

ATTACHMENT A

**2017
CALIFORNIA
FREIGHT INVESTMENT PROGRAM
FINAL GUIDELINES**

May 17, 2017

California Transportation Commission



**CALIFORNIA TRANSPORTATION COMMISSION
2017
CALIFORNIA FREIGHT INVESTMENT PROGRAM GUIDELINES**

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I. Introduction

1. Background

The Fixing America's Surface Transportation (FAST) Act was signed into law on December 4, 2015 and established a new freight fund under the National Highway Freight Program for a five-year period. The National Highway Freight Program provides approximately \$582.571 million of apportionments to California over the five-year period of the FAST Act.

On June 27, 2016 the Governor signed Senate Bill 826 (Leno, 2016), which directs the California Transportation Commission (Commission) to allocate the federal National Highway Freight Program funds to corridor-based projects selected by local agencies and the state.

In addition to the National Highway Freight Program funding, Assembly Bill 133 (Weber, 2016) provided an \$11 million Traffic Congestion Relief Fund loan repayment to be used for trade corridor improvements.

The Commission is responsible for programming and allocating these state and federal funds which will be administered through the California Freight Investment Program.

The California Freight Investment Program guidelines build from the 2007 Trade Corridors Improvement Fund guidelines, which provided \$2 billion for freight-related infrastructure improvements along corridors with a high volume of freight movement. The Trade Corridors Improvement Fund was largely considered a successful program, as managed by the California Transportation Commission.

Freight planning and policy has changed since the Proposition 1B Trade Corridors Improvement Fund guidelines were developed in 2007 with the approval of the 2014 California Freight Mobility Plan and the 2015 California Sustainable Freight Action Plan, which have helped define California's approach to freight planning and policy over the last decade. The California Freight Investment Program guidelines reflects the intent of these plans and policies along with the National Highway Freight Program Goals.

These guidelines describe the policy, standards, criteria, and procedures for the development, adoption and management of the California Freight Investment Program. The guidelines were developed in consultation with stakeholders representing state, regional, and local government entities, advocacy groups and private industry. As these guidelines were developed, there were a number of bills being considered in the state legislature to fund investments in trade corridors. It is the Commission's intent that these guidelines be structured in such a way that they can guide the programming and allocating of the proposed funding should it be realized.

The Commission may amend these guidelines after first giving notice of the proposed amendments. The Commission will make a reasonable effort to amend the guidelines prior to a call for projects or may extend the deadline for project submission in order to comply with the amended guidelines.

2. Program Objectives

The objective of the California Freight Investment Program is to fund projects which improve the efficient movement of freight on designated corridors throughout the state and to support the goals outlined in the National Highway Freight Program, the California Freight Mobility Plan, and the guiding principles in the California Sustainable Freight Action Plan.

National Highway Freight Program Goals	California Freight Mobility Plan Goals	California Sustainable Freight Action Plan Guiding Principles
<i>Invest in infrastructure and operational improvements that strengthen economic competitiveness, reduce congestion, reduce cost of freight transportation, improve reliability, and increase productivity.</i>	<i>Improve the contribution of the California freight transportation system to economic efficiency, productivity, and competitiveness.</i>	<i>Support local and regional efforts to improve trade facilities and corridors that achieve regional environmental, public health, transportation, and economic objectives consistent with statewide policy goals.</i>
<i>Improve safety, security, efficiency and resiliency of freight transportation in rural and urban areas.</i>	<i>Improve the safety, security, and resilience of the freight transportation system.</i>	<i>Improve the state-of-good-repair of the multi-modal freight transportation system.</i>
<i>Improve the state of good repair of the National Highway Freight Network.</i>	<i>Improve the state of good repair of the freight transportation system.</i>	<i>Grow the number of well-paying employment opportunities in the freight sector.</i>
<i>Use innovation and advanced technology to improve National Highway Freight Network safety, efficiency and reliability.</i>	<i>Use innovative technology and practices to operate, maintain, and optimize the efficiency of the freight transportation system while reducing its environmental and community impacts.</i>	<i>Apply innovative and green technology, along with accompanying infrastructure and applicable practices, to optimize the efficiency of the freight transportation system.</i>
<i>Improve the efficiency and productivity of the National Highway Freight Network.</i>	<i>Reduce costs to users by minimizing congestion on the freight transportation system.</i>	<i>Grow the economic competitiveness of California's freight sector.</i>
<i>Reduce environmental impacts of freight movement on the National Highway Freight Network.</i>	<i>Environmental Stewardship – Avoid and reduce adverse environmental and community impacts of the freight transportation system.</i>	<i>Reduce or eliminate health, safety, and quality of life impacts on communities that are disproportionately affected by operations at major freight corridors and facilities. This includes reducing toxic hot spots from freight sources and facilities, and ensuring continued net</i>

		<i>reductions in regional freight pollution.</i>
National Highway Freight Program Goals	California Freight Mobility Plan Goals	California Sustainable Freight Action Plan Guiding Principles
<i>Improve State flexibility to support multi-State corridor planning and address highway freight connectivity.</i>		<i>Invest strategically to improve travel time reliability and to achieve sustainable congestion reduction on key bottlenecks on primary trade corridors.</i>
		<i>Reduce freight-related deaths and injuries, and security threats.</i>
		<i>Improve system resilience by addressing infrastructure vulnerabilities associated with expected climate change impacts and natural disasters, which may include exploring opportunities to utilize natural systems to improve water quality, reduce ecosystem damage, prevent flooding, and create a cooling effect.</i>
		<i>Site freight projects to avoid greenfield development by enhancing existing freight infrastructure or targeting infill development near compatible land uses.</i>

3. Program Schedule

The following schedule lists the major milestones for the development and adoption of the 2017 California Freight Investment Program:

Draft guidelines presented to Commission	March 16-17, 2017
Commission adoption of guidelines	May 17, 2017
Call for projects	May 17, 2017
Project applications due to Commission (postmark date)	July 31, 2017
Release staff recommendations	October 3, 2017
Commission adopts program	October 18, 2017

II. Funding

4. Source

The California Freight Investment Program will receive approximately \$547.2 million of federal and state funds as follows:

- ~~\$545.2~~ 536.5 million from the federal National Highway Freight Program over a five year period beginning with the 2015-16 federal fiscal year through the 2019-20 federal fiscal year. This amount is governed by the obligation authority set by Congress in its annual Federal Appropriation Act.
- \$11 million of state funds appropriated in the Budget Act of 2015 as amended by Assembly Bill 133 (Chapter 2, Statutes of 2016, item 2660-013-0001, provision 1[b]).

It is the intent of the Commission to adopt a multi-year program of projects covering state fiscal years 2017-18 through 2019-20.

5. Distribution

The Commission supports a corridor-based programming approach to the California Freight Investment Program, which recognizes and complements the goods movement planning work already done within the major trade corridors. The Commission also recognizes and supports the key role that the state and regions have in project identification.

After consulting the California Freight Mobility Plan and conducting a number of stakeholder workshops, the Commission has determined that the following corridors are eligible for funding under this program:

- Bay Area (Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma counties)
- Central Valley (El Dorado, Fresno, Kern, Kings, Madera, Merced, Placer, Sacramento, San Joaquin, Stanislaus, Sutter, Tulare, and Yolo counties)
- Central Coast (Monterey, San Benito, San Luis Obispo, Santa Barbara, and Santa Cruz counties)
- Los Angeles/Inland Empire (Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties)
- San Diego/Border (Imperial and San Diego counties)

The Commission acknowledges that other regions may have goods movement infrastructure needs along corridors that have a high volume of freight movement that are eligible for funding. The Commission anticipates those regions will nominate their projects for consideration.

