



Merced to Bakersfield Segment

The Authority Is Unlikely to Complete the Segment as Currently Envisioned within Its Planned Schedule

FEBRUARY 3, 2025



**OFFICE OF THE
INSPECTOR GENERAL**
CALIFORNIA HIGH-SPEED RAIL

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February 3, 2025

The Governor of California
President pro Tempore of the Senate
Speaker of the Assembly

State Capitol
Sacramento, California

Dear Governor and Legislative Leaders:

The Office of the Inspector General, California High-Speed Rail (OIG-HSR) reviewed the schedule for the Merced-to-Bakersfield segment (M-B segment) of the High-Speed Rail project to address the risk that the schedule may not accurately account for current conditions and risks. Two years ago, the California High-Speed Rail Authority (Authority) set a target to complete the M-B segment by 2030, while acknowledging that various uncertainties could push project completion out to 2033. The Authority reaffirmed in its May 2024 Business Plan the 2030 target and 2033 “schedule envelope.” Based on our review of the latest project information, the 2030 target date has been pushed back to 2031, in part because the Authority has extended the timeline for completing construction that is currently underway in the Central Valley. With a smaller remaining schedule envelope and the potential for significant uncertainty and risk during subsequent phases of the project, staying within the 2033 schedule envelope is unlikely. In fact, uncertainty about some parts of the project has increased as the Authority has recently made decisions that deviated from the procurement and funding strategies that were part of its plans for staying on schedule. In addition, there are ongoing risks of delay to completing the first 119 miles of the M-B segment, such as construction delays related to continued disagreements with third parties, that further threaten the timely completion of the segment.

Although the Authority has established a project scheduling process that fundamentally aligns with best practices, it should strengthen its implementation of a key step in that process. Specifically, the Authority has not completed a risk analysis that would allow it to better determine whether its plan for completing the M-B segment is realistic and achievable. The Authority believes the usefulness of doing so now would be limited because it has recently undertaken initiatives that will change the project scope, schedule, and risks. Although the Authority has used a different, also accepted, method to create its schedule envelope, federal guidance makes clear that the need for a full risk analysis remains. We are therefore recommending that the Authority commit to a timeline for conducting that analysis. The results of the analysis will not only add more credibility to the Authority’s published schedule, but more importantly will help the Authority identify and mitigate threats to its ability to adhere to that schedule.



Authority Response

The Authority provided a response to our review—included in its entirety in the back of this report—in which it generally agreed with our recommendations and provided additional clarification and new details about some of its recent decisions and upcoming plans. The upcoming plans announced in the Authority’s response include looking for cost-cutting and timeline-reducing opportunities through a re-examination of various project designs, development of a new management structure and procurement strategy, and an upcoming effort to work with state lawmakers to improve its ability to resolve third-party conflicts in timelier manner. As indicated in our report, we appreciate and acknowledge the efforts undertaken by the Authority to date and look forward to working with the Authority to provide project stakeholders with continued transparency on the results of these new efforts and the implementation of our recommendations.

Respectfully submitted,

Benjamin M. Belnap, CIA
Inspector General, High-Speed Rail

Introduction

In designing and building California’s high-speed rail project, the timely completion of the 171-mile segment linking Merced to Bakersfield is a clear priority. With Senate Bill 198, state lawmakers prioritized the completion of the M-B segment over other elements of the project by placing limits on the Authority’s use of state funding for portions of the project outside of the M-B segment. Completing this segment is important because it would demonstrate the Authority’s ability to initiate operational service and would allow Californians to experience the promised benefits of high-speed rail, including improved transportation and environmental benefits. Further, the timely completion of this segment will help prevent additional costs above current estimates because delays to the schedule would result in higher costs related to inflation, contractor time, and maintaining and securing Authority properties and assets. Figure 1 presents a map of the M-B segment.

In the 2023 Project Update Report, the Authority presented a baseline schedule for the M-B segment that includes key activities, shown in the text box, for completing the 171-mile operating system to begin passenger service. The baseline schedule set a target to initiate high-speed rail operations on the M-B segment by 2030.

Key Activities in the M-B Schedule

Initial 119-mile segment construction packages (CP)

- CP1 design & civil construction [2013-2026]
- CP2-3 design & civil construction [2015-2026]
- CP4 design & civil construction [2016-2023]

Bakersfield extension

- Design [2019-2025]
- Civil construction [2025-2028]

Merced extension

- Design [2020-2026]
- Civil construction [2025-2028]

High-speed rail track and systems

- Construction [2024-2029]

Stations

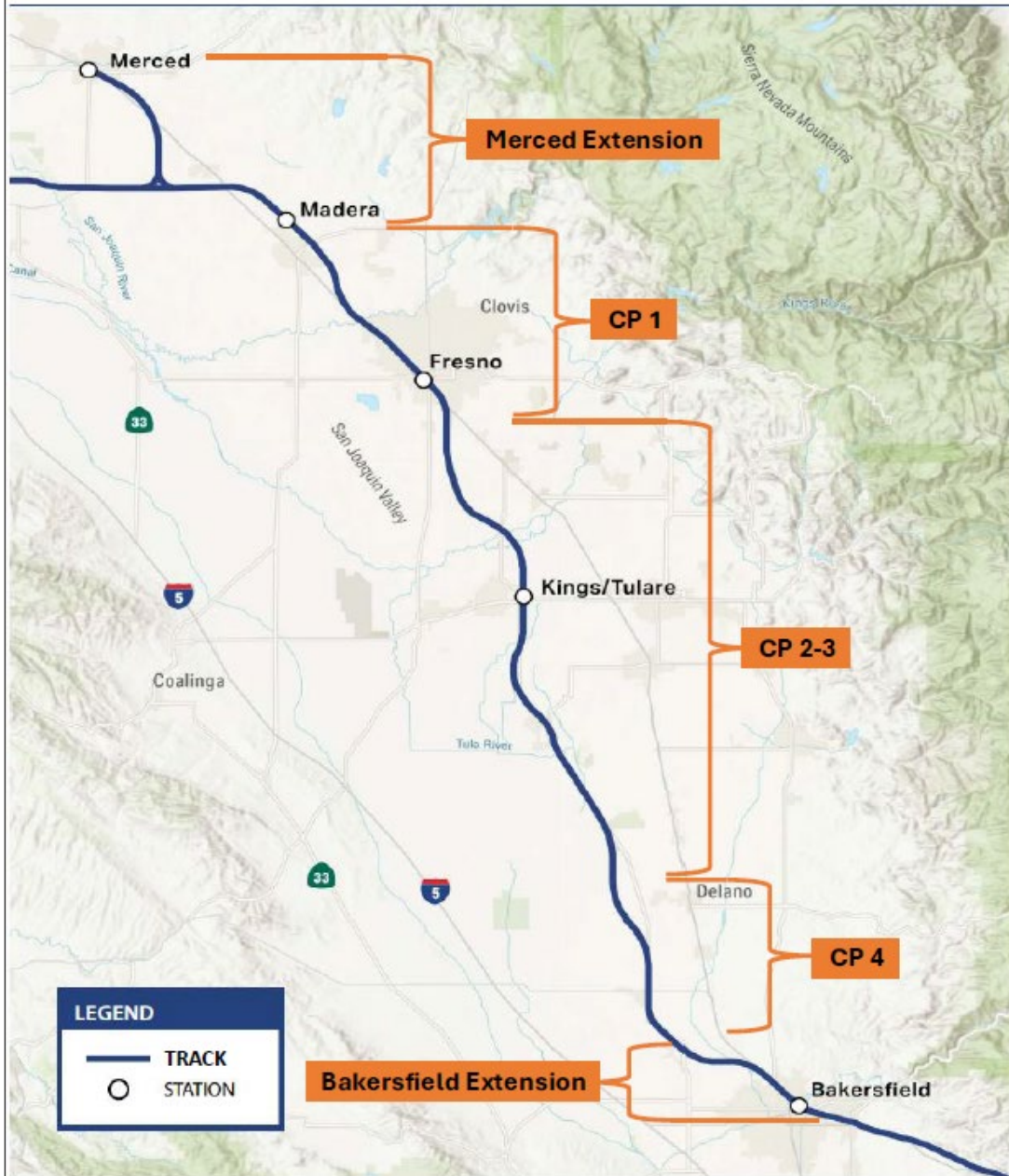
- Design [2022-2025]
- Construction [2026-2029]

