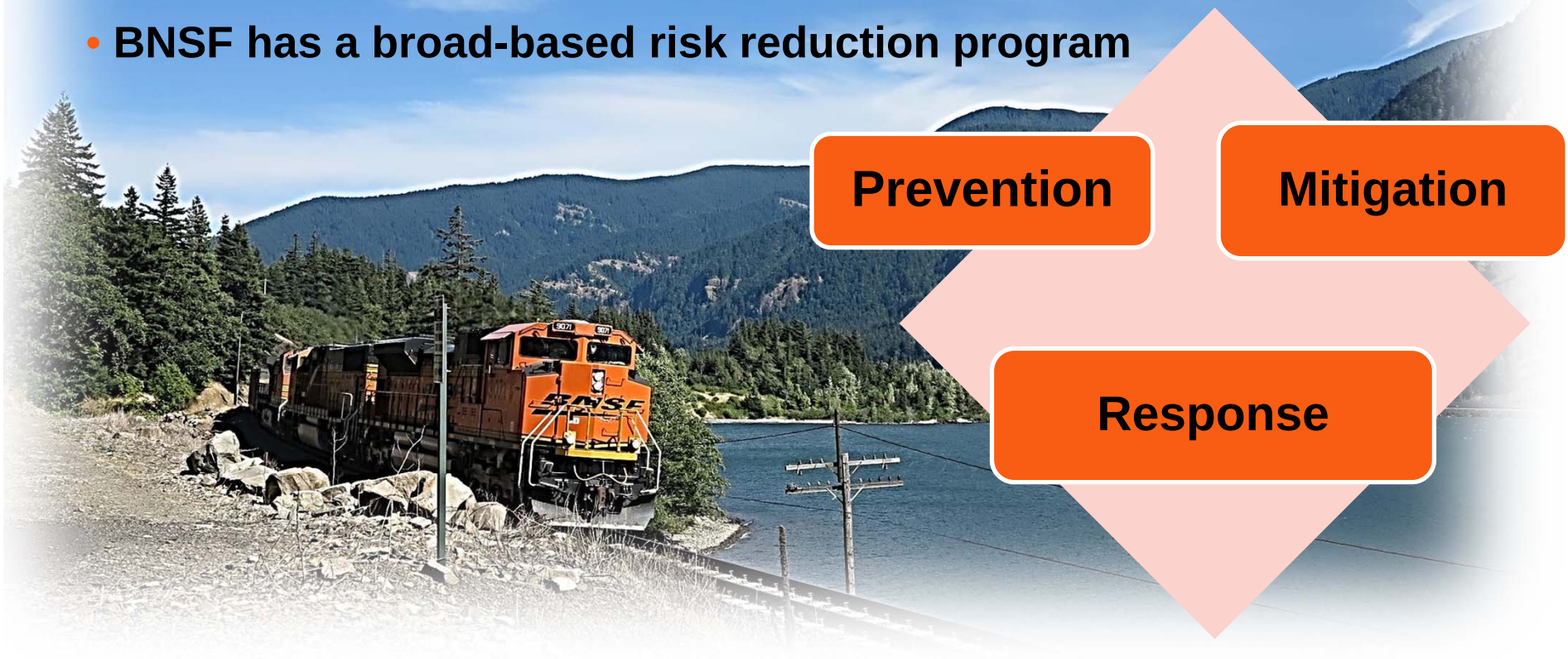
BNSF RAILWAY Safety and Hazmat Overview

BNSF RAILWAY

BNSF's Safety Overview

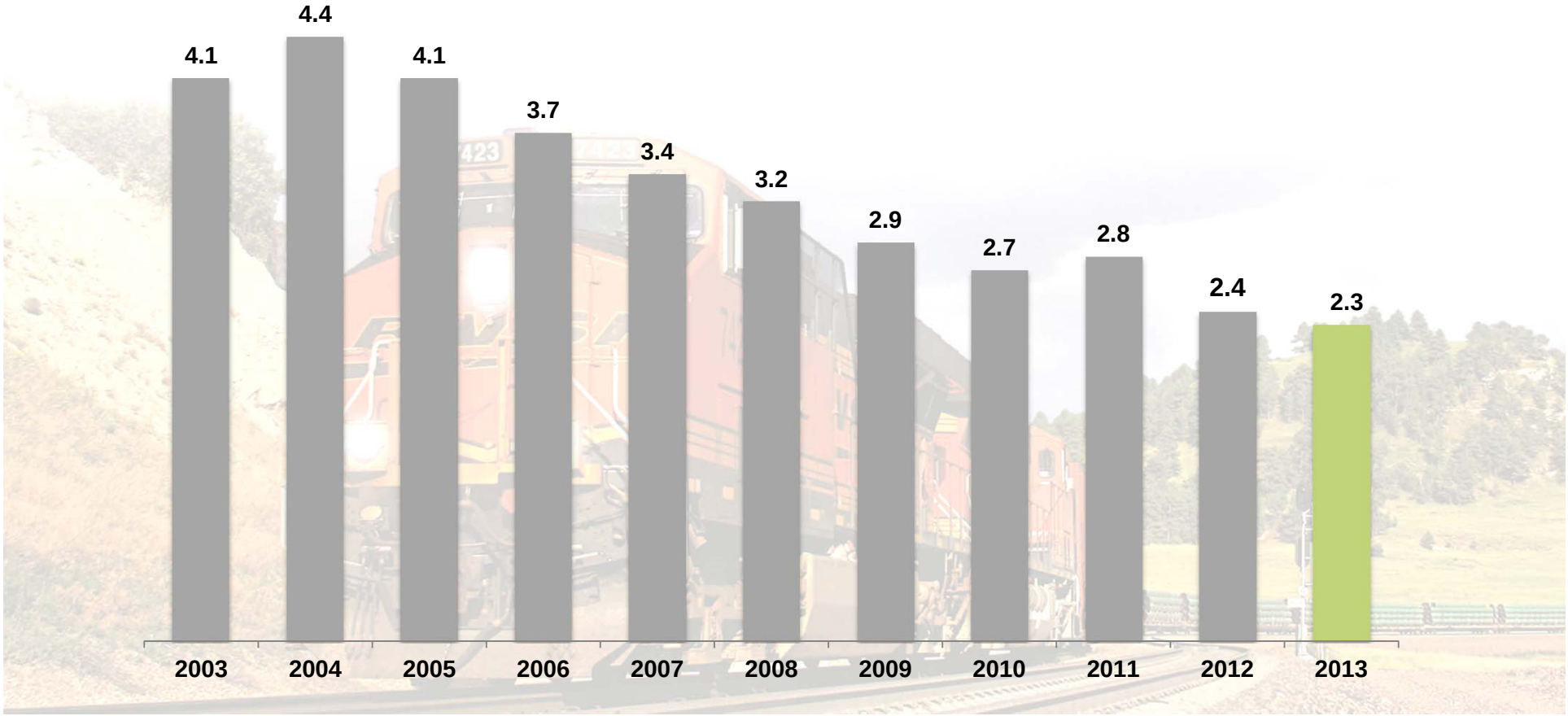
- Rail is safest mode of land transportation
- BNSF's safety vision is to prevent accidents in the first place
- BNSF has a broad-based risk reduction program



2013: Safest Year in History

From 1980 to 2013 rates for accident, employee injury and crossing collisions fell by over 80%

Industry Reportable Rail Equipment Incident Rate *(Incidents per Million Train Miles)*