To promote a corridor-based approach while also recognizing the key role of the state in prioritizing interregional freight projects, the Commission has developed the following targets for projects nominated by the California Department of Transportation (Caltrans) and for the geographic programming of projects nominated by other agencies.

The target for Caltrans' nomination of statewide projects is based on the statewide priorities identified by the Administration and accounts for 40% of the identified program funding. While this percentage is less than the 60/40 state/local split typical of federal transportation funds as specified later in these guidelines, priority will be provided for projects jointly nominated and jointly funded by the state and local agencies. ~~The Commission expects Caltrans' nominations to provide for statewide geographic balance.~~

In considering geographic balance for the overall program, the Commission may program below the corridor-based targets in a region or regions to account for projects programmed from the statewide target.

~~The targets for the corridors are based on the identified costs of projects located on the Tier 1 network and total projects set forth in the California Freight Mobility Plan (excluding those shown as under construction and fully funded). The California Freight Mobility Plan Tier 1 network is comprised of routes having the highest truck volumes or provides essential connectivity to and between key freight gateways and regions.~~

The targets for the corridors are refined percentages based on the Proposition 1B Trade Corridors Improvement Fund percentages. These refined percentages will be used for the initial programming of California Freight Investment Program funds. The Commission intends to utilize the tiered Freight Project List in the California Freight Mobility Plan to identify a low to high programming range for each identified corridor for the distribution of funds in future programming cycles. The Commission expects Caltrans to maintain an updated Freight Project List and submit to the Commission annually.

The targets are neither minimums, maximums, nor guarantees. They do not constrain what any agency may propose or what the Commission may approve for programming and allocation within any particular corridor.

Programming Targets		
Statewide Target		
Caltrans	222,480,000	
Regional Corridor Targets		
	Low	High
Bay Area/Central Valley	—63,000,000	—90,000,000
Central Coast	————	—7,000,000
Los Angeles/Inland Empire	—164,000,000	—190,000,000
San Diego/Border	—53,000,000	—90,000,000
Other	————	—10,000,000

Programming Targets		
Statewide Target		
Caltrans		219,000,000
Regional Corridor Targets		
	Percentage	Target
Bay Area/Central Valley	27%	89,000,000
Central Coast	2%	7,000,000
Los Angeles/Inland Empire	56%	184,000,000
San Diego/Border	13%	43,000,000
Other	2%	7,000,000

Savings at contract award and project completion must be returned proportionally to the California Freight Investment Program. California Freight Investment Program funding is not available to fund cost increases. Caltrans is encouraged to program a portion of State Transportation Improvement Program or State Highway Operation and Protection Program funds to pay for potential cost increases on their nominated projects. For jointly nominated projects, the Commission expects cost increases will be funded based on agreements between the agencies nominating the project.

6. Matching Requirements

Projects funded from the California Freight Investment Program will require at least a 30% match of local, state, or private funds except for projects nominated by Caltrans. For projects nominated by Caltrans, no match will be required. However, as noted in Section 11, the Commission will consider the leveraging and coordination of other funds when evaluating projects. For projects jointly nominated by Caltrans and another agency, matching funds must account for 30% of the local agency's share of the project costs.

The matching funds must be expended concurrently and proportionally to the California Freight Investment Program funds. Costs incurred prior to allocation will not be counted towards match.

The applicant must provide a project funding plan through construction that demonstrates the supplemental funding in the plan (local, federal, state, private sources) is reasonably expected to be available and sufficient to complete the project.

The investment of public funding must be tied to public benefits as demonstrated through a public/private benefit cost analysis. California Freight Investment Program funds should not supplant other committed funds and revenues otherwise available through existing private sector revenue streams.

7. Reimbursement

The California Freight Investment Program is a reimbursement program for eligible costs incurred. Costs incurred prior to Commission allocation and, for federally funded projects, Federal Highway Administration project approval (i.e. Authorization to Proceed) are not eligible for reimbursement.

III. Eligibility

8. Eligible Applicants

Eligible applicants include local, regional, and public agencies such as cities, counties, Metropolitan Planning Organizations, Regional Transportation Planning Agencies, port authorities, public construction authorities, and Caltrans. Project proposals from private entities should be submitted by a public agency sponsor.

A nomination may identify an entity other than the applicant to be the project implementing agency. The implementing agency assumes responsibility and accountability for the use and expenditure of program funds.

Applicants must comply with all relevant federal and state laws, regulations, policies, and procedures.

9. Eligible Projects

Consistent with the California Freight Mobility Plan, a freight project is a project that significantly contributes to the freight system's economic activity or vitality; relieves congestion on the freight system; improves the safety, security, or resilience of the freight system; improves or preserves the freight system infrastructure; implements technology or innovation to improve the freight system or reduce or avoid its negative impacts; or reduces or avoids adverse community and/or environmental impacts of the freight system.

To be eligible for funding under this program, a project must meet the aforementioned freight project definition, support the objectives of the program, and meet the screening and evaluation criteria.

[A capital improvement that is required as a condition for private development approval or permits is not eligible for funding from the California Freight Investment Program.](#)

Because the majority of funds in the California Freight Investment Program are federal funds, projects must comply with the provisions of Title 23 of the U.S. Code of Federal Regulation, and be located on the Primary Highway Freight System or a designated Critical Rural Freight Corridor or Critical Urban Freight Corridor. The designation of the Critical Rural Freight Corridor or Critical Urban Freight Corridor is not required at the time of project nomination, however, the designation must be federally approved prior to the project requesting allocation. [Grade crossing improvement projects, grade separation projects, intermodal projects, and Intelligent Transportation System projects are not required to have a Critical Rural Freight Corridor or Critical Urban Freight Corridor designation.](#)

California Freight Investment Program funds may be used for any component of a project, however, the project must award construction by December 31, 2022.

Projects eligible for funding under the program include, but are not limited to, the following:

- Additional capacity projects to address highway freight bottlenecks, highway or bridge projects to improve flow of freight on National Highway Freight Network, physical separation of passenger vehicles from commercial motor freight.
- Port and/or rail projects to facilitate intermodal interchange, transfer, and access into or out of the facility (limited to 10% of yearly apportionments).
- Intelligent Transportation Systems or other technology to improve the flow of freight, real time information systems, weigh-in-motion devices, electronic screening/credentialing systems, traffic signal optimization, work zone management and information systems, ramp metering, electronic cargo and border security technologies.
- Grade Separations.
- Geometric improvements to interchanges and ramps.
- Truck only lanes, including climbing and runaway, and parking facilities.
- Adding or widening shoulders.
- Efforts to reduce environmental impacts of freight movement.
- Environmental/community mitigation for freight movement.

IV. Project Selection Process

10. Screening Criteria

Nominations will receive an initial screening by the Commission for completeness, eligibility, and deliverability before moving to the evaluation process. Incomplete or ineligible applications may not be evaluated.

