



2022 Proposition 1A Funding Plan

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Glossary of Key Terms

TERM	DESCRIPTION
AB 180	Assembly Bill 180, passed by the California State Legislature and signed by Governor Newsom in June 2022, amends the 2021 Budget Act and appropriates \$4.2 billion in Proposition 1A bond funds for the 119-mile Central Valley Segment.
AB 1889	Assembly Bill 1889, enacted in 2016, clarifies that early investments in the Bookends and elsewhere along the system, as defined in SB 1029 of the 2011–12 Regular Session (Chapter 152 of the Statutes of 2012), which will ultimately be used by high-speed rail trains, are consistent with the intent of the Legislature in appropriating funding and is consistent with Proposition 1A.
Baseline Capital Costs Estimate	A project’s baseline is defined as the cumulative project’s scope/assumptions, schedules, cost and risk.
Business Plan	A biennial plan produced by the Authority by May 1 of each even numbered year, and is required and defined in Public Utilities Code Section 185033. The Authority’s business plan is an overarching policy document used to inform the Legislature, the public, and stakeholders of the project’s implementation, and assist the Legislature in making policy decisions regarding the project. The most-recent Business Plan was adopted by the Board in April 2022.
Cap-and-Trade	California’s Cap-and-Trade program was established through AB 32. The Authority has received both one-time Cap-and-Trade funding and statutory authorization for a continuous appropriation of Cap-and-Trade auction revenues. Appropriation of Cap-and-Trade Revenues was approved in the FY 2014-15 budget cycle, through SB 862, which continuously appropriated 25 percent of Cap-and-Trade revenues to the Authority. AB 398, which was signed into law in July 2017, extended the Cap-and-Trade Program through December 2030.

TERM	DESCRIPTION
Central Valley Segment	The Central Valley Segment (CVS), also known as the Madera to Poplar Segment, is part of the planned Merced to Bakersfield segment and the Silicon Valley to Central Valley line. The CVS consists of the 119-mile segment – between Madera on the north end and Poplar Avenue in Shafter on the south end – that was the subject of previous funding plans in 2011 (C Plan) and 2017 (D Plan). It also has been described as the First Construction Segment (FCS) in the 2012 and 2014 Business Plans.
Early Train Operator	The Early Train Operator (ETO), DB Engineering & Consulting USA, a subsidiary of Deutsche Bahn AG, was engaged at the end of 2017. In this role, DB Engineering & Consulting USA will assist the Authority in developing the system—including operational planning, procurement of track and systems, stations, and trainsets.
Funding Plan	The plan prepared by the Authority herewith to meet the requirements of Streets and Highways (S&H) Code Section 2704.08, subdivision (d)(1).
FRA Agreements	Authority grant agreements with the federal government numbered FR- HSR-0009-10-01-06 (ARRA Agreement, Amendment 6) and FR-HSR-0118- 12-01-01 (FY 10 Agreement, Amendment 1).
Initial Operating Segment	The geographic alignment between the Silicon Valley and the Central Valley is proposed as the Initial Operating Segment of the high-speed rail system.
Madera to Poplar Segment	The Madera to Poplar Segment, also known as the Central Valley Segment, consists of the 119-mile segment – between Madera on the north end and Poplar Avenue in Shafter on the south end – that was the subject of previous funding plans in 2011 (C Plan) and 2017 (D Plan). It also has been described as the First Construction Segment (FCS) in the 2012 and 2014 Business Plans.
Merced to Bakersfield Early Interim Service	The proposed approach to provide for early interim service at high speeds between Merced, Fresno and Bakersfield on a 171-mile portion of the future Silicon Valley to Central Valley line. This interim service would be operated by one or more regional service provider(s) to connect Merced, Fresno and Bakersfield, in one of the fastest growing regions in California, with additional stops to serve Madera and Kings/Tulare.
Phase 1	Phase 1 comprises approximately 520 miles between San Francisco and Los Angeles/Anaheim.

TERM	DESCRIPTION
Project Update Report	A biennial Project Update Report (PUR) is produced by the Authority by March 1 of each odd numbered year, and is required and defined in Public Utilities Code Section 185033.5. The report fulfills the Authority’s requirement to update the California Legislature on the development and implementation of intercity high-speed rail service. The 2021 Project Update Report requirement was waived by the Legislature, due to the COVID 19 pandemic and the delayed adoption of the 2020 Business Plan until 2021. The next Project Update Report is due March 2023. Senate Bill 198 requires the Authority to include in the 2023 Project Update Report an updated funding plan for the entire Merced to Bakersfield segment, including new estimates of cost and schedule for the Central Valley Segment subsection.
Proposition 1A or the Bond Act	The “Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century” (the Bond Act), approved by voters in November 2008. The Bond Act authorizes \$9.95 billion in General Obligation (GO) bonds to pay for the capital costs of the high-speed rail system and improvements to regional services which will connect to the system. The Bond Act is codified in Streets and Highways (S&H) Code Section 2704 et seq.
SB 198	SB 198, passed by the California State Legislature and signed by Governor Newsom in June 2022, establishes priorities for High-Speed Rail investments with a priority on completing an electrified two-track railroad between Merced and Bakersfield, including a shared station in Merced with Amtrak and ACE passenger rail services. SB 198 also includes provisions related to Legislative reporting and project oversight.
SB 1029	SB 1029, passed by the California State Legislature and signed by Governor Brown in July 2012, appropriates federal and state funding for the Central Valley Segment and Bookend projects on the Peninsula Corridor Segment, Burbank to Los Angeles Segment and Los Angeles to Anaheim Segment. The appropriations included the initial \$2.6 billion in Proposition 1A funds for the Central Valley Segment between Madera and Poplar, as well as: \$600 million for the Peninsula Corridor Segment; \$423 million for the Link US project on both the Burbank to Los Angeles Usable Segment and Los Angeles to Anaheim Usable Segment; and \$77 million for the Rosecrans/Marquardt Grade Separation Project on the Los Angeles to Anaheim Usable Segment.
Silicon Valley to Central Valley Line	The geographic alignment between the Silicon Valley and the Central Valley proposed as the Initial Operating Segment of the high-speed rail system.

Acronyms and Abbreviations

SHORT TERM	FULL TERM
AB	Assembly Bill
ACE	Altamont Corridor Express
ARB	Air Resources Board of the State of California
ARRA	America Recovery and Reinvestment Act
ARTIC	Anaheim Regional Transportation Intermodal Center
Authority	California High-Speed Rail Authority
BART	Bay Area Rapid Transit
BNSF	Burlington Northern Santa Fe
CEQA	California Environmental Quality Act
CO	Change Order
CP	Construction Package
CVS	Central Valley Segment
DB	Design-Build
DBE	Disadvantaged Business Enterprise
DOF	Department of Finance
DRB	Disputes Resolution Board
DVBE	Disabled Veteran Business Enterprise
EAC	Estimate at Completion
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
ETO	Early Train Operator
ERM	Enterprise Risk Management
FRA	Federal Railroad Administration
FCP	Funding Contribution Plan
FY	Fiscal Year
FY10	Cooperative Agreement No. FR-HSR-0118-12-01-01 (High-Speed Intercity Passenger Rail Program for federal fiscal year 2010)
ETO	Early Train Operator
GGRF	Greenhouse Gas Reduction Fund (a.k.a. Cap-and-Trade proceeds)
GHG	Greenhouse Gas
GO	General Obligation (as in General Obligation Bonds)
HSIPR	High-Speed Intercity Passenger Rail Program

SHORT TERM	FULL TERM
HMF	Heavy Maintenance Facility
IOS	Initial Operating Segment
IRL	Issue Resolution Ladder
LAO	California Legislative Analyst's Office
LGA	Locally Generated Alternative (for the portion of the Merced to Bakersfield segment entering Bakersfield)
M	Millions
Metro	Los Angeles County Metropolitan Transportation Authority
NEPA	National Environmental Policy Act
P70	70% Probability
PCEP	Peninsula Corridor Electrification Project
PCJPB	Peninsula Corridor Joint Powers Board
PCM	Project and Construction Management
PD	Project Development <i>or</i> Program Delivery (depending on context)
PMO	Program Management and Oversight unit
PMP	Program Management Plan
PRIIA	Passenger Rail Investment and Improvement Act of 2008
PUR	Project Update Report
RFP / RFQ	Request for Proposals / Request for Qualifications
RMP	Risk Management Plan
ROD	Record of Decision
ROW	Right of Way
SB	Senate Bill
S&H Code	Streets and Highways Code
SCC	Standard Cost Category
SJPA	San Joaquin Joint Powers Authority
SR 99	State Route 99
STO	State Treasurer's Office
UPRR	Union Pacific Railroad
YOE	Year of Expenditure

Introduction

The “Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century” (the Bond Act) is codified in Streets and Highways Code Section (S&H) 2704 et seq. S&H 2704.08, subdivision (d) requires that, prior to committing any proceeds of bonds described in paragraph (1) of subdivision (b) of Section 2704.04 for expenditure for construction and real property and equipment acquisition on each corridor, or usable segment thereof, other than for costs described in subdivision (g), the authority shall have approved and concurrently submitted to the Director of Finance and the Chairperson of the Joint Legislative Budget Committee the following: (1) a detailed funding plan for that corridor or usable segment thereof...(as further described herein); and (2) a report or reports prepared by one or more financial services firms, financial consulting firms, or other consultants, independent of any parties, other than the authority, involved in funding or constructing the high-speed train system, making certain indications (as further described herein).

The Authority is submitting this Funding Plan in satisfaction of the above-referenced requirements pursuant to Streets and Highways (S & H) Code Section 2704.08, subdivision (d).

1. Background and Purpose of the Funding Plan

In February 2021 the Authority submitted an initial funding plan (2021 Proposition 1A Funding Plan) pursuant to the requirements of the Proposition 1A Bond Act, as specified in S & H Code Section 2704.08, *subdivision (c)* as a prerequisite to requesting appropriation of additional Proposition 1A bond funds. The \$4.2 billion in requested bond funds were appropriated by the Legislature in June 2022 through Assembly Bill 180, which is described further below. Pursuant to the requirements of the Proposition 1A Bond Act, as specified in S & H Code Section 2704.08, *subdivision (d)*, the California High-Speed Rail Authority (Authority) is submitting this final funding plan (2022 Proposition 1A Funding Plan, or Funding Plan) to enable commitments and expenditures of the newly-appropriated Proposition 1A bond funds.

The Authority Board of Directors finalized and adopted the 2022 Business Plan on April 27, 2022, and submitted it to the California State Legislature on May 6, 2022. The 2022 Business Plan and the Funding Plan, taken together, outline the progress the Authority has made addressing the challenges facing the project, the significant number of jobs this project is producing and seeks to increase through the appropriation and expenditure of Proposition 1A bond funds, as well as the next steps for construction and funding to complete the Merced to Bakersfield segment and, ultimately, the full Phase 1 segment between San Francisco and Los Angeles – Anaheim.

Assembly Bill 180, Chapter 44 of 2022 (AB 180), was passed by the California State Legislature and signed by Governor Newsom in June 2022. This legislation amends the 2021 Budget Act and appropriates \$4.2 billion in Proposition 1A bond funds for the 119-mile Central Valley Segment. A budget trailer bill, Senate Bill 198, Chapter 71 of 2022 (SB 198), includes certain statutory provisions on legislative intent, expenditure priorities and limitations, and new

oversight and reporting. Among other things, SB 198 requires that the new \$4.2 billion Proposition 1A appropriation be limited in expenditure to the Central Valley and that Cap-and-Trade proceeds be prioritized to the following: (A) Merced to Bakersfield segment until completion of this segment, (B) meeting legal and funding commitments made as of June 1, 2022, and (C) completing planning and environmental work required under federal grant agreements as of June 1, 2022. Expenditures outside these areas are limited and require additional notification and reporting. The newly appropriated Proposition 1A funds supplement the previous appropriations of bond proceeds, federal grants, and Cap-and-Trade Program proceeds directed to the Central Valley Segment.

The Authority previously selected the Central Valley Segment (CVS) (from Madera to Poplar Avenue) for construction in accordance with the criteria specified in Streets and Highways (S&H) Code Section 2704.08, subdivision (f). This 119-mile project currently under construction also has been described as the First Construction Segment (FCS) in the 2012 and 2014 Business Plans, and as the Central Valley Segment in more recent Business Plans (collectively, the Business Plans). For ease of reference, the terms Central Valley Segment, CVS, or Madera to Poplar Segment will be used interchangeably throughout this Plan, except when referencing past actions regarding the FCS.

The CVS is the backbone of the future Merced to Bakersfield segment. The Authority plans to apply the full amount of the \$4.2 billion Proposition 1A appropriated in the amended 2021 Budget Act to the CVS, as a critical step toward completion of the Merced to Bakersfield segment. Additional state Cap-and-Trade funds and anticipated new federal grant awards will be utilized for completion of the full Merced to Bakersfield segment, in accordance with the provisions of SB 198.

Senate Bill 198 requires the Authority to include in the 2023 Project Update Report an updated funding plan for the entire Merced to Bakersfield segment, including new estimates of cost and schedule for the Central Valley Segment portion. Of the \$4.2 billion appropriated by AB 180, SB 198 specifies that the final \$2.2 billion is available for expenditure no sooner than 60 days after the 2023 Project Update Report is approved, provided the Authority notifies the Joint Legislative Budget Committee that these remaining funds are necessary to meet project milestones established in the most recent Project Update Report.

As indicated above, the Authority is seeking new federal grant funds appropriated and authorized under the Bipartisan Infrastructure Law (BIL), also known as the Infrastructure Investment and Jobs Act (IIJA). The initial applications for projects in the Merced to Bakersfield segment totaling about \$1.1 billion were submitted for funding in the combined Multimodal Project Discretionary Grant (MPDG) Program on May 23, 2022. The Authority also anticipates future federal funding requests of roughly \$3.7 billion for Merced to Bakersfield segment costs from additional federal grant programs established or expanded under the BIL. It should be noted that this Funding Plan for the 119-mile Central Valley Segment does not include, or depend upon, the award of new federal funds. Rather, those awards would cover scope and costs beyond this Funding Plan for full Merced to Bakersfield segment construction, including the cost to build a second track for the initial 119-mile Central Valley segment. Future additional federal funding requests would include a two-track scope for the entire Merced to Bakersfield segment.

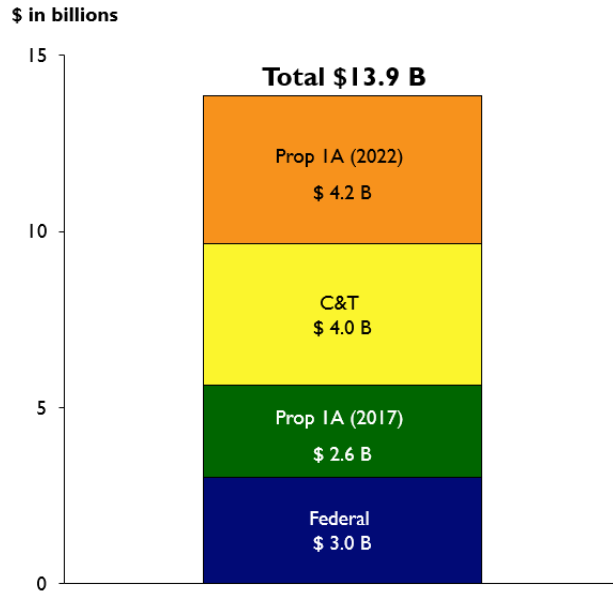
2. Current Funding Plan Appropriation

This Funding Plan directs the full \$4.2 billion in new Proposition 1A bond funds to the Central Valley Segment, consistent with the direction of AB 180 and SB 198.

Cap-and-Trade auction results continue to recover from the COVID-related low point in trading activity. Initially, the COVID-19 pandemic caused shocks to the Cap-and-Trade markets, resulting in lower auction proceeds and project funding from the three quarterly auctions following the COVID Emergency Orders. This resulted in \$288 million less revenue in 2020 relative to what auctions produced in prior years. Fortunately, these markets have strongly recovered. The last four quarterly auctions from August 2021 through May 2022 yielded \$1,089 million in total Cap-and-Trade revenues for the Authority. These results demonstrate Cap-and-Trade revenue significantly above the Authority's established high range of \$750 million per year.