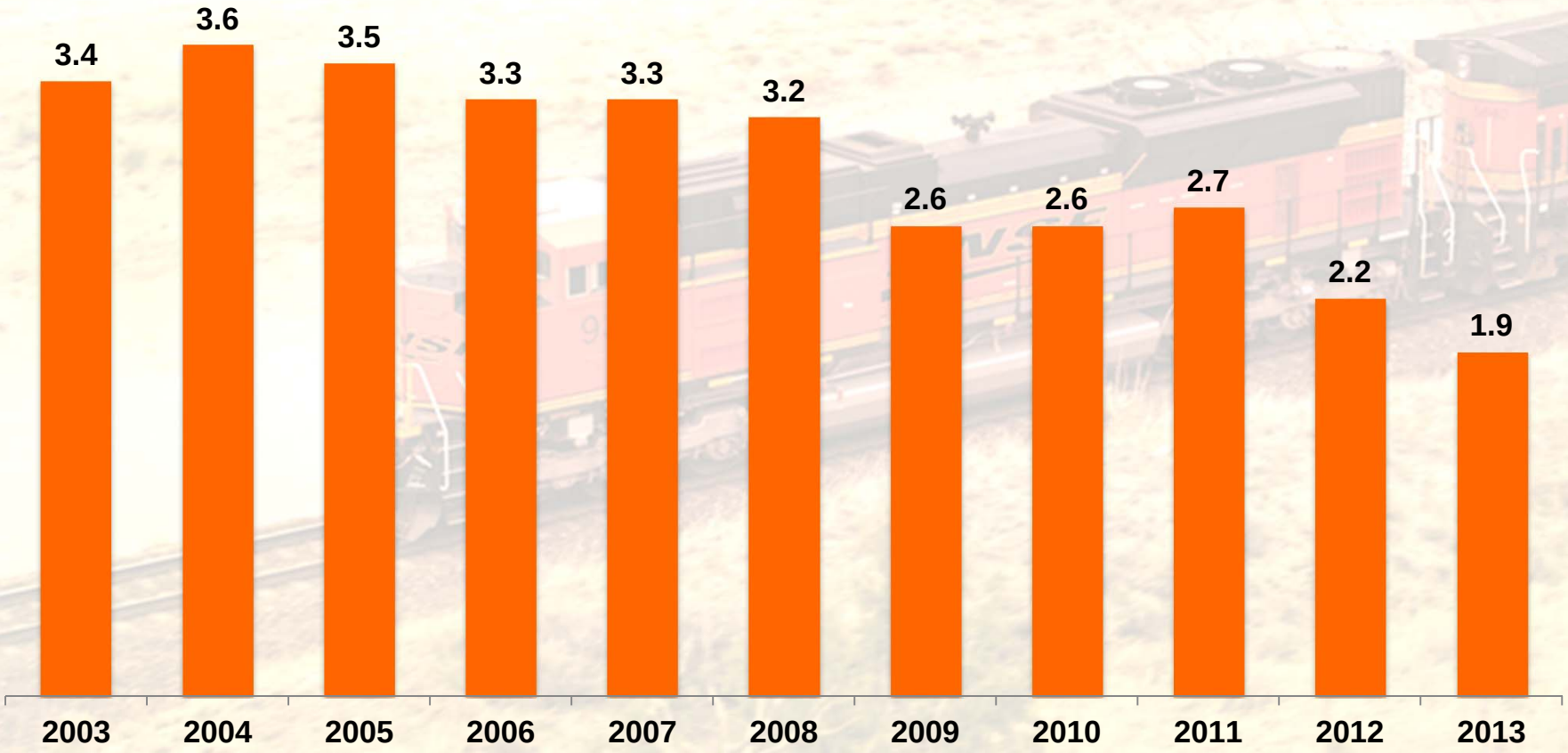


Source: FRA Ten Year Overview – 2013 Data Through October

BNSF: A Safety Leader

Incident rate consistently lower than industry average

BNSF Reportable Rail Equipment Incident Rate *(Incidents per Million Train Miles)*



