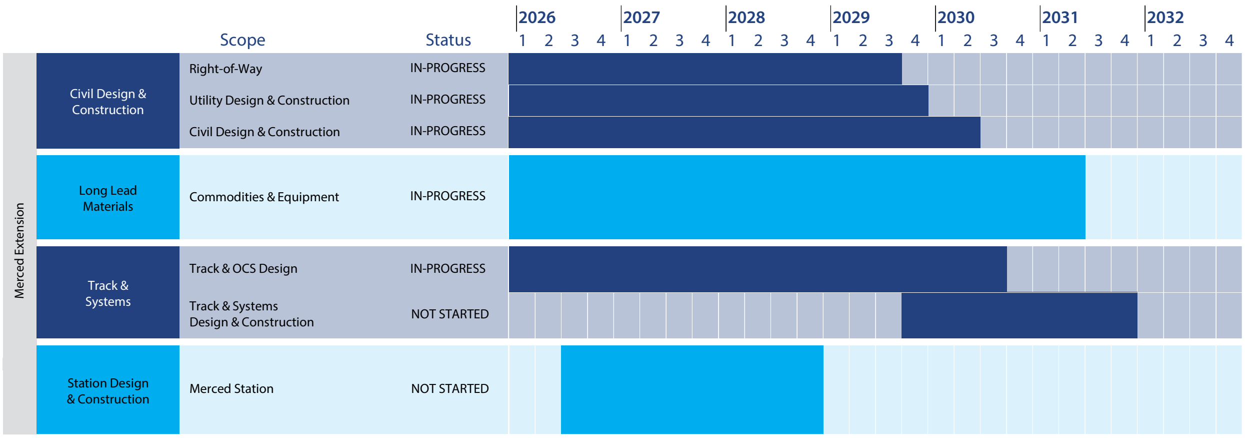
The Authority will continue to oversee the effectiveness of the risk responses and adjust mitigation strategies as conditions evolve, ensuring that risk management remains integrated into decision-making and that public resources are protected in support of long-term program success.

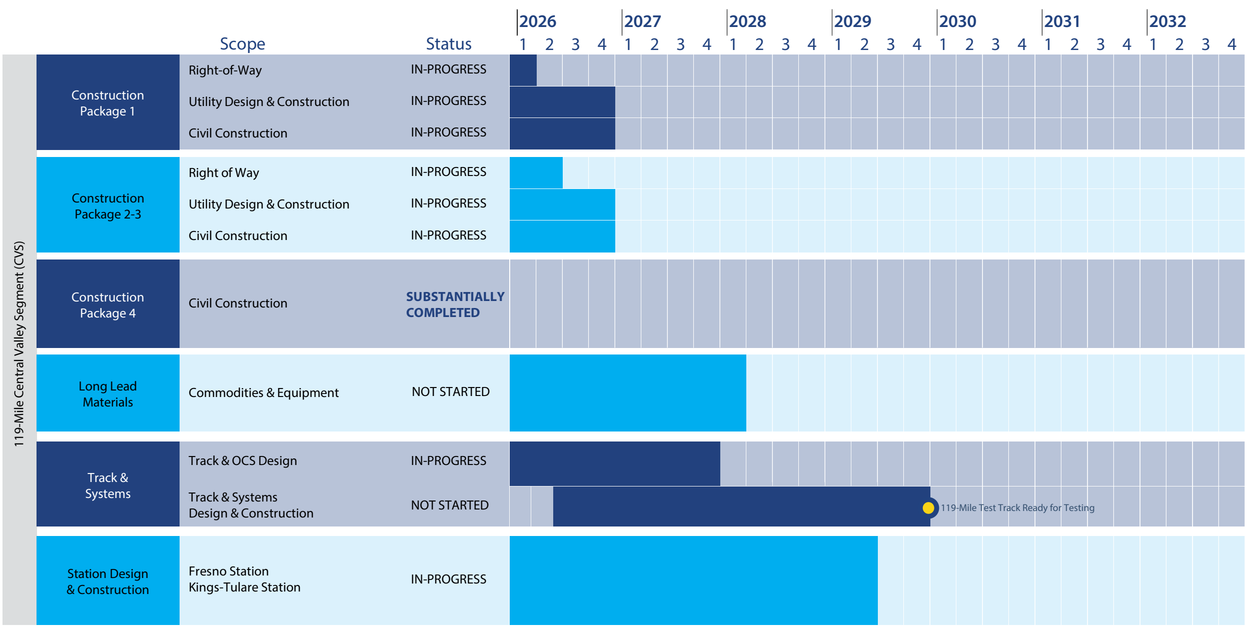
APPENDIX D:
PROJECT SCHEDULES

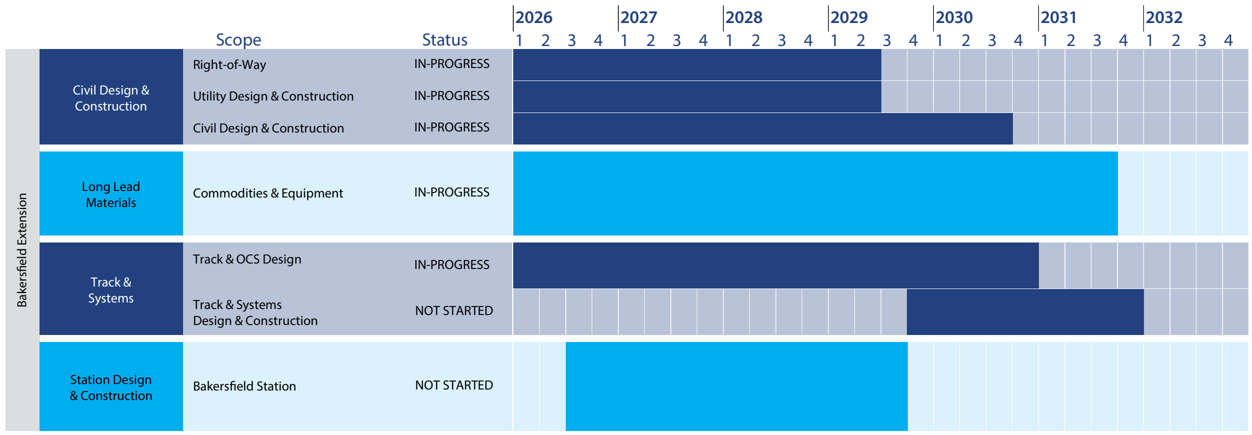
Exhibits D.0. D1, and **D.2** provide an overview of the estimated schedule for design, construction, procurement, track and systems and track testing for Merced – Bakersfield (M–B), San Francisco – Bakersfield (SF-B) and San Francisco-Los Angeles/ Anaheim (Phase 1). Schedules presume sufficient funding, and efficiencies are made available in 2026. The SF-B and Phase 1 schedules include a rolled-up timeline for the 119-mile Central Valley Segment (CVS). The Phase 1 schedule also provides a rolled-up timeline of the SF-B schedules.

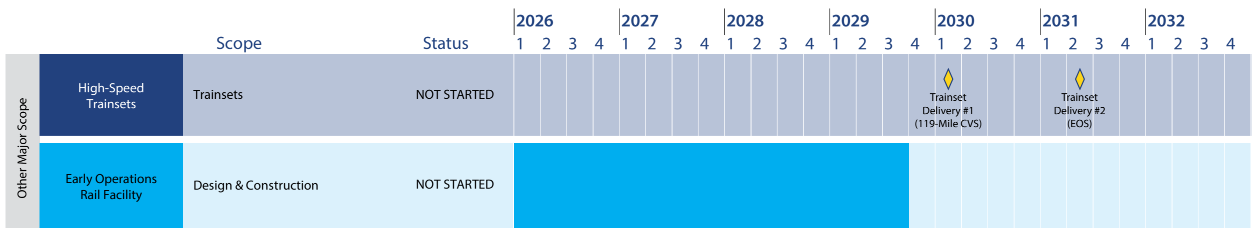
The M-B project schedule risk analysis is underway and will be included in the final 2026 Business Plan.

Exhibit D.0: Merced – Bakersfield Timeline for Major Scope Items






Scope
Status
2026
2027
2028
2029
2030
2031
2032
1 2 3 4
Bakersfield Extension
Civil Design & Construction
Right-of-Way
IN-PROGRESS
Utility Design & Construction
IN-PROGRESS
Civil Design & Construction
IN-PROGRESS
Long Lead Materials
Commodities & Equipment
IN-PROGRESS
Track & Systems
Track & OCS Design
IN-PROGRESS
Track & Systems Design & Construction
NOT STARTED
Station Design & Construction
Bakersfield Station
NOT STARTED


Scope
Status
2026
2027
2028
2029
2030
2031
2032
1 2 3 4
Other Major Scope
High-Speed Trainsets
Trainsets
NOT STARTED
Trainset Delivery #1 (119-Mile CVS)
Trainset Delivery #2 (EOS)
Early Operations Rail Facility
Design & Construction
NOT STARTED