Exhibit I-1 illustrates the application of both Proposition 1A Bond Funds and Cap-and-Trade funds. The total baseline project budget for the Central Valley Segment is \$13.9 billion, which is consistent with the 2022 Business Plan. As stated above, SB 198 requires the 2023 Project Update Report to include updated cost and schedule estimates for both the CVS and the full Merced to Bakersfield Segment. To the extent higher global inflation and other factors require any funding beyond this budget, this the Authority would direct additional available Cap-and-Trade funds to the CVS. The Authority outlines available Cap-and-Trade revenues on page 45 and believes these revenues would be sufficient to cover any such costs.

Exhibit I-1. Central Valley Segment Project Cost and Proposed Funding (\$ in Billions)



Notes:

- (1) *The Authority's total available funding is higher than the current CVS total cost. Additional Cap-and-Trade funds are available to mitigate future cost inflation risks.*
- (2) *Sum may not foot to total due to rounding.*

3. Maintaining the Economic Engine of the Project

One of the high-speed rail project's signature benefits is the on-going creation of jobs in designing, planning and constructing the system. From July 2006 through June 2021, high-speed rail supported the equivalent of up to 70,500 full-time jobs and \$13.7 billion in economic impact in California, with the majority of the economic activity stemming from construction of the Central Valley Segment. In FY 2020-21 alone, the project supported the equivalent of approximately 10,100 full-time jobs, including direct, indirect and induced jobs. In the Central Valley, the project's economic impact has been especially meaningful to the region. By May 31, 2022, the Authority had surpassed 7,983 construction workers dispatched since the start of construction. Fifty-seven percent (57%) of the investment in the system in FY 2021-22 occurred in designated disadvantaged communities throughout California, spurring economic activity in these areas. Additionally, over half (56%) of the total program investment from July 2006 through June 2021 occurred in designated disadvantaged communities.

The expenditure of Proposition 1A bond funds will allow job growth to continue. On-going construction will continue to contribute to the economic stability of the Central Valley, producing about 116,000 projected job-years in the Merced to Fresno project section and about 87,000 projected job-years in the Fresno to Bakersfield project section through construction completion.

4. Previous Funding Plans and Proposition 1A Appropriations

In 2011, the initial Funding Plan for the CVS Usable Segment was approved by the Authority Board of Directors, in accordance with the S&H Code Section 2704.8, subdivision (c) (Resolution #HSR11-23, November 3, 2011). In the Budget Act for FY 2012-13, Proposition 1A funds in the amount of \$2.6 billion were appropriated by the Legislature in Senate Bill 1029 (SB 1029), Chapter 152 of 2012. In making its appropriation, the Legislature chose to use Proposition 1A funds to match the concurrent appropriation of federal funds (for combined funding of \$5.87 billion) to begin construction of the high-speed rail system.

A subsequent Funding Plan dated January 1, 2017, sought *expenditure* approval to use the appropriated Proposition 1A funds to pay for the on-going construction in the Central Valley that SB 1029 authorized, and which had commenced using federal funding sources. The 2017 Funding Plan for the CVS (along with the required accompanying Independent Consultant Report) was approved in accordance with S&H Code Section 2704.8, subdivision (d) (Resolution #HSRA 16-28, December 13, 2016).

The Director of California's Department of Finance also approved three more funding plans, which, when combined with the Central Valley Segment, provide a total of \$3.3 billion in Proposition 1A funds, specifically:

- \$2.6 billion for the Central Valley usable segment (as noted above);
- \$600 million for the Caltrain Peninsula Corridor Electrification Project (PCEP) on the Peninsula Corridor Usable Segment;
- \$423 million for the Link US project on both the Burbank to Los Angeles Usable Segment and Los Angeles to Anaheim Usable Segment; and
- \$77 million for the Rosecrans/Marquardt Grade Separation Project on the Los Angeles to Anaheim Usable Segment.

5. Current Funding Plan / Proposition 1A Appropriation

This Funding Plan provides an outline of the high-speed rail project's economic and environmental benefits, project funding (including bond funds, Cap-and-Trade Funds, and existing federal funds). The Authority also has engaged with the Biden Administration and reestablished the important partnership between California and the federal government in delivering this project, as it reflects the new administration's policies and priorities related to both transportation and climate change. See "Recent Progress – Federal Funding," below for information regarding the status of federal FY10 grant funds.

The Authority's immediate priorities are as follows:

- Complete construction of the 119-mile Central Valley Segment, fulfilling our federal grant agreements with the Federal Railroad Administration.
 - Substantial completion of the 22-mile stretch through Kern County to Poplar Avenue under Construction Package 4 is anticipated in March 2023 – the first construction package to reach this milestone.
 - The expected completion dates for CP 1 and CP 2-3 will be updated in the 2023 Project Update Report, but are reflected here with substantial completion in 2025.
- Meet our federal commitment to environmentally clear the entire 500-mile system between San Francisco and Los Angeles/Anaheim, with over 420 miles of 500 miles already cleared.
 - The first two segments into Los Angeles County – Bakersfield to Palmdale and Burbank to Los Angeles – received their respective Record of Decision (ROD) in August 2021 and January 2022.
 - The two segments in Northern California – San Jose to Merced and San Francisco to San Jose – received their respective Record of Decision (ROD) in April 2022 and August 2022.
- Advance construction on the "bookend" projects to which we have committed funding in the Los Angeles Basin and the Bay Area (\$3 billion in investments for infrastructure projects in the Northern and Southern regions).
- Award the Track and Systems contract in 2022, with design work commencing in 2023; with goal of testing and commencing electrified high-speed train service by the end of the decade.

- Expand the 119-mile segment in the Central Valley to develop 171 miles of electrified high-speed rail service by advancing design, funding pre-construction work, setting aside funds for construction extensions to Merced and Bakersfield, and connecting downtown Merced, Fresno and Bakersfield with additional stops at Madera and Kings/Tulare.
- Advance project design in each segment, including the four Southern California Segments and those between San Francisco and Merced, as each segment completes the environmental review phase.
 - On March 18, 2022, requests for qualifications (RFQs) for Design Services were released for Merced to Madera and the Fresno to Bakersfield Locally Generated Alternative (LGA). The Authority Board of Directors approved the award of the contracts on August 17, 2022, for \$41.0 million and \$44.9 million for NTP-1 work, respectively. Both of these contracts are outside of the Central Valley Segment, and are not part of the scope of this Funding Plan.
- Pursue additional federal funding to complete the inaugural high-speed operating service between Merced and Bakersfield, including selected additional elements and construction under one or more additional programs established or expanded under the Bipartisan Infrastructure Law (BIL).
 - The Authority submitted two grant applications on May 23, 2022, under the Multimodal Project Discretionary Grant Program, and anticipates pursuing additional grants in the coming months, as summarized in subsection 6, below.

Approval of this Funding Plan is an important component of achieving the above objectives. Doing so is particularly important for the Central Valley Segment, as the on-going construction will continue to contribute to the economic stability of this region and the state.

6. Recent Progress

a. Federal Funding

In June 2021, the FRA and the Authority reached a settlement agreement for restoration of the \$929 million in FY10 federal grant funds, which had been the subject of active litigation among the parties. Amendment #4 of the relevant Cooperative Agreement (dated June 15, 2021) also extends the project performance period and federal funding period by four years, to December 31, 2026, and anticipates completion of testing and readiness for operations two years later, in 2028.

The Authority also received a 2021 federal grant award in the amount of \$24 million under the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) program for crucial safety, efficiency and construction projects in and around the city of Wasco, including adjustments and enhancements to State Route 46 and enhancements to adjacent properties affected by the project. The grant and Authority matching funds help bring improvement, safety, environmental justice and economic development to a historically disadvantaged community and further demonstrates the federal government's support for this program.

In addition, as described in the 2022 Business Plan, the Authority has a pro-active strategy to leverage new federal infrastructure investments appropriated and authorized by the Bipartisan Infrastructure Law (BIL). The Authority is uniquely positioned due to extensive environmental clearance, active construction, commitment of state funds to match federal dollars, and the high degree of alignment of the California high-speed rail program with key federal goals, including combating climate change and enhancing economic development and connectivity in underserved communities. The Authority submitted two grant applications on May 23, 2022, under the Multimodal Project Discretionary Grant Program and anticipates further applications to come, as summarized below:

- The Authority applied for \$1,043 million in federal grant funds for selected elements of the inaugural high-speed operating service between Merced and Bakersfield under one or more programs included in the notice of funding opportunity for the Multimodal Project Discretionary Grant Program.
- The Authority applied for \$223 million in federal grant funds for configuration design for San Francisco to Los Angeles under one or more programs included in the notice of funding opportunity for the Multimodal Project Discretionary Grant Program.
- The Authority anticipates pursuing additional federal grants in the total range of \$3.7 billion in the coming months and years, including, but not limited to, Federal-State Partnership for Intercity Passenger Rail (FSPIR), Consolidated Rail Infrastructure and Safety Improvements (CRISI) and FRA's Rail/Highway Crossing Elimination Program.

b. Environmental Clearance

The Federal Railroad Administration (FRA) approved the Authority's application for National Environmental Policy Act (NEPA) Assignment, making California the first state in the nation to receive NEPA Assignment for rail projects. Under a NEPA Assignment Memorandum of Understanding (MOU) between the Authority and the US Department of Transportation, Federal Railroad Administration (FRA), the FRA assigns and the State assumes, environmental review responsibilities under NEPA and other federal environmental laws with respect to projects in California's High-Speed Rail system and projects that directly connect to stations on the high-speed rail system. Additional details can be found in Section F, including Exhibit F-2.

This assignment is expected to streamline the process for receiving environmental clearance records of decision (RODs) for the remaining segments in the program. As of August 2022, the Authority has completed environmental clearance, including RODs, for eight segments, including all segments in the Central Valley. Within the next year, the Authority expects to release draft environmental documents for the final two project sections for public review and comment, with final RODs anticipated in 2023 and 2024.

c. Construction

On the construction front, significant progress is occurring in the Central Valley. The Authority resolved past litigation to allow construction work to progress more effectively. The resolution of contractor issues to clear areas of construction has increased the amount of activity over the last year. The Authority increased the number of active construction sites, put thousands of workers on the job and engaged hundreds of small businesses. Many third-party agreements were completed, and stronger relationships were built with key stakeholders, thereby resolving program-related issues.

Construction also continues on the Authority-funded Bookend Projects. The Peninsula Corridor Electrification Project in the Bay Area is under construction and San Mateo Grade Separation Project opened to the public in September 2021. Southern California will soon see the start of construction on the Los Angeles Union Station Link US Project, while a groundbreaking was held for the Rosecrans Marquardt Grade Separation Project on June 2, 2022. Additionally, the Authority continues to advance a multi-billion-dollar procurement for Track and Systems. These are the necessary steps required to meet terms of the federal funding agreements to construct the first segment of the nation's first truly high-speed rail system.

d. Lessons Learned

The Authority's past lessons learned, input from stakeholders, and analysis of impacts arising from the pandemic, among other factors, are guiding the Authority to strengthen risk management and to take a more prudent and pragmatic staged delivery approach, both of which are discussed further below.

In Chapter 4 (Strengthening Risk Management) of the 2022 Business Plan the Authority summarizes its improved risk management processes and progress to-date. The Enterprise Risk Management (ERM) Mission is to "foster a risk-aware culture to focus decisions on the proactive management of risks to support the Authority in achieving its statewide goals and objectives." The ERM Vision is "an organization where every decision is informed and guided by a sound understanding of risks as they relate to achieving the Authority's objectives."

To assess today's situation, Authority staff have conducted an extensive review of the current status of civil construction in the Central Valley, the remaining issues and risks that need to be addressed, and the schedule for delivering the Central Valley projects. As part of this process, the Authority staff reviewed both the remaining legacy risks as well as the impact COVID-19 has already had and may continue to have in the future. This review shows solid progress—that the Authority is moving beyond past legacy risks—but also that the Authority must proceed with caution in the face of the still unknown risks that may emerge from the pandemic. Based on this review, the Authority staff developed an updated Estimate at Completion (EAC), recalibrated the schedule and recognized that the contingency needs to be maintained and replenished. These updates were included in the 2022 Business Plan. Details are found in *Section D. Construction Cost Projection*.

e. Strengthening Risk Management

The emergence of the COVID-19 pandemic in early 2020 created a variety of new and unforeseen risks, neither anticipated nor planned for. The pandemic affected how we conduct business, interact with the public and build high-speed rail. Although we responded to its immediate impacts quickly, the full magnitude of the pandemic and its duration are still unknown, even with the recent vaccine approval and accelerated rollout. Given this uncertainty, there still may be possible residual impacts from the ongoing risk of exposure and the potential for isolated shutdowns, which may include supply chain issues, labor shortages and labor escalation, among others.

The Authority continues to work toward enhancing and expanding the scope of risk management, integrating across all levels of the organization, and supporting the mitigation of key risks from specific projects up to the enterprise level. By establishing a process of

continuous improvement, identifying what has worked well and what could be improved upon, the Authority's risk management function seeks to reduce risk impacts and maximize opportunities.

Enterprise Risk Management. A key objective in developing the Enterprise Risk Management program is to align the Authority's risk management processes to the 20 principles of the Committee of Sponsoring Organizations of the Treadway Commission risk framework: Enterprise Risk Management – Integrating with Strategy and Performance. More detailed objectives of the program include:

- Proactively identifying and monitoring key risks (opportunities, threats and outside risks) associated with the Authority's objectives;
- Establishing risk processes and a cadence for risk coordination and reporting;
- Aligning offices and programs to coordinate risk responses to reduce negative risks and take advantage of positive risks;
- Enhancing communication of risks and opportunities throughout the organization, both internal and external;
- Enabling the Board of Directors and the Enterprise Risk Committee to fulfill their risk oversight responsibilities; and
- Developing a risk-awareness culture, with a focus on proactive mitigation.

The Authority has made progress on several fronts.

- 1. Conducted a Maturity Assessment:** The Risk Management Office completed a two-part maturity assessment focusing on cost, schedule and budget risk management. A comparison of the current state to the desired future state allowed the development of a series of program next steps.
- 2. Established the Enterprise Risk Committee:** Formalized the Enterprise Risk Committee membership and formalized the charter, which includes monthly meetings to review, discuss and monitor action plans on the Authority's top risks. The risk office now facilitates monthly Enterprise Risk Committee meeting where members discuss key risks across the Authority.

- 3. Identified Enterprise Risks:** Workshops were conducted across the Authority to identify and assess risks to each office. This exercise helped form the Authority's baseline enterprise risk register.
- 4. Conducted Targeted Risk Reevaluations:** Throughout the Authority, available risk registers were evaluated for completeness and process alignment. A series of recommendations were provided to improve risk management at the Authority.
- 5. Advanced a Plan:** Staff worked on furthering an Enterprise Risk Management Plan and vision for the program using the roadmap described in Exhibit 4.0. The plan was shared with Authority executives and adopted by the Enterprise Risk Committee.

Staged Approach to Project Delivery. The Authority has implemented a Staged Project Delivery process to serve as a comprehensive project development / delivery process and to strengthen its risk management program. This process will serve as the organizing framework for our capital budget approval process. Under the Staged Project Delivery process, the Authority identifies the necessary preconstruction and coordination activities prior to awarding future contracts and commencing early work packages. As projects complete the environmental stage, design will advance to a configured footprint, assessing value engineering opportunities to reduce cost and maintain travel time goals. This will allow the Authority to complete the pre-construction work to plan for ROW acquisition, utility relocation and ultimately move to construction as funding becomes available. Staged Project Delivery processes are considered best practices by the FRA, as evidenced in its recent draft guidance on project delivery (Docket No. FRA-2022-0035, Guidance on Development and Implementation of Railroad Capital Projects), and often are used by both the private and public sectors. Benefits include reducing uncertainty prior to entering construction contracts, a key factor in the Authority's current staged project delivery approach, based on lessons learned in early years of the Central Valley Segment.

Opportunities based on lessons learned present themselves in all aspects of project development, including engineering, right-of-way acquisition, third-party agreements, procurement, contracting, and estimating. As the Authority advances capital projects through the Staged Project Delivery process, it will do so with an integrated, multidisciplinary project team that includes Risk Management and Project Controls, Planning and Sustainability, Strategic Delivery, Engineering, Environmental, Real Property, Infrastructure Delivery, Rail Operations and the Authority's regional teams that interface with local communities and stakeholders.

