



ANNUAL RAILROAD SAFETY REPORT TO THE CALIFORNIA STATE LEGISLATURE

Pursuant to California Public Utilities Code Section 916, 916.1, 916.2, and 916.3

NOVEMBER 30, 2022

FOR FISCAL YEAR 2021–2022



**California Public
Utilities Commission**

Rail Safety Division

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Executive Summary

Rail Safety Activities During the COVID-19 Pandemic

The California Public Utilities Commission (CPUC or Commission) issues this Annual Railroad Safety Report for fiscal year (FY) 2021-2022, pursuant to Public Utilities Code (Pub. Util. Code) Sections 916, 916.1, 916.2, and 916.3.¹ Those laws require the CPUC to report to the Legislature on or before November 30 of each year on its rail safety activities, the results of its investigation of certain incidents and the cause or causes of the incidents, any action undertaken by the Commission in response to those findings, the sites on railroad lines that the Commission finds to be hazardous, and the Commission's determination of the impact on competition, if any, of the regulatory fees assessed on railroad corporations for the support of the Commission's activities.

The COVID-19 global public health crisis presented numerous challenges to the rail industry and the railroad oversight practices of the CPUC's Rail Safety Division (RSD). To comply with all federal, state, county, and city COVID public health and safety mandates, RSD adjusted its inspection and investigation practices and implemented alternative practices that allowed RSD inspectors to continue to inspect, investigate, and perform mandated safety-related activities and effectively enforce compliance with federal and state safety regulations. In addition, RSD launched several innovative programs that go above and beyond regulations to ensure the safe operation of railroads.

¹ Pub. Util. Code Section 916 requires CPUC to report to the Legislature on its rail safety activities on or by November 30 of each year. In addition, Pub. Util. Code Section 916.3 requires CPUC to report on the actions it has taken to comply with Section 765.5, which requires CPUC to take all appropriate action necessary to ensure the safe operation of railroads in this state. This report chronicles the rail safety activities of ROSB and identifies the proactive efforts CPUC's railroad safety inspectors in the Rail Safety Division take to promote the safe operation of railroads during the previous fiscal year.

Pub. Util. Code Section 916.1 requires CPUC to annually report the results of its investigations of runaway trains or other uncontrolled train movements that threaten public health and safety, as per Section 7661. This is included in this report in Chapter III.

Pub. Util. Code Section 916.2 requires CPUC to report to the Legislature on sites on railroad lines in California it finds to be hazardous. The report is to include a list of all derailment accident sites in the state where accidents have occurred within at least the previous five years, and a list of all railroad sites in the state that the Commission has determined to pose a local safety hazard (called Local Safety Hazard Sites [LSHSs]). Section 916.2 permits this report to be combined with the report required by Section 916. The list of derailments is located on the Commission's website at <http://www.cpuc.ca.gov/rosb/>, and the list of LSHSs, documented by calendar year, is presented in Chapter IV.

Pub. Util. Code Section 916.3 requires CPUC to report annually on the impact on competition, if any, of the regulatory fees assessed railroad corporations for the support of CPUC's activities. This report includes the assessment in Chapter V.

This Annual Report addresses both mandated rail safety programs pursuant to the CPUC's state and federal responsibilities, and proactive and innovative efforts the CPUC has undertaken to ensure the safety of the public and railroad employees.

Highlights from FY 2021-2022

Proactive Safety Efforts and Risk Management Activities

CPUC has regulatory authority over rail safety within California. RSD is responsible for enforcing state and federal laws, regulations, Commission General Orders (GO), and directives relating to transportation by rail. Beyond situations specifically identified in these authorities, RSD inspectors continuously identify other potential safety hazards, and conduct risk management and reduction work:

- RSD inspectors created nine new Risk Management Status Report (RMSRs) to identify risks that may not be addressed by existing rules and regulations.
- RSD's Crude Oil Reconnaissance Team (CORT) obtained information from California refineries about large-volume crude oil shipments projected to enter the state and inspected crude oil transfer facilities and related infrastructure to verify compliance with state and federal railroad regulations, as well as CPUC railroad-related GOs.
- RSD inspectors performed 147 total bridge observations and 36 GO Inspections (including walkway and obstruction violations).
- Through its Rail Head Wear Project (RHWP), RSD is monitoring rail head wear by utilizing high-grade manual rail head wear gauges and thorough visual inspections in critical areas throughout California.
- RSD staff continued to work with railroads on the status of their implementation of Positive Train Control (PTC).
- RSD staff monitored implementation of High-Speed Rail (HSR) in California.
- RSD continued its Heavy Grade Audit Project (HGAP) to identify potential and imminent risks caused by changes in train make-up rules (the placement of individual railcars that make up a train) to the safe operation of freight trains in mountainous areas in California, where trains encounter steep grades and sharp curves.
- RSD investigated 29 complaints received from a variety of sources, including railroad employees, railroad unions, and the public.

Mandated Rail Safety Inspections and Investigations

During FY 2021-2022 RSD inspectors:

- Performed 2,657 inspections and follow-up inspections to monitor the railroads' compliance with federal and state laws and CPUC General Orders (GOs).

- Performed 147 safety surveys on bridges.
- Cited 6,006 federal regulation defects.
- Recommended civil penalties for 304 violations of federal regulations.
- Completed 405 CPUC GO Reports that identified 944 state regulation defects.

Investigations of Runaway Trains

In FY 2021-2022, RSD investigated 13 instances of an uncontrolled train movement.

Local Safety Hazard Sites

This Report includes a list of the accidents that have occurred at or near a local safety hazard site (LSHS) within the previous five years. These sites were identified in 1997 in a formal CPUC Decision. Pub. Util. Code Section 916.2 requires the CPUC to include a list of all railroad derailment accident sites in the state on which accidents have occurred within at least the previous five years, describe the nature and probable causes of the accidents, and indicate whether the accidents occurred at or near sites that the CPUC has determined to be hazardous.² Within the previous five calendar years, California experienced 389 derailments. Of that total, 39 derailments, or 10 percent, occurred at or near local safety hazard sites.

² The CPUC has been combining the LSHS accident report with its Annual Railroad Safety Report since 2014.

I. Proactive Safety Efforts and Risk Management Activities

The CPUC strives to achieve a goal of zero accidents and injuries across all the utilities and businesses it regulates, and within all CPUC facilities. To achieve that goal, RSD embraces a comprehensive safety management approach that integrates public policy, risk management, and compliance with the federal and state laws and CPUC General Orders.

Safety culture improvement and proactive risk management are integral to RSD's mission of ensuring safe operation and maintenance practices of railroads in California. In addition to investigating specific violations of state and federal regulations, RSD inspectors and support and analytical staff carry out comprehensive and proactive safety oversight. A high priority of risk management involves looking beyond specific texts in the regulations to identify additional, potential risks.. As explained below in sections A through K, in addition to its mandated safety efforts, RSD uses proactive tools, cooperative engagement with railroads, inspection programs for high risk areas, and monitoring of emerging rail technologies and projects.

A. Risk Management Status Reports

During field work, RSD inspectors may identify items of concern that are either: (1) out of their area(s) of expertise; (2) outside of formal/official reporting and action protocols; or (3) are still safety risks despite prior formal or informal regulatory action. When this happens, the inspectors complete a Risk Management Status Report (RMSR).

Once an RMSR is documented, the inspector and supervisor meet with the responsible railroad, shipper, or associated entity's responsible representative, convey the safety risk linked with the issue, and define a time-period in which the risk should be addressed. The RSD inspector performs a follow-up inspection to determine whether the risk was eliminated or sufficiently mitigated. If the railroad fails to take the steps required to resolve the issue, the RSD Program Manager will pursue the matter with the responsible railroad officials, and if necessary, bring the issue up to the Director or to the CPUC for further enforcement action.

An example of an RMSR is presented in Appendix B.

During FY 2021-2022:

- 2 previous fiscal year RMSRs were closed out (i.e., the recommendations were implemented and/or an alternative conclusion was reached with the railroad).
- 9 new RMSRs were created. The issue areas were as follows:
 - 4 - Railroad Operations
 - 2 – Other - Lost Loads
 - 2 – Other - Platform
 - 1 - Mechanical

Five of these new reports were closed. RSD seeks to resolve the remaining four reports during the next fiscal year.

B. Crude Oil Reconnaissance Team

The Crude Oil Reconnaissance Team (CORT) was established in 2013 and is comprised of RSD inspectors from all five railroad disciplines (track, signal and train control, hazardous materials, motive power and equipment, and operating practices). Team members obtain information from California refineries, such as planned crude oil unit train shipment arrival dates and routes. A “unit train” is a train that is composed of cars carrying a single type of cargo, and a crude oil unit train carries only crude oil. The trains tracked by CORT may have 100 individual tank cars. CORT also verifies the origin of crude oil shipments, in particular, whether the shipments contain Bakken crude, which is more volatile than most other types of crude oil. The team monitors crude oil unit trains to inform RSD management if Bakken crude enters the state and to determine if any actions must be taken.

A total of 11 crude oil unit trains entered two facilities in California during the past fiscal year, with each unit train carrying 100 tank cars. The Plains All American facility in Taft received one unit oil train, originating in Edmonton, Canada, containing heavy crude. Kern Oil Refinery in Bakersfield received 10 light crude oil trains, all originating from Carlsbad, New Mexico. Last year, 22 unit trains entered California, each carrying 100 loaded tank cars, with the Plains facility receiving 5 unit trains and the Kern facility receiving 17.

Most of the crude oil entering the state arrives in unit trains. However, crude oil also enters in individual tank cars that are part of trains carrying mixed cargos, known as “manifest trains.” Crude oil cars travelling in manifest trains are difficult for CORT to track until they reach a rail yard, because refineries do not have information about which manifest trains are carrying crude oil cars, and therefore cannot inform RSD. Once crude oil tank cars reach rail yards, RSD can obtain information about them from the Yardmasters, who know the contents of the various tank cars within their facilities as well as their final destinations once they leave the yards.

CORT personnel also inspect crude oil transfer facilities and related infrastructure to verify compliance with state and federal railroad regulations, as well as CPUC railroad related GOs. As part of these efforts, the team obtains data from each facility pertaining to its actual and expected future monthly train count, which are used to prepare a monthly CORT report on crude oil shipments coming into the state.

Ethanol unit trains entering the state. Starting in February 2019, CORT began tracking the number of unit trains carrying ethanol entering the state in addition to the shipments of crude oil. Ethanol is an extremely volatile commodity that moves in large volumes throughout the state. There are three facilities that handle unit trains of ethanol in California: Kinder Morgan, Eco-Energy and Pelican Renewables. As with crude oil, individual ethanol cars entering the state cannot be tracked until they reach rail yards and are assembled into trains with known final destinations. Ethanol shipments are included in the monthly CORT report.

Kinder Morgan, located in Wilmington, receives ethanol by rail from BNSF Railway (BNSF) via the Lomita Rail Terminal, which then moves it via pipeline to various refineries in Los Angeles County. The Lomita Rail Terminal received 171 unit trains of ethanol in FY 2021-2022, ranging in size from 64 to 96 cars. When there is no room for these cars at the Kinder Morgan facility, they are stored in a siding outside of the Kinder Morgan facility or a rail yard in Barstow.

Eco-Energy, located in Stockton, received its first ethanol unit train in June 2022. The facility plans to receive 1 to 4 trains with 108 cars each month. During FY 2021-2022, the facility received one ethanol unit train, and is projected to receive more trains in the future. The trains are delivered by Central California Traction Company (CCT). Upon arrival, the product is moved via pipeline to several refineries in the Port of Stockton.

Pelican Renewables, located in Stockton, received its first ethanol unit train in May 2022, and plans to receive 2 to 4 trains with 110 cars each month. During FY 2021-2022, the facility received 5 ethanol unit trains. The trains are delivered by CCT. Upon arrival, the product is placed in storage tanks until being shipped by truck to various refineries in the Stockton area.



Inspection of ethanol car at Pelican Renewables in Stockton

Storage of tank cars containing Liquefied Petroleum Gas. In April 2019, the team began tracking the number of individual tank cars containing Liquefied Petroleum Gas (LPG) in storage at various locations throughout California. Data produced by these new activities can be helpful to other agencies if cars carrying LPG release their contents due to derailments or other types of incidents.

To discover the number of stored cars carrying LPG, CORT contacts railroad managers, vendors, and train crews to locate yards storing both loaded and empty cars throughout California. There are

five storage locations in the state: Arizona and California Railroad, Santa Maria Valley, Sierra Northern Railway, Northwestern Pacific Railroad and Oakland Global Rail Enterprise. Storage at each of these locations fluctuates between 50 and 200 cars per month.

RSD conducts compliance inspections of these locations on a regular basis and tabulates current numbers in the monthly CORT report. When a defect is found, such as missing placards, the railroad and the vendor are both notified. Depending on the lease agreement, either the railroad or the vendor is responsible for correcting the defect.

C. Railroad Bridge Evaluation Program

Railroad bridges and approaches that suffer structural damage or other failure due to corrosion of steel components, silt build-up around supports, excessive loads, and other conditions create dangerous conditions for the public, railroad employees, and the environment.

In the Railroad Bridge Evaluation Program (RBEP), two RSD inspectors focus on issues related to railroad bridges. The inspectors perform bridge observations, prioritizing these observations based on such risk factors as the proximity of railroad bridges to the identified Local Safety Hazard Sites across the state; to flammable vegetation; and/or to saltwater bodies, where salinity can cause increased rates of corrosion. Inspectors can cite bridge owners for violations of GOs or applicable Federal regulations. Where conditions do not violate regulations but pose other safety hazards, inspectors may issue an RMSR.

RSD involvement in railroad bridge safety through the RBEP is important for regulatory oversight because there are so few FRA bridge inspectors. The FRA currently has only six bridge inspectors to cover approximately 80,000 railroad bridges in the United States.