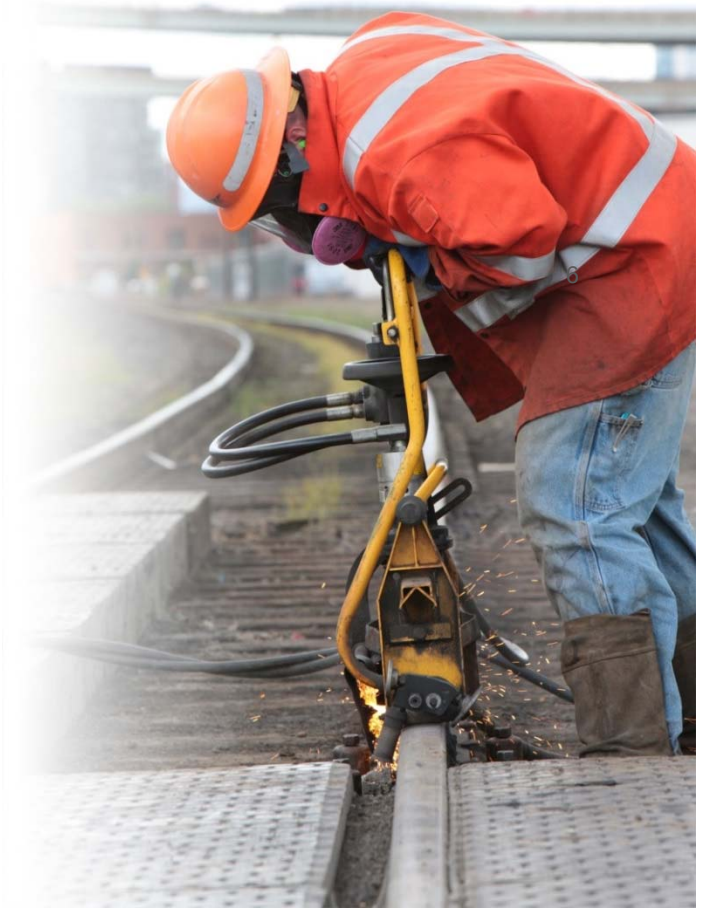
Source: FRA Ten Year Overview – 2013 Data Through October

