

# BNSF RAILWAY

## Safety and Hazmat

### Overview



# BNSF Overview

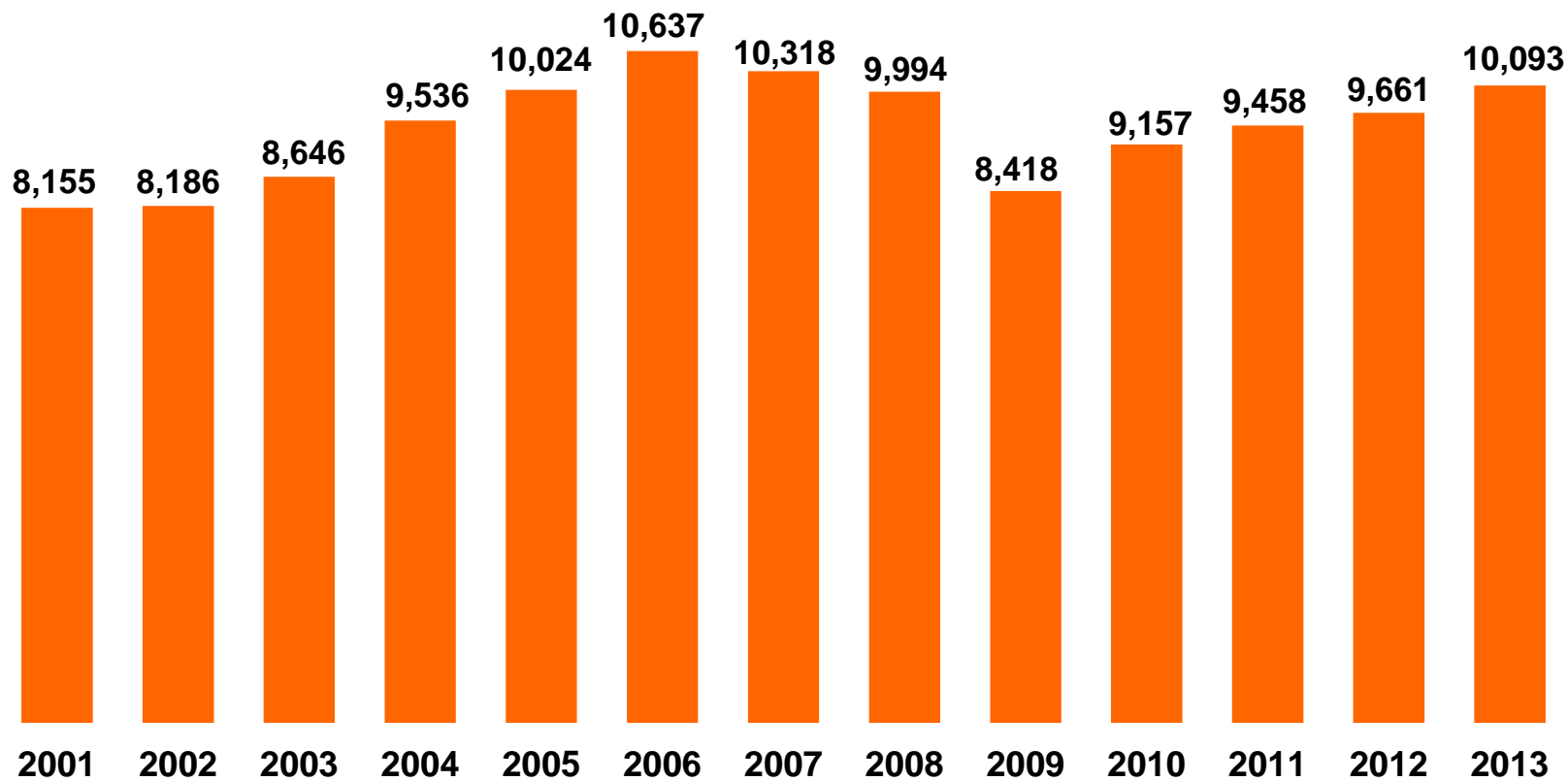
32,500 route miles in 28 states and two Canadian provinces.