Nominations will be screened by the Commission for the following:

- Project is included in the California Freight Mobility Plan, in an adopted regional freight plan, or an adopted regional transportation plan.
- Project can demonstrate a 30% funding match as outlined in Section 6 of these guidelines. A project that is already fully funded will not be considered for programming.
- Project must award a construction contract by December 31, 2022.
- Project must be one of the types of projects listed in Section 9 of these guidelines.
- Project must not have the purpose or intent to increase the state's overall capacity to facilitate the transportation of coal in bulk, pursuant to Government Code Section 14525.3. In evaluating each new terminal project, if related environmental documents are not yet complete, the Commission shall base their review on written confirmation from the project applicant. .
- Project must meet the objectives of the California Freight Investment Program.
- Project must be located on the federally approved Primary Highway Freight System or a designated Critical Rural Freight Corridor or Critical Urban Freight Corridor as specified in Section 9 of these guidelines.

- Project contributes to corridor or air basin emission reduction of greenhouse gases, diesel particulates, carbon monoxide, nitrogen oxides, and other pollutants.
- Project will stimulate economic activity, enhance trade value, and preserve/create jobs.

11. Evaluation Criteria

Evaluation criteria are outcome oriented and customizable to each corridor. Evaluation criteria are grouped into three categories.

Where a project is proposed to improve private infrastructure, the Commission's evaluation will examine the public/private benefit assessment of the project.

Nominations will be evaluated on the following:

- Freight System Factors
 - Throughput – Project provides for increased volume of freight traffic through capacity expansion or operational efficiency.
 - Velocity – Project increases the speed of freight traffic moving through the distribution system.
 - Reliability - Project reduces the variability and unpredictability of travel time.
- Transportation System (Priorities) Factors
 - Safety - Project increases the safety of the public, industry workers, and traffic.
 - Congestion Reduction/Mitigation - Project reduces daily hours of delay on the system and improves access to freight facilities.
 - Key Transportation Bottleneck Relief - Project relieves key freight system bottlenecks where forecasts of freight traffic growth rates indicate infrastructure or system needs are inadequate to meet demand.
 - Multi-Modal Strategy - Project employs or supports multi-modal strategies to increase port and transportation system throughput while reducing truck vehicle miles/hour traveled (VMT/VHT) or truck idling times.
 - Interregional Benefits - Project links regions/corridors to serve statewide or national trade corridor needs.
- Community Impact Factors
 - Air Quality Impact - Project reduces local and regional emissions of diesel particulate, carbon monoxide, nitrogen oxides, greenhouse gases, and other pollutants.
 - Community Impact Mitigation - Project reduces negative impacts on communities (noise, localized congestions, safety, public health, etc.).
 - Economic/Jobs Growth – Project stimulates local economic activity, enhances trade value, and preserves/creates jobs.

The Commission will also consider the following factors when evaluating projects:

- The overall need, benefits and cost, of the project in the context of its contribution to advancing the California Freight Mobility Plan, the California Sustainable Freight Action Plan, and an adopted regional freight plan. Projects submitted by Caltrans should also include a description of how the project contributes to advancing the Interregional Transportation Strategic Plan.
- Project readiness and reasonableness of the schedule for project implementation, including the following:
 - Progress towards achieving environmental protection requirements.
 - The comprehensiveness and sufficiency of agreements with key partners (particularly infrastructure owning railroads) that will be involved in implementing the project.
- The leveraging and coordination of funding from other private, federal, state, local or regional sources, with consideration of those sources that are discretionary compared to those that are nondiscretionary.
- The commitment of multiple partners in the delivery of the project, as evidenced by joint nomination and/or joint funding of a project.
- The project's support or use of innovated technology or practices.

12. Project Nominations

The Metropolitan Planning Organizations will be responsible for compiling ~~and submitting~~ project nominations from their respective agencies to the Commission. Project nominations coming from Imperial County will be considered as part of the San Diego/Border programming target, but the project nominations from Imperial County will be compiled and submitted through the Southern California Association of Governments as its Metropolitan Planning Organization. ~~submitted to San Diego Association of Governments since the County falls within the San Diego/Border corridor.~~ All other project nominations will be submitted directly to the Commission.

Each Metropolitan Planning Organization will submit a cover letter signed by the respective Executive Director and the project nominations. The submittal will include a full list of all nominations received and confirm consistency with an adopted Regional Transportation Plan and adopted regional freight plan, if applicable. ~~their submittal that lists all nominations received and describes the process on how the nominations were selected and prioritized through a public and transparent process.~~

Project applications and their supporting documentation should be submitted to the Commission by July 31, 2017, in hard copy. Nominations will be treated in accordance with California Public Records Act requirements and certain information, subject to those requirements, may be publicly disclosed.

The Commission will post basic project application information on its website prior to adopting the final program of projects. After projects are selected for programming, Commission will post the status of all project applications to its website.

Each project application submittal must include three copies of the application package and one electronic copy. All application materials should be address or delivered to:

Susan Bransen, Executive Director
California Transportation Commission
1120 N Street, MS-52
P.O. Box 942873
Sacramento, CA 95814

Each project application should be limited to 20 pages (excluding the benefits documentation and the Project Programming Request form) and must include:

- A cover letter, with signature authorizing and approving the application. Where the project is to be implemented by an agency other than the nominator, documentation of the agreement between the project nominator and implementing agency must be submitted with the application.
- A confirmation that any new **bulk** terminal project will does not have the potential for significant environmental impacts, as described in related environmental documents in an environmental document as a result of the storage, handling, or transport of coal in bulk pursuant to Government Code Section 14525.3. In evaluating each new terminal, if related environmental documents are not yet complete, the Commission shall base their review on written confirmation from the project applicant.
- ~~• A confirmation that any new non-bulk terminal project will not increase the state's overall capacity to facilitate the transportation of coal in bulk pursuant to Government Code Section 14525.3.~~
- A confirmation that any capacity-increasing project or a major street or highway lane realignment project was considered for reversible lanes pursuant to Streets and Highways Code Section 100.15.
- An explanation of the project and its proposed benefits, including the following:
 - Project title, which should be a brief non-technical description of the project type, scope, and location.
 - Project priority (if agency is submitting multiple applications)
 - Project background and a purpose and need statement.
 - A concise description of the project scope and anticipated benefits (outcomes and outputs) proposed for funding.
 - A description on how the project furthers the objectives of the California Freight Investment Program.
 - A map (or maps) of the project location denoting the project site and identifying impacted communities that meet either of the following criteria:
 - An area identified as among the most disadvantaged 25% in the state according to the California Environmental Protection Agency and based on the California Communities Environmental Health Screening Tool 3.0 (CalEnviroScreen 3.0) scores (score must be greater than or equal to 36.62). This list can be found at the following link under SB 535 List of Disadvantaged Communities: <http://www.calepa.ca.gov/EnvJustice/GHGInvest/>.