Trains

- Procurement [2022-2024]
- Design & manufacture [2024-2029]
- Testing & trial running [2029-2030]

Source: M-B baseline schedule documentation.

Figure 1. M-B Segment Map



Source: Authority maps and documentation.

Note: Section boundaries are not exact but are approximations for illustrative purposes.

The Authority established a process for completing monthly schedule status updates to reflect actual progress and adjustments that may arise because, for example, an activity has slipped past its due date. Comparison between the baseline schedule and these status updates indicates whether the project is progressing as planned. The Authority also monitors progress by identifying

the schedule's critical path, which includes individual activities that, if delayed, would cascade and therefore impact the overall completion of the schedule. The Authority is required by state law to provide a schedule update in the 2025 Project Update Report and indicated that it is currently in the process of reviewing the M-B schedule.

A baseline schedule includes a reserve of extra time, referred to as *contingency*, to account for uncertainty and risks. According to best practices for project schedules from the federal Government Accountability Office, contingency should be calculated by performing a schedule risk analysis—a statistical simulation that displays the probability associated with a range of completion dates—and comparing a target completion date with that of the simulation result at a desired level of certainty. Contingency can also be calculated as a percentage of a project's remaining duration, though this method does not provide key benefits that a schedule risk analysis would. The Authority used the latter method to establish its schedule envelope for completing the M-B segment between 2030 and 2033.

At the time of the 2023 Project Update Report, the Authority acknowledged that the goal of initiating operations between 2030 and 2033 was aggressive, and that the corresponding M-B schedule was ambitious. In the 2023 Project Update Report and the 2024 Business Plan, the Authority identified some strategies for managing the progress of the project and maintaining the schedule, which included the following:

- Establishing a timeline for advancing procurements for rail operations.
- Developing a related timeline for obtaining funding to begin work on unfunded elements of the M-B segment, such as the Merced and Bakersfield extensions.
- Identifying an approach for managing issues that posed risk to the efficient completion of the initial 119-mile construction packages (CPs), including delays related to third parties, such as railroad and utility companies.

We acknowledge the concerted effort the Authority has made in each of these strategy areas and the progress it has been able to achieve, including beginning the process of procuring trainsets for high-speed rail operations, winning a multi-billion-dollar federal grant award, completing numerous necessary right-of-way-clearing activities for the CPs, and tracking and resolving third-party issues. Even so, as we describe in this report, the Authority has recently pushed back its target date for completing the M-B segment, and it has made some recent decisions that were not consistent with the strategies it established for maintaining the schedule. The Authority maintains that each of these decisions was warranted given the challenging and ever-changing landscape in which it operates. Even so, the remainder of this report clarifies the impact these decisions have had on the prospect of the Authority's completing the M-B segment as presently scheduled and scoped.

REVIEW RESULTS

- **The Schedule for Completing the M-B Segment Has Slipped by One Year and the Schedule Envelope Has Become More Difficult to Achieve**
- **The Authority Departed from Some of Its Strategies to Stay on Schedule and Faces Further Schedule Risks and Uncertainty**
- **The Authority Needs to Analyze Schedule Risk to Ensure a Revised M-B Schedule Will Be Reliable**

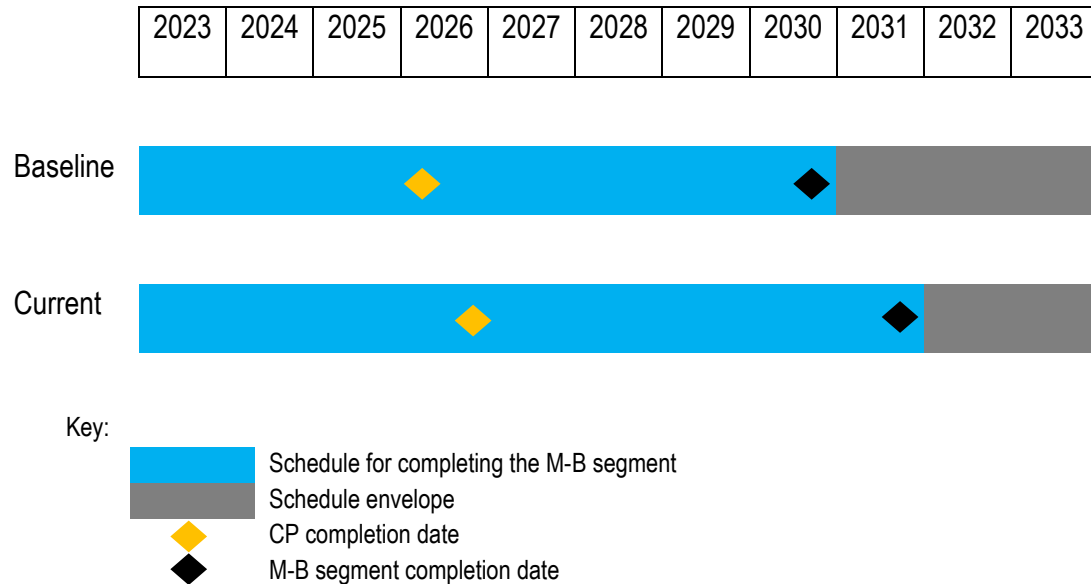
It Is Increasingly Unlikely that the Authority Will Complete the M-B Segment, as Presently Scoped, within the Current Project Schedule Envelope

The Authority is not on schedule to finish the M-B segment as currently envisioned. When the Authority established the baseline schedule that it shared in the 2023 Project Update Report, it planned to complete the M-B segment in about eight years, by December 2030. The schedule envelope it presented allowed three additional years—until December 2033—to account for uncertainty and risk that could delay its planned timeline. The Authority presented the same 2030 to 2033 envelope in its 2024 Business Plan. However, as Figure 2 shows, the Authority’s current schedule has now pushed the target date for completing the M-B segment back from the end of 2030 to the end of 2031. Although this later completion date is still within the schedule envelope, the quickness and extent of the schedule change is notable. In practical terms, it means that as of now, a quarter of the way through the eight-year timeline it set in 2023, the Authority’s schedule adjustments have already used a third of the excess time provided by the schedule envelope.