- 32,500 route miles in 28 states and two Canadian provinces
- 43,000 employees
- Over 7,000 locomotives
- Over 100,000 freight cars owned or leased
- 13,100 bridges and 89 tunnels
- Over 1,600 freight trains per day

# BNSF Volumes

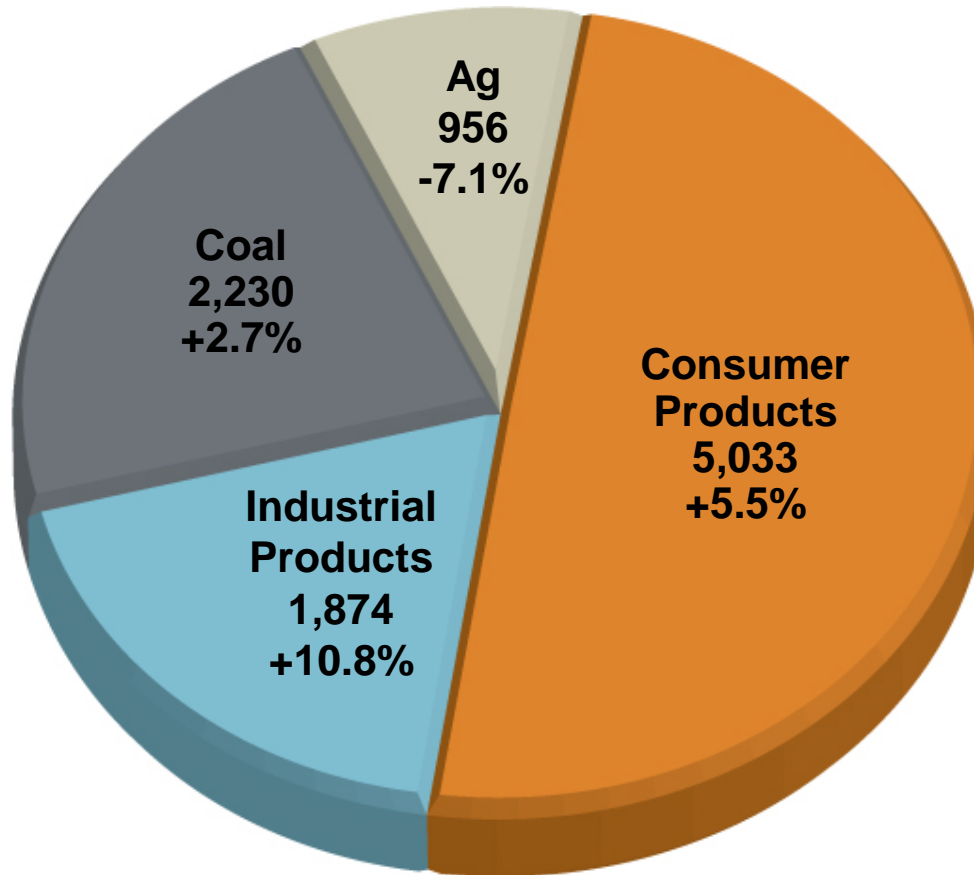
*Thousands*



# BNSF Volume – 2013 Full Year

Total units and % change from FY 2012

In Thousands



2013 Total BNSF Volume 10,093 +4.5%

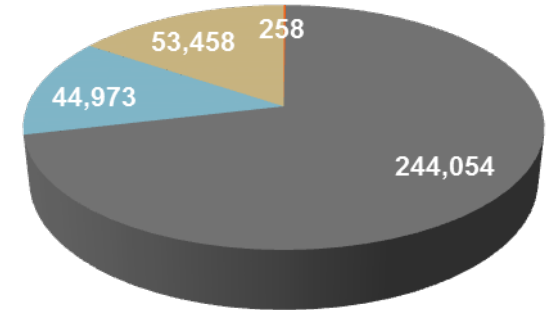
# BNSF 2013 Volume - Montana

In all, BNSF moves nearly **2 million carloads** of freight in Montana annually



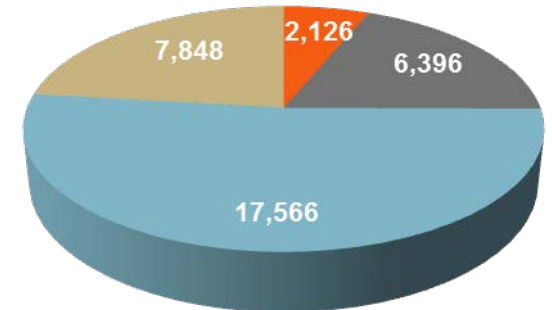
- BNSF
- Handling Carrier
- Other Rail Systems
- Union Pacific

