APPENDIX 3.18-A: RIMS II MODELING DETAILS
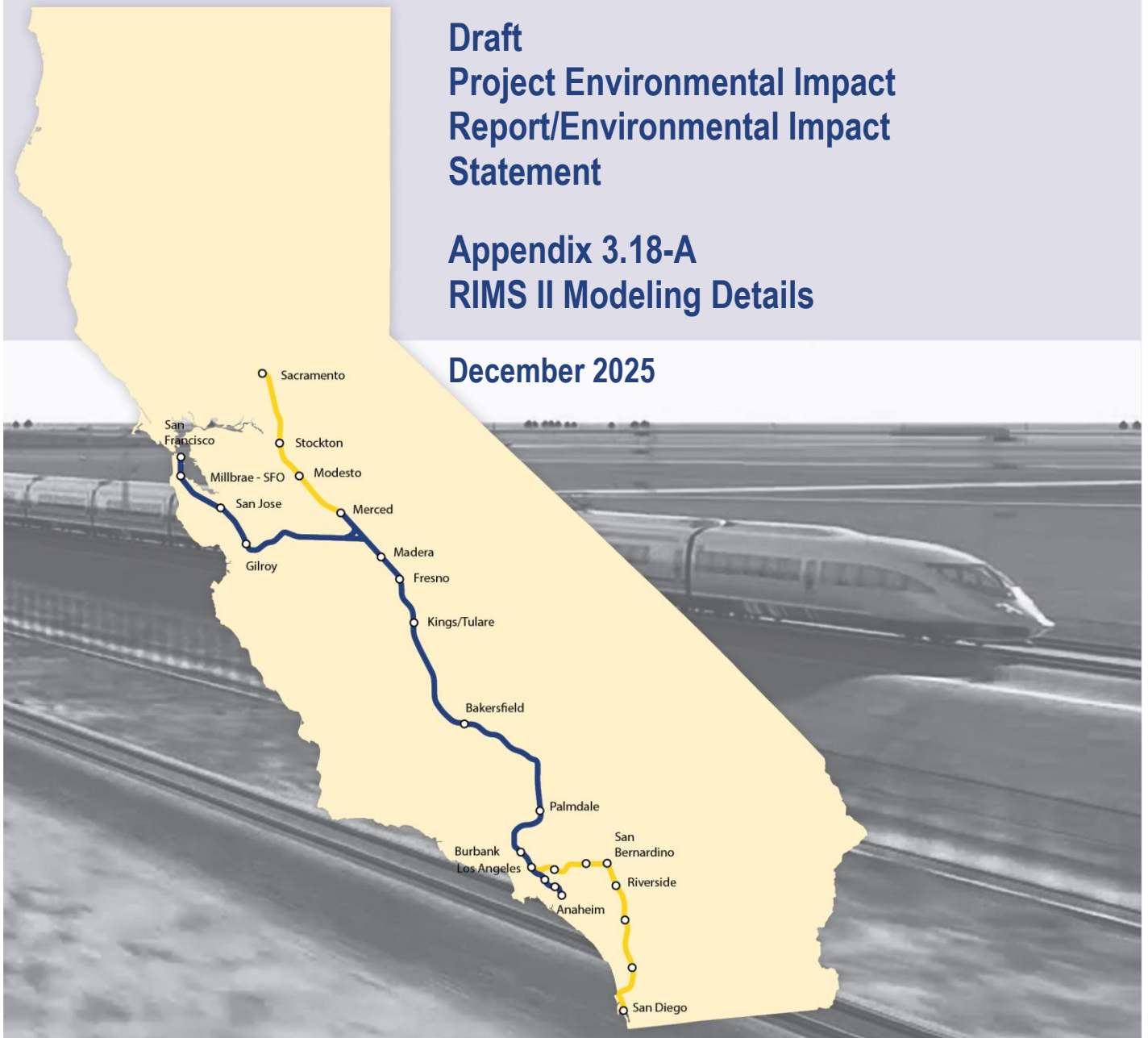
California High-Speed Rail Authority

Los Angeles to Anaheim Project Section

**Draft
Project Environmental Impact
Report/Environmental Impact
Statement**

**Appendix 3.18-A
RIMS II Modeling Details**

December 2025

CALIFORNIA
High-Speed Rail Authority

TABLE OF CONTENTS

Tables

ACRONYMS AND ABBREVIATIONS

Term	Definition
Authority	California High-Speed Rail Authority
BEA	Bureau of Economic Analysis
HSR	high-speed rail
I/O	Input-Output
O&M	operations and maintenance
RIMS	Regional Input-Output Modeling System
RSA	resource study area