The schedule has been pushed back, in part, because the Authority has extended its timeline for completing the CPs on the 119-mile section of the M-B segment. Completing the CPs is on the critical path, meaning that any delay to that milestone in turn delays subsequent activities—such as laying track—and therefore the project’s overall completion date. When the Authority established the baseline M-B schedule, it was in the process of collecting and evaluating revised schedules for the completion of the CPs from its contractors but used the contractors’ existing schedule information to project that the CPs would be completed by early 2026. That assumption has proved incorrect. According to updated information we reviewed, the CPs will not be completed until the *end* of 2026. This nearly one-year delay along the critical path is a key reason why the Authority’s target date for completing the M-B segment has moved from 2030 to 2031. The Authority said that another reason

for the delay was a change to the plan for procuring work to lay track and install systems for high-speed rail operations.

Figure 2. The Schedule for Completing the M-B Segment Has Changed From 2030 to 2031



Source: Analysis of the Authority’s baseline schedule for completing the M-B segment and its September 2024 status update on the schedule, which was the most current schedule information available at the time of our review.

The smaller remaining schedule envelope, in turn, leaves the Authority less time to manage uncertainty and risk in the future. This is cause for concern because uncertainty and risk are likely to remain significant over the next few years as the project moves forward to new and potentially riskier phases. Put another way, the Authority has had to make these schedule adjustments while the project is still in the civil construction phase with which the Authority has considerable experience. Once the project transitions to trackwork, systems installation, and testing for the operation of high-speed rail—activities with which the project has limited experience and therefore carry considerable uncertainty—it could encounter conditions that differ from its assumptions and require additional schedule adjustments. Throughout this report, we describe reasons why the remaining schedule envelope is likely an inadequate timeframe for completing the M-B segment as presently scoped.

The Authority Has Not Maintained the Procurement Timeline It Established to Meet the M-B Schedule

The Authority has paused procurement activity that it needs to complete to stay on schedule. In the 2024 Business Plan, the Authority described a new procurement strategy, which included a deliberate sequence for planned procurements to help it meet its schedule to begin operations between 2030 and 2033. However, the Authority has not followed the procurement timeline it established. For example, the Authority set a goal to award a contract for trainsets by December 2024 that it described as a critical step for meeting the M-B schedule. The Authority did not meet that goal. Instead, in fall of 2024, the Authority extended the procurement and indicated that it did not anticipate executing a contract until summer of 2025. Although this decision has not yet caused additional delay to the M-B schedule, it increases the likelihood that the Authority will need to use more of the schedule envelope, pushing completion of the segment past the projected 2031 date discussed above.

A factor that contributes to uncertainty about activities on the M-B schedule is whether the Authority and the contractors performing the activities have agreed to a schedule for the work. When that has occurred, the Authority can better assess whether assumptions about the duration of the work in its schedule are realistic. For example, the Authority's schedule assumes that its future trainset contractor will need four years to design and build the first two trainsets. That work is planned to begin in August 2025. The Authority's schedule currently allows a total of about nine months of flexibility to reduce the risk of delay for activities related to the larger process of procuring, certifying, and testing the project's first trainsets. Much of that total flexibility is now being used between the planned contract award in December 2024 and summer 2025 when the execution of the contract is anticipated, even though the Authority's assessments indicate that a majority of the risks related to the trainsets—and those with the largest potential schedule impacts—may arise after work on the trainsets begins.

Notably, the schedule also shows that if work to design and build the first trainsets is delayed by more than one week, which is a small amount of contingency time given the activity's four-year planned duration, the activity's status will become critical. As such, any additional delay to that work will delay the project's completion. Therefore, although not causing schedule delays on its own, the Authority's decision to extend the trainset procurement means that the Authority and its future contractor will have less flexibility to manage any issues that emerge once the contract is in place. Less flexibility creates greater likelihood that the work to build the trainsets will become critical and that any delays to that work will consequently push the target completion date from December 2031 into 2032.

The Authority extended the trainset procurement timeline—and paused related procurement activities to reconsider the strategy it had previously developed—following the hiring of its new CEO

in fall of 2024. The CEO explained that he paused the trainset procurement because he is having Authority staff re-examine the sequencing of various project activities and look for ways to cut unnecessary expenses. In particular, he stated that there may be an opportunity to better align the Authority's trainset design with the more standard design of other high-speed trains throughout the world and that doing so would reduce costs and shorten the time it takes for the eventual manufacturer to deliver the Authority's trainsets. If the CEO is ultimately correct that reconsidering the Authority's procurement strategy shortens the time it takes manufacturers to deliver trains, then the Authority may be able to reclaim some of the time lost from delaying that procurement and mitigate its impact on the overall M-B schedule. However, as we indicate above, until the Authority has entered the relevant contracts, such benefits remain uncertain. As such, the Authority still has a need to account for that uncertainty as part of establishing a revised procurement timeline.

Recommendation

To ensure that the M-B schedule includes an achievable timeline for procurement activities, the Authority should establish a new procurement timeline that incorporates its reconsidered procurement strategy. The Authority should present that timeline and a discussion of the impacts it is likely to have on the M-B schedule, and whether those impacts can be mitigated, along with the M-B schedule update in the 2025 Project Update Report. If the Authority determines that it cannot provide this information in time to publish its results as part of the 2025 Project Update Report, it should describe in that report the status of its efforts and the anticipated timeline for completing them, and it should then publish the results upon completion.

The Authority Departed from Its Strategy to Obtain Federal Funding Necessary for Maintaining the M-B Schedule

Although only affecting a small proportion of the total funding needed to complete the M-B segment, the Authority's recent decision not to seek M-B funding from an important federal grant program represents a significant shift from its previously stated funding strategy. In the 2024 Business Plan, the Authority presented a funding strategy for the M-B segment, which currently faces a \$6.5 billion funding gap. According to the Authority, to keep the M-B segment on schedule for completion in 2033, it was necessary to secure funding no later than 2026 for the construction of the Merced and Bakersfield extensions and the second track on the 119-mile section of the larger overall segment. To do so, the Authority stated its intent to seek \$4.7 billion in new funding from the Federal-State Partnership grant program (FSP) and related federal grants, noting the FSP program had already committed more than \$3 billion to the M-B segment's design and construction. During our review of funding for the M-B segment, published in October 2024, the Authority provided an analysis indicating it expected to receive an additional \$2.5 billion in funding from the FSP program by 2026.

In December 2024, the Authority had an opportunity to apply for FSP funding; however, instead of requesting federal funding for work necessary to complete the M-B segment, it requested funding to design other parts of the planned Phase 1 alignment of the high-speed rail system outside the Central Valley. Specifically, the Authority applied for \$536 million to perform design and geotechnical work on the tunneling that will be needed to connect the Central Valley to Northern and Southern California. That amount of federal funding, if awarded, would be combined with \$134 million in state funds taken from California's Cap-and-Trade program revenues, 25 percent of which state law directs to the high-speed rail project. The Legislature and the Governor have, through state law, directed the Authority to complete Phase 1, but to prioritize funding the completion of the M-B segment until its planning and construction are complete. Although state law permits the Authority to commit Cap-and-Trade funds outside of the M-B segment, it imposes certain restrictions on how much total funding can be committed and prescribes oversight regarding whether spending such funds will delay the completion of the M-B segment.