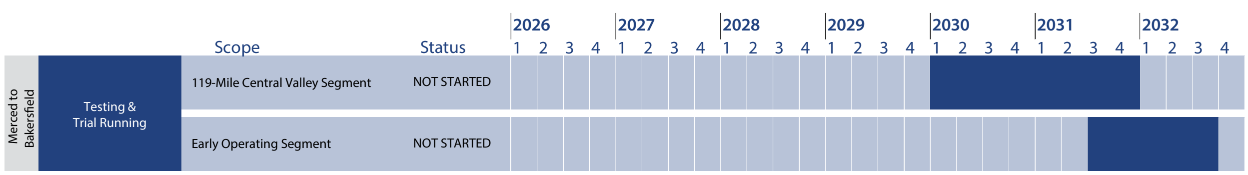
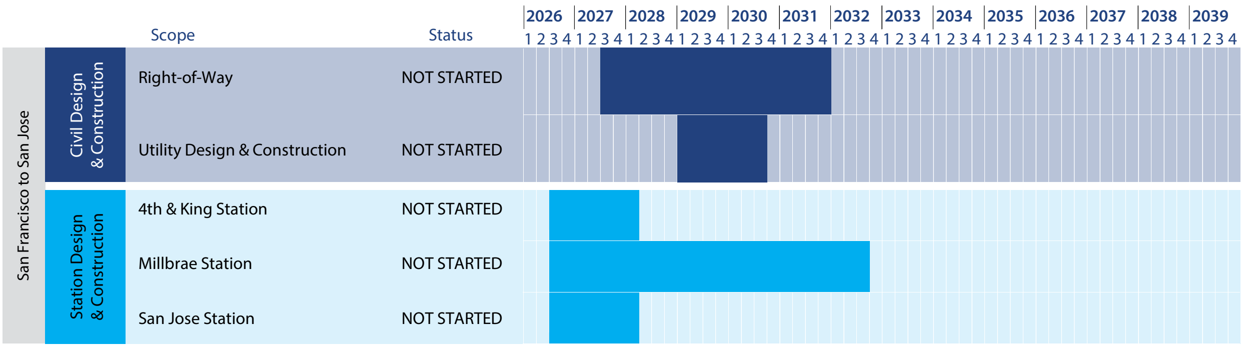
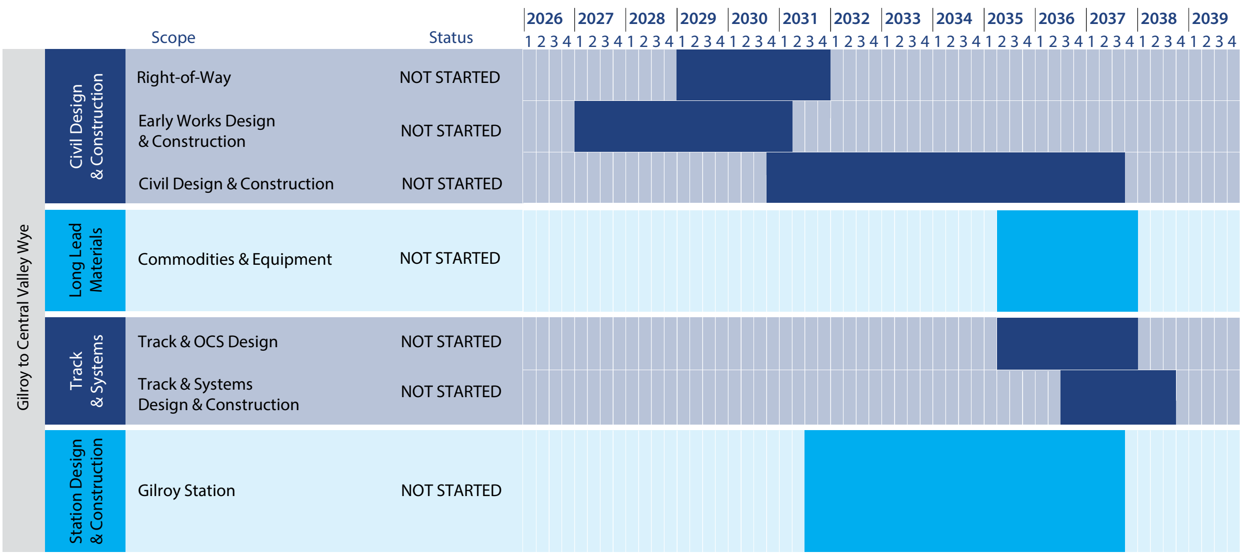
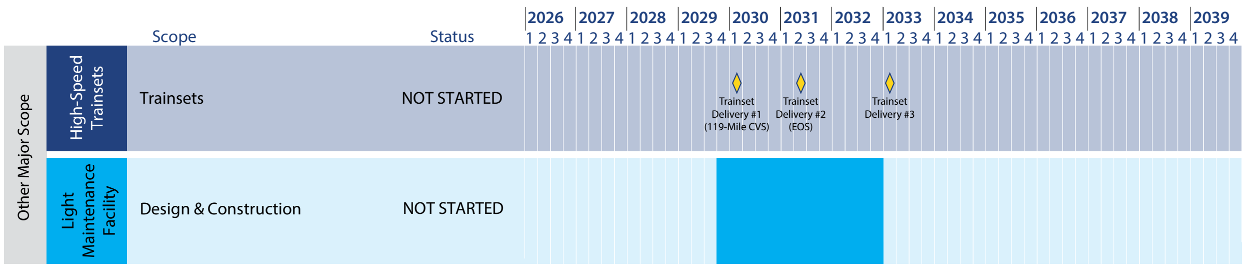

Scope
Status
2026
2027
2028
2029
2030
2031
2032
1 2 3 4
Merced to Bakersfield
Testing & Trial Running
119-Mile Central Valley Segment
NOT STARTED
Early Operating Segment
NOT STARTED

Exhibit D.1: San Francisco–Bakersfield Timeline of Major Scope Items






2026
2027
2028
2029
2030
2031
2032
2033
2034
2035
2036
2037
2038
2039
Scope
Status
Merced to Bakersfield
Segment Schedule
Merced to Bakersfield
IN-PROGRESS


2026
2027
2028
2029
2030
2031
2032
2033
2034
2035
2036
2037
2038
2039
Scope
Status
Other Major Scope
High-Speed Trainsets
Trainsets
NOT STARTED
Trainset Delivery #1 (119-Mile CVS)
Trainset Delivery #2 (EOS)
Trainset Delivery #3
Light Maintenance Facility
Design & Construction
NOT STARTED

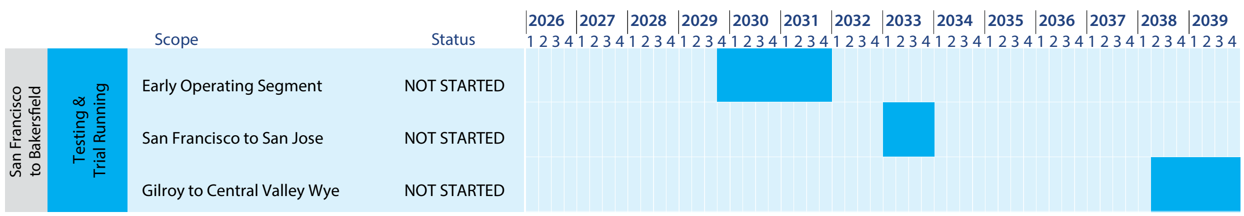
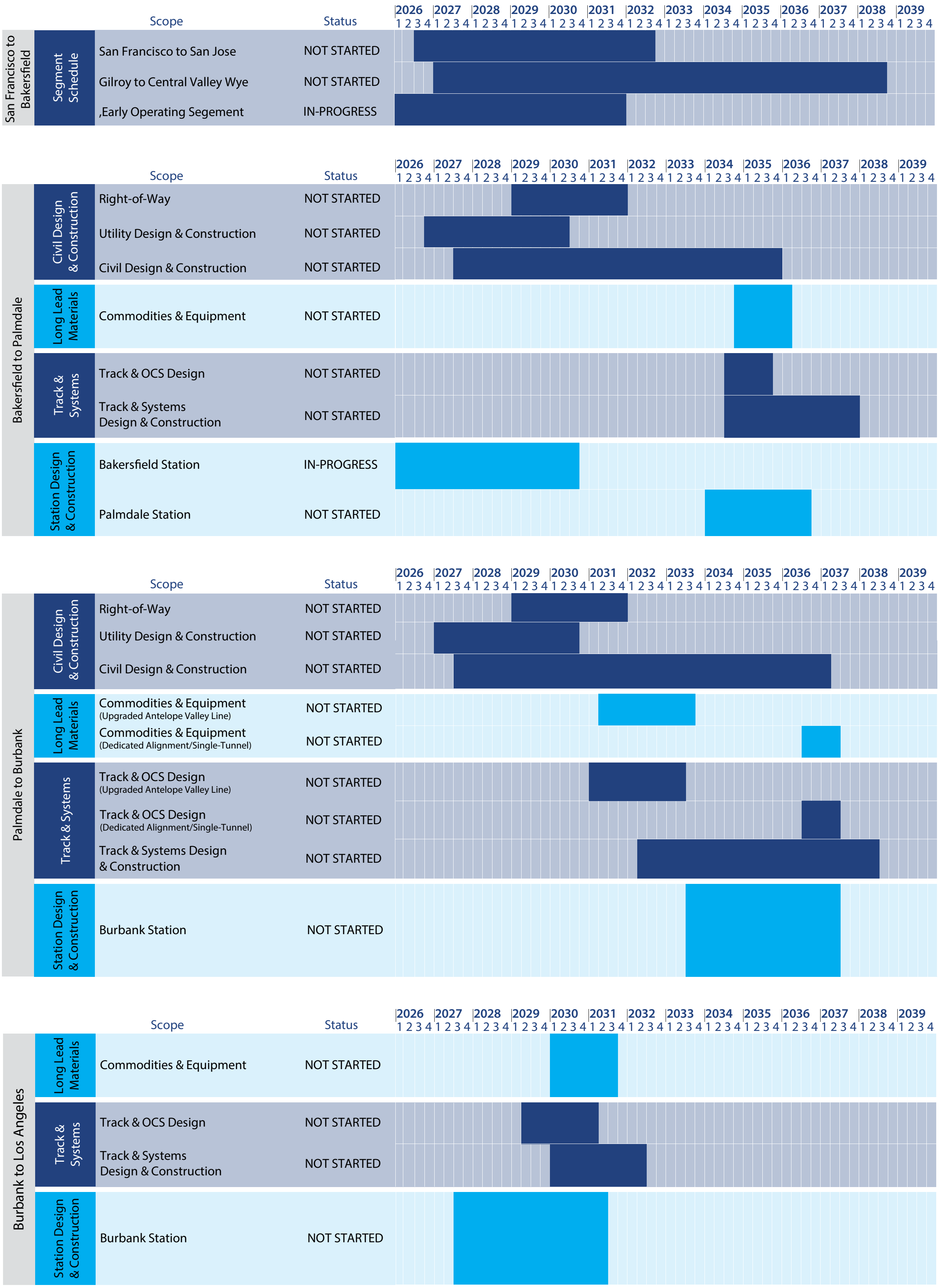
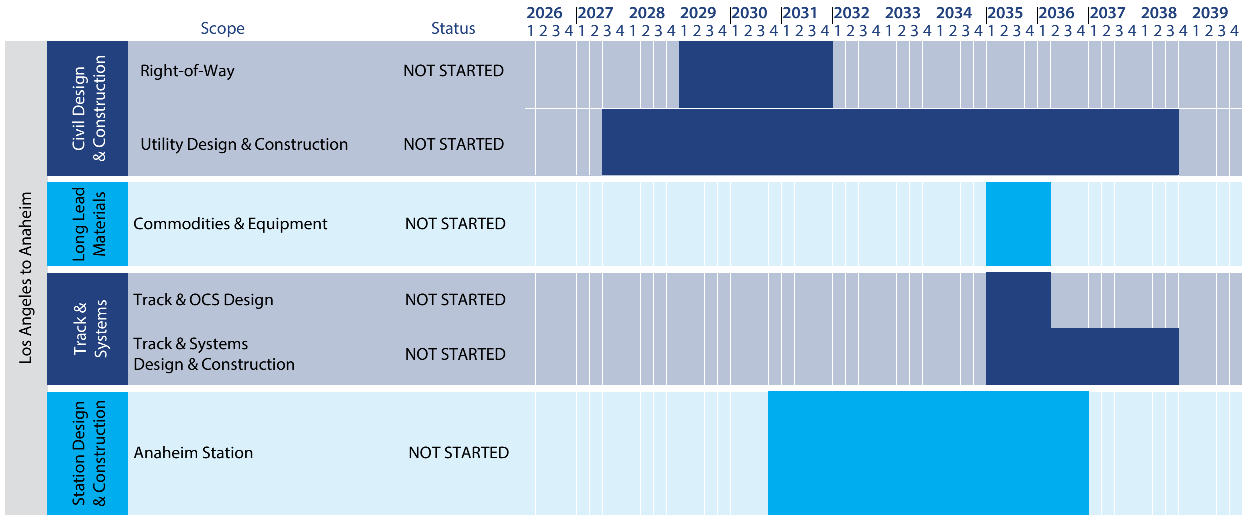
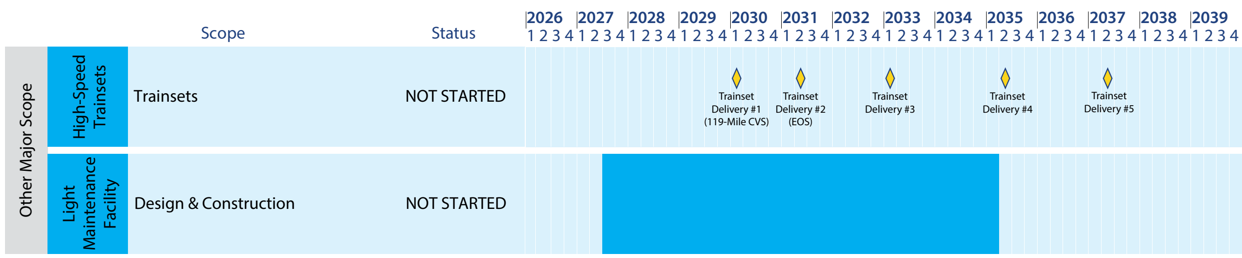
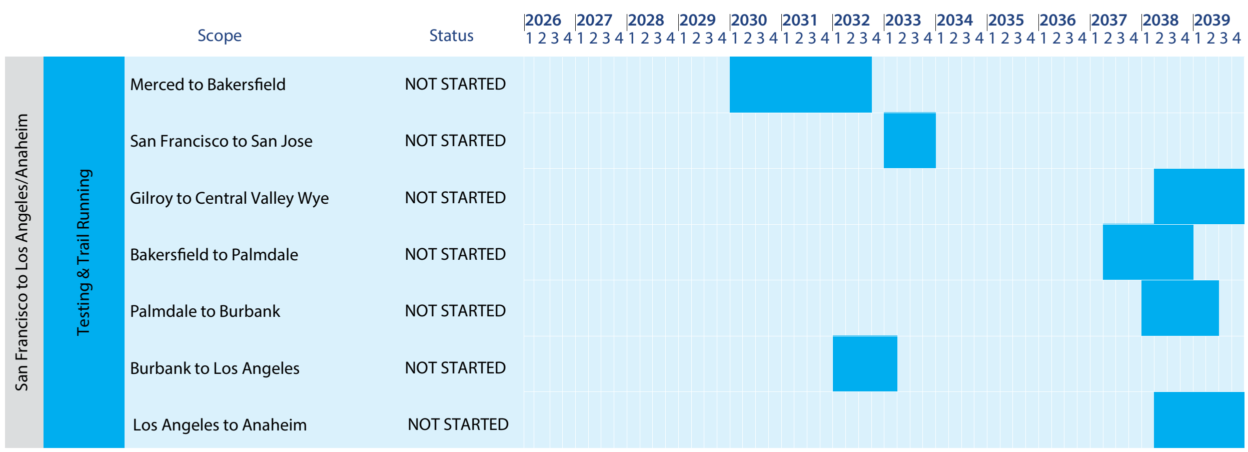

