



# CPUC Rail and Transit Hazard Management Program

August 2012

2012 Railroad Right-of-Way Trespass Prevention Workshop

Daren Gilbert, Manager  
Rail Transit & Crossings Branch  
California Public Utilities Commission





# Outline

- CPUC Program Overview
- Rail Transit Hazard Program
  - Part 659 Requirements
  - CPUC Hazard Program
  - Going Forward
- Rail Crossing Program
  - Trespassing Measures
- Wrap-up / Question





# CPUC Overview

## CPUC's Rail Safety Organization

### •Railroad Operations Safety Branch

- Railroad track, signaling, Haz. Mat., etc.
- Works closely with FRA

### •Rail Transit and Crossings Branch

#### – Rail Transit Safety Section

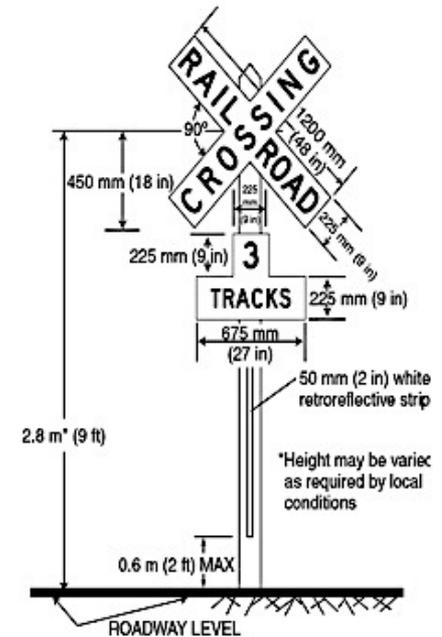
- SSO for BART, SF MUNI, LA Metro, SD Trolley, Sprinter etc.

#### – Transit Operations Safety Section

- Transit track, signal and train control, motive power and equipment, and operations inspections

#### – Rail Crossings Engineering Section

- CPUC authority required for new crossings and modification of existing crossings (Transit and Railroad crossings)





# CPUC Overview: Rail Operations Safety Branch

- **CPUC participates in the FRA State Participation Program**
  - Enforces all 49 CFR 200 series railroad safety regulations, as applicable
  - Enforces a number Commission General Orders and state laws
  - XX FRA Certified inspectors in track, motive power and equipment, HazMat, operating practices, signal and train control
  - Investigate and report on all fatal and injury accidents, including trespass
  - Recommendations issued to local jurisdictions and railroads





# CPUC Overview: Rail Transit

- **Oversight Rail Transit Agencies**
  1. Bay Area Rapid Transit (BART);
  2. San Francisco Municipal Transportation Agency (SF-Muni);
  3. Sacramento Regional Transit District (SRTD);
  4. Santa Clara Valley Transportation Authority (SCVTA);
  5. Los Angeles County Metro Transportation Authority (LA-Metro);
  6. North County Transit District – Sprinter (NCTD); and
  7. San Diego Trolley Inc. (SDTI).
- **Oversight of other fixed guideway systems:**
  - Funicular/incline - Angels Flight (Los Angeles),
  - Automated People Movers - SFO Airtrain (San Francisco), Sacramento Airport APM, BART airport connector
  - Trolleys – Port of Los Angeles Red Car Line, The Grove, Americana (Southern California)



# CPUC Overview: Rail Crossings

- **CPUC authorization required for all new crossings and crossing modifications:**
  - All Transit and Railroad crossings
  - New crossings (at-grade and grade-separations)
  - Change in type of warning devices at public crossings
  - Road Modifications (widening, medians, sidewalks)
  - Change in number of tracks
- **Authorization process**
  - Formal Commission Application for new rail crossings
  - New transit system crossings under General Order 164-D, based on. submission of a Hazard Analysis for each proposed crossing
  - Staff authorization of modifications for existing rail and transit crossings through delegated authority under General Order 88-B



# Rail Transit: 49 CFR Part 659 Requirements

- **Hazard Management Process 659.31(a) :**  
“...a process to identify and resolve hazards during its operation, including any hazards resulting from subsequent system extensions or modifications, operational changes, or other changes within the rail transit environment.”
- **Requirement of the CPUC Program Standard**  
The program standard lays out how the CPUC will conduct its state safety oversight activities.
- **Requirement on transit agencies under General Order 164-D, Section 6**





# Rail Transit: 49 CFR Part 659 Requirements

- **Hazard Management Process - 49 CFR 659.31(b) and Commission General Order 164-D, Section 6 :**
  1. Define the rail transit agency's approach to hazard management and the implementation of an integrated system-wide hazard resolution process;
  2. Specify the sources of, and the mechanisms to support, the ongoing identification of hazards;
  3. Define the process by which identified hazards will be evaluated and prioritized for elimination or control;
  4. Identify the mechanism used to track through resolution the identified hazard(s);
  5. Define minimum thresholds for the notification and reporting of hazard(s) to oversight agencies; and
  6. Specify the process by which the rail transit agency will provide ongoing reporting of hazard resolution activities to the oversight agency