Products Shipped from Montana



**342,743 Carloads**

Products Shipped to Montana



**33,936 Carloads**

- Consumer Products
- Industrial Products
- Coal
- Agricultural Products

# 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



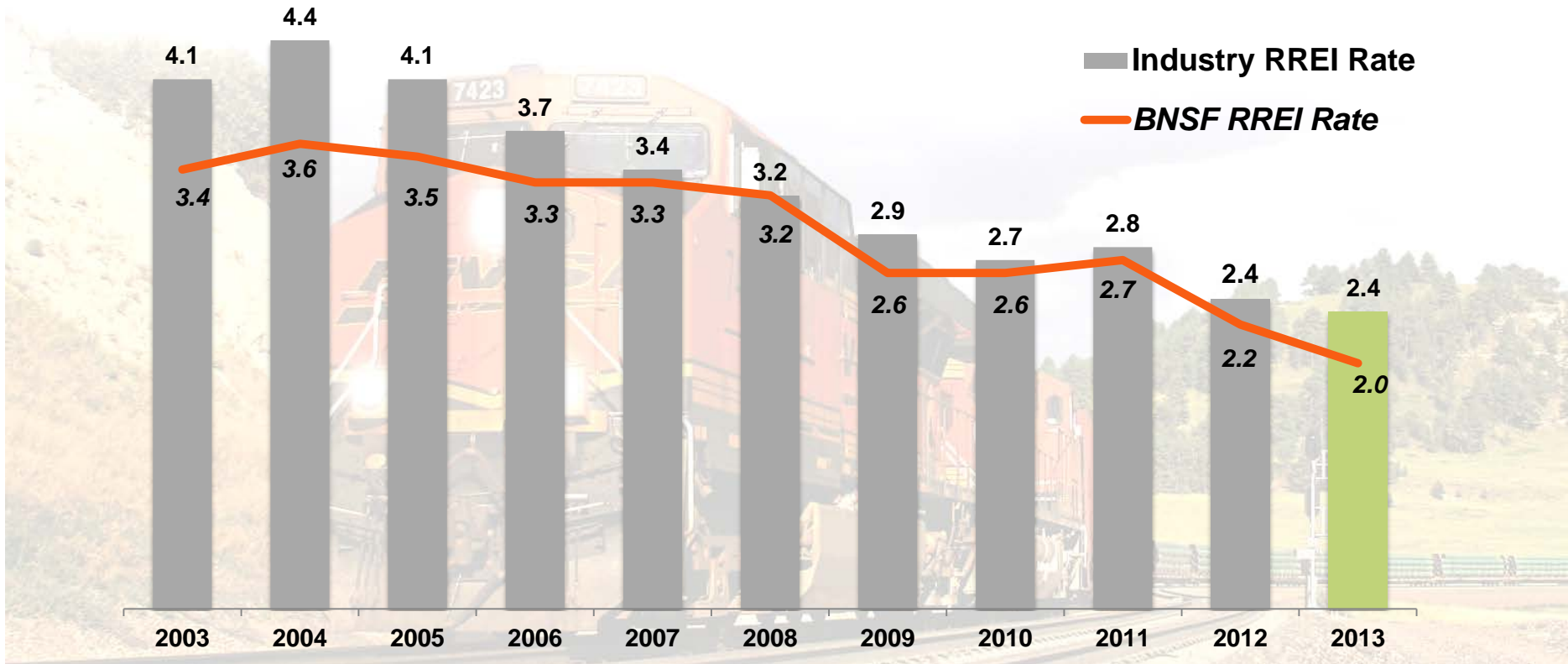
**Prevention**

**Mitigation**

**Response**

# BNSF: Safety Leader for Continuous Risk Reduction

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



# Rail is a Safe Way to Haul Hazmat

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- **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