Improved and more detailed project design will lead to reduced risk through enhanced preliminary engineering, right-of-way acquisition and geotechnical investigation prior to

procurement for construction. By progressing project sections through the stages and identifying troubled areas, the Authority can more adequately reduce risks and increase oversight, accountability and transparency for project development and delivery. As designs are further refined, risk staff continue to work closely with the project teams to develop and refine mitigations and to identify and understand these technical risks.

7. Organization of the Plan

This Funding Plan is organized into six sections, as described below.

- A. Usable Segment:** The Authority proposes to commit bond proceeds to expenditures for construction and real property and equipment acquisition for the Central Valley Segment, as described in Section A of this Funding Plan. This section describes the Central Valley Segment, previously selected and approved by the Authority for construction funding, and provides updates on intervening progress toward completion of construction.
- B. Sources of Funding:** The sources of funding are discussed in Section B of this Funding Plan. With enactment of AB 180, the Authority will be directing the entire \$4.2 billion in Proposition 1A bond funds to the CVS, as part of the Merced to Bakersfield segment, prioritized in the relevant budget trailer bill provisions in SB 198 discussed herein. The appropriated amount supplements the previous appropriations of proceeds of bonds authorized by the Bond Act for the initial Useable Segment in the amount of \$2.684 billion and other federal and state funding sources. This section describes the funding sources, conditions of use, and presents the amounts, anticipated timing of expenditure and related rationale for the necessary additional Proposition 1A bond proceeds.
- C. Ridership and Revenue Forecast:** The forecast ridership and revenues are presented in Section C of this Funding Plan. This section describes the future initial operating service, interim services, and interim use/independent utility options available to the Authority.
- D. Construction Costs:** The projected construction costs are presented in Section D of this Funding Plan. The information reflects the most recent Baseline Capital Cost Estimate for the Central Valley Segment, which also has been incorporated into the 2022 Business Plan.
- E. Material Changes:** The material changes between this Funding Plan and the February 9, 2021, Funding Plan submitted pursuant to Streets and Highways Code Section 2704.08, subdivision (c) are presented in Section E of this Funding Plan. The primary changes are

adoption of the 2022 Business Plan, updates to Cap-and-Trade Revenues, appropriation of Proposition 1A bond proceeds by the Legislature and enactment of the federal Bipartisan Infrastructure Law.

F. *Terms and Conditions of Agreements:* The anticipated terms and conditions of various agreements for the Central Valley Segment and future operating segments are presented in Section F of this Funding Plan. This section describes multiple agreements related to the funding, construction, and planning for operation of future passenger train service, as applicable, along the Usable Segment.

Independent Consultant's Report: Provided under separate cover.

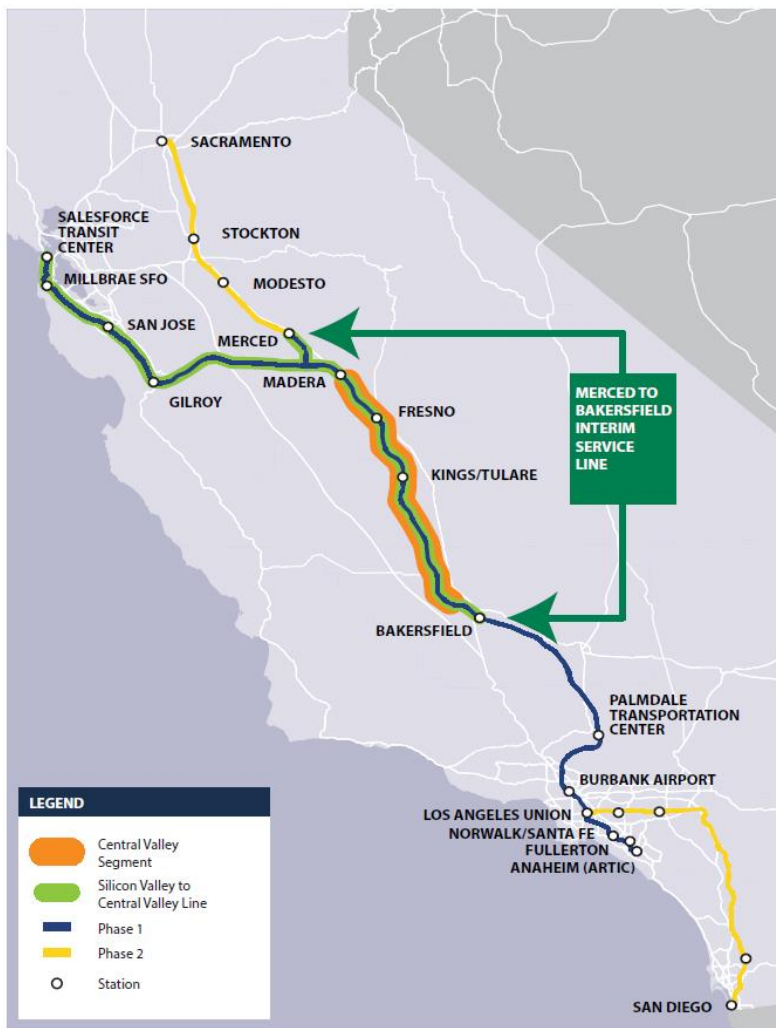
A. The Usable Segment and Construction Costs

Streets and Highways Code Section 2704.08, subdivision (d)(1)(A) requires identification of the corridor, or usable segment thereof, and the estimated full cost of constructing the corridor or usable segment thereof.

1. Central Valley Usable Segment (CVS)

Also known as the Madera to Poplar Usable Segment, this usable segment consists of the 119-mile Central Valley Segment – between Madera on the north end and Poplar Avenue in Shafter on the south end – that was the subject of previous funding plans in 2011 (Streets and Highways Code Section 2704.08, subdivision (c) Plan) and 2017 (Streets and Highways Code Section 2704.08, subdivision (d) Plan)). See Exhibit A-1 for the location of the Central Valley Segment in the context of the Silicon Valley to Central Valley line.

Exhibit A-1. Central Valley Segment in Context of the Silicon Valley to Central Valley Line



SUBJECT TO CHANGE – JANUARY 2021

2. Construction Activities

The official groundbreaking of construction for the high-speed rail system was held on January 6, 2015, in Fresno. In the years that have followed, the Authority has advanced construction, secured ROW parcels, attained permits, continued geotechnical investigations essential to structural design, demolished structures, relocated utilities along the ROW, and begun construction of dedicated high-speed rail viaducts, bridges, and guideway.

The Authority currently is delivering the infrastructure in the Central Valley through a series of contracts. The first contracts that the Authority let were design-build (DB) contracts for construction of the civil works for the usable segment. These contract packages include CP 1, CP 2-3, and CP 4. All of these contracts have been executed and work is underway with heavy construction ongoing.

The SR-99 realignment work was completed in January 2019. This shifted the highway 100 feet to the west, reconstructing three overpasses, adding auxiliary lanes and improved ramp access for traffic safety and mobility.

In 2021, the Authority and the FRA reached agreement to extend the project performance period and federal funding period for four years, to December 31, 2026. In addition, the grant agreement for FY10 funding anticipates testing and operation readiness two years later, in 2028. The current forecast completions dates for each construction package (pending executed change orders) are as follows:

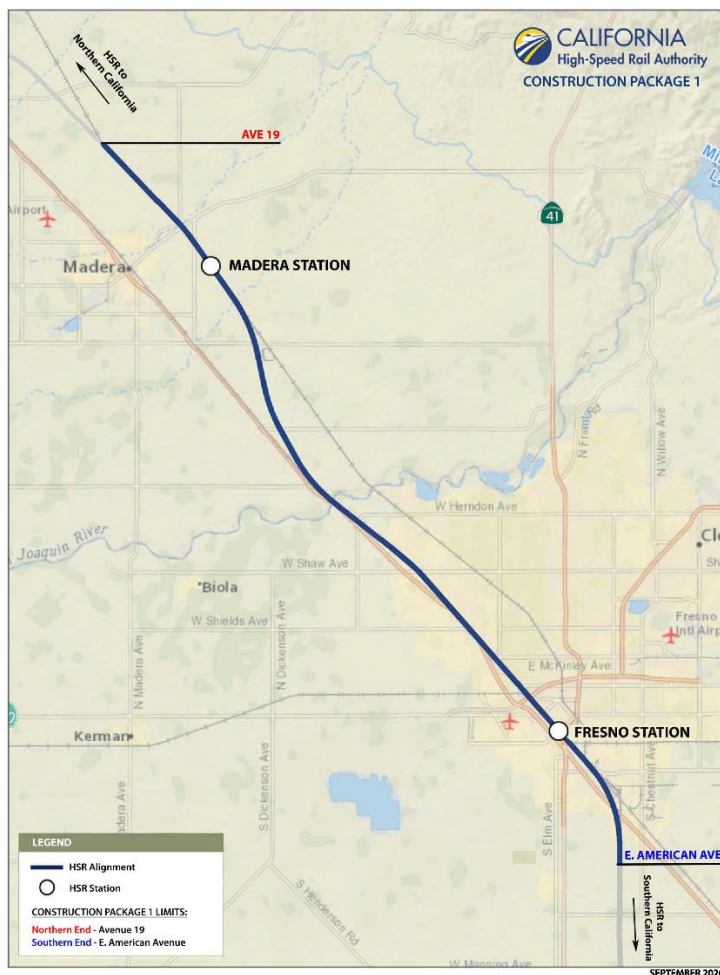
- CP 1: Contract completion is being updated for the 2023 Project Update Report. For purposes of this report, CP 1 substantial completion is expected in 2025
- CP 2-3: Contract completion is being updated for the 2023 Project Update Report. For purposes of this report, CP 2-3 substantial completion is expected in 2025
- CP 4: Contract completion (5/3/2023); and Construction completion (3/1/2023)

Additional details about the performance period and other aspects of each CVS construction package and other agreements summarized below can be found in **Section F. Terms and Conditions of Agreements.**

a. Construction Package 1 (CP 1)

CP 1 is the first significant construction contract executed on the Central Valley Segment. The CP 1 construction area is a 32-mile stretch beginning at Avenue 19 in Madera County (approximately adjacent to the existing Madera Amtrak station) and concluding at East American Avenue in Fresno County. It includes 12 grade separations, 2 viaducts, 1 tunnel and a major river crossing over the San Joaquin River. Construction has been completed on 13 sites and is under way at 8 more active sites. CP 1 is being delivered under a DB model. The scope and boundaries of CP 1 appear in **Exhibit A-2**.

Exhibit A-2. CP 1 Project Scope and Boundaries



For more information on CP 1 please refer to:
https://www.buildhsr.com/construction_packages/package_1.aspx
https://www.buildhsr.com/construction_update/

Source: About Construction Package 1 (HSR 13-06)

https://hsr.ca.gov/wp-content/uploads/docs/newsroom/maps/CP1_Map.pdf

b. Construction Package 2-3 (CP 2-3)

CP 2-3 is the second significant construction contract executed on the Central Valley Segment. The CP 2-3 construction area extends approximately 65 miles beginning at the terminus of CP 1 at East American Avenue in Fresno County and concluding approximately one mile north of the Tulare/Kern County line. CP 2-3 includes approximately 36 grade separations in the counties of Fresno, Tulare and Kings, including viaducts, underpasses and overpasses. Work in this section is complete at 3 sites and currently underway with active construction progressing at 20 sites. CP 2-3 is being delivered under a DB model. The scope and boundaries of CP 2-3 appear in **Exhibit A-3**.

Exhibit A-3. CP 2-3 Project Scope and Boundaries



For more information on CP 2-3 please refer to:
https://www.buildhsr.com/construction_packages/package_2_3.aspx
https://www.buildhsr.com/construction_updates/

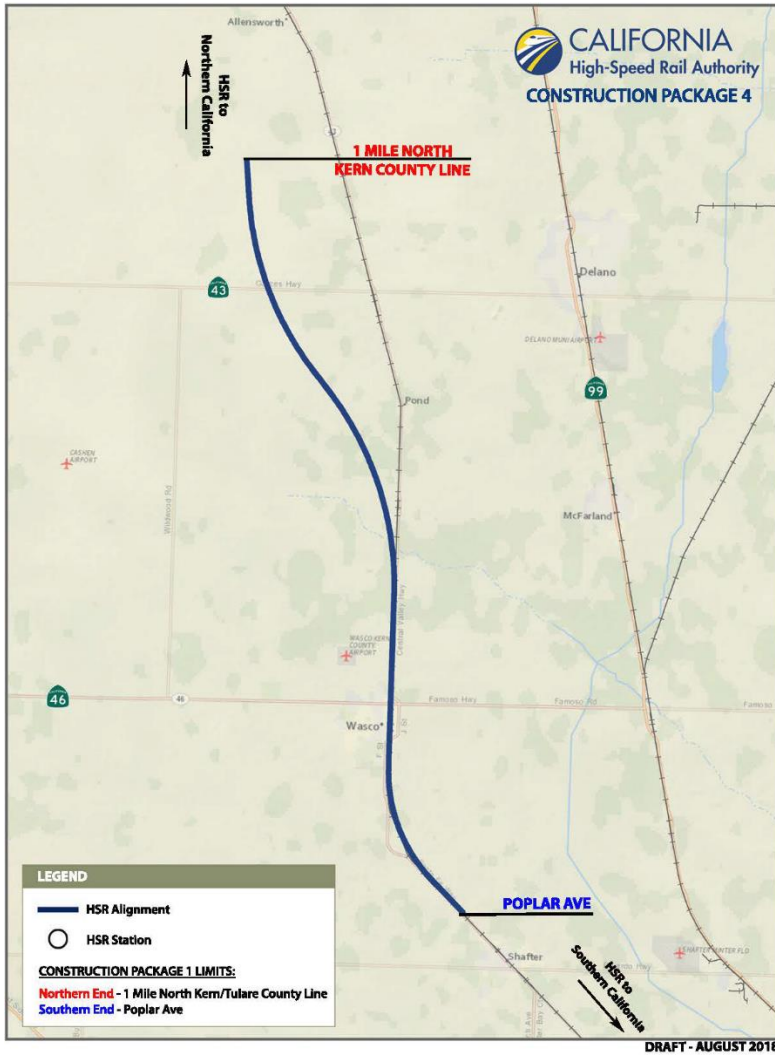
Source: About Construction Package 2-3 (HSR 13-57)

https://hsr.ca.gov/wp-content/uploads/docs/newsroom/maps/CP2_3.pdf

c. Construction Package 4 (CP 4)

CP 4 is the third significant construction contract executed on the Central Valley Segment. The CP 4 construction area is a 22-mile stretch beginning at a point approximately one mile north of the Tulare/Kern County Line at the terminus of CP 2-3 and concluding at Poplar Avenue to the south. CP 4 work includes construction of at-grade, retained fill and aerial sections of the high-speed rail alignment and relocation of four miles of existing BNSF tracks. Work in this section is completed at two sites and currently underway with active construction progressing at five sites. CP 4 is being delivered under a DB model. The scope and boundaries of CP 4 appear in **Exhibit A-4**.

Exhibit A-4. CP 4 Project Scope and Boundaries



Source: *About Construction Package 4 (HSR 14-32)*

https://hsr.ca.gov/wp-content/uploads/docs/newsroom/maps/CP4_Map.pdf

3. Estimated Construction Cost

The total estimate at completion for the construction of the Central Valley Segment has been prepared in accordance with the methods described in *Section D. Construction Cost Projection*. The total budget is summarized in **Exhibit A-5**, below, for ease of reference.

Exhibit A-5. Construction Cost Estimate for Central Valley Segment (\$ in Millions)

Item	Total Budget
Construction Package 1 and State Route 99	\$5,133
Construction Package 2-3	\$3,836
Construction Package 4	\$1,208
CVS Track and Systems, Stations and Support Facilities	\$2,362
Project-wide Support *	\$687
Interim Use / Project Reserve	\$208
Unallocated Contingency	\$420
Total**	\$13,855

* Central Valley Usable Segment Budget excludes planning costs, as they are appropriated separately from construction costs under Proposition 1A.

** Sum of line items may not foot to Total due to independent rounding.

The Central Valley Segment is fully funded, as shown in **Exhibit I-1**, above, and **Exhibit B-1**, below. The cost and schedule of the Central Valley Segment will be updated in the 2023 Project Update Report. The Authority's available funding is higher than the current Central Valley Segment total cost, and additional Cap-and-Trade funds are available to mitigate future cost inflation risks if necessary

B. Sources of Funds and Anticipated Time of Receipt

Streets and Highways Code Section 2704.08, subdivision (d)(1)(B) requires identification of the sources of all funds to be used and anticipated time of receipt thereof based on offered commitments by private parties, and authorizations, allocations, or other assurances received from governmental agencies.