49 CFR Part 237 requires railroad track owners to create a bridge management program, perform annual bridge inspections, and calculate load capacities. RSD and the FRA have agreed to work in concert to ensure that railroad track owners in California complete their bridge management programs and conduct joint railroad bridge observations.

During FY 2021-2022, pursuant to RBEP, RSD inspectors performed the following:

- 147 total bridge observations.
- 48 FRA track inspection reports (including track condition violations).
- 34 State GO Inspections (including walkway and obstruction violations).
- 3 RMSRs (notifications to railroads about bridge safety concerns not covered by regulations).

As an example of RBEP activities, on April 19, 2022, an RSD inspector performed an observation of a UPRR bridge in the City of San Luis Obispo. The inspector identified a missing walkway plank which created a tripping hazard. This condition did not comply with GO 118-A, which requires that walkways shall provide a reasonable regular surface. Irregular walkways on bridges are especially dangerous for railroad employees because such conditions increase the potential severity of injuries, due to their elevation above the ground.

RSD staff immediately notified UPRR management of the non-complying condition and issued a CPUC GO inspection report. UPRR committed to remediating the condition within 30 days. On April 26, 2022, RSD received notification and photographic verification from UPRR management that the missing plank was replaced.



Before: Walkway plank missing on bridge deck



After: Walkway planks replaced

D. Railroad Tunnel Evaluation Project

Railroad tunnel structural integrity can be weakened by such events as earthquakes, fires, flooding, and soil erosion, and by derailments and other railroad accidents. This in turn can lead to significant risks to trains traveling through tunnels. RSD is helping to address this problem by assigning staff to evaluate railroad tunnel conditions in the Railroad Tunnel Evaluation Project (RTEP).

The RTEP inspection team is made up of RSD track inspectors. Team members inspect the tunnels and track structures within tunnels by walking the track. The inspectors document tunnel and track conditions by taking photographs and videos, and completing tunnel survey forms. Information collected on the survey forms includes tunnel history; height and width measurements; rail wear measurements; conditions of tunnel walls, ceilings, and floors; adequacy of drainage; and ballast conditions. Future tunnel surveys can use this information to assess whether tunnel conditions have worsened and if so, to what extent. A representative of the railroad responsible for the tunnel is present during the inspections, and they are made aware of concerns brought up by the RSD inspection team. RSD staff have completed railroad tunnel inventories for all railroads operating in California. There are approximately 120 tunnels that are in use and approximately 30 that are not in service.

The RTEP inspectors were not able to perform tunnel inspections for most of FY 2021-2022 due to COVID-19, because in order to perform these inspections, the RTEP team inspectors ride in hi-rail vehicles accompanied by railroad personnel. This would have violated the CPUC's social distancing protocols.

The RTEP tunnel inspections resumed in the third week of June 2022. 15 tunnels were inspected prior to the end of FY 2021-2022, all located in Plumas County between the towns of Portola and Belden, on a major freight route used by UPRR and BNSF Railway trains. For example, on June 15,

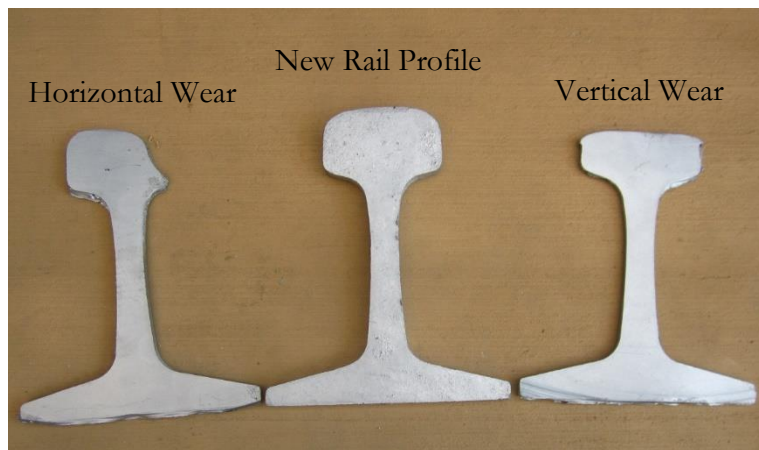
2022, the RTEP inspectors discovered a two-foot section of track with excessive wear in the tunnel at Spring Garden, 16 miles east of Keddie. This section likely would degrade further as a result of train traffic, eventually resulting in a broken rail that could cause a derailment. The RTEP informed the UPRR Manager of Track Maintenance (MTM) of this finding. The following day the MTM had that section replaced and informed RTEP of the replacement.



Degraded rail section

E. Rail Head Wear Project

Rail head wear is caused by the abrasive interface of wheels from loaded railroad cars passing over rails. Rail head wear can cause problems affecting uniform track gage and train balance while the train is traversing a curve. Track gage and train balance must be maintained within specified tolerances for safe train passage. Therefore, excessive rail head wear can be a causal factor for train derailments, especially on sharp curved track in mountainous areas.



FRA and some railroads collect rail head wear measurements under some circumstances. However, there are no regulations mandating when rail should be replaced due to rail head wear. It is imperative that railroads establish good rail wear monitoring, maintenance and replacement plans with remedial contingencies in the event of shortened rail head life expectancy, especially in multi-curved mountainous areas.

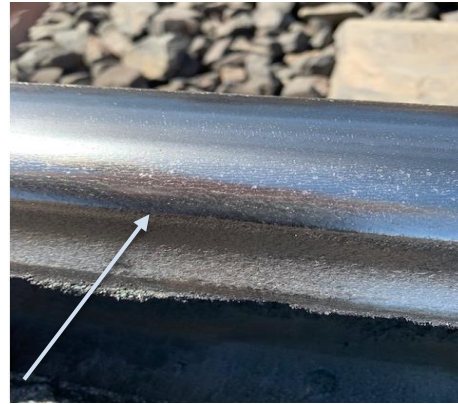
During FY 2021-2022, RSD inspectors on the Rail Head Wear Project (RHWP) team measured and documented rail head wear at locations of concern identified by our track inspection staff. The RHWP team measures rail head wear utilizing high-grade manual rail head wear gauges during tunnel surveys, derailment investigations, while conducting routine inspections at Local Safety Hazard Sites, and during other routine and special activities in sinuously curved track locations. Track inspectors also compare measurements with data collected by the FRA and the railroads themselves to look for uniformity or conflicting data. The track inspectors discuss their rail wear measurement findings with their branch supervisors and railroad company officers to assess rail monitoring, maintenance, and replacement plans.

Under the RHWP, RSD track inspectors collected measurements at 30 different locations throughout the state during FY 2021-2022. As an example of the value of this effort, on July 21, 2021, an RSD Track inspector measuring rail head wear on UPRR tracks near Bealville in Kern County identified a section of main track with horizontal wear in excess of one inch. This widening of the track gage increased the risk of derailment. RSD staff immediately notified railroad management of the dangerous condition, and the railroad committed to replace the rail within one

week. A follow-up inspection by the RSD track inspector on July 26, 2021, confirmed that the rail had been replaced.



Measurement on gauge indicates 1" horizontal wear



Close up of horizontal wear on rail

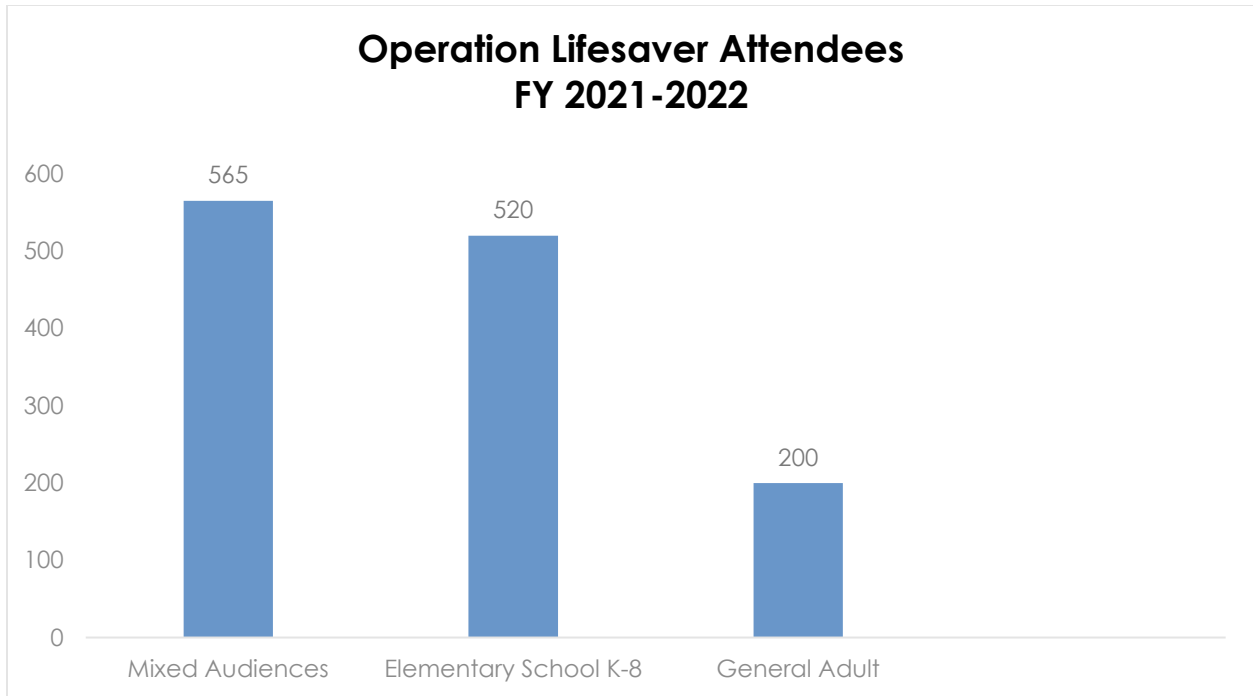
Excessive rail head wear conditions may call into question a railroad’s overall rail maintenance program plan. The RHWP intent is to focus on constructive discussions with high-level railroad officials regarding potential risks that may be overlooked in an existing rail monitoring, maintenance, or replacement plan. These ongoing discussions have proven beneficial for identifying high risk areas, such as Tehachapi Pass, where excessive rail head wear appeared at a faster rate than the railroad projected. This has opened a dialogue between RSD and the railroad for proactive adjustments to their rail replacement plans before a derailment occurs.

In the absence of FRA regulations concerning rail head wear, and as part of the CPUC’s commitment to continually look beyond the regulations, RSD plans to continue collecting rail head wear information, which will allow RSD to advocate for more effective rail head wear monitoring, maintenance, and replacement plans by railroads.

F. Operation Lifesaver Presentations

Operation Lifesaver, Inc (OLI), a nonprofit organization, administers a public safety awareness campaign and is funded primarily by grants from the FRA. Operation Lifesaver’s mission is to end collisions, deaths, and injuries at highway-rail grade crossings and on rail property through a nationwide network of volunteers who work to educate people about rail safety.

RSD inspectors and other staff have volunteered for Operation Lifesaver activities throughout the state, providing presentations to schools, community organizations, drivers’ education classes, bus driving workshops and trucking organizations, as well as educating the public at weekend events such as festivals and safety fairs about the dangers of being on or close to tracks, the meaning of warning signs, and other safety-related topics.



During FY 2021-22, RSD staff:

- Performed 19 Operation Lifesaver presentations
- Attended 4 community-wide events
- Reached approximately 1,285 people

Operation Lifesaver events included:

- Burbank Fire Safety Day
- Great Valley Elementary School
- San Clemente Junior Lifeguards
- San Luis Obispo Railroad Days
- Victoria Elementary School

G. Positive Train Control

Positive Train Control (PTC) technology uses a combination of wired or wireless digital communications, global positioning, and fixed wayside signal systems to send and receive a continuous stream of data about the location, direction, and speed of trains. PTC is designed to prevent train-to-train collisions involving different track blocks, over-speed derailments, incursions into established work zones, and movement through a track switch left in the wrong position. If a train does not slow for an upcoming speed restriction, stop indication, a switch improperly aligned, or a work zone boundary, which has not been given the approval to pass by the Employee-In-Charge, PTC will alert the engineer. If an appropriate action is not taken by the engineer, PTC will apply the train's brakes before the speed restriction, stop indication, switch in wrong position location, or work zone is violated.³

The Rail Safety Improvement Act of 2008 (Pub. L. No. 110-432) required each Class I railroad and each entity providing regularly scheduled, intercity or commuter rail passenger service to implement an FRA-certified PTC system by December 31, 2015, on:

- Its main line over which 5 million or more gross tons of annual traffic and poison- or toxic-by-inhalation hazardous materials are transported, and
- Its main line over which intercity or commuter rail service is regularly provided.

In October 2015, in the Positive Train Control Enforcement and Implementation Act of 2015 (Pub. L. No. 114-73), Congress extended this deadline to December 31, 2018, and included provisions for railroads to request an additional 24-month extension to December 31, 2020, if certain criteria were met.

Each railroad that owns track (host railroad) is required to implement PTC along all tracks covered under the above laws. Two freight railroads in California, UPRR and BNSF, are required to implement a PTC system under federal regulations and did so prior to the end of 2020. In general, short line railroads do not fall under the federal requirements to install PTC on their own railroad because they do not carry passengers or meet other criteria covered under the applicable regulations. However, the host railroad can require a short line to have PTC interoperability when the short line is operating on the host tracks.

There are several different PTC systems available that meet federal requirements, and different PTC systems are or will be in use by different railroads. Two different types of PTC systems are in use within California, which poses challenges when different systems are used by the host railroad and other railroads using that track (tenant railroads). In order to traverse host railroads, each tenant railroad must have interoperable PTC onboard equipment so that the different PTC systems can communicate with each other.

³ The 2014 and 2015 Annual Reports to the Legislature provide more detail on PTC technology.

