

# *BNSF RAIL SAFETY OVERVIEW*

JULY 24, 2016  
NASHVILLE, TN



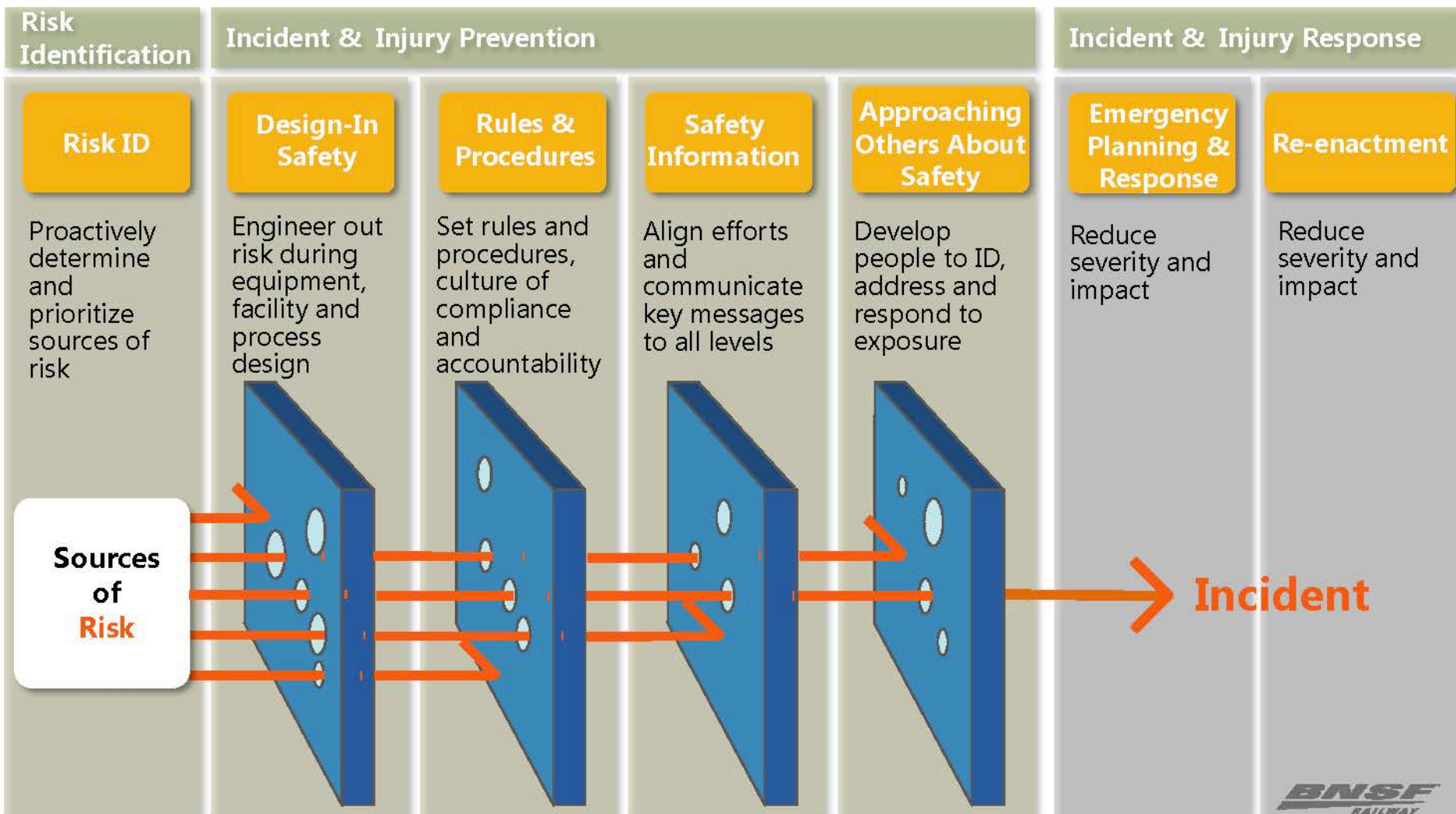
# BNSF's Safety Overview

- Rail is safest mode of land transportation.
- BNSF's safety vision is to prevent accidents in the first place.
- BNSF has a broad-based risk reduction program.





# Prevention: Risk-Reduction Efforts – Layers of Safety



# Prevention: Reducing Risk

## Human Factor

- Training
- Remote monitoring
- Positive Train Control
- Self reporting protocol

## Equipment/Mechanical

- Ultrasonic inspection
- Detector network - dragging equipment
- Technology
  - Thermal/infrared scanning for warm bearing detection

## Track/Signal

- Enhanced track inspection training
- Continued elimination of jointed rail
- Strong capital program for tie renewal
- Technology - ground penetrating radar and enhanced geometry testing







# Prevention: Key Train Operations

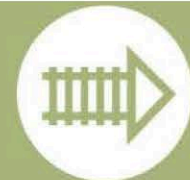
A Key Train has one or more loads of Toxic Inhalation Hazard/Poisonous Inhalation (TIH/PIH) materials or a train with 20 or more tank loads of any hazardous materials.