An area with a median household income (reference Table B19013) that is less than 80% of the statewide median based on the most current Census Tract

(reference Table 140) level data from the 2010-2014 American Community Survey (<\$49,191). Communities with a population less than 15,000 may use data at the Census Block Group (reference Table 150) level. Unincorporated communities may use data at the Census Place (reference Table 160) level. Data and Tables are available at: <http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>

- A project cost estimate which includes the amount and source of all funds committed to the project and the basis for concluding that the funding is expected to be available. Cost estimates should be escalated to the year of proposed implementation and be approved by the Chief Executive Officer or other authorized office of the implementing agency.
- When proposing to fund only preconstruction project components, the applicant must demonstrate the means by which it intends to fund the construction of a useable segment, consistent with the Regional Transportation Plan.
- A description that demonstrates the ability to absorb any cost overruns and deliver the proposed project with no additional funding from this program.
- A description of the project delivery plan, including a description of the known risks that could impact the successful implementation of the project and the response plan of the known risks. The risks considered should include, but not be limited to, risks associated with deliverability and engineering issues, community involvement, and funding commitments.
- A description of the transportation corridor and the function of the proposed project within the corridor.
- A description and quantification of improvements in trade corridor mobility, including measures of velocity, throughput, reliability and congestion reduction for freight movement in the corridor.
- A description and quantification of the local and corridor effects of the project on diesel particulate, greenhouse gases and other pollutant emissions using the Quantification Methodology for Air Pollutants in Appendix A. The Air Resources Board is working to develop standardized methods for applicants to quantify air quality impacts. If these methodologies are available prior to adoption of these guidelines, they will be incorporated into the guidelines. Additionally, the Commission intends to consult with the Air Resources Board in assessing the air quality impact of proposed projects.
- A description of how the project furthers the goals, performance measures, and targets of the region's Regional Transportation Plan, and if applicable, it's associated freight plan. For each performance measure the applicant should indicate how the project scored relative to other projects in the Regional Transportation Plan.
- A description of the corridor plan or other coordinated management strategy being implemented by the nominator and other jurisdictions within the corridor to preserve corridor mobility.
- Documentation supporting the benefits and cost estimates cited in the application should be no more than 10 pages in length, citing or excerpting, as appropriate, the project study report, environmental document, Regional Transportation Plan, and other studies that

provide quantitative measures of the project's costs and benefits, including both trade corridor mobility benefits and emission reduction benefits.

- Each applicant should provide documentation that the expected benefits of the proposed project justify its costs, recognizing that some costs and benefits can be difficult to quantify. Each application should include analysis utilizing Caltrans' Life-Cycle Benefit-Cost Analysis Model 6.0. This model can be found at: http://www.dot.ca.gov/hq/tpp/offices/eab/LCBC_Analysis_Model.html. If another model is more applicable the application should describe why and provide the analysis based on the alternate model.
- Where investment of California Freight Investment Program funding is proposed to improve private infrastructure, this documentation should include an assessment of public and private benefits to show that the share of public benefit is commensurate with the share of public funding.
- Documentation for rail investments should acknowledge and describe how the private railroads, regional agencies and appropriate state agencies will come to agreement on public and private investment levels and resulting benefits.
- Each application must include a Project Programming Request Form. An excel template of this form may be found at <http://www.dot.ca.gov/hq/transprog/ocip.htm>. Each Project Programming Request must list federal, state, local, and private funding categories by project component and fiscal year. If the project is a scope addition to a project with a prior Project Programming Request Form, the prior Project Programming Request should be included. California Freight Investment Program funds cannot be used to supplant other committed funds.

V. Programming

The Commission intends to adopt a program of projects for the California Freight Investment Program at the October 18-19, 2017 meeting. The California Freight Investment Program must be developed consistent with the federal apportionment levels approved under the FAST Act and the amount programmed in each fiscal year may not exceed the yearly obligation authority amount.

Pursuant to federal statute, the Commission may not program more than 10 percent of the total yearly apportionment amount for freight intermodal or freight rail projects, which include the following projects:

- Within the boundaries of public or private freight rail or water facilities (including ports).
- That provide surface transportation infrastructure necessary to facilitate direct intermodal interchange, transfer, and access into or out of the facility.

The program of projects for each fiscal year will include, for each project, the amount to be funded from the California Freight Investment Program, and the estimated total cost of the project. Project costs in the California Freight Investment Program will include costs for each of the following components: (1) permits and environmental studies; (2) plans, specifications, and estimates; (3) right-of-way; and (4) construction. The cost of each project component will be listed in the program no earlier than in the fiscal year in which the particular project component can be implemented. For Caltrans implemented projects, the cost of right-of-way support and

construction support will be separated out and programmed separately from the right-of-way capital and construction capital cost.

The Commission will program and allocate funding to projects in whole thousands of dollars and will include a project only if it is fully funded from a combination of California Freight Investment Program and other committed funding. The Commission will regard funds as committed when they are programmed by the Commission or when the agency with discretionary authority over the funds has made its commitment to the project by ordinance or resolution. For federal formula funds, including Surface Transportation Program, Congestion Mitigation and Air Quality Improvement Program, and federal formula transit funds, the commitment may be by Federal approval of the Federal Statewide Transportation Improvement Program.

The Commission, with assistance from Caltrans, will monitor appropriations to, encumbrances from, and balances in the California Freight Investment Program to ensure the program contains an adequate balance to cover allocations and reimbursements.

Additionally, with assistance from Caltrans, the Commission will keep track of any available capacity from resulting project savings, rescinded allocations or project deletions. The Commission will determine the appropriate use of these funds on a program-wide basis.

VI. Program/Project Amendments

13. Project Review Committee

Commission staff may form a Project Review Committee to assist Commission staff in evaluating amendments on an as needed basis. The Project Review Committee will include representatives from Caltrans and various other transportation stakeholders.

14. Amendment Requests

Project amendments requested by implementing agencies shall receive the approval of all partner and funding entities before presentation to the Commission. Amendment requests should be submitted in a timely manner and include documentation that supports the requested change and its impact on the scope, cost, schedule and benefits.

Caltrans shall coordinate all amendment requests and utilize the Project Programming Request to help document the change. Implementing agencies must notify Caltrans in writing of proposed project scope changes. This notification must include the following:

- An explanation of the proposed scope change.
- The reason for the proposed scope change.
- The impact the proposed scope change would have on the overall cost of the project.
- An estimate of the impact the proposed scope change would have on the potential of the project to deliver the project benefits as compared to the benefits identified in the project application (increase or decrease in benefit) and an explanation of the methodology used to develop the aforementioned estimates.

Caltrans will review the proposed scope change and forward the proposed scope change with Caltrans' written analysis and recommendation to the Commission for the Commission's approval.

Commission staff may also request that the Project Review Committee review and make a recommendation on amendment requests.

Commission staff will present recommended scope changes deemed by staff to be minor changes, such as those with little or no impact to project benefits or which increase the benefits of the project, to the Commission as a part of the project allocation request. Staff will present recommendations to disapprove minor scope changes and recommendations to approve or disapprove more significant scope changes to the Commission as project amendments.

VII. Allocations

When an agency is ready to implement a project or project component, the agency will submit an allocation request to Caltrans. The typical time required, after receipt of the request, to complete Caltrans review, and recommendation and Commission allocation is 60 days.

Caltrans will review the request and determine whether or not to recommend the request to the Commission for action. The Commission will consider the allocation of funds for a project when it receives an allocation with a recommendation from Caltrans. The recommendation will include a determination of project readiness, the availability of appropriated funding, and the availability of all identified and committed supplementary funding. When Caltrans develops its construction allocation recommendation, the Commission expects Caltrans to certify that a project's plans specifications and estimate are complete, environmental and right-of-way clearances are secured, and all necessary permits and agreements (including railroad construction and maintenance) are executed.