APPENDIX 3.18-A: RIMS II MODELING DETAILS FOR THE LOS ANGELES TO ANAHEIM PROJECT SECTION

3.18-A.1   Introduction

This document presents the methodology, assumptions, and results of the short-term (i.e., construction) and long-term (i.e., operations and maintenance [O&M]) employment effects associated with the high-speed rail (HSR) project alternatives, Shared Passenger Track Alternative A and Shared Passenger Track Alternative B (the Shared Passenger Track Alternatives) for the Los Angeles to Anaheim Project Section. The findings presented in this analysis demonstrate that the initial construction phase and the O&M phase of the project would have positive employment effects in the resource study area (RSA), which includes Los Angeles and Orange Counties.

3.18-A.2   Analysis Framework and Approach

The employment effects reported for the project are informed by estimated project expenditures (e.g., labor, materials, and equipment) in the RSA, construction and O&M schedules, and regional economic data, including final demand multipliers, from the Bureau of Economic Analysis' (BEA) Regional Input-Output Modeling System (RIMS II). The approach applied to estimating short-term and long-term employment effects is consistent with industry standard practices as well as procedures outlined for regional growth analysis in *Project Environmental Impact Report/Environmental Impact Statement Environmental Methodology Guidelines*, Versions 5.9 and 5.11 as amended (Authority 2017a, 2022).

3.18-A.2.1 Input-Output Analysis Overview

Input-Output (I/O) analysis for the project is based on the concept that industries in a geographic region are interdependent and thus the total contribution of any one establishment's activity is larger than its individual (direct) output or employment. Consequently, an establishment's economic activity has a multiplier effect that generates successive rounds of spending and output in other economic sectors in a particular region. For example, construction firms purchase goods from producers, who in turn purchase raw materials from suppliers. Therefore, an increase or decrease in the demand for construction supplies would stimulate an increase or decrease in output and employment in interdependent secondary industries.

Regional economic impact analysis and I/O models provide a means to quantify economic effects stemming from a particular industry or initial economic activity. I/O models rely on economic multipliers that mathematically represent the relationship between the initial change in one sector of the economy and the effect of that change on employment, income, economic output, and value added in other regional industries specific to the defined region. These economic data provide a quantitative estimate of the magnitude of shifts in jobs and revenues in that region's economy (BEA 2017, 2019).

The analysis begins with an estimate of the initial economic input associated with the project's expenditures on capital investment and operations in the economy of the RSA. These initial inputs are referred to as the *direct effects*. Next, the I/O model quantifies the impacts associated with the multiplier effects that would result from that initial economic input. Multiplier effects include indirect or induced effects. Indirect effects represent economic impacts on suppliers, while induced effects represent economic impacts on household income and spending. In this report, direct, indirect, and induced effects are defined as follows:

- **Direct Effect:** The economic value of the initial input of spending into the economy made by the California High-Speed Rail Authority (Authority)

- **Indirect Effect:** The economic value of "upstream" industry-to-industry transactions that supply inputs to the production of goods and services consumed by the Authority

- **Induced Effect:** The economic value of labor income that recirculates in the economy as a result of the initial expenditures made by the Authority

- **Total Impact:** The sum of the direct, indirect, and induced effects; measures the overall impact of project activities within the RSA

This analysis measures economic significance using common economic metrics, including output, employment, employee compensation, and job-years:

- **Employment:** Equivalent to jobs, a headcount that includes part-time and full-time workers

- **Job-Years:** A combined measure of total jobs and the length of time of those jobs. One job-year is defined as equivalent to one job held by one person over 1 year's duration. As an example, one job held by one worker for 3 years would constitute 3 job-years; three jobs held by three workers for 1 year's duration would also constitute 3 job-years.

It should be noted that a portion of the impacts reported in this analysis may not be entirely net new. For example, it is plausible that the State of California would have allocated a portion of its HSR budget on other projects elsewhere that would have generated economic activity in the state if the HSR project did not occur. Therefore, the absence of the HSR project could have other economic impacts if funding were reallocated for other transportation projects, and the economic impact estimates in this section represent the total impacts of these investments and do not account for the opportunity costs of this funding.

