

California Public Utilities Commission

SAFETY AND ENFORCEMENT DIVISION
OFFICE OF RAIL SAFETY
RAILROAD OPERATIONS AND SAFETY BRANCH



Annual Railroad Local Safety Hazard Report For Calendar Year 2012

**Pursuant to Public Utilities Code
Section 7711**

July 1, 2013

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I. EXECUTIVE SUMMARY

This report is prepared pursuant to Public Utilities Code Section 7711, which requires the California Public Utilities Commission (Commission or CPUC) to identify local safety hazards on California railroads, and to report on recent California railroad accident history. Specifically, 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.

In 2012, the number of derailments decreased slightly, from 67 the previous year to 65 in 2012. Fortunately, none involved hazardous materials spills and none resulted in fatalities.

Two notable derailments include the following:¹

- On June 21, 2012, Union Pacific Railroad (UPRR) freight train derailed 12 cars near Bealville, Kern County, approximately 35 miles southeast of Bakersfield. This is at Local Safety Hazard Site (LSHS) #16.
- On September 23, 2012, a UPRR train derailed 5 empty lumber cars in Caliente, Kern County, approximately 30 miles southeast of Bakersfield. This is also at LSHS #16.



Figure 1: Derailment near Bealville.

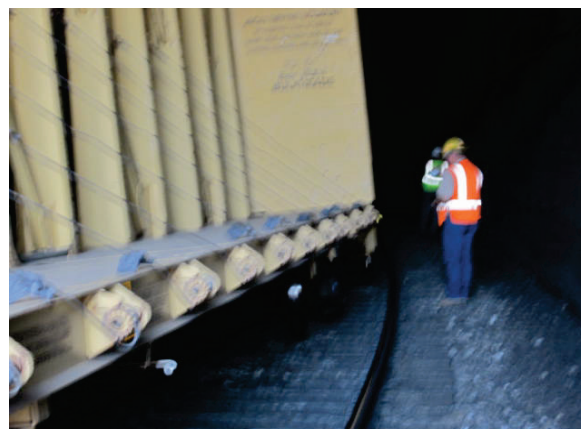


Figure 2: Derailment near Caliente, inside Tunnel.

¹ Appendix 1 contains a complete list of all railroad derailments in the California in the last five years. Appendix 2 contains the USDOT Accident Cause Code list.

Since 2008, there has been a 25-percent decrease in railroad derailments in California as shown in the Figure 2.

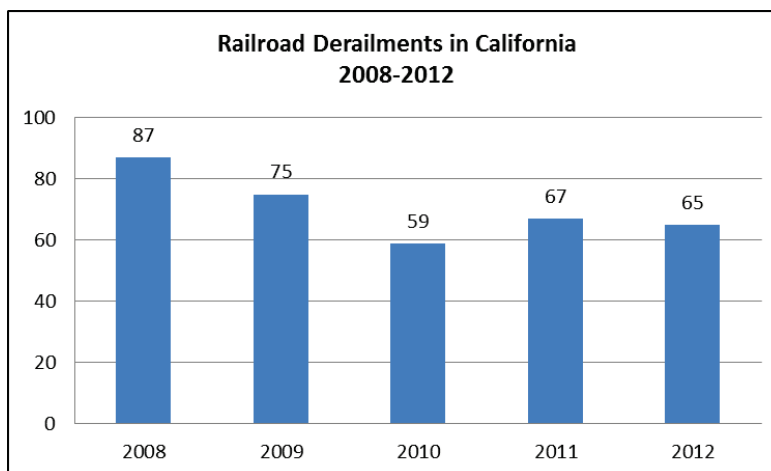


Figure 3: Source-Federal Railroad Administration, Office of Safety Analysis.

II. SAFETY CULTURE AND RISK MANAGEMENT

The Railroad Operations and Safety Branch (ROSB) staff (Staff) is continuing to learn from the lessons of Dunsmuir and San Bruno. Staff is working to enhance the safety culture of the railroad industry as well as its own safety culture, and will ensure that identification and mitigation or elimination of hazards is not limited to existing regulations and non-compliance with those regulations. Staff has implemented a new way to record perceived risks, large or small, and utilize this record to influence rail carriers to address perceived risks that have no regulation, but are a safety concern.

