



MPO Quarterly Meeting  
June 16, 2015  
**Crude by Rail**

**Crude by Rail**

02 **“Domestic Energy Growth –truly a gift to the US. This is the greatest business development of our time.”** by Matt Rose, Chief Executive, BNSF at Transportation Research Board January 2015

**Why Rail?**

- Current Bakken crude pipelines don't have sufficient capacity to meet market demand.
- Rail provides a *rolling pipeline* for crude.
- Rail is flexible and can change destination en route.
- Long term opportunity for crude by rail to ship to east and west coasts, where rail facilities exist.

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**Bakken Shale Formation**

- Light sweet crude oil
- Contains more volatile components than heavier oils from the tar sands of Canada
  - Explosive
  - Flammable

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**MAJOR OIL ARTERIES ACROSS NORTH AMERICA**

Map date 2014 – subject to change

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**Common Carrier Obligation**

“A common carrier is legally bound to carry all passengers or freight as long as there is enough space, the fee is paid, and no reasonable grounds to refuse to do so exist. A common carrier that unjustifiably refuses to carry a particular person or cargo may be sued for damages.”

- Railroads are common carriers
- Cannot discriminate → cannot refuse service without a compelling reason
- Cannot refuse to take cars that are functional and meet federal safety requirements

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**Recent Incidents**

- Jul 6, 2013, Lac-Mégantic, Quebec
- Nov 8, 2013, Pickens County, Alabama
- Dec 30, 2013, Casselton, ND
- Apr 30, 2014, Lynchburg, VA
- Feb 16, 2015, West Virginia
- March 5, 2015, Galena, IL

**Crude by Rail June 7, 2014 Executive Order**

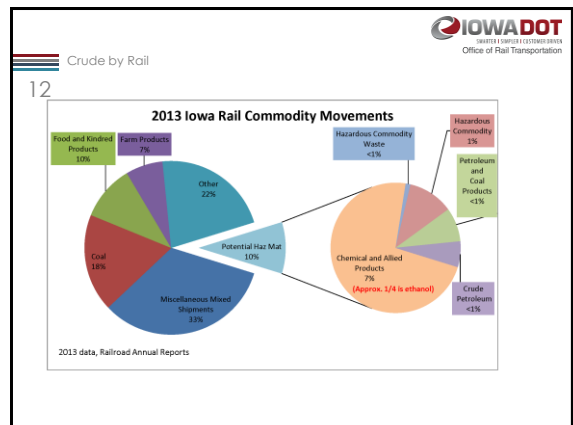
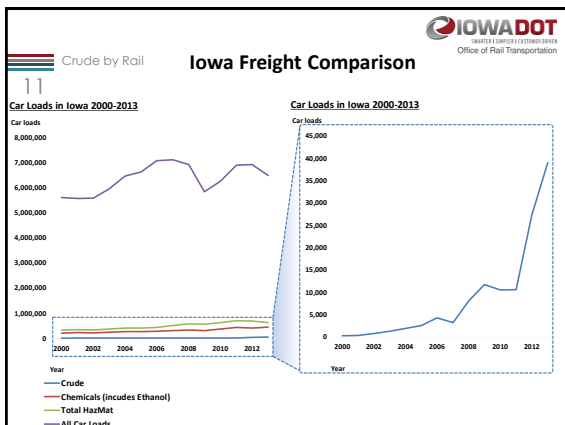
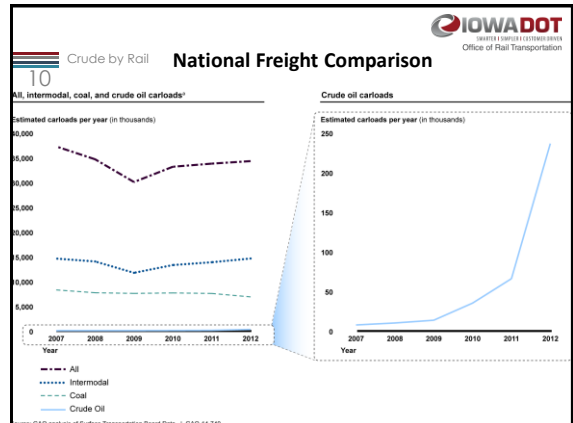
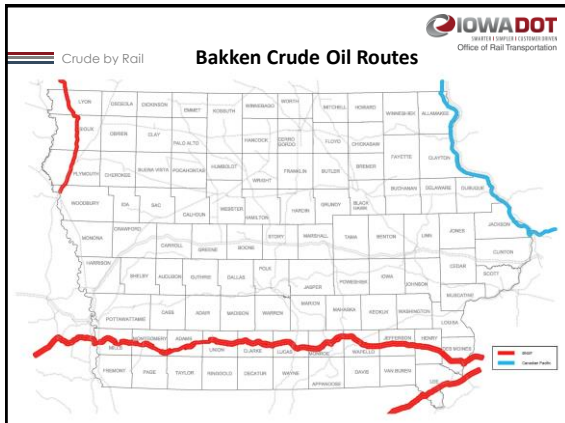
07