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- **Record capital investments – \$42 billion since 2000 and an additional record \$5 billion in 2014**
- **Employee training and compliance**
- **Inspections of infrastructure and equipment**



# Continued Risk Reduction

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**Identifying issues before a problem occurs**

**Operations**

**Equipment**

**Oil  
Characteristics**



# Prevention: Operating Practices for Key Trains

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- Longstanding BNSF/Rail Industry best practices for special handling hazardous materials (“Key Trains”) now extend to crude and ethanol shipments
- Key Train Definition:
  - 1 or more loads of Toxic Inhalation Hazard/Poisonous Inhalation (TIH/PIH) materials
  - 20 or more tank loads of any hazardous materials
- Special Handling for Key Trains:
  - Special identification and tracking
  - Speed restrictions for ethanol & crude: 50 mph max speed limit on Key Trains
  - 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
  - Key Trains will not be left unattended on main line or siding tracks, unless a detailed briefing regarding securement procedures has taken place between train crew members and the train dispatcher. Key Trains left unattended will have reverser removed and cab will be locked when equipped

# Prevention: U.S. DOT Agreement Provides Additional Operating Practice Risk Reductions

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- **Speed Restrictions:**
  - Speed restrictions of 40 mph for Key Trains carrying crude in DOT-111 tank cars through High Threat Urban Areas (HTUAs) (additional 36% reduction in Kinetic Energy. 56% overall reduction in KE)
- **Risk-based Routing**
  - Apply PHMSA's *Rail Corridor Risk Management System (RCRMS)* and its 27 Risk Factors that define the "most safe and secure" route for trains carrying TIH/PIH, to the routing of unit crude trains
- **Derailment Prevention**
  - Wayside Detector Network – a max of 40 mile spacing of Defective Bearing detectors on key crude oil routes (detects flaws with equipment wheels as they pass detector device)
  - Rail Detection – At least one additional internal rail inspection than required by federal regulations
  - All key crude trains operated with Distributed Power (DP) or an operative two-way End of Train Device (ETD) - All BNSF crude trains operate with DP
- **Emergency Response (in addition to local training undertaken by BNSF already)**
  - Rail Industry commits up to \$5 million to develop and deliver crude-specific hazmat training to First Responders
  - Rail Industry commits to develop an inventory of emergency response resources

# Mitigation: Tank Car Standards

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Rail industry voluntarily adopted stronger standards in Oct. 2011 & Nov. 2013:



**DOT-111**

## **“New” 1232 Cars vs. “Old” DOT-111 Cars**

- **1/2” or 7/16” jacketed shell vs. 7/16”**
- **1/2” extra protective head shield**
- **Roll over protection (top fitting protection)**
- **Larger pressure release valve**
- **47 - 77% better crashworthiness**

# Mitigation: "Next Generation Tank Car" NGTC

## EVOLUTION OF RAIL INDUSTRY TANK CAR STANDARDS FOR CRUDE OIL

The railroad industry is proposing to increase the federal tank car design and construction standards for new tank cars used to transport crude oil. This proposal comes after a previous upgrade proposal which the industry voluntarily adopted and has been observing since October 2011. This graphic shows the additional tank car components included in the latest rail industry proposal.

### HIGH CAPACITY PRESSURE RELIEF VALVE

**Current Standard:** No requirement

**Latest Rail Industry Proposal:** Requires a high capacity pressure relief device to protect against a rise in internal pressure resulting from fire. Provides for faster release of product.

### TOP FITTINGS PROTECTION

**Current Standard:** Requires top fittings protection to protect the integrity of valves and fittings used to load product in the event of an accident.

**Latest Rail Industry Proposal:** Contains the same requirement.

### STEEL TANK

**Current Standard:** Requires a minimum 1/2 inch thick steel tank for unjacketed cars and a minimum 3/8 inch thick steel tank for jacketed cars.