## Special Handling for Key Trains

- Special identification and tracking
- Speed restrictions for crude and ethanol
  - **BNSF requires a speed of 35 mph for all shale crude trains through municipalities of 100,000 or larger as of March 2015**
  - 50 mph for all Key Trains as of July 2014
  - Municipal speed restriction of 40 mph for crude oil trains consisting of one or more DOT111 tank cars, including CPC 1232 tank cars, moving through High Treat Urban Areas issued by the Department of Transportation on July 1, 2014.
- **Risk-based Routing:** Applied PHMSA's *Rail Corridor Risk Management System* and its 27 Risk Factors, defining the "most safe and secure" routes for trains carrying TIH/PIH, to crude unit trains starting July 2014.
- **Key Train Routes:** Wayside wheel bearing detector spacing, frequency of track inspections, minimum track maintenance standards for tracks used to meet or pass Key Trains.
- **Unattended Trains:** Crude oil trains left unattended require specific job safety briefing between train crew and train dispatcher.
- **Locomotive Cab Securement:** Key Trains left unattended have reverser removed and cab doors locked.

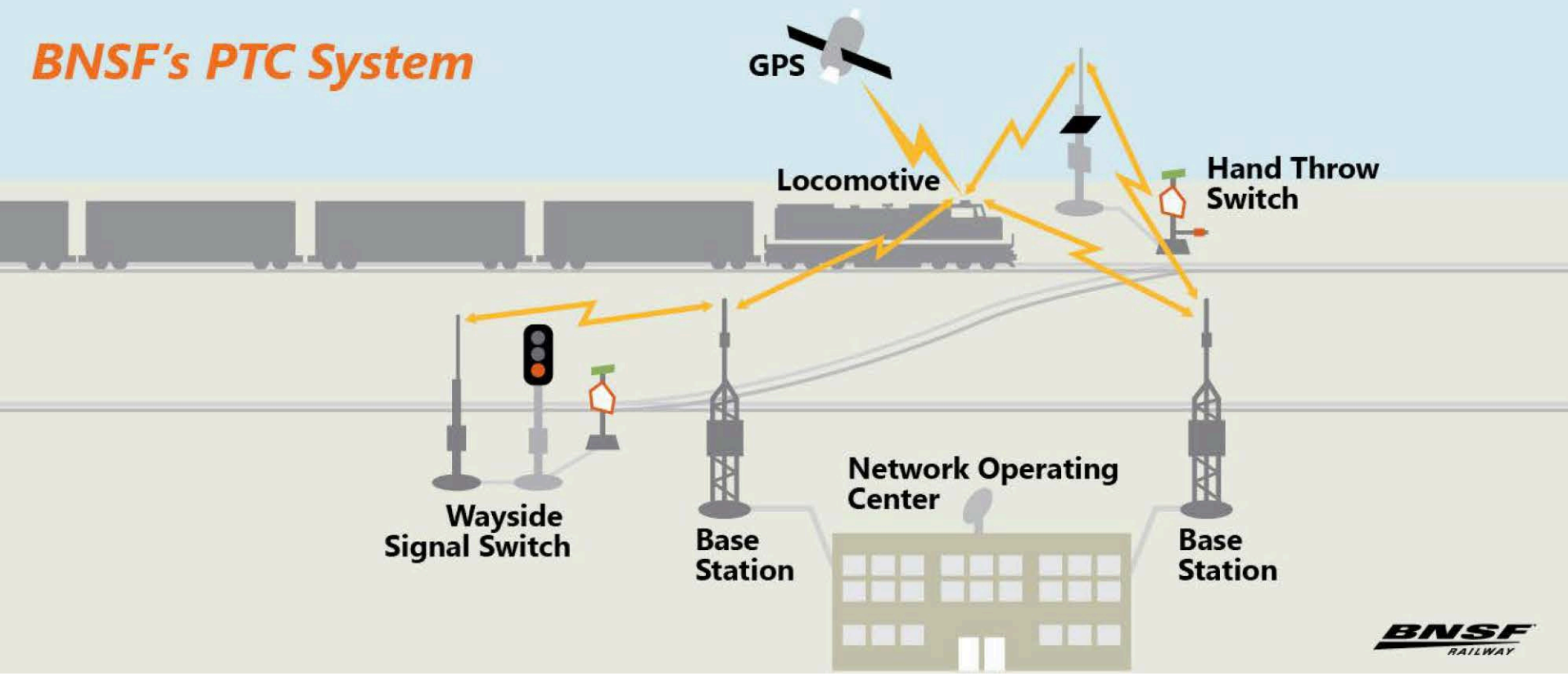
# Prevention: Positive Train Control (PTC) Deployment Will Enhance Safety