- US DOT requires railroads to notify State Emergency Response Commissions (SERC) of the operation of trains carrying more than 1,000,000 gallons of Bakken crude oil per week through their state
- In Iowa, BNSF and CP reported trains meeting the threshold
- Does not apply to all crude oil, only Bakken crude oil

**Crude by Rail 49 CFR §172.820 May 1, 2015**

08

- Must identify a point of contact on routing issues involving the movement of materials
- Must provide information to:
  - State and/or regional Fusion Centers that have been established to coordinate with state, local and tribal officials
  - State, local, and tribal officials affected by a rail carrier's routing decisions and who directly contact the railroad to discuss routing decisions



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Iowa's Department of Transportation  
Office of Rail Transportation

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### Some Statistics (for Hazardous Materials Shipments)

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- 99.997% of rail hazmat shipments reached their destination without a release caused by a train accident (through 2010).
- Hazmat shipments equaled roughly 6% of all U.S. rail traffic (2010).
- Train accidents with a hazmat release declined by 91% from 1980 to 2010.

Source: AAR

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Iowa's Department of Transportation  
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AVOID

PLAN

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### AVOID Infrastructure

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- Railroads invest heavily in infrastructure improvements
- Railroads self-inspect (the entire system)
- Iowa DOT track inspection (monitor RR)
- FRA inspection (spot check)
- FRA regulates jointly with PHMSA for hazardous cargo

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Iowa's Department of Transportation  
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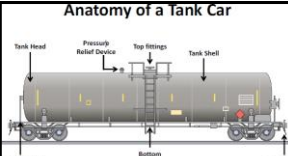
### AVOID Car Safety

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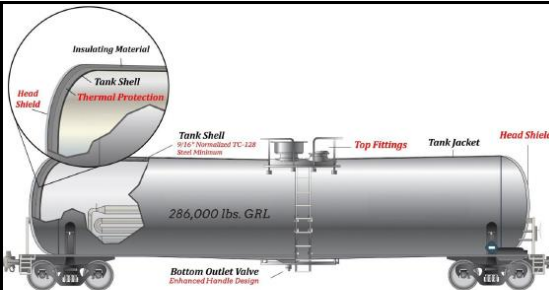
May 1, 2015 Final Rule

- Modifications to car standards
- Modifying or phasing out older designs
- New rules regarding train routing, speed, enhanced braking, and product classification

**Anatomy of a Tank Car**



Tank Car Type / Service	US Retrofit Deadline	Tank Car Type / Service	TC Retrofit Deadline
Non Jacketed DOT-111 tank cars in PG I service	(January 1, 2017) January 1, 2018	Non Jacketed DOT-111 tank cars in Crude Oil service	May 1, 2017
Jacketed DOT-111 tank cars in PG I	March 1, 2018	Jacketed DOT-111 tank cars in Crude Oil service	March 1, 2018
Non Jacketed CPC-1232 tank cars in PG I service	April 1, 2020	Non Jacketed CPC-1232 tank cars in Crude Oil service	April 1, 2020
Non Jacketed DOT-111 tank cars in PG II service	May 1, 2023	Non Jacketed DOT-111 tank cars in Ethanol service	May 1, 2023
Jacketed DOT-111 tank cars in PG II service	May 1, 2023	Jacketed DOT-111 tank cars in Ethanol service	May 1, 2023
Non Jacketed CPC-1232 tank cars in PG II service	July 1, 2023	Non Jacketed CPC-1232 tank cars in Ethanol service	July 1, 2023
Jacketed CPC-1232 tank cars in PG I and PG II service and all remaining tank cars carrying PG III materials in an HHT (pressure relief valve and valve handles)	May 1, 2025	Jacketed CPC-1232 tank cars in Crude and Ethanol service and all remaining tank cars carrying PG III materials in an HHT (pressure relief valve and valve handles)	May 1, 2025



286,000 lbs. GRL

**Safety enhancements of DOT Specification 117 Tank Car:**

- Full-height 1/2 inch thick head shield
- Tank shell thickness increased to 9/16 inch minimum TC-128 Grade B, normalized steel
- Thermal protection
- Minimum 1-gauge jacket
- Top fittings protection
- Enhanced bottom outlet handle design to prevent unintended actuation during a train accident

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19 U.S. DOT agreement with rail industry provides additional operating practice risk reductions

- **Speed Restrictions:**
  - Speed restrictions of 40 mph for Key Trains carrying crude in DOT-111 tank cars through High Threat Urban Areas (HTUAs)
- **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 –detects flaws with equipment wheels as they pass detector device
  - Increased Rail Inspection- beyond FRA regulations
  - All Key Crude Trains operated with Distributed Power (DP) or an operative two-way End of Train Device.

