

Sustainability Approach at BNSF Railway

New Partners for Smart Growth Conference Session: Freight Rail – On the Right Track to Sustainability

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Agenda

Sustainability Approach at BNSF Railway

- BNSF is a Leading Freight Railroad
- Freight Rail is a Sustainable Business Solution
- Rail's Environmental Benefits
- BNSF's Sustainable Investments and R&D
- Sustainable Intermodal Transport and Partnerships
- Summary

BNSF is a Leading U.S. Railroad

- A Berkshire Hathaway company
- Moves one-fourth of the nation's rail freight
- 40,000 employees
- 6,000 locomotives
- 32,000 route miles in 28 states and two Canadian provinces
- Operates over 1,400 freight trains per day
- Serves over 40 ports
- 13,100 bridges and 87 tunnels
- Unlike other forms of transportation, BNSF trains operate on an infrastructure financed almost entirely by the railroad

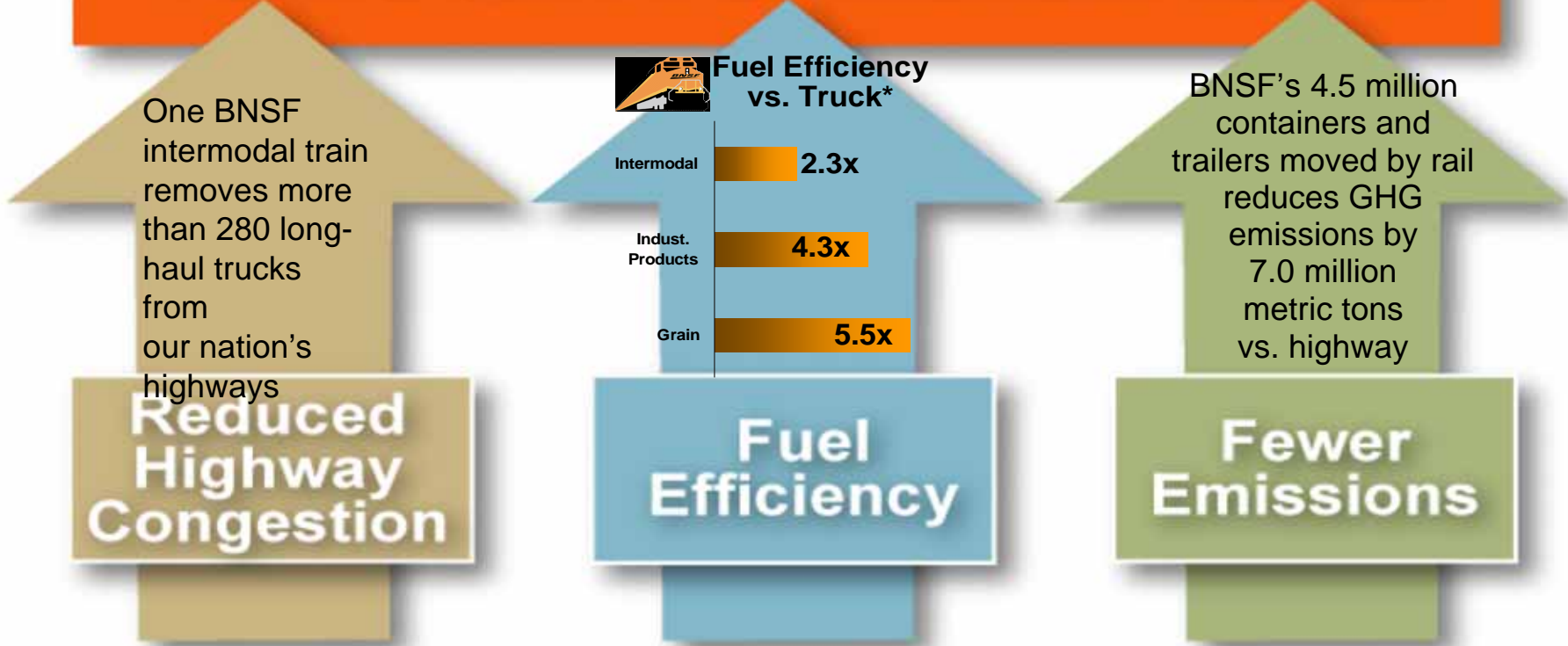


Freight Rail is a Sustainable Business Solution

- Global supply and demand challenge
 - Increasing resource demands as population increases from 7B to 9B people by 2050 (per U.N.)
 - More costly resource production on a planet with finite resources – energy, water, commodities
- Sustainable business solutions required including efficient use of resources and reduced emissions
- Rail is a part of the sustainable business solution
 - Most sustainable form of land freight transport
 - Product footprints can be significantly reduced by switching to rail for land transport