# 49 CFR Part 659 Requirements

- **Program Standard 49 CFR 659.15 (b) requirements**
  - “ongoing communication and coordination relating to the identification, categorization, resolution, and reporting of hazards to the oversight agency”
- **CPUC RTSS Procedures Manual (Program Standard)**
  - Includes sample reporting thresholds (red signal violation)
  - Reporting requirements (notification process / time, monthly reporting, logging)



# 49 CFR Part 659 Requirements

- **System Safety Program Plan (SSPP) (659.19-f)**
  - Transit agencies to include in its SSPP:
    - “a description of the rail transit agency’s process used to implement its hazard management program, including activities for:
      1. Hazard identification;
      2. Hazard investigation, evaluation and analysis;
      3. Hazard control and elimination;
      4. Hazard tracking; and
      5. Requirements for on-going reporting to the oversight agency relating to hazard management activities and status”

CPUC audits to ensure SSPP contains requirements





# 49 CFR Part 659 Requirements

- **Safety Certification 49 CFR 659.19 (g)**
  - Requires specific safety certification plan for extensions and major projects.
  - Commission General Order 164-D Section 11 specifically requires the safety certification plan to contain hazard analysis of the project during preliminary engineering.
  - Resolution of the hazard or its control is required.
  - Tracking and follow up may be required.





# Hazard Examples

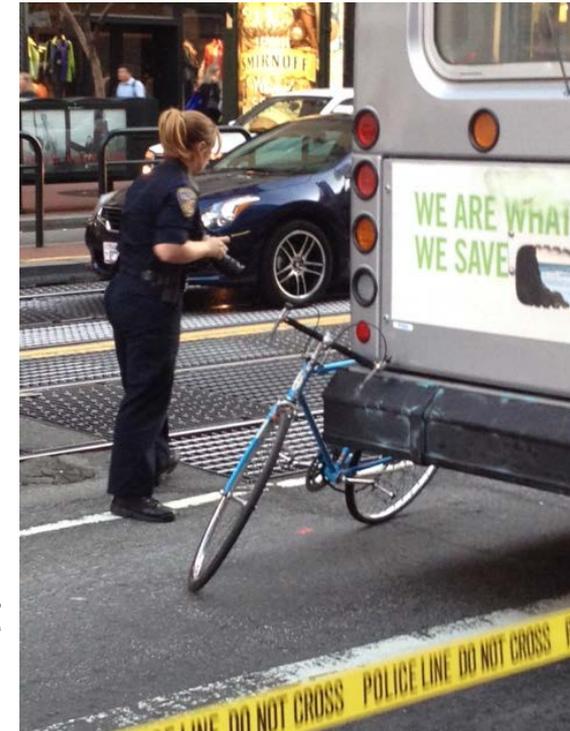
- **Event:**
  - 08/04/2012 – Trespass location identified on Sacramento Regional Transit District system
  - Numerous trespassers identified over short period
- **Reason for Notification:**
  - Identified by CPUC Staff
- **Follow-up:**
  - Transit agency notified, justification for current configuration?
  - After-action report of corrective action plan (CAP)





# Hazard Examples

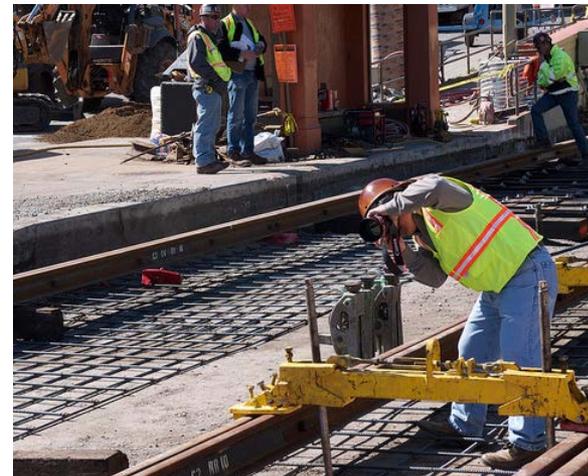
- **Event:**
  - 03/07/2012– Bicyclist injured near on Muni Tracks
  - Bicyclist wheel caught in MUNI track, feel & injured by oncoming bus
  - Bicyclist injured and transported to hospital
- **Reason for Notification:**
  - Media Coverage, Potential Train vs. Bicyclist
- **Follow-up:**
  - Determine MUNI mitigations for repeat incidents
  - Investigation report for hazard / incident





# Hazard Examples

- **Event:**
  - 04/2010– MUNI track defects discovered by internal inspectors
  - Potential derailment
- **Reason for Notification:**
  - Not notified, hazard discovered by internal inspectors
- **Follow-up:**
  - Determine MUNI mitigations for repairing track
  - Investigation report for hazard





# Going Forward

- **Clearly Defining Hazard Thresholds**

- Develop hazard conditions that require notification and reporting, similar to current accident requirements
- Considering the following items