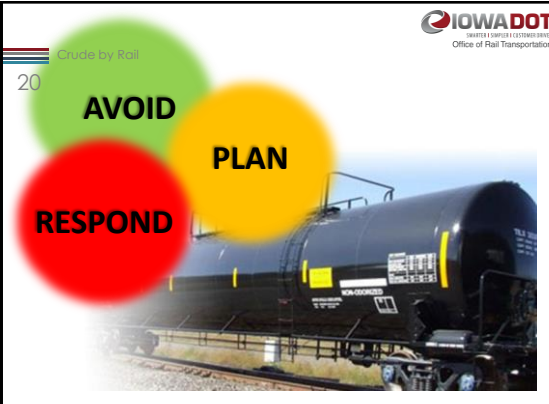
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- First Responder Coordination
- Training for local first responders
  - TRANSCAER (Transportation Community Awareness and Emergency Response)
  - TRANSCAER's Iowa crude training planned for 2015 (6 locations in Iowa)
  - Pueblo, Colorado training at TTCI national RR research and training facility
  - \$5 M commitment by rail industry to train first responders
- Railroad actions
  - Response plans
  - Coordination
  - Specialized Railroad employee training for hazardous materials

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Iowa DOT

- Multi-modal table top exercises for emergency response, Summer 2015
- Focus inspectors on crude oil routes
- Review crossing safety on crude oil routes
- Coordination with HSEMD, DNR, local emergency responders, railroads
- Participate in TRANSCAER's planning committee
- Multi-agency study on Crude Oil and Biofuel Rail Shipments in Iowa

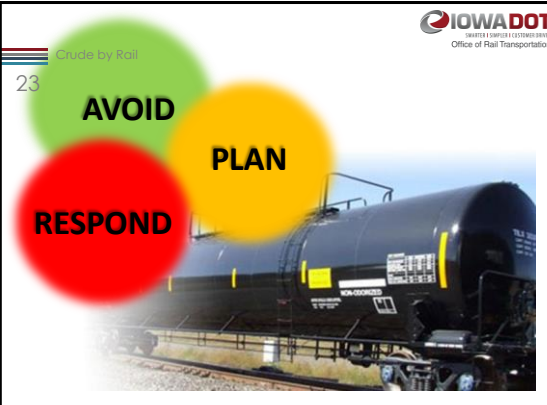
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Railroads


- Report to applicable agencies and law enforcement
- Provide manifest information
- Support responders at the scene
  - Local fire departments and police have jurisdiction at incidents
- Provide track protection
- Provide staff in incidents
  - Railroad law enforcement
  - Railroad emergency responders
  - Environmental mitigation

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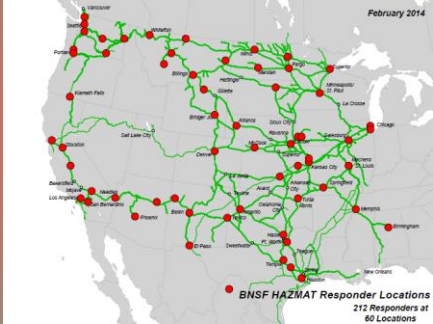
- Railroads pre-position assets
- For example, BNSF pre-positions 212 first responders and equipment at 60 locations across the network.
  - Industrial fire-fighting foam trailers
  - Emergency breathing air trailers
  - Chlorine kits
  - Air monitoring assets



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February 2014

**BNSF HAZMAT Responder Locations**  
212 Responders at 60 Locations

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**Trends and Issues**

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- Continued investment in rail capacity and expansion
- Local opposition to capital investments
- Increased public scrutiny
- Local community emergency preparedness
- Frac sand shipments – truck and rail impacts
- Propane impacts – Cochin pipeline reversal impacting propane supply in Iowa
- Pipelines

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**Trends and Issues**

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- Increased pressure for regulatory involvement
- Crude by Rail Safety– Final Rule May 1, 2015
  - Tank Car standards
  - Operating practices
- North Dakota – 2014 limit on tank pressures inside cars carrying Bakken crude
- Energy prices – what does that mean for the future of Crude by Rail?