RSD has two PTC inspectors. One has an extensive technology background, which is essential in understanding the complexities of PTC hardware and software design; the other has expertise in railroad operations. The group also has a lead, a senior inspector with railroad operations expertise. The PTC inspectors have been actively engaged in design review, component and wayside appurtenance testing, and PTC system and train interface operations during the development, construction, implementation, maintenance, and continuation of PTC systems in California.

Due to COVID-19 safety precautions, most PTC-related field activities, such as PTC operational train ride observations, were limited during FY 2021-2022. Staff communicated with railroad personnel to monitor performance. Staff also continued to perform the following activities:

- Ongoing correspondence with the railroads to determine current status and implementation issues.
- Monthly reports of PTC activities to RSD management.

RSD staff will continue to monitor the progress of PTC in California and make recommendations to ensure that carriers operate and maintain safe and effective systems.

California PTC Status: Passenger Railroads⁴

PASSENGER RAILROAD	STAGE OF PTC IMPLEMENTATION
1 SCAX	Conditional Certification. ⁵ Interoperability with tenants BNSF, UP, SDNX, and ATK on all host territory.
2 SDNX	Conditional Certification. Interoperability with tenants SCAX, ATK, BNSF, and PSRR (BNSF assumed operations from PSRR on October 1, 2020).
3 SMART	Conditional Certification. Interoperable with tenant NWP, which discontinued freight service as of February 28, 2022. SMART assumed freight operations on March 1, 2022 with acquired NWP equipment.
4 ATK	ATK is a tenant railroad in California. Interoperability with host railroads SCAX, SDNX, BNSF, and UP.
5 PCMZ	Conditional Certification. Interoperability with tenants ATK, UP, and ACE.
6 ACE	ACE is a tenant railroad in California. Interoperable with host railroad UP and Caltrain.

⁴ See Appendix I - List of Abbreviations for explanations of railroad abbreviations in the following two tables.

⁵ FRA Conditional Certification of the railroad’s Safety Plan and PTC system granted. The Safety Plan demonstrates to the FRA that the respective railroad’s PTC system meets all of the federal requirements and works as stated.

California PTC Status: Freight Railroads

FREIGHT RAILROAD	STAGE OF PTC IMPLEMENTATION
1 BNSF	All required subdivisions in California have PTC installed and in revenue service. BNSF is PTC interoperable with SCAX, SDNX, ATK, and UP. BNSF took over operations from PSRR as of October 1, 2020.
2 UP	All required subdivisions in California have PTC in revenue service. UPRR is interoperable with BNSF, SCAX, ATK, ACE, and PMCZ.
3 PSRR	PSRR discontinued operations on September 30, 2020 and BNSF assumed operations on October 1, 2020. SDNX required PSRR to equip their locomotives with PTC equipment that PSRR operates on SDNX lines. PSRR's parent company is Watco Companies, LLC. PSRR was interoperable with SDNX to satisfy the requirement.
4 NWP	NWP discontinued operations on February 28, 2022 and SMART assumed operations on March 1, 2022. SMART required NWP to equip their locomotives with PTC equipment that NWP operates on SMART lines. NWP was interoperable with SMART to satisfy this requirement.

H. California High-Speed Rail

California High Speed Rail System

The California High Speed Rail Authority (CHSRA), located within the California State Transportation Agency, is responsible for planning, designing, building and operation of the California High Speed Rail (HSR) system. Phase 1 of the system is the 520 mile San Francisco/Merced to Los Angeles/Anaheim section approved by California voters in Proposition 1A in 2008. Phase 2 is future extensions from Merced to Sacramento and from Los Angeles to San Diego. The system would eventually encompass over 800 miles of rail, with up to 24 stations.

Estimated completion dates for the various segments of the system have changed over time. The CHSRA's 2022 *Business Plan* estimated that the 171-mile Central Valley Segment, running from Merced to Bakersfield, would be completed in 2030.⁶ Construction has been taking place on a 119-mile portion of this segment, between the city of Madera and to the south, Poplar Avenue (an

⁶ CHSRA, *2022 Business Plan*, submitted to the Legislature May 6, 2022, p. 18, <https://hsr.ca.gov/about/high-speed-rail-business-plans/2022-business-plan/>

orchard area about twenty miles north of Bakersfield). Completion dates for the other segments cannot be made at this time due to funding uncertainties.⁷

Brightline West High Speed Rail System

Brightline West, formerly XpressWest, is a proposed privately financed high-speed rail line that would run 260 miles between Los Angeles and Las Vegas. Initially, the western end of the line would begin at the town of Apple Valley, located in the Victor Valley in San Bernardino County. After several delays in its starting date, the project plans to break ground in 2023, with passenger service along the initial 170-mile segment beginning in 2026.

Brightline also has proposed a 49-mile high-speed rail project running from Apple Valley to the city of Rancho Cucamonga, where passengers could connect with Union Station in Los Angeles via the Metrolink commuter rail system. Environmental reviews for this project are ongoing. Another possible project is a connector between Brightline and the California High Speed rail system once the latter reaches Palmdale in the Antelope Valley, thereby allowing passengers to access that system's stations, including those in the Los Angeles Basin.

RSD's Role

With its high speeds and hundreds of passengers on each train, HSR poses large potential accident risks. Even at low speeds, accidents can have significant consequences. RSD, with its regulatory authority over high-speed rail as a passenger rail system, has important responsibilities in helping to ensure the safety of HSR.

RSD staff inspect joint corridor locations where HSR construction sites and conventional freight train and passenger train properties interface. These inspections focus on HSR construction building activities that may endanger railroad workers on adjacent properties and/or potentially interfere with conventional railroad operations. The work associated with HSR can create unsafe conditions in close quarters between HSR and railroad properties. For example, locations where HSR contractors are moving building materials and equipment that could come into proximity of train operations creates a safety risk for HSR and railroad workers.

RSD reviews grade crossing applications from the CHSRA and Brightline West to ensure that the applications incorporate all applicable state and federal requirements. The applications mostly consist of overpass and underpass structures (which are referred to as grade separations) and related construction plans that eliminate the need for at-grade crossings. While grade separated crossings are more expensive than the at-grade crossings that are common on conventional railroad systems, grade separation eliminates train collisions with vehicles and pedestrians at crossing locations.

⁷ CHSRA's [2022 Business Plan](#), emphasizes that it is not possible to predict when sections beyond the Central Valley might be constructed absent a stable and predictable source of funding.

CHSRA, [ibid.](#), p. 78.

RSD staff also inspect the construction sites to ensure compliance with all applicable state requirements, especially those regarding close clearances, as overpasses, trestles, crash walls and other structures are being erected.

Once construction advances to the track construction phase and operational tests are ready to begin, RSD oversight will include discipline-specific inspections, as well as incident investigations in the event of violations of state and federal laws.

Applicable CPUC GOs that are enforced during the planning and initial stages of construction include:⁸

- GO 22-B Accident Reporting
- GO 26-D Clearances
- GO 88-B Highway-Rail Crossings
- GO 118-A Walkways

In FY 2021-2022, RSD staff performed the following:

- RCEB staff reviewed and approved one GO 88-B application from the CHSRA for an alteration of an existing crossing. These applications require only staff level approval.
- There were no RCEB staff reviews of CHSRA or Brightline West formal applications for construction of new crossings. When these are submitted, applications require approval by the full Commission, a process that generally takes over a year.

I. Heavy Grade Audit Project

RSD initiated the Heavy Grade Audit Project (HGAP) at the start of 2020 as part of its efforts to proactively manage public safety risks in cooperation with railroads. The purpose of HGAP is to identify potential and imminent risks, caused by changes in train make-up rules, to the safe operation of freight trains in mountainous areas in California, where trains encounter steep grades and sharp curves (“heavy grades”).

UPRR System Special Instructions Item 8, “Heavy and Mountain Grade Operations,” defines territories with a grade of 1 percent or more as “Heavy Grade” territories that require special train handling due to steep grade and sharp curves. The potential for a derailment or runaway train greatly increases in these areas.

⁸ A list of railroad-specific General Orders is presented in Appendix A. General Order 176, Overhead 25 kV Electrification for HSR, is enforced by a different unit, the Safety and Enforcement Division, Electric Safety and Reliability Branch.

Train make-up refers to the placement of individual railcars that make up a train. When assembling a train, railroads consider a variety of factors — such as weather conditions, terrain, each car’s weight, length, freight, and whether it is loaded or empty — when determining its position in the train. Additional locomotives also can be placed at other locations within trains.

Train make-up affects the weight distribution of trains and their ability to safely transit railroad track, depending on such factors as track grade and curvature, and how crews handle train speed and braking. Improperly assembled trains are more susceptible to derailment. For example, if cars are arranged such that empty rail cars alternate with loaded, heavy cars, the empty cars can become compressed between the loaded cars and derail when the engineer applies the train’s brakes. Similarly, if the engineer accelerates the train too abruptly it may pull the rail cars apart and/or derail them. Mountainous areas with steep grades and sharp curves pose the greatest potential derailment risks. These risks also have increased as the railroads have increased the length, and correspondingly the weight of their trains. Average train lengths have increased from approximately 5,000 feet in the 1970s to approximately 17,000 feet in 2022.

Although the FRA has issued non-binding guidance, there are no FRA regulations directing specific train make-up arrangements. Under a May 2004 settlement agreement, CPUC has the power to enforce the train make-up rules set by the two major freight railroads operating in the state, UPRR and BNSF, for their own operations. These railroads also are required to notify the CPUC on or before the day they change their make-up rules, including an explanation of the processes or decision criteria employed by the railroads in order to assess the safety of the proposed rules and the application of the criteria to the site in question.⁹ However, the railroads can remain in compliance with the settlement agreement and still alter their make-up rules in ways that potentially increase derailment risks.

It is because of these potential risks that RSD initiated the HGAP inspection teams to conduct field inspections to determine how changes in make-up rules may affect the safety of railroad operations. Among other activities, RSD inspectors discuss the configuration changes with train crews to discover whether the crews themselves have experienced increased difficulties, received adequate training, or perceived any new risks in train operations over sections of track where the new rules are in force. HGAP teams also assess the effects train make-up rule changes may have on tracks and bridges, such as increased rail wear or the structural integrity of bridges.

When HGAP personnel find that a rule change may increase safety risks, they bring their concerns to the attention of RSD management. RSD managers and inspectors may then meet with railroad management to discuss these concerns. The HGAP team can explain its findings, share any risk data team members have collected, and show railroad management why RSD believes that the rule change should be modified or withdrawn.

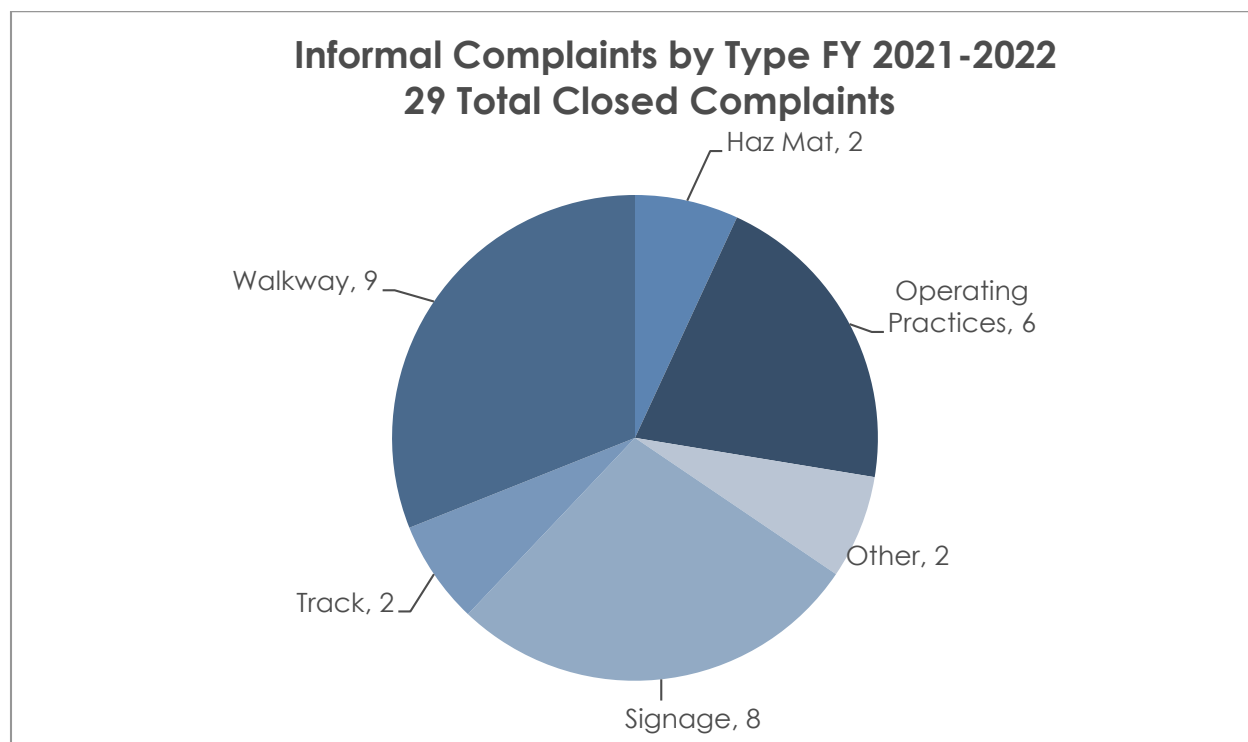
⁹ Commission Decision 06-02-013, *Opinion Modifying Decision 97-09-045 To Conform It To Federal Court Decisions*, February 16, 2006, https://docs.cpuc.ca.gov/published/Final_decision/53822.htm

J. Safety Complaint Investigations

RSD investigates complaints related to railroad safety that are received from a variety of sources, including railroad employees, railroad unions, and the public. In FY 2021-2022, RSD investigated 29 such complaints.