In a letter of intent the Authority sent to the Legislature about its FSP application, the Authority provided two main reasons for its decision not to apply for funding for the M-B segment:

1. The Authority believes the federal government has signaled that funding for the M-B segment is a lower priority and there is a preference to fund scope outside it.
2. It was impractical to apply for certain work on the M-B segment because the \$1 billion total available FSP funding was less than the Authority's estimated costs for the work.

Regarding the first reason, we identified no clear evidence that the Authority's request for federal funding for work outside the Central Valley has a better chance of success than one to fund a

component of the M-B segment. We acknowledged the general uncertainty about the outcomes of federal grant applications in our recent report on the M-B segment funding gap. In the same report, our analysis of recent years' grant activities led us to estimate an FSP award amount of about \$857 million—significantly lower than the \$2.5 billion the Authority expected at that time. However, notwithstanding the lack of success of recent applications for other grant federal programs, we did not conclude that the project was unlikely to receive additional FSP funding for the M-B segment. In addition, the Authority confirmed for us that it was not aware of any changes to the FSP program's funding announcement for the current year that indicated a specific shift in the program's funding priorities. Instead, the Authority indicated it believed such a shift may occur because of the types of projects funded last year, which included the M-B segment, and that it expected the Federal Railroad Administration (FRA) would want to fund different project types in the long run.

For its part, in its letter of intent the Authority underscored the importance of the FSP program by describing it as the most robust federal funding program available for the California high-speed rail. Therefore, although the activities for which the Authority is seeking funding are important to the longer-term success of Phase 1 because they will provide increased certainty about challenges and costs that must be overcome to complete the system, the Authority's decision not to request M-B segment funding from this important program signifies a potentially significant strategic shift. Further, the fact that the segment will not receive FSP funding in the current grant cycle highlights existing questions about when and how the Authority will be able to secure new funding to continue to move the segment forward.

As to the second reason, we recognize that the total amount of funding at stake in the Authority's recent FSP funding request—\$670 million—is relatively minor in the context of the total funding gap the M-B segment faces. Given the roughly \$6.5 billion in total funding the Authority has estimated it needs by 2026 to keep the segment on schedule, pursuing this particular FSP grant funding opportunity for the M-B segment would not have significantly improved the Authority's ability to meet the segment's schedule. We raised concerns in our funding gap report about the Authority's ability to secure the additional funding it needs through federal grants alone. However, to prioritize completion of the M-B segment in the face of such uncertainty, it remains important for the Authority to take advantage of opportunities to secure any new funding for the segment.

During our review, the Authority reiterated the reasoning in its letter of intent, explaining that federal priorities differ from state legislative priorities with respect to the latter's focus on the M-B segment. The Authority also stated that the federal government has indicated an interest to move toward populated areas and connect with other high-speed rail systems to develop a Southwest region network. Notwithstanding the Authority's perspective, as we state above, the fact that the M-B segment will receive no FSP funding this year underscores existing concerns about how quickly the segment, as currently scoped, can be funded. Therefore, to the extent that the Authority determines it is necessary to consider an alternative approach or contingency plan, it should put forward such a plan for stakeholders to consider.

The Authority has developed a contingency plan—required by existing federal grant agreements—for starting high-speed rail operations on a subsection of the M-B segment if the schedule to complete the entire segment is significantly delayed. The plan does not specify what would constitute a significant delay, but according to the FRA, the Authority must conduct an assessment of the conditions that would necessitate the plan’s implementation and begin providing regular status updates to the FRA beginning June 2026. According to the plan, high-speed rail operations could start on a 105-mile section between Madera and Wasco, with onward journeys provided by bus and rail connections at those locations. However, the plan notes that successful implementation as currently envisioned would still require the Authority to obtain funding to construct the second track on that section and to engage with other state agencies and stakeholders to establish agreements needed for operations. For these reasons and others, we have also repeatedly recommended that the Authority improve its reporting to state lawmakers and other stakeholders about the magnitude and timing of its funding needs to keep the M-B segment on schedule.

Recommendations

To ensure that the high-speed rail project proceeds in a manner consistent with priorities established in state law, the Authority should do the following:

1. Maintain its stated priority to pursue available funding opportunities for the purpose of completing the M-B segment.
2. Provide information in the 2025 Project Update Report about feasible options for initiating service on a limited section of the M-B segment by 2033, if necessary, and the estimated costs to realize them. If the Authority determines that it cannot provide this information in time to publish its results as part of the 2025 Project Update Report, it should describe in that report the status of its efforts and the anticipated timeline for completing them, and it should then publish the results upon completion.

Risks to Completing the CPs Could Delay the M-B Schedule

In the 2023 Project Update Report, the Authority acknowledged that it would need to manage ongoing risks to the CPs to keep the M-B segment on schedule. Completing the CPs is on the critical path of the M-B schedule, so risks of delay to the CPs pose corresponding risks of delay to other critical activities, including the start of trackwork, and therefore to the project overall. The Authority has identified the management of issues related to third parties as a top risk to each of the CPs. Although the CPs are fully funded as of the 2024 Business Plan, and significant portions are under construction, certain activities that require the Authority to work with various third parties are delayed and pose a risk to the overall schedule.

We found that obtaining approvals from key third parties that are needed to commence certain elements of construction work has often been a lengthy process. Risks of delay to that process are among the key concerns for each individual CP's schedule. Out of eleven top risks to CP1 and CP2-3 that the Authority recently identified, three were related to third-party approvals. Our forthcoming report—to be published later this month—further describes delays in obtaining approvals from third parties and the resulting impact on the Authority's efforts to relocate utilities and acquire right-of-way.

One example of the lengthy approval process is related to completing designs for the CP1 segment at Herndon Avenue in the city of Fresno. The Authority must receive design approval from the city and a railroad company before beginning construction. When the Authority and its contractor established the revised baseline schedule for CP1, the timeline for obtaining that approval was November 2023, but allowed for a slip of several months before it would cause delay to CP1. Nevertheless, the railroad company's comments on the designs have required so many revisions that obtaining approval has now become a critical activity. Specifically, the Authority anticipated submitting the seventh revision to the railroad company for approval in January 2025. Current CP1 schedule information indicates that, unless time can be recovered, the delay to approval of the Herndon Avenue design could push the completion of CP1 from November 2026 into spring of 2027. Because completing CP1 in November 2026 is on the critical path of the M-B schedule, delay to CP1 will in turn delay the start of trackwork and the completion of the M-B segment.

The Authority is making efforts to mitigate the risks that third-party approval processes pose to the CP schedules. The Authority indicated that designs have typically gone through multiple revisions before achieving approval and that the number of revisions may vary depending on the complexity of the design. However, it noted that the number of design revisions has been high for certain work on CP1 and indicates quality issues. Therefore, to manage and mitigate the risks described in the example above, the Authority's general approach includes increasing communication with third parties, and in this instance the Authority has also taken a more active oversight role with its contractor in the design revision and submittal process.

Despite these efforts, mitigation strategies do not always fully recoup lost time, and additional oversight can itself cost the Authority time and money. Our forthcoming report includes our conclusions about the reasons why obtaining approvals from third parties can be such a lengthy process and recommendations to improve the Authority's ability to obtain approvals in a timely manner.

