



Fiscal Year (FY) 2024-25 Research Initial Scope of Work (ISOW)

Task ID: 4478

Task Title: California Short Line Rail Research

1. What is the need? Short line railroads play a crucial role in California's shipping network, managing the "first and last mile" of the freight rail system and connecting shippers to the national rail network. Operating 1,406 route miles, they handle substantial and bulky freight, constituting about a third of California's rail network. However, compared to Fortune 500 Class I rail giants, short lines are typically smaller, rural, and California-based, which presents vulnerabilities such as competition from trucking, funding shortages, and technological disadvantages. Aligning with the state's GHG emissions reduction goals, short line railroads must upgrade their locomotives to zero-emission models by 2030, as mandated by the state's Locomotive Regulation. Meanwhile, the acquisition of a single zero-emission locomotive, priced at \$7-\$10 million, presents a significant financial challenge for these railroads, especially given their typical annual revenue of less than \$40 million (approximately 150 short line rail locomotives need to be replaced statewide). According to the California Short Line Rail Association, persistent challenges, including challenges resulting from state mandates, could force railroads out of business. Potential shutdowns may disrupt crucial freight transportation connections, heighten air pollution, compromise safety, and threaten California's economic competitiveness. A shift to road transport could intensify highway congestion and increase Caltrans' maintenance costs. Despite numerous state policies aimed at shifting freight modes, our direct influence beyond policy level is limited due to the nature of the goods movement industry. While Caltrans manages state highways, other freight modes are externally managed. Therefore, supporting short line railroads is key for advancing our mode shift goals, primarily through our ability to seek and obtain funding on behalf of the industry as a whole. It is critical to gain a comprehensive understanding of specific impacts concerning mode shift, VMT, and economic implications that we may face if the necessary funding to comply with the regulations is inaccessible or unavailable. This research will enhance our understanding of the short line rail system and provide compelling data-driven justification for advocating for public investment. Ultimately, this research aims to

support the effectiveness of the state's regulation while preserving the operational viability of short line railroads.

2. What is the product?

- **Data Analysis:** This research aims to evaluate the capabilities of California's 26 short line railroads to upgrade and maintain zero-emission locomotives by assessing their operational data. It will calculate the total cost necessary for upgrading the applicable locomotives owned by these railroads. Using this data, the study will conduct an economic impact analysis to assess the statewide implications to meet the CARB's regulation and its deadline. Additionally, it will examine available federal and state funding programs for short line rail operators, consolidating grants requirements in a matrix table.
- **Case Studies:** This research will evaluate statewide effects of challenges and new regulations on short line railroads, including sustainability, mode shifts, economics, environment, Vehicle Miles Traveled (VMT), and Caltrans' road maintenance costs. Supplementing the data analysis, this research aims to identify past short line rail closures linked to increased regulatory costs similar to the current situation, examining post-closure impacts such as changes in mode share in the corridors served by rail prior to closure. It will also assess the impact on local economies and businesses pre- and post-closure. Looking within and beyond California, our nationwide investigation into historical short line rail scenarios will deepen our understanding of potential impacts.
- **State's Roles and Responsibilities:** A key focus of this research involves examining the state's role in supporting privately-owned short line rail operators to ensure compliance with regulatory requirements, considering their significant public benefit. The research will then delve into strategies aimed at assisting short line railroads, especially those lacking resources for funding applications, in navigating funding programs strategically. This comprehensive exploration involves robust outreach and stakeholder engagement, supporting opportunities for increased discretionary funding, bundling multiple projects into a consolidated statewide application, leveraging diverse funding programs, and crafting a long-term roadmap for funding applications. Existing research concerning this topic is very limited. However, this research will benefit from information within the Short Line Rail Improvement Plan, an introduction document outlining California's short line railroad.

3. What is the plan to implement the product following a successful research project? The Office of Technical Freight and Project Integration (TFPI) of the Division of Transportation Planning (DOTP) will be the lead. Below is an implementation plan.

Data-backed Potential Impacts (FY24/25): Upon the completion of this research, Caltrans will be able to evaluate the potential impacts and mode shift (rail to highway) based on the empirical data derived from the scenario findings. Additionally, TFPI will work with the Office of Strategic Freight Planning to update

the California Freight Mobility Plan (CFMP), revise freight policies, adjust freight project applications, and strengthen interagency partnerships accordingly. These efforts aim to mitigate impacts on the state highways and advance sustainable freight strategies.

Funding Opportunity Support (FY24/25): Once we identify and understand the priority needs for California short line railroads, TFPI can identify relevant funding programs for addressing needs and collaborate with other state agencies to collectively assist short line railroads in their pursuit of needed funding.

Federal and State Funding Programs Workshops for Short Line Railroads (FY24/25): Due to resource limitations for small railroads, OSFP will conduct comprehensive workshops on federal and state grant programs for these entities. These workshops will provide consolidated funding information and potential state assistance for grant application development.

Strategic Funding Application (FY24/25): This research aims to investigate innovative strategies to aid short line railroads in applying for grants. One approach involves facilitating joint grant applications by entities such as Caltrans or other state agencies, consolidating projects from multiple short line railroads into a single application. This collaborative method will both increase competitiveness as well as streamline the grant-seeking process for these railroads.

Project Implementation (FY25/26): A key product of this research is the development of a phased improvement plan essential for realizing the long-term vision of both the state and the industry. This plan comprises distinct timelines: a short-term priority capital project list identified for the next 5 years (~2029); mid-range project list identified for the next decade (2034); and long-range improvements and investments for long-range (2040) planning toward the envisioned future. TFPI will then use this comprehensive list for project planning and coordination purposes.

4. Related Research: *If any.*