2026
2027
2028
2029
2030
2031
2032
2033
2034
2035
2036
2037
2038
2039
Scope
Status
San Francisco to Bakersfield
Testing & Trial Running
Early Operating Segment
NOT STARTED
San Francisco to San Jose
NOT STARTED
Gilroy to Central Valley Wye
NOT STARTED

Exhibit D.2: Phase 1 Timeline of Major Scope Items




Scope
Status
2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039
1 2 3 4
Los Angeles to Anaheim
Civil Design & Construction
Right-of-Way
NOT STARTED
Utility Design & Construction
NOT STARTED
Long Lead Materials
Commodities & Equipment
NOT STARTED
Track & Systems
Track & OCS Design
NOT STARTED
Track & Systems Design & Construction
NOT STARTED
Station Design & Construction
Anaheim Station
NOT STARTED


Scope
Status
2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039
1 2 3 4
Other Major Scope
High-Speed Trainsets
Trainsets
NOT STARTED
Trainset Delivery #1 (119-Mile CVS)
Trainset Delivery #2 (EOS)
Trainset Delivery #3
Trainset Delivery #4
Trainset Delivery #5
Light Maintenance Facility
Design & Construction
NOT STARTED


Scope
Status
2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039
1 2 3 4
San Francisco to Los Angeles/Anaheim
Testing & Trail Running
Merced to Bakersfield
NOT STARTED
San Francisco to San Jose
NOT STARTED
Gilroy to Central Valley Wye
NOT STARTED
Bakersfield to Palmdale
NOT STARTED
Palmdale to Burbank
NOT STARTED
Burbank to Los Angeles
NOT STARTED
Los Angeles to Anaheim
NOT STARTED

APPENDIX E: CONSTRUCTION PACKAGE PROGRESS MAPS

The Authority has transformed the Central Valley by constructing world-class high-speed rail infrastructure including viaducts, overpasses, and underpasses. As of December 2025, the Authority made significant achievements in preparation for track laying with 80 miles of guideway and 58 major structures complete. The Authority also successfully completed 1,673 utility relocations (93 percent) and delivered 2,284 parcels (99.7 percent) to design-build teams.

The Authority provides updates on progress in the Central Valley with monthly reports and updates to its buildhsr.com website. For the latest reporting please see: *Finance & Audit Committee webpage*. The following maps provide a snapshot of the progress and status of structures within each construction package along the 119-mile segment.