Staff is also implementing a renewal of risk assessment with a new and permanent risk assessment team approved for the 2012 / 2013 budget. Our risk assessment team has begun developing new projects based on some initially perceived risks, such as railroad bridge integrity, inspection, and maintenance, and the effect on derailment risk of car placement in trains (track-train dynamics). The new Staff team is in training and beginning the work of assessing current risk in these areas, as well as working with the railroads to ensure they are addressing unregulated risks and complying with existing regulations.

Staff must provide the critical functions of inspection, enforcement, hazard identification, risk assessment, risk management, information-gathering and analysis, and consequently participate in rulemaking, litigation, mediation, and negotiation effectively. Staff must continuously improve its understanding of safety culture, system safety planning, high reliability operations, and other contributions of the applied engineering, organizational, and behavioral sciences. Risk management must be the overarching principle, and must be fully integrated in all projects, plans, and oversight activities within the ROSB program.

III. BACKGROUND

In July 1991, a Southern Pacific (SP) freight train derailed near Dunsmuir. The derailment punctured a rail tank car, which resulted in a hazardous materials leak consisting of 19,000

gallons of metam sodium, a concentrated herbicide, in the Sacramento River. The toxic herbicide killed all vegetation and all fish and other aquatic animals in the water downstream from the spill, with some invertebrate species becoming extinct. Additionally, several hundred persons, including residents, were exposed to the contaminated river water and/or to toxic fumes requiring medical treatment. That same month, another SP train derailed near Seaclyff and released liquid hydrazine. Other rail accidents involving derailments, runaway trains, injuries and fatalities increased public and legislative concerns.

The following month, the CPUC ordered an investigation into the Dunsmuir and Seaclyff derailments. The CPUC investigation concluded that the derailment was caused by track-train dynamics and the positioning of cars in the train.² In addition, the investigation found the Cantara Loop, a ten-mile section of railroad track that included the derailment site, to be a local safety hazard site.



Figure 4: 1991 Cantara Loop derailment and resulting chemical spill

IV. ADOPTION OF SAFETY REGULATIONS

Prompted by the investigation and new legislation, in October 1993 the CPUC opened a rulemaking to consider mitigations for local rail safety hazards within California (Rulemaking 93-10-002). Prior to the issuance of a formal decision that would adopt new safety regulations in 1996; the California Legislature amended Public Utilities Code Section 7711. Section 7711 requires the CPUC to annually report on sites on railroad lines in the state that it finds to be hazardous and to consider a list of factors, including root causes, when identifying whether railroad sites pose a local safety hazard.³

In September 1997, the CPUC issued D.97-09-045 (75 CPUC2d 1), adopting safety regulations

² Railroad operators must place loaded and empty cars at strategic locations in the string of rail cars (“consist”) to ensure no excessive forces that could derail a train are generated by the locomotives’ pulling or braking power.

For example, in uphill movements, if empty cars are placed on the head-end of a heavy train, with too much power these lightweight cars could be pulled sideways through the inside of a curve, called “stringlining,” as they were in the 1991 Cantara Loop derailment and other derailments here and at other identified local safety hazard sites.

In downhill movements the weight of the train pushing against a braking locomotive could cause such lightweight cars to derail to the outside of the curve, called “jackknifing,” as has happened in other derailments in the Cantara Loop segment as well as at other identified local safety hazard sites in the state.

³ AB 1935 (Bermudez), Chapter 885, Statutes of 2006.

to eliminate or reduce essentially local safety hazards. The decision identified several local safety hazard sites in California using statistical methods and models to analyze site characteristics and accident concentrations. In the decision, the CPUC stated it took "great pains to ensure that this Commission has done nothing to weaken or conflict with the rightful and valuable exercise of federal jurisdiction" and it "carefully and thoroughly considered every safety measure to ensure that these measures do not `unduly' or `unreasonably' burden interstate commerce." (75 CPUC2d 1 at 10.) The CPUC regulations were intended to complement the Federal Railroad Administration's (FRA) efforts, with the hope of reducing or eliminating derailments and toxic spills in California.

The decision identified 19 local safety hazard sites in California in compliance with Section 7711, and adopted regulations governing operations at 13 of these sites. (See Figure 1 on following page.) In addition, the CPUC decision required the railroads to comply with their own train make-up rules.