1. Overview of Sources of Funds

The Authority has identified the following three funding sources, totaling \$13.855 billion, to fund the construction of Central Valley Usable Segment, subject to satisfaction of the various conditions associated with each source summarized below:

- **Federal grants:** authorized under the American Recovery and Reinvestment Act of 2009 (Recovery Act or ARRA) and under the High-Speed Intercity Passenger Rail Program for federal fiscal year 2010 (FY10)
- **State general obligation bonds:** authorized under the “Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century” (Bond Act) approved by California voters as Proposition 1A in 2008
- **State Cap-and-Trade Revenues:** authorized through the Budget Act of 2014 (SB 852 and SB 862) and current laws

Exhibit B-1 provides the federal and state funding sources for construction period activities for the Central Valley Segment. Roughly \$7.4 billion in funds were received and expended by June 2022. This includes the full ARRA grant and most of the Proposition 1A bond proceeds already appropriated. The future Proposition 1A bond proceeds, will be applied as needed in order to be available in the fiscal year in which expenditures are made. The Authority anticipates Proposition 1A bond proceeds will be expended starting in FY22-23 and ending in FY24-25. Federal funding of \$929 million from the FY10 grant will be available during the latter phases of construction in compliance with the grant provisions that require state funds to be expended prior to receipt of these federal funds. As of June 2021, the federal appropriation of these funds has been affirmed as part of the renewed engagement by the FRA under the Biden Administration, as discussed in greater detail under “FY10,” below.

A summary of each funding source is provided after **Exhibit B-1**.

Exhibit B-1. Sources of Funds for Central Valley Segment Construction (\$ in Millions)

	Total
CVS Construction (Madera to Poplar)	\$13,855
TOTAL USES - CAPITAL OUTLAY	\$13,855
ARRA - Construction	\$2,080
Proposition 1A - Construction (2017)	\$2,609
Proposition 1A - Construction (2022)	\$4,200
FY10	\$929
Cap-and-Trade (includes actuals thru May 22)	\$4,036
TOTAL SOURCES - CAPITAL OUTLAY	\$13,855

Note: The Authority’s total available funding is higher than CVS total cost. Additional Cap-and-Trade funds are available to mitigate future cost inflation risks.

Sources: Business Plan 2022; May 2022 Cap-and-Trade actuals; and June 2022 FCP, Funding Sources

a. Federal Funding

The Authority has received approximately \$3.5 billion in federal funding commitments to complete environmental review for the Phase 1 system and to construct the 119-mile Central Valley Segment between Madera and Poplar Avenue. Of this, \$3.0 billion is allocated for the construction of the Central Valley segment.

ARRA: \$2.5 billion was allocated by the federal American Recovery and Reinvestment Act of 2009 in compliance with the Federal Railroad Administration (FRA) grant requirement, of which \$2.1 billion dollars has been allocated towards CVS Construction. All ARRA funds were expended by the grant deadline of September 2017. These funds require a match from state funds. As approved by FRA, a tapered match provision was adopted, which allowed the expenditure of federal funds first, followed by the expenditure of state matching funds. At this time, 100 percent, or \$2.5 billion, of the ARRA obligation has been matched by state funds. The FRA has approved 100 percent of the submitted match.

FY10: \$929 million was appropriated by Congress from Fiscal Year 2010 (FY10) Transportation, Housing and Urban Development funds. Per the terms of the federal grant agreement, the FY10 funds, along with \$360 million of state matching funds, are scheduled to be the last funding required to complete the federal grant scope of work. These funds are anticipated to be accessed in December 2024.

Although the FY10 funds were de-obligated by the Trump Administration, California sued for restoration of the funding, and the \$929 million in FY10 funds were fully restored by the Biden Administration through a settlement agreement in June 2021. Amendment #4 of the relevant Cooperative Agreement (dated June 15, 2021) also extends the project performance period and federal funding period by four years, to December 31, 2026, and anticipates the completion of testing and readiness for operations two years later, in 2028.

b. State Funding

In 2008, Californians voted to build electrified high-speed rail by approving Proposition 1A, which provided \$9.95 billion for high-speed rail planning and construction, \$9 billion of which will be used to develop the high-speed rail system. In 2012, the Legislature appropriated Proposition 1A funding to advance construction activities in the Central Valley and regional areas: \$2.6 billion was appropriated for the Central Valley and \$1.1 billion was appropriated for bookend projects in Northern and Southern California. Over multiple appropriations, the Legislature has additionally approved about \$600 million for project development, including completing environmental reviews on the entire Phase I system.

Additionally, California authorized the development of a trading system of carbon-emissions allowances, also known as the Cap-and-Trade Program. The California Air Resources Board implements the program and oversees quarterly auctions of emission credits. The Authority is allocated a portion of the revenue generated from the auctions, as specified in California Health and Safety Code Section 39719. Each of these state funding sources is described below.

Proposition 1A: The 2011 Central Valley Segment Funding Plan estimated the cost of construction at that time. With its approval, the Authority was provided access to \$2.6 billion in Proposition 1A construction funds for the 119-mile segment in the Central Valley that is currently under construction. As of May 2022, the Authority has expended 100 percent of the authorized \$2.6 billion and has put those dollars directly to work in the Central Valley.

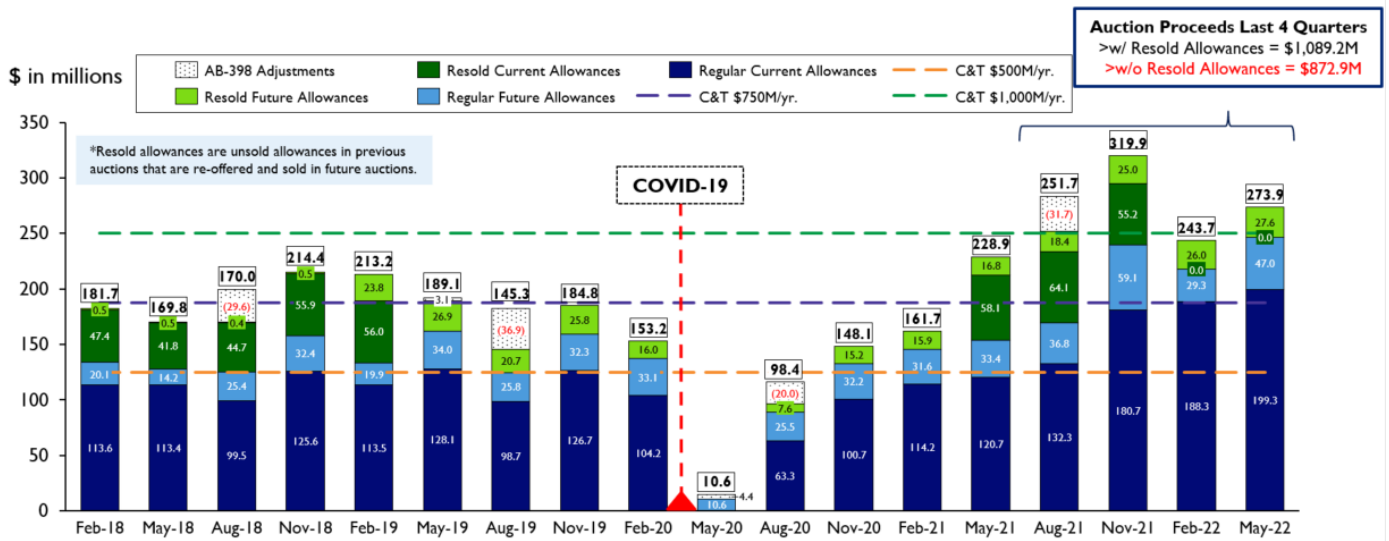
The Authority has \$4.2 billion available in remaining Proposition 1A bond funds for capital outlay activities. With enactment of AB 180, the Authority will be directing the entire \$4.2 billion in Proposition 1A bond funds to the CVS, as part of the Merced to Bakersfield segment, prioritized in the relevant budget trailer bill provisions in SB 198, discussed above.

Cap-and-Trade: To reduce greenhouse gas (GHG) emissions in California, the Legislature authorized the development of a trading system of carbon emissions allowances, also known as the Cap-and-Trade Program. The California Air Resources Board implements the program and oversees the quarterly auctions. In 2014, the Authority received two one-time allocations of Cap-and-Trade funding totaling \$650 million. In addition, in Senate Bill (SB) 862, the Legislature continuously appropriated 25 percent of annual Cap-and-Trade funds for high-speed rail beginning in the 2015-16 fiscal year and going forward. In July 2017, the Legislature approved Assembly Bill (AB) 398, which was then signed into law by Governor Brown. This legislation implemented several measures to stabilize the Cap-and-Trade Program, including extending the sunset date through December 31, 2030; this was an important step by the Legislature toward securing a long term, stable source of funding for this project and for regional transit and rail projects statewide. Subsequent to the passage of AB 398, the auctions began yielding more consistent results, providing a more stable funding stream. As of May 2022, the Authority has received \$5.05 billion in Cap-and-Trade funds, which includes the initial \$650 million appropriation and quarterly auction proceeds since August 2015.

To support greater flexibility in Cap-and-Trade expenditure, we have established a range of future Cap-and-Trade receipts for purposes of capital planning. The low range assumes that the Authority will receive \$500 million per year, and the high range assumes \$750 million per year. The 2022 Business Plan also cites a forecast by the Legislative Analyst for 2022-23 of around \$1 billion. As shown on **Exhibit B-2**, since the enactment of AB 398 (July 2017), the Authority has received approximately \$743 million annually through the May 2022 auction (including proceeds from resold allowances).

The COVID-19 pandemic caused shocks to the Cap-and-Trade markets, resulting in lower auction proceeds and project funding from the three quarterly auctions following the COVID Emergency Orders. This resulted in lower auction proceeds, \$288 million less in 2020, relative to what auctions produced in recent years. Fortunately, these markets have strongly recovered. The last four quarterly auctions from August 2021 through May 2022 yielded \$1,089 million in total Cap-and-Trade revenues for the Authority. These results demonstrate Cap-and-Trade revenues significantly above the Authority's established high range of \$750 million per year. In keeping with recent improved performance, the Authority anticipates that the risks to future Cap-and-Trade revenues will be primarily short- to medium-term because past auction results suggest the Authority will capture revenue from unsold allowances through auctions in the coming years as those unsold allowances will be offered again for sale. As the impacts of COVID-19 recede over time and as the state ramps up its climate actions to achieve its 2030 greenhouse gas reduction targets, the total cumulative Cap-and-Trade revenue for the Authority may not be significantly affected.

Exhibit B-2. Quarterly Cap-and-Trade Auction Proceeds for High-Speed Rail

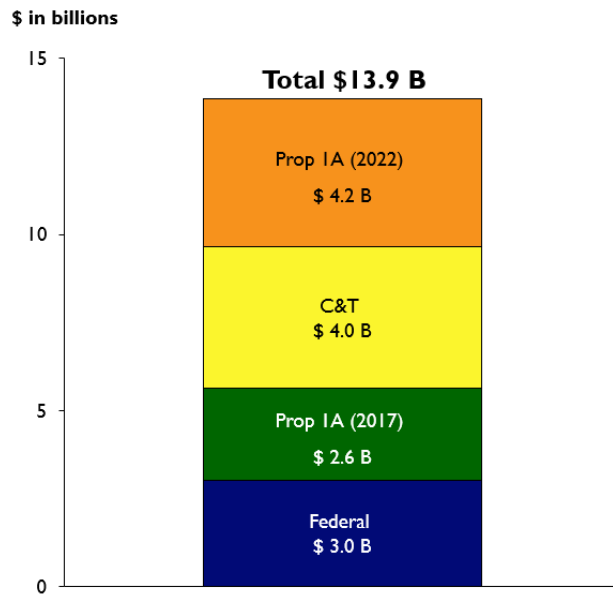


*Cap-and-Trade auction proceeds are subject to various adjustments, and final proceeds figures are generally provided within 60 days after the close of an auction.

Exhibit B-3, below, illustrates the application of federal funds, Proposition 1A Bond Funds, and Cap-and-Trade funds, with the budget and contingency included in the 2022 Business Plan.

This Funding Plan is submitted pursuant to Proposition 1A to enable expenditure of the \$4.2 billion in bond funds for the Central Valley Segment, starting in FY 2022-23.

Exhibit B-3. Central Valley Segment Construction Cost and Proposed Funding



Notes:

- (1) *The Authority's total available funding is higher than CVS total cost. Additional Cap-and-Trade funds are available to mitigate future cost inflation risks.*
- (2) *Sum may not foot to Total due to rounding.*

2. Managing Cash Flow

As indicated in the prior section, the Cap-and-Trade auction proceeds in the last four quarters from August 2021 through May 2022 totaled \$1,089.2 million (including resold allowances). Historically, auction results had a degree of volatility, specifically in 2017 prior to AB 398 as well as in 2022 as a result of the COVID-19 pandemic economic shocks. Auction proceeds have strongly recovered in recent auctions, however, as COVID-19 continues to spread and other global events create economic shocks of their own, additional risks to future cash flows remain. The Authority has multiple appropriations to fund various current commitments in order to reduce cash flow risks; however, the reliance on Cap-and-Trade proceeds has been increasing pending access to the remaining \$4.2 billion in Proposition 1A bonds.

The Authority received separate Proposition 1A appropriations from the Legislature in 2012 for the Central Valley construction and for the bookend projects in the Bay Area and Southern California. The Central Valley Proposition 1A appropriation for construction has been fully utilized. Prior to the recent appropriation under AB 180, Central Valley construction fully relied on Cap-and-Trade funding. The Proposition 1A appropriation for Bookends remains

available to cover those expenditures in FY 2022-23 and thereafter, as applicable. Existing RAISE and FY10 federal funds are anticipated to be utilized for the project starting in July 2022 and December 2024, respectively, in accordance with the current federal grant agreements and matching requirements. As published in the Financial Office's *June 2022 Cash Management Report*, the Authority maintains a Cap-and-Trade cash balance of \$1.6 billion as of May 2022, providing a modest beginning balance of funds to pay contractors in June 2022 and thereafter.

Going forward, approval of the current Funding Plan will provide Proposition 1A bond proceeds to reduce near-term reliance on uncertain future Cap-and-Trade proceeds from upcoming auctions. The use of the balance of Proposition 1A appropriation in the CVS will provide a more secure and certain stream of funding to the project, and not subject it so directly to the significant fluctuations in Cap-and-Trade receipts that have been experienced over the past two years. This will enable the project to keep moving forward, keep workers employed and move toward completion of the segment.

C. Projected Ridership and Operating Revenue

Streets and Highways Code Section 2704.08, subdivision (d)(1)(C) requires inclusion of a projected ridership and operating revenue report.

1. Overview of Ridership Plans

The Authority does not plan to run stand-alone high-speed rail service on the 119-mile Central Valley Segment between Madera and Poplar Avenue. Instead, this segment is the first construction segment of early interim service between Merced and Bakersfield. It also will serve as the high-speed rail test track that will be necessary to test high-speed rolling stock before passenger service can begin, as required by FRA. There is currently no other place in this country to test trains at speeds of 200 mph and higher so completing this segment is essential to bringing high-speed rail to California.

The Silicon Valley to Central Valley line will be the Initial Operating Section (IOS) for the high-speed rail system. The Central Valley Usable Segment, running from Madera to Poplar Avenue, is a part of the Silicon Valley to Central Valley Line. As the Authority builds out the Silicon Valley to Central Valley Line, it will look for ways to bring tangible mobility benefits to Californians as quickly as possible through early use of the high-speed rail infrastructure and assets being built for the Central Valley Segment.

As the Authority advances construction of the CVS, the Authority will advance design and complete other preconstruction work on the north and south extensions to Merced and Bakersfield, where it can begin providing interim service in the Central Valley. Under this concept the Authority plans to lease its rail assets to a regional partner that will operate rail passenger service at high-speed in the Central Valley.