3.18-A.2.2 RIMS II Multipliers

The short-term construction and long-term O&M jobs created in the employment effects RSA were calculated using RIMS II multipliers published by the BEA (BEA 2019). Multipliers are published in a tabular format corresponding to the North American Industry Classification System for both industry aggregations and detailed industries, as defined by the BEA.

For this analysis, Type II annual regional economic final-demand multipliers were used to estimate direct, indirect, and induced job creation. These multipliers relate to the total number of jobs created per $1 million change in final demand (BEA 2019) and account for induced impacts associated with the spending of earnings by labor (households) within a region; Type I multipliers only account for direct and indirect impacts. *Direct employment* refers to the jobs created to build the project and primarily involves jobs created in the construction sector. *Indirect employment* refers to the jobs created in existing businesses in the RSA (e.g., material and equipment suppliers) that supply goods and services to the construction of the project. *Induced employment* refers to jobs created in new or existing businesses (e.g., retail stores, gas stations, banks, restaurants, service companies) that supply goods and services to workers and their families.

3.18-A.3   Project Impacts

3.18-A.3.1 Summary of Findings

The findings presented in this analysis demonstrate that the initial construction phase and the O&M phase of the project would have positive employment effects in the RSA. Capital cost estimates are provided in a range, because there is additional construction activity that may occur related to the Norwalk/Santa Fe Springs and Fullerton HSR Station Options.

As further discussed in Section 3.18-A.3.2.1, Construction Cost Estimates, construction-related expenditures in the RSA on labor and materials were estimated at approximately $3.843 billion in 2023 constant dollars (excluding HSR station options at Fullerton and Norwalk/Santa Fe Springs); costs would increase to approximately $4.054 billion with the Fullerton HSR Station Option and $3.943 billion with Norwalk/Santa Fe Springs HSR Station Option. Economic impact estimates are presented for the project without these HSR station options in the text, with the economic impact estimates of the project inclusive of these HSR station options in parenthesis leading with the Fullerton HSR Station Option. These expenditures were estimated to support 31,950 annual job-years[1] (33,690 with the Fullerton and 32,790 with the Norwalk/Santa Fe Springs HSR Station Options) from the start of construction in 2031 to the end of construction in 2037, accounting for

---

[1] In the RIMS II model, 1 job-year is equivalent to one job held by one person over 1 year's duration. This metric can account for both full-time and part-time jobs.

15,300 direct job-years (16,120 with the Fullerton and 15,700 with the Norwalk/Santa Fe Springs HSR Station Options) and 16,650 indirect and induced job-years (17,570 with the Fullerton and 17,090 with the Norwalk/Santa Fe Springs HSR Station Options). During the peak years of construction (2035 and 2036), project-related expenditures in the RSA were estimated to support 11,660 annual job-years (12,280 with the Fullerton and 11,960 with the Norwalk/Santa Fe Springs HSR Station Options), consisting of 5,580 direct jobs (5,880 with the Fullerton and 5,720 with the Norwalk/Santa Fe Springs HSR Station Options) and 6,080 indirect and induced jobs (6,400 with the Fullerton and 6,240 with the Norwalk/Santa Fe Springs HSR Station Options).

Annual O&M-related expenditures in the RSA on labor and materials were estimated at approximately $69 million in 2024 constant dollars, as presented in Section 3.18-A.3.3.1, Operation and Maintenance Cost Estimates. These expenditures were estimated to support a total of 680 job-years on an annual basis once operations are stabilized in 2040, accounting for 210 direct jobs and 470 indirect and induced jobs.[2]

3.18-A.3.1.1   Employment Effects Resource Study Area

For the Shared Passenger Track Alternatives, the RSA for employment effects is defined as the two-county area that incorporates Los Angeles County and Orange County. Regional growth associated with the project is expected to be largely driven by increased employment opportunities resulting from construction and O&M of the project.

3.18-A.3.1.2   RIMS II Multipliers

As described in Section 3.18-A.2.2, RIMS II Multipliers, the multipliers for this analysis are based on 2007 national I/O data and 2013 regional data and are specific to Los Angeles County and Orange County. For consistency with prior estimates, the 2015 RIMS multipliers were used, and costs were adjusted so that multipliers and inputs were using the same dollar year. Outputs were then adjusted to 2023 dollars.

For this analysis, Type II annual regional economic final-demand multipliers were used to estimate direct, indirect, and induced job creation. These multipliers relate the total number of jobs created per $1 million change in final demand (BEA 2013) and account for induced impacts associated with the spending of earnings by labor (households) within a region; Type I multipliers only account for direct and indirect impacts.