Following issuance of D.97-09-045, the railroads challenged the CPUC decision and claimed that the CPUC lacked the authority to require the railroads to comply with train make-up rules, regardless of whether they were the railroads' own prescribed rules. In 2003, the Ninth Circuit Court of Appeals concluded that the CPUC rules were preempted by federal law in several areas and remanded the issue of CPUC regulation of train make-up rules to the District Court.⁴ The District Court and the Ninth Circuit Court both rejected the railroads' claim that the CPUC did not have the authority to require the railroads to comply with their own train make-up rules.⁵ However, the court also accepted the railroads' claim that other regulations were preempted, and remanded some back to the District Court.

In response to the courts' actions, the CPUC Railroad Operations and Safety Branch, Union Pacific Railroad Company (UPRR), and the Burlington Northern Santa Fe Railway Company (BNSF) settled the train make-up rule issue by filing a Stipulated Final Judgment allowing the CPUC to not only enforce the railroads' rules for train make-up at the local safety hazard sites, but also to require a scientifically based process for generating those rules.⁶ The Stipulated Final Judgment was approved by the U.S. District Court for the Northern District of California on May 10, 2004.⁷

On February 16, 2006, in D.06-02-013, the CPUC modified D.97-09-045 to conform to the court rulings and the settlement agreement. The modified decision provides the CPUC the authority to enforce train make-up rules at the following 13 identified local safety hazard sites: Sites 1, 3, 4, 7, 9, 12, 16, 22, 23, 26, 28, 29, and 31 (Appendix 3). The modified decision requires railroads to provide timely notice to the CPUC to request any changes to those rules and must include a technical analysis and justification of the safety implications of such changes. Should the railroads fail to provide notice to the CPUC, the CPUC may assess penalties.

⁴ *Union Pacific Railroad Co. v. CPUC*, 109 F Supp. 2d 1186 (N.D. Cal. 2000) and *Union Pacific Railroad Co. v. CPUC*, 346 F.3d 851 (9th Cir. 2003).

⁵ The Ninth Circuit Court affirmed the authority of the CPUC to enforce the railroad's train make-up rules with one exception. The Court ruled that CPUC enforcement of train make-up rules that governed car placement by coupler types was preempted.

⁶ The parties agreed to remove rules governing car placement by coupler types, dynamic brake rules subject to FRA enforcement, and Road Railer rules.

⁷ Case No. C 97-03660-TEH.