STRUCTURES COMPLETED

22 of 33

67%

GUIDEWAY MILES COMPLETED

11 of 32

34%

UTILITY RELOCATIONS COMPLETED

893 of 992

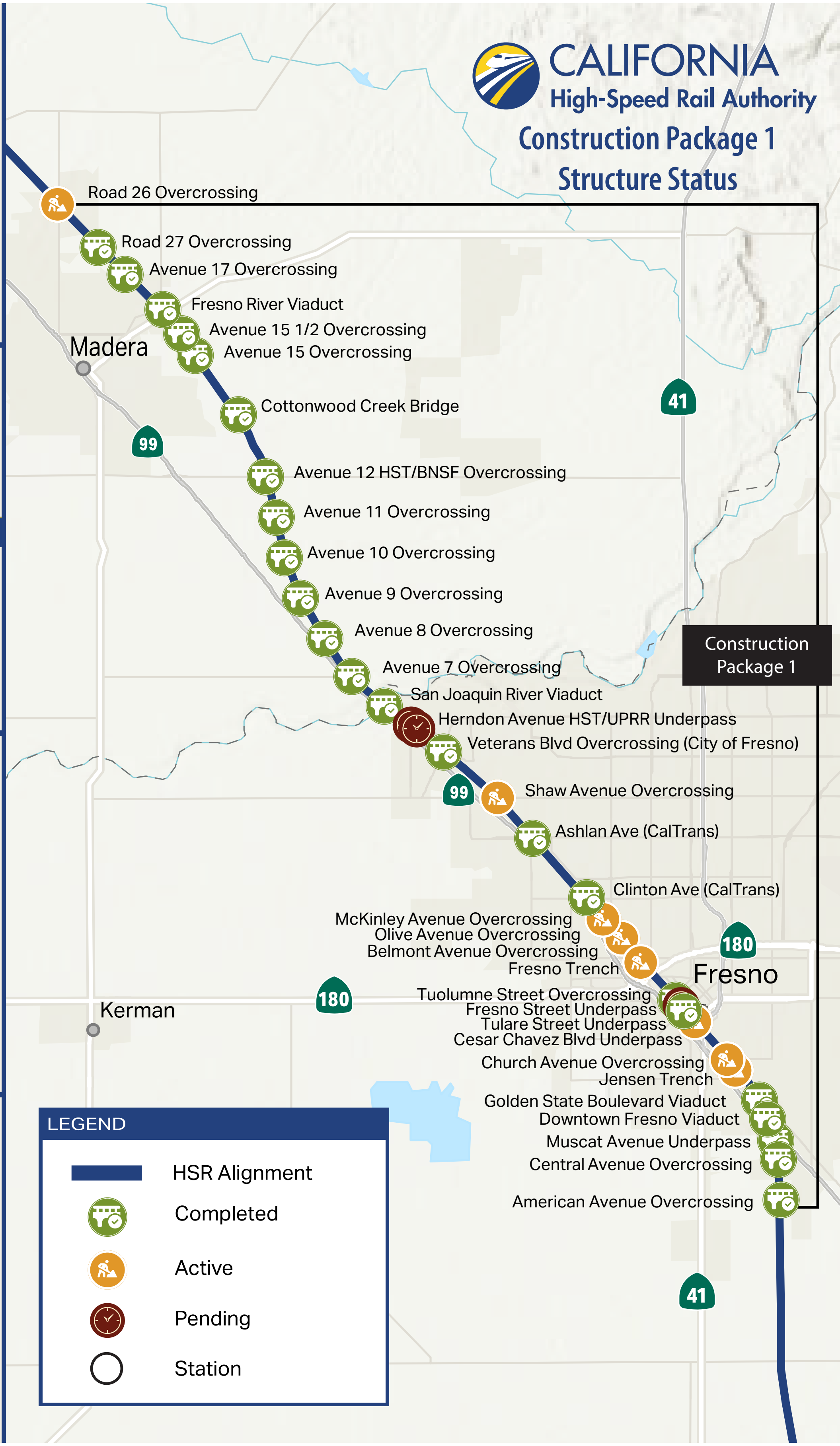
90%

RIGHT OF WAY PARCELS DELIVERED

1,080 of 1,082

99.8%

Data as of December 2025



STRUCTURES COMPLETED

25 of 48
52%

GUIDEWAY MILES COMPLETED

48 of 65
74%

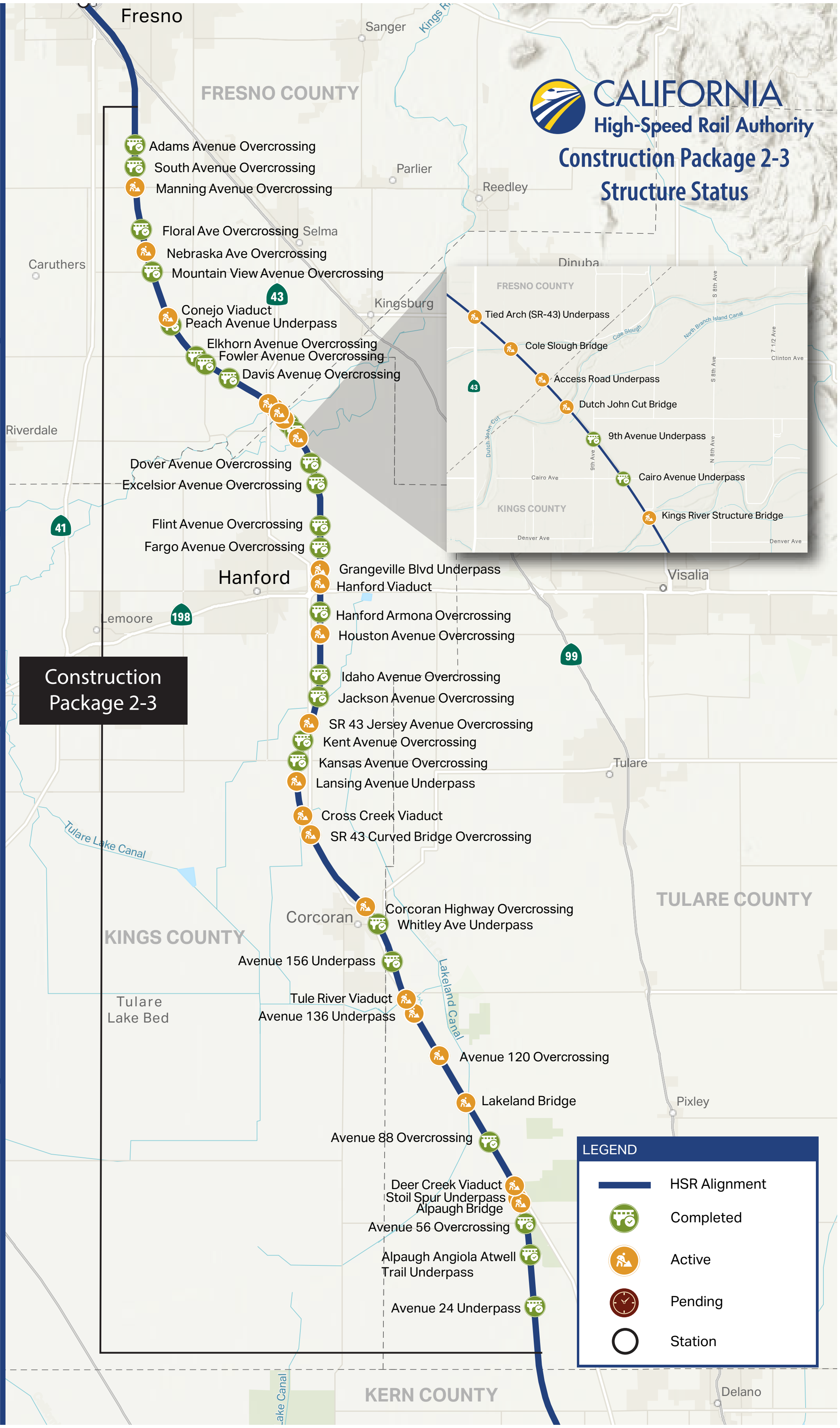
UTILITY RELOCATIONS COMPLETED

647 of 701
92%

RIGHT OF WAY PARCELS DELIVERED

981 of 987
99.4%

Data as of December 2025



STRUCTURES COMPLETED

11 of 11
100%

GUIDEWAY MILES COMPLETED

21.1 of 21.2
99.5%

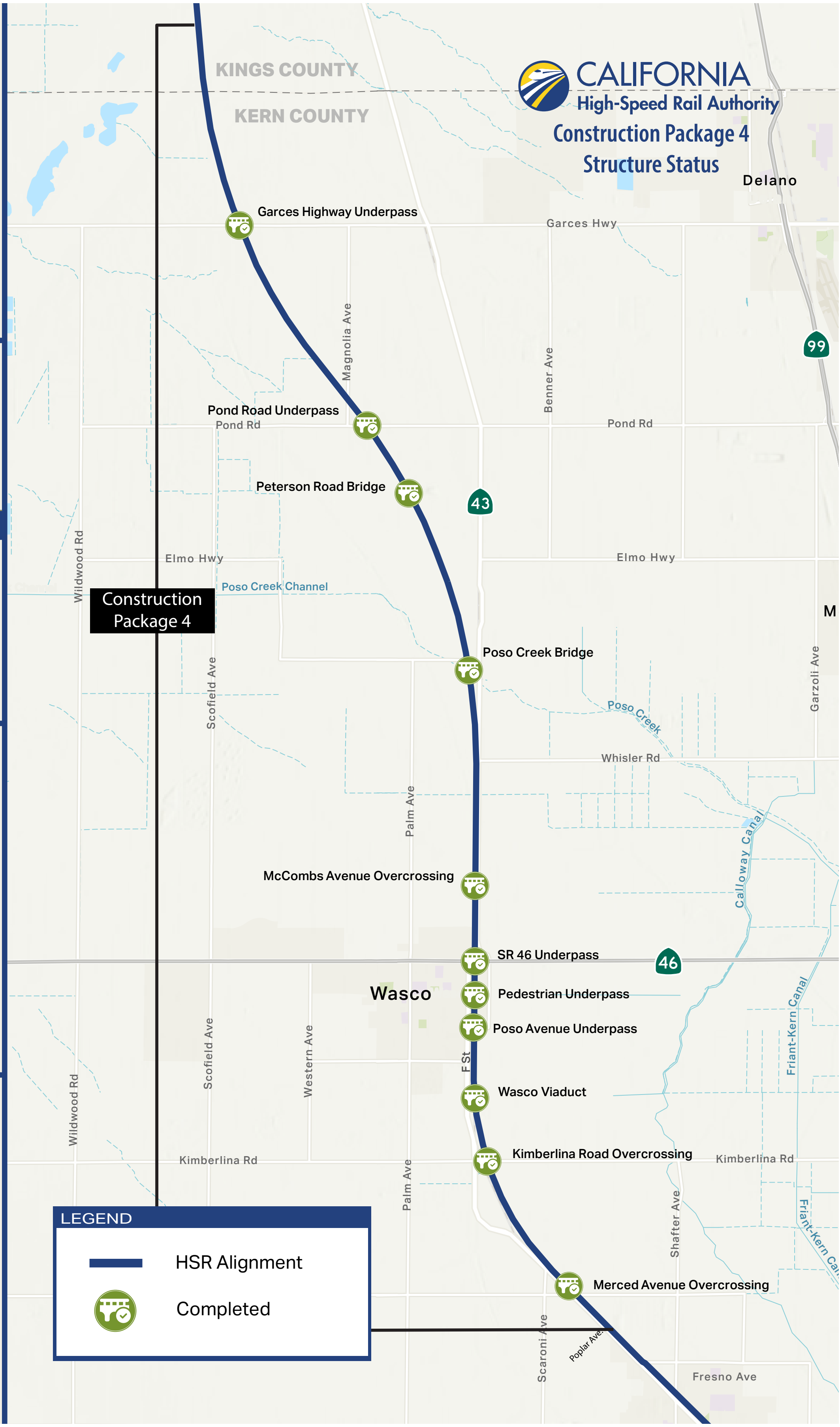
UTILITY RELOCATIONS COMPLETED

133 of 133
100%

RIGHT OF WAY PARCELS DELIVERED

223 of 223
100%

Data as of May 2025



APPENDIX F: BENEFIT COST ANALYSIS

INTRODUCTION

In addition to the regional economic impacts in terms of job creation and economic output, the high-speed rail project will generate societal economic benefits from the actual service itself. These benefits will include travel time savings, safer traffic conditions, reduced automobile operating costs, and improved access to employment and educational opportunities. An Authority analysis quantified such societal benefits and determined that, through 30 years of operation from San Francisco to the Los Angeles area, the value of such benefits would total over $118.3 billion.

The three scenarios examined in the Business Plan all improve intercity passenger rail service performance, including reliability, safety, and trip time, while adding capacity to congested corridors. They add resilience to a strained transportation network, build new connections within and to the Central Valley, and attract new users to a cleaner, more sustainable mode of travel.

The high-speed rail service will also generate what are referred to as wider economic benefits, such as productivity increases for certain types of workers (and employers) who benefit from increased connectivity to clients and colleagues. That same increased connectivity will also provide opportunities for disadvantaged communities, for example, by increasing access to employment opportunities as well as spurring development around the stations. Through investments and improvements at existing highway-rail grade crossings, safety conditions will improve and result in better traffic flow.

A categorized list of societal economic benefits is shown in **Table F.0**. Benefits include:

- Improved travel times, accessibility, and equitable opportunities for disadvantaged areas. The scenarios will save travel time and improve transportation reliability for millions of travelers giving them greater access to jobs and connectivity around the state. Impacts from these changes will be felt near stations and in other opportunity zones in the Central Valley.
- Increased accessibility, increasing labor market efficiency, and productivity. There are wider economic impacts benefits of increased connectivity for firms and workers, including better labor matching between employee skills and job requirements, better on-the-job learning, and increased labor specialization. This increased productivity results in higher firm profits as well as increased employee wages. The analysis assessed the expected impacts on employees and firms in the markets served by the scenarios presented in Chapter 2. These include increased wages and firm profits, estimated from rising commercial real estate value.

- Improved service and stations for other Amtrak routes in California and beyond. Amtrak routes connecting at the high-speed rail stations will see improved amenities and faster connections. The reduced travel times may also entice more travelers to connect into the routes available at the stations. Moreover, these improvements will have a nationwide impact since California has more Amtrak stations than any other state. Long-distance Amtrak riders connecting at high-speed rail stations will benefit from the better amenities and connections at centrally located stations.
- Elimination of multiple Amtrak, BNSF Railway, and Union Pacific Railroad at-grade crossings. The benefits of grade separations alone include improved safety from crashes; travel time savings for residents, commercial trucks, and emergency services; reduced noise, decrease in traffic congestion; reduction in emissions from idling vehicles; improved train operations reliability (both for freight and passenger rail); and property value uplift. From Madera to north of Bakersfield, major at-grade crossings will be separated. In some areas, at-grade crossings will be upgraded to quad gates,[1] which have been shown to reduce at-grade crossing collisions by 98 percent.[2] These will deliver safety and environmental benefits prior to the arrival of high-speed rail. These benefits will be felt along all the long-distance Amtrak routes departing from San Francisco for cross-country travel.

[1] Quad gates are designed to block all lanes of traffic on both sides of the track, and to provide a closure delay on the exit side to allow vehicles that may get stuck between the gates to get off the tracks.

[2] UC Berkeley Safe Transportation Education and Research Center as shown in *hsr.ca.gov/about/safety/quad-gates/*

- Addressing climate change and sustainability. The service reduces greenhouse gas and criteria air pollutant emissions by transferring trips from road and air to zero-emissions high-speed rail, promoting energy efficiency, increasing transport network resiliency, and renewing existing aging infrastructure.
- Improved resiliency for California's transportation network. The risk of climate-related events makes the California transportation network vulnerable to frequent weather-related disruptions. Unplanned disruptions are not typically accounted for in traditional ridership models, but history suggests that the service will add options to California's transportation network and reduce the impact of disruptions, climate-related or otherwise.
- Employment opportunities. The scenarios invest in vital infrastructure assets and provide opportunities for families to achieve better access to job opportunities in larger economic centers and near stations. These are quantified as part of the wider economic benefit productivity gains.
- Serving historically under-connected communities. The planned service will reach underserved communities beyond the core economic centers. In addition, small businesses have been consciously included as part of project completion, and development of service has always prioritized community engagement efforts.