In these investigations, RSD inspectors may find non-conformances with railroad safety regulations. Where these involve state regulations, RSD directs the railroads to comply. If the complaint pertains to federal regulations, RSD inspectors communicate with the FRA to inform that agency of the complaint, avoid duplication of efforts, and ensure that the complaint is properly resolved.

In many instances, RSD looks beyond the specific texts of applicable regulations to identify non-regulated risks and other safety issues raised by complainants, and strive to work with railroads, shippers and other entities associated with the complainants’ safety concerns to find resolutions. However, in some cases, such as complaints regarding homelessness, RSD may lack the regulatory authority to resolve an issue raised by a complainant despite the safety hazards they describe.



K. General Order Training Program

The General Order Training Program (GOTP) was initiated in 2016 to improve RSD inspectors’ understanding of CPUC’s railroad’s safety GOs and related Public Utilities Code sections. Each of ROSB’s four regions has two presenters, who are responsible for training their region’s inspectors.

Inspectors receive this training every two years to retain proficiency. The two presenters also give condensed presentations to railroads and businesses on the state's GOs at their request. The GOTP represents RSD's commitment to continuing education for its inspectors, and cooperation with the railroads. Continued internal training and external education improves compliance and reduces the risks of railroad accidents and injuries.

New and refresher training started in February 2022. Eight classes were held covering GOs 118-A and 26-D, and the documentation of enforcement activities in RSD's Railroad Safety and Security Information Management System (RSSIMS) database. In 2022, RSD expanded the GOTP training to include the Rail Crossing and Engineering Branch (RCEB) inspectors. A total of 51 inspectors received in-person class training.

RSD continues to expand and update its GOTP program to ensure continued expertise in its inspector ranks. In addition to its current modules covering GOs 26-D, 72-B, 75-D, 118-A, 126, and 161, and Pub. Util. Code 7662, the GOTP team will develop additional training modules for Pub. Util. Codes 315, 7661, 7663, 7672, and 7673, which cover requirements for railroads to report incidents, including derailments, service interruptions, and hazardous materials releases, to the Governor's Office of Emergency Services (Cal OES) and the California Highway Patrol.

II. Mandated Rail Safety Inspections and Investigations

A. Inspection Process

RSD inspectors perform investigative and surveillance activities to detect instances of non-compliance (commonly called “defects” in FRA and RSD railroad safety-related documents) with both federal and state railroad safety laws and regulations.

Federal: To enforce federal regulations, RSD inspectors operate under the CPUC’s Safety Participation Program agreement with the FRA (49 CFR Part 212).

State: The primary California railroad safety laws and regulations enforced by RSD inspectors are CPUC GOs and the Public Utilities Code sections applicable to rail. A list of these laws and regulations is contained in Appendix A. The GOs most frequently cited by ROSB are 26-D (Regulations Governing Clearances on Railroads and Street Railroads With Reference to Side and Overhead Structures, Parallel Tracks, Crossings of Public Roads, Highways and Streets), and 118-A (Regulations Governing the Construction, Reconstruction, and Maintenance of Walkways Adjacent to Railroad Trackage and the Control of Vegetation Adjacent Thereto).

Among other provisions, GO 26-D establishes minimum standards for overhead and side clearances (i.e., distances) between freight cars and other equipment on railroad tracks on the one hand, and nearby objects on the other, such as switch boxes, signals, parallel tracks, and other rail apparatus; platforms, overhead roads, bridges, buildings, and other structures; and other types of potential obstructions. These standards are necessary to prevent contact between trains and obstructions which could damage both, and in particular, to prevent train personnel riding on the sides or tops of trains from being hit by such objects and becoming injured or killed.

Among other provisions, GO 118-A requires railroad corporations to provide reasonably safe and adequate walkways adjacent to their tracks in all switching areas, and sets standards for walkway slopes and ballasting. These standards are necessary to prevent persons from tripping and falling on uneven walkways, especially in the path of moving trains, possibly causing injury or death.

In general terms, RSD inspectors perform the following steps:

1. After arriving at a site, inspectors record noncomplying conditions at the facility or other railroad location in question, including the location, type, and extent of each defect discovered.
2. Inspectors present inspection findings to a responsible party representing railroad management and discuss how the defects can be corrected.
3. For non-compliances with FRA regulations, inspectors issue an FRA Inspection Report (Form FRA F 6180.96) to the railroad within 24 hours after the inspection. The RSD inspector may recommend that FRA issue a violation, with an accompanying civil penalty.

The FRA Chief Counsel reviews the recommendation and determines whether FRA will issue a violation and the amount of the civil penalty, if any, to be assessed.¹⁰

4. For non-compliances with CPUC General Orders, inspectors issue a General Order Inspection Notification (GOIN, also referred to as a GO Report) to the railroad within 24 hours after the inspection. For GOs 26-D and 118-A and Pub. Util. Code Section 7662 (which sets signage requirements; see Appendix A), CPUC Resolution ROSB-002¹¹ sets out a framework under which the railroad is given a period of time to correct non-compliances. If a follow-up inspection after that period finds that the non-compliances have not been corrected, another GOIN is issued, and the Director or Deputy Director of the Division has the authority to issue a citation, with accompanying fines, within a set period of time. A process is provided under which the railroad can request extensions and appeal the citation.¹²

B. Regular Inspections

Following are statistics on the number and results of regular inspections performed by RSD inspectors during FY 2021-2022. Examples of regular inspections are presented in Appendix C.

Total inspections

RSD inspectors:

- Performed 2,657 inspections and follow-up inspections to monitor the railroads' compliance with federal and state laws, and CPUC GOs.
- Performed 147 safety surveys (bridge and tunnel).
- Cited 6,006 federal regulation defects.
- Recommended civil penalties for 304 violations of federal regulations.
- Completed 405 CPUC GO Reports that identified 944 state regulation defects.¹²

RSD Hazardous Materials inspectors:

¹⁰ There is a wide range of financial penalties for violations of applicable federal railroad safety regulations, depending on which regulation is violated and whether the violation is ruled as “willful.” A penalty may be assessed against an individual only for a willful violation. The final penalty amount depends on the resolution of a claims conference between the railroad and the FRA. Penalties for violations of hazardous materials-related regulations potentially are much higher. For more information see <https://railroads.dot.gov/legislation-regulations/civil-penalties-schedules-guidelines>.

¹¹ As modified or otherwise affected by subsequent Commission actions, including Commission Resolution ALJ-299.

¹² Non-conformances with FRA regulations (“federal regulation defects”) can only be reported by inspectors certified in the applicable railroad discipline in which the defects occur (e.g., track defects are reported by track inspectors). Accordingly, the numbers of federal defects are disaggregated by discipline in the following discussion. However, inspectors from any of the five railroad disciplines can identify GO defects, and these defects are not disaggregated by discipline in the discussion.



CPUC inspector and US Coast Guardsman examining a leaking battery shipment

- Inspected or evaluated 13,248 units¹³ in 601 FRA Inspection Reports.
- Identified 1143 federal regulation defects.
- Recommended 3 violations for civil penalties for federal defects identified during regular inspection activity.

Hazardous materials units include each tank car, each record to ensure accurate documentation of the substance contained in a hazardous materials rail car or package, each evaluation of a hazardous materials unintended release mitigation plan, each inspection of the shipper’s paperwork, and other similar items.

RSD Hazardous Materials inspectors conduct a variety of activities, including the investigation of accidents involving the actual or threatened release of hazardous materials as reported by the Governor’s Office of Emergency Services 24-hour Warning Center. Inspectors also conduct unannounced inspections at the facilities of shippers, consignees, freight forwarders, intermodal transportation companies, and railroads.

RSD Hazardous Materials inspectors also inspect facilities to ensure compliance with CPUC GO 161, Rules and Regulations Governing the Transportation of Hazardous Materials by Rail. Inspectors look for the appropriate grounding of cars to prevent dangerous static electricity buildup during unloading. GO 161 also has requirements for reporting the release or threatened release of

¹³ A unit is a metric used to measure the activities of RSD inspectors. Units can be physical objects like locomotives, signal systems, and paper and electronic records generated by railroad companies; or actions performed by railroad personnel, such as switching operations. These are inspected or otherwise evaluated by inspectors for compliance with applicable regulations and railroad operating rules.

hazardous materials where there is a reasonable belief that the release poses a significant present or potential harm to persons, property, or the environment.

RSD Motive Power and Equipment (MP&E) inspectors:



RSD inspector identifying a defective high flange on a rail car wheel, which potentially could cause the rail car to derail



Broken vertical handhold bracket that may further break and cause a railroad employee to fall from the equipment

- Inspected or evaluated 36,343 units in 428 FRA Inspection Reports.
- Identified 2,723 federal regulation defects.
- Recommended 249 violations for civil penalties for federal regulation defects identified during regular inspection activity.

MP&E units include each locomotive, each rail car, inspection records or specific components thereof. Pub. Util. Code Section 765.5(d) requires CPUC to establish, by regulation, a minimum inspection standard to ensure that at the time of inspection, that railroad locomotives, equipment, and facilities located in the Class I railroad yards will be inspected not less frequently than every 120 days (three times per year).¹⁴

¹⁴ UPRR and BNSF are the only Class I freight railroads operating in California. As defined in 49 CFR 263.1003, Class I railroad means a railroad which in the last year for which revenues were reported exceeded the threshold established under regulations of the Surface Transportation Board ([49 CFR part 1201.1-1](#) (2008)).

Pub. Util. Code Section 765.5(d) requires CPUC to establish by regulation a minimum inspection standard to ensure that railroad locomotives, equipment, and facilities located in class I railroad yards in California will be inspected not less frequently than every 120 days, and inspection of all branch and main line track not less frequently than every 12 months.

During FY 2021-2022, RSD did not satisfy the mandate. Of the 51 facilities, 32 sites were inspected three times or more during the fiscal year. Of the remaining 19 facilities, all were inspected at least once. Facilities that have greater numbers of train traffic are inspected more often than those with lesser train traffic.

Extended vacancies and the difficulties associated with identifying and recruiting well-qualified and experienced candidates contributed to failing to meet the mandate. When a certified RSD inspector leaves, it takes at least one year to hire a new inspector, get the inspector appropriate training for federal certification, and train the inspector in the field mentored by an experienced RSD inspector. During that period, RSD’s ability to meet the mandate is reduced. In addition, the experienced inspectors may miss their individually assigned mandate segments because they spend a significant amount of time training new hires on California-specific laws and CPUC GOs.

RSD Operating Practices (OP) inspectors:



RSD inspector observing UP locomotive to ensure it is secured properly to prevent an uncontrolled movement.

- Inspected or evaluated 3,724 units in 545 FRA Inspection Reports.
- Identified 592 federal regulation defects.
- Recommended 52 violations for civil penalties for federal regulation defects identified during regular inspection activity.

Operating Practices activities include ensuring the accuracy of train consist (train make up) records, observing crews performing switching operations, reviewing the accuracy and completeness of accident records, ensuring compliance with certifications and licenses, and other similar items. The

Operating Practices inspectors were challenged by COVID-19 protocols and were unable to safely ride locomotives and passenger cars to conduct observations for operating compliance during the first three quarters of the fiscal year.

RSD Signal and Train Control inspectors:



RSD Signal inspectors observing a power operated switch inspection

- Inspected or evaluated 918 units in 151 FRA Inspection Reports.
- Identified 169 federal regulation defects.
- Recommended no violations for civil penalties for federal regulation defects identified during regular inspection activity.

Signal and Train Control units include each signal system structure, maintenance and testing records, warning devices at crossings, and other electronic or mechanical signaling systems.

RSD Track inspectors:



CPUC and FRA Track inspector with railroad employees conducting a track inspection

- Inspected or evaluated 6,656 units in 527 FRA Inspection Reports.
- Identified 1,379 federal regulation defects.
- Recommended no violations for civil penalties for federal regulation defects found during regular inspection activity.

Track units include a mile of track, a switch, a roadway maintenance machine, a record, and other similar items involving the track structure.

Inspectors use several methods to inspect track. Each method has its benefits and drawbacks depending on the terrain, steepness, and location.¹⁵

The methods include:

- Physically walking the track.
- Riding in a hi-rail vehicle (motor vehicle outfitted with steel rail guide wheels).
- Riding in an FRA or railroad owned geometry car (a passenger coach equipped to identify geometric track deficiencies that create accident risks).

In FY 2021-2022, RSD inspectors surveyed 2,829 miles of track by conducting physical walking inspections. The inspections identified 850 defective conditions. RSD inspectors conducted numerous follow-up inspections to monitor the railroads' compliance and verify that the defects had been corrected. However, this mandate was not met due to the COVID-19 pandemic and RSD's

¹⁵ The 2013-2014 Annual Report to the Legislature provides a detailed explanation about the methods of track inspections: <http://www.cpuc.ca.gov/rosb/>

inability to maintain social distancing while riding in vehicles during the first three quarters of the fiscal year.

C. Focused Inspections

A focused inspection is an inspection that may concentrate on a specific discipline's regulations and/or a specific location or theme. These inspections target railroad yards and track that pose the greatest safety risk, based on inspection data, accident history, and rail traffic density. Focused inspections involve inspectors from a variety of disciplines or multiple inspectors from a single discipline, working together at a specific location or rail facility. Typically, focused inspections are joint efforts between the FRA and RSD, although Pub. Util. Code Section 767.5 permits the CPUC to conduct the inspections as the CPUC determines to be necessary.

Focused inspections allow RSD inspectors to evaluate all aspects of a railroad or railroad facility's operational and maintenance practices and procedures. This includes evaluation of railroad personnel's technical expertise and experience, and organizational safety culture. If corrective actions are recommended by RSD inspectors, a follow-up inspection is performed to determine progress by the railroad entity in carrying out the recommended actions. An example of a focused inspection is shown in Appendix D.

Pub. Util. Code Section 765.5(e) requires CPUC to conduct focused inspections of railroad yards and track.