The Authority Has Not Implemented a Best Practice to Conduct a Risk Analysis of the M-B Schedule

Although the Authority’s project scheduling processes fundamentally align with best practices published by the federal government, it should strengthen its implementation of one key best practice. During this review, we confirmed that the Authority has established written processes for scheduling in its Program Controls Manual. We compared those processes to the federal Government Accountability Office’s (GAO) best practices for creating a high-quality and reliable schedule—one that is comprehensive, well-constructed, credible, and controlled—and found that they fundamentally align. For example, the Authority’s process for developing the project schedule requires identifying and defining relevant work activities that contribute to the total scope of the M-B segment, which is consistent with the GAO’s recommended practice to capture all work activities so that the resulting project schedule is comprehensive.

However, we found that the Authority has not implemented a best practice related to the construction and credibility of its schedule, which is to conduct a schedule risk analysis (risk analysis). We consider this a key best practice because it can help determine the likelihood that the target completion date is achievable, in part by ensuring that a schedule includes adequate time for uncertainty and risks—such as the strategic changes and ongoing third-party delay risks we described earlier. We focused our assessment of the Authority’s implementation of and adherence

Schedule Risk Analysis

An analysis that uses statistical techniques to predict a level of confidence in meeting a project’s planned completion date. A schedule risk analysis focuses on uncertainty and key risks and how they affect the schedule’s activity durations.

Source: The GAO’s *Schedule Assessment Guide: Best Practices for Project Schedules*.

to scheduling best practices on the area of risk analysis because we were aware the Authority had not performed that analysis when it originally established the baseline schedule for the M-B segment.¹ The Authority’s procedures state that it will conduct a risk analysis as needed as part of developing the project schedule, but the procedures do not specify how frequently the analysis must occur. In the two years since the Authority established the M-B schedule, it has not yet completed a risk analysis for that schedule that fully satisfies the best practice.

Until the Authority conducts such an analysis, it will continue to have limited assurance that its

¹ We did not assess the Authority’s technical implementation of other scheduling best practices during this review. To the extent that we identified questions about the Authority’s implementation of other best practices, we will address those questions by considering them in the upcoming risk assessment that will inform our 2025-26 annual work plan.

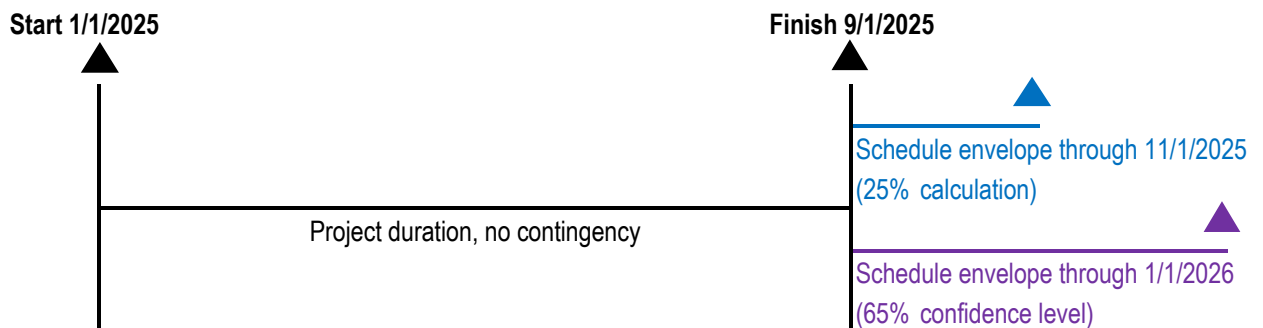
plan for completing the M-B segment is realistic and achievable. A risk analysis models the likelihood of various outcomes for a project's scheduled activities and their effect on schedule given known uncertainty and risks. The outcome of this modeling then allows the users of the risk analysis to determine the likelihood, or confidence level, of meeting a planned project completion date and the amount of additional contingency time that may be needed to reach a desired likelihood of completion. To provide an example of these results, the GAO describes a risk analysis for the construction of a house revealing that the project has only a seven percent confidence level for its planned completion date, and that several additional weeks of contingency time would be needed to reach a 65 percent confidence level of completion. The GAO goes on to note that the best practice is to conduct a risk analysis as part of first establishing a baseline schedule, and then to regularly update the analysis thereafter, including before key decisions are made about the project.

The Authority told us that when it initially established the M-B schedule in the 2023 Project Update Report, it did not conduct a risk analysis because it was gathering information that the analysis would model. Instead of performing the risk analysis, the Authority used a different method to help account for uncertainty and risk, thereby establishing the schedule envelope from 2030 to 2033 that we presented in Figure 2. Specifically, the Authority calculated 25 percent of the planned timeframe for completing the M-B segment by December 2030 and, following the results of that calculation, added contingency time up to 2033 to create the schedule envelope.

Although appropriate, the method the Authority used to calculate the M-B schedule envelope does not remove the need for a risk analysis. The percentage calculation method is specified in guidance on schedule contingency from the U.S. Department of Transportation, which explains that the 25 percent is based on historical data. However, the guidance does not recommend relying on that calculation alone. Instead, the guidance recommends that projects in general perform both the calculation and the more in-depth risk analysis we have been describing, and then select the longer of the two resulting time periods as the schedule's contingency period. Figure 3 shows a hypothetical example of how contingency times determined using the two methods described could differ for a given schedule. In the example, the risk analysis produces a completion date at a 65 percent confidence level that exceeds the contingency time determined by the 25 percent calculation alone.

Notably, according to the GAO, unless a risk analysis is conducted, the resulting schedule tends to underestimate a project's duration. The change from 2030 to 2031 that has already occurred for the baseline M-B schedule underscores this possibility for the segment given the lack of a risk analysis thus far. To the extent the project schedule was initially underestimated, the amount of contingency time applied as a percentage of that duration could also be insufficient.

Figure 3. A Hypothetical Example of Contingency Times Resulting from a Percentage Calculation of Risk Versus a Schedule Risk Analysis



Source: A hypothetical example based on GAO and U.S. Department of Transportation guidance on schedule risk analysis and contingency calculation.

Conducting a risk analysis would also better allow the Authority to test assumptions about and interactions between the activities that comprise its current M-B segment schedule. The GAO notes that schedules, or components thereof, can be subject to optimistic thinking that results in underestimating a project’s duration. It also emphasizes that uncertainty and risks can become better defined as a project advances. The GAO encourages periodically reevaluating those risks as well as using risk analyses to assess the statistical schedule probabilities resulting from interaction among a project’s individual activities. We identified an example in which the Authority has been able to take advantage of such information about the individual CPs because it has established procedures that require regular risk analysis of CP schedules. In that instance, a June 2024 risk analysis of the CP2-3 schedule identified a new utility-related risk to completing that CP that could cause a delay of a year or more beyond the current projected completion date, in part because of the effect on related tasks like construction. In response to that information, the Authority identified actions that it could take to avoid the risk to the extent possible.

The fact that the Authority requires regular risk analyses for the CP schedules demonstrates its understanding that the analysis is an important tool. However, until the Authority performs a risk analysis of the overall M-B schedule, it cannot consider how the respective risks to completing the CPs and other activities as currently scheduled may impact the target completion date for the M-B segment. Conversely, performing such an analysis would allow the Authority to use the resulting information to prioritize its risk management and response efforts, helping keep the project on schedule.