In compliance with Section 21150 of the Public Resources Code, the Commission will not allocate funds for design, right-of-way, or construction prior to documentation of environmental clearance under the California Environmental Quality Act. As a matter of policy, the Commission will not allocate funds for design, right-of-way, or construction of a federally funded project prior to documentation of environmental clearance under the National Environmental Policy Act (NEPA). Exceptions to this policy may be made in instances where federal law allows for the acquisition of right-of-way prior to completion of NEPA review.

The Commission will approve the allocation if the funds are available and the allocation is necessary to implement the project as included in the adopted California Freight Investment Program. If there are insufficient program funds to approve an allocation, the Commission may delay the allocation of funds to a project.

Allocations must be requested in the fiscal year of project programming. Agencies should not request Commission allocations unless prepared to award contracts related to the allocation within six months. Whenever programmed funds are not allocated within the fiscal year programmed or within the time allowed by an approved allocation extension, the project will be deleted from the California Freight Investment Program. Funds available following the deletion of a project may be programmed to a project amended into the program.

Where the project is to be implemented by an agency other than the applicant, the allocation request must include a copy of the Memorandum of Understanding or Interagency Agreement between the project applicant and implementing agency.

When Caltrans is the implementing agency, right-of-way support and construction support costs must be allocated separately from right-of-way capital and construction capital costs.

VIII. Project Delivery

15. Timely Use of Funds

California Freight Investment Program allocations must be requested in the fiscal year of project programming, and construction allocations are valid for award for six months from the date of allocation unless the Commission approves an extension. No award extensions will be granted beyond the December 31, 2022 award deadline.

Funds allocated for project development or right-of-way costs must be expended by the end of the second fiscal year following the fiscal year in which the funds were allocated. The implementing agency must invoice Caltrans for these costs no later than 180 days after the fiscal year in which the final expenditure occurred.

After award of the contract, the implementing agency has up to 36 months to complete (accept) the contract. At the time of fund allocation, the Commission may extend the deadline for completion of work and the liquidation of funds if necessary to accommodate the proposed expenditure plan for the project.

The Commission may extend the deadlines for allocation of funds, for award of a contract, for expenditures for project development or right-of-way, or for contract completion no more than one time, only if it finds that an unforeseen and extraordinary circumstance beyond the control of the responsible agency has occurred that justifies the extension. The extension will not exceed the period of delay directly attributed to the extraordinary circumstance and will in no event be for more than 20 months.

Where a project component will not be ready for allocation as programmed in the current fiscal year, the implementing agency should request an extension of the allocation deadline rather than a project amendment.

16. Delivery Deadline Extensions

The Commission may extend a delivery deadline upon the request of the implementing agency. No deadline may be extended more than once. However, there are separate deadlines for allocations, for award of contract, for expenditures, and for project completion, and each project component has its own deadlines. The Commission may consider the extension for each of the deadlines separately.

All requests for project delivery deadline extensions shall be submitted directly to Caltrans for processing. The extension request should describe the specific circumstance that justifies the extension and identify the delay directly attributable to the circumstance. Caltrans will review the proposed extension requests and forward them with Caltrans' written analysis and recommendation to the Commission for action.

17. Project Inactivity

Once funds for a project are encumbered, project applicants are expected to invoice on a regular basis (for federal funds, see 23 CFR 630.106 and the Caltrans' Inactive Obligation Policy). Failure to do so will result in the project being deemed "inactive" and subject to de-obligation if proper justification is not provided.

18. Project Reporting

Caltrans, in cooperation with the implementing agencies, will report to the Commission on a semi-annual basis. The reports will include information on the activities and progress made toward implementation of the project, including those project activities taking place prior to an allocation and the commitment status of supplemental funding identified at the time of programming. A final delivery report will also be required. The purpose of the reports is to ensure that the project achieves the objectives of the program, is executed in a timely fashion, and is within the scope and budget identified when the decision was made to fund the project.

For new terminal projects, project applicants will annually notify the Commission that the project is not being used to handle, store, or transport coal in bulk.

Within one year of the project becoming operable, the implementing agency must provide the following information to Caltrans to be included in a final delivery report to the Commission which includes:

- The scope of the completed project as compared to the programmed project.
- Before and after photos documenting the project.
- The final costs, by component and fund type, as compared to the approved project budget at allocation.
- Its duration as compared to the project schedule in the project application.
- Performance outcomes and benefits derived from the project as compared to those described in the project application. This should include an explanation of the methodology used to quantify the benefits.
- For the purpose of this section, a project becomes operable when the construction contract is accepted or acquired equipment is received.

The National Highway Freight Program funds administered under the California Freight Investment Program will be subject to the National Performance Management Measures for assessing Performance of Freight Movement. The final regulations for the Performance Management Measures are slated to become final on May 20, 2017. Commission staff, in cooperation with stakeholders, intend to bring forward updated reporting guidelines to meet these Performance Management Measures at a future Commission meeting.

19. Project Auditing

Caltrans must audit, in accordance with Generally Accepted Government Auditing Standards, a representative sample of California Freight Investment Program projects to evaluate the performance of the project, determine whether project costs incurred and reimbursed are in compliance with the executed project agreement or approved amendments thereof; state and

federal laws and regulations; contract provisions; and Commission guidelines, and whether project deliverables (outputs) and outcomes are consistent with the project scope, schedule and benefits described in the executed project agreement or approved amendments thereof. A report on the projects audited, their findings and status of any corrective action must be submitted to the Commission by October 1 of each year.

WITHDRAWN AT MAY 2017 CTC MEETING

Appendix A – Quantification Methodology for Air Pollutants

This quantification methodology is for applicants of the California Freight Investment Program to quantify the carbon dioxide (CO₂), particulate matter 10 microns or less (PM₁₀), and nitrogen oxide (NO_x) impacts of proposed projects. Additionally, the methodology provides resources to quantify particulate matter 2.5 microns or less in diameter (PM_{2.5}) as an informational item. Because of limited data availability, it only needs to be provided for projects that do not include the locomotive sector (grade separations and some operational improvement projects).

For project inputs, applicants are expected to rely on existing project level data and tools. Submissions shall show their work by providing the calculations from beginning to end. Project applicants are also required to submit documentation supporting calculations, inputs, and key assumptions. Web links to supporting data/documents will be accepted.

The methodology is intentionally simplified and relies on widely available inputs and tools. The results are not intended to replace environmental review and quantification of environmental impacts for the purposes of the California Environmental Quality Act or National Environmental Policy Act.

Project Types

The methodology focuses on four project types—interchange improvement, highway widening, grade separation, and operational improvement—and must be utilized for projects falling under these categories.

Table 1 – Project Type Definition

Project Type	Definition
Interchange Improvement	To improve a junction, including on- and off-ramps, to permit traffic on at least one highway to pass through the junction without directly crossing another traffic stream.
Highway Widening	To widen a highway in order to improve its capacity.
Grade Separation	To improve a junction by using grade separation to permit traffic on at least one highway to pass through the junction without directly crossing another traffic stream.
Operational Improvement	Any project (other than an interchange upgrade, highway widening, or grade separation) expected to result in a decrease in vehicle or locomotive congestion.