Rail is a Safe Way to Haul Hazmat

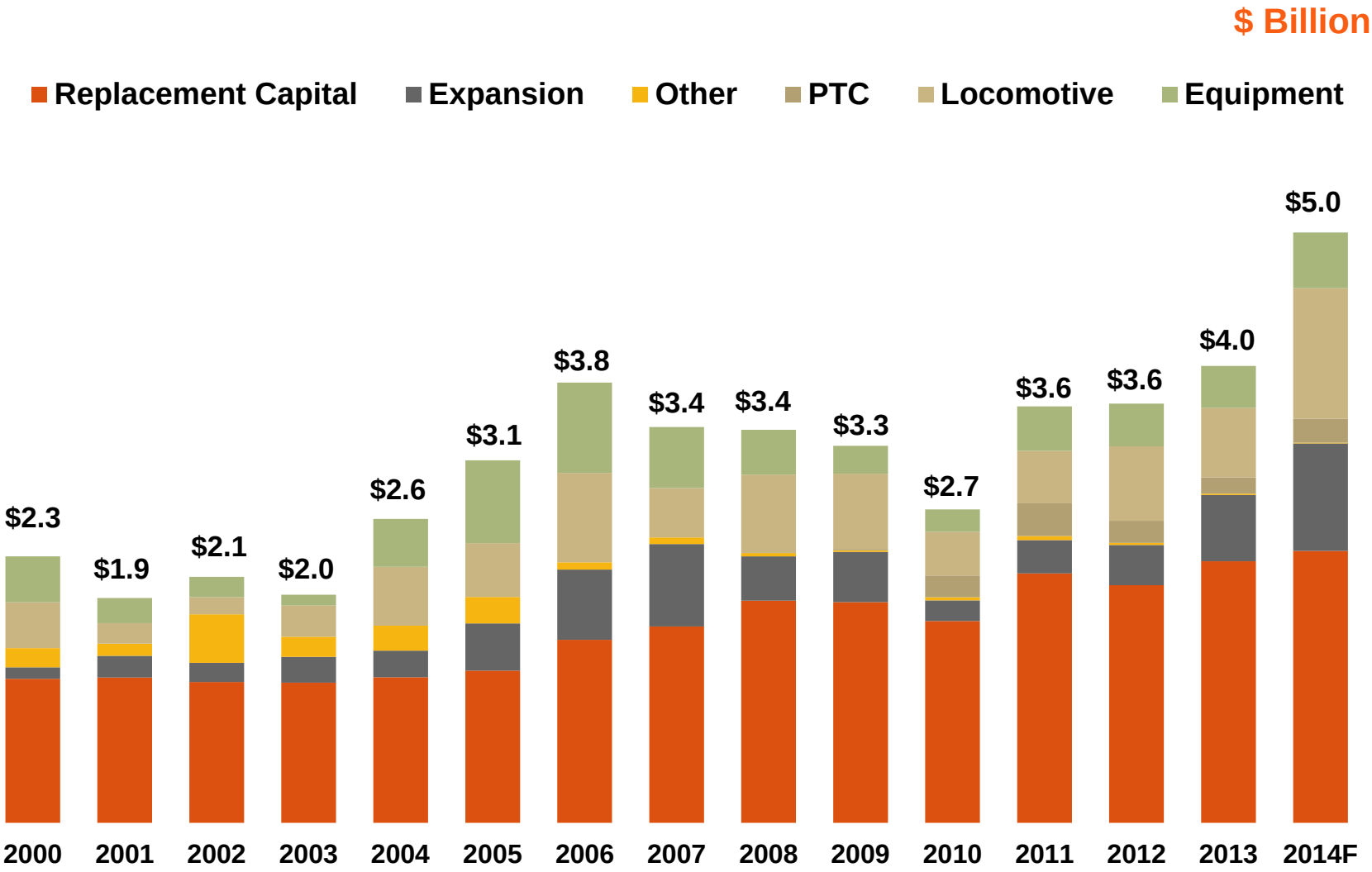
- **99.997% of rail industry shipments of hazardous materials reach destination without a release caused by a train accident**
- **In 2013, BNSF had fewest number of main line derailments in company history**
- **Hazmat train accident rates declined by 91% since 1980**

BNSF's Risk Reduction Program

- **Record capital investments – $42 billion since 2000**
- **Employee training and compliance**
- **Inspections of infrastructure and equipment**



Capital Commitments



BNSF Employee Focus on Safety

Culture of Compliance

- **Identify and address risks**
- **Comply with existing rules 100%**
- **Focus on critical behaviors:**
  - Deadly Decisions
  - Critical Decisions
  - Safety Absolutes
  - Safety Essentials