Until such time as the Silicon Valley to Central Valley line is completed, interim service at high-speed will be provided along the Merced to Bakersfield corridor, once those extensions have been completed. The following information provides service concepts, ridership projections and revenue projections for the following services:

- **Merced to Bakersfield Interim Service:** Passenger service at high-speed between Merced and Bakersfield upon completion of 171 miles of high-speed rail system, with service operated by regional service providers
- **Silicon Valley to Central Valley Initial Operating Section (IOS):** High-speed service between Silicon Valley and Central Valley – full revenue positive high-speed rail service operated under purview of the Authority

2. Merced to Bakersfield Interim Service

In the future, electrified high-speed trains will run in this corridor on a dedicated track at speeds up to 220 miles per hour, which will accomplish the following:

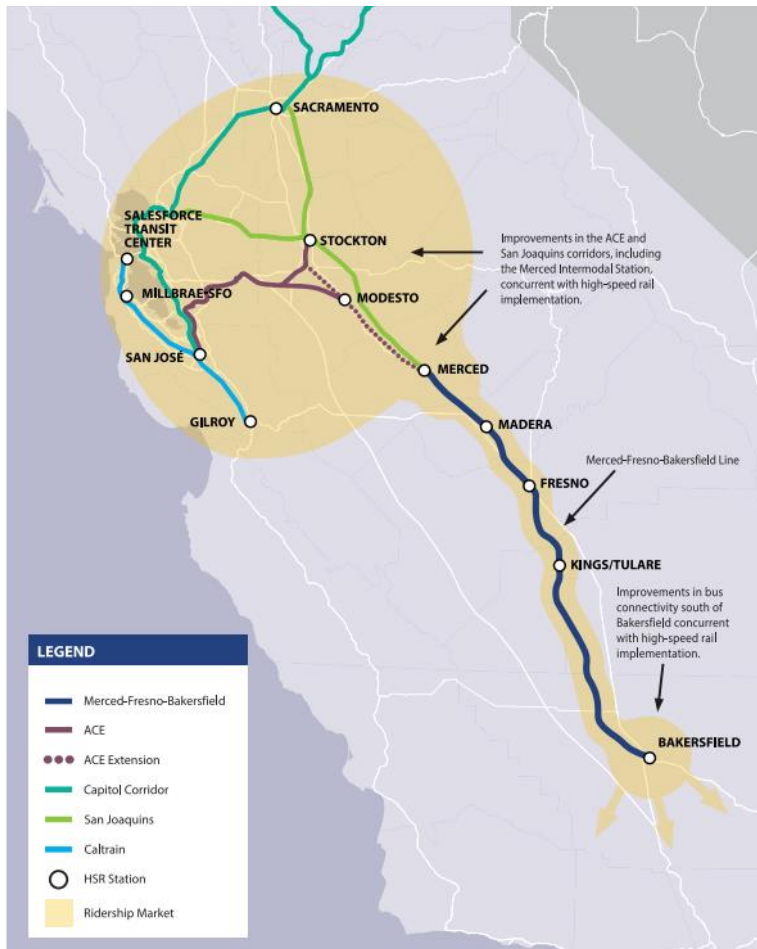
- Cut travel time in half – reducing travel times between Merced and Bakersfield by up to 100 minutes;
- Double the service – with 18 round trips per day that reliably depart and arrive on time;
- Increase access and connectivity – through better connections to the Bay Area and Sacramento with Altamont Corridor Express (ACE) and San Joaquins services at a new multimodal station in Merced and more Thruway Bus Service connections to Southern California at the Bakersfield station;
- Double system-wide ridership – increasing it by 4.8 million annual riders to 8.8 million annual riders;
- Relieve congestion – with a reduction of 284 million annual vehicle miles traveled;
- Improve air quality – reducing 50.6 thousand more metric tons in greenhouse gas (GHG) emissions (compared to the No Build Scenario), equivalent to emissions from 10,874 passenger vehicles driven for one year);
- Yield a higher revenue increase – generating \$117.2 million in additional system-wide revenues from passenger fares; and
- Produce more than 200,000 projected job years – building the Merced to Bakersfield line will continue to contribute to the economic stability of the Central Valley.

Given these results and the fact that environmental reviews are complete, the Authority is advancing to the next phase of project development. In March 2022, requests for design services were released for the Merced and Bakersfield extensions, consistent with the Staged Project Delivery process, and in August 2022 the Board of Directors approved these contracts. This work will include advancing design, mapping right of way, identifying utility relocations that will be required, negotiating third-party agreements and engaging with local communities. Contracts for design of four Central Valley Stations will also be issued in 2022.

a. Interim Service Concept

The service concept for the interim service operating at high-speed through the Usable Segment plans for one train per hour per direction. Service would extend over approximately 19 hours per day for seven days per week. Additional peak or reduced off-peak hour services or holiday period services have not been modeled. As envisioned, interim high-speed service is scheduled according to a clock face timetable, in which departures and arrivals occur at the same minute of each hour. At the northern terminus of the Usable Segment, at Merced, the schedule provides for conveniently timed transfers between interim service trains and corresponding San Joaquins and ACE trains, as well as for buses. At the southern terminus of the Usable Segment, at Bakersfield, the schedule provides for conveniently timed transfers between interim service trains and buses.

Exhibit C-1. Merced to Bakersfield Connectivity Map



Source: Authority 2019 Project Update Report

b. Interim Service - Ridership Projections

Total annual interim service rail ridership in 2029 is forecasted at 2,049,000 for the future usable segment between Merced and Bakersfield. **Exhibit C-2** illustrates the 2029 ridership projections by route.

Exhibit C-2. 2029 Interim Service Ridership

From/To	Merced	Madera	Fresno	Tulare	Bakersfield	Total
Merced		35,900	162,900	65,500	308,200	572,500
Madera	35,900		2,500	4,300	13,600	56,300
Fresno	162,900	2,500		134,900	197,800	498,100
Kings Tulare	65,500	4,300	134,900		98,900	303,600
Bakersfield	308,200	13,600	197,800	98,900		618,500
Total	572,500	20,400	335,200	238,100	310,300	2,049,000

Source: California High Speed Rail Early Train Operator – Central Valley Segment System Management & Operations Interim Financial Plan. January 31, 2020.

Note: Results of a single-track analysis show a potential reduction of 2.2% in ridership.

c. Interim Service - Revenue Projections

The fares used in the demand modeling effort and the base case forecasts for interim service represent average fare levels. These projections have been presented below in **Exhibit C-3**.

Exhibit C-3. 2029 Interim Service Revenue (in 2019\$)

From/To	Merced	Madera	Fresno	Tulare	Bakersfield	Total
Merced		\$395,000	\$2,281,000	\$1,114,000	\$8,013,000	\$11,803,000
Madera	\$395,000		\$21,000	\$52,000	\$326,000	\$794,000
Fresno	\$2,281,000	\$21,000		\$675,000	\$4,352,000	\$7,329,000
Tulare	\$1,114,000	\$52,000	\$675,000		\$1,681,000	\$3,522,000
Bakersfield	\$8,013,000	\$326,000	\$4,352,000	\$1,681,000		\$14,372,000
Total	\$11,803,000	\$794,000	\$7,329,000	\$3,522,000	\$14,372,000	\$37,820,000

Source: California High Speed Rail Early Train Operator – Central Valley Segment System Management & Operations Interim Financial Plan. January 31, 2020.

Note: Results of a single-track analysis show a potential reduction of 2.2% in revenue.

d. Side-by-Side Peer Review Report

At the request of legislators, the Authority commissioned an independent peer review of ridership forecasts prepared by the Early Train Operator (ETO) for the Side-by-Side Analysis that compared relative benefits of early high-speed rail service in the Central Valley, Northern California, and Southern California corridors. Resource Systems Group (RSG), a consulting firm with 30 years of experience in transportation forecasting, reviewed whether the ETO properly conducted their ridership study and whether the results produced were reasonable.

The peer review report found that the ETO (and its subconsultant, Steer) applied the model appropriately. The work is “high level” (Steer’s term) to answer the questions asked as part of the Side-by-Side analysis, but it is not an investment-grade study and is caveated accordingly. RSG confirmed the ridership estimates for all three corridors were reasonable, while the SoCal estimates appear slightly high. The ridership estimates are within expected and published elasticity ranges for travel time and frequency.

RSG found that the Central Valley corridor, which includes the high-speed service from Merced to Bakersfield and improvements in supporting Altamont Corridor Express (ACE) and San Joaquins rail and bus services, obtains the highest forecast gain in ridership and does so at the lowest increase in cost, relative to a “no build” scenario in comparison to the Northern California and Southern California corridors.

RSG noted that there is risk that the demand for the services may not materialize in the Central Valley corridor as expected. However, this risk has more margin for error compared to the Northern California and Southern California corridors, which have higher costs and lower forecasted ridership and revenue. Further, this risk seems relatively low compared to the Northern California and Southern California corridors since there is much less need for additional regional funding in the “build” scenario of the CVS relative to the other corridors.

e. Interim Service - Connecting Ridership Projections

At the same time that the interim service option includes 2,049,000 trips attributable to interim high-speed services, it is also noted that San Joaquins, ACE, and Thruway Bus ridership increases by a total of 2,758,000 annually, as of 2029. The significant increase seen in traditional regional rail and bus services is likely attributable in large part to interim services at high-speed driving total demand throughout the system.

The ETO ridership projections are based upon the number of linked trips - defined as the number of individual passengers riding to a destination regardless of how many transfers are made along the way. The ETO forecasted total system ridership at 8,776,000 for the 2029 commencement assumption. When comparing the no Interim Service option to the Interim Service option as of 2029, the total system ridership increase is 121 percent from 3,969,000 to 8,776,000 riders annually, respectively.

Exhibit C-4 illustrates the breakdown of total forecasted system ridership by service type and as a total system. The interim service at high speed almost triples the train miles between Merced and Bakersfield and increases bus ridership by 96 percent. The other thruway service bus ridership increases by 145 percent. The combined connecting services north of Merced increase the train and bus miles by 122 percent and show a corresponding increase in ridership of 118 percent.

Exhibit C-4. 2029 Total System Ridership in the Usable Segment

Service	No Interim Service	Interim Service
Interim Service - Unlinked	0	2,049,000
San Joaquins – Unlinked	1,778,000	3,111,000
ACE – Unlinked	2,191,000	4,572,000
Thruway Bus Bakersfield* - Unlinked	341,000	668,000
Other Thruway Bus* - Unlinked	587,000	1,441,000
<i>Unlinked Trips are not additive</i>		
Total System – Linked Trips**	3,969,000	8,776,000

Notes: *Reflects approved Senate Bill 742 in future scenarios which allows transportation of passengers who are not connecting to a passenger rail service;

**The system total for ridership is calculated as linked trips, i.e., trips transferring from ACE, San Joaquins or Thruway bus connections are only counted once for total ridership.

Source: California High Speed Rail Early Train Operator – Central Valley Segment System Management & Operations Interim Financial Plan. January 31, 2020

f. Interim Service - Connecting Revenue Projections

Similar to the impact of interim service at high speed on ridership estimates, introduction of interim service into the total system presents a positive effect on revenue. As seen in **Exhibit C-5** below, total additional fare revenue for the San Joaquins, ACE, and Thruway bus systems under the interim service option is estimated at \$78,422,000 (excludes the \$37,820,000 direct revenue of the interim service).

Exhibit C-5. 2029 Total System Revenue (in 2019\$)

Services	No Interim Service	Interim Service	Additional Fare Revenue
Interim Service	\$0	\$37,820,000	NA
San Joaquins	\$33,104,000	\$62,458,000	\$29,354,000
ACE	\$14,607,000	\$45,265,000	\$30,658,000
Thruway Bus – Bakersfield	\$4,498,000	\$8,799,000	\$4,301,000
Other Thruway Bus	\$9,383,000	\$23,492,000	\$14,109,000
Total System	\$61,592,000	\$177,834,000	\$78,422,000

Source: California High Speed Rail Early Train Operator – Central Valley Segment System Management & Operations Interim Financial Plan. January 31, 2020

3. Silicon Valley to Central Valley Initial Operating Section

a. IOS Service Concept

The Authority plans to operate trains on the Silicon Valley to Central Valley Initial Operating Section after early interim service in the Central Valley. The sequential delivery of high-speed rail segments implies that the Authority will first be an Infrastructure Owner for the Merced to Bakersfield segment, and then build out the balance of the Silicon Valley to Central Valley Line as funding sources permit.

b. IOS Ridership and Revenue Projection

The ridership and farebox revenue forecasts continue to use the enhanced risk analysis that addressed the feedback provided by Project Finance Advisory, Ltd. (PFAL), from its review of all the forecasts that were used in previous Proposition 1A funding plans. The risk analysis was conducted separately for the Silicon Valley to Central Valley Line opening year (2031). PFAL is not reviewing the Silicon Valley to Central Valley Line ridership and revenue projections as part of their review of this 2022 Funding Plan.

These results presented below reflect Silicon Valley to Central Valley Line operations in 2036, which is the first full year of operations forecast without service ramp-up impact.

Exhibit C-6. Silicon Valley to Central Valley Line Ridership and Revenue (Medium Case)

Initial Operating Segment (IOS)	2036
Ridership	17,585,246
Revenue (2019\$)	\$1,086,756,253

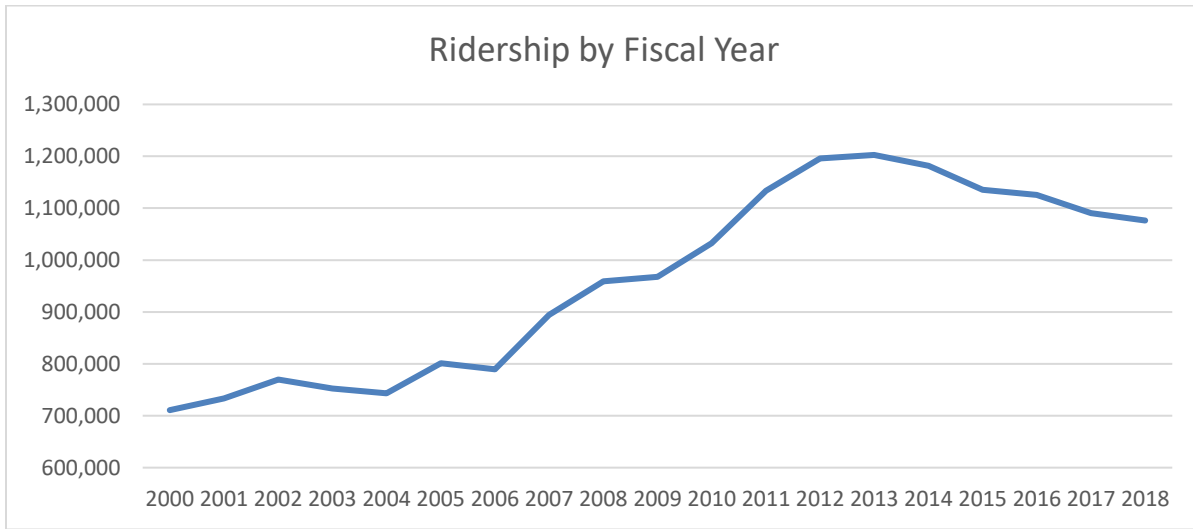
Source: 2022 Business Plan

4. Madera to Poplar Early Interim Use

As required under the federal grant, which the Proposition 1A funds are matching, if the development of the Merced to Bakersfield extensions are significantly delayed then the Madera to Poplar segment would be utilized for a shorter segment of electrified passenger service. Such early interim use of the CVS infrastructure and assets will increase travel options for Central Valley residents, create new mobility connections, enhance economic opportunity, and improve air quality. However, this is a back-up option and not the primary goal of completing this segment.

