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, 2021

FOR FISCAL YEAR 2020–2021

California Public Utilities Commission

Rail Safety Division

Executive Summary

Rail Safety Activities During the COVID-19 Pandemic

The California Public Utilities Commission (CPUC) issues this Annual Railroad Safety Report for fiscal year 2020-2021 (FY 2020-2021), 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 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 therefore 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, and launched several innovative programs that go above and beyond those requirements.

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[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 IV.

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 V.

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 VI.

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 2020-2021 include:

Mandated Rail Safety Inspections and Investigations

During FY 2020-2021 RSD inspectors:

- Performed 3,806 inspections and follow-up inspections to monitor the railroads' compliance with federal and state laws and CPUC General Orders (GOs).
- Performed 129 safety surveys on bridges.
- Cited 6,074 federal regulation defects.
- Recommended civil penalties for 306 violations of federal regulations.
- Completed 463 CPUC GO reports that identified 1,324 state regulation defects.

Investigations of Runaway Trains

In FY 2020-2021, RSD investigated nine 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 7711 requires the CPUC to list all derailment accident sites in the state where accidents have occurred within at least the past five years and indicate whether the accidents occurred at or near sites that the CPUC has determined to pose a local safety hazard.[2] Within the previous five calendar years, California experienced 380 derailments. Of that total, 31 derailments, or 8.16 percent, occurred at or near local safety hazard sites.

Proactive Safety Efforts and Risk Management Activities

RSD uses a proactive approach in identifying safety hazards and conducting risk management and reduction work:

- RSD inspectors created six 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

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

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: 126 total bridge observations and 36 State 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 Positive Train Control (PTC).
- RSD staff monitored implementation of High-Speed Rail (HSR) in California.
- RSD initiated the Heavy Grade Audit Project (HGAP) at the end of 2020 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 35 complaints received from a variety of sources, including railroad employees, railroad unions, and the public.

I. Proactive Safety Efforts and Risk Management Activities

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, as well as support and analytical staff, look beyond the regulations toward more comprehensive overall proactive safety oversight.

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 the CPUC General Orders.

To augment its mandated safety efforts, RSD uses proactive tools, cooperative engagement, and presentation methods explained below in sections A through K.

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 2020-2021:

- 2 previous fiscal year RMSRs were closed out (i.e., the recommendations were implemented and/or an alternative conclusion was reached with the railroad).
- 6 new RMSRs were created. The issues were as follows:
    - 2 - Railroad Operations
    - 2 - Uncontrolled Movement
    - 1 - Bridge
    - 1 - Other Lost Load

Four of these new reports were closed. RSD seeks to resolve the remaining two 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 22 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 5 unit oil trains, all originating in Edmonton, Canada, and containing heavy crude. Kern Oil Refinery in Bakersfield received 17 light crude oil trains, all originating from Carlsbad, New Mexico. Last year, 104 unit trains entered California, each carrying 100 loaded tank cars, with the Plains facility receiving 96 unit trains and the Kern facility receiving 8.

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 two facilities that handle unit trains of ethanol in California: Kinder Morgan and NuStar Energy. 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 128 unit trains of ethanol in FY 2020-2021, 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.

NuStar Energy is located in Crockett. During FY 2020-2021, the facility received 31 ethanol unit trains, each with 96-100 cars. The trains arrived from Canada via Union Pacific Railroad (UPRR or UP)-controlled track. Upon arrival, the product is placed in storage tanks until being shipped by truck or pipeline to various refineries.

Ethanol car inspection

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. To date, six storage areas have been located: Arizona and California Railroad, Fillmore and Western Railway, PBF Energy, 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 several factors, such as the proximity of railroad bridges to the identified Local Safety Hazard Sites across the state, 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 has only six bridge inspectors to cover approximately 80,000 railroad bridges in the United States.[3]

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 complete their bridge management programs and conduct joint railroad bridge observations.

During FY 2020-2021, RSD inspectors who specialize in bridges performed the following:

- 126 total bridge observations.
- 55 FRA track inspection reports (including track condition violations).
- 36 State General Order Inspections (including walkway and obstruction violations).
- 2 RMSRs (notifications to railroads about bridge safety concerns not covered by regulations).

An example of a railroad bridge where problems were found by an RSD inspector is illustrated below:

On March 8, 2021, an inspector observed a timber bridge in Stockton with vegetation growing on each side and in the water near the bridge pilings. Overgrown vegetation underneath a bridge can

[3] The FRA is planning to hire an additional bridge inspector to increase their total number of inspectors to seven.

cause the water underneath to swirl around the bridge pilings and erode the foundation, compromising the integrity of the structure. Vegetation near a bridge creates a fire hazard, especially in the summer months when it is dry. This unsafe condition was immediately reported to UPRR, resulting in the company clearing the vegetation. The inspector verified the corrections on March 10, 2021.

Before: Vegetation growing around the bridge

After: Vegetation cleared from bridge

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.

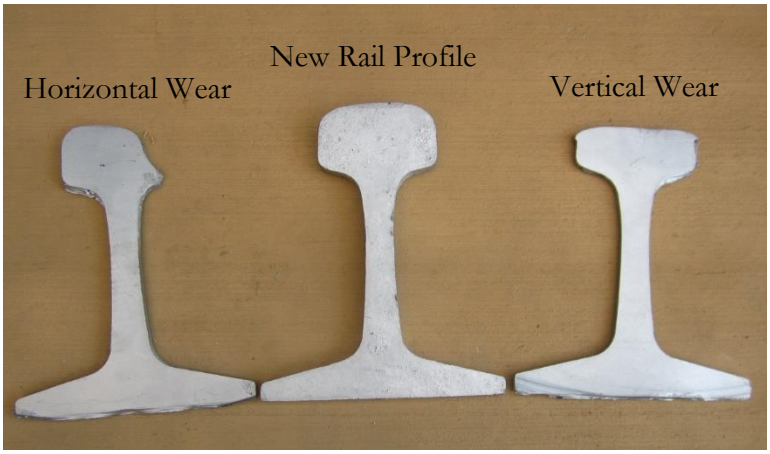
RSD staff have completed railroad tunnel inventories for all railroads operating in California. There are approximately 120 tunnels that are in use and approximately 30 that are not in service. RTEP inspectors have not been able to perform tunnel inspections since January 2020 due to COVID-19

because in order to perform these inspections, RTEP team inspectors ride in hi-rail vehicles accompanied by railroad personnel. This would have violated CPUC's social distancing protocols.

The RTEP team plans to resume tunnel inspections during FY 2021-2022.

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.



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 2020-2021, 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 29 different locations throughout the state during FY 2020-2021. As an example of the value of this effort, on January 19,

2021, an RSD Track inspector measuring rail head wear on the UPRR near Keene identified a section of main track rail with a concerning wear condition. RSD staff immediately notified railroad management of the dangerous condition, and the railroad committed to replace the rail within two weeks. A follow-up inspection by the RSD track inspector on February 5, 2021, confirmed that the rail had been replaced.

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.

Due to COVID-19-related restrictions on public meetings, RSD staff did not give any OLI presentations during FY 2020-2021.

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.[4]

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 are 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.

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.

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

Due to COVID-19 safety precautions, most PTC-related field activities, such as PTC operational train ride observations, were not performed during FY 2020-2021. 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 Railroads[5]

	PASSENGER RAILROAD	STAGE OF PTC IMPLEMENTATION
1	SCAX	Conditional Certification.[6] 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.
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.

[5] See List of Abbreviations at the end of this Report for explanations of railroad abbreviations in the following two tables.