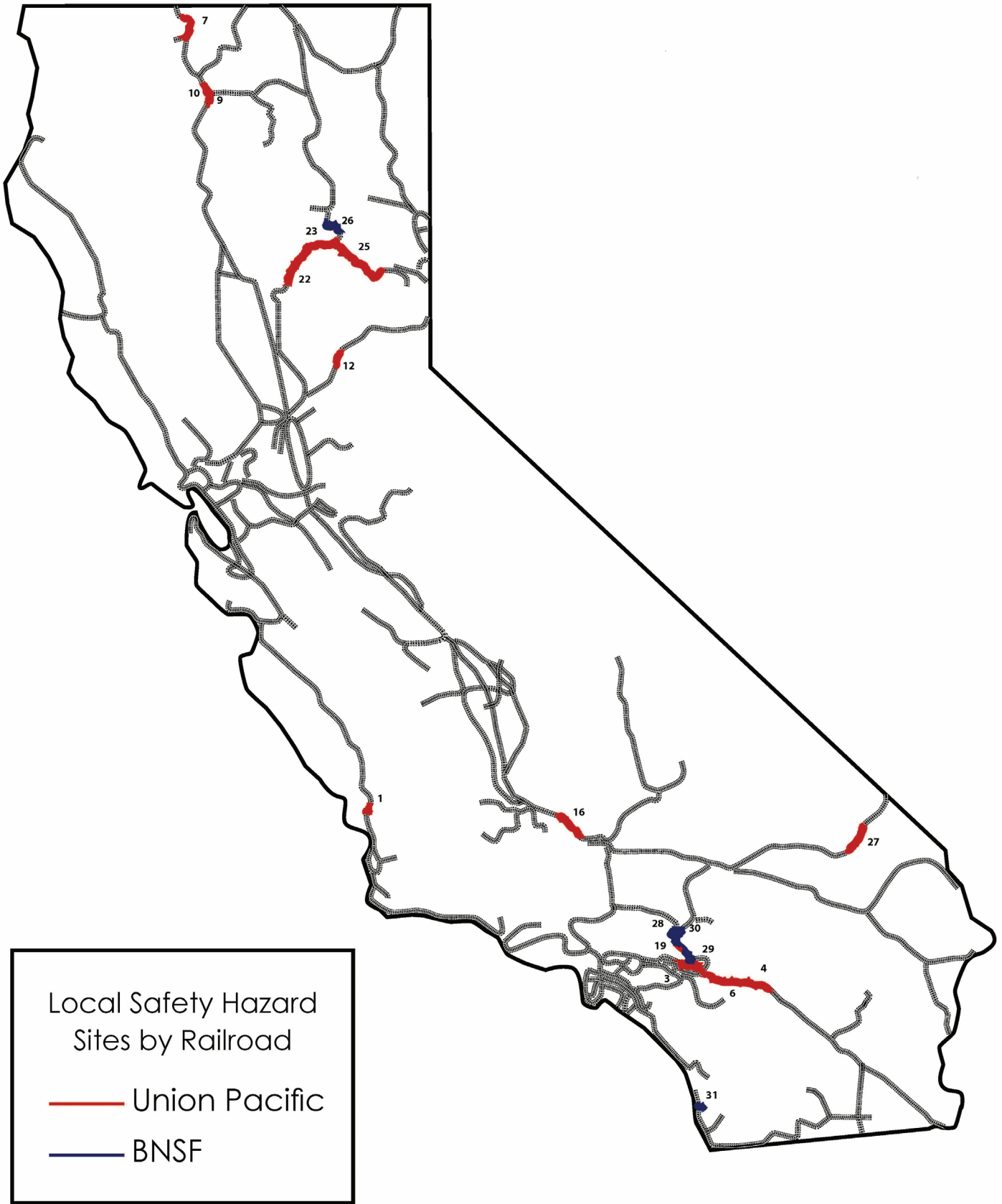


Figure 1. Local Safety Hazard Sites as identified in Appendix 3

V. INSPECTION OF LOCAL SAFETY HAZARDS

The CPUC Railroad Operations and Safety Branch employs federally certified hazardous materials inspectors who inspect railroad facilities at all sites, including those identified as local safety hazard sites. The inspectors ensure that railroads have appropriate processes in place for the secure movement of shipped materials classified as hazardous. These processes include chain-of-custody requirements, tracking procedures, and identification and mitigation of risks at vulnerable locations.

The inspectors conduct annual on-site security inspections at all rail facilities, including the Class I railroads, UPRR⁸ and BNSF, as well as the 30 additional railroads that operate in California.

The hazardous materials inspectors also conduct annual compliance inspections for the following state-wide mandates for all railroads to address safety hazard issues:

- Public Utilities Code Section 765.5 (d), which requires the CPUC to inspect railroad locomotives, equipment, and facilities located in class I railroad yards not less frequently than every 120 days, and inspection of all branch and main line track not less frequently than every 12 months.
- Public Utilities Code Section 765.5 (e), which requires the CPUC to conduct focused inspections of railroad yards and track and target facilities that pose the greatest safety risk, based on inspection data, accident history, and rail traffic density.
- Public Utilities Code Section 7665.2, which requires every operator of rail facilities to provide a risk assessment to the CPUC for each rail facility in the state, and prescribes the elements of the risk assessment.
- Public Utilities Code Section 7665.4, which requires the rail operators to develop an infrastructure protection program, and requires the CPUC to review the infrastructure protection program. It permits the CPUC to conduct inspections to facilitate the review, and permits the CPUC to order a rail operator to improve, modify, or change its program to comply with the requirements of this article.
- Public Utilities Code Section 7665.6, which 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.

In 2012, the CPUC Railroad Operations and Safety Branch hazardous materials inspectors:

- Performed 69 inspections at local safety hazard sites;⁹
- Inspected 1,277 units;¹⁰

⁸ The Southern Pacific merged with UPRR on Sept. 11, 1996.