PTC is a digital wireless communication technology



*The Future*

## *BNSF's PTC System*



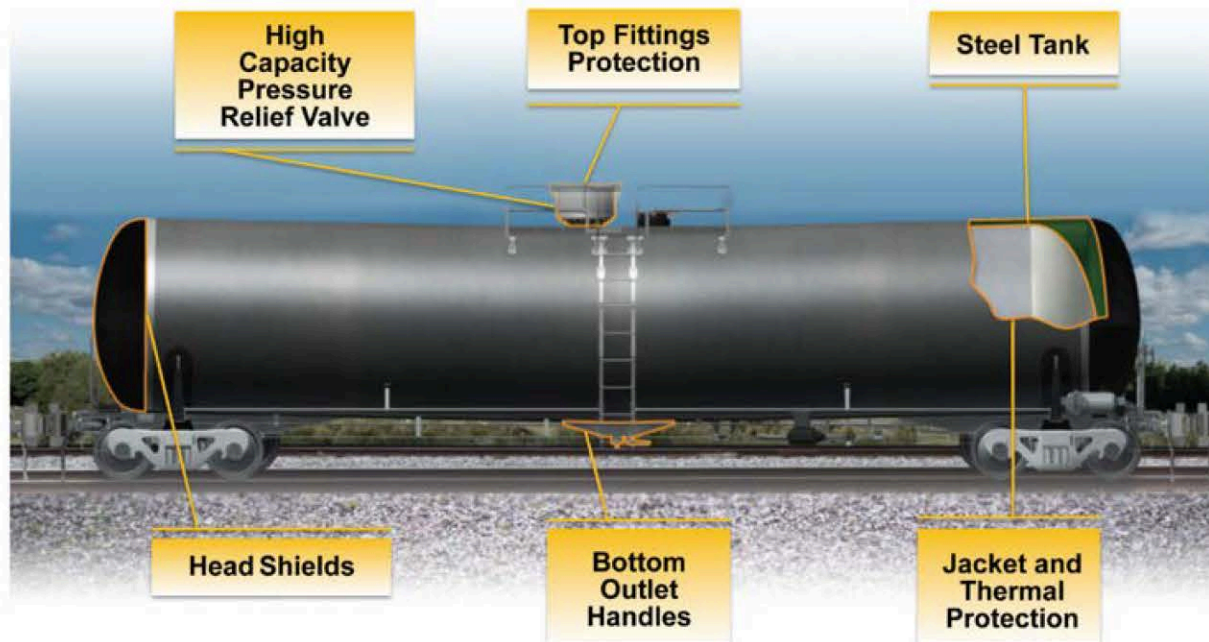


# Mitigation: New Tank Car Standards

## Tank Cars for High-Hazard Flammable Trains (HHFT)

New tank cars built after Oct. 1, 2015, must meet enhanced DOT 117 design or performance criteria for HHFT:

- Increased thickness from 7/16 inch to 9/16 inch steel
- Thermal protection required
- Jacketing with minimum 11-gauge steel and weather-tight
- Full-height Head Shield - 1/2-inch thick



# Mitigation: New Tank Car Standards

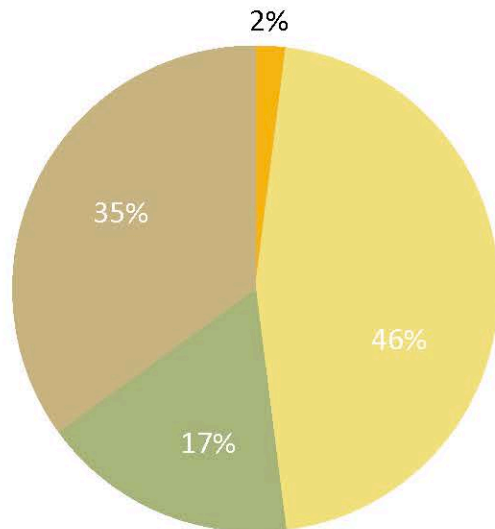
Car specification /Service	U.S. Retrofit Timeline	Car specification /Service	Canadian Retrofit Timeline
DOT111 (NJ)/PGI	January 1, 2017* January 1, 2018	DOT111 (NJ)/Crude Oil	May 1, 2017
DOT111 (J)/PGI	March 1, 2018	DOT111 (J)/Crude Oil	March 1, 2018
CPC-1232 (NJ)/PGI	April 1, 2020	CPC-1232 (NJ)/Crude Oil	April 1, 2020
DOT111 (NJ)/PGII	May 1, 2023	DOT111 (NJ)/Ethanol	May 1, 2023
DOT111 (J)/PGII	May 1, 2023	DOT111 (J)/Ethanol	May 1, 2023
CPC-1232 (NJ)/PGII	July 1, 2023	CPC-1232 (NJ)/Ethanol	July 1, 2023
CPC-1232 (J)/PGI and II and all remaining cars in PGIII	May 1, 2025	CPC-1232 (J)/PGI and II all remaining cars in other flammable liquid service	May 1, 2025



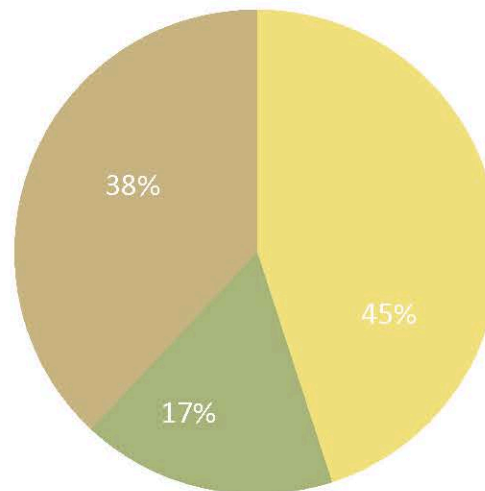
# Crude Oil Unit Train Tank Car Fleet

Project 38% of fleet by year-end 2016 will be Next Gens.