[6] 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	SMART requires NWP to equip their locomotives with PTC equipment that NWP operates on SMART lines. NWP is 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. The HSR system has been planned to connect San Francisco to the Los Angeles basin. Eventually, the system is planned to extend to Sacramento and San Diego, totaling 800 miles with up to 24 stations. Previous estimates were that the first segment, Merced to Bakersfield, would begin service in 2029, followed by the full Silicon Valley to Central Valley Line (San Francisco and Merced to Bakersfield) in late 2031. Phase 1, San Francisco and Merced to Los Angeles/Anaheim, was projected to begin service in late 2033. There were no estimated completion dates for the Sacramento and San Diego sections. As of June 2021, these estimated dates remained the same, with the caveat that they assumed full funding of the segments, which remains uncertain. As stated in the CHSRA Revised Draft 2020 Business Plan, "These dates

are only for the purpose of determining future year estimates in order to present statutorily requested operating and financial scenarios."[7]

On June 11, 2021, the CHSRA announced that the U.S. Department of Transportation was releasing $929 million in federal grant funding for the Authority, reversing the Trump Administration's 2019 decision to rescind these funds.

Brightline West High Speed Rail System

Brightline West, formerly XpressWest, is a proposed privately financed high-speed rail line. Brightline West has postponed a bond sale to finance the rail system until at least 2022, and any construction will be delayed until at least that year. The company has stated that construction, testing, and commissioning will take approximately three years.

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.

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[7] California High Speed Rail Authority, *Revised Draft 2020 Business Plan*, February 9, 2021, page 129, https://hsr.ca.gov/docs/about/business_plans/2020_Business_Plan.pdf

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 2020-2021, RSD staff performed the following:

- RCEB staff reviewed and approved four GO 88-B applications from the CHSRA for alterations of existing crossings. These applications require only staff level approval.

- RCEB staff reviewed nine CHSRA and five Brightline West formal applications for construction of new crossings and filed comments in the proceedings. 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. The purpose of HGAP is to look beyond the regulations 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% 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 of their trains.

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.

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[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

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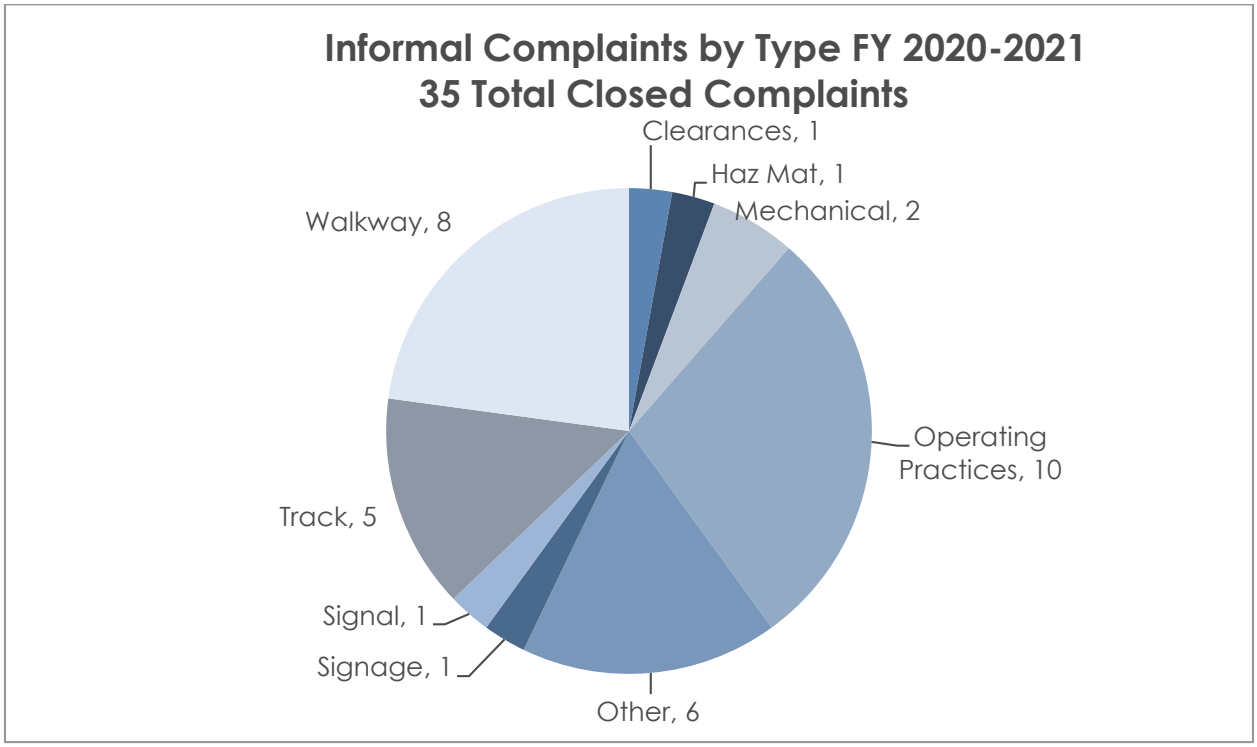
The HGAP program is another example of RSD's proactive public safety investigative initiatives intended to reduce safety risks in railroad operations.

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 2020-2021, RSD investigated 35 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 follow proper procedures. 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 will look beyond the regulations in evaluating 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 a related Public Utilities Code section. Each of ROSB's four regions has two presenters, who are responsible for training their region's inspectors and for giving condensed presentations to railroads and businesses requesting information on the state's GOs. By helping them to detect non-compliances with GOs, the training given to RSD inspectors and the presentations given to railroad company personnel reduces the risks of railroad accidents and injuries.

Due to COVID-19 restrictions on face-to-face meetings, in-person GOTP classes were not held during FY 2020-2021, and GOTP trainers conducted online meetings for improving existing training modules and developing new ones. Two newly hired inspectors attended separate online presentations of GOs 118-A and 26-D. On completion of the classes, the participants demonstrated their understanding of the materials by identifying all non-complying conditions while performing a multi-day focused inspection under the supervision of experienced RSD personnel.

Both in-person classes and field training resumed with the easing of State-mandated COVID-19-related restrictions on June 15. Until they are lifted, social distancing restrictions will still apply to the classroom settings. Two classes on GOs 118-A and 26-D were conducted in June for four new hires, which were followed by field training the same month. A total of six new hires received GO training in FY 2020-2021.

Starting in FY 2021-2022, all 41 inspectors will receive additional and/or refresher training in seven railroad-related GOs (26-D, 72-B, 75-D, 118-A, 126, 135, and 161) and one railroad-related Public Utilities Code (7662). ROSB plans to have all inspectors complete this training during the next two fiscal years.

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).

> Pub. Util. Code Section 916:
>
> On or before November 30 of each year, the Commission shall report to the Legislature on its rail safety activities.

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.

For non-compliances with federal regulations, the RSD inspector may recommend that FRA issue a violation to a railroad, 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]

B. Regular Inspections

Following are statistics on the number and results of regular inspections performed by RSD inspectors during FY 2020-2021. Examples of regular inspections are presented in Appendix C.

Total inspections

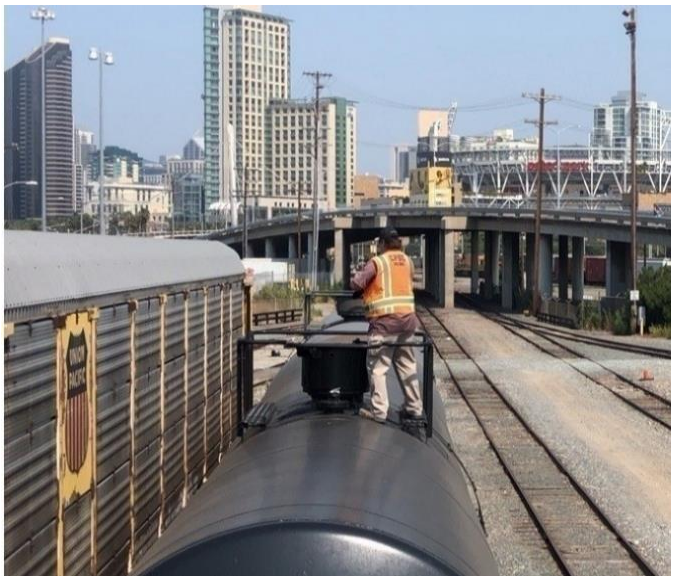
RSD inspectors:

- Performed 3,806 inspections and follow-up inspections to monitor the railroads' compliance with federal and state laws, and CPUC GOs.
- Performed 129 safety surveys (bridge and tunnel).
- Cited 6,074 federal regulation defects.
- Recommended civil penalties for 306 violations of federal regulations.
- Completed 463 CPUC GO reports that identified 1,324 state regulation defects.[11]

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 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.