Table F.0: Impacts Summary

Impacts	Current Status/ Baseline and Problem to be Addressed	Project Improvements	Population Affected	Economic Benefit
User Benefits	California residents do not have a modern, efficient, and rapid rail service.	California's Phase 1 High-Speed Rail System will provide swift, efficient travel in state-of-the-art stations for residents and visitors.	State of California; General Population	Tavel time savings, reliability, transfer time savings, transit amenities, and induced ridership benefits
Safety and Environmental Benefits	California residents are facing high costs due to highway crashes, increased congestion, vehicle maintenance costs, and high emissions.	Reduced highway traffic will decrease crashes, congestion, vehicle maintenance costs, and emissions.	State of California; General Population	Vehicle O&M, safety, emissions, congestion, and pavement damage and noise
Wider Economic Benefits for Workers	The California economy would benefit from improved accessibility between and within labor markets.	Increased accessibility will improve labor market efficiency and productivity	State of California	Measuring worker productivity impacts through wage increases
At-Grade Rail Crossing Removals	California is among the states with the highest number of reported highway-rail grade crossing accidents/ incidents	The construction of the scenarios will eliminate over 100 existing Amtrak, BNSF Railway and Union Pacific Railroad at-grade crossings. These grade separation projects will also help provide more equity in access to jobs in communities historically segregated by crossings.	State of California; General Population	Safety from crashes, travel time savings at crossings; travel time savings for emergency services; reduced noise (no train horns), congestion, emissions from idling vehicles
Wider Economic Benefits for Firms	Commercial property is underdeveloped in areas in the Central Valley around current stations.	Firms will profit from increased productivity. Commercial space within a radius of the stations will see property value uplift.	State of California; General Population	Measuring firm profits through commercial property value uplift

*Operations & Maintenance and Rehabilitation & Replacement costs incurred during the 30-year period of analysis are subtracted from the benefits.

Benefits

The different scenarios will each generate a variety of benefits to society. These benefits do not include the added ridership and subsequent benefits a Brightline West connection would bring to the Palmdale scenario. The scenarios generate these benefits by providing swift, efficient travel for residents and visitors, generating travel time savings, safety benefits, pollution and congestion reductions, and vehicle operation costs savings for users. In addition to the "static" benefits, an additional layer of wider economic benefits will be engendered: firms involved in a wide range of activities including education, finance, law, media, technology, the arts, and management consulting — businesses will benefit from increased accessibility between cities along the corridor. The scenarios also protect and enhance the carrying capacity of the state's existing freight rail providers and reduce conflicts between freight and passenger trains, increasing reliability and travel times of both.

Costs

Costs are based on the construction schedule recently updated in the 2026 Business Plan and are discounted at a 3.1 percent real discount rate, in 2023 dollars. These costs assume rehabilitation and replacement of the system. Operation and maintenance (O&M) and rehabilitation and replacement costs are included in the numerator of the benefit-cost ratio calculation as disbenefits. Please refer to **Appendix B: Forecast and Estimates** for details pertaining to the costs.

A breakdown of benefits and disbenefits by category of expenditures for all three scenarios is shown in **Table F.1**.

This leads to an overall Net Present Value (NPV) of $44.0 billion in 2023 dollars and a BCR of 1.6 for San Francisco to Anaheim Phase 1, the longest and most capital expenditure intensive of the three scenarios.

The benefits associated with each scenario outline quantitatively how high-speed rail service and operations will contribute to economic vitality, improved environmental conditions and generally enhance commercial activities and employment opportunities for residents and businesses along the rail corridor, the rest of California, and the country as a whole.

Table F.1: Costs and Benefits of High-Speed Rail, Monetary Values (2023$ in millions)

BCA Metric Discounted (3.1%)	Merced – Bakersfield	San Francisco – Bakersfield	San Francisco – Los Angeles/ Anaheim
Total Benefits	**15,066**	**50,934**	**119,381**
User Benefits	**3,235**	**16,001**	**41,341**
Travel Time and Transfer Savings	1,870	8,185	16,977
Air Delay Savings	-	-	249
Reliability	743	3,541	8,188
Stations and Train Amenity Benefits	297	3,061	9,961
Induced Ridership Benefits	325	1,216	5,966
Safety and Environmental Benefits	**2,746**	**12,230**	**26,411**
Vehicle O&M Savings (including fuel)	1,487	6,461	14,011
Safety (highway traffic reduction)	681	2,961	6,422
Emission Reductions	405	2,057	4,349
Congestion Reductions	170	737	1,599
Pavement and Noise	3	14	31
Wages and Wider Economic Benefits	**1,771**	**17,212**	**34,714**
Firms' Wider Economic Benefits	**50**	**1,388**	**1,496**
At-Grade Rail Crossing Removals	**4,645**	**4,264**	**13,152**
Emergency Vehicle Benefits	3,653	3,261	10,260
Time and Emissions Savings	612	546	1,787
Reliability	298	266	872
Safety (from crossing removals or upgrades)	83	192	233
Residual Value	**4,660**	**6,552**	**13,931**
O&M and Rehabilitation and Replacement	**(2,041)**	**(6,714)**	**(11,663)**
O&M	**(1,781)**	**(5,857)**	**(10,172)**
Rehabilitation and Replacement	**(260)**	**(857)**	**(1,491)**
Total Costs	**25,954**	**39,892**	**74,272**
Net Present Value	(10,888)	11,042	45,110
Benefit Cost Ratio	**0.6**	**1.3**	**1.6**
Payback Period (Years)	39	30	28
Internal Rate of Return (IRR)	**(1.7%)**	**2.4%**	**3.6%**

APPENDIX G: ANCILLARY REVENUE UPDATE

This appendix is an update to the Authority's prior analysis and reporting on ancillary revenues. Its primary focus is to communicate changes in net ancillary revenue calculations from revised ridership estimates across differing system buildout scenarios. The 13 ancillary revenue sources previously analyzed remain largely unchanged. For detailed descriptions of each ancillary revenue opportunity, readers are directed to the *2025 Supplemental Project Update Report*. In addition to reporting revised net revenue estimates, this appendix also highlights any material changes to the prior reporting, including to underlying assumptions.

Ancillary revenues reflect the additional income streams generated from supporting or complementary services beyond the Authority's future core business operations of generating revenue from train ticket sales (i.e., farebox revenue). These opportunities typically are tied to the rolling stock, stations, and station areas. Consequently, they are realized once the system is operational. Where generated, the Authority will allocate revenues to support system operations and maintenance costs.

Ancillary revenues are different from revenue generating asset commercialization opportunities. These opportunities are tied to monetizing system assets other than rolling stock, including right-of-way, surplus land, and associated infrastructure through strategic commercial opportunities that create value beyond primary transportation services. Revenue generated by these opportunities will be used to support system capital expenses. For more information see **Appendix K: Cap-and-Invest Financing**.

Material Changes

The following changes in assumptions and sources used in this revised analysis:

- Excess land disposition is excluded as a source of ancillary revenues going forward. Instead, the analysis conducted on asset commercialization opportunities evaluates long-term ground leases to support solar and other infrastructure.
- Analysis of parking revenue is confined to Central Valley stations which the Authority owns. Further analysis is necessary to determine any revenue sharing arrangements at stations where the Authority will be a tenant.
- For Central Valley stations, we are assuming 4,500 square feet of retail space. Further analysis is necessary to determine any revenue sharing arrangements at stations where the Authority will be a tenant.
- Onboard food and beverage (F&B) services are not evaluated given the high level of operation and maintenance costs associated. For example, research indicates Amtrak F&B is not profitable and is subsidized by ticket revenue.

Net Income Analysis

Consistent with prior analysis and reporting, the Authority estimated the operating and maintenance (O&M) costs for each identified ancillary revenue source summarized in the 2025 Supplemental Project Update Report.

The Authority conducted high-level research into typical costs relating to operations and maintenance for each revenue source identified. This assessment is preliminary and assumes the initial capital expenditures required to establish each revenue source is included in the estimate presented in the report (e.g. baggage fees, parking fees, retail, onboard, food and beverages, and express cargo).

Net Income is included in the ancillary revenue cash flow analysis and calculated as: Net Income equals revenue minus O&M expenses.

Table G.1 provides annual ancillary revenue net income estimates for multiple buildout scenarios, presented in low and high ranges, based on different market conditions and implementation factors. These findings highlight the potential financial contribution of ancillary revenues to the project's long-term economic sustainability and the Authority's objectives of delivering a financially viable transportation solution.

Table G.1: Ancillary Revenue Net Income ($ in millions)

Buildout Scenario	Ridership Year	Annual Net Income Results
Merced – Bakersfield	2033	$19.32 to $41.03
San Francisco – Bakersfield	2040	$122.25 to $277.93
San Francisco – Palmdale	2040	$139.20 to $327.78
San Francisco – Los Angeles/Anaheim (Phase 1)	2040	$185.76 to $466.25

APPENDIX H: ASSET COMMERCIALIZATION

Strategic Vision

Asset commercialization is a strategic imperative for the Authority to generate new revenue by utilizing high-speed rail right-of-way for a multifaceted utility corridor. This vision repositions the transportation infrastructure as a platform capable of carrying electricity and data while supporting California's clean energy and technology goals. By systematically leveraging infrastructure assets, this approach turns a traditional cost center into a dynamic, revenue-generating platform that creates value beyond primary transportation services.

Research and Opportunity Identification

As part of the research conducted since the release of the 2025 Supplemental Project Update Report, the Authority performed more than 40 interviews globally with leading rail operators, rail infrastructure managers, and experts from adjacent industries. The interviews provided critical insights into best practices, innovative approaches, and emerging trends in asset commercialization. With that expertise in hand, the Authority identified more than 100 potential project opportunities for asset commercialization.

Opportunity Clustering and Categorization

The Authority first separated strategic opportunities into tangible and non-tangible categories. The tangible opportunities were further segmented into location-based groups:

- Along the rail corridor-leveraging land and assets directly adjacent to the tracks
- Hub-centric in population areas – focusing on high-traffic nodes and urban centers located close to the tracks
- Locations near the corridor-targeting areas not adjacent to the tracks with proximity advantages for commercial or industrial use

Each opportunity was further evaluated based on its timing for revenue generation and grouped into two distinct categories:

- **Pre-ridership:** Opportunities that can generate revenue before the start of railway operations
- **Ridership:** Opportunities for revenue generation after railway operations begin

This structured approach allows the Authority to visualize a wide range of potential revenue streams, compare them against available land assets, and prioritize opportunities based on geography, implementation timeline, and operational relevance.

Evaluation Framework

Each opportunity was assessed against two key dimensions: impact and effort.

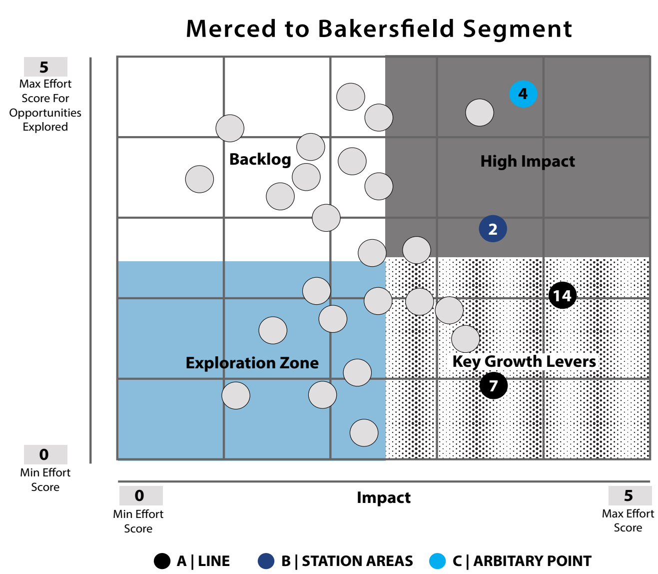
- **Impact criteria:** included projected financial returns (e.g., Net Present Value), implementation timeline, synergies with other initiatives, replicability across the corridor, sustainability, strategic alignment, and customer impact.
- **Effort criteria:** focused on capital intensity, stakeholder and governance complexity, permitting and regulatory requirements, delivery timelines, and right-of-way considerations.