The Authority informed us that it has now successfully gathered information about schedule risks for various activities needed to construct the M-B segment, the lack of which had likely previously delayed its readiness to conduct a risk analysis. However, although the Authority acknowledged that it is able to perform a risk analysis of the M-B schedule, it also emphasized that doing so at this time

would not be as useful as might be expected. To explain why not, the Authority stated that there are several key ongoing initiatives that will significantly change the project baseline scope and schedule, and therefore affect the associated risks. The Authority stated that these initiatives have been triggered through its current risk efforts, justifying its alternative approach to the recommended risk analysis in that it provides a useful understanding of risk given where the program is for the M-B segment. As such, the Authority indicated that if it is not able to perform a risk analysis in time for the 2025 Project Update Report, due in March, it would again use the percentage calculation approach to quantify the M-B schedule risk.

For the reasons described above, we have concerns about the Authority's continuing to use a schedule for the M-B segment that is not informed by the recommended risk analysis. According to state law, each project update report must contain a schedule for completion of the M-B segment. Such a requirement underscores the importance that reliable schedule information holds for state lawmakers and other users of the reports. Notwithstanding the Authority's current uncertainty about initiatives it has decided to undertake that affect its scheduling assumptions, and recognizing the utility of its current approach to calculating schedule risk, the resulting information is incomplete and the federal guidance is clear about the necessity and benefits of conducting a risk analysis at regular stages throughout a project's lifespan. Therefore, in the event the Authority lacks the certainty to make a risk analysis useful at this moment, we believe it nonetheless needs to commit to a timeline for conducting the risk analysis and reporting the results so that its future updates on the M-B schedule will be sufficiently meaningful.

Recommendations

To help ensure the reliability of the M-B schedule and the Authority's ability to identify and manage risks to the schedule, the Authority should do the following:

1. Conduct a risk analysis of the M-B schedule and publish the results, including the Authority's confidence level in its target date for completing the M-B segment and how it determined the amount of contingency time added to establish an envelope for uncertainty and risk. If the Authority determines that it cannot conduct the analysis in time to publish its results as part of the 2025 Project Update Report, it should describe in that report the status of its efforts and the anticipated timeline for completing the analysis, which it should then publish upon completion.
2. Revise its project scheduling process to specify when a risk analysis, as recommended by the GAO and the U.S. Department of Transportation, must be conducted and updated.

Appendix A

Scope and Methodology

The objective of this review was to examine the Authority's process for updating the schedule for the M-B segment, as well as examine risks to the schedule and the Authority's efforts to mitigate those risks. We focused our review on the schedule for the M-B segment published first in the Authority's 2023 Project Update Report and most recently in its 2024 Business Plan; we did not review or opine on the Authority's efforts to complete schedule-related requirements in its various federal grant agreements. We performed the review during the period of October 2024 through January 2025. The three review objectives were as follows:

- 1) Evaluate the strength and completeness of the Authority's policies and procedures for tracking project schedules as well as for identifying and mitigating the risks of schedule delays.
- 2) Determine which project components have been delayed compared to the 2023 Project Update Report schedule or are at the greatest risk of delay and what the Authority has done to mitigate these risks.
- 3) Identify any improvements the Authority should make to its process for managing the project schedule, including mitigating the impacts of potential or likely delays.

We performed the following to address the objectives:

1. Reviewed the Authority's documented procedures and conducted interviews with staff and consultants responsible for schedule management to determine the Authority's processes for managing the project schedule for the M-B segment and the schedules for various components of work on the segment, such as the CPs.
2. Assessed whether the Authority's documented processes align with best practices. We conducted our assessment using the GAO's Schedule Assessment Guide. The Authority agreed that this was an appropriate source of criteria.
3. Conducted interviews with staff and consultants responsible for risk management and reviewed documentation of risks to the M-B segment to understand the status of the Authority's efforts to implement a best practice to conduct a risk analysis for the M-B schedule.
4. Compared the baseline schedule for the M-B segment to current schedule information, including schedule status updates for the M-B schedule and CP schedules, to determine whether any components of the M-B segment have been delayed or are at risk of delay.

5. Interviewed Authority procurement staff and reviewed documentation about procurement timelines to assess whether the Authority has been meeting its planned timelines for components of work on the M-B segment that are not yet under contract.
6. Reviewed the Authority's risk information to make a selection of key risks to the completion of the CPs as scheduled and identify how the Authority assessed and responded to those risks and the outcomes of its efforts.
7. Reviewed federal grant information to assess risks and opportunities related to the Authority's efforts to pursue its strategy to obtain funding needed to keep the M-B segment on schedule.

Appendix B

Authority Response

We have included the Authority's response to our review results and recommendations in its entirety. Following the Authority's response, we have also included a series of comments necessary to clarify and provide additional perspective. The numbers of those comments correspond to the numbers we have placed in the margin of the response.



Gavin Newsom
GOVERNOR

Ian Choudri
CALIFORNIA HIGH-SPEED RAIL AUTHORITY



January 29, 2025

Jordan Wright
Deputy Inspector General
California State Auditor
621 Capitol Mall, Suite 1200
Sacramento, CA 95814

Dear Mr. Wright:

Thank you for the opportunity to provide a response to your draft report “Merced to Bakersfield Segment: The Authority is Unlikely to Complete the Segment within Its Planned Schedule.” We recognize that the scope of the report is primarily focused on the Authority’s Merced to Bakersfield (M-B) schedule as published in the Authority’s 2024 Business Plan and did not include analysis of schedule-related requirements for its various federal grant agreements. It also did not include review of any efforts to expedite the published schedule taken in the last several months or consider information on efforts planned in the near future.

1

We also appreciate that the Office of the Inspector General (OIG) acknowledged in the report that the Authority is implementing strategies to progress the project—cited strategies included:

- Working with the federal government to obtain federal grant awards;
- Completing numerous necessary right-of-way-clearing activities for the construction packages (CPs); and
- Tracking and resolving third-party disagreements.

We would also like to note that the Authority is implementing various other strategies to mitigate the schedule, including:

- Working with the Administration and Legislature on proposed legislation to improve the Authority’s ability to advance third-party utility work more expeditiously;

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- Assessing new procurement strategies, including direct purchasing long-lead materials to advance rail activities;
- Executing master cooperative agreements with cities, counties, and third-party stakeholders (e.g., railroads and utility providers) that build on lessons learned and increase collaboration;
- Undertaking a comprehensive review of the Authority's Design Criteria Manual (DCM) for design requirement improvements that could lead to favorable cost and schedule impacts;
- Coordinating activities monthly with project teams to evaluate proposed schedule updates and proactively identify project interface risks that can prompt mitigation and governance actions; and
- Continuing working closely with State and Federal officials on efforts to build support and funding. Meeting with members and staff for updates and information about the project needs to initiating efforts to advance overall funding.

While these management actions are not exhaustive, they provide additional context of key management actions the Authority is taking to mitigate schedule and funding risks to the project.

The Authority has provided responses to the OIG's recommendations below:

Review Result #1

The Schedule for Completing the M-B Segment Has Slipped by One Year and Achieving the Current Schedule Envelope is Unlikely

Authority Response

2

The 2024 Business Plan provided a schedule window for the start of operations on the M-B Segment, which is a date range between 2030 to 2033. While slippage in schedule for a mega-infrastructure project can occur, and is common, it is premature at this time to determine that the full schedule window is unlikely to be achieved due to a one-year delay, as mitigation measures have not yet been fully evaluated or implemented to determine if time can be recaptured. The Authority is actively working to evaluate and implement opportunities to recover time, and will continue to do so in the coming months.