RSD Hazardous Materials inspectors:



CPUC inspector checking for securement of a tank car containing hazardous material

- Inspected or evaluated 15,337 units[12] in 1,148 FRA inspection reports.
- Identified 927 federal regulation defects.
- Recommended 21 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

[12] 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.

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 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 Mechanical inspector checking for proper side bearing clearance underneath the rail car. Improper side bearing clearance may cause the rail car to subsequently derail.

RSD Mechanical inspector discovered the air reservoir tank mounting brackets were broken and not properly repaired. The train brakes on this rail car may become ineffective due to this defective condition.

- Inspected or evaluated 38,520 units in 445 FRA inspection reports.
- Identified 2,201 federal regulation defects.
- Recommended 217 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).[13]

During FY 2020-2021, RSD did not satisfy the mandate. Of the 57 facilities, 43 sites were inspected three times or more during the fiscal year. Of the remaining 14 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.

The primary reasons for not meeting the mandate were due to the COVID-19 pandemic and the extended vacancies. RSD's ability to meet the mandate was hampered due to the inability of inspectors to maintain social distancing from railroad employees while inspecting repair shops, as well as a requirement to avoid contact with certain railroad equipment.

Extended vacancies and the difficulties associated with identifying and recruiting well-qualified and experienced candidates were another cause for the delay. 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 using 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 inspectors discussing inspection activity

[13] UPRR and BNSF are the only Class I freight railroads operating in California. The Surface Transportation Board defines a Class I railroad as "having annual carrier operating revenues of $250 million or more" after making an adjustment using a formula based on the Railroad Freight Price Index developed by the Bureau of Labor Statistics. (49 CFR Part 1201 Subpart A).

- Inspected or evaluated 3,862 units in 388 FRA inspection reports.
- Identified 682 federal regulation defects.
- Recommended 49 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.

RSD Signal and Train Control inspectors:

RSD and FRA Signal inspectors along with railroad company personnel conducting an inspection of a mainline bridge and signaling associated with bridge operation

- Inspected or evaluated 1,170 units in 166 FRA inspection reports.
- Identified 203 federal regulation defects.
- Recommended 5 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:

Track inspector conducting an inspection

- Inspected or evaluated 12,187 units in 707 FRA inspection reports.
- Identified 2,061 federal regulation defects.
- Recommended 14 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.

> Pub. Util. Code Section 765.5(d) requires CPUC to establish by regulation a minimum inspection standard to ensure that all branch and main line track is inspected not less frequently than every 12 months.

Inspectors use several methods to inspect track. Each method has its benefits and drawbacks depending on the terrain, steepness, and location.[14]

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).

[14] The 2013-14 Annual Report to the Legislature provides a detailed explanation about the methods of track inspections: http://www.cpuc.ca.gov/rosb/

In FY 2020-2021, RSD inspectors surveyed 2,435 miles of track by conducting physical walking inspections. The inspections identified 831 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 inability to maintain social distancing while riding in vehicles.

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 increased safety risks, 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.

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

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.

Multi-discipline RSD inspectors conducting a focused inspection with railroad personnel

In FY 2020-2021, RSD inspectors performed 15 focused inspections, which consisted of:

- 2 track inspections.
- 7 hazardous materials inspections.
- 2 signal and train control inspections.
- 4 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 2020-2021, there were 727 reported railroad-related incidents in California, down from 764 in the previous fiscal year. Each incident falls into one or more categories: 381 were related to crossing or trespasser incidents (163 of which were within 50 feet of a grade-crossing), 191 were materials spills, 139 were derailments, and 15 were in other categories. These incidents resulted in a total of 169 fatalities and 94 injuries (compared to 195 and 104 in the previous year, respectively), mostly to trespassers and road users. RSD supervisors determined that 191 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 2020-2021, RSD inspectors performed security inspections on all the 37 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 Web-Ex conferences. These railroads are identified in the table below.

Pacific Sun Railroad ceased operations on September 30, 2020 and was removed from the security review requirement. BNSF took over operations on October 1.

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

RAILROAD	DATE OF INSPECTION	COMPLIANT	COMMENTS
Altamont Commuter Express	03/04/21	Y	Conducted through Webex
Amtrak Los Angeles	06/18/21	Y	Conducted through Webex
Amtrak Oakland	06/18/21	Y	Conducted through Webex
Baja California Railroad	06/25/21	Y	Conducted through Webex
BNSF	02/09/21	Y	Conducted through Webex
Cal Train	03/04/21	Y	Conducted through Webex
California Northern Railroad	03/04/21	Y	Conducted through Webex
Central California Traction Company	03/04/21	Y	Conducted through Webex
Fillmore Western	03/04/21	Y	Conducted by phone interview
Goose Lake Railway	03/03/21	Y	Conducted through Webex
Los Angeles Junction Railroad	04/12/21	Y	Conducted through Webex
Metrolink	05/12/21	Y	Conducted through Webex
Modesto & Empire Traction	03/04/21	Y	Conducted through Webex

Napa Valley Railroad	04/23/21	Y	Conducted through Webex
Niles Canyon Railway	03/04/21	Y	Conducted through Phone
North County Transit District	05/19/21	Y	Conducted through Webex
Northwestern Pacific Railroad Company	03/03/21	Y	Conducted by phone interview
Oakland Global Rail Enterprise	06/18/21	Y	Conducted by phone interview
Pacific Harbor Lines	03/28/21	Y	Conducted by phone interview
Pacific Southwest Railway Museum	05/26/21	Y	Conducted through Webex
Quincy Railroad	03/03/21	Y	Conducted by phone interview
Richmond Pacific Railroad	03/04/21	Y	Conducted by phone interview
Sacramento Valley Railroad	03/03/21	Y	Conducted by phone interview
San Diego & Imperial Valley	05/13/21	Y	Conducted through Webex
San Francisco Bay Railroad	03/04/21	Y	Conducted through Webex
San Joaquin Valley RR	03/04/21	Y	Conducted through Webex
Santa Cruz & Big Trees	03/04/21	Y	Conducted through phone interview
Santa Maria Valley RR	06/21/21	Y	Conducted through Webex
Sierra Northern Railroad	03/04/21	Y	Conducted by phone interview
SMART	06/21/21	Y	Conducted through Webex
So. Cal Ramp Services	04/28/21	Y	Conducted through Webex
St. Paul and Pacific RR	03/04/21	Y	Conducted by phone interview
Stockton Terminal & Eastern Railroad	04/28/21	Y	Conducted through Webex
Trona Railway Company	03/04/21	Y	Conducted by phone interview
UPRR	03/19/21	Y	Conducted by phone interview. Note: security manager is located in Omaha NE.

Ventura County Railroad	05/13/21	Y	Conducted through Webex
West Isle Line	03/04/21	Y	Conducted through Webex

III. Investigations of Runaway Trains and Other Uncontrolled Train Movements

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. Similarly, Pub. Util. Code Section 7711.1 requires 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."[15]

In FY 2020-2021, RSD investigated nine instances of an uncontrolled train movement. An example of such an investigation is shown in Appendix F of this report.