The most applicable multipliers for the construction and O&M phases of the project are Industry Aggregation #7: Construction (NAICS Industry Sector 23: Construction), and Industry Aggregation #33: Rail Transportation (NAICS Industry Sector 482: Rail Transportation), respectively. These industry aggregation multipliers are presented in Table 3.18-A-1 and Table 3.18-A-2.

Table 3.18-A-1 Construction Total Multipliers for Output, Earnings, Employment, and Value Added by Industry Aggregation (Type II)[1]

| Industry Aggregation | Multiplier | | | | | |
| | Final Demand | | | | Direct Effect | |
	Output[2] (Dollars)	Earnings[3] (Dollars)	Employment[4] (Jobs)	Value-Added[5] (Dollars)	Earnings[6] (Dollars)	Employment[7] (Jobs)
7. Construction	2.0173	0.5913	12.1929	1.103	1.8481	2.0879

Source: BEA 2015

[1] Regional Input-Output Modeling System II multipliers for the two-county resource study area were used in the analysis of employment gains.

[2] Represents the total dollar change in output that occurs in all industries for each additional dollar of output delivered to final demand by the industry corresponding to the entry.

[3] Represents the total dollar change in earnings of households employed by all industries for each additional dollar of output delivered to final demand by the industry corresponding to the entry.

---

[2] Employment impacts are rounded up to the nearest 10 jobs. Totals may not sum because of rounding.

[4] Represents the total change in number of jobs that occurs in all industries for each additional 1 million dollars of output delivered to final demand by the industry corresponding to the entry. Because the employment multipliers are based on 2007 data, the output delivered to final demand should be in 2007 dollars.

[5] Represents the total dollar change in value added that occurs in all industries for each additional dollar of output delivered to final demand by the industry corresponding to the entry.

[6] Represents the total dollar change in earnings of households employed by all industries for each additional dollar of earnings paid directly to households employed by the industry corresponding to the entry.

[7] Represents the total change in number of jobs in all industries for each additional job in the industry corresponding to the entry.

Table 3.18-A-2 Operations and Maintenance Total Multipliers for Output, Earnings, Employment, and Value Added by Industry Aggregation (Type II)[1]

Industry Aggregation	Multiplier					
	Final Demand				Direct Effect	
	Output[2] (Dollars)	Earnings[3] (Dollars)	Employment[4] (Jobs)	Value-Added[5] (Dollars)	Earnings[6] (Dollars)	Employment[7] (Jobs)
33. Rail Transportation	1.9483	0.4549	7.4426	1.0358	2.1927	3.2616

Source: BEA 2015

[1] Regional Input-Output Modeling System II multipliers for the two-county resource study area were used in the analysis of employment gains.

[2] Represents the total dollar change in output that occurs in all industries for each additional dollar of output delivered to final demand by the industry corresponding to the entry.

[3] Represents the total dollar change in earnings of households employed by all industries for each additional dollar of output delivered to final demand by the industry corresponding to the entry.

[4] Represents the total change in number of jobs that occurs in all industries for each additional 1 million dollars of output delivered to final demand by the industry corresponding to the entry. Because the employment multipliers are based on 2007 data, the output delivered to final demand should be in 2007 dollars.

[5] Represents the total dollar change in value added that occurs in all industries for each additional dollar of output delivered to final demand by the industry corresponding to the entry.

[6] Represents the total dollar change in earnings of households employed by all industries for each additional dollar of earnings paid directly to households employed by the industry corresponding to the entry.

[7] Represents the total change in number of jobs in all industries for each additional job in the industry corresponding to the entry.

3.18-A.3.2 Estimation of Short-Term Employment Effects from Construction

3.18-A.3.2.1   Construction Cost Estimates

Project-related costs that account for expenditures on labor and materials in the RSA were estimated and applied to the RIMS II employment multipliers. Additionally, as noted above, the RIMS II multipliers are based on regional data from 2013. To apply these multipliers, construction costs (estimated in 2023 dollars) were deflated to 2007 constant dollars. Data from the Bureau of Labor Statistics' Consumer Price Index All Urban Consumers (Current Series) (BLS 2025) were used to adjust construction expenditures to 2007 constant dollars. A Consumer Price Index deflation factor of 0.68 was applied to construction costs (2023 dollars). To convert from 2007 to 2023 dollars, a Consumer Price Index deflator of 1.46 was used.