<i>Near-miss occurrences:</i>
Near-miss collision of train with another train or object (defined as deployment of emergency brake to prevent collision)
Near-miss collision with employee or contractor on the rail right-of-way
Near-miss electrocution
Near-miss industrial accident with potential for fatality or serious injury
<i>Signal Issues:</i>
Wrong side signaling failure (false proceed)
An activation failure, a partial activation, or a false activation of a rail grade crossing warning system
Local or system-wide malfunction of the signal system or system component



# Going Forward

**Switch Issues:**

- Switch run-through
- Improperly lined track switches (switch left in incorrect position)
- Failure to latch and or lock a track switch
- Operating over a track switch previously run through (i.e. damaged or broken)

**Condition of Track:**

- Broken rail (or increase changes in number, frequency or nature of breaks)
- Trackbuckle
- Placement of speed restriction

**Electrification System:**

- Failure of insulators and/or contactors resulting in electrical arcing
- Failure of other system components resulting in electrical arcing, burning or smoke
- Live wires; loose wires

**Vehicle Conditions:**

- Broken or loose wheels
- Broken axle

**Operating Issues:**

- Incapacitated train operator in revenue service
- Failure of train operator to recognize flagging/work zone (as evidenced by portable trip stop overrun, shunt device, etc.)
- Failure of employee to appropriately place or remove precautionary safety devices (derails, trip stops, other items)
- General Order/Track Right violation (unauthorized train movement near or through work zone)
- Train speeding through work zones in revenue service
- Train uncoupling in revenue service
- Leaving equipment or materials that fouls or obstructs train movements on an adjacent track





# Going Forward

## 1. Eliminate Crossing Hazard

- Remove / Grade Separate crossing

- Better implementation of Hazard Precedence Model
- Grade Crossing Example

## 2. Provide Safety Devices

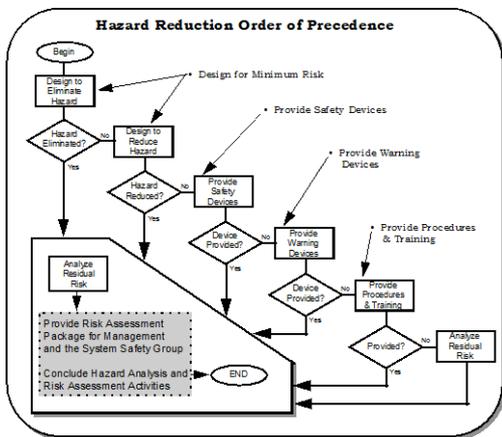
- Gates, Barriers, Channelization

## 3. Provide Warning Devices

- Signs, Flashing Lights, Bells

## 4. Procedures

- Enforcement, Operations





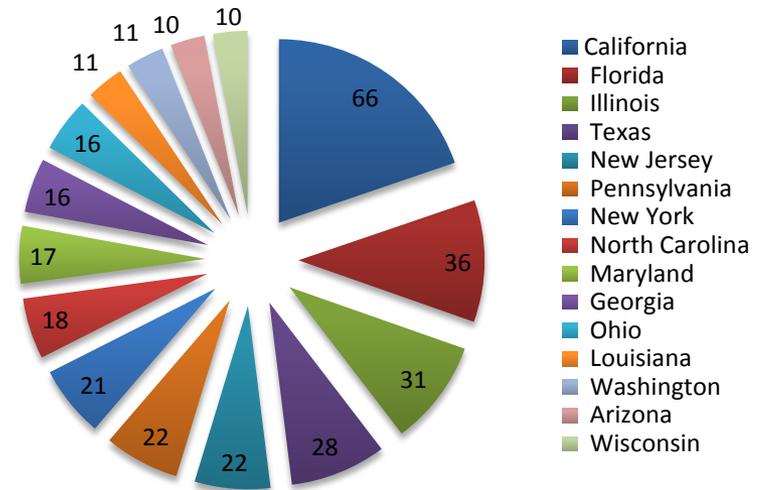
# Need for Increased Pedestrian Safety

## Trespassing Incidents:

- Alignments with adequately treated pedestrian pathways and such as curb, pavement markings and channelization, can reduce illegal trespassing on the right-of-way



**CY2010 - Trespassing Fatalities by State**



- 451 Trespassing Fatalities in 2010



# Trespassing: Learning Lessons

- Pedestrians will take most direct route
- Need to channelize (fencing, barriers)
- Continual observation along ROW is the most effective mitigation to trespassing
- The most convenient route should be the safest route
- Safety must not be compromised based on aesthetics or convenience



# Trespassing: Learning Lessons

- San Clemente Pedestrian Trail Trespassing Hazard Mitigations
  - Fencing
  - Landscaping
  - Crossings
  - Channelization
- Determined by Multiple Team Diagnostic Reviews





# Trespassing Measures





# Trespassing Signage

- Approved MUTCD pedestrian signage includes:
  - Pedestrian Crossing
  - “Look” Both ways
  - Light Rail Blank-Out
  - Light Rail Station
- Signs not yet in MUTCD must request permission from FHWA





# Questions





# Contact Info

**Daren Gilbert**

**[Daren.gilbert@cpuc.ca.gov](mailto:Daren.gilbert@cpuc.ca.gov)**

**CPUC web site**

**<http://www.cpuc.ca.gov/crossings>**