[15] 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 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

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[16]	RR MILEPOST	NUMBER OF DERAILMENTS 2016-20	OVERLAP WITH SITE #**
16	UPRR Mojave Subdivision	SP Bakersfield Line	335.0 to 359.9	19	
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	0	#3, #4
22	UPRR Canyon Subdivision	UP Feather River Division	234.0 to 240.0	0	#25

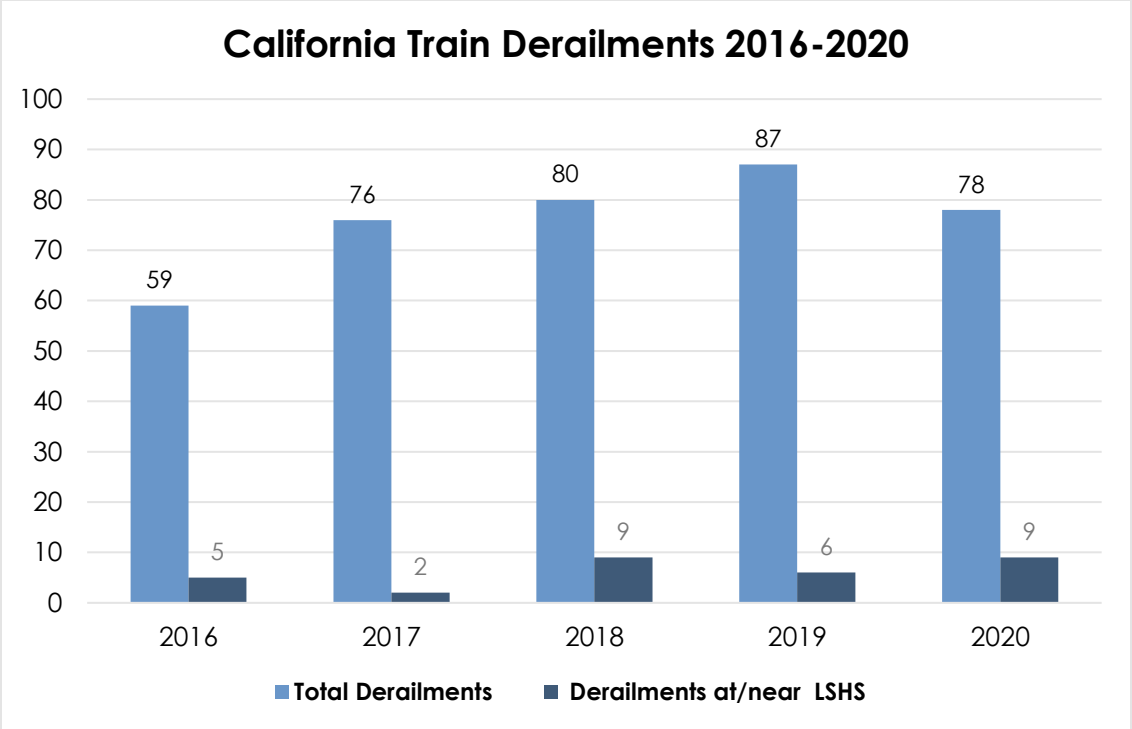
[16] In 1996, UPRR purchased Southern Pacific Railroad.

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	1	#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	2	
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 380 derailments. Of that total, 31 derailments, or 8.16 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