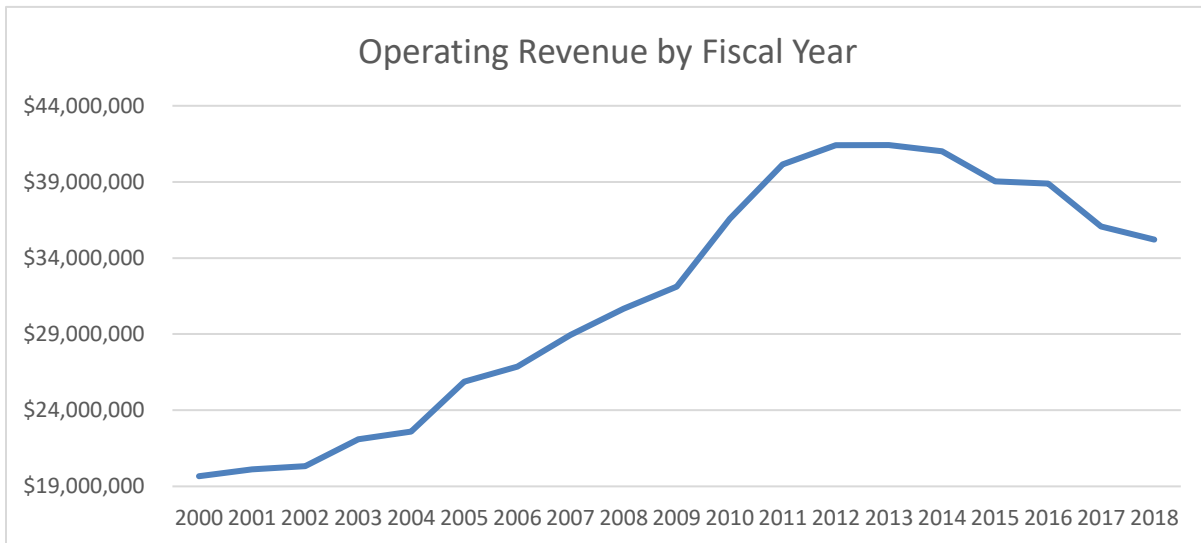
As the Authority currently does not have plans to deploy high-speed rail service on the stand-alone Central Valley Segment, ridership and operating revenue projections do not exist for this segment. In lieu of this, historical ridership and operating revenue statistics for the existing San Joaquins service are shown in **Exhibits C-7** and **C-8** below.

Exhibit C-7. San Joaquins Service – Systemwide Ridership
(including Central Valley)¹



Source: 2020 SJPA Business Plan Update

Exhibit C-8. San Joaquins Service – Systemwide Operating Revenue
(including Central Valley)²



Source: 2020 SJPA Business Plan Update

¹ Ridership figures presented for the San Joaquins service include systemwide (Central Valley, Bay Area, and Sacramento region) alignments.

² Revenue figures presented for the San Joaquins service include systemwide (Central Valley, Bay Area, and Sacramento region) alignments.

D. Construction Cost Projection

Streets and Highways Code Section 2704.08, subdivision (d)(1)(D) requires inclusion of a construction cost projection including estimates of cost escalation during construction and appropriate reserves for contingencies.

1. Capital Cost Summary

The cost to complete the Central Valley Segment is \$13.9 billion in YOES. In 2017, the *Central Valley Segment Funding Plan* estimated the cost to deliver the Madera to Poplar Usable Segment to be \$7.813 billion in YOES. However, these numbers are not directly comparable and contain different elements of scope.

Of the current \$13.9 billion in YOES estimates in the current funding plan, \$6.95 billion has been spent through April 2022. These capital cost estimates include an increase for known costs and reserves/contingencies set aside for COVID and other future risks. As of May 2022, remaining contingency balance for CP 1, CP 2-3, CP 4 and Track and Systems add up to \$1.41 billion. In addition, there is also \$574 million of Program Wide Unallocated Contingency, Project Reserve and Interim Use, making the total available contingency \$1.98 billion.

The Authority confirms that construction cost escalation is included in the total costs presented herein. However, because of the methodology used to produce the estimate at completion, it is not possible to isolate the escalation elements of this forecast. The EAC focuses on actual construction progress achieved during the execution of its construction packages and other contracts rather than a forecasted spend curve in base year dollars that can be multiplied by a selected escalation rate to achieve a Year of Expenditure forecast. Therefore, project contingencies have been isolated as a single number, but cost escalation is included in the totals presented. For contracts already awarded, such as CP 1, CP 2-3, and CP 4 design-build packages, contract costs are fixed regardless of future inflation, except for scope subject to change orders and contractor delay claims.

As discussed in the 2022 Business Plan and the June 2022 Construction Update, inflation and supply chain issues continue to be a risk. The 40-year high inflation rate is leading directly to increased construction costs. The Authority will update its capital cost estimates in the 2023 Project Update Report, which will take into account risk of higher construction costs being passed to the Authority through higher bid prices and escalation rates, as well as the actual track and systems bid and contracted pricing (for which materials indices will be included). On a related note, the Authority's Cap-and-Trade auction proceeds have increased substantially in the past year, and the market anticipates this strong performance to continue. The Authority

would direct additional Cap-and-Trade proceeds to the Central Valley Segment if necessary due to inflation or other cost impacts. The Authority outlines available Cap-and-Trade revenues on page 45 and believes these revenues would be sufficient to cover any such costs.

Exhibit D-1 below summarizes the funding plan budget. Costs described in this Funding Plan do not include planning/project development costs, previously appropriated bookend costs, or system-wide construction costs outside those described. The baseline cost estimate presented for the CVS usable segment is based on P70 confidence levels at the time the estimates were produced. This means that current Authority forecasts reflect a 70% probability of the actual capital cost being at or below the estimate. Specifically, the expenditures will include the following:

- Civil Works
- Track
- Railroad Infrastructure
- Signaling
- Overhead catenary System
- Communication systems
- Positive train control
- Trainset Certification Facility

Exhibit D-1 provides the cost estimates, that are consistent with the 2022 Business Plan. The Authority will recalculate the appropriate P70 confidence level project cost estimates (taking into account the latest project risk analyses, market data and the actual track and system bid results) as part of its capital cost estimate update for the 2023 Project Update Report.

Exhibit D-1. Construction Cost Estimates: Central Valley Segment (\$ in millions)

Item	Total Budget
Construction Package 1 and State Route 99	\$5,133
Construction Package 2-3	\$3,836
Construction Package 4	\$1,208
CVS Track and Systems, Stations, and Support Facilities	\$2,362
Project-wide Support *	\$687
Interim Use / Project Reserve	\$208
Unallocated Contingency	\$420
Total Uses**	\$13,855

* Central Valley Usable Segment Budget excludes planning costs, as they are appropriated separately from construction costs under Proposition 1A.

**Sum of line items may not foot to Total Uses due to independent rounding.

2. Alternative Phased Track Option

In light of the COVID-19 pandemic and increasing cost and funding pressures on the budget for the CVS, options were sought that could reduce immediate cost without compromising the fundamental objectives of the CVS. Since the civil works are under contract and well underway, the focus of these efforts turned to the on-going track and systems procurement, which is the major remaining component of the CVS works.

The key objective for the CVS is the establishment of a fully electrified 119-mile test track for the certification of Tier III high-speed trains, followed by early interim service on the Merced to Bakersfield segment. To address this priority, the Authority has considered an alternative phased track option. The procurement strategy would allow the Authority flexibility to deliver track in an incremental and phased manner – starting with a single track. The Authority has requested bid prices for both a phased single-track delivery and a simultaneous two-track delivery.

Allowing for this phased approach would provide the Authority with options to reduce costs without losing functionality. The approach would include construction of a single, mainline track, and all track necessary to support stations. The station track areas would serve initially as passing tracks for trains operating interim service. In addition, track elements necessary for ultimate expanded dual track operation would be constructed thus minimizing future service interruptions and costs. This would allow the Authority to phase track implementation throughout the Central Valley in a way that meets cash flow and funding availability.

The potential decision to deliver a phased track is not anticipated to materially affect ridership and revenue forecasts, given that passthrough tracks can be used to mitigate the effect of switching to a single-track option and that only one train per hour was assumed to run in each direction. As noted in Section C, results of a single-track analysis show a potential reduction of 2.2 percent in ridership and revenue.

As sufficient funding becomes available, it is the Authority's priority, as it is the Legislature's, to deliver a 171-mile electrified dual-track segment that is usable for high-speed rail service in the Central Valley from Merced to Bakersfield, with a new combined station in downtown Merced, and connections to the Amtrak San Joaquin and the Altamont Corridor Express.

The end of 2021 saw the enactment of the "Bipartisan Infrastructure Law", which provides billions of dollars in federal funding for passenger rail projects, including high-speed rail. At the Authority, there is a tremendous opportunity for the state to develop a federal-state funding program that will enable us to deliver a two-track initial operating segment connecting Merced, Fresno and Bakersfield. The initial applications - totaling about \$1.3 billion - were submitted on

May 23, 2022, for funding in the combined Multimodal Project Discretionary Grant (MPDG) Program which included a funding request for CVS second track scope. Furthermore, with the enactment of SB 198, the budget trailer bill referenced previously, the completion of the entire Merced to Bakersfield segment as a two-track operating segment is prioritized for both Cap-and-Trade funds and future federal grant funding.

3. Capital Cost Approach and Methodology

The *2022 Business Plan Capital Cost Basis of Estimate Report* provides an overview of the estimating approach, methodology, and assumptions that serve as the basis for the entire Phase I system. Cost changes since the 2020 Capital Cost Basis of Estimate Report are an interim update and have not been incorporated into the O&M, Life Cycle or Breakeven analyses at this time. All other technical methodologies, assumptions and results remain unchanged.

The capital cost estimates are based on a specific scope, the level of design completed, and a general understanding of risk. Capital costs of this project have evolved as in any major transportation infrastructure project, from early planning and conceptual engineering through preliminary engineering, contract procurement and, ultimately, to final design and construction. As the project scope, alignment, procurement strategies, delivery mode and other key decisions are finalized—and as environmental mitigation and other project components are more accurately specified—capital costs become more certain and risk factors become more defined, supporting contingency modifications and schedule confidence. SB 198 includes specific requirements for the next Project Update Report and future business plans and reports thereafter. These and other future legislative reports will continue to progressively update cost estimates as the remaining environmental Records of Decision are approved. These cost updates will then be incorporated in future forecast and estimate analyses.

a. Central Valley Segment (CVS)

The Authority conducted an EAC and Risk review as part of its ongoing review and updates to the CVS capital costs and schedule. The CVS consists of 119 miles of civil works track, systems, maintenance facilities, and stations. The three civil design-build construction packages have already been awarded and the design and construction works are in progress. The remaining costs outside of the civil packages (i.e., track and systems) is estimated using the Authority's defined process. EAC for fixed price contracts that are in progress are largely dependent on the value of remaining work. Remaining Work is equal to the current budget (including all executed change orders) minus all expenditures. EAC is also calculated based on pending change orders, potential changes, and trends. Internal stakeholders, including program and Project Construction Management (PCM) staff, were involved in the process.

A stochastic schedule model was created, which incorporated a number of specific risks across all construction package segments. Monte Carlo simulations were run against this model (quantitative cost risk analysis) to determine the possible range of contingency needed for each construction package based on the determined risk profile. The Authority has chosen to go with a P70 confidence level for the recommended contingency amount. Once the review was completed, the EAC and recommended contingency per construction package was presented to the senior management team to obtain feedback/approval.

As required by SB 198, the Authority will present an updated and revised draft Program Baseline Budget in the 2023 Project Update Report. This will allow the Authority to finalize commercial settlements with construction contractors, accommodate all remaining scope, and evaluate Track and Systems bids.

b. Contingency Analysis

The Authority conducted an enhanced and robust risk assessment effort, including Monte Carlo simulations, to identify and quantify discrete schedule and cost risks, as well as the uncertainties associated with the program scope. This assessment included a thorough review of the base project scope, schedule and cost established in the 2019 Program Baseline, followed by a comprehensive process to identify and quantify individual project risks relating to potential schedule and cost variables. This process resulted in updating the capital costs previously included in the 2019 Program Baseline.

The risk management team used iterative, risk-based execution planning to update the schedule and cost estimates of the 2019 Program Baseline. This process included using the initial execution plan for each project within the Central Valley Segment, identifying and quantifying the project risks, and developing and incorporating treatment strategies. Using the treatment strategies, a probabilistic schedule model was developed for each project that was used to run Monte Carlo simulations, resulting in quantitative schedule and cost risk analyses that established a range of possible schedule and cost outcomes. The range of schedule and cost outcomes includes the probability, or confidence level, associated with each potential outcome. To achieve the optimal execution plan that balances scope, schedule, cost and acceptable risk, several iterations of this process were performed for each project.

This technique allows the Authority to statistically quantify the cost and schedule impacts to projects, resulting in updated schedule and cost contingencies. Furthermore, these risk-informed forecasts allow the Authority to more effectively manage risks by:

- Drilling-down and understanding the impacts of specific risks;
- Supporting prioritization of risks for mitigation;

- Implementing risk management and mitigation measures; and
- Proactively monitoring the program’s costs.

By performing iterative, risk-based execution planning, including Monte Carlo simulations, on the construction projects within the Central Valley Segment, staff has identified that many previously identified risks remain and that new risks have been added, including the addition of new scope of work. The Authority utilized the quantitative schedule and cost risk analyses for each project to develop a new, overall Central Valley Segment schedule and budget, which uses a 70th percentile, or P70, confidence level. By using a higher confidence level, the Authority is increasing the probability of completing projects within updated schedules and budgets by accounting for risks it is currently tracking and managing and for the unknown risks that may still occur given the current status of design and construction. This is a prudent, industry best practice approach based on the current status of the projects. For additional context, the Authority’s Capital Cost Basis of Estimate also describes the Authority’s inclusion of risk assessment in developing the contingency. **Exhibit D-2** shows the Authority’s current remaining contingency balance as of May 31, 2022.

Exhibit D-2. Current Remaining Contingency Balance (in \$ Millions)

Construction Package (CP)	Contingency Value Balance (data through 5-31-2022)	Change Orders Pending Governance Action	Remaining Contingency
CP 1	573	(29)	544
CP 2-3	455	(27)	428
CP 4	86	28	114
Track & Systems	322	-	322
Total	1,436	(27)	1,409
Program Wide Unallocated Contingency, Project Reserve and Interim Use			574
Total Available Contingency			1,983

3. Timing of Construction - Major Upcoming Milestones

Having advanced much of the pre-construction and construction work in the Central Valley over the last two years, the Authority is past the midpoint of construction on the original 119 miles. It has resolved long-standing issues with major stakeholders. Significant work that was required to open access along the railroad lines that the Authority’s alignment follows has been completed, and the utility work necessary to allow construction to finish is defined and underway along the entire alignment.

Exhibit D-3 shows the Authority’s current expectation for completion of the three ongoing construction projects and award of the Track and Systems contract.

Exhibit D-3. Central Valley Construction Schedule

Construction Elements	Expected Completion
Track and Systems Contract Award	FY 2022-23 Q2
Construction Package 4	FY 2022-23 Q3
Construction Package 1	2025*
Construction Package 2-3	2025*

* *Re-baselined schedules are being developed for CP 1 and CP 2-3*

In addition, the Authority’s goals are to achieve the following milestones on all construction packages by the end of 2022 (except where other timing is noted):

- Complete environment documents on San Francisco to San Jose and San Jose to Merced segments (the Authority Board of Directors approved the Final EIR/EIS for the San Francisco to San Jose segment on August 18, 2022, and for the San Jose to Merced segment on April 28, 2022);
- Deliver 95% of needed right-of-way parcels to the contractors to advance construction;
- Complete all critical land rights conveyances, and execute the remaining third-party agreements;
- Construction will be substantially complete or underway on 83 of the 93 structures (89 percent) and on 106 of 119 miles of guideway (89 percent);
- **Construction Package 1:** four additional structures will begin construction, and three additional will be completed, for a total of 17 structures complete out of 33 total structures;
- **Construction Package 2-3:** 6 additional structures will begin construction, and 5 additional structures will be completed for a total of 16 structures complete out of 49 total structures.
- **Construction Package 4:** all structures anticipated to be complete.

4. Analysis of Funding Reserves

The Authority can further augment the contingency budget for the CVS Funding Plan scope if inflation and other factors produce a need based on the Program Baseline update. Current available funding is more than sufficient to cover the December 2021 Expenditure Authorization, which includes the CVS Funding Plan scope together with existing program commitments to environmentally clear the Phase 1 alignment from San Francisco to Los Angeles/Anaheim and construct bookend projects in the Bay Area and Southern California. Further, the Authority also has sufficient funding to deliver the Merced to Bakersfield Interim Service Line, if Cap-and-Trade revenues continue to be robust and the Authority receives new federal funds as planned.

As discussed earlier, the Authority is implementing a new Staged Project Delivery process to serve as a comprehensive project development / delivery process and to strengthen its risk management program. The Authority will not move forward with civil construction contracts outside of the Central Valley Segment until it has completed the advance design and capital cost re-estimation process for Merced extension and Bakersfield extension and have done a full detailed funding analysis that will take into account the latest Cap-and-Trade revenue forecasts and new federal grant funding information.

Exhibit D-4 and **Exhibit D-5** show the Authority's current total cost and total funding for the Dec-21 Expenditure Authorization and Merced to Bakersfield segment scopes, respectively.