Multi-discipline RSD inspectors discussing a defective condition during a focused inspection

In FY 2021-2022, RSD inspectors performed 15 focused inspections, which consisted of:

- 2 hazardous materials inspections.
- 3 track inspections.
- 5 operating inspections.
- 1 signal and train control inspections.

- 2 mechanical inspections.
- 2 cross-discipline inspections.

D. Accident Investigations

RSD inspectors evaluate each accident when reported to the CPUC, usually by Cal OES, and determine the appropriate investigative response based on accident severity criteria, including:

- Impact to the public (evacuations, injuries, fatalities).
- Injuries or fatalities to railroad employees or passengers.
- Environmental impact.
- Impact on commercial transportation (highway closures, commuter interruptions).
- Violations of state or federal railroad safety regulations or operating rules.

In FY 2021-2022, there were 796 reported railroad-related incidents in California, up from 727 in the previous fiscal year. Each incident falls into one or more categories: 464 were related to crossing or trespasser incidents (175 of which were within 50 feet of a grade-crossing), 99 were materials spills, 165 were derailments, and 68 were in other categories. These incidents resulted in a total of 215 fatalities and 155 injuries (compared to 169 and 94 in the previous year, respectively), mostly to trespassers and road users. RSD supervisors determined that 196 incidents required further investigation. Appendix E describes an example of a major accident investigation performed by RSD inspectors.

Pub. Util. Code Section 315 requires CPUC to investigate the cause of all accidents occurring within the state upon the property of any public utility directly or indirectly connected with its maintenance or operation, resulting in loss of life or injury to person or property damage.

E. Security Inspections

Among other provisions, the Local Community Rail Security Act of 2006, Pub. Util. Code Sections 7665 through 7667, requires that every operator of rail facilities in the state implement an infrastructure protection program to protect rail infrastructure in the state from acts of sabotage, terrorism, or other crimes.

The infrastructure protection program is to be updated by the rail operator at least once every year, and the updated plan submitted to CPUC. Also, the operators are to provide CPUC with a risk assessment incorporating a broad range of risk-related information. RSD reviews the programs, and it may conduct inspections to facilitate the reviews and order rail operators to improve, modify, or change their programs to comply with the Act.

In FY 2021-2022, RSD inspectors performed security inspections on all of the 38 railroads that operate in California. All railroads inspected followed relevant state railroad security-related laws. Amtrak, UPRR, and BNSF railroads have national security plans that are reviewed annually by the FRA. RSD inspectors reviewed each railroad's security plan at various locations within the state. However, due to COVID-19-related travel and physical distancing restrictions, several of the security reviews were conducted by phone or via Webex conferences. These railroads are identified in the chart below.

Following is a table identifying the railroad, inspection date, and compliance status:

RAILROAD	DATE OF INSPECTION	COMPLIANT	COMMENTS
Altamont Commuter Express	03/14/22	Y	Conducted through Webex
Amtrak Los Angeles	03/14/22	Y	Conducted through Webex
Amtrak Oakland	03/14/22	Y	Conducted through Webex
Baja California Railroad	05/19/22	Y	Conducted through Webex
BNSF	06/09/22	Y	
Cal Train	06/16/22	Y	
California Northern Railroad	06/02/22	Y	
Central California Traction Company	02/14/22	Y	Conducted through Webex
Goose Lake Railway	01/13/22	Y	Conducted by phone interview
Los Angeles Junction Railroad	05/16/22	Y	
Merced County Central Valley Railroad	06/03/22	Y	
Metrolink	06/27/22	Y	
Modesto & Empire Traction	02/14/22	Y	Conducted through Webex
Napa Valley Railroad	01/13/22	Y	Conducted through Webex
Niles Canyon Railway	01/31/22	Y	Conducted through Webex
North County Transit District	05/27/22	Y	

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Northwestern Pacific Railroad Company	03/18/22	Y	Conducted through Webex
Oakland Global Rail Enterprise	02/14/22	Y	Conducted through Webex
Pacific Harbor Lines	05/02/22	Y	
Pacific Southwest Railway Museum	05/13/22	Y	Conducted by phone interview
Quincy Railroad	01/28/22	Y	Conducted by phone interview
Richmond Pacific Railroad	01/28/22	Y	Conducted by phone interview
Sacramento Valley Railroad	06/02/22	Y	
San Diego & Imperial Valley	04/25/22	Y	
San Francisco Bay Railroad	06/09/22	Y	Conducted by phone interview
San Joaquin Valley Railroad	05/26/22	Y	
Santa Cruz & Big Trees	03/18/22	Y	Conducted by phone interview
Santa Maria Valley Railroad	06/28/22	Y	
St Paul & Pacific Railroad	06/17/22	Y	
Sierra Northern Railroad	01/28/22	Y	Conducted through Webex
Sierra Northern Railroad Ventura	01/28/22	Y	Conducted through Webex
SMART	03/18/22	Y	Conducted through Webex
So. Cal Ramp Services	04/21/22	Y	
Stockton Terminal & Eastern	02/14/22	Y	Conducted through Webex
Trona Railroad	04/14/22		
UPRR	06/27/22	Y	Conducted by phone interview. Note: security manager is located in Omaha NE.
Ventura County Railroad	05/11/22	Y	
West Isle Line	06/12/22	Y	

Notes:

Merced County Central Valley Railroad, which began operations on May 2, 2022, is a new addition to the reviews.

Filmore Western Railroad ceased operations June 30, 2021. Sierra Northern Ventura Branch will begin freight operation by the fourth quarter of 2022 on the former Filmore Western rail line.

III. Investigations of Runaway Trains and Other Uncontrolled Train Movements

Pub. Util. Code Section 916.1 requires the CPUC to annually report the results of its investigations of runaway trains or other uncontrolled train movements that threaten public health and safety, as per Section 7661. Similarly, Pub. Util. Code Section 7711.1 requires the CPUC to collect and analyze near-miss data for incidents in California occurring at railroad crossings and along the railroad rights-of-way. Section 7711.1 states “For purposes of this section, “near-miss” includes a runaway train or any other uncontrolled train movement that threatens public health and safety reported to the Commission pursuant to Section 7661.”¹⁶

In FY 2021-2022, RSD investigated thirteen instances of an uncontrolled train movement. An example of such an investigation is shown in Appendix F of this report.

¹⁶ Pub. Util. Code Section 7661 requires such uncontrolled movements to be reported to the California Governor’s Office of Emergency Services, which in turn notifies the CPUC.

IV. Derailment and Local Safety Hazard Sites

Pub. Util. Code section 916.2 requires the CPUC to report to the Legislature on sites on railroad lines in the state it finds to be hazardous. The sites on railroad lines the CPUC identified as hazardous were identified in 1997 in a formal Commission Decision, D.97-09-045, and were termed Local Safety Hazard Sites (LSHSs). Two methods to determine sites were used: 1) sites determined by a statistically significant higher derailment rate than elsewhere on the line, and 2) sites determined by the operating railroad to require stricter operating practices than elsewhere on the line.

LSHS locations have not changed their physical characteristics, and therefore no change has been made to the list since 1997.

Section 916.2 also requires the CPUC to include a list of all railroad derailment accident sites in the state on which accidents have occurred within at least the previous five years, describe the nature and probable causes of the accidents, and indicate whether the accidents occurred at or near sites that the CPUC has determined to be hazardous.

The list of derailments is located on the CPUC's website at <http://www.cpuc.ca.gov/rosb/>.

Table 1 lists the accidents that have occurred “at or near” an identified local safety hazard site within the previous five years pursuant to Pub. Util. Code section 916.2(a). The original analysis identifying these sites was based on the higher risk of main line and siding accidents.

Table 1—List of Local Safety Hazard Sites

*LSHS #	CURRENT LSHS TRACK LINE	PREVIOUS LSHS TRACK LINE AT TIME OF D.97-09-045 ¹⁷	RR MILEPOST	NUMBER OF DERAILEMENTS 2017-21	OVERLAP WITH SITE #**
16	UPRR Mojave Subdivision	SP Bakersfield Line	335.0 to 359.9	23	
9	UPRR Black Butte Subdivision	SP Shasta Line	322.1 to 332.6	3	#10
10	UPRR Black Butte Subdivision	SP Shasta Line	322.1 to 338.5	0	#9
19	UPRR Mojave Subdivision	SP Bakersfield Line	463.0 to 486	0	
12	UPRR Roseville Subdivision	SP Roseville District	150.0 to 160.0	1	
6	UPRR Yuma Subdivision	SP Yuma Line	542.6 to 589.0	3	#3, #4

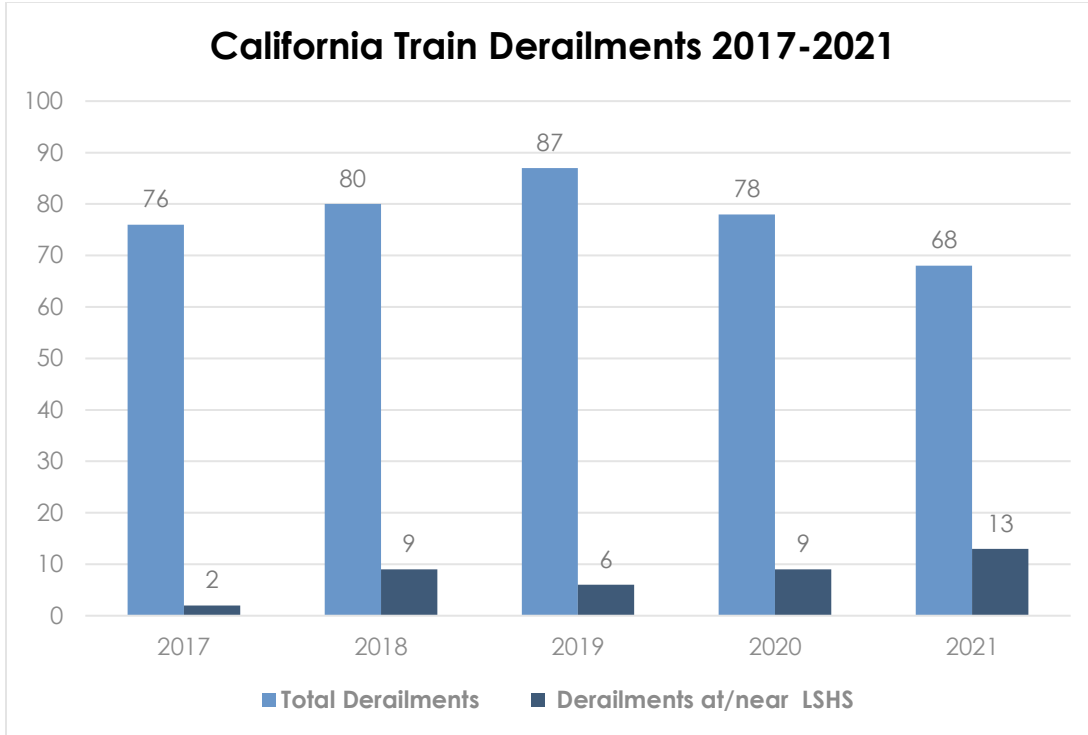
¹⁷ In 1996, UPRR purchased Southern Pacific Railroad.

22	UPRR Canyon Subdivision	UP Feather River Division	234.0 to 240.0	0	#25
25	UPRR Canyon Subdivision	UP Feather River Division	232.1 to 319.2	1	#22, #23
3	UPRR Yuma Subdivision	SP Yuma Line	535.0 to 545.0	0	#6
23	UPRR Canyon Subdivision	UP Feather River Division	253.0 to 282.0	1	#25
4	UPRR Yuma Subdivision	SP Yuma Line	586.0 to 592.0	0	#6
26	BNSF Gateway Subdivision	UP Bieber Line,	15.0 to 25.0	0	
31	BNSF San Diego Subdivision	ATSF San Diego	249.0 to 253.0	0	
1	UPRR Coast Subdivision	SP Coast Line	235.0 to 249.0	0	
7	Central Oregon and Pacific Railroad Siskiyou Subdivision	SP Siskiyou Line	393.1 to 403.2	0	
27	UPRR L.A. Subdivision, Cima Grade		236.5 to 254.6	2	
28	BNSF Cajon Subdivision	ATSF Cajon	53.0 to 68.0	4	
29	BNSF Cajon Subdivision	ATSF Cajon	81.0 to 81.5	1	
30	BNSF Cajon Subdivision	ATSF Cajon	55.9 to 81.5	0	

* The LSHS number (LSHS #) is for identification purposes only and does not indicate any ranking.

** The two methods of determining LSHSs described earlier sometimes produce different site boundaries. Where a site's boundaries identified by one method overlap with another site identified by the different method, the other site is listed in this column.

Within the previous five calendar years, California experienced 389 derailments. Of that total, 39 derailments, or 10 percent, occurred at or near local safety hazard sites. For this report, “at or near” includes any location of railroad track along the railroad right-of-way that is contained in the segment of railroad designated to be a local safety hazard site, including the distance of track one mile on each side of the local safety hazard site. Maps of local safety hazard sites are included in Appendix G.