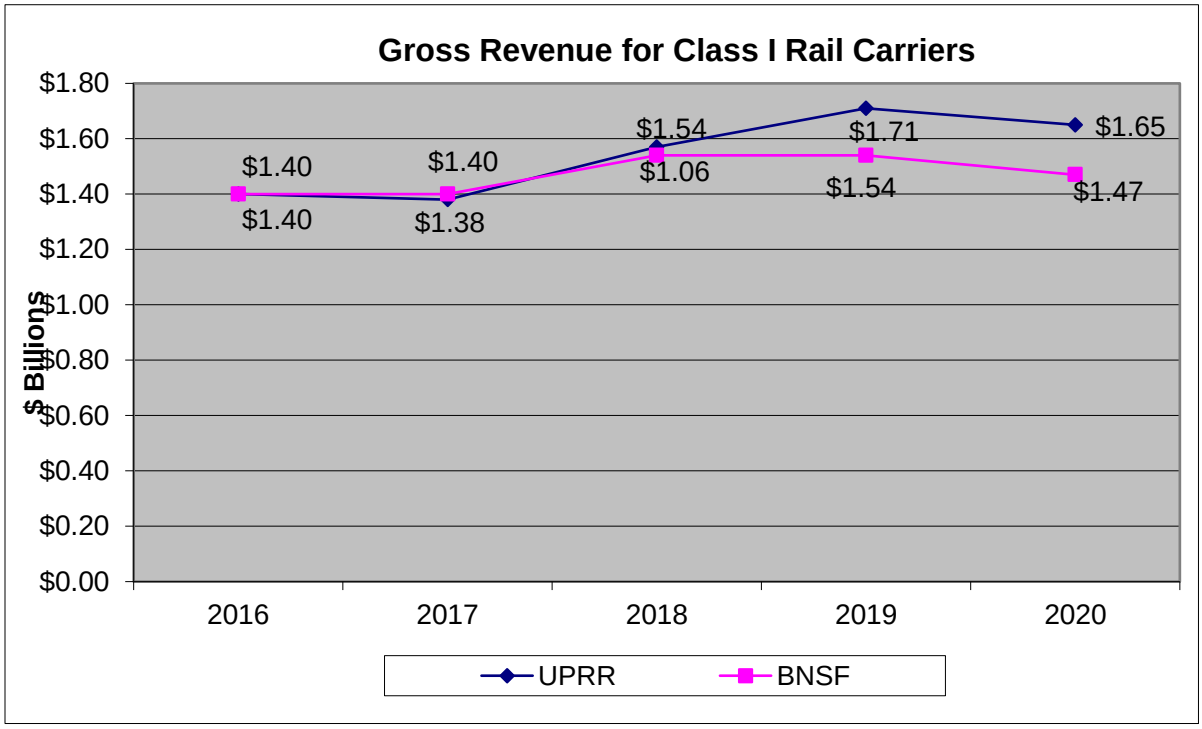
V. Regulatory Fee Impact on Competition

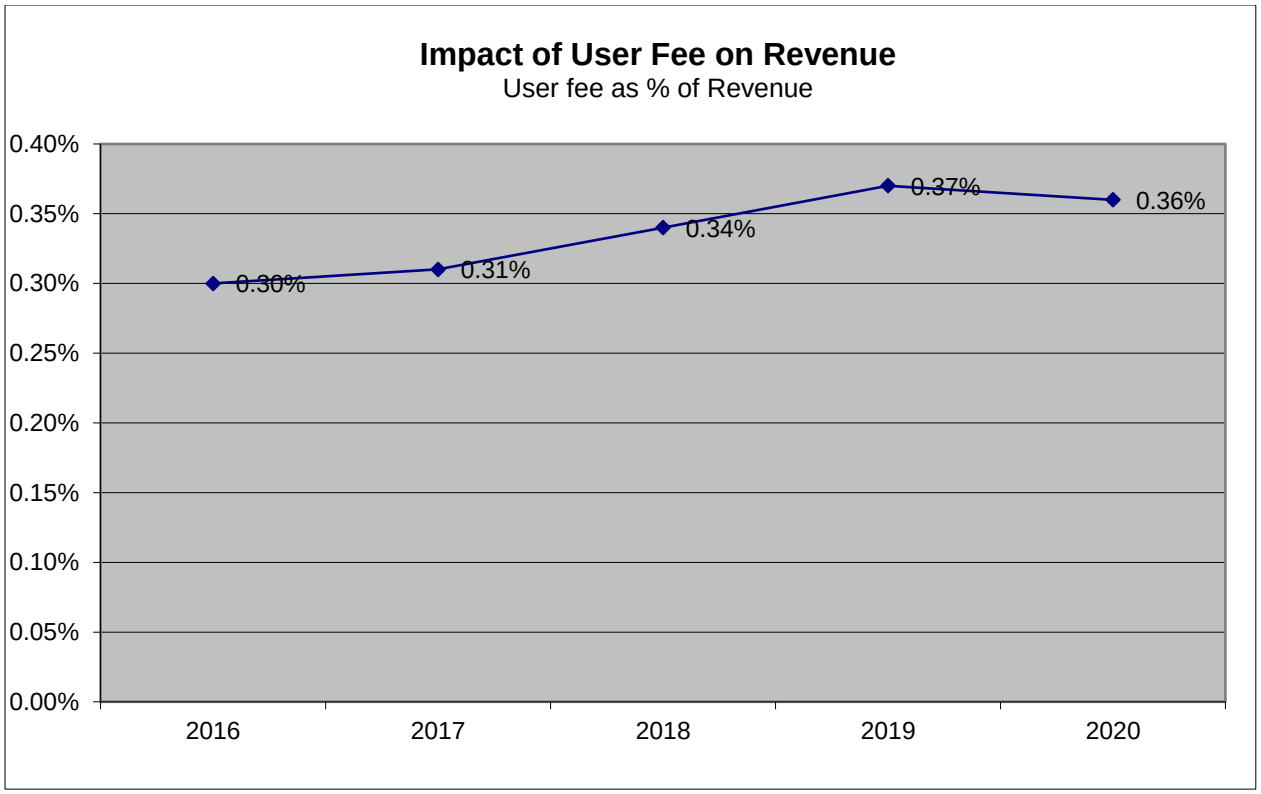
Pub. Util. Code Section 309.7 requires the activities of CPUC that relate to safe operation of common carriers by railroad, other than those relating to grade crossing protection, to be supported by the fees paid by railroad corporations.

Pub. Util, Code Section 916.3 requires 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.

In FY 2020-2021, the Legislature appropriated $11.15 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 2020-2021 on UPRR and BNSF constituted 0.36 percent of their combined 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

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).[17] 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.

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. As stated by that GO, "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. The GO states that "no railroad or street railroad corporation shall operate any 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. An example of this effort is provided in Appendix H.

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[17] 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

Appendix A – State Railroad Safety Laws and General Orders

AUTHORITY	STATUTORY SPECIFIED TASKS (PARAPHRASED)	CPUC-GENERAL ORDERS
Pub. Util. Code Sec. 309.7 (a)	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. 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.	
Pub. Util. Code Sec. 309.7 (b)	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. 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.	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)	(d) ROSB activities shall also be supported by the fees paid by railroad corporations. 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.	

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	(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. (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). (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. (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	

AUTHORITY	STATUTORY SPECIFIED TASKS (PARAPHRASED)	CPUC-GENERAL ORDERS
	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. (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.	
Pub. Util. Code Sec. 768	768. 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.	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. GO 72-B: Formulates uniform standards for grade crossing construction to increase public safety. GO 75-D: Establishes uniform standards for warning devices for at-grade crossings to reduce hazards associated with persons traversing at-grade crossings. 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. GO 126: Establishes requirements for the contents of First-Aid kits provided by common carrier railroads.
Pub. Util. Code Sec. 916	Requires the Commission to report to the Legislature on its rail safety activities annually, on or before November 30.	

AUTHORITY	STATUTORY SPECIFIED TASKS (PARAPHRASED)	CPUC-GENERAL ORDERS
Pub. Util. Code Sec. 916.2	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 have occurred within at least the previous five years.	
Pub. Util. Code Sec. 916.3	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. 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.	
Pub. Util. Code Sec. 7661	Requires the Commission to investigate any incident that results in a notification to CEMA [now OES].	
Pub. Util. Code Sec. 7662	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.	
Pub. Util. Code Sec. 7665.2	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.	
Pub. Util. Code Sec 7665.4	(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. (g) Permits CPUC to fine a rail operator for failure to comply with the requirements of this section or	

AUTHORITY	STATUTORY SPECIFIED TASKS (PARAPHRASED)	CPUC-GENERAL ORDERS
	an order of the Commission pursuant to this section.	
Pub. Util. Code Sec. 7665.6	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 are secured from hijacking, sabotage, or terrorism; and secure remote-control devices. 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.	GO 161: Establishes safety standards for the rail transportation of hazardous materials.
Pub. Util. Code Sec. 7665.8	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.	
Pub. Util. Code Sec. 7673	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.	
Pub. Util. Code Sec. 916.2 [formerly Sec. 7711]	Requires CPUC to identify local safety hazards on California railroads	
Pub. Util. Code Sec. 7711.1	Requires CPUC to collect and analyze near-miss data.	

Appendix B – Example of a Risk Management Status Report

November 16, 2020 – June 29, 2021

November 16, 2020: While observing NorCal Lumber employees rearranging rail cars for their Marysville facility, an RSD inspector noted several safety concerns not covered by state or federal regulations. The NorCal employees were moving rail cars from the facility towards the UP track over a public road crossing without providing warning to approaching vehicles by, e.g., having an employee stand in the crossing while holding a red flag to stop approaching traffic. Once traffic is stopped, the rail cars can then safely be moved over the road crossing. Although the crossing had the required crossbucks, visibility of the approaching rail cars was limited by trees and a collision could have occurred.

The inspector contacted a NorCal employee when the movement stopped and discussed the hazards of shoving cars over the crossing without providing a red flag warning to vehicle traffic.

The inspector also observed three additional safety issues:

- The rail cars were being shoved by a forklift with no connections between the forklift and the rail cars to stop them from continuing to roll when the forklift stopped moving. A slight uphill grade as the cars left the NorCal facility would eventually stop the movement, but there was nothing to provide an immediate stop. Drivers unaware of the rail cars could hit or get hit by the cars as they continued to roll. The employee stated that company policy required red flag protection before they moved cars over the crossing.

- Some cars were left in the road crossing where a vehicle could collide with them. The inspector told the employee that the cars needed to be repositioned. The employee moved the cars clear of the road crossing. The employee stated that company policy was to leave cars clear of the crossing.

- After he moved the cars, the employee applied one hand brake to secure them and told the inspector that he was going to move the forklift back into the facility. Standard industry practice is to apply two handbrakes for this purpose, so the inspector asked the employee what NorCal policy was regarding securing unattended cars. The employee stated that company policy was to apply two hand brakes, and he applied the second brake before going back inside the facility.

The inspector then went into the facility and discussed his observations with a NorCal manager. The manager stated that he would discuss proper safety procedures with his employees and set up a meeting between the inspector and NorCal's Vice President of Operations. Following this meeting,

the inspector filled out a Risk Management Status Report (RMSR) and sent copies to NorCal's local manager and Vice President (VP) of Operations.

November 25, 2020: The inspector met with NorCal's VP of Operations to discuss his safety concerns, mentioning that a copy had also been sent to the local UP manager. The VP stated that he would address the observed safety issues with his employees to ensure compliance with company policy.

February 11, 2021: RSD received a notification from the Office of Emergency Services (OES) that a derailment had taken place at NorCal Lumber at 3:45 PM.[18] No details were available at that time. An inspector arranged to visit the site the next day.