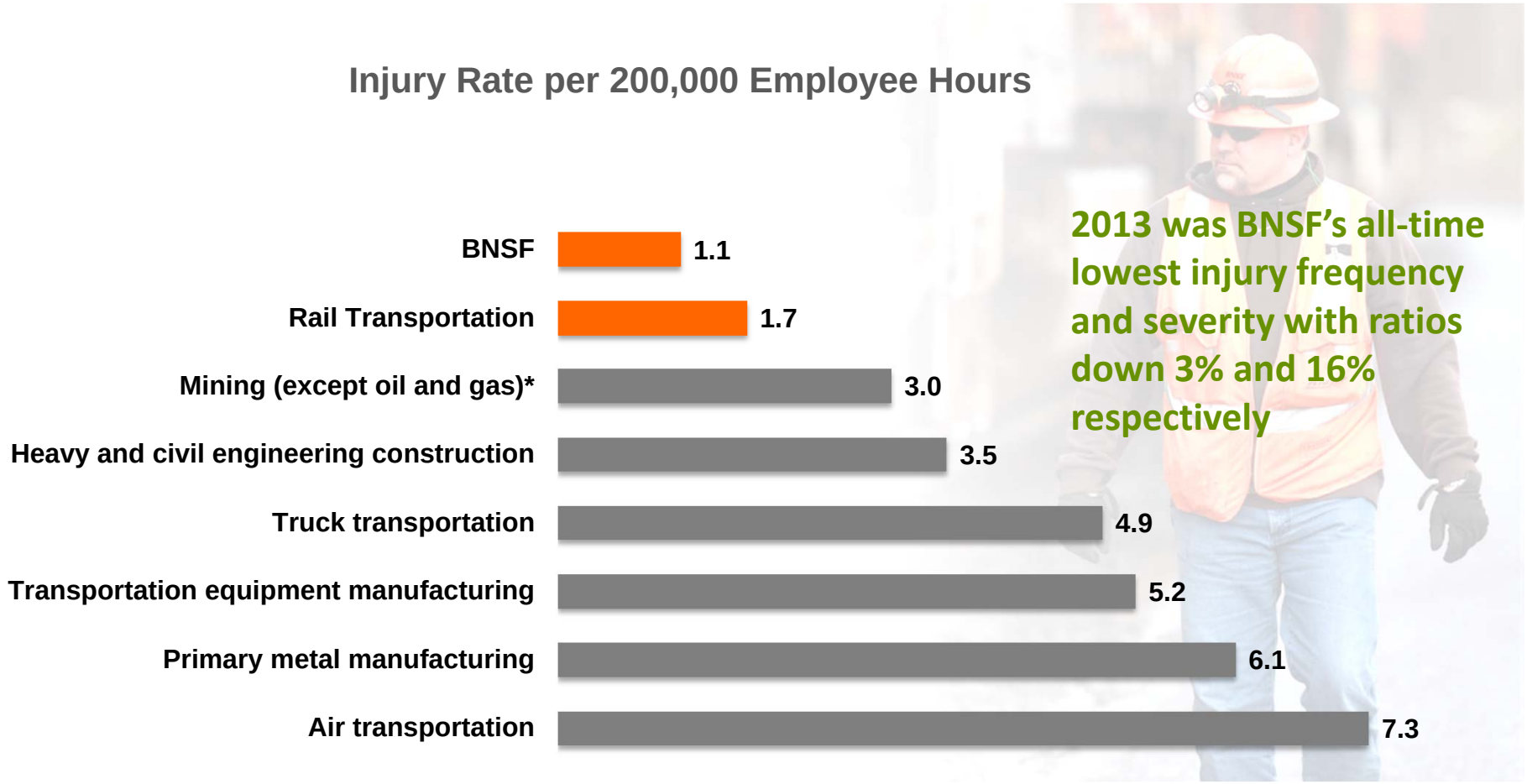
Culture of Commitment

- **Safety WITH vs. Safety TO**
- **Approach others about safety**
- **Power of safety is local:**
  - Site Safety Teams
  - SIRP and SACP
  - Peer-to-Peer

Nothing is more important than returning home safely

Preventing Accidents in First Place

BNSF's employee safety record exceeds the industry average for rail transportation, and is significantly safer than other major industries



*2012 BNSF & Rail Transportation Reportable Rates/ 2011 Industry Results . Sources: US Bureau of Labor Statistics, Federal Railroad Administration, *Mine Safety and Health Administration*

Track Record for Safety

BNSF's comprehensive inspection process ensures safety of key rail infrastructure by identifying potential problems before they can lead to unsafe conditions:

- **Bridge and track inspections**
  - BNSF inspects tracks and bridges more often than required by FRA
  - Most key routes on BNSF are inspected 4 times per week and the busiest main lines are inspected daily
  - Track inspections include state-of-the-art technology to detect internal and external flaws in the rail and track structure
- **Weather & earthquake inspections**
  - BNSF receives severe weather warnings 24/7 from private weather data service
  - Special inspection programs for: Storms, high water periods, after earthquakes, extremely hot & cold weather conditions

Track Geometry Car

Geometry Car Inspections

- **Track Surface**
- **Alignment**
- **Curve Geometry**
- **Gage**
- **Rail Wear**