Source: Federal Railroad Administration, Office of Safety Analysis:

Total derailments: Table 1.12, Ten Year Accident/Incident Overview and Table 3.18, Accident By State/Railroad

Total derailments at/near LSHS: Table 3.11, Accident Detail Report, as calculated by RSD staff

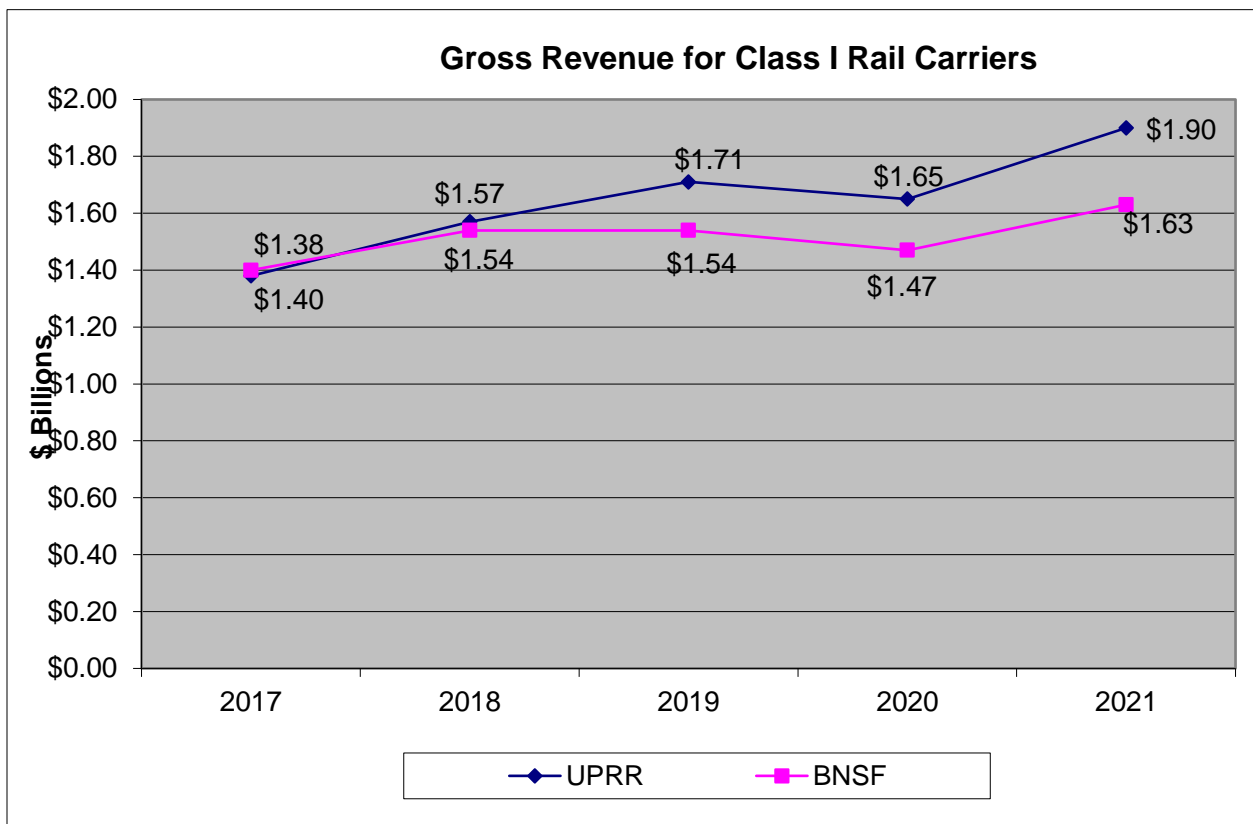
V. Regulatory Fee Impact on Competition

Pub. Util. Code Section 309.7 requires the activities of the CPUC that relate to safe operation of common carriers by railroad, other than those relating to grade crossing protection, to be supported by the fees paid by railroad corporations.

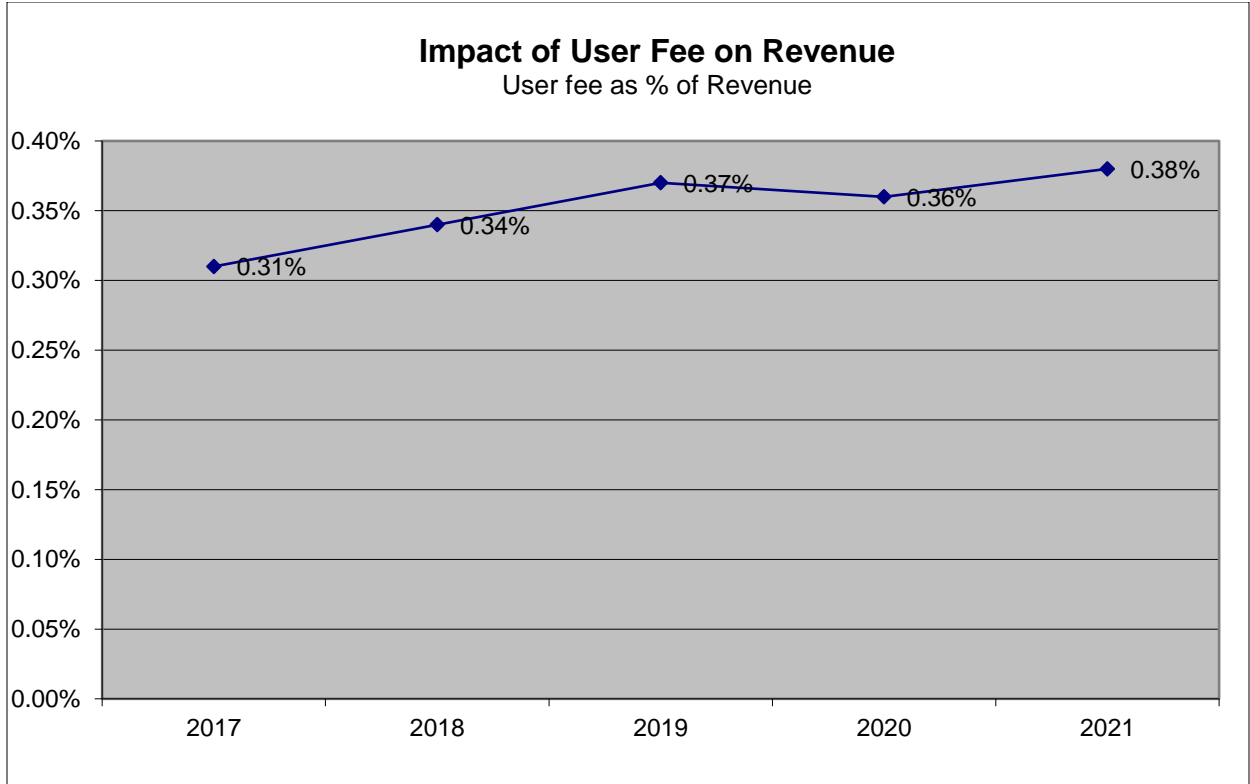
Pub. Util. Code Section 916.3 requires the CPUC to report annually on the impact on competition, if any, of the regulatory fees assessed by railroad corporations for the support of CPUC’s activities.

In FY 2021-2022, the Legislature appropriated \$13.27 million from the CPUC Transportation Reimbursement Account. The fees paid by the railroad corporations are deposited into a dedicated subaccount within the CPUC Transportation Reimbursement Account and are the sole funding source for the ROSB program. The fees do not fund any other CPUC programs.

The railroad user fees assessed in FY 2021-2022 on UPRR and BNSF constituted 0.38 percent of their combined intrastate revenues. This amount had a negligible impact on the major California railroads’ profits and was unlikely to have had any effect on competition. The following two graphs show the percentage of user fees versus railroad revenue last year.



Source: the railroads report their revenues to CPUC annually to determine the user fee that funds ROSB



VI. Challenges for Rail Safety

Trespassing on Railroad Property by Homeless Individuals

During the last year, RSD continued to observe rail safety issues associated with trespassing by homeless individuals and homeless encampments in and around railroad properties. These present public safety concerns and affect the personal safety of RSD inspectors.

A railroad-related trespasser is any person who enters or remains upon an area on railroad property that he or she is not authorized to access, including railroad equipment, or in railroad facilities near railroad equipment and on railroad rights-of-way (ROWs).¹⁸ Trespassing along railroad ROWs and within railroad infrastructure such as yards is the leading cause of rail-related deaths in America. Hundreds of people die each year in the U.S. from rail-related trespassing accidents, and additional hundreds are injured.

During calendar year 2021, the U.S. experienced 1,151 total pedestrian rail trespassing casualties (625 fatalities and 526 injuries). California had 244 total casualties (143 fatalities and 101 injuries), more than any other state.¹⁹

Trespassing by homeless people is a particularly difficult problem. Many locations in California near railroad tracks have been occupied by homeless individuals and encampments. Homeless tents and other structures, possessions, and debris frequently are placed in unsafe proximity to railroad tracks.

Apart from the risks to individual trespassers, homeless encampments often create hazards which impede the inspections of train equipment and tracks necessary for safe operations, damage rail infrastructure, and adversely impact service.

RSD has the regulatory authority to enforce measures that can reduce some safety issues created by this situation. The disposal of waste materials or other disturbances on walkways that create tripping hazards in the vicinity of railroad ROWs would violate GO 118-A, which sets standards for walkway surfaces alongside railroad tracks. GO 118-A states, “The Commission, after hearing, may order the railroad corporation to eliminate any unsafe walkway condition and may specify such reasonable time within which the improvement shall be completed as may be appropriate under the circumstances.”

Similarly, tents, wooden structures, and miscellaneous debris in homeless encampments may violate GO 26-D, which sets clearance standards between railroad tracks and structures and obstructions adjacent to tracks. GO 26-D states that “no railroad or street railroad corporation shall operate any

¹⁸ Kathryn Stanchak and Marco DaSilva, *Trespass Event Risk Factors*, U.S. Department of Transportation, Federal Railroad Administration, DOT-VNTSC-FRA-14-03, November 2014, p. 5, <https://railroads.dot.gov/elibrary/trespass-event-risk-factors>

¹⁹ Operation Lifesaver, “Trespassing Casualties by State,” April 11, 2022, [Trespassing Casualties by State | Operation Lifesaver \(oli.org\)](https://www.operationlifesaver.org/operation-lifesaver/oli.org)

cars, trains, motors, engines, or other rolling equipment over its own or other tracks, except as hereinafter provided, on which overhead or side clearances, or clearances between tracks, are less than the minimum herein prescribed...”

These GOs cover only a small portion of the railroad safety issues presented by homelessness near railroad properties. RSD staff have met with local governmental officials and railroad company personnel to discuss ways of addressing these issues. As an additional safety measure for RSD staff, inspectors have been instructed to conduct their inspections in pairs, or in the company of local enforcement or railroad personnel.

An example of RSD activities related to homeless encampments is provided in Appendix H.

Appendix A – State Railroad Safety Laws and General Orders

AUTHORITY	STATUTORY SPECIFIED TASKS (PARAPHRASED)	CPUC-GENERAL ORDERS
Pub. Util. Code Sec. 309.7 (a)	<p>RSD is responsible for inspection, surveillance, and investigation of the rights-of-way, facilities, equipment, and operations of railroads and public mass transit guideways, and for enforcing state and federal laws, regulations, orders, and directives relating to transportation of persons or commodities, or both, of any nature or description by rail.</p> <p>RSD shall advise the Commission on all matters relating to rail safety, and shall propose to the Commission rules, regulations, orders, and other measures necessary to reduce the dangers caused by unsafe conditions on the railroads of the state.</p>	
Pub. Util. Code Sec. 309.7 (b)	<p>RSD shall exercise all powers of investigation granted to the Commission, including rights to enter upon land or facilities, inspect books and records, and compel testimony.</p> <p>RSD shall employ sufficient federally certified inspectors to ensure at the time of inspection that railroad locomotives and equipment and facilities located in class I railroad yards in California are inspected not less frequently than every 120 days, and all main and branch line tracks are inspected not less frequently than every 12 months.</p>	GO 22-B: Requires that railroads immediately furnish the Commission notification of all train collision and derailments resulting in loss of life or injury, all bridge failures, and all highway crossing accidents resulting in loss of life or injury.
Pub. Util. Code Sec. 309.7 (c)	RSD shall, with delegated CPUC attorneys, enforce safety laws, rules, regulations, and orders, and to collect fines and penalties resulting from the violation of any safety rule or regulation.	Resolution ROSB-002 established a civil penalty citation program for enforcing compliance with safety requirements for railroad carriers
Pub. Util. Code Sec. 309.7 (d)	<p>(d) ROSB activities shall also be supported by the fees paid by railroad corporations.</p> <p>The activities of the division of the Commission responsible for consumer protection and safety that related to grade crossing protection shall be supported by funds appropriated from the State Highway Account in the Public Transportation Fund.</p>	

AUTHORITY	STATUTORY SPECIFIED TASKS (PARAPHRASED)	CPUC-GENERAL ORDERS
Pub. Util. Code Sec. 315	The Commission shall investigate the cause of all accidents occurring within this state upon the property of any public utility or directly or indirectly arising from or connected with its maintenance or operation, resulting in loss of life or injury to person or property and requiring, in the judgment of the Commission, investigation by it, and may make such order or recommendation with respect thereto as in its judgment seems just and reasonable.	
Pub. Util. Code Sec. 421	(a)-(g) The Commission shall annually determine a fee and is permitted to expend funds for specified purposes.	
Pub. Util. Code Sec. 761	Whenever the Commission finds that rules, practices, equipment, appliances, facilities, or service of any public utility are unjust, unreasonable, unsafe, improper, inadequate, or insufficient, the Commission shall fix the rules.	GO 27-B: Filing and posting of railroad timetables and changes.
Pub. Util. Code Sec. 765.5	<p>(a) The purpose of this section is to provide that the Commission takes all appropriate action necessary to ensure the safe operation of railroads in this state.</p> <p>(b) The Commission shall dedicate sufficient resources necessary to adequately carry out the State Participation Program for the regulation of rail transportation of hazardous materials as authorized by the Hazardous Material Transportation Uniform Safety Act of 1990 (P.L. 101-615).</p> <p>(c) On or before July 1, 1992, the Commission shall hire a minimum of six additional rail inspectors who are or shall become federally certified, consisting of three additional motive power and equipment inspectors, two signal inspectors, and one operating practices inspector, for the purpose of enforcing compliance by railroads operating in this state with state and federal safety regulations.</p> <p>(d) On or before July 1, 1992, the Commission shall establish, by regulation, a minimum inspection standard to ensure, at the time of inspection, that railroad locomotives, equipment, and facilities located in class I railroad yards in California will be inspected not less frequently than every 120 days, and inspection of all branch</p>	