**Latest Rail Industry Proposal:** Requires a minimum 3/4 inch thick steel tank.

### HEAD SHIELDS

**Current Standard:** Requires minimum 1/2 inch thick half height head shields at both ends of the tank car to improve puncture resistance.

**Latest Rail Industry Proposal:** Requires 1/2 inch thick full-height head shields at both ends of the tank car.

### BOTTOM OUTLET HANDLES

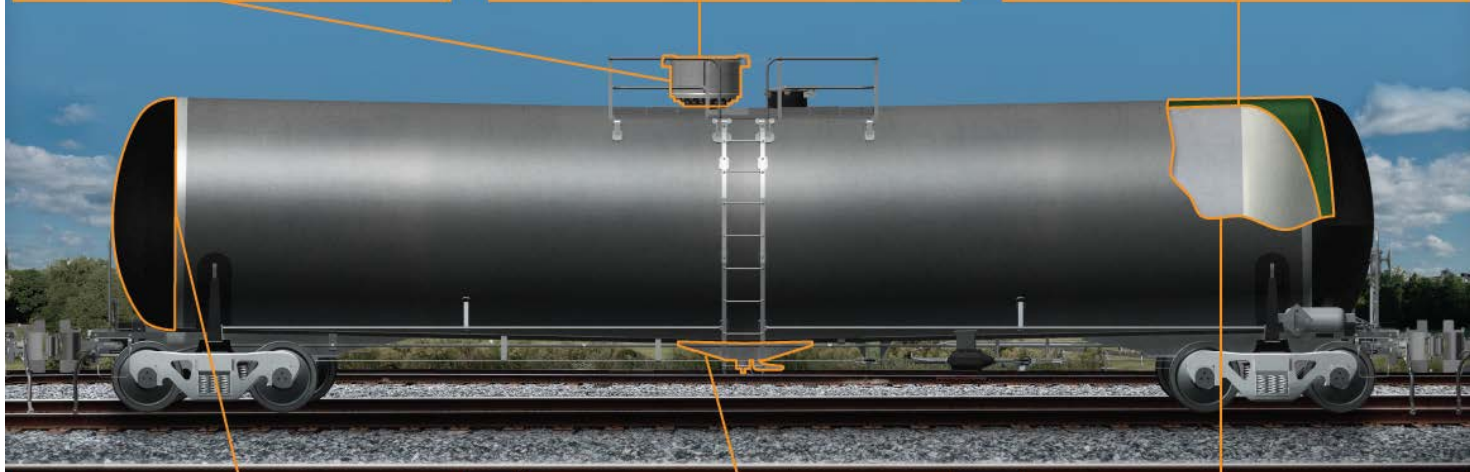
**Current Standard:** No requirement

**Latest Rail Industry Proposal:** Requires bottom outlet handle reconfiguration to prevent the handle from inadvertently opening the bottom outlets in the event of an accident.

### JACKET AND THERMAL PROTECTION

**Current Standard:** Requires a minimum 1/2 inch thick steel tank OR a 3/8 inch thick steel jacket.

**Latest Rail Industry Proposal:** Requires the addition of both a 1/2 inch thick steel jacket around the tank car and thermal protection.



Source: Association of American Railroads, February 2014

- Require jackets and thermal protection on 1232 tank car
- BNSF NGTC RFP issued to accelerate the tank car design, production, and to bring more certainty to crude-by-rail tank car market

# Response: Making a Difference

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**Safety Initiatives**

**Hazmat Training**

**Specialized  
Staff/Equipment**



# Free Community Hazmat Training

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- BNSF trains an average of 3,500 local emergency responders each year in communities across network
- More than 65,000 emergency responders trained since 1996 on:
  - Hands-on equipment in field – Instructor lead
  - Train list / shipping papers
  - Placards
  - Equipment
  - Incident Assessment