This dual-axis evaluation provided a robust decision-making framework, balancing short-term gains with long-term strategic objectives. The opportunities with the greatest impact were selected as initial priorities to maximize asset commercialization.

Critical Competencies for Implementation

This benchmarking exercise also highlighted critical competencies required for successful implementation and management of asset commercialization revenue streams. These include urban development, real estate management, and technical expertise. Building these competencies will position the Authority to effectively capture and sustain asset commercialization opportunities while ensuring alignment with international standards and market expectations. To support this, the Authority has also initiated a review of the current organizational structure to ensure the right leverage and integration of these newly identified competencies.

Exhibit H.1: Evaluation Framework for Commercial Opportunities of High-Speed Rail Assets



Location	Opportunities
A | LINE	7 Broadband 14 Electric Transmission Opportunities Explored
B | STATION AREAS	Opportunities Explored
C | ARBITARY POINT	2 Power Generation 4 Data Centers Opportunities Explored

Next Steps and Strategic Outlook

Based on the evaluation, a first set of high-potential opportunities was selected for deeper analysis and initial feasibility studies.

The Authority undertook a detailed review of nonoperational land holdings and parcels adjacent to the rail corridor to assess potential for early revenue streams, including before train service begins, and developed a preliminary strategy.

The analysis revealed several complementary opportunities, particularly in areas such as renewable energy and technology infrastructure. For example, solar farms and data centers could leverage high voltage direct current (HVDC) transmission and technology corridors, creating a multiplier effect on investment returns and operational efficiency. By combining land-based initiatives with technology-driven solutions, the Authority can establish an asset commercialization strategy that integrates physical assets with future-oriented infrastructure.

The Authority has initially shortlisted four projects as a priority as discussed in **Chapter 1**. To begin implementing this strategy, the Authority advanced two procurements: a Request for Qualifications to identify a potential operator and co-development partner, and a Request for Expressions of Interest focused on power generation. These opportunities represent a balanced portfolio of short-term and long-term strategies to enhance financial resilience and operational flexibility.

1. Electric Transmission: Developing an HVDC line within the Authority's unique infrastructure corridor.
2. Broadband: Installing and leasing fiber optic cable.
3. Power Generation: Developing utility-scale solar and battery storage on its non-operational land, creating a long-term revenue source from energy sales and leases.
4. Power-Related Facilities/Data Centers: Leasing Authority land for data centers.

APPENDIX I:
GOVERNANCE AND FUNDING

Different governance and business models have been used to restructure the international railway sector away from the single national railroad company model. In recent decades, separated national rail operating units and pure railway operating companies such as Eurostar, Italo, Virgin Rail, and others have succeeded as separate businesses from infrastructure management of tracks, systems, right-of-way, stations, and facilities. With restructuring, national labor contracts and representation continues to cover railway employees.

This governance structure requires efficient management of fair and non-discriminatory access to rail infrastructure. It normally requires the establishment of a government regulatory body to manage infrastructure access.

Railway Governance Structures

Governance structures determine how rail infrastructure and operations are organized, from full vertical integration to complete structural vertical separation. The choice of structure directly influences competition, investment models, and use of track access charges (TAC). There are four governance structures:

- Vertical Integration (one entity owns infrastructure and operations)
- Vertical Integration with Separation of Essential Functions (internal safeguards for neutrality)
- Organizational Separation (distinct legal entities under a holding company)
- Full Structural Separation (independent companies for infrastructure and operations)

Exhibit I.0 presents a vertically separated scenario under which the Authority could be responsible for regulating TACs between train operators and a private infrastructure manager.

In some countries, such as Sweden and Spain, full separation divides national railroads into different independent companies. Other countries have used organizational separation holding structures for their railroad companies, under which the infrastructure manager and railway undertaking are separated into subsidiaries. Use of holding company structures, as in Italy, France, or Germany, must include an institutional and organizational firewall to maintain separation between subsidiaries.

In either case, the infrastructure manager must be independent of train operating entities. Infrastructure manager revenues are derived from a TAC that it is established independently by the regulatory body. The TAC is a fee that is paid by the train operating railway to the infrastructure manager for each train's use of the infrastructure.

The regulatory body establishes the TAC and sets policies for capacity allocation and economic regulation of the infrastructure manager. A well-functioning and powerful regulatory body are essential because the infrastructure manager has a monopoly over train operating companies.

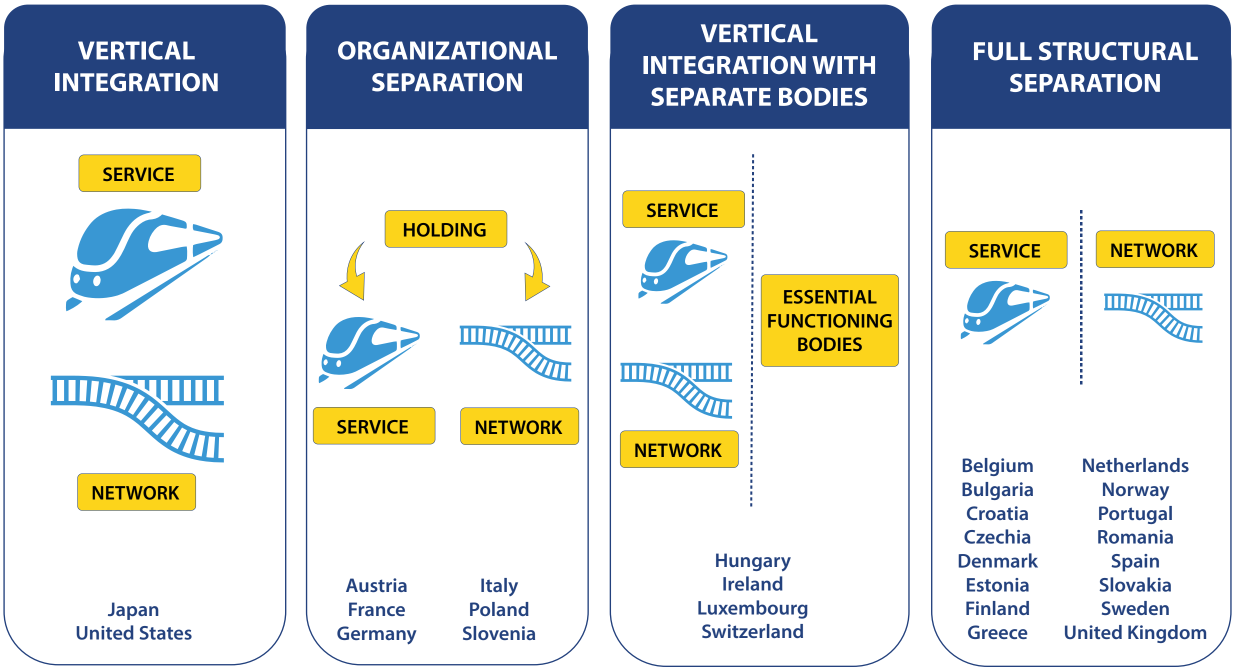
For some European systems, private sector investments helped fund construction of the high-speed lines and were repaid through the TAC revenues. With publicly subsidized train services, the government pays some or all of the TAC; however, with profitable private railway undertakings (such as Italo), the private train operator pays the TAC to the infrastructure managers.

In Japan, by contrast, the government maintained its vertical integration structure. Japanese railway operators have been private since the 1980s, when the government decided to commercialize railways as separate companies for different geographic regions of the country. This model follows the typical vertically integrated railroad businesses of both infrastructure and operations, where high-speed rail is one part of their business.

The Central Japan Railway Company's (JR Central) main business segment is focused on high-speed train service and passenger revenues. Its transportation revenue accounts for three-fourths of total JRC revenues and 93 percent of the Earnings Before Interest and Taxes (EBIT). Real estate only accounts for 4 percent of EBIT.

The East Japan Railway Company (JR East) adopted a different business model under which real estate is a large business segment. In terms of EBIT, real estate is 32 percent of the total, while retail and services count for 16 percent, passenger revenues 46 percent, and the remainder 6 percent.

Exhibit I.0: Railway Governance Structures Compared Across the United States, Europe, and Japan



Dedicated vs. Shared Rail Lines

Some high-speed rail networks, for example in Spain or Japan, have separate tracks, rights-of-way, and stations from the traditional railway network, with the line dedicated and used by high-speed trains. In other countries, such as Italy and Germany, the high-speed lines are interconnected to the conventional rail lines. Some rail lines are dedicated while others can be used by mixed traffic. This second strategy has been used to limit construction cost and to leverage the existing rail network.

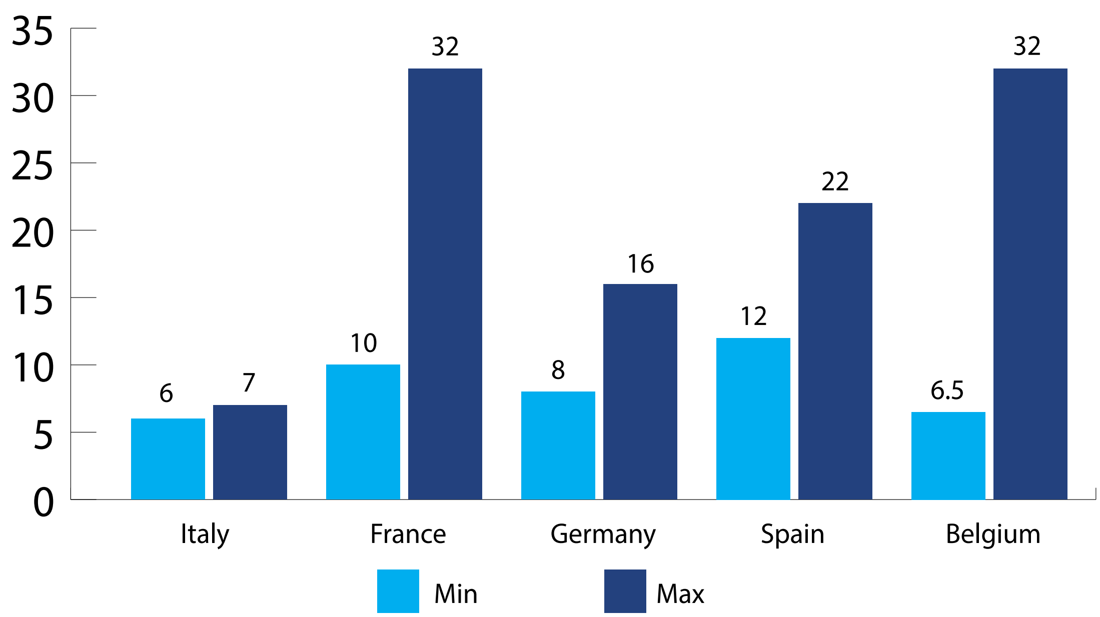
In Italy, the high-speed trains share tracks near the main urban cities (Milan, Florence, and Rome) with slower trains. Travel time from Milan to Rome is about 3 hours because speeds are lower and travel time is longer on shared lines. Nonetheless, the high-speed rail market share in Italy rail is similar compared to dedicated line from Madrid to Barcelona in Spain, where travel time is 2½ hours over a distance 25 miles longer. An attractive factor in Italy is the higher frequency of trains service.