AUTHORITY	STATUTORY SPECIFIED TASKS (PARAPHRASED)	CPUC-GENERAL ORDERS
	<p>and main line track not less frequently than every 12 months.</p> <p>(e) Commencing July 1, 2008, in addition to the minimum inspections undertaken pursuant to subdivision (d), the Commission shall conduct focused inspections of railroad yards and track, either in coordination with the Federal Railroad Administration, or as the Commission determines to be necessary. The focused inspection program shall target railroad yards and track that pose the greatest safety risk, based on inspection data, accident history, and rail traffic density.</p>	
<p>Pub. Util. Code Sec. 768</p>	<p>The Commission may, after a hearing, require every public utility to construct, maintain, and operate its line, plant, system, equipment, apparatus, tracks, and premises in a manner so as to promote and safeguard the health and safety of its employees, passengers, customers, and the public. The Commission may prescribe, among other things, the installation, use, maintenance, and operation of appropriate safety or other devices or appliances, including interlocking and other protective devices at grade crossings or junctions and block or other systems of signaling. The Commission may establish uniform or other standards of construction and equipment and require the performance of any other act which the health or safety of its employees, passengers, customers, or the public may demand.</p>	<p>GO 26-D: Establishes minimum clearances between railroad tracks, parallel tracks, side clearances, overhead clearances, freight car clearances, and clearances for obstructions, motor vehicles, and warning devices to prevent injuries and fatalities to rail employees.</p> <p>GO 72-B: Formulates uniform standards for grade crossing construction to increase public safety.</p> <p>GO 75-D: Establishes uniform standards for warning devices for at-grade crossings to reduce hazards associated with persons traversing at-grade crossings.</p> <p>GO 118-A: Provides standards for the construction, reconstruction, and maintenance of walkways adjacent to railroad tracks to provide a safe area for train crews to work.</p> <p>GO 126: Establishes requirements for the contents of First-Aid kits provided by common carrier railroads.</p>
<p>Pub. Util. Code Sec. 916</p>	<p>Requires the Commission to report to the Legislature on its rail safety activities annually, on or before November 30.</p>	
<p>Pub. Util. Code Sec. 916.2</p>	<p>Requires the Commission to report to the Legislature on sites on railroad lines in the state it finds to be hazardous and list all derailment accidents sites in the state on which accidents</p>	

AUTHORITY	STATUTORY SPECIFIED TASKS (PARAPHRASED)	CPUC-GENERAL ORDERS
	<p>have occurred within at least the previous five years.</p>	
<p>Pub. Util. Code Sec. 916.3</p>	<p>Requires the Commission to report on the actions CPUC has taken to comply with section 765.5, which requires CPUC to take all appropriate action necessary to ensure the safe operation of railroads in this state.</p> <p>Requires the Commission to report annually on the impact on competition, if any, of the regulatory fees assessed railroad corporations for the support of CPUC's activities.</p>	
<p>Pub. Util. Code Sec. 7661</p>	<p>Requires the Commission to investigate any incident that results in a notification to CEMA [now Cal OES].</p>	
<p>Pub. Util. Code Sec. 7662</p>	<p>Requires a railroad to place appropriate signage to notify an engineer of an approaching grade crossing and establishes standards for the posting of signage and flags, milepost markers, and permanent speed signs.</p>	
<p>Pub. Util. Code Sec. 7665.2</p>	<p>By July 1, 2007, requires every operator of rail facilities to provide a risk assessment to the Commission and the agency for each rail facility in the state that is under its ownership, operation, or control, and prescribes the elements of the risk assessment.</p>	
<p>Pub. Util. Code Sec. 7665.4</p>	<p>(f) Requires the rail operators to develop an infrastructure protection program and requires the Commission to review the infrastructure protection program submitted by a rail operator. Permits CPUC to conduct inspections to facilitate the review and permits CPUC to order a rail operator to improve, modify, or change its program to comply with the requirements of this article.</p> <p>(g) Permits CPUC to fine a rail operator for failure to comply with the requirements of this section or an order of the Commission pursuant to this section.</p>	
<p>Pub. Util. Code Sec. 7665.6</p>	<p>Requires every rail operator to secure all facilities that handle or store hazardous materials; store hazardous materials only in secure facilities; ensure that the cabs of occupied locomotives</p>	<p>GO 161: Establishes safety standards for the rail transportation of hazardous materials.</p>

AUTHORITY	STATUTORY SPECIFIED TASKS (PARAPHRASED)	CPUC-GENERAL ORDERS
	<p>are secured from hijacking, sabotage, or terrorism; and secure remote-control devices.</p> <p>Prohibits every rail operator from leaving locomotive equipment running while unattended or unlocked, from using remote control locomotives to move hazardous materials over a public crossing, unless under specified circumstances.</p>	
<p>Pub. Util. Code Sec. 7665.8</p>	<p>Requires every rail operator to provide communications capability to timely alert law enforcement officers, bridge tenders, and rail workers of the local or national threat level for the rail industry, i.e., sabotage, terrorism, or other crimes.</p>	
<p>Pub. Util. Code Sec. 7673</p>	<p>Requires every railroad that transports hazardous materials to provide a system map showing mileposts, stations, terminals, junction points, road crossings, and location of pipelines in its rights of way.</p>	
<p>Pub. Util. Code Sec. 916.2 [formerly Sec. 7711]</p>	<p>Requires CPUC to identify local safety hazards on California railroads</p>	
<p>Pub. Util. Code Sec. 7711.1</p>	<p>Requires CPUC to collect and analyze near-miss data.</p>	

Appendix B – Example of a Risk Management Status Report

September 1, 2021: While performing an inspection of the BNSF car repair shop in Commerce, an RSD inspector was made aware of an unsafe practice:

Electric derails controlled by BNSF mechanical staff were used to provide protection for the repair tracks leading to the shop. The derails prevented equipment from entering those tracks while BNSF and TTX²⁰ employees were repairing rail cars.

It was brought to the inspector's attention by an employee that occasionally the derails were removed while equipment was being moved from the facility yard into the repair tracks. When this occurred, employees continued to work and were instructed to use switches to provide protection by lining them against movement into the track they were working on. However, the repair track switches did not have the capability to be locked. This was in violation of 49 CFR 218.27(b) and 49 CFR 218.29(a)(4), which require the use of derails or locked switches to provide protection to employees working on, under, and between rolling equipment.

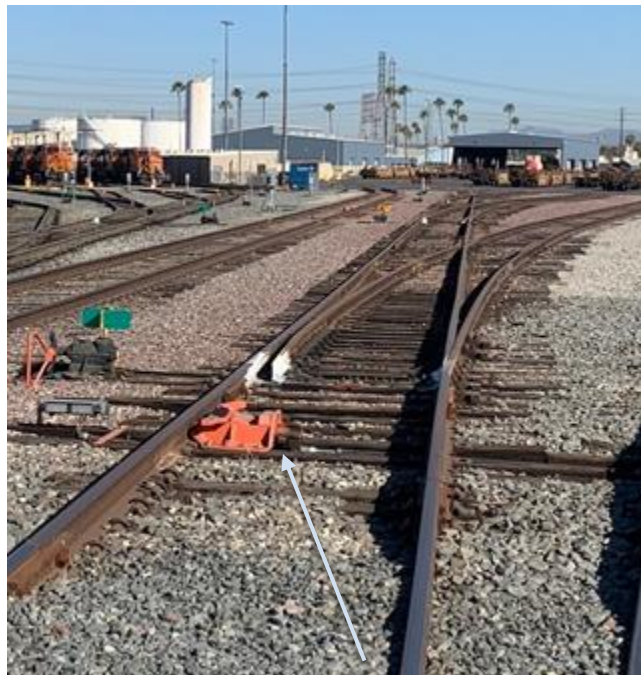
The RSD inspector notified the TTX car foreman and BNSF manager of the unsafe condition and recommended that they implement a procedure to prevent train movements into the repair tracks while employees are working on equipment when the electronic derail is removed. Following this notification, the inspector completed a CPUC Risk Management Status Report (RMSR) and copied the BNSF and TTX managers.

On December 21, 2021, responding to the safety concerns raised in the RMSR, BNSF implemented a procedure that requires all work to stop on repair tracks when electric derails are not properly engaged. This was reported by the BNSF Mechanical General Foreman to an RSD inspector on that date. RSD will continue to inspect the repair shop tracks for compliance with this new requirement as well as other state and federal requirements.

²⁰ TTX is a private contractor that provides car maintenance services for BNSF at Commerce.



Repair track switch, not capable of attaching a locking device



Electric derail located at the entrance to the repair shop tracks

Appendix C – Examples of Regular Inspections

November 4, 2021: An RSD inspector and a Union Pacific Manager of Track Maintenance (MTM) inspected the main tracks used by Capital Corridor passenger trains between Suisun City and Fairfield. The inspector evaluated compliance with track safety standards in the Code of Federal Regulations.

During the inspection, two railroad spikes were observed between the base of rail and the tie plate. This obstruction did not comply with 49 CFR 213.123(b), which states no metal object which causes a concentrated load by solely supporting a rail shall be allowed between the base of the rail and the bearing surface of the tie plate. This creates additional stress on the rail which may cause it to break, resulting in a derailment.

In the presence of the inspector, the MTM reduced the track speed to a safe limit of 25 miles per hour (mph) at this location before the next train passed over the defective condition. The MTM subsequently reported to the inspector that repairs were made the same day by removing the spikes and installing new ones in the correct position. The inspector issued an FRA Inspection Report noting the non-compliance and performed a follow up inspection later that day to verify that repairs had been completed, bringing the track into compliance.



Before: Spikes between the tie plate and rail base



After: Spikes correctly installed

January 18, 2022: RSD inspectors performed a hazardous materials inspection at the Union Pacific Los Nietos Rail Yard in Santa Fe Springs. A rail car containing sodium hydroxide solution, a caustic acid, was found with an unsecured bottom outlet valve (BOV) plug. 49 CFR 173.31(d)(1)(iv) states that shippers must verify all closures on tank cars and determine that the closures and all fastenings securing them are properly tightened in place by use of a bar, wrench, or other suitable tool. A secured BOV plug is essential to ensure that product will not be inadvertently released, placing the public and railroad personnel at risk of exposure to a hazardous material. The BOV is secondary protection to prevent a leak if the main closure valve fails or inadvertently opens during transportation.

The UP hazardous materials manager was notified of the non-compliance and immediately secured the loose closure by placing the plug into the BOV and tightening it. The waybill was acquired from UP to identify the shipper of the car to determine if the shipper had a history of violating regulations, in order to aid the inspector in determining what type of corrective action to take. If a shipper is a chronic offender, regulatory action could include a recommendation of a civil penalty to the FRA by the inspector. In this case, the shipper had a positive inspection history with no previous citations issued by a regulatory agency. The shipper was issued an FRA Inspection Report for the non-compliant condition, with a copy given to the railroad. The shipper responded by reviewing requirements for properly securing closures on tank cars with its employees.



Unsecured BOV Plug

January 18, 2022: An RSD inspector performed an inspection of the Union Pacific Los Angeles Transportation Center Intermodal Facility in Los Angeles. The inspector observed debris from container break-ins along both main and yard tracks, which created unsafe walking conditions. This did not comply with General Order 118-A, which requires railroads to maintain reasonably safe walkways in all areas where switching is performed.

The inspector immediately notified UP management of the non-complying conditions and issued a General Order Inspection Report. UP committed to remediating the condition within 90 days. Staff conducted a follow-up inspection on April 7, 2022 and verified that the debris had been removed, which brought the walkways into compliance.



Before: Walkways covered by debris



After: Debris removed from walkway surface

April 27, 2022: An RSD inspector performed a highway-rail grade crossing inspection at the Edison Highway crossing of the San Joaquin Valley Railroad (SJVR) in Bakersfield.

The inspector identified an unlocked junction box containing the grade crossing’s warning system. This allowed someone to tamper with the crossing equipment: wires were pulled out of the junction box. Tampering with wiring could break or disconnect wires and result in an activation failure while a train is approaching or occupying the crossing.

The accompanying SJVR signal maintainer inspected the wiring for damage and tested it for proper function, after which the junction box was secured with a padlock, bringing it into compliance. The inspector issued an FRA Inspection Report to SJVR management noting a violation of 49 CFR 234.211, which states that grade crossing warning system apparatus shall be secured against unauthorized entry.



Before: Unsecured Junction box



After: Junction box secured with padlock

May 11, 2022: An RSD inspector performed an inspection at the Union Pacific Intermodal Container Transfer Facility in Long Beach to verify compliance of railroad freight equipment. The inspector examined railroad freight equipment that was deemed ready for service by UP, i.e., that the railroad had previously inspected the cars and determined that they were in compliance.

Several non-compliant conditions were identified, including a cracked coupler knuckle. This was out of compliance with 49 CFR 215.123(c), which states that a railroad may not place a car in service with a cracked coupler knuckle. A cracked knuckle could result in an unintentional separation of rail cars, leading to a derailment.

The inspector immediately notified UP management of the non-compliant condition, which was corrected before the train departed by replacing the knuckle. RSD issued an FRA Inspection Report with a recommendation for civil penalties against UP for unsafe conditions on cars that had been inspected and released for transportation.



Crack in coupler knuckle



Side view of railcar couplers

Appendix D – Example of a Focused Inspection

November 2 – 4, 2021: RSD inspectors conducted a multi-discipline focused inspection of HASA Chemical in Pittsburg; POSCO Steel in Pittsburg; Crockett Co-Generation in Crockett; Union Pacific Railroad yards in Pittsburg, Martinez, Crocket, Benicia, and Oakland; BNSF rail yard in Pittsburg; and a California Northern Railroad rail yard in Suisun-Fairfield. The inspection team included equipment, track, hazardous materials, and operating practice inspectors. This area was selected due to the high volume of railroad traffic, including cars carrying hazardous materials, in a densely populated area. Following are major findings, including examples of non-compliances with federal regulations and CPUC General Orders.