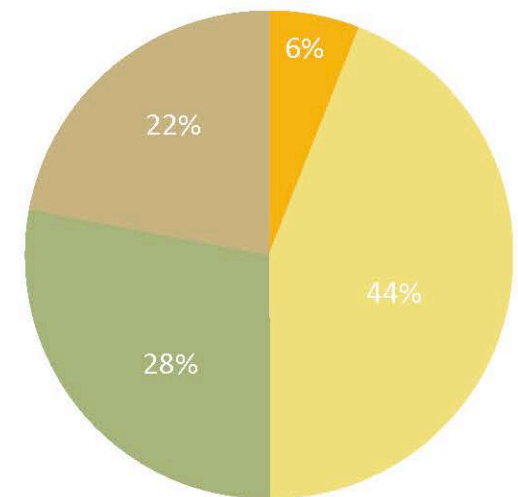
Current Online (June 2016)



Forecast On-Line Dec 2016



Current Total Customer Fleet  
(On-Line and In Storage)



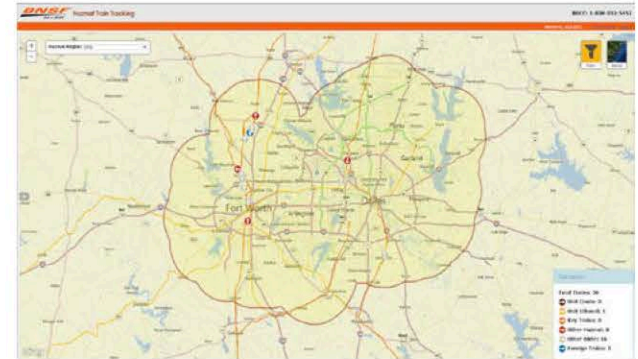
■ DOT-111 ■ CPC-1232 Non-Jacketed ■ CPC-1232 Jacketed ■ Next Gen: DOT-117, DOT-117R & DOT-120

# Response: First Responder Access to Information

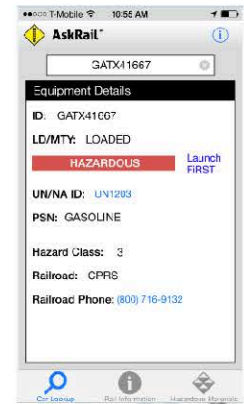
Historically, BNSF has provided local first responders information about hazmat shipments upon request.

*Today we go even further*

- Since July 2014, BNSF provides **State Emergency Response Commissions with Bakken crude traffic train counts** on transport of 1 million+ gallons.
- BNSF **offers SECURETRAK** website, a real-time Geographic Information System tracking program, to state and/or regional fusion centers.
- Industry **launched AskRail app** to provide first responders with car-specific data for hazmat contents and railroad contacts during incident.
- BNSF **developed national inventory of resources** for first responders, staging of emergency response equipment and community notification contacts.
- BNSF launched [www.BNSFHAZMAT.com](http://www.BNSFHAZMAT.com) website to provide information such as training and emergency response plans to first responders.



**SECURETRAK Website**



**AskRail App**



# Response: First Responder Training

BNSF and the railroad industry train first responders in their communities under a longstanding program called “TRANSCAER” (*Transportation Community Awareness and Emergency Response*)

- Hands-on equipment in field – Instructor lead
- Train list / shipping papers
- Placards
- Equipment
- Incident Assessment



- BNSF trained **more than 10,000** local emergency responders in 2015.
- More than **80,000 emergency responders** trained by BNSF since 1996.

# Response: Training First Responders at National Facilities



- Security and Emergency Response Training Center (SERTC) at national railroad research/training facility
- First responders learn crude incident techniques in three-day class with 24 hours of training
- In 2015, industry trained 1,700 first responders. In 2014 and 2015, BNSF sponsored more than 1,200 local emergency responders; In 2016, BNSF is sponsoring 360 responders to attend SERTC and Texas A&M
- BNSF believes first responders must be properly trained to respond safely



# Restoration of sites

## BNSF will restore the site



Cameron, Texas, post derailment

- BNSF is responsible for mitigation of the spill and any restoration tasks
- BNSF contracts with pre-approved consultants and contractors to perform the remediation and restoration
- State agencies oversee the work and BNSF must obtain their concurrence before a site is acceptably closed

The image features the BNSF Railway logo centered over a background of a train. The train is a freight locomotive pulling several railcars, all rendered in a monochromatic orange-brown color scheme. The locomotive is positioned in the upper half of the frame, facing forward, while the railcars extend into the distance. The overall image has a grainy, high-contrast aesthetic.

***BNSF***<sup>®</sup>  
*RAILWAY*





# State Involvement in Rail Safety



Tehachapi Loop, east of Bakersfield, CA

Paul W. King, PhD  
Safety and Enforcement Division  
California Public Utilities Commission  
July 24, 2016, Nashville NARUC meeting





## Presentation Overview

- State rail safety programs.
- State/federal roles and jurisdiction.
- Possible NARUC roles and involvement.