Quantification Methodology for CO₂, NO_x, and PM₁₀ Emissions

The general steps of the quantification methodology are:

- Quantify the pre- and post-project CO₂, NO_x, and PM₁₀ emissions for an interchange upgrade, highway widening, grade separation, or operational improvement project using the equations provided below.
- Quantify the emissions for passenger vehicles, heavy-duty vehicles, and locomotives (grade separation or operational improvement projects only) separately, and then sum the categories to calculate total emissions. For example, a rail to highway grade

separation project will calculate pre- and post-project emissions for the locomotive, passenger, and heavy-duty modes.

- Subtract the pre-project emissions from the post-project emissions to determine the emission impact of the project.
- For projects with construction occurring on more than one route (interchange improvements, grade separations), calculations should be done for each route separately and then summed.

Particulate matter 2.5 microns or less in diameter (PM2.5) should also be calculated and reported as an informational item. Because of limited data availability, it only needs to be provided for projects that do not include the locomotive sector (grade separations and some operational improvement projects).

See Appendix B for a general example of the application of this methodology.

Passenger Vehicle Methodology:

$$\text{Emissions} = (\text{Emission Factor}) * (\text{Passenger Vehicle Throughput}) * (\text{Impacted Distance}) * (20 \text{ Year Project Life})$$

Emission Factor:

Select the appropriate emission factor (grams/vehicle-mile) in Table 2 based on average vehicle speed at the location of the project and the estimated post-project average speed. The statewide passenger vehicle emission factors, provided in Table 2, were downloaded from EMFAC 2014 with the following parameters:

- Annual average for 2030 (estimated mid-project life)
- 2007 vehicle categories LDA, LDT1, LDT2, MDV, and MCY.
- Aggregated model year
- Gasoline fuel

Table 2 – 2030 Annual Average Passenger Vehicle Emission Factors (Per Vehicle)

Speed	g NOx/mile	g PM10/mile	g CO2/mile	g PM2.5/mile
5	0.0969	0.00946	806	0.00869
10	0.0761	0.00591	595	0.00544
15	0.0678	0.00394	460	0.00363
20	0.0603	0.00276	367	0.00254
25	0.0538	0.00204	304	0.00187
30	0.0496	0.00158	260	0.00146
35	0.0483	0.00131	233	0.00120
40	0.0472	0.00114	217	0.00104
45	0.0473	0.00104	209	0.00096
50	0.0478	0.00101	209	0.00092
55	0.0484	0.00102	217	0.00094
60	0.0467	0.00109	231	0.00100
65	0.0517	0.00123	255	0.00113
70	0.0512	0.00134	281	0.00124

Passenger Vehicle Throughput:

Use total vehicle throughput per year and the proportion of passenger vehicles at the project site to calculate the passenger vehicle throughput. If post-project throughput is not available, keep it consistent with the pre-project throughput. Assume a passenger fleet mix factor of 0.91 for all projects if documented project specific data is unavailable¹.

$$\text{Passenger Vehicle Throughput} = \left(\frac{\text{total vehicle throughput}}{\text{year}} \right) * (0.91)$$

Project Life:

Assume a 20 year project life for pre- and post-project calculations².

Impacted Distance:

Using documented data (project study report, environmental document), provide the impacted distance of the project in centerline miles. If documented impacted distance data is not available, provide the length of the project area in centerline miles. Use the same value for pre- and post-project calculations.

Heavy-Duty Vehicle Methodology:

$$\text{Emissions} = (\text{Emission Factor}) * (\text{Heavy - Duty Vehicle Throughput}) * (\text{Impacted Distance}) * (20 \text{ Year Project Life})$$

Emission Factor:

Select the appropriate emission factor (grams/vehicle-mile) in Table 3 based on annual average vehicle speed at the location of the project and the estimated post-project annual average speed. The statewide heavy-duty vehicle emission factors, provided in Table 3, were downloaded from EMFAC 2014 with the following parameters:

- Annual average for 2030 (estimated mid-project life)
- 2007 vehicle categories LHDT1, LHDT2, MH, MHDT, HHDT, SBUS, UBUS, and OBUS.
- Aggregated model year
- Diesel fuel

Table 3 – 2030 Annual Average Heavy-Duty Vehicle Emission Factors (Per Vehicle)

Speed	g NOx/mile	g PM10/mile	g CO2/mile	g PM2.5/mile
5	12.2	0.0264	2500	0.0252
10	9.05	0.0209	2130	0.0200
15	5.00	0.0188	1500	0.0180
20	3.74	0.0204	1510	0.0195
25	2.01	0.0095	1270	0.0091
30	1.46	0.0077	1270	0.0074
35	1.15	0.0064	1340	0.0061
40	0.86	0.0057	1290	0.0054

¹ ARB, “EMFAC 2014 Web Database,” 2014, <https://www.arb.ca.gov/emfac/>, accessed on April 17, 2017.

² Caltrans, “Life-Cycle Benefit-Cost Analysis Model,” 2007, http://www.dot.ca.gov/hq/tpp/offices/eab/LCBC_Analysis_Model.html, accessed on April 17, 2017.

45	0.70	0.0054	1260	0.0051
50	0.63	0.0056	1160	0.0054
55	0.51	0.0051	1160	0.0049
60	0.42	0.0048	1090	0.0046
65	0.45	0.0052	1110	0.0049
70	0.45	0.0052	1190	0.0050

Heavy-Duty Vehicle Throughput:

Use total vehicle throughput per year and the proportion of heavy-duty vehicles at the project site to calculate the heavy-duty vehicle throughput. If post-project throughput is not available, keep it consistent with the pre-project throughput. Assume a heavy-duty fleet mix factor of 0.09 for all projects if documented project specific data is unavailable³.

$$\text{Heavy - Duty Vehicle Throughput} = \left(\frac{\text{total vehicle throughput}}{\text{year}} \right) * (0.09)$$

Project Life:

Assume a 20 year project life for pre- and post-project calculations⁴.

Impacted Distance:

Using documented data (project study report, environmental document), provide the impacted distance of the project in centerline miles. If documented impacted distance data is not available, provide the length of the project area in centerline miles. Use the same value for pre- and post-project calculations.

Locomotive Methodology:

$$\text{Emissions} = (\text{Emission Factor}) * (\text{Fuel Usage Factor}) * (\text{Locomotive Throughput}) * (\text{Impacted Distance}) * (20 \text{ Year Project Life})$$

Emission Factor:

Select the appropriate emission factor in Table 4. The g/gal is calculated using Tier 2, Tier2+/Tier3, and Tier 4 line-haul emission factors from U.S. EPA⁵ and a train conversion factor of 20.8 bhp-hr/gallon⁶. The 2030 Train Mix is based on U.S. EPA emission factors and ARB 2016 Line Haul Locomotive Model projection of Tier distribution.

³ ARB, "EMFAC 2014 Web Database," 2014, <https://www.arb.ca.gov/emfac/>, accessed on April 17, 2017.

⁴ Caltrans, "Life-Cycle Benefit-Cost Analysis Model," 2007, http://www.dot.ca.gov/hq/tpp/offices/eab/LCBC_Analysis_Model.html, accessed on April 17, 2017.