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Exhibit D-4. Dec-21 Expenditure Authorization – Total Cost & Total Funding

Cost (\$ in billions)	Low	High	Comment
CVS Funding Plan	13.9		
Project Development	1.8		
Bookends	1.3		
Program Wide Support / SR-46	1.0		
Total Cost	17.9		Dec-21 Expenditure Authorization

Revenue (\$ in billions)	Low	High	Comment
Current Funding with Cap and Trade as a Range (\$500M/yr. to \$1.0B/yr.)	21.3	25.2	2022 Business Plan page 47 updated with May 2022 Cap-and-Trade auction results

Funding Reserve (\$ in billions)	Low	High	Comment
Funding Sufficiency	3.4	7.3	Funding surplus of \$3.4 B with low revenue and base cost. Funding surplus of \$7.3 B with high revenue and base cost.

Exhibit D-5. Merced to Bakersfield Program Budget – Total Cost & Total Funding

Cost (\$ in billions)	Low	High	Comment
Dec-21 Expenditure Authorization	17.9	17.9	2022 Business Plan pages 59 & 79
Merced to Bakersfield extensions (double track, 6 trainsets, stations, etc.)	4.6	6.0	
Unified Merced Station High-Speed Rail Cost (ACE and Amtrak connections funded separately)	0.5	0.5	Estimate of high-speed rail cost to extend to further north Merced station, station cost
Total Cost	23.0	24.4	

Revenue (\$ in billions)	Low	High	Comment
Current Funding with Cap and Trade as a Range (\$500M/yr. to \$1.0B/yr.)	21.3	25.2	2022 Business Plan page 47 updated with May 2022 Cap-and-Trade auction results
New Federal Fund Target (federal grant target for Merced to Bakersfield Program)	4.8	4.8	2022 Business Plan page 55. Assumes 80/20 federal/state funding split.
Total Funding with Federal Grant Target	26.1	30.0	

Funding Reserve (\$ in billions)	Low	High	Comment
Funding Sufficiency w/o New Federal Grant	(3.1)	2.2	Funding shortfall of \$3.1 B with low revenue and high cost. Funding surplus of \$2.2 B with high revenue and low cost.
Funding Sufficiency with New Federal Grant	1.7	7.0	Funding surplus of \$1.7 B with low revenue and high cost. Funding surplus of \$7.0 B with high revenue and low cost.

E. Material Changes

Streets and Highways Code Section 2704.08, subdivision (d)(1)(E) requires inclusion of a report describing any material changes from the plan submitted pursuant to subdivision (c) for this corridor or usable segment thereof.

At this time, the following material changes have occurred since submission of the Funding Plan in February 2021 pursuant to S&H Code Section 2704.08(c):

- Cap-and-Trade auction results continue to improve. Initially, the COVID-19 pandemic caused shocks to the Cap-and-Trade markets, resulting in lower auction proceeds and project funding from the three quarterly auctions following the COVID Emergency Orders. This resulted in \$288 million less revenues in 2020, relative to what auctions produced in recent years. Fortunately, these markets have strongly recovered. The last four quarterly auctions from August 2022 through May 2022 yielded \$1,089 million in total Cap-and-Trade revenues for the Authority. These results demonstrate Cap-and-Trade revenues significantly above the Authority's established high range of \$750 million per year.
- As of June 2021, the FRA and the Authority have reached a settlement agreement for restoration of the \$929 million in FY10 federal grant funds, which had been the subject of litigation between the parties. Amendment #4 of the relevant Cooperative Agreement (dated June 15, 2021) also extends the project performance period and federal funding period by four years, to December 31, 2026.
- On March 18, 2022, requests for qualifications (RFQs) for Design Services were released for Merced to Madera and the Fresno to Bakersfield Locally Generated Alternative (LGA). Statements of Qualifications for Merced to Madera were received on May 26, 2022, and a Notice of Proposed Award was posted on June 17, 2022. Statements of Qualifications for the Fresno to Bakersfield LGA were received on June 10, 2022, and the Authority Board of Directors awarded both agreements at the August 2022 Board of Directors meeting.
- The Authority received a 2021 federal grant award in the amount of \$24 million under the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) program for crucial safety, efficiency and construction projects in and around the city of Wasco, including adjustments and enhancements to State Route 46 and enhancements to adjacent properties affected by the project. The grant and Authority matching funds help bring improvement, safety, environmental justice and economic development to a

historically disadvantaged community and further demonstrates the federal government's support for this program.

- On April 27, 2022, the Authority Board of Directors adopted the 2022 Business Plan and submitted it to the California State Legislature on May 6, 2022.
- On May 23, 2022, the Authority submitted an application for \$1,043 million in federal grant funds for selected elements of the inaugural high-speed operating service between Merced and Bakersfield under one or more programs included in the notice of funding opportunity for the Multimodal Project Discretionary Grant Program.
- Also on May 23, 2022, the Authority submitted an application for \$223 million in federal grant funds for configuration design for San Francisco to Los Angeles under one or more programs included in the notice of funding opportunity for the Multimodal Project Discretionary Grant Program.
- As of June 30, 2022, with the enactment of the amended 2021 Budget Act, contained in AB 180, the Authority will be directing the entire \$4.2 billion in Proposition 1A bond funds to the CVS, as part of the Merced to Bakersfield segment prioritized in the relevant budget trailer bill provisions of SB 198, discussed above. In addition, SB 198 requires appointment by the Governor of the High-Speed Rail Authority Inspector General.
- The Authority received a 2022 federal grant award in the amount of \$25 million under the RAISE program for a \$41 million design contract on the extension from Madera to Merced. This grant award was announced in August 2022 and will support the new design contract awarded by the Board also in August 2022.

F. Terms and Conditions of Agreements

Streets and Highways Code Section 2704.08, subdivision (d)(1)(F) requires a description of the terms and conditions associated with any agreement proposed to be entered into by the authority and any other party for the construction or operation of passenger train service along the corridor or usable segment thereof.

The Authority has developed hundreds of contracts in support of development of the high-speed rail system. This section of the Funding Plan identifies certain existing and proposed agreements and contracts relating to the construction and operation of the Usable Segment. The Authority has moved forward with a range of agreements necessary for construction and operation of the Usable Segments. This section identifies those agreements, specifically: Federal Agreements between the Authority and its federal funding and oversight partners, Regional Interagency Agreements and Memoranda, and Construction Agreements (both executed and planned). None of these are lease agreements or franchise agreements.

1. Federal Agreements

a. Grant / Cooperative Agreements

The Authority has entered into agreements with the US Department of Transportation, Federal Railroad Administration (FRA) in connection with the two federal funding sources for the CVS. **Exhibit F-1** describes key elements and terms of the FRA Agreements. These include the ARRA Agreement, Amendment 6, and the FY 10 Agreement, Amendment 4.

Exhibit F-1. FRA Grant/Cooperative Agreements – Key Elements and Terms

Key Elements	Key Terms
Parties to the Agreement	California High-Speed Rail Authority (Authority) US Dept. of Transportation, Federal Railroad Administration (FRA)
Agreements	FR-HSR-0009-10-01-06 (ARRA Agreement, Amendment 6) FR-HSR-0118-12-01-01 (FY 10 Agreement, Amendment 4)
Purpose of Agreement	Conduct and fund the CVS (referred to in the Grant Agreement as the initial Central Valley Section), and Phase I project level environmental clearances as more specifically set forth in the Statement of Work, and any supplements thereto.
Performance Period	FY 10: 12/16/2009 to 12/31/2026 and ARRA: 8/17/2010 to 9/30/2022 (conforming updates pending)

Key Elements	Key Terms
Federal Funding Period	FY 10: 12/16/2009 to 12/31/2026 and ARRA: 8/17/2010 to 09/30/2017 (conforming updates pending)
Total Funding Amount	\$3,481,176,231.00 total federal funds \$2,552,556,231.00 from ARRA, and \$928,620,000.00 from FY 10
Scope of Project	<ul style="list-style-type: none"> • As used in the FRA Agreements, the term “Project” refers to the overall effort identified in Section 8 of the Grant/Cooperative Agreement and as that term is defined in Subsection 1(h) of Attachment 2. <i>(ARRA Agreement, Attachment 2, General Provisions)</i> • The ARRA Agreement Statement of Work, Attachment 3, incorporates Tasks 1-4, which define preliminary engineering and environmental work and pre-construction activities for seven Phase 1 sections, as well as project administration and indirect costs. • The ARRA Agreement Statement of Work, Attachment 3A, incorporates Tasks 5-10, which define activities for construction of the Initial Central Valley Section including: (5) design/build program management; (6) real property acquisition; (7) early work; (8) final design and construction; (9) project reserves; and (10) unallocated contingency. <i>Task 7 is no longer applicable.</i> • The FY 10 Agreement, Amendment 4 updates certain aspects of Tasks 5-10, including the deliverables and approved project schedule. This includes addition of signals and electrification as Task 8.6, within the existing overall federal funding. • The ARRA Agreement is in the process of being amended to conform to Amendment 4 of the FY 10 agreement, as applicable.
Delivery Responsibilities	<p>The Authority is responsible for furnishing all personnel, facilities, and equipment, and other materials and services (except as otherwise specified in the agreement) necessary to perform the Project as set forth in the Statement of Work (Attachment 3), and any supplements thereto. <i>(ARRA Agreement, Attachment 1-Section 2. Scope, and Attachment 3 and 3A. See also FY 10 Agreement, Amendment 4.)</i></p> <p>The FRA will provide, on an “as available” basis, one professional staff person, to be designated as the Grant Manager, to review work or work products in progress, and arrange for the review of the Project results upon completion. Since the award was made as a cooperative agreement, FRA has substantial programmatic involvement. Substantial involvement means that, after award, technical, administrative, or programmatic staff will assist, guide, coordinate, or otherwise participate in Project activities. <i>(Section 3. Awarding Agency Participation)</i></p>

Key Elements	Key Terms
<p>Environmental Responsibilities</p>	<p>Working collaboratively with FRA, the Authority is responsible for preparing the environmental analysis and documentation for each Project Section necessary to comply with the National Environmental Policy Act (NEPA), and other associated federal environmental laws including, but not limited to: Section 106 of the National Historic Preservation Act; Section 4(f) of the Department of Transportation Act; Section 7 of the Endangered Species Act; and the General Conformity requirements of the Clean Air Act. The Authority is also responsible for complying with applicable state laws that may include the California Environmental Quality Act.</p> <p>The Authority and FRA are jointly responsible for ensuring that the environmental review process is being conducted in accordance with relevant environmental laws. FRA is the lead federal agency responsible for NEPA compliance and the Authority is the lead state agency responsible for complying with all applicable state environmental laws. As part of the environmental review process, the Authority maintains all documents developed or received by the Authority that support agency decision making and makes them available to FRA upon request. In addition, the Authority has agreed to additional detailed provisions about how the work will be conducted with respect to its environmental responsibilities for the Project. <i>(Task 1 Environmental Review – Attachment 3)</i>. Since NEPA Assignment the Authority is the NEPA lead federal agency.</p>
<p>Other Responsibilities</p>	<p>The Authority shall comply with the Buy America provisions set forth in 49 U.S.C. 24405(a) for the Project with respect to the use of steel, iron and manufactured goods produced in the United States, subject to the conditions therein set forth. <i>(Section 11. Buy America)</i></p>

Sources: ARRA Grant Agreement, No. FR-HSR-0009-10-01-06 (Amendment 6) and FY 10 Grant Agreement, No. FR-HSR-0118-12-01-04

b. Environmental Authority MOU

Exhibit F-2 describes key elements of the MOU for delegated authority for the California High-Speed Rail Authority, which has been assigned FRA’s responsibilities as lead agency under the National Environmental Policy Act (NEPA). This assignment is expected to streamline the process for receiving environmental clearance records of decision (RODs) for the remaining segments in the program.

Exhibit F-2. NEPA Assignment MOU – Key Elements and Terms

Key Elements	Key Terms
Parties to the Agreement	California High-Speed Rail Authority (Authority) US Department of Transportation, Federal Railroad Administration (FRA)
Agreements	Memorandum of Understanding (MOU), by which the California High-Speed Rail Authority (Authority) has been assigned FRA’s responsibilities as lead agency under the National Environmental Policy Act (NEPA). Pursuant to Section 327 of Title 23 of the United States Code, effective July 23, 2019 the MOU is authorized under the Surface Transportation Project Delivery Program, otherwise known as NEPA Assignment.
Purpose of Agreement	The NEPA Assignment MOU provides that the FRA assigns, and the State assumes, environmental review responsibilities under NEPA and other federal environmental laws with respect to projects in California’s High-Speed Rail system and projects that directly connect to stations on the high-speed rail system, which include the Link Union Station and West Santa Ana Branch Transit Corridor projects in Los Angeles. The MOU also includes the ACE forward project in the Altamont Corridor Express system. These federal responsibilities will now be performed by the Authority, with oversight by the California State Transportation Agency, streamlining the NEPA process.

Sources: <https://www.hsr.ca.gov/programs/environmental/nepa.aspx>,
https://www.hsr.ca.gov/docs/programs/enviro_nplanning/NEPA_MOU_Signed_Thank_you_Letter_BK_to_Bator_y_20190718.pdf

Additional information regarding the above-referenced federal agreements can be found here:

[hsr.ca.gov/about/capital-costs-funding/funding-agreements/](https://www.hsr.ca.gov/about/capital-costs-funding/funding-agreements/)
https://www.hsr.ca.gov/wp-content/uploads/docs/about/funding_finance/funding_agreements/HSRFRA_CooperativeGrantAgreement_Amendment6_051816_Redacted.pdf
https://www.hsr.ca.gov/wp-content/uploads/docs/about/funding_finance/funding_agreements/Executed_FY10_Amendment_1.pdf

2. Regional Interagency Agreements and Memoranda

a. Station Area Development MOUs

To date, the Authority has executed planning agreements with the cities of Fresno, Bakersfield and Merced in the Central Valley, as well as with other cities along the Phase I route.

These agreements allow the Authority to work closely with station jurisdictions and other service providers to promote city-regeneration opportunities and enable more sustainable, district-scale development. These efforts also include working with regional and local transit providers to enhance multi-modal connectivity to high-speed rail stations and surrounding transportation improvements. Ultimately, the work will facilitate adoption of amendments to general plans and zoning codes and will help develop financing and phasing plans to support the station area plans, as well as options to attract private investors.

b. Station Site Planning MOUs

The vision for station planning is to create community hubs and help transform cities. The goals being advanced through this program include:

- Fostering sustainable development and operations;
- Reducing greenhouse gas emissions;
- Maximizing system performance; and
- Creating economic engines for local communities.

Subject to authorization and approvals, the Authority plans to execute Memoranda of Understanding (MOU) with the various cities related to station site planning activities. The Authority plans to use a two-stage approach:

- MOU#1 is a high-level MOU that is intended to galvanize the station planning efforts between the Authority and its City partner.
- MOU#2 will focus on defined planning, governance, Public-Public agreements, timelines and resourcing milestones and commitments from the Authority and its City partner.

Following are summaries of the MOU#1 with the cities of Fresno and Bakersfield, respectively.

Exhibit F-3.

MOU for Station Site Planning – City of Fresno

Key Elements	Key Terms
Parties to the Agreement	California High-Speed Rail Authority (Authority) City of Fresno (Fresno)
Purpose of Agreement	The purpose of this Memorandum of Understanding (“MOU”) is to establish a flexible framework between the Participants to permit them to enable key station site planning activities, enable customer access to the High-Speed Rail system, facilitate collaboration for development of future governance principles, and establish principles for future Public-Public agreements.
Scope of Project	<p>The Authority and Fresno intend to work collaboratively through initiatives focused particularly on, but not limited to, the following areas of cooperation:</p> <ul style="list-style-type: none"> • Development of a Station Site and Adjacent Development Plan, led by the Authority, that lays out the location of station site facilities scaled to phases of the High-Speed Rail system program. • Under this MOU, the Authority and Fresno will work together to deliver a MOU amendment, for ratification by the Authority and Fresno, that defines plans for developing resources, governance, accountability, timelines, and a defined set of agreements associated with future station developments.

Exhibit F-4.