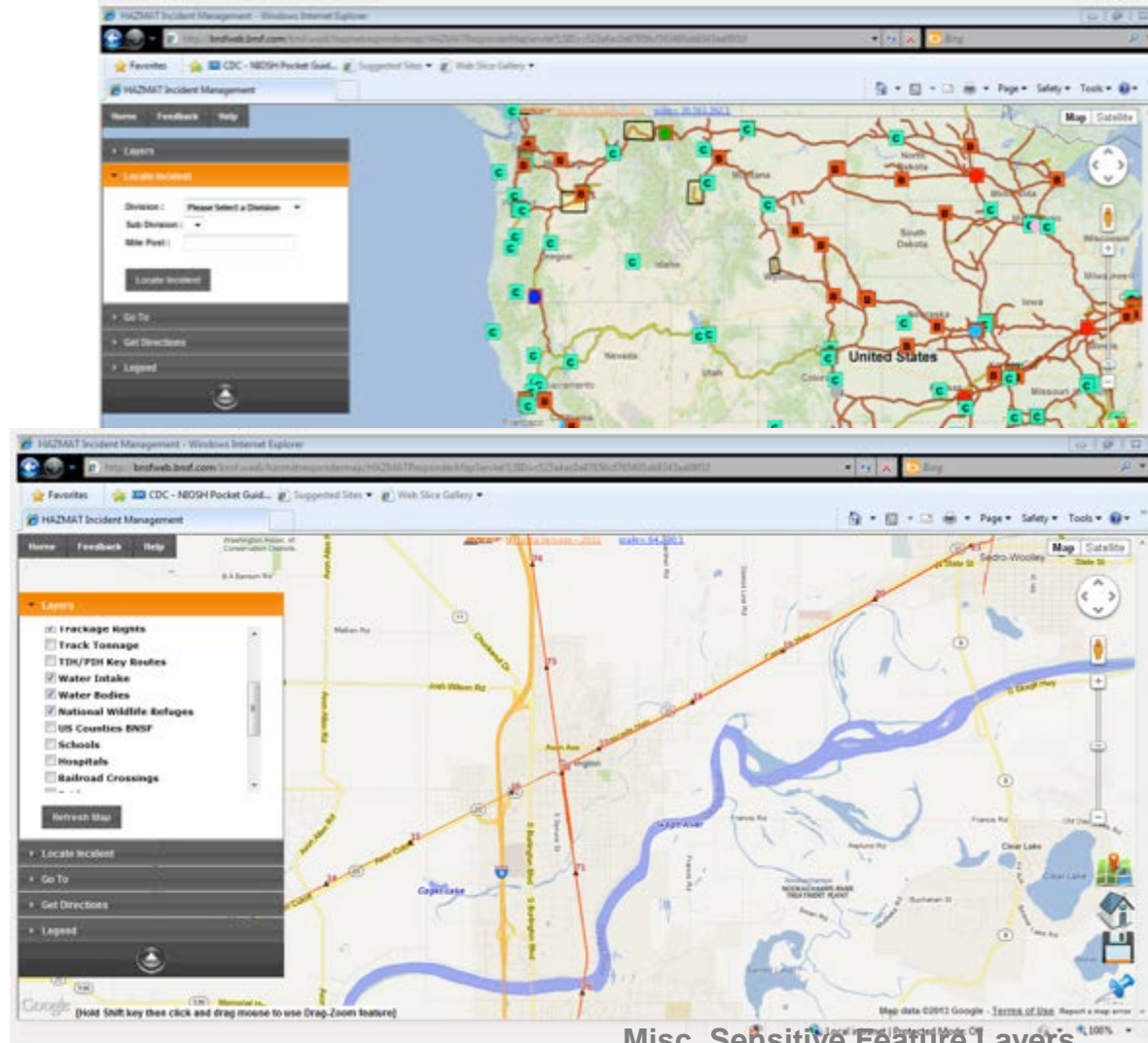
# Response: Training First Responders

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- **Security and Emergency Response Training Center (SERTC) in Pueblo, Colorado, national railroad research/training facility (TTCI)**
- **\$5 million industry commitment to train first responders on crude oil routes**
- **BNSF is covering cost for 736 student spots for the three-day classes**
- **BNSF believes first responders must be properly trained to respond safely**