Construction costs incorporated into the employment effects analysis are presented in Table 3.18-A-3, corresponding to the standard cost categories outlined in the *Preliminary Engineering for Project Definition Record Set Capital Cost Estimate Report* (Authority 2025). Monies that are expected to be expended outside of the RSA were not included, because these funds are not anticipated to generate new jobs in the RSA. Cost items excluded include right-of-way costs associated with the purchase or lease of real estate and the relocation of existing households and businesses, off-site professional service costs, and unallocated contingency and finance costs as detailed in the *Project Environmental Impact Report/Environmental Impact Statement Environmental Methodology Guidelines*, Version 5.11 as amended (Authority 2022) and the *Regional Growth Analysis: Calculating Construction Job Impacts* memorandum (Authority 2017b).

Table 3.18-A-3 Standard Construction Cost Categories (Millions of $)

Standard Cost Categories	2023 Dollars (in Millions)	2007 Dollars[1] (in Millions)
10 Track Structures and Track	$1,025	$698
20 Stations, Terminals, Intermodal	$138 ($349 with Fullerton HSR Station Option and $239 with Norwalk/Santa Fe Springs HSR Station Option improvements)	$93 ($238 with Fullerton HSR Station Option and $163 with Norwalk/Santa Fe Springs HSR Station Option improvements)
30 Support Facilities: Yards, Shops, Administrative Buildings	$1,075	$732
40 Sitework, Right-of-Way, Land, Existing Conditions	$1,230	$837
50 Communications and Signaling	$375	$255
60 Right-of-Way Acquisition	Not included because this is a transfer payment and does not generate any local economic activity	Not included because this is a transfer payment and does not generate any local economic activity
70 Vehicles	Considered a systemwide cost and not included as part of the Shared Passenger Track Alternatives	Considered a systemwide cost and not included as part of the Shared Passenger Track Alternatives
80 Professional Services	Not included in construction job impact analysis	Not included in construction job impact analysis
90 Unallocated Contingency	Not included because it is uncertain if or how funds will be expended	Not included because it is uncertain if or how funds will be expended
100 Finance Charges	Estimate to be developed prior to project construction	Estimate to be developed prior to project construction.\
Total	**$3,843[2] cost included in economic impact analysis ($4,054 with Fullerton HSR Station Option and $3,944 with Norwalk/Santa Fe Springs HSR Station Option Improvements)**	**$2,615 cost included in economic impact analysis ($2,760 with Fullerton HSR Station Option and $2,685 with Norwalk/Santa Fe Springs HSR Station Option Improvements)**

Source: Authority 2025

[1] Consumer Price Index deflation factor of 0.68 was applied to convert 2023 dollars to 2007 dollars. The deflated estimates were developed so that construction costs categories would be in consistent dollar years for application to the Regional Input-Output Modeling System II regional accounting data.

[2] Construction costs include early action projects as defined in Chapter 2, Section 2.6.5. The Authority estimates that early action projects comprise approximately 40 to 45 percent of the total construction costs. The Authority anticipates the funding for early action projects would come in part and potentially in whole from other agencies and entities. Therefore, the construction spending estimate reflects combined spending by the Authority and others.

Authority = California High-Speed Rail Authority; HSR = high-speed rail

3.18-A.3.2.2   Direct, Indirect, and Induced Short-Term Employment Effects

Project construction is expected to occur over 7 years. Construction is assumed to commence in 2031 and end in 2037. Short-term employment impacts are expressed as annual job-years for each year of construction. The spread of construction costs was estimated as 8 percent (Year 1/2031), 10 percent (Year 2/2032), 15 percent (Year 3/2033), 15 percent (Year 4/2034), 18 percent (Year 5/2035), 18 percent (Year 6/2036), and 16 percent (Year 7/2037).[3]

---

[3] This was the assumed construction period when the RIMS II job effects analysis was undertaken. It is possible that the construction start date could shift into the future. The magnitude of job effects is not expected to change substantially in the event that construction starts at a later date.

Project construction was estimated to result in 31,950 direct, indirect, and induced job-years in the two-county RSA, as presented in Table 3.18-A-4. Direct employment effects were estimated at 15,300 job-years while the additional indirect and induced employment effects were estimated at 16,650 job-years. During the peak period of construction (2035 and 2036), the project is estimated to support 5,580 direct and 6,080 indirect and induced jobs, for a total of 11,660 jobs during the two peak construction years. Estimates inclusive of the two HSR station options under consideration (in Norwalk/Santa Fe Springs and Fullerton) are considered separately.