## State rail safety programs

- Nearly all states have some state railroad safety regulations, mainly railroad employee workspace regulations: clearance and walkways.
- 30 states have federal/state participation programs under CFR Part 212
  - State inspectors serve in same capacity as FRA inspectors.
  - Coordinate with FRA Regional Administrators.
  - Receive training, certification, funded by FRA.
  - Coordinate with, and often work alongside FRA inspectors.
- Association of State Railroad Safety Managers (ASRSM)
  - FRA-sponsored organization of state participation program managers.
  - Annual meeting funded by FRA.
  - Has one of two state voting memberships on the FRA's Railroad Advisory Committee for Safety (RSAC).





# California's rail safety programs



## Railroad Safety

- ~ 9,000 miles total railroad track
- 2 Class I railroads (transcontinental)
- 7 commuter/passenger railroads
- 33 shortline railroads (local and regional)
- High-Speed Rail, construction beginning
- 45 state inspectors



## Rail Transit Safety

- ~ 500 miles of rail transit track or guideways
- 7 major rail transit systems
- 7 small rail transit systems
- 12 in various planning and development stages
- 11 state inspectors, 13 engineering field-representatives



## Rail Crossing Safety

- ~ 13,500 rail crossings
- 13 engineering field-representatives

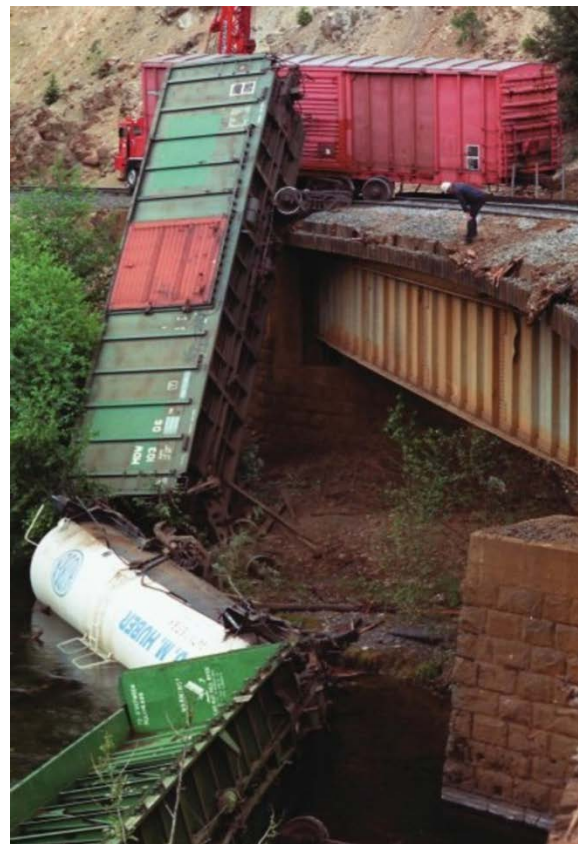






## State/federal roles and jurisdiction

- Policy issues: Efficiency, capability, preemption issues.
  - Federal:
    - An economy of scale for research, rulemaking.
    - Ability to address state cross-border issues, requirements.
    - Fills voids in state safety where state historically has little or no regulation.
  - State:
    - Closer attention to local safety concerns, unique characteristics.
    - Ability to set its own level of safety resources, augmenting federal effort.
    - Can adopt some regulations when state needs are identified.



Dunsmuir, CA, 1991





## State/federal roles and jurisdiction (cont.)

- Preemption:
  - Federal law:
    - ***Safety Appliance Act*** (1893)
      - Set standards for air brakes and couplers
      - Essentially required national uniformity in requirements for railcars.
    - ***Locomotive Boiler Inspection Act*** (1911)
      - Set standards for locomotives
      - Essentially required national uniformity in requirements for locomotives







## State/federal roles and jurisdiction (cont.)

- ***Federal Railroad Safety Act*** (1970)
  - Established the Federal Railroad Administration
  - Preempted states when subject matter is covered by federal regulations and laws.
    - » Exception allowed for states to regulate when:
      - » Local safety hazard.
      - » Compatible with federal laws, regulations.
      - » No burden on interstate commerce.