⁹ An inspection is a review of railroad equipment and facilities to determine compliance with CPUC safety regulations.

¹⁰ A unit equals one tank car, one locomotive, etc.

- Wrote 114 defects;¹¹ and,
- Did not write any violations.¹²

VI. LOCAL SAFETY HAZARD SITES AND POSITIVE TRAIN CONTROL

The Federal Rail Safety Improvement Act of 2008 requires Class I railroads¹³ to install Positive Train Control (PTC) equipment on main lines that carry passengers, freight, and specified hazardous materials, by December 31, 2015. Most of the original local safety hazard sites are on main line track that have or will have PTC equipment installed. Staff has been monitoring progress for PTC design and installation, noting that the first installation in the nation will be in the Los Angeles Basin, and will cover the Metrolink system's tracks.

¹¹ A defect is a condition of non-compliance that must be corrected.

¹² A violation is a defect found not corrected, or a defect serious enough to warrant immediate remediation and civil penalty.

¹³ The Surface Transportation Board defines a Class I railroad in the United States as "having annual carrier operating revenues of \$250 million or more" after adjusting for inflation using a Railroad Freight Price Index developed by the Bureau of Labor Statistics. (49 CFR Part 1201) Two Class I railroads operate in California, the Union Pacific Railroad Company (UPRR) and the Burlington Northern Santa Fe Railway (BNSF).

Appendix 1 – List of Railroad Derailments past Five Years

Appendix 2 – U.S. DOT Accident Cause Codes
(FRA Guide for Preparing Accident/Incident Reports, Appendix C)

Appendix 3 –List of Local Safety Hazard Sites

- 1) Site No. 1 - SP Coast Line, Milepost 235.0 to 249.0
(Now UPRR Coast Subdivision)
- 2) Site No. 3 – SP Yuma Line, Milepost 535.0 to 545.0
(Now UPRR Yuma Subdivision)
- 3) Site No. 4 – SP Yuma Line, Milepost 586.0 to 592.0
(Now UPRR Yuma Subdivision)
- 4) Site No. 6 - SP Yuma Line, Milepost 542.6 to 589.0
(Now UPRR Yuma Subdivision)
- 5) Site No. 7 – SP Siskiyou Line, Milepost 393.1 to 403.2
(Now Central Oregon and Pacific Railroad {CORP} Siskiyou Subdivision)
- 6) Site No. 9 – Shasta Line (Black Butte District), Milepost 322.1 to 332.6
(Now UPRR Black Butte Subdivision)
- 7) Site No. 10 – SP Shasta Line, Milepost 322.1 to 338.5
(Incorporated into Site No. 9 – see above)
- 8) Site No. 12 – SP Roseville District, Milepost 150.0 to 160.0
(Now UPRR Roseville Subdivision)
- 9) Site No 16 – SP Bakersfield Line, Milepost 335.0 to 359.9
(Now UPRR Mojave Subdivision)
- 10) Site No. 19 – SP Bakersfield Line, Milepost 463.0 to 486
(Now UPRR Mojave Subdivision)
- 11) Site No. 22 – UP Feather River Division, Milepost 234.0 to 240.0
(Now UPRR Canyon Subdivision)
- 12) Site No. 23 – UP Feather River Division, Milepost 253.0 to 282.0
(Now UPRR Canyon Subdivision)
- 13) Site No. 25 - UP Feather River Division, Milepost 232.1 to 319.2
- 14) Site No. 26 – UP Bieber Line, Milepost 15.0 to 25.0
(Now BNSF Gateway Subdivision)
- 15) Site No. 27 – UP L.A. Subdivision, Cima Grade, Milepost 236.5 to 254.6
- 16) Site No. 28 – ATSF Cajon, Milepost 53.0 to 68.0
(Now BNSF Cajon Subdivision)

17) Site No. 29 – ATSF Cajon, Milepost 81.0 to 81.5
(Now BNSF Cajon Subdivision)

18) Site No. 30 – ATSF Cajon, Milepost 55.9 to 81.5
(Now BNSF Cajon Subdivision)

19) Site No. 31 – ATSF San Diego, Milepost 249.0 to 253.0
(Now BNSF San Diego Subdivision)