⁵ EPA, "Emission Standards Reference Guide for On-road and Nonroad Vehicles and Engines," December 13, 2016, <http://www3.epa.gov/otaq/standards/nonroad/locomotives.htm>, accessed on April 17, 2017

⁶ EPA, "Emission Factors for Locomotives Table 3," <https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P100500B.TXT>, accessed April 17, 2017

Table 4 – Locomotive Emission Factors

	NOx (g/gallon)	PM10 (g/gallon)	CO2 (g/gallon)
2030 Train Mix	66	1.4	10,206

Fuel Usage Factor:

The fuel usage factor shall be provided in gallons of fuel/gross ton-miles. The pre-project fuel usage factor should be based on recent regional data. The post-project fuel usage factor could improve compared to the pre-project factor if the project is expected to result in locomotives operating in more efficient notch profiles. Estimate the post-project fuel usage factor based on the projected notch profile through the grade change. Work with the locomotive operators, as appropriate, to estimate the fuel usage factor.

Locomotive Throughput:

Provide locomotive throughput in gross tons moved per year. If post-project throughput is not available, keep it consistent with the pre-project throughput. Work with the locomotive operators, as appropriate, to estimate the locomotive throughput.

$$\text{Locomotive Throughput} = \frac{\text{gross tons}}{\text{year}}$$

Project Life:

Assume a 20 year project life for pre- and post-project calculations⁷.

Impacted Distance:

Using documented data (project study report, environmental document), provide the impacted distance of the project area in track miles (of only one track if there are multiple tracks. If documented impacted distance data is not available, provide the length of the project area in track miles (of only one track if there are multiple tracks). Use the same value for pre- and post-project calculations.

⁷ Caltrans, "Life-Cycle Benefit-Cost Analysis Model"

Appendix B - Example of Methodology Application

Example Project Emission Quantification

Example Scenario: An applicant is proposing a grade separation project at a junction between rail tracks and a road in Sacramento. Pre-project average vehicle speed is 20mph and is expected to increase to 30mph post project. Vehicle throughput is 100,000 vehicles/year and locomotive throughput is 1,000,000 gross tons/year and throughput is expected to be the same post-project. The impacted road distance is one mile and the impacted rail distance is two miles. The pre- and post- project fuel usage factors are 1gallon/550 gross ton-miles and 1gallon/600 gross-ton miles (expected), respectively.

Note that this example does not include the calculation for PM 2.5 because this project includes the locomotive sector. However, PM 2.5 must be calculated for all other projects that do not include locomotives.

Pre-Project Passenger Vehicle:

$$\text{Emissions} = (\text{Emission Factor}) * (\text{Passenger Vehicle Throughput}) * (\text{Impacted Distance}) * (\text{Project Life})$$

Inputs:

Emission Factor (per vehicle):

Speed	g NOx/mile	g PM10/mile	g CO2/mile
20	0.0603	0.00276	367

Passenger Vehicle Throughput:

Passenger Vehicle Throughput =

$$\left(\frac{\text{total vehicle throughput}}{\text{year}} \right) * (\text{passenger: fleet mix factor})$$

$$\text{Passenger Vehicle Throughput} = \left(\frac{100,000 \text{ vehicles}}{\text{year}} \right) * (.91)$$

Passenger Vehicle Throughput = 91,000 passenger vehicles/year

Project Life: 20 years

Impacted Distance: 1 mile

Quantification:

$$NOx \text{ Emissions} = (.0603g/vehicle - mile) * (91,000 \text{ vehicles/year}) * (1 \text{ mile}) * (20 \text{ years})$$

$$NOx \text{ Emissions} = 109,746 \text{ grams}$$

$$PM10 \text{ Emissions} = (.00276g/vehicle - mile) * (91,000 \text{ vehicles/year}) * (1 \text{ mile}) * (20 \text{ years})$$

$$PM10 \text{ Emissions} = 5,023 \text{ grams}$$

$$CO2 \text{ Emissions} = (367g/vehicle - mile) * (91,000 \text{ vehicles/year}) * (1 \text{ mile}) * (20 \text{ years})$$

$$CO2 \text{ Emissions} = 667,940,000 \text{ grams}$$

Pre-Project Heavy-Duty Vehicle:

$$Emissions = (Emission \text{ Factor}) * (HD \text{ Vehicle Throughput}) * (Impacted \text{ Distance}) * (Project \text{ Life})$$

Inputs:

Emission Factor:

Speed	g NOx/mile	g PM10/mile	g CO2/mile
20	3.74	0.0204	1510

Heavy-Duty Vehicle Throughput:

$$Heavy - Duty \text{ Vehicle Throughput} =$$

$$\left(\frac{\text{total vehicle throughput}}{\text{year}} \right) * (\text{heavy - duty: fleet mix factor})$$

$$Heavy - Duty \text{ Vehicle Throughput} = \left(\frac{100,000 \text{ vehicles}}{\text{year}} \right) * (.09)$$

$$Heavy - Duty \text{ Vehicle Throughput} = 9,000 \text{ vehicles}$$

Project Life: 20 years

Impacted Distance: 1 mile

Quantification:

$$NOx \text{ Emissions} = (3.74g/vehicle - mile) * (9,000 \text{ vehicles/year}) * (1 \text{ mile}) * (20 \text{ years})$$

$$NOx \text{ Emissions} = 673,200 \text{ grams}$$

$$PM10 \text{ Emissions} = (.0204g/vehicle - mile) * (9,000 \text{ vehicles/year}) * (1 \text{ mile}) * (20 \text{ years})$$

$$PM10 \text{ Emissions} = 3,672 \text{ grams}$$

$$CO_2 \text{ Emissions} = (1,510g/vehicle - mile) * (9,000 \text{ vehicles/year}) * (1 \text{ mile}) * (20 \text{ years})$$

$$CO_2 \text{ Emissions} = 271,800,000 \text{ grams}$$

Pre-Project Locomotive

$$\text{Emissions} = (\text{Emission Factor}) * (\text{Fuel Usage Factor}) * (\text{Locomotive Throughput}) * (\text{Impacted Distance}) * (\text{Project Life})$$

Inputs:

Emission Factor:

	NOx (g/gallon)	PM10 (g/gallon)	CO2 (g/gallon)
2030 Train Mix	66	1.4	10,206

Fuel Usage Factor: 1 gallon/550 gross ton-miles

Locomotive Throughput:

$$\text{Locomotive Throughput} = \frac{1,000,000 \text{ gross tons}}{\text{year}}$$

Project Life: 20 years

Impacted Distance: 2 miles

Quantification:

NOx Emissions

$$= (66 \text{ g/gallon}) * (1 \text{ gallon}/550 \text{ gross ton} - \text{mile}) * (1,000,000 \text{ gross tons/year}) * (2 \text{ mile}) * (20 \text{ years})$$

$$NOx \text{ Emissions} = 4,800,000 \text{ grams}$$

PM10 Emissions

$$= (1.4 \text{ g/gallon}) * (1 \text{ gallon}/550 \text{ gross ton} - \text{mile}) * (1,000,000 \text{ gross tons/year}) * (2 \text{ mile}) * (20 \text{ years})$$

$$PM10 \text{ Emissions} = 101,818 \text{ grams}$$

CO2 Emissions

$$= (10,206 \text{ g/gallon}) * (1 \text{ gallon}/550 \text{ gross ton} - \text{mile}) * (1,000,000 \text{ gross tons/year}) * (2 \text{ mile}) * (20 \text{ years})$$

$$CO_2 \text{ Emissions} = 742,254,545 \text{ grams}$$

Total Pre-Project Emissions:

$$NOx(\text{passenger vehicle} + \text{heavy} - \text{duty vehicle} + \text{locomotive}) \\ = 109,746 \text{ g} + 673,200 \text{ g} + 4,800,000 \text{ g}$$

$$NOx = 5,582,946 \text{ grams}$$

$$PM10(\text{passenger vehicle} + \text{heavy} - \text{duty vehicle} + \text{locomotive}) \\ = 5,023 \text{ g} + 3,672 \text{ g} + 101,818 \text{ g}$$

$$PM10 = 110,513 \text{ grams}$$

$$CO2(\text{passenger vehicle} + \text{heavy} - \text{duty vehicle} + \text{locomotive}) \\ = 667,940,000 \text{ g} + 271,800,000 \text{ g} + 742,254,545 \text{ g}$$

$$CO2 = 1,681,994,545 \text{ grams}$$

Post-Project Passenger Vehicle:

$$\text{Emissions} = (\text{Emission Factor}) * (\text{Passenger Vehicle Throughput}) * (\text{Impacted Distance}) \\ * (\text{Project Life})$$