## State/federal roles and jurisdiction (cont.)

### Case precedents\*

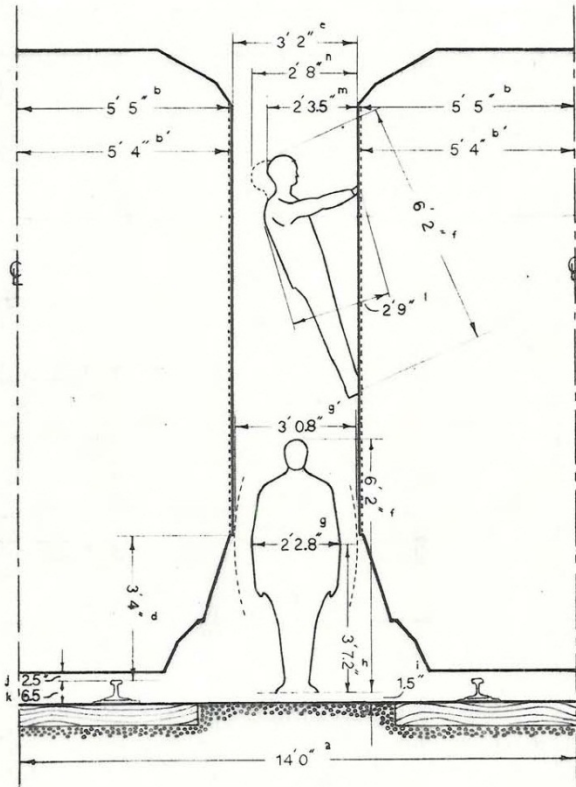
- *Southern Pacific v. CPUC*, U.S. Court of Appeals, 9<sup>th</sup> Circuit, 1987
  - State railroad employee workspace clearances and walkways not preempted.
- *Easterwood v. CSX* (1993)
  - Federal law must cover safety issue, not merely “touch upon.”
- *BNSF v. Doyle*, U.S. Court of Appeals 7<sup>th</sup> Circuit, 1999.
  - State regulation of mainline train crew-size not regulated.

\* Not a complete legal analysis - only included as important examples.