Hazardous materials inspectors focused on were closures, placards, stencils, and other items pertaining to the shipment of tank cars containing hazardous materials. The team inspected 53 tank cars containing hazardous materials and identified 32 non-complying conditions. One car previously loaded with LPG had a warped dome lid without an opening and weather-proof cover as required by 49 CFR 173.314(j), which states that protective housing covers must have an opening with a weather-proof cover above the pressure release valve. Without an opening (vent) to prevent pressure build up within the housing, explosion could occur. The car was removed from service until the proper lid could be installed. A mobile repair shop was contacted to replace the lid with one that had a vent.

The track inspector performed walking inspections of rails, switches, and ties at various locations for compliance. The inspector also verified on-track safety of roadway workers when working within 10 feet of the tracks. The inspector checked 45 separate yard tracks, and all were compliant.

Equipment inspections were conducted on 46 railcars and 9 locomotives to verify compliance. The equipment inspectors identified 26 non-complying conditions on locomotives and cars in outbound trains. One such condition was a detached handhold missing a mounting bolt, which was non-compliant with 49 CFR 231.1(h)(4) which states that side handholds shall be securely fastened with not less than 1/2-inch bolts. This created an unsafe condition for an employee climbing or riding the side of the car. The car was taken out of service until repairs could be made.

Operating practice inspectors' focus was to verify compliance with federal regulations and railroad operating and safety rules which included unattended equipment left in the clear of adjacent tracks, operation of hand throw switches and derails, protection of shoving moves, securement of unattended equipment, radio procedures, use of locomotive horns, and train speed requirements. Inspectors identified four non-complying conditions, including one with a recommendation that the FRA assess a penalty for unsecured equipment (cars on a track with no hand brakes applied to prevent movement). This was not compliant with 49 CFR 232.103(n)(1), which requires a sufficient number of hand brakes to be applied to hold the equipment. If equipment is not properly secured, it can result in an uncontrolled movement, potentially causing a collision or derailment. The railroad manager was notified and immediately responded by applying handbrakes to secure the equipment.

The inspection team also checked for compliance with General Orders 26-D and 118-A. There were eight non-complying conditions, including one for GO 26-D, which requires a minimum side clearance of 8'6" from the center of rail. A bush and multiple tree branches were within 8'6" of center of rail, which could strike an employee riding the side of equipment. Both the bush and the entire tree were removed as verified by a follow-up inspection on January 11, 2022.



Before: Vegetation within 8'6" of center of rail



After: Vegetation removed



Before: Missing bolt on handrail



After: Warning tape placed on unsafe handrail until repairs could be made.

Appendix E – Example of an Accident Investigation

January 15, 2022: Seventeen rail cars of a UP freight train derailed at approximately 1:30 PM at the UP Los Angeles Transportation Center (LATC) in Los Angeles. No deaths or injuries occurred as a result of the derailment, nor were any of the cars' contents released. Approximately 1,500 feet of track was damaged, including two crossover switches. (Crossovers are switches connecting two parallel tracks.) The derailment occurred on a crossover switch connecting main track 2 to the Los Angeles Transportation Center intermodal yard.

The track is adjacent to another main track. The two main tracks carry up to two passenger trains and 15 freight trains per day. The derailment only impacted traffic on one main track. Other trains were routed to the other main track to avoid delays. The rail cars were cleared, and the damaged main track was repaired and put back into service at approximately 1:30 AM the following day. The yard track was repaired and put back into service at on January 17, 2022 at approximately 1:00 PM. The crossover was repaired put back in service on February 28, 2022.

RSD inspectors were notified about the derailment by an Office of Emergency Services report on the day of the derailment. That same day, inspectors contacted UP managers at the scene to begin collecting information. RSD's field investigation was conducted on January 18, 2022. After reviewing the available information and interviewing railroad personnel involved with the incident, it was determined that the derailment was caused by someone lining the switch (i.e., moving the handle that controls the points of the switch) while the train was moving over it, creating a gap which caused the cars to derail.

The locomotive event recorder and track image recorder (outward facing camera on the locomotive) download were reviewed and verified that the switches of the crossover were lined correctly when the train movement started over the switches. This indicated that a trespasser had lined the switch while the train was moving over it.

At the time of the derailment, the switches were not equipped with locks to prevent tampering. RSD recommended installing high security locks on the switches to prevent similar incidents from occurring in the future. After the repairs were completed, UP installed high security locks on both crossover switches, which was verified by an RSD inspector during a follow-up inspection on January 31, 2022.



Derailed cars on the crossover switch



Switch equipped with lock after tracks were repaired

Appendix F – Example of an Uncontrolled Train Movement

March 21, 2022: An uncontrolled movement occurred in the UP West Colton rail yard in the city of Colton. UP employees assembled a train consist of three remote controlled locomotives coupled to 120 rail cars, weighing 9,554 tons. At approximately 7:10 AM., the train was started and began moving east on a downhill grade. As it rolled downhill, its speed increased from 7 mph to 15 mph, above the maximum allowable speed of 10 mph at that location.

The train crew attempted to slow the train down by applying the train air brake system, but the speed continued to increase. The crew initiated an emergency brake application, but this failed to stop the train.²¹ The 3 locomotives and 12 of the rail cars derailed when the train reached a derauling device.

The derailment did not cause any injuries. A fuel tank on one of the locomotives was punctured and leaked 2,500 gallons of diesel fuel. The diesel did not reach any waterways. A fire occurred when the fuel contacted an electrical component inside the locomotive motor, which damaged railroad equipment and lumber loaded on a rail car. Monetary damages to UP were \$1,701,533: \$248,000 for track repairs, \$546,000 for locomotive repairs and replacement, \$165,000 for signal damage, and \$742,533 for car repairs and replacement.²²

RSD inspectors responded to this incident the same day to interview UP personnel, review procedures and to inspect the equipment, track and signal systems involved. RSD's investigation determined the train did not have enough braking power to stop the train before reaching the derauling device. The train brakes were not operating because the train crew failed to put air into that system. This meant that only the locomotive brakes were engaged, which were insufficient to stop the train. This also caused the emergency brakes to be ineffective.

The crew also failed verify that the brakes were functional before starting the movement. For this type of train consist, UP Superintendent Bulletin #17 requires verification that the air braking systems of at least 25 cars are working prior to movement. Lastly, an RSD inspector also determined that the locomotive consist involved did not receive a daily locomotive inspection as required by 49 CFR 229.21. The inspector recommended a civil penalty against UP to the FRA for failing to complete a daily inspection. As a result of the incident, UP updated its procedures for assembling trains at this location to require that train crews communicate with each other that train brakes are operational before starting to move a train. These communications are also documented by a railroad employee responsible for train movements in the yard.

²¹ Trains have two types of braking systems: train brakes (air brakes on rail cars) and locomotive brakes (air brakes on the locomotive). When activated, emergency brakes put both of these systems into immediate operation.

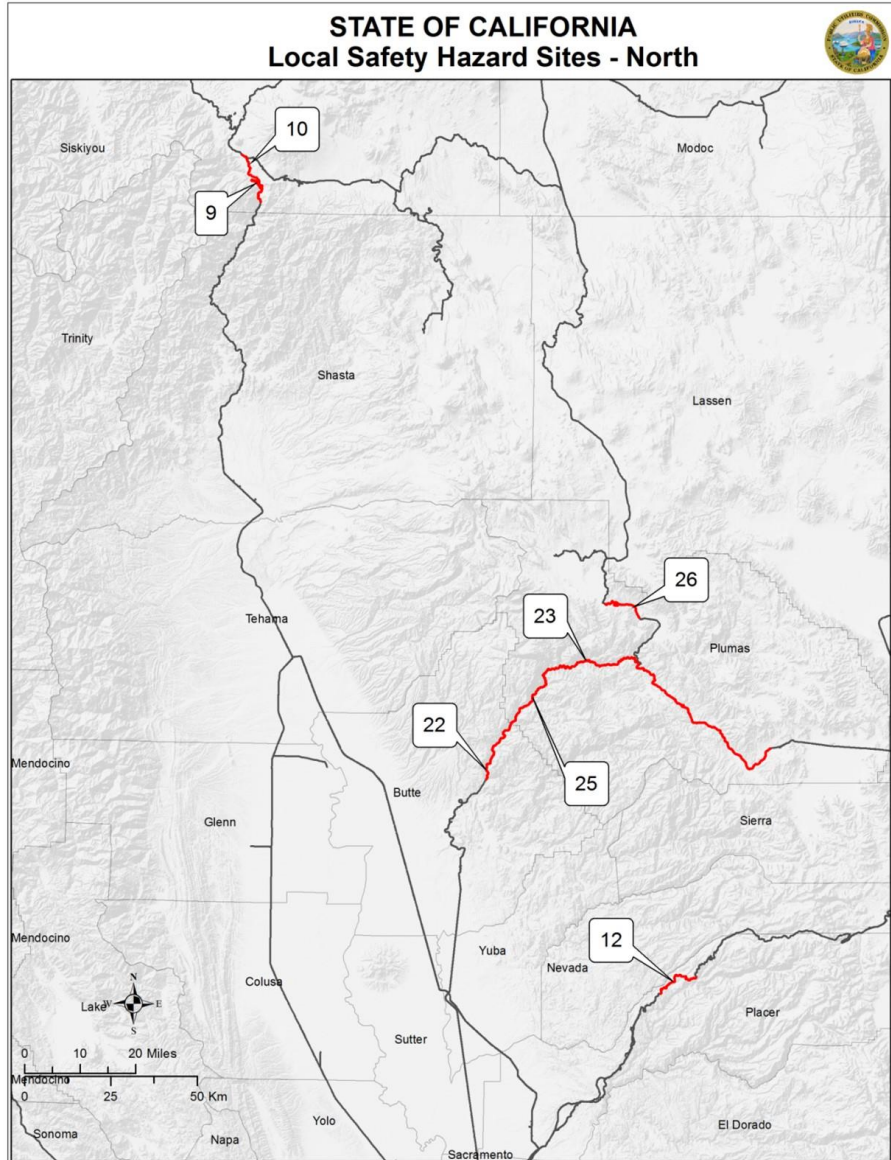
²² The value of the lumber is unknown.



Locomotives and rail cars derailed as result of an uncontrolled movement

Appendix G – Local Safety Hazard Site Maps

Local Safety Hazard Sites are shown below in three areas: 1) Northern California, 2) California Central Coast/Desert Valley, and 3) Southern California. The map numbers correspond to the list of Local Safety Hazard Sites presented in Chapter IV.







Appendix H – Example of RSD Response to Homeless Encampments

February 1, 2022: RSD inspectors identified a homeless encampment located on BNSF Railroad property in Fullerton. The inspection identified multiple hazards posed by the encampment and related debris.

Inhabitants living in the encampment had attached makeshift tents and tarps of various sizes to railroad-owned fences and to freight cars that were in long term storage within the rail yard. These items created violations of the clearance requirements of General Order 26-D. In addition, the encampment included chairs, couches, wood, metal, and assorted debris that were scattered within the walkway utilized by railroad employees, creating safety hazards that were violations of General Order 118-A. RSD staff also observed inhabitants of the encampment trespassing on or near active railroad tracks, which posed safety problems both to the trespassers and to railroad personnel working in this area.

RSD staff immediately notified BNSF management of these hazards and sent a General Order Inspection Notification identifying the non-compliances with GO 26-D and 118-A. On February 2, 2022, BNSF management issued a written order to all employees identifying the clearance and walkway hazards. Within one week of the RSD notification, BNSF removed the encampment and associated debris.

On February 14, 2022, RSD inspectors conducted a follow-up inspection and verified that the tents and encampment debris had been removed from railroad property, and that the walkways and clearances were brought into compliance.



Before: Homeless encampment adjacent to BNSF tracks



After: Encampment removed from property

Appendix I - List of Abbreviations

AAR	Association of American Railroads
ABTH	Air Brake and Train Handling
ACE	Altamont Corridor Express
APTA	American Public Transportation Association
ASLRRA	American Short Line and Regional Railroad Association
ATK	Amtrak
BNSF	BNSF Railway
CFR	Code of Federal Regulations
CHSRA	California High Speed Rail Authority
CORT	Crude Oil Reconnaissance Team
CPUC	California Public Utilities Commission
ERVSD	Extended Revenue Service Demonstration
FRA	Federal Railroad Administration
GO	General Order
GOIN	General Order Notification Process
GOTP	General Order Training Program
HGAP	Heavy Grade Audit Project
HM	Hazardous Materials
HSR	High Speed Rail
LATC	Los Angeles Transportation Center
LPG	Liquefied Petroleum Gas
LSHS	Local Safety Hazard Site
MP&E	Motive Power and Equipment
mph	miles per hour

MTM	Manager of Track Maintenance
NWP	Northwestern Pacific Railroad
OES	Office of Emergency Services
OLI	Operation Lifesaver
OP	Operating Practices
PCMZ	Caltrain
PSRR	Pacific Sun Railroad
PTC	Positive Train Control
Pub. Util. Code	California Public Utilities Code
RBEP	Railroad Bridge Evaluation Program
RCEB	Rail Crossings and Engineering Branch
RHWP	Rail Head Wear Project
RMSR	Risk Management Status Report
ROSB	Railroad Operations and Safety Branch
ROW	Right of Way
RSD	Rail Safety Division
RSSIMS	Railroad Safety and Security Information Management System
RTEP	Railroad Tunnel Evaluation Project
SCAX	Metrolink
SDNX	North Coast Transit District
SJVR	San Joaquin Valley Railroad
SMART	Sonoma-Marín Area Rail Transit
UPRR or UP	Union Pacific Railroad