To that point, there are significant changes occurring at the Authority to better position the Project for delivery. These changes include: (1) new executive management and key roles, (2) improved organizational structure for refocusing the Authority to more effectively delivery the project, and (3) an updated procurement strategy. Once the Authority has a full understanding of the impacts these changes will have, we plan to conduct a thorough schedule analysis to

provide a new schedule and then assess if that target date falls within or outside of the current project schedule window.

Finally, the delays impacting the construction packages have been driven generally by third-party requirements, design iterations, and other conflicts for those systems impacted by our construction work. In this area the Authority only has the ability to coordinate the necessary work, and lacks sufficient control to advance the work as expeditiously as needed to stay on schedule—and while the Authority does everything it can to manage the coordination, the lack of authority to control the design and construction management approval process creates a challenging situation for the Authority. Given this situation, the Authority is working with the Administration and hopes to engage the Legislature on proposed legislation that would provide greater control that could result in improved processing of design/construction agreements with third-parties to advance the schedule.

3

Review Result #2

The Authority Has Not Maintained the Procurement Timeline It Established to Meet the M-B Schedule

OIG Recommendation

To ensure that the M-B schedule includes an achievable timeline for procurement activities, the Authority should establish a new procurement timeline that incorporates its reconsidered procurement strategy. The Authority should present that timeline and a discussion of the impacts it is likely to have on the M-B schedule, and whether those impacts can be mitigated, along with the M-B schedule update in the 2025 Project Update Report. *If the Authority determines that it cannot provide this information in time to publish its results as part of the 2025 Project Update Report, it should describe in that report the status of its efforts and the anticipated timeline for completing them, and it should then publish the results upon completion.*

Authority Response

Under the guidance and experience of new leadership, the procurement strategy for the Authority is being optimized. An industry forum event will occur in January 2025 to allow the Authority to engage with industry experts and innovators for information sharing on the latest technologies, industry trends and innovative approaches that will help deliver the Project.

The Authority agrees to adopt this recommendation and will provide an updated, achievable timeline for procurement activities that informs a revised schedule and describe the status of such in summary form in the 2025 Project Update Report. The Authority remains committed to both existing funding commitment

timelines and to project schedules, and is actively working to ensure that its updated procurement strategy remains on existing schedules.

Review Result #3

The Authority Departed from Its Strategy to Obtain Federal Funding Necessary for Maintaining the M-B Schedule

OIG Recommendation

To ensure that the high-speed rail project proceeds in a manner consistent with priorities established in state law, the Authority should do the following:

1. Maintain its stated priority to pursue available funding opportunities for the purpose of completing the M-B segment.
2. Provide information in the 2025 Project Update Report about feasible options for initiating service on a limited section of the M-B segment by 2033, if necessary, and the estimated costs to realize them. *If the Authority determines that it cannot provide this information in time to publish its results as part of the 2025 Project Update Report, it should describe in that report the status of its efforts and the anticipated timeline for completing them, and it should then publish the results upon completion.*

Authority Response

4

In order to properly understand the Authority's strategy for federal funding, additional context regarding how the last few years have unfolded is necessary. When the Infrastructure Investment and Jobs Act (IIJA) was signed into law by President Biden on November 15, 2021, it promised \$1.2 trillion for transportation and infrastructure spending with \$550 billion of that figure going toward "new" investments and programs. The Authority developed a federal funding strategy and approach to secure a goal of \$8 billion in new federal grants from programs that were considered qualifiable and was ultimately awarded a total of \$3.3 billion in federal funds. Although the Authority recognized sizeable funding opportunities in the IIJA, including large shares of available funds within the funding programs most closely focused on rail, the lack of Congress fully funding authorized program levels (largely limiting funding to advance appropriations with limited augmentation) reduced the overall opportunity. As such, federal funding awards have not produced enough to reach the Authority's original goal.

Outcome of Awards

Large FRA awards from the Federal State Partnership Program were made in 2023, with each having a very clear connection to either full project completion (Brightline West) or an independent utility segment (CHSRA). During each subsequent funding opportunity at FRA or USDOT, the Authority applied for

scope that would build additional elements of the Project needed to deliver the full M-B scope. As outlined in the table below, these efforts were not successful, with debriefs suggesting that federal agencies did not see the individual components as advancing enough additional benefit on top of the independent utility already achievable with the initial FSP grant relative to other project funding opportunities across the nation.

The table below identifies federal grant funding applications that were previously denied related to the scope of work in the Merced Extension:

Grant Program	Date of Application	Amount Requested	Scope of Work	Award Outcome
RAISE FFY 2024	2/28/2024	\$15,879,501	Merced Integrated Multimodal Station	Not awarded 6/26/2024
MEGA FFY 2025 and FFY 2026	5/6/2024	\$236,095,307	Merced Integrated Multimodal Station	Not awarded 9/20/2024
CRISI FFY 2023-FFY 2024	5/28/2024	\$449,975,492	Inaugural High-Speed Service-Merced Extension	Not awarded 10/29/2024
RAISE FFY 2025- Round 1 FFY 2024 Projects of Merit	12/2/2024	\$15,879,501	Merced Integrated Multimodal Station Grant Application Resubmission	Not awarded 1/10/25

The FRA's 2023 award had indicated a strong support for project development on the remainder of Merced to Bakersfield and fully funded many of those activities in this segment. Given the unsuccessful nature of the above grant applications to identify an additional area of construction or project development in the segment, the Authority decided to pursue advanced project development activities focused on the geotechnical work that would support high-speed rail reaching more populated regions of the state to give the FRA an opportunity to support additional benefits that may be attractive to fund.

The Authority and the FRA meet on a regular basis and discuss options that would move the project forward, and the FRA has indicated support for the project to advance geotechnical work to support high-speed rail ultimately reaching more populated regions of the state. They understand that advancing design work is required to evaluate the process of constructing tunnels. These studies are estimated to take three years to complete. Since the environmental documents for these areas have been fully completed, advanced design is slated as the next step of work in these areas and is ready to begin immediately. The delay of this prudent work consequently reflects greater costs and extended completion times for work on advancing design and construction beyond the M-B segment.

The Authority recognizes and agrees that M-B is the priority. However, the overall mission of the project is to provide a statewide system that reaches Californians in all parts of the state, and which will ultimately optimize ridership and potential private sector investment interest. If an appropriate-scale funding application seems unfeasible for M-B, the Authority cannot reasonably pass on the opportunity to apply for funding for scope that seems more attuned to the requirements and limitations presented in the Notice of Funding Opportunity (NOFO). This reasoning reflects the Authority's approach, and the Authority does not concur with the OIG's comment that the Authority's FSP request signifies a strategic shift.

Limited FSP Funding Opportunity

Considering the FSP NOFO on September 30, 2024, offered a grant ceiling of about \$1 billion that was limited to uncommitted advance appropriations for federal fiscal year 2025, the Authority's grant application had to be significantly reevaluated to consider how to make a request of appropriate scale and attractiveness to program priorities, within a national program that had already made large awards to the Southwest United States.