Railcar Defect Technology

Proactive detection improves safety and extends equipment service life

Acoustic Bearing Detector

- **Wheel Impact Load Detector**
  Evaluates wheel surface defects
- **Warm Bearing Detection System**
  Monitors excess heat from wheel bearings
- **Hot / Cold Wheel Detector & Technology Drive Train Inspection**
  Measures wheel tread temperature
- **Acoustic Bearing Detector**
  Uses microphone array to evaluate and identify internal journal bearing flaws

Positive **Train Control Technology**

Digital wireless communication technology

- Prevent train-to-train collisions
- Enforce speed limits
- Protect roadway workers and equipment
- Prevent movement of train through a switch left in improper position

Interoperability allows operating on other railroads

Predictive, advanced train control safety technology

Continued Risk Reduction

Identifying issues before a problem occurs

Operations

Equipment

Oil Characteristics

U.S. Rail Safety Measures after Lac-Mégantic

Railroads have implemented FRA's August 2, 2013, Emergency Order:

- **Trains transporting specified hazardous materials will receive increased oversight if carrying:**
  - 5 or more loads of Toxic Inhalation/Poisonous Inhalation (TIH/PIH) materials
  - 20 or more tank loads of flammable or combustible liquids, which primarily includes crude oil and ethanol
- **Identified trains will not be left unattended on main line or siding tracks, outside of yards & terminals, unless railroad has developed a plan identifying specific locations and circumstances when train may be left unattended**
  - Exemptions for specific locations require lead locomotive to be locked and/or the operating control handles removed.
  - Mandatory briefing between the train crew and dispatcher regarding securement
- **Emergency Responders**

  Railroads must inspect trains for proper securement after an emergency responder has been on, under or between the cars

U.S. Rail Safety Measures after Lac-Mégantic

- **For decades, BNSF and the Rail Industry have had our own set of <u>self-imposed</u> best practices for handling hazardous materials, including TIH**
- **Recognizing the increase in crude-by-rail, railroads recently chose to apply industry best practices to crude and ethanol shipments**
- **Key Trains: Extra precautions are taken to reduce risk for Key Trains moving hazardous materials :**
  - **Key Train Definition: Tighter definition than required by FRA**
    - 1 or more loads of Toxic Inhalation/Poisonous Inhalation (TIH/PIH) materials
    - 20 or more tank loads of any hazardous materials
  - **Special identification and tracking**
  - **Speed Restrictions: 50 mph max speed limit on Key Trains**
  - **More restrictive exception handling procedures: Wayside detector alarm handling**
  - **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**

Low Pressure Tank Car, DOT 111A100W1

DOT 111

1232

Rail industry voluntarily adopted stronger tank car standards in Oct. 2011

"New" 1232 Cars vs. "Old" DOT 111 Cars

- 1/2" vs.7/16" thick steel
- ½" extra protective head shield
- Roll over protection
- Larger pressure release valve
- 50% better crashworthiness

DOT ANPRM – AAR Comments

- Aggressive phase out of "older style" DOT 111 tank car
- Require jackets and thermal protection on the "new style cars" 1232

Industry Pushing for Change

BNSF is supporting increased standards for tank cars that carry hazmat

- **Aggressive phase out older-model tank cars**
- **Increase federal tank car design standards for new cars, or retrofit existing cars**
- **Require additional safety upgrades to cars ordered since Oct. 2011:**
  - Installation of high-flow capacity relief valves
  - Design modifications to prevent bottom outlets from opening in an accident

- **Eliminate option for rail shippers to classify a flammable liquid with a flash point between 100 and 140 degrees as a combustible liquid**

Industry Safety Actions with U.S. DOT

- The rail and petroleum industries are working together to ensure shipping crude oil by rail is safe
- Petroleum industry and PHMSA* determining oil volatility
- Rail industry analyzing routing protocols and additional speed reduction to reduce risk

- Railroads, car owners and customers developing future tank car improvements and enhancements

* Pipeline and Hazardous Material Safety Administration

Response: Making a Difference

Safety Initiatives

Hazmat Training

Specialized Staff/Equipment