Inputs:

Emission Factor (per vehicle):

Speed	g NOx/mile	g PM10/mile	g CO2/mile
30	0.0496	0.00158	260

Passenger Vehicle Throughput:

$$\text{Passenger Vehicle Throughput} = \left(\frac{\text{total vehicle throughput}}{\text{year}} \right) * (\text{passenger: fleet mix factor})$$

$$\text{Passenger Vehicle Throughput} = \left(\frac{100,000 \text{ vehicles}}{\text{year}} \right) * (.91)$$

$$\text{Passenger Vehicle Throughput} = 91,000 \text{ passenger vehicles/year}$$

Project Life: 20 years

Impacted Distance: 1 mile

Quantification:

$$NOx \text{ Emissions} = (.0496 \text{ g/vehicle} - \text{mile}) * (91,000 \text{ vehicles/year}) * (1 \text{ mile}) * (20 \text{ years})$$

$$NOx \text{ Emissions} = 90,272 \text{ grams}$$

$$PM10 \text{ Emissions} = (.00158g/vehicle - mile) * (91,000 \text{ vehicles/year}) * (1 \text{ mile}) * (20 \text{ years})$$

$$PM10 \text{ Emissions} = 2,876 \text{ grams}$$

$$CO2 \text{ Emissions} = (260g/vehicle - mile) * (91,000 \text{ vehicles/year}) * (1 \text{ mile}) * (20 \text{ years})$$

$$CO2 \text{ Emissions} = 473,200,000 \text{ grams}$$

Post-Project Heavy-Duty Vehicle

$$Emissions = (Emission \text{ Factor}) * (Heavy - Duty \text{ Vehicle Throughput}) * (Impacted \text{ Distance}) * (Project \text{ Life})$$

Inputs:

Emission Factor:

Speed	g NOx/mile	g PM10/mile	g CO2/mile
30	1.46	0.0077	1270

Heavy-Duty Vehicle Throughput:

$$Heavy - Duty \text{ Vehicle Throughput} =$$

$$\left(\frac{\text{total vehicle throughput}}{\text{year}} \right) * (\text{heavy - duty: fleet mix factor})$$

$$Heavy - Duty \text{ Vehicle Throughput} = \left(\frac{100,000 \text{ vehicles}}{\text{year}} \right) * (.09)$$

$$Heavy - Duty \text{ Vehicle Throughput} = 9,000 \text{ vehicles}$$

Project Life: 20 years

Impacted Distance: 1 mile

Quantification:

$$NOx \text{ Emissions} = (1.46g/vehicle - mile) * (9,000 \text{ vehicles/year}) * (1 \text{ mile}) * (20 \text{ years})$$

$$NOx \text{ Emissions} = 262,800 \text{ grams}$$

$$PM10 \text{ Emissions} = (.0077g/vehicle - mile) * (9,000 \text{ vehicles/year}) * (1 \text{ mile}) * (20 \text{ years})$$

$$PM10 \text{ Emissions} = 1,386 \text{ grams}$$

$$CO2 \text{ Emissions} = (1,270g/vehicle - mile) * (9,000 \text{ vehicles/year}) * (1 \text{ mile}) * (20 \text{ years})$$

$$CO2 \text{ Emissions} = 228,600,000 \text{ grams}$$

Post-Project Locomotive

$$\text{Emissions} = (\text{Emission Factor}) * (\text{Fuel Usage Factor}) * (\text{Locomotive Throughput}) \\ * (\text{Impacted Distance}) * (\text{Project Life})$$

Inputs:

Emission Factor:

	NOx (g/gallon)	PM10 (g/gallon)	CO2 (g/gallon)
2030 Train Mix	66	1.4	10,206

Fuel Usage Factor: 1gallon/600 gross ton-miles

Locomotive Throughput:

$$\text{Locomotive Throughput} = \frac{1,000,000 \text{ gross tons}}{\text{year}}$$

Project Life: 20 years

Impacted Distance: 2 miles

Quantification:

NOx Emissions

$$= (66 \text{ g/gallon}) * (1 \text{ gallon}/600 \text{ gross ton} - \text{mile}) * (1,000,000 \text{ gross tons}/\text{year}) \\ * (2 \text{ mile}) * (20 \text{ years})$$

NOx Emissions = 4,400,000 grams

PM10 Emissions

$$= (1.4 \text{ g/gallon}) * (1 \text{ gallon}/600 \text{ gross ton} - \text{mile}) * (1,000,000 \text{ gross tons}/\text{year}) \\ * (2 \text{ mile}) * (20 \text{ years})$$

PM10 Emissions = 93,333 grams

CO2 Emissions

$$= (10,206 \text{ g/gallon}) * (1 \text{ gallon}/600 \text{ gross ton} - \text{mile}) * (1,000,000 \text{ gross tons}/\text{year}) \\ * (2 \text{ mile}) * (20 \text{ years})$$

CO2 Emissions = 680,400,000 grams

Total Post-Project Emissions:

$$\text{NOx}(\text{passenger vehicle} + \text{heavy} - \text{duty vehicle} + \text{locomotive}) \\ = 90,272 \text{ g} + 262,800 \text{ g} + 4,400,000 \text{ g}$$

$$\mathbf{NOx = 4,753,072\ grams}$$

$$\begin{aligned} PM10(\text{passenger vehicle} + \text{Heavy} - \text{Duty vehicle} + \text{locomotive}) \\ = 2,876\ g + 1,386\ g + 93,333\ g \end{aligned}$$

$$\mathbf{PM10 = 97,595\ grams}$$

$$\begin{aligned} CO2(\text{passenger vehicle} + \text{heavy} - \text{duty vehicle} + \text{locomotive}) \\ = 473,200,000\ g + 228,600,000 + 680,400,000\ g \end{aligned}$$

$$\mathbf{CO2 = 1,382,200,000\ grams}$$

Emissions Impact of the Project:

$$\text{Emission Impact} = (\text{Post} - \text{Project Emissions}) - (\text{Pre} - \text{Project Emissions})$$

$$NOx = 4,753,072\ g - 5,582,946\ g = \mathbf{-829,874\ grams\ NOx}$$

$$PM10 = 97,595\ g - 110,513\ g = \mathbf{-12,918\ grams\ PM10}$$

$$CO2 = 1,382,200,000\ g - 1,681,994,545\ g = \mathbf{-299,794,545\ grams\ CO2}$$