Infrastructure Governance

In the vertical separation governance model, the infrastructure manager receives TAC revenues from the railway operator(s).

International benchmarking shows that TACs represent between 30 percent and 55 percent of the total costs for a private passenger operator. The level of TACs varies in different countries of Europe, as shown in **Exhibit I.1**. The lowest is in Italy, where it was reduced by the Authority of Regulation of Transport due to the low debt level of the infrastructure manager.

Exhibit I.1: Track Access Charge Rates per Train KM (in Euros)



In France, the TAC varies by line (for example Paris – Lyon is the highest), and by peak and off-peak times. In Spain, the TAC varies by line and by the number of seats on the train. The TAC in Belgium depends on the hour of travel and whether the line is dedicated or shared (which affects travel time).

Through TACs, the infrastructure manager could recover the total operating cost of the infrastructure (direct cost), and part of the initial capital cost to build the infrastructure. In general, vertical separation models involve TACs that guarantee the infrastructure manager can recover the operation cost, asset depreciation, and return on investment.

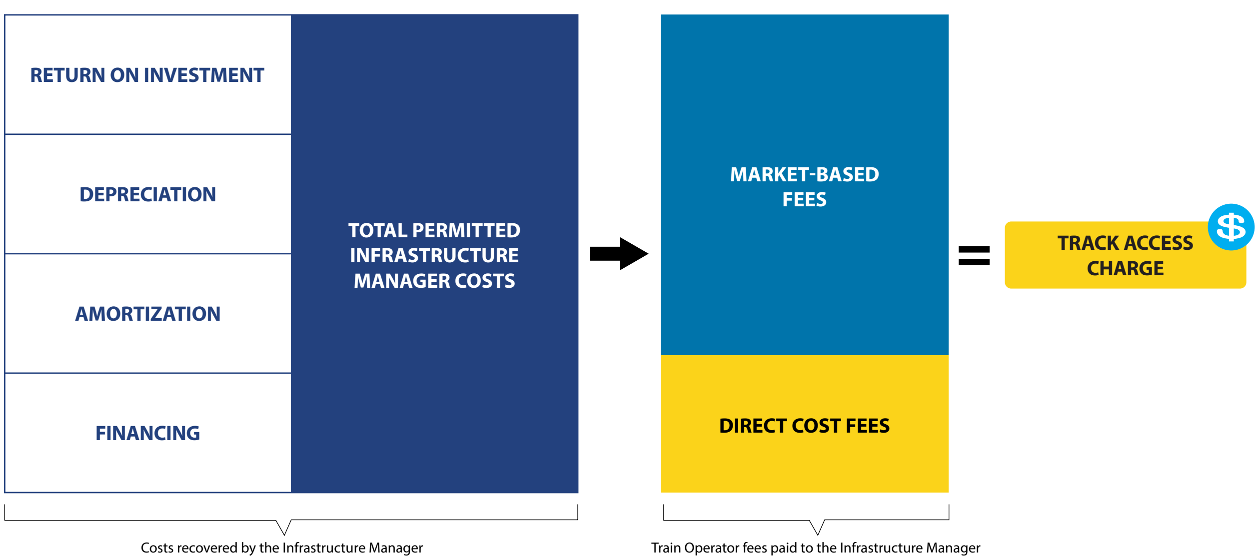
A TAC is normally established with two main components. The first is a charge to recover direct costs on a network-wide basis. The second, based on the ability of railway operator to pay, is to recover the difference between the total permitted cost of the infrastructure manager and the direct cost.

A vertical separation structure with the use of TACs could provide compelling opportunities for the private sector. One potential P3 scenario would provide an infrastructure concession to a private entity with a duration of around 50 years and guarantees they would receive a TAC. This structure has been used for several European high-speed lines in attractive markets.

An example is the Tours – Bordeaux high-speed line in France, which includes almost 188 miles of line and almost 24 miles of links to the line. The project was 51 percent financed by France, with 49 percent of the project paid for by private investors.

In this Tours – Bordeaux example, private investors receive TAC revenues paid by the railway operator. They have a stable concession for 50 years and the TAC revenues cover all operating expenses as well as the financing of their part of the capital expenditures. TAC is regulated by an independent economic regulator (an authority who regulates transportation) and is fixed to provide a consistent return on investment.

Exhibit I:2: Infrastructure Manager Cost Components of Track Access Charge



In Italy, the government is in the process of breaking up the high-speed line network to partially commercialize it and attract investors using TAC revenues from the two operators (in 2027 there will be a third operator). This model could represent an opportunity for California high-speed rail to use a similar structure that could attract private investors for infrastructure construction, especially for the profitable San Francisco – Bakersfield and San Francisco – Los Angeles – Anaheim scenarios.

Private Railway Operators

While Japan uses a vertically integrated private governance structure for its high-speed rail system, fully private train operators were established in the past 15 years.

The first case of a private operator managing only the transportation section and not the infrastructure was in Italy. The total number of passengers the Italian high-speed rail system has more than doubled since the introduction of a second private high-speed railway operator using an infrastructure of 600 miles and the traditional lines with high-speed rail trainsets. Its EBIT is between 25 percent and 33 percent for the most recent year. The total value of the company, sold in 2025, was $3.5 billion.

In Spain, the Iryo line is partially owned by private investors. It entered the market in November 2022 and is expected to have operational profits in 2025.

Revenue from Retail

Retail activities provide substantial revenue for rail operations in Europe. In Italy, for example, retail management of 14 stations was commercialized in 2014 when more than 1 million square feet were leased. As shown in **Exhibit I.3**, the company running retail operations, Grandi Stazioni Retail, was separated from the Ferrovie dello Stato Italiane (the state-owned railway group). Other station activities, such as facility management of engineering activities, were maintained in a separate group.

The company was ultimately sold to private investors. In Italy, the railway sector is covered by national labor contracts and Grandi Stazioni continues to be covered by that contract. In 2024, the value of the company was estimated at $1.4 billion, and the leased area had doubled.

In the case of California, especially in the San Francisco – Bakersfield and San Francisco – Los Angeles – Anaheim sections, when ridership will rise to 12.5 million and 25 million passengers respectively, station revenue could attract private investors in the management of the retail activities.

Exhibit I.4: Bifurcated Revenues of Grandi Stazioni Retail and Railway Services

HOLDING COMPANY

GrandiStazioni Rail
GRUPPO FERROVIE DELLO STATO ITALIANE

- Retail Lease Management
- Media & Advertisting
- Services to Customers
- GS Ceska
- Office Lease Management
- Facility Management
- Railway Services
- Engineering Activities
- Real Estate Assets

PRIVATE COMPANY

GS Retail
- Retail Lease Management
- Media & Advertisting
- Services to Customers
- GS Ceska

Retail Revenue
€190,000,000

EBITDA
€80,000,000

HOLDING COMPANY

GS Rail
- Railway Services
- Facility Management
- Engineering Activities
- Office Lease Management

Rail Revenue
€202,000,000

Net Profit
€9,000,000

Solar Energy Development Opportunities

Solar energy production is an attractive business opportunity for the Central Valley high-speed line. It can supply train power demand and other power demands such as data centers.

Many railway infrastructure managers in Europe are investing in solar energy production facilities, because rail operations are a major consumer of electricity.

For example, Italian railways consume 5.9 TWh annually, representing 2 percent of the total energy consumption in Italy. Ferrovie dello Stato Italiane plans to develop 1 GW of solar energy production capacity by 2034. This project has already started, and solar energy is being produced along railway lines.

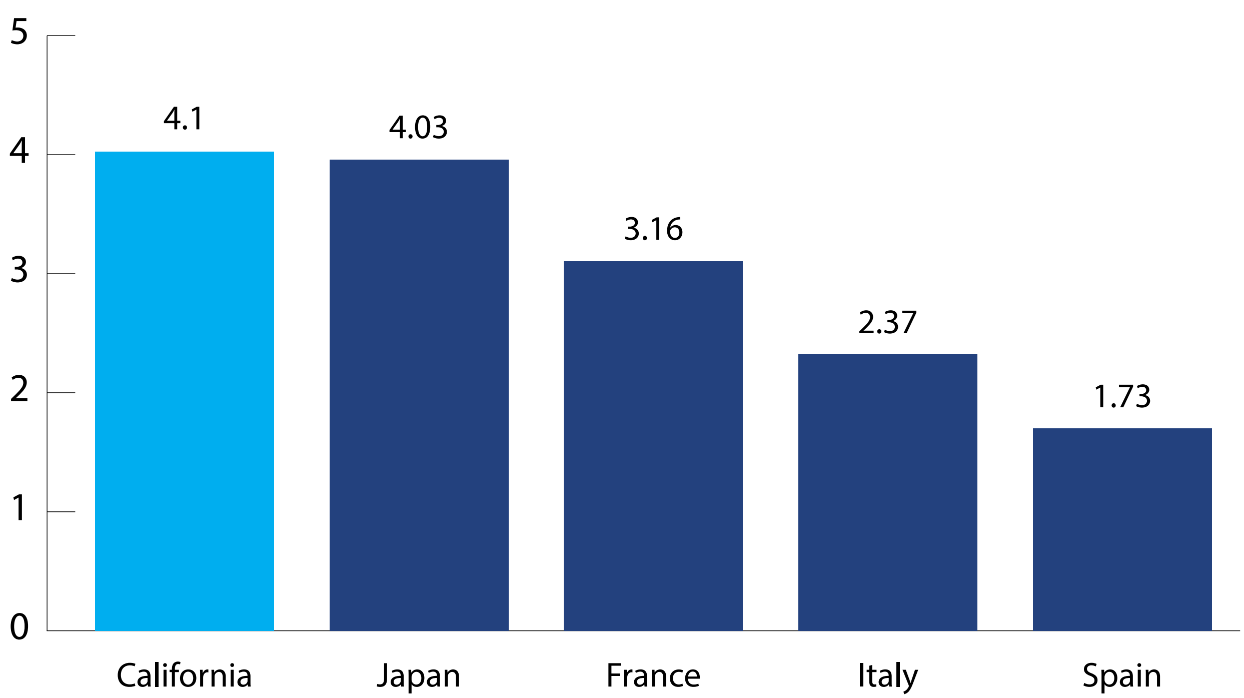
In California, the opportunity is much greater than in Italy (estimated 30 percent higher) due to California's more southern geography and climate.