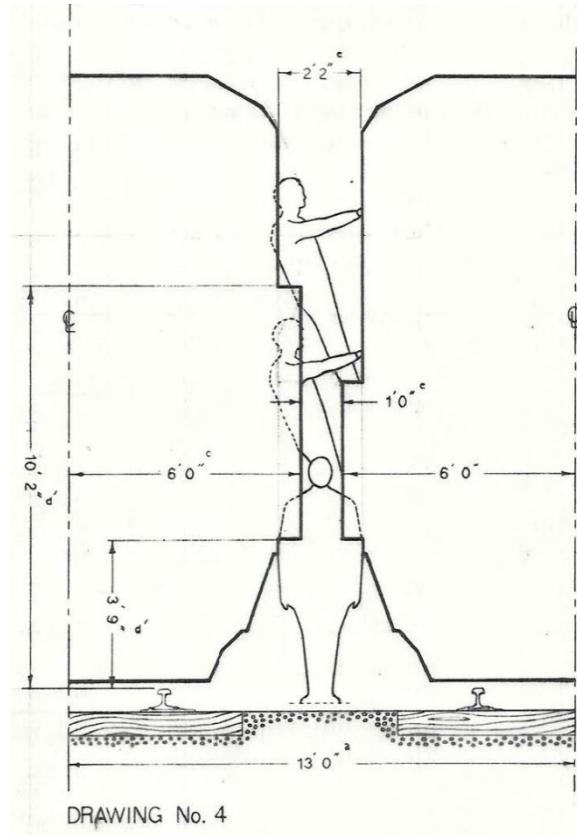




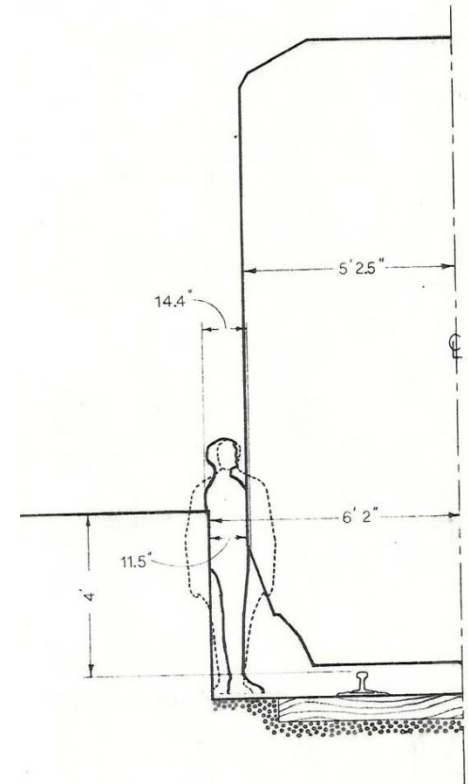
# CPUC railroad workspace regulations



Compliant



Non-compliant

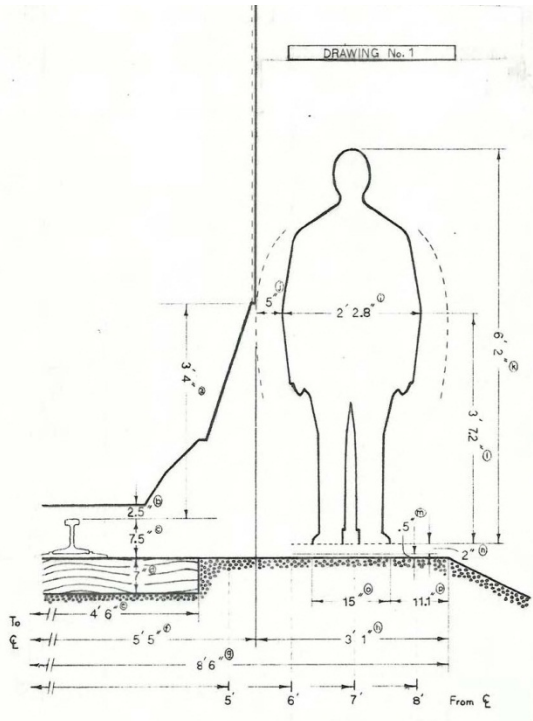


Non-compliant

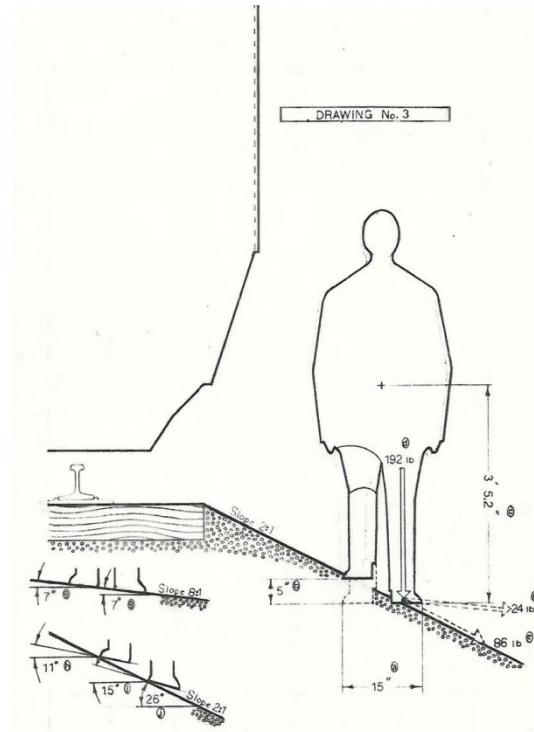
## CPUC General Order 26-D governing side clearances



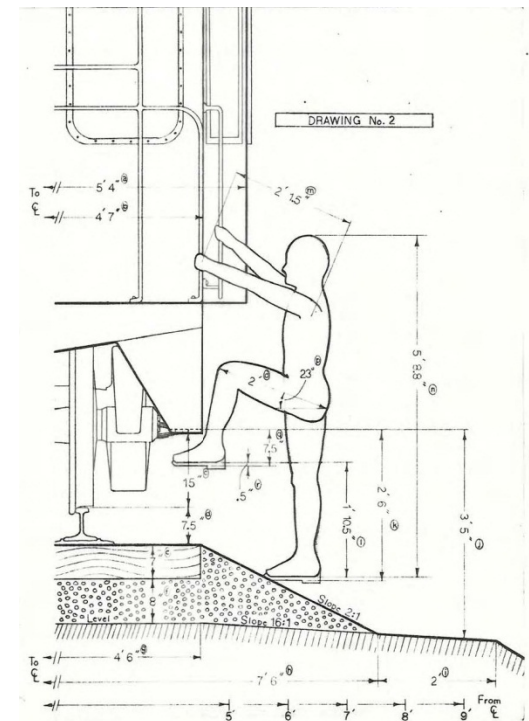
## CPUC railroad workspace regulations (cont.)



Compliant



Non-compliant



Non-compliant

## CPUC General Order 118-A regulating walkway surfaces





## State/federal roles and jurisdiction (cont.)

### Case precedents (cont.)\*

- *Union Pacific, et al., v. CPUC*, U.S. District Court, Northern Dist. California, 2000; U.S. Court of Appeals, 9th Circuit, 2003.
  - Some state regulations allowed:
    - Placement of trackside defect detectors, enforcement of RR operating rules.
  - Local safety hazard exemption not allowed:
    - Instead applied the standard “not capable of being adequately encompassed within uniform national standards”
- Additional untested, local court cases, or unlitigated boundaries, for example:
  - Americans with Disabilities Act - access vs. side clearances
  - Interstate Commerce Commission Termination Act – blocked crossings.







## State/federal roles and jurisdiction (cont.)

- Railroad Safety Advisory Committee (RSAC).
  - Negotiated rulemaking format seeking consensus among stakeholders.
  - Full committee meets twice a year
  - Working groups meet as needed
  - Membership:
    - Approximately 65 voting members.
    - Two state voting members:
      - Association of State Railroad Safety Managers (ASRSM)
      - American Association of State Highway Transportation Officials (AASHTO)
  - Proposed regulations must have working group consensus
  - Proposed regulations must be approved by majority vote of full committee
  - Meetings currently held only in D.C.
  - No expenses paid.





## Possible NARUC Roles, Involvement

- Standing committee: Greater recognition and support of state rail safety programs within NARUC.
- Coordination, information exchange between the states' programs.
- RSAC:
  - Assist and augment ASRSM, AASHTO.
  - Keep Commissioners abreast of rail safety issues, opportunities.
  - Membership request, benefits:
    - One more state/public-interest vote.
    - D.C. staff presence.
- Comments on ANPRM, NPRM, petitions.
- Coordinate state legislation.
- Assist in federal legislation.





## Recent RSAC and NPRM Emphasis

### Crude-oil trains



July 6, 2013, Lac-Mégantic, Quebec



December 30, 2013, Casselton, North Dakota

### Ethanol trains



June 2009, Cherry Valley, Illinois



August 2012, near Plevna, Montana







## Dunsmuir Yard and Mt. Shasta, CA



# Illinois Emergency Management Agency



## Shipment of Flammable Liquids-by-Rail in Illinois

Joe Klinger, Assistant Director  
July 24, 2016





# IEMA Mission

- Prepare, protect and assist the citizens of the State of Illinois through planning, prevention, training, mitigation, response, and recovery to all hazards, natural or manmade.
- Serves as SERC, coordinates all phases of EM with local, state, federal, private sector, VOAD, etc.