Table 3.18-A-4 Employment Impacts During Construction[1] (in Annual Job-Years[2])

Employment[3]	2031	2032	2033	2034	2035	2036	2037	Total
Direct	1,060	1,750	2,400	2,400	2,790	2,790	2,110	15,300
Indirect and induced	1,160	1,900	2,610	2,610	3,040	3,040	2,290	16,650
Total	**2,220**	**3,650**	**5,010**	**5,010**	**5,830**	**5,830**	**4,400**	**31,950**
Including Norwalk/Santa Fe Springs HSR Station Option								
Direct	1,090	1,790	2,470	2,470	2,860	2,860	2,160	15,700
Indirect and induced	1,190	1,950	2,680	2,680	3,120	3,120	2,350	17,090
Total	**2,280**	**3,740**	**5,150**	**5,150**	**5,980**	**5,980**	**4,510**	**32,790**
Including Fullerton HSR Station Option								
Direct	1,120	1,840	2,530	2,530	2,940	2,940	2,220	16,120
Indirect and induced	1,220	2,010	2,760	2,760	3,200	3,200	2,420	17,570
Total	**2,340**	**3,850**	**5,290**	**5,290**	**6,140**	**6,140**	**4,640**	**33,690**

Source: BEA 2015

[1] Regional Input-Output Modeling System II multipliers for the two-county resource study area were used in the analysis of employment gains.

[2] In the Regional Input-Output Modeling System II model, 1 annual job-year is equivalent to one job held by one person over 1 year's duration. This metric can account for both full-time and part-time jobs.

[3] Employment impacts are rounded up to the nearest 10 jobs. Totals may not sum because of rounding. Job estimates were scaled to reflect an estimate for savings that could be reasonably accrued from standard value engineering review. The savings estimate is based on actual Authority engineering design review of the Los Angeles to Anaheim Project Section. More detail on the type of refinements considered as value engineering is found in the Preliminary Engineering for Project Definition General Notes.

Authority = California High-Speed Rail Authority; HSR = high-speed rail

3.18-A.3.3   Estimation of Long-Term Employment Effects from Operations and Maintenance

3.18-A.3.3.1   *Operation and Maintenance Cost Estimates*

Similar to construction cost estimates detailed in Section 3.18-A.3.2, Estimation of Short-Term Employment Effects from Construction, project-related O&M costs in the RSA were estimated and applied to the RIMS II employment multipliers, which are based on regional data from 2013. To apply these multipliers, O&M costs (estimated in 2015 dollars) were deflated to 2007 constant dollars using data from the Bureau of Labor Statistics' Consumer Price Index All Urban Consumers (Current Series) (BLS 2025). A Consumer Price Index deflation factor of 0.875 was applied to O&M costs (2015 dollars) to deflate to 2007 dollars. A Consumer Price Index deflator of 1.51 was then used to convert O&M costs from 2007 to 2024 dollars.[4]

O&M costs incorporated into the analysis are presented in Table 3.18-A-5, corresponding to relevant cost categories outlined in the *Operations and Maintenance Cost Model Documentation, 2024 Business Plan* (Authority 2024). Monies that are expected to be expended outside of the RSA are not included, because these funds are not anticipated to generate substantial new jobs in the RSA. Cost items excluded include off-site services for dispatching and control as well as insurance.

Table 3.18-A-5 Standard Operations and Maintenance Cost Categories (Millions of $)

Standard Cost Categories	2024 Dollars (in Millions)	2015 Dollars (in Millions)	2007 Dollars[1] (in Millions)
Train operations	$23	$18	$15
Dispatching	$2	$2	$2
Maintenance of equipment	$11	$8	$7
Maintenance of infrastructure	$10	$8	$7
Station operations and train and station cleaning	$5	$4	$4
Commercial	$7	$6	$5
General administration and executive management	$4	$3	$3
Insurance	$4	$3	$3
Unallocated contingency	$3	$2	$2
Total	**$69**	**$54**	**$47**

Source: Authority 2024

[1] Consumer Price Index deflation factor of 0.875 was applied to operations and maintenance costs categories to allow for application to the Regional Input-Output Modeling System II regional accounting data.