The Authority's decision to refrain from applying for Merced Extension scope and the remaining second track in its FSP funding application was due to denied applications for construction work that could not provide an entire independent-utility segment of new route or additional service. Of note, given constrained national funding programs, FRA granted an award to Caltrans and SJJPA to fund

the Madera Station, which was fundable within a national program and allows for service and interconnectivity along the fully funded portion of the M-B alignment, but not the Authority's application for the Merced station. The FRA also indicated that they wanted to move toward populated regions and connect with other HSR systems.

Although the FRA has indicated interest to pursue the Bakersfield extension, the amount of the unfunded scope exceeds the whole pot of funding under the FSP program. Requesting partial scope is ill advised from a technical/engineering perspective, akin to the impracticality of building half of a house. The Authority was also concerned about advancing a competitive application. The work in the Bakersfield extension is not ready for construction as the design work is still occurring. The Authority does not believe the civil work that does not directly extend service to the next station would be viewed as a top funding priority by the FRA, considering the inability to deliver construction milestones as quickly as competitors who have already completed their design work.

The Authority has prioritized the pursuit of funding opportunities for the M-B segment. To represent the Authority's commitment to the M-B segment, there is currently 93.4% (\$33.0B out of \$35.3B) of the Program Baseline Budget allocated to the segment. If the Authority were awarded the FY24 FSP grant for Gilroy to Madera and Bakersfield to Palmdale Geotech (\$670M), that allocation would only fall to 91.6% (\$32.976B out of \$35.993B). While the federal grant award goal was not achieved, the Authority is working on revised strategies to continue advancing and funding the project, the results of which will be provided no later than the 2026 Business Plan.

Review Result #4

Risks to Completing the CPs Could Delay the M-B Schedule

Authority Response

The Authority agrees with this review result as significant work remains that requires complex design-build work to be coordinated with third-parties, of which the Authority lacks control over the design development process to get to construction sooner, to complete in the next 24 months for the construction packages to achieve target completion dates. However, the Authority will continue to actively manage the construction work, third-party coordination and requirements, and monitor its risk to completion. The construction packages represent a combined 119 miles of civil infrastructure to be ready for high-speed rail scope activities, of which 22 miles are substantially completed. Overall, the Authority has 99.2% of all Right-Of-Way needed for the construction packages, 82% of all utility conflicts relocated with another 8% in progress now, 56% or 52 structures completed with another 33 underway of the 93 to complete, and 50% or 60 guideway miles completed with another 36 underway of the 119 miles to complete.

Over the next two years, additional areas of the remaining 97 miles will reach completion and the Authority is studying alternatives for segmental handover, as well as other schedule improvement efforts that could prove to provide additional schedule savings. Additional details on these efforts will be provided no later than the 2026 Business Plan.

Review Result #5

The Authority Has Not Implemented a Best Practice to Conduct a Risk Analysis of the M-B Schedule

OIG Recommendation

To help ensure the reliability of the M-B schedule and the Authority's ability to identify and manage risks to the schedule, the Authority should do the following:

1. Conduct a risk analysis of the M-B schedule and publish the results, including the Authority's confidence level in its target date for completing the M-B segment and how it determined the amount of contingency time added to establish an envelope for uncertainty and risk. If the Authority determines that it cannot conduct the analysis in time to publish its results as part of the 2025 Project Update Report, it should describe in that report the status of its efforts and the anticipated timeline for completing the analysis, which it should then publish upon completion.
2. Revise its project scheduling process to specify when a schedule risk analysis, as recommended by the GAO and the U.S. Department of Transportation, must be conducted and updated.

Authority Response

5 The Authority conducts qualitative risk assessments on a routine basis to drive mitigations across the project, as well as changes in strategies and policies, where applicable. While we agree that a formal Quantitative Schedule Risk Analysis (QSRA) would further highlight the most significant areas of risk, it would not likely provide any additional insight into new opportunities for mitigation, as the Authority is already well-informed as to the challenges driving these risks and is making efforts to mitigate them.

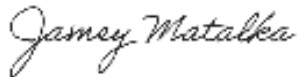
It is therefore not recommended we conduct a QSRA until the Authority first establishes a revised procurement strategy and updated project schedule. The results of which will provide a more comprehensive and significantly more informative result which can be then compared to the current risk practices. The Authority agrees to perform this analysis no later than the 2026 Business Plan.

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The Authority appreciates the OIG's observations, review results, and recommendations and will continue working in good faith with the OIG to advance this project.

If you have any questions, please contact Jamey Matalka, Chief Financial Officer, at jamey.matalka@hsr.ca.gov or 916-669-6626.

Sincerely,

A handwritten signature in cursive script that reads "Jamey Matalka".

Jamey Matalka
Chief Financial Officer

cc: Ian Choudri, Chief Executive Officer
Paula Rivera, Chief Auditor

OIG-HSR Comments on the Authority's Response

1. We appreciate the Authority's description of the new efforts it describes taking in order to expedite the project schedule. During this engagement, we worked with the scheduling and mitigation information the Authority provided to us and would have incorporated the described efforts into our review and report had the Authority informed us of them.
2. We did not determine that the Authority is unlikely to achieve its schedule envelope due simply to the one-year delay the project has experienced so far. Our assessment of the overall risk to the schedule envelope is also based on our review of delays to planned procurement activities, the funding gap that the segment faces, and ongoing risks to the CPs from third-party conflicts, each of which adds pressure to the Authority's critical path.

Our conclusion that achieving the current schedule envelope is unlikely is also based on when and for what activity the one-year delay occurred. As we describe in the report, the delay—representing one-third of schedule contingency—occurred in the first few years of the published M-B schedule and in the guideway construction phase—an activity with which the Authority has the most knowledge and experience. The Authority still has more than five years of remaining activities, many of which the Authority itself lacks prior experience performing, such as laying track and installing systems for high-speed rail operations. Thus, because we believe that productive solutions need to be actively sought, we do not believe it is premature to provide our conclusion and rationale regarding the unlikelihood of the existing schedule envelope for the segment as presently envisioned. The Authority describes in its response the efforts it is undertaking to pursue various solutions but stops short of agreeing with our report conclusions, which provide a clearer view of the magnitude of the underlying schedule problems the Authority's solutions are attempting to address.

3. We commend the Authority's efforts to work with the Administration and the Legislature to address risks to the project that involve third parties. In a forthcoming report to be published later this month, we will share our independent conclusions and recommendations related to these risks.
4. We wish the Authority success on its recent application for federal funding and note in our report that its planned purpose has clear value for the ultimate Phase 1 system. We also summarize the Authority's rationale and acknowledge the limited dollar amount in question relative to the existing funding gap. However, given the existing funding strategy published by the Authority as recently as the 2024 Business Plan, we remain concerned about what the Authority's decision not to apply for that funding for the purpose of completing the Merced-to-Bakersfield segment means for the prospect of keeping that segment on schedule.

5. We disagree that a risk analysis is unlikely to provide additional insight for the Authority. Although the Authority's current efforts can identify risks for individual activities in the project schedule, they cannot model the likely interactions between those activities and their likely impacts on the overall project schedule. We do agree that conducting a risk analysis while the Authority lacks certainty about the assumptions underlying its schedule would have limited value and acknowledge as much in our recommendations. However, given that the Authority has previously committed to a comprehensive schedule update in the 2025 Project Update Report, including additional risk analyses, we encourage it to complete the tasks it describes and conduct the recommended risk analysis as soon as practicable.



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