In France, SNCF, the state-owned company, developed a new subsidiary "SNCF Renouvables" to develop 1 GW before 2030 of solar energy production capacity. In France, the railway system consumes 9 TWh per year and, in this case, is the biggest national consumer of electricity. The project has the potential to produce 15 percent to 20 percent of the total electric energy consumed by SNCF by 2030.

APPENDIX J: CALIFORNIA'S ECONOMIC CORRIDOR

California's is the world's fourth-largest economy, and its high-speed rail system is being built along the state's primary economic corridor, echoing the scale and ambition of landmark rail projects in Europe and Asia. Europe has decades of experience with high-speed rail (the first line was built in Italy in 1977). As now happening in California, initial lines were developed in the most-important economic corridors, such as Milan – Rome, Paris – Lyon, and Madrid – Barcelona. The distance from San Francisco and Los Angeles is similar to the Milan – Rome route in Italy or Madrid – Barcelona in Spain. California has a much larger gross domestic product than many national economies where high-speed rail has been developed. It is comparable to the Japanese economy and is much larger than that of France, Italy, and Spain, as shown in **Exhibit J.0.**

Exhibit J.0: Gross Domestic Product of California Compared to Nations with High-Speed Rail (2024 $ in trillions)



Source: last available data, The World Bank

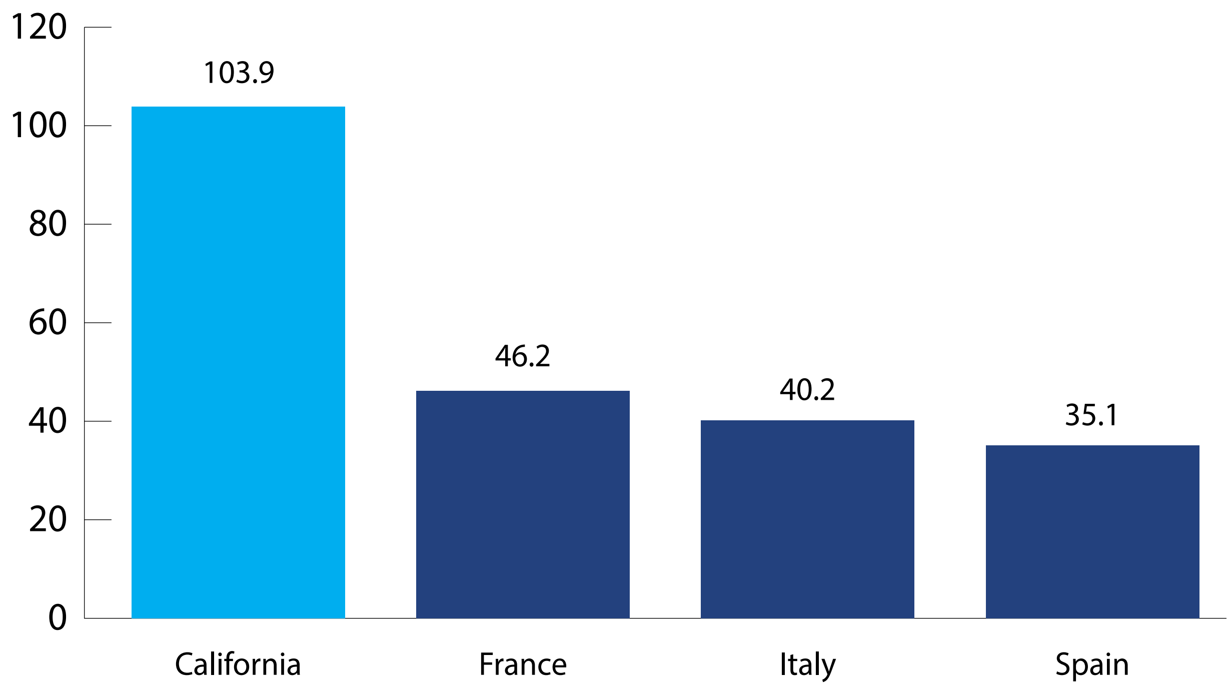
In these three European countries, the high-speed railway infrastructure is still partially under construction in several sections. HSR in Italy, Spain, and France are differentiated by geographical characteristics and patterns of urban settlement.

In Italy, the network is organized around a backbone corridor between Turin and Salerno, forming a T-shape with the under-construction high-speed line from Milan to Venice. The main hub is not the capital city of Rome because the network is relatively compact, with shorter overall length and reduced distances between cities. It primarily serves the most productive and densely populated regions.

In France, the network has a radial structure with four main branches converging in Paris, the capital city, located in the northern part of the country. Several major urban centers (such as Nice, Toulouse, and Nantes) are not directly connected to the network, mainly because of their distance from the principal corridors.

In Spain, the capital city of Madrid, which is situated in the center of the country, is connected to all major cities. As a result, Spain developed the most extensive HSR network in Europe, but with lower traffic, as Spain has a smaller population than Italy and France.

Exhibit J.1: Gross Domestic Product per Capita (2024 $ in thousands)



Source: last available data, The World Bank

Each of these countries has private investments as part of their high-speed rail systems, in operations or in infrastructure.

As shown in **Exhibit J.1**, the GDP per capita in France, Italy, and Spain is much lower than in California, highlighting a significant gap in purchasing power, productivity, and market maturity. In comparison, California represents a high-income, high-spending market, offering strong potential for high-speed rail products.

Exhibit J.2 compares GDP along various high-speed rail corridors. The statistics are related to the U.S. counties or national provinces where a high-speed rail station is located. This data is indicative of the level of economic activity that can help estimate the potential financial value to both a rail operator and for investors in other system assets.

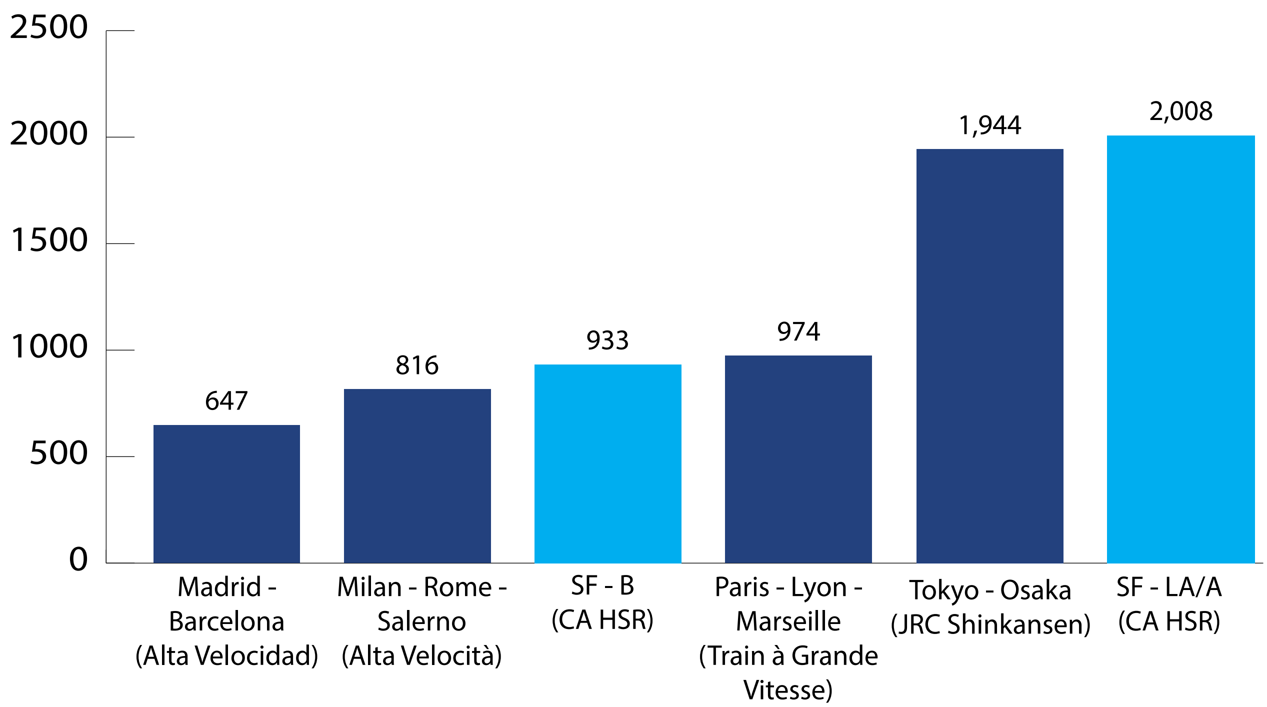
From the analysis, it is clear the San Francisco – Bakersfield economic corridor is more robust in terms of GDP than the Barcelona – Madrid corridor, which has about 90 trains per day, and Milan – Rome, which has more than 160 trains per day. It is similar in scale to the Paris – Lyon – Marseille route.

Data shows the following for the San Francisco – Los Angeles – Anaheim corridor:

- The counties where stations are located on the CAHSR have a larger collective economy than all of Spain and similar to Italy.
- The California high-speed rail economic corridor is at least double the size of the other European high-speed rail corridors.

These analyses show California has a strong potential to attract private investment in high-speed rail development due to the strength of the economy along the rail corridor.

Exhibit J.2: Gross Domestic Product of High-Speed Rail Corridors (2024 $ in millions)



Source: last available data, Eurostat and U.S. Bureau of Economic Analysis

APPENDIX K:
CAP-AND-INVEST FINANCING

Lack of stable, long-term funding has been a persistent challenge for the high-speed rail program. Recent 2025 legislation, AB 1207 and SB 840, provided the Authority a $1 billion annual share of Cap-and-Invest proceeds from 2026 through 2045, marking a significant step forward for the program.

Since the 2016 Business Plan, the Authority regularly outlined specific financial terms necessary for financing supported by the Greenhouse Gas Reduction Fund (GGRF) set out below, including an update of the current Cap-and-Invest Program status.

The rating agencies and investors also will require a legal opinion of the State Attorney General that the State has full authority to issue the revenue bonds (most likely this would rely on the special funds doctrine for an exception to the Constitutional Debt Limit in Article XVI, Section 1).

The contemplated Cap-and-Invest revenue bonds differ somewhat from other state revenue bond precedents that have relied on the special fund doctrine, because in these cases the revenues being pledged to the bonds are generated directly from the enterprises, programs or projects being financed.

If all the above conditions are met, the Authority believes financing supported by Cap-and-Invest revenues would be possible.

Prior Business Plan Recommendations On GGRF	Update On Relevant Status Of C&I
A priority lien over all GGRF revenues	Priority lien provided by AB1207 and SB 840
A stable and substantial funding commitment to the program with a set floor on GGRF revenues	$1 billion annual commitment for the Authority through 2045. However, funds are still subject to market risk and regulatory risk on the overall level of GGRF revenues falling below $1 billion annually
Continuous appropriation through the new GGRF sunset date, without the need for separate appropriations in future budget years	Included in Health and Safety Code Section 39719.4
Non-impairment language guaranteeing the state will not change the law in a manner that would impair any contracts entered into by the Authority secured by the GGRF revenues	Not included in current State code; and several amendments are required to support future financing implementation

Photo: Construction crews work at a high-speed rail site along Grangeville Boulevard in Kings County.

DRAFT 2026 BUSINESS PLAN

CALIFORNIA
High-Speed Rail Authority

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