February 12, 2021: The inspector visited the derailment site and contacted the local UP manager before contacting the NorCal manager. When there is a derailment, UP track and car department employees inspect for defects that could make the car(s) or track unsafe for movement. The manager stated that the derailment occurred when rail cars were being moved out of the facility towards, but not onto, the UP main track. NorCal Lumber employees had not added connections between the rail cars and the forklift used to move them, and the cars kept moving when the forklift stopped. One car derailed two sets of wheels when it went over a derail but remained standing. There was no track damage or damage to the rail car. The inspector then contacted the NorCal Lumber VP restating his concerns about their operations. The VP stated that they were working towards a solution that would improve safety.

June 29, 2021: Responding to the safety concerns raised in the RMSR, NorCal Lumber notified the inspector that they are relocating their rail operations in July to an unused location a mile and a half away, still in Marysville, that will not require them to shove rail cars over a road crossing. RSD will inspect the yard and operations when the move is complete.

[18] RSD is notified of derailments and other rail incidents by OES. When a notification is received, depending upon the nature of the incident, an inspector is assigned to visit the site to investigate it.

Appendix C – Examples of Regular Inspections

July 17, 2020: An RSD inspector performed an inspection of a Union Pacific industrial lead in Salinas to verify compliance with CPUC General Orders. The inspector observed a tree next to the tracks creating an unsafe side clearance condition. This condition did not comply with GO 26-D, which requires all structures and obstructions to be at least 9.5 feet from the center line of curved tracks, so as not to impede the minimum side clearances of train locomotives and cars. This condition could cause a crew member to be struck while riding the side of a car.

Additionally, the walkway adjacent to the track was uneven and debris covered the walkway surface. These conditions created tripping hazards for train crews and other persons using the walkway. GO 118-A requires that walkways shall provide a reasonable regular surface.

RSD staff immediately notified UP management of the non-complying conditions and issued an inspection report. UP committed to remediating the condition within 30 days. Staff conducted a follow-up inspection on August 17, 2020 and verified that these conditions had been repaired and brought into compliance.

Before: Irregular walkway surface

After: Graded walkway

Before: Tree impeding minimum side clearance; debris on walkway

After: Tree and debris removed

January 14, 2021: An RSD inspector performed an inspection of train crews and equipment at the UP Polk Yard in Sacramento. The purpose of the inspection was to verify compliance with Federal regulations as well as UP operating and safety rules.

During the inspection, the inspector observed a UP train crew operating a remote-controlled locomotive (RCL) during switching operations in the yard. While the foreman operating the RCL locomotive was switching cars between tracks, he left one of them in a position that fouled the adjacent track, creating a close clearance. 49 CFR 218.101 states that rolling equipment shall not be left where it will foul a connecting track.

When crews leave equipment physically fouling tracks it creates an immediate danger to equipment and crews. For example, employees riding the side of cars can collide with equipment fouling the track, causing serious injury or death.

The inspector immediately intervened and stopped the movement. The inspector then conducted a job briefing with the train crew to review railroad regulations and safety practices. After the job briefing, the train crew moved the cars further down the track so they would not foul.

The inspector contacted the UP Manager responsible for crews at the Polk Yard. The Manager agreed that his crew was not adhering to appliable regulations or UP operating rules. The Manager stated that he would review these with the crew to ensure they understood the requirements. The inspector issued an inspection report documenting the non-compliance and will perform frequent follow up inspections to verify equipment does not foul.

Tank car located on the left side track is fouling the adjacent track

February 9, 2021: RSD inspectors conducted a hazardous materials compliance inspection of a UP rail yard in the City of Industry. During the inspection, multiple non-compliant items were identified on a tank car transporting highly flammable liquid. 49 CFR 173.31(d)(1) states that no person may offer for transportation a tank car containing a hazardous material unless that person determines that the tank car is in proper condition and safe for transportation.

The following items noted could have potentially resulted in a release of the flammable liquid that may have injured a railroad employee or a member of the nearby community:

- Manway swing bolts not secured- A manway is the top opening of a tank car used to load the car when opened. Swing bolts are applied to the manway to ensure it is closed and creates a proper seal to prevent contents from leaking during transportation.

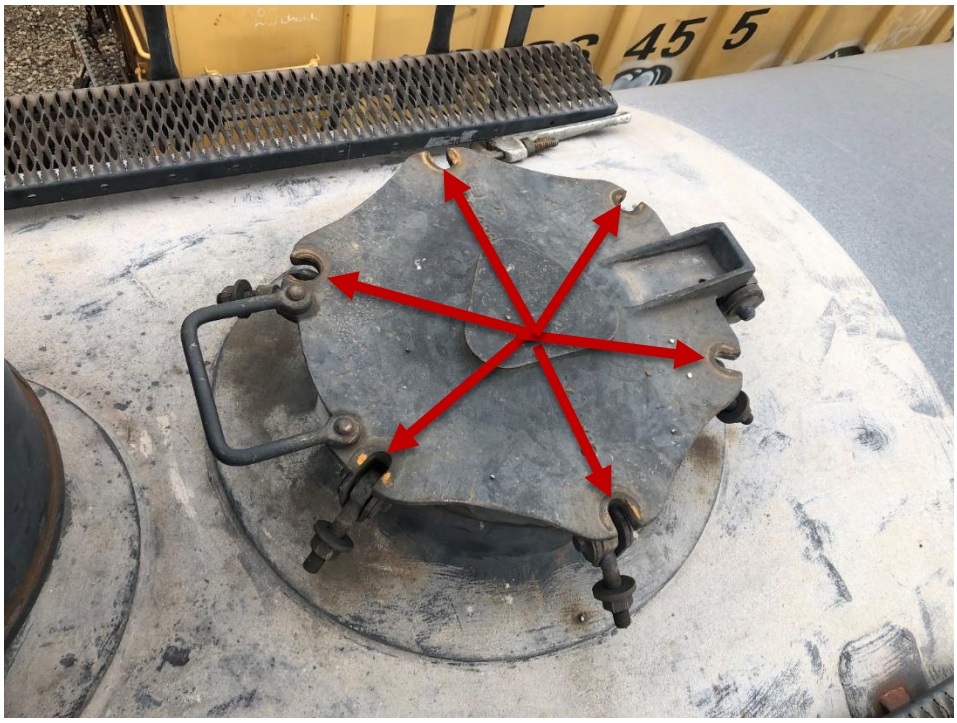
- Bottom outlet cap not secured- A bottom outlet cap is the secondary closure on the bottom of a tank car to protect contents from leaking if there is a valve failure. When the bottom outlet valve is in the closed position and functions properly it prevents leaks. If the valve is opened unintentionally or experiences a mechanical failure during transportation, the bottom outlet cap will prevent leaks.

- Protective housing pin not applied- A housing on top of tank cars protects the valves during transportation. The housing pin ensures the housing stays closed in the event of a derailment to prevent exposed valves from breaking off and releasing contents.

The inspectors immediately notified UP management of the non-compliant issues identified on the tank car. UP dispatched a hazardous materials remediation team to perform corrective measures, and to ensure the car was safe to re-enter into transportation. RSD inspectors remained on hand to verify all corrections were made.

The inspectors submitted inspection reports to the railroad and the shipper identifying the non-compliant issues on the tank car and contacted the shipper to review their pre-transportation loading procedures. After the review, inspectors determined an employee at the shipper did not follow the required procedures.

RSD recommended civil penalties against the shipper for improper securement and failure to follow Federal regulations. The shipper also reviewed procedures for securing tank cars for transportation with employees.



Six manway swing bolts not secured

Protective housing pin not properly placed for securement

Bottom outlet cap not applied underneath the tank car

March 23, 2021: RSD inspectors performed an inspection of the BNSF Hobart Intermodal Yard in Commerce. During the inspection, a container was identified with improper blocking and bracing of hazardous material. 49 CFR 174.55(a) states that containers must be loaded so that contents cannot fall or slide during transportation.