MOU for Station Site Planning – City of Bakersfield

Key Elements	Key Terms
Parties to the Agreement	California High-Speed Rail Authority (Authority) City of Bakersfield (Bakersfield)
Purpose of Agreement	The purpose of this Memorandum of Understanding (“MOU”) is to establish a flexible framework between the Participants to permit them to enable key station site planning activities, enable customer access to the High-Speed Rail system, facilitate collaboration for development of future governance principles, and establish principles for future Public-Public agreements.
Scope of Project	<p>The Authority and Bakersfield intend to work collaboratively through initiatives focused particularly on, but not limited to, the following areas of cooperation:</p> <ul style="list-style-type: none"> • Development of a Station Site and Adjacent Development Plan, led by the Authority, that lays out the location of station site facilities scaled to phases of the High-Speed Rail system program. • Under this MOU, the Authority and Bakersfield will work together to deliver a MOU amendment, for ratification by the Authority and Fresno, that defines plans for developing resources, governance, accountability, timelines, and a defined set of agreements associated with future station developments.

3. Construction Agreements

As described above, the CVS is being delivered through a series of agreements, commencing with the multiple construction packages referenced above. Below are additional details about the current terms of the agreements for each construction package.

Since March 2020, the progress of the construction work across the three Central Valley design-build Construction Packages (CP’s) has been affected by events related to the worldwide COVID 19 pandemic, state wildfires and civil unrest. At this time the impact of these events on the terms of these agreements is not yet known since the pandemic is ongoing.

a. Construction Package #1 (CP 1) is being delivered under a DB model. See **Exhibit F-5** for key elements and terms of the Design-Build Construction Agreement for CP 1.

Exhibit F-5. Design-Build Construction Agreement for CP 1

Key Elements	Key Terms
Parties to the Agreement	California High-Speed Rail Authority (Authority) Tutor-Perini/Zachry/Parsons, a joint venture, comprised of Tutor Perini Corporation, Zachry Construction Corporation and Parsons Transportation Group (a wholly owned subsidiary of Parsons Corporation)
Agreement Number	HSR 13-06
Purpose of Agreement	Design-build construction
Performance Period	August 2013 to [December 2023] (pending executed change order)
Total Contract Price	Contract price as of June 2022 is \$2,795,399,822, which consists of base bid of \$969,988,000 + \$53,000,000 provisional sums + \$1,772,411,822 in executed change orders (CO).
Scope of Projects	<p>The scope of CP 1 consists of civil works for at-grade and aerial track sections over a 32-mile section of the CVS beginning at Avenue 19 near the Madera Amtrak Station in Madera County and concluding at East American Avenue in Fresno County. It includes 20 grade separations, two viaducts, one tunnel and a bridge river crossing over the San Joaquin River. Major design and construction elements for CP 1 include the following:</p> <ul style="list-style-type: none"> • Surveys, Mapping and Geotechnical Studies • Site Clearing, Demolition and Removal of Hazardous Materials • Utility and Third Party Relocation; Railroad Relocation • Scheduling and Coordination • Grading, Embankment and Drainage • Structure Construction and Foundation Work • Environmental Compliance and Mitigation • Paving, Re-striping, Landscaping and Traffic Signals

For more information on CP 1 please refer to:

https://www.buildhsr.com/construction_packages/package_1.aspx

b. Construction Package #2-3 (CP 2-3) is being delivered under a DB model. See **Exhibit F-6** for key elements and terms of the Design-Build Construction Agreement for CP 2-3.

Exhibit F-6. Design-Build Construction Agreement for CP 2-3

Key Elements	Key Terms
Parties to the Agreement	California High-Speed Rail Authority (Authority) Dragados/Flatiron, a joint venture, comprised of Dragados USA, Inc. and Flatiron West, Inc.
Agreement Number	HSR 13-57
Purpose of Agreement	Design-build construction
Performance Period	June 2015 to [December 2023] (pending executed change order)
Total Contract Price	Contract price as of June 2022 is \$2,425,968,011, which consists of base bid of \$1,205,335,890 + \$160,000,000 provisional sums + \$1,060,632,121 in executed change orders (CO).
Scope of Projects	<p>The scope of CP 2-3 consists of design and construction of civil works for a 65-mile section of the CVS beginning at the terminus of CP 1 at East American Avenue in Fresno and concluding approximately one mile north of the Tulare-Kern County line.</p> <p>Major work elements include the design and construction of at-grade, retained fill and aerial sections of high-speed rail, and will be performed in the following areas:</p> <ul style="list-style-type: none"> • Project Management, Scheduling, Investigation and Coordination • Geotechnical Engineering and Seismology Studies and Surveys • Surveys, Mapping and Investigations • Clearing and Demolition of ROW • Utility and Third-Party Relocation, Including Railroads • Environmental Compliance and Mitigation • Grading, Embankment and Drainage • Structure Construction and Foundation Work • Paving, Re-striping, Landscaping and Traffic Signals

For more information on CP 2-3 please refer to:

https://www.buildhsr.com/construction_packages/package_2_3.aspx

c. **Construction Package #4 (CP 4)** will be delivered under a DB model. See **Exhibit F-7** for key elements and terms of the Design-Build Construction Agreement for CP 4.

Exhibit F-7. Design-Build Construction Agreement for CP 4

Key Elements	Key Terms
Parties to the Agreement	California High-Speed Rail Authority (Authority) California Rail Builders, a special purpose entity of Ferrovial Agroman US Corp.
Agreement Number	HSR 14-32
Purpose of Agreement	Design-build construction
Performance Period	February 2016 to [March 2023](pending executed change order)
Total Contract Price	Contract price as of June 2022 is \$706,751,889, which consists of base bid of \$337,247,000 + \$107,000,000 provisional sums + \$262,504,889 in executed change orders (CO).
Scope of Projects	<p>The scope of CP 4 consists of design and construction of civil works for a section of the CVS of approximately 22 miles through the Central Valley beginning one mile north of the Tulare-Kern County line at the southern terminus of CP 2-3 and concluding at Poplar Avenue. Major work elements include:</p> <ul style="list-style-type: none"> • Project Management and Administration • Utility Investigation, Coordination and Protection and Relocation • Demolition and Clearing of Right of Way • Code Assessment • Completing, Coordinating, Securing Approval and Executing Final Permitting and Utility Agreements • Survey and Mapping • Subsurface Investigations • Geotechnical Engineering and Seismology • Design, engineering and analysis • Estimating • Value Engineering and Possible Alternative Technical Concepts • Coordination with Jurisdictional Authorities (i.e. governments, FRA, the California Public Utilities Commission, etc.) • Coordination w/Adjacent Railroads (BNSF), Local Communities and Adjacent High-Speed Rail Works

For more information on CP 4 please refer to:

https://www.buildhsr.com/construction_packages/package_4.aspx

4. Other Agreements

a. Early Train Operator

In 2017, the Authority contracted with DB Engineering & Consulting USA, a subsidiary of Deutsche Bahn AG, as the Early Train Operator (ETO). In this role, DB Engineering & Consulting USA has assisted the Authority in developing the system—including operational planning, assistance with the procurement of track and systems, stations, and trainsets. An operator, responsible for initial operations and maintenance, will be selected in the future.

The ETO is now actively engaged in the program’s implementation and delivery strategy. The ETO confirmed that the Authority’s current procurement strategy is consistent with the long-term objectives of the program. The ETO also is assisting the Authority with the analysis of the early interim services that would operate in the Central Valley between Merced and Bakersfield.

In addition to helping with operational design and implementation, the ETO has brought industry expertise to current ridership and revenue strategies to assist the Authority on decisions to maximize ridership and revenue. The ETO also will assist the Authority with mobilization and the establishment of the Train Operating Company and subsequent commencement of revenue services. See **Exhibit F-8** for key elements and terms of the Early Train Operator Agreement.

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Exhibit F-8. Early Train Operator Agreement – Key Elements and Terms

Key Elements	Key Terms
Parties to the Agreement	California High-Speed Rail Authority (Authority) DB Engineering & Consulting USA, Inc.
Agreement Number	HSR 17-20
Purpose of Agreement	Consulting services to advise Authority on the design, development and procurement of the commercial aspects of high-speed rail passenger train operations
Performance Period	December 19, 2017 to November 30, 2023
Total Contract Price	\$30,000,000 (as of December 2020)
Scope of Project	<p>Contractor to perform general Consulting Services set forth in the Scope of Work, including:</p> <ul style="list-style-type: none"> • During the First Phase, Contractor Key Personnel will work alongside the Authority and its advisors on the design, development and procurement of the commercial aspects of high-speed rail passenger train operations. The primary focus of work will be in relation to future passenger services in the Valley-to-Valley (V2V) segment of the System and its subsequent extension to San Francisco; additional work may also relate to other extensions of the System. • Establish the framework for the Franchise Agreement for operation of the high-speed rail system. • Engage Contractor in all decisions that have the potential to impact the future enterprise value of the business and fully integrate the Contractor within the Authority alongside the Rail Delivery Partner and other advisors (and with the Authority’s reporting requirements). • Negotiate and execute a Franchise Agreement to govern the provision of the Second Phase services, which will include mobilization and the establishment of the Train Operating Company (“TOC”) and subsequent commencement of revenue services.

b. Rail Delivery Partner

The Rail Delivery Partner (RDP) provides the Authority with recommendations and advice regarding the implementation of delivery approaches and other strategies. As part of the delivery strategy and the original vision for the Authority, the RDP provides staff augmentation to essential functions within the organization.

Exhibit F-9. Rail Delivery Partner – Key Elements and Terms

Key Elements	Key Terms
Parties to the Agreement	California High-Speed Rail Authority (Authority) Parson Brinkerhoff, Inc. Name change Amendment 2 to WSP, Inc.
Agreement Number	HSR 14-66
Purpose of Agreement	Architectural & Engineering
Performance Period	July 1, 2015 to June 30, 2023
Total Contract Price	Upon Execution of the Contract in 2015 value: 700,000,000.00 Amendments reducing value: Amendment 1) 696,547.796.00 and Amendment 3) 666,369,796.00 Amendment 2) name change to WSP, Inc. Current Contract value: \$798,532,229 (as of June 2022)
Scope of Projects	Through the Program, the Consultant will be providing the Authority with recommendations, advice and implantation of strategic delivery approaches and other strategies. The Consultant shall manage and plan the work required for the Program to meet applicable legal requirements, present a buildable solution and meet operating requirements. <ul style="list-style-type: none"> • Modes of Rail Delivery Partner Support • Functional Areas of Responsible as defined in Work Plans

c. Third-party Agreements

Master agreements are in place with BNSF, Union Pacific Railroad, AT&T, PG&E and various irrigation districts. In the past year, 45 third-party agreements were finalized, of which 34 were critical to supporting construction. As of July 1, 2022, there are no delinquent agreements.

5. Proposed Future Agreements

Upcoming long-term contracts for Track and Systems and Rolling Stock will have implications for testing on the CVS and potential future Interim Service between Merced and Bakersfield when these extensions can be completed. Likewise, one or more agreements will be needed for interim service operations. Decision points related to the procurement of Track and Systems and high-speed Trainsets are imminent, as described below.

a. Track and Systems

In 2022, the Authority plans to execute a contract for Track and Systems to achieve the ARRA grant deadline and complete high-speed rail infrastructure for testing and operations. The timing of this contract has been affected by the pandemic. The Authority has issued an RFP for the procurement of Track and Systems phased into several segments. The procurement is structured as a long-term design-build-maintain (DBM) contract that includes both the construction, fabrication, and installation of high-speed rail Track and Systems (e.g., communications, electrification, signals etc.), testing and commissioning, and the long-term maintenance and lifecycle of those assets.

The Track and Systems contract, as proposed, would include a 30-year term of maintenance for both the underlying civil works and the track and systems work. The Track and Systems work would be issued through multiple Notices to Proceed (NTP) for the Silicon Valley to Central Valley line. The contract will include long-term and complex provisions on performance levels, service plans, obligations and associated penalties during operations that will be rigorously examined by any operator that utilizes the high-speed rail infrastructure. The Operator of Interim Service will have to conform to the terms of the contract that the Authority is presently procuring, including service plans, performance criteria, and payments. As such, the Authority and stakeholders will need to agree that the terms and conditions of the contract conforms with the requirements of Interim Service.

For more information on the Track and Systems please refer to:

<https://hsr.ca.gov/business-opportunities/contractors/track-systems/>

b. High-Speed Rail Trains

The Authority also is planning to begin procurement of high-speed rail trains (also known as rolling stock

On May 23, 2022, the Authority submitted two federal grant applications under the Multimodal Project Discretionary Grant (MPDG) Program, one of which included a funding request for six fully electric trainsets capable of 220 mph, including the first prototypes to be used in North America. These will be sufficient for initial testing and future operating passenger service between Merced, Fresno and Bakersfield (Cost: \$690 million; Grant request: \$414 million).

c. Interim Service Agreements

The Authority plans to provide for early interim service at high speeds between Merced, Fresno and Bakersfield on a 171-mile portion of the future Silicon Valley to Central Valley line. This interim service would be operated by one or more regional service provider(s) to connect Merced, Fresno and Bakersfield, in one of the fastest growing regions in California, with additional stops to serve Madera and Kings/Tulare.

The Authority, CalSTA and the SJPA have entered into an MOU to provide for early interim service from Merced to Bakersfield. The purpose of the MOU is to facilitate cooperation and coordination to develop the requirements of early interim operation to integrate that new service with existing intercity and regional rail systems. The MOU sets forth responsibilities for CalSTA, the Authority and the SJPA. This is an overarching agreement that outlines roles and responsibilities and how the parties will work together to reach agreement on specific areas for service implementation. It outlines those elements to be resolved, details of which will be included in more detailed and specific agreement(s) that will amend, supplement or supersede the MOU. See **Exhibit F-10**, below for an overview of the current MOU.

Exhibit F-10. Interim Service Plan MOU

Key Elements	Key Terms
<p>Parties to the Agreement</p>	<ul style="list-style-type: none"> • California High-Speed Rail Authority (Authority) • San Joaquin Joint Powers Authority (SJJPA) • California State Transportation Authority (CalSTA)
<p>Purpose of Agreement</p>	<p>The parties are interested in pursuing a coordinated implementation strategy to provide improved rail service, including segments of high-speed rail operations, connecting the Bay Area, Sacramento, Merced, and Bakersfield utilizing a combination of future high-speed rail assets and existing regional rail services and/or corridors. The MOU will facilitate cooperation and coordination between the parties and other participants in the development of parameters for early interim operation of a portion of the California High-Speed Rail system in combination with existing intercity and regional rail systems.</p>
<p>Authority Key Responsibilities</p>	<ul style="list-style-type: none"> • Provide system access to the operator for use of Authority infrastructure • Will not exclude any interested, qualified, and acceptable entity from participating in operator procurement • Authority’s Track and Systems contractor will maintain and have legal responsibility for civil infrastructure, track and railway systems, and associated facilities • Provide high-speed trainsets and train maintenance facility • Authority’s rolling stock contractor will maintain trainsets and train maintenance facility • Provision, maintenance, and operation (by Authority’s contractor) of an operations control center for dispatching, incident management, and service recovery • Security and policing of infrastructure, trainsets, and associated facilities • Provide budget inputs to SJJPA for business plan submissions to CalSTA

Key Elements	Key Terms
<p>SJJPA Key Responsibilities</p>	<ul style="list-style-type: none"> • Act as rail service provider (indirectly, by contract with the Operator) • Identify and propose a delegate Operator • Pay Authority system access fee for Authority infrastructure and related assets for maintenance and overhead costs related to interim service • Pay Authority a train rental fee for usage of trainsets to cover maintenance and insurance • Work with SJRRC and Authority to pursue a joint Operator for ACE, San Joaquins, and high-speed rail operations. • Prioritize the development of regional rail connectivity infrastructure to Merced station including funding • Advertising and marketing • Engage and oversee the rail service Operator • Submit business plan to CalSTA that includes plans to execute future agreements for joint SJJPA and high-speed rail segment services that consider methods to account for operating costs
<p>CalSTA Key Responsibilities</p>	<ul style="list-style-type: none"> • Overall planning, coordination, and budgeting of intercity passenger rail service • Work with SJJPA on business plans and budgets to operate services, including high-speed rail, San Joaquins service, connecting bus services, and potentially ACE service. • Approve SJJPA business plans that ensure that incremental costs tied to high-speed rail operations related to ACE services are fully covered by incremental revenues • Delegate appropriate authority to Caltrans to provide oversight and funding to SJJPA
<p>Notable Terms</p>	<ul style="list-style-type: none"> • Use the MOU as the next step in developing the interim service plan • Collaborate, cooperate, and coordinate with each other to commit personnel, exchange necessary technical and other information, and negotiate more detailed agreements • Anticipate entering into future agreements, including Authority/SJJPA system access agreement, train lease agreement, and operations agreement