Rail's Environmental Benefits

Rail's Environmental Value



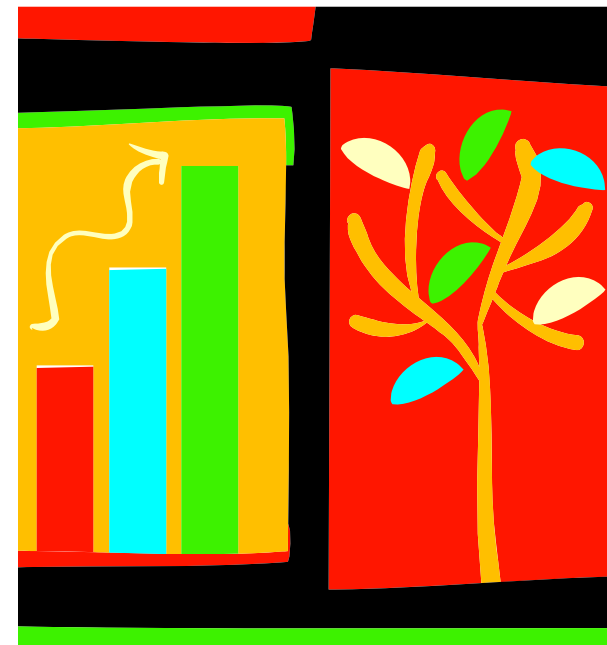
From an environmental, economic, congestion and safety perspective, rail is the best way to move goods – today and in the future

* Based on a 1,500 mile truck haul



BNSF Sustainable Investments

- BNSF invests in more sustainable technologies & operations that improve:
 - **Business** – infrastructure investments, operational efficiencies and access to markets
 - **Communities** – improve communities we serve through jobs, cleaner air and less traffic
 - **Environment** – through reduced environmental footprint and cleaner air



Sustainable Business

- BNSF Investments - \$4.1B capital budget in 2013
- BNSF Jobs - Union (35,000) & veterans (over 7,000)
- Per Dept of Commerce, every \$1 invested in rail returns \$3 to US economy – jobs, business efficiency and expansion opportunities



Community Investments and Participation

- “Friends of BNSF” on web – share rail heritage and operations information with public
- Green teams for grassroots greening of operations
- Community safety outreach
- Volunteer in communities we serve



Green Equipment Investments

- **Equipment**

- **Locomotives**

- Aggressive purchasing (over 1,000 in last 4 years) of locomotives that are 15% more fuel efficient with lower emissions than the locomotives they replace

- **Idle Control Technology** - Installed on 90% of locomotives

- **Intermodal Yards**

- **Automated Gate Technology** – Installed at 9 facilities through 2012
 - **Electric Wide-Span Cranes** – Installed at Memphis and Seattle, planned for future intermodal yards



Wide-span Cranes in Memphis

Green Operations Investments

- **Fuel Efficient Operations**
 - **Driver Assist Technology** - throttle control software systems for optimum acceleration & deceleration
 - **Training/Fuel MVP**
- **Locomotive Power**
 - Proper Horsepower Per Trailing Ton
 - Distributed Power
- **Aerodynamics**
- **Top of Rail Lubrication**



Alternative Fuels R&D and Partnerships

- **Biodiesel** – Partner w/ EPA in MT testing biodiesel blends up to 20%
- **Ethanol injection** – Partner w/ Southwest Research on stationary testing as alternative fuel supplement
- **Hydrogen fuel cell** – Partner with Dept of Defense on Balkan fuel cell. Niche application where locomotives only emit water vapor.
- **LNG** – Yard hostler trucks at intermodal yard in Commerce, CA



Customer Carbon Foot-printing

- Web-based tool calculates shipper rail transportation carbon footprint
- Annual customer letters document carbon footprint reduction shipping by rail over versus road

BNSF Railway Carbon Estimator Entry Worksheet