There was no blocking and bracing preventing the steel drums containing toluene diisocyanate, a poisonous material, which had been placed on the top level, from moving during transportation. Loaded packages allowed to shift during transportation could result in a hazardous material spill that could harm the surrounding public or environment. It also places employees who unload containers at risk of being injured.

The inspectors immediately notified BNSF management to ensure that the container would not be moved until corrective action was completed. The container was placed on hold, offloaded, and then reloaded correctly with proper blocking and bracing as verified by RSD staff.

The shipper was notified and issued an inspection report documenting the non-compliant condition. The shipper agreed to make changes to their loading processes to prevent further issues with improper blocking and bracing.

Voids next to steel drums which would allow for loads to shift laterally

Steel drums loaded on top could potentially fall out when opening the door

Appendix D – Example of a Focused Inspection

February 3, 2021: RSD inspectors conducted a multi-discipline, multi-region focused inspection of UP and BNSF properties in Benicia, Martinez, and Oakland. These locations were selected as places where large quantities of hazardous materials are transported via rail or handled in rail facilities in densely populated areas. Hazardous materials, operating practices and track compliance inspections were conducted at UP and BNSF intermodal yards in Oakland, UP freight yards in Martinez and West Oakland, and UP industrial tracks in Benicia. The inspections concentrated on CPUC General Orders and Federal regulations.

Hazardous Materials inspectors identified several non-compliant conditions, including improper spelling of commodity names on placards (49 CFR 172 sections 504(a) and 426(a)), misspelled markings on the side of tank cars (49 CFR 172.330(a)(1)(II)) and placards not visible on tank cars (49 CFR 172.516(c)(6)). Proper markings and placards on tank cars and containers are used to help railroad workers and first responders identify what type of commodity is loaded in the car or container.

Operating Practices inspectors observed a passenger train operating over a grade crossing not sounding the locomotive horn in the proper sequence or duration as required by 49 CFR 222.21(a). The shortened horn sequence does not provide adequate warning for pedestrians or motorists approaching the crossing.

Inspectors also briefed a train crew and identified a locomotive engineer with a non-compliant certification card as required by 49 CFR 240.223(a)(7). The regulation requires that locomotive engineers possess a certificate with the date of the person's last monitoring event which is required each calendar year to remain certified. Without regular monitoring events, an engineer's skill set may decline and compromise public safety.

While inspecting a locomotive consist, inspectors observed safety chains hanging too low between locomotives. This does not provide safe passage between locomotives as required by 49 CFR 229.119(e), as the condition could allow an employee to fall from the locomotive consist resulting in an injury or fatality. Inspectors reported all non-complying conditions to railroad management and documented the results with an inspection report. All non-complying conditions identified during the inspection were corrected immediately by railroad personnel.

Inspectors performing a walkway inspection

Appendix E – Example of an Accident Investigation

RSD supervisors quickly evaluate reported railroad accidents and determine whether they need to dispatch an inspector or inspection team to investigate these events. During FY 2020-2021, RSD inspectors performed 191 accident investigations. An example is presented below.

December 3, 2020: Fourteen rail cars of a BNSF freight train derailed at approximately 3:03 AM in Fresno. No deaths or injuries occurred from the derailment, nor were any of the cars' contents released. Approximately one mile of track was damaged, and the Central Ave highway-rail grade crossing warning device was destroyed. The derailment occurred on a main track with a 79 miles per hour speed limit. The track is adjacent to another main track. The two main tracks carry up to 8 passenger trains and 13 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 Malaga Ave and Central Ave railroad street crossings in Fresno were blocked for several hours until the crossing was cleared. The damaged main track and crossing warning device were repaired and put back into service at approximately 1:00 PM the following day.

RSD inspectors were notified about the derailment by BNSF management on the day of the derailment. That same day, three inspectors travelled to the derailment site and met with BNSF managers. RSD's investigation determined that the derailment was caused by improper train handling by the locomotive engineer. The locomotive event recorder download indicated that the engineer did not use the train's air brakes as required, which caused an excessive lateral force-that caused the car wheels to fall off the tracks and derail the cars. Examining the derailed cars, RSD inspectors identified a loaded rail car placed between long, empty rail cars which increases the possibility of derailment when an excessive force is introduced. RSD believes the train make-up[19] was a contributing factor. RSD investigators will collect train make-up data from future investigations of train derailments when train handling is considered to be a probable cause of the derailment. The data will be used to determine if existing railroad corporation train make-up rules should be revised.

[19] Train make-up is the order rail cars are placed in a train.

Empty rail car derailed at street crossing

Loaded car placed between two empty cars

Appendix F – Example of an Uncontrolled Train Movement

May 23, 2021: An uncontrolled movement occurred in the UP West Colton rail yard in the city of Bloomington at approximately 7:00 AM. 168 rail cars, weighing 15,778 tons, rolled uncontrolled out of a receiving yard track and collided with a train moving approximately 121 cars from an adjacent track. The collision resulted in three rail cars derailing from the uncontrolled cars, and one car derailing and three cars suffering damage on the train proceeding from the adjacent track. There were no injuries or hazardous materials released. Damages were $500 for track repairs and $7,000 for car repairs.

RSD inspectors responded to this incident the same day to interview UP personnel and to inspect the equipment involved. UP management had been the first to respond to the incident. They verified that the cars had six handbrakes applied. This was in conformance with UP LA Complex Superintendent Bulletin No.4, which requires six handbrakes to be applied to cars left unattended on receiving yard tracks, regardless of the total length or weight of the cars left on the track. RSD inspectors conducted a mechanical inspection of the cars and determined the handbrakes were functional and complied with Federal regulations.

After more than 20 years without an uncontrolled movement being reported in this area of the Yard, this was the second such movement within a 60-day period. The previous uncontrolled movement, on April 5, 2021, involved 140 cars weighing 13,656 tons which had six handbrakes applied. There were no injuries, derailments, or collisions reported from that incident. Similar to the May 23 event, in this incident, the application of six handbrakes failed to prevent the uncontrolled movement, and RSD determined that the handbrakes were functional and complied with Federal regulations.

RSD determined that UP did not violate any state or federal regulations related to the two incidents. However, despite this compliance, RSD concluded that in each incident the weight of the cars involved exceeded the ability of the six handbrakes to hold the cars in place. Train lengths and weights have increased over time. In a U.S. Government Accountability Office report to Congress, data provided by two Class I railroads indicated that their average train lengths increased by 25 percent from 2008 to 2017.[20] To ensure that cars are secured and will not move while unattended, RSD believes that additional handbrakes should be applied to handle the longer and heavier trains that now are encountered, and in RSD's judgement, an increased number of applied handbrakes probably would have prevented the two uncontrolled movements. RSD inspectors made the following recommendations to UP on May 4, 2021, following the April 5 incident. The

[20] GAO, *Rail Safety,* p. 11.

recommendations apply to all cars left unattended in the UP West Colton receiving yard:

- Use of a manual skate to provide an added level of securement.[21]
- Increase number of handbrakes from the current requirement of 6.
- Implement secondary procedure to have a railroad manager, car department or other responsible railroad employee to verify that 6 hand brakes are properly applied on trains.
- Ensure the CTC controlled crossovers at Cedar remain in normal position after train arrives or departs to prevent uncontrolled movements from entering the main track and potentially causing a collision or injury to railroad personnel.[22]

After the May 23 incident, UP agreed to increase the number of handbrakes applied to unattended equipment left in the receiving yard. The updated UP LA Complex Superintendent Bulletin No.4 requires train crews to apply ten handbrakes for trains over 10,000 tons and seven handbrakes for trains under 10,000 tons.

UP declined to adopt the other-recommendations. ROSB will revisit these recommendations if a similar uncontrolled movement occurs in the future.