# Emergency Notification: Hazmat GIS

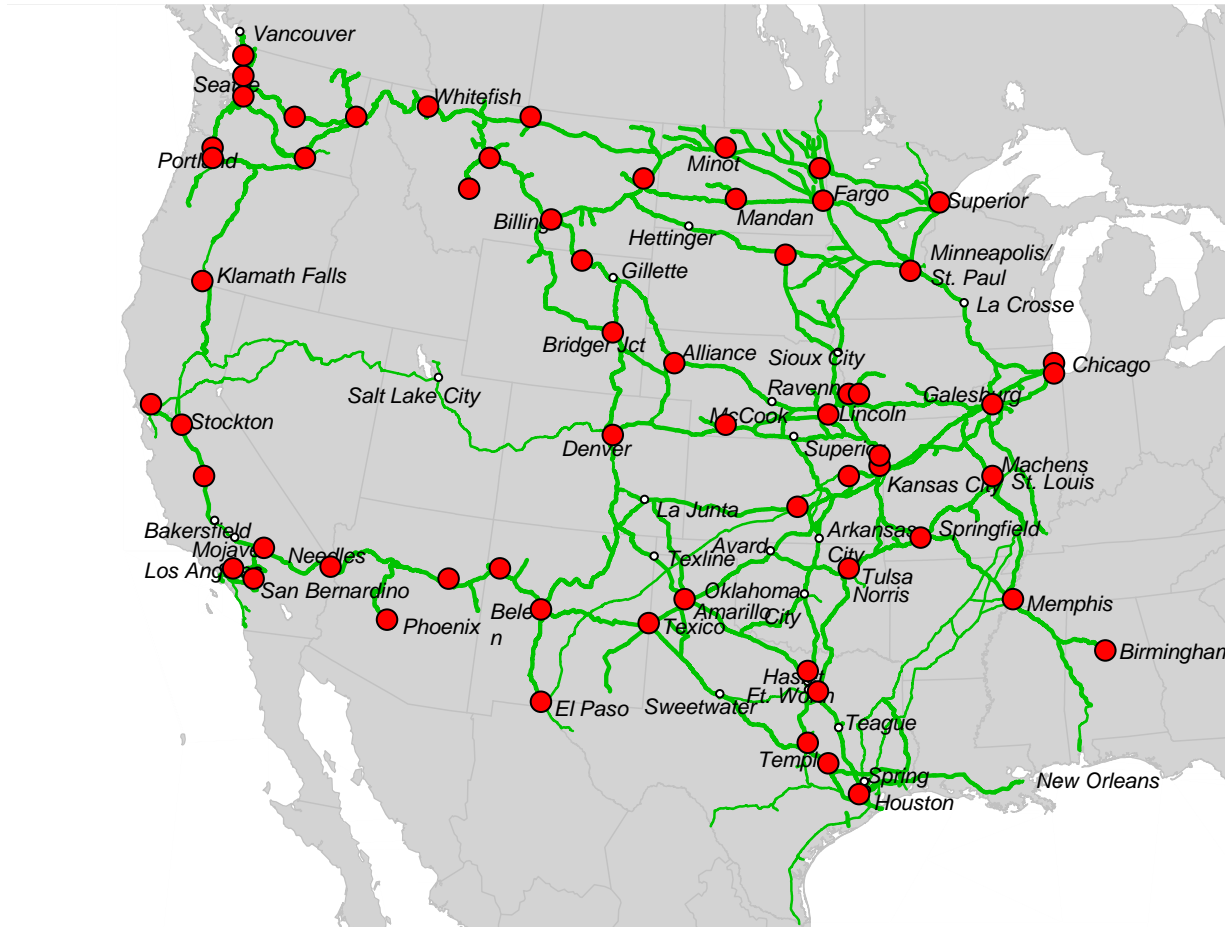
- **BNSF has developed a GIS for emergency incidents**
- **Enables BNSF to quickly identify local emergency responders closest to an incident**



Misc. Sensitive Feature Layers

# BNSF Hazmat Responder Locations

**212 responders at 60 locations**



# Specialized Hazmat Equipment

- **Fleet of Industrial fire-fighting foam trailers**
- **Emergency breathing air trailers**
- **Chlorine kits**
- **Midland kits**
- **Air monitoring assets**



# Questions

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