3.18-A.3.3.2   *Direct, Indirect, and Induced Long-Term Employment Effects*

Project construction is scheduled to be complete in 2037, and full O&M staffing levels are expected to be reached in 2040 and remain constant in future operating years.[5] Ongoing O&M is

---

[4] Construction cost estimates are estimated by converting to 2023 dollars, because 2023 capital costs are the most recent costs the Authority prepared for the Los Angeles to Anaheim Project Section; however, O&M costs are escalated to 2024 dollars, which was when the Draft Environmental Impact Report/Environmental Impact Statement was prepared.

[5] Full O&M staffing starting in 2040 is premised on the end of the construction period when the RIMS II job effects analysis was undertaken. It is possible that the construction start date could shift into the future, which would result in O&M activities being pushed further out. The magnitude of O&M job effects is not expected to change substantially in the event that construction starts at a later date.

estimated to result in 680 direct, indirect, and induced job-years annually in the two-county RSA, as presented in Table 3.18-A-6. Direct employment effects were estimated at 210 annual job-years while the additional indirect and induced employment effects were estimated at 470 annual job-years.

Table 3.18-A-6 Employment Impacts from Operations and Maintenance[1] (in Annual Job-Years[2])

Employment	Direct	Indirect and Induced	Total[3]
Jobs	210	470	680

Source: BEA 2015

[1] Regional Input-Output Modeling System II multipliers for the two-county resource study area were used in the analysis of employment gains.
[2] In the Regional Input-Output Modeling System II model, 1 annual job-year is equivalent to one job held by one person over 1 year's duration. This metric can account for both full-time and part-time jobs.
[3] Employment impacts are rounded up to the nearest 10 jobs. Totals may not sum because of rounding.

3.18-A.3.4 Additional Analysis Considerations

3.18-A.3.4.1   *Disaggregating Direct, Indirect, and Induced Effects with RIMS II Multipliers*

The RIMS II total multipliers presented in Table 3.18-A-1 and Table 3.18-A-2 can be used to calculate the number of direct and indirect and induced jobs created as a result of additional industry demand. For the purpose of this analysis, the following calculation approach was taken, using the construction industry aggregation multipliers presented in Table 3.18-A-1 as an example. The construction industry final-demand employment multiplier represents the total change in the number of jobs in all industries for each $1 million of output spent in the construction industry, while the direct effect multiplier represents the total change in the number of jobs in all industries for each additional job created in the construction industry. In this analysis, the following steps were taken to compute direct and indirect and induced employment effects:

1. Number of Direct Jobs per $1 million of Final Demand = Final Demand Employment Multiplier/Direct Effect Employment Multiplier

    Direct Jobs per $1 million of Final Demand in the Construction Industry = 12.1929/2.0879 = **5.8398**

2. Number of Indirect and Induced Jobs per $1 million of Final Demand = Final Demand Employment Multiplier – Number of Direct Jobs per $1 million of Final Demand

    Indirect and Induced Jobs per $1 million of Final Demand in the Construction Industry = 12.1929 – 5.8398 = **6.3531**

3.18-A.4   References

Bureau of Economic Analysis (BEA). 2013. *RIMS II: An Essential Tool for Regional Developers and Planners.* U.S. Department of Commerce, December 2013.

———. 2015. Regional Input-Output Modeling System multipliers. U.S. Department of Commerce.

———. 2017. *The Use of Commodities by Industry.* https://www.bea.gov/itable/input-output (accessed June 2020).

———. 2019. Regional Input-Output Modeling System (RIMS II) Multipliers: Los Angeles-Orange County (Type II). https://apps.bea.gov/regional/rims/rimsii/ (accessed October 2019).

California High-Speed Rail Authority (Authority). 2017a. *Project Environmental Impact Report/Environmental Impact Statement Environmental Methodology Guidelines*, Version 5.9 as amended. April 2017.

———. 2017b. *Regional Growth Analysis: Calculating Construction Job Impacts*. March 28, 2017.

———. 2022. *Project Environmental Impact Report/Environmental Impact Statement Environmental Methodology Guidelines*, Version 5.11 as amended.

———. 2024. *Operations and Maintenance Cost Model Documentation, 2024 Business Plan*: Technical Supporting Document.

———. 2025. *Preliminary Engineering for Project Definition Record Set Capital Cost Estimate Report.* December.

U.S. Bureau of Labor Statistics (BLS). 2025. Consumer Price Index All Urban Consumers (Current Series).