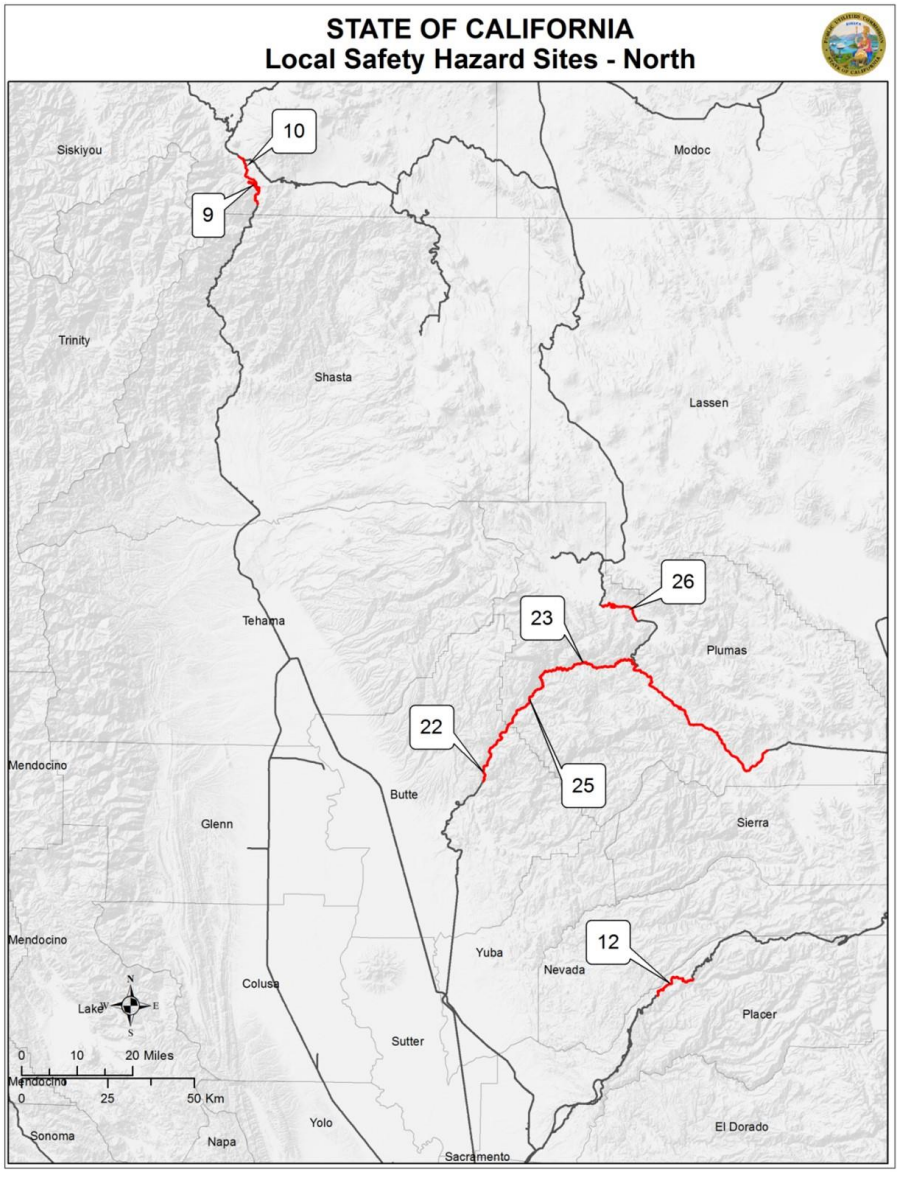
Cars rolled out of track colliding with cars moving from adjacent track

[21] Manual skates are portable devices placed on tracks to slow or hold moving rail cars. When the weight of a car presses down on a skate, it increases the friction between the wheel and rail to slow the movement.

[22] CTC crossovers at Cedar are switches controlled by the train dispatcher that allow trains to enter and leave West Colton Yard at Cedar Ave. This recommendation would prevent an uncontrolled movement from occupying the main track.

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 V.




STATE OF CALIFORNIA
Local Safety Hazard Sites - Central
Inyo
San Benito
Fresno
Tulare
Kings
Monterey
San Luis Obispo
1
Kern
16
Santa Barbara
Ventura
Los Angeles
N
W
E
S
0 10 20 Miles
0 25 50 Km


STATE OF CALIFORNIA
Local Safety Hazard Sites - South
Kern
San Bernardino
Los Angeles
28
30
19
29
6
4
3
Riverside
Orange
San Diego
Imperial
31
N
W
E
S
0
10
20 Miles
0
25
50 Km

Appendix H – Example of RSD Response to Homeless Encampments

October 30, 2020 – January 27, 2021

October 30, 2020: RSD inspectors identified a homeless encampment located on Union Pacific Railroad property between the cities of Stockton and Lodi, under the roadway overpass at 8 Mile Road. Due to the size of the encampment, RSD staff reached out to the San Joaquin County Sheriff's Office to send Deputies to accompany RSD inspectors while an inspection was conducted. The inspection identified multiple hazards posed by the encampment and related debris. Persons living in the encampment had dug out ballast underneath UPRR railroad tracks and placed electrical wires under the main tracks. The wires posed both a tripping hazard and potential electrical shock or fire risk to railroad employees and other persons encountering them.

The encampment and assorted debris were also noted to be within the clearance envelope of GO 26-D and walkway requirements of GO-118A. RSD staff notified UPRR management and UPRR railroad police of the non-compliant conditions, and the safety issues posed to railroad employees working in this area. RSD staff also identified the dangers of injury or death posed to the encampment inhabitants, who were trespassing on or near active railroad tracks. RSD filed a CPUC General Order report to UPRR noting the non-compliances with the two GOs and the dangerous conditions posed by the encampment. UPRR management responded with an action plan to remediate the encampment and remove the trespassers.

January 4, 2021: RSD inspectors, UPRR management, UPRR police, San Joaquin Sheriff's Department Deputies and San Joaquin County Code enforcement officers conducted a follow up inspection which revealed that the encampment was still there. The inhabitants were offered shelter at a facility in French Camp prior to removal of the encampment and their belongings. Cleanup of area was begun by UPRR and was projected to be completed before the end of the month.

January 27, 2021: RSD inspectors, UPRR management, UPRR police, and San Joaquin Sheriff's Deputies performed a follow up inspection which revealed that the encampment, debris, and inhabitants had been removed from the UPRR property. RSD inspectors will continue to monitor the areas for new encampments and resulting non-compliant conditions.

Before: Homeless encampment and debris on property

After: Encampment and debris removed from UPRR property

Before: Homeless encampment and debris near UPRR 8 Mile location

After: Encampment and debris removed

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 Rai Authority
CORT	Crude Oil Reconnaissance Team
CPUC	California Public Utilities Commission
ERVSD	Extended Revenue Service Demonstration
FRA	Federal Railroad Administration
GO	General Order
GOTP	General Order Training Program
HGAP	Heavy Grade Audit Project
HM	Hazardous Materials
HSR	High Speed Rail
LPG	Liquefied Petroleum Gas
LSHS	Local Safety Hazard Site
MP&E	Motive Power and Equipment
MPH	Miles Per Hour
NWP	Northwestern Pacific Railroad

OLI	Operation Lifesaver
OP	Operating Practices
PCMZ	Caltrain
PSRR	Pacific Sun Railroad
PTC	Positive Train Control
Pub. Util. Code	California Public Utilities Code
RMSR	Risk Management Status Report
ROSB	Railroad Operations and Safety Branch
ROW	Right of Way
RSD	Rail Safety Division
RTEP	Railroad Tunnel Evaluation Project
SCAX	Metrolink
SDNX	North Coast Transit District
SJVR	San Joaquin Valley Railroad
SMART	Sonoma-Marin Area Rail Transit
UPRR or UP	Union Pacific Railroad