# Rail System in Illinois

- 53 railroads operate in the state
  - 7,400 miles of track
  - 2<sup>nd</sup> largest rail system in the U.S.
  - CIC in Joliet area
- Chicago is the largest rail hub in the U.S.
  - 6 of the 7 largest railroads in the U.S. operate in Chicago
- All 7 of largest railroads operate in Illinois



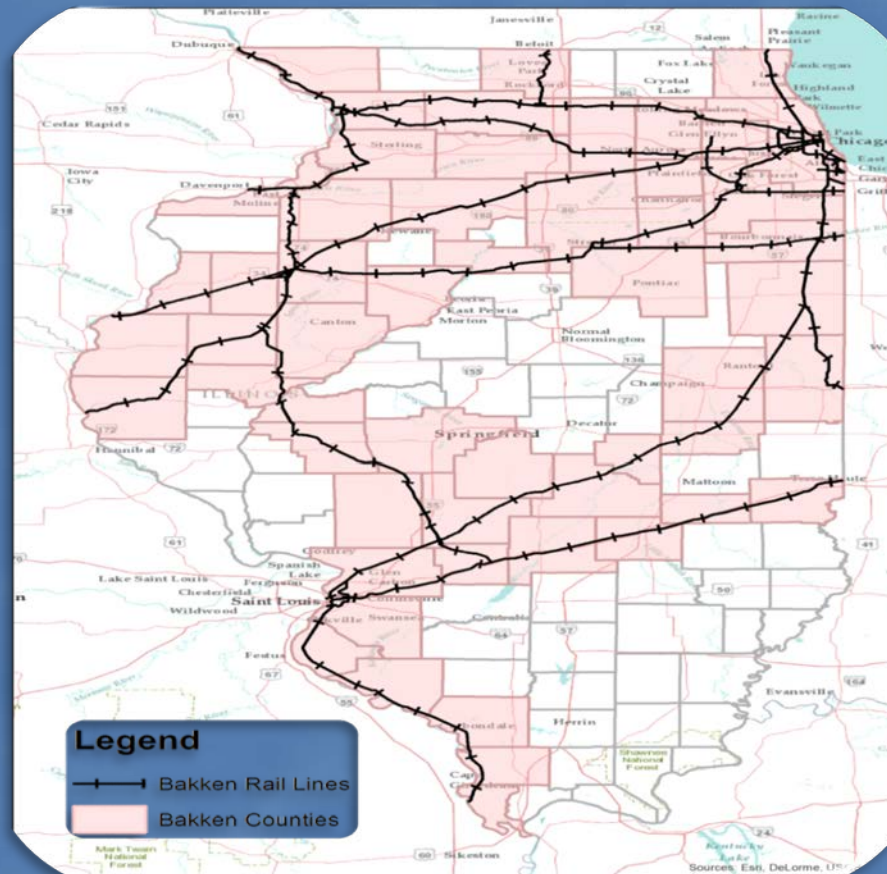
# ICC Role

- Regulatory agency for rail safety in Illinois
- Public safety
  - Rail safety inspections (track; signals and train control; hazardous materials; operating practices)
  - Grade crossing safety (7,600 crossings in IL; 2<sup>nd</sup> highest # in the U.S.)
  - Public education/awareness
- Verifies compliance using federally-certified inspectors



# Bakken Oil in Illinois

- Illinois serves as the crossroads for the shipment of Bakken crude oil





# SERC in Illinois

- May 2014 – The SERC formed a Strategic Planning Advisory Committee focused on Bakken/flammable liquids comprised of members from federal, state, and local entities
  - Governor's office, IEMA, ICC, IDNR, ISP, OSFM, CMS, ARC, USCG, DHS, IFSI, MABAS, ILEAS, IESMA, some local EMAs, railroad companies, etc.



# Advisory Committee

- Roles and responsibilities of the Advisory Committee relating to Bakken/flammable liquids
  - Meet regularly
  - Develop and share state level strategic plans
  - Identify preparedness initiatives
  - Conduct community outreach



# Advisory Committee

- Key initiatives
  - Risk/threat profile
  - Illinois prevention strategy
  - Outreach training
  - Resource identification
  - Public outreach/information sharing
  - Response communications





# Training for Local Responders

- Through grants, IEMA provides approximately 25,000 training opportunities annually
- IEMA Provided HMEP funds for IFSI to develop “Crude Oil by Rail Awareness”
  - 62 classes for approx. 2,000 first responders in high priority areas
- IEMA member of Chi/Cook County WG  
Tabletop Feb 27, 2015



# Galena, Illinois

- March 5, 2015 → Galena, Illinois (105 tank cars; 21 cars derailed; 2-car fire; 1-mile radius evacuated [6 homes]; 0 casualties)









# State Issues

- From AAR, RR assign Liaison Officer for ICS
- Current notification is too generalized. State/locals need more detailed Advance Notice of Bakken crude oil shipments.
- Requirements for tank car upgrades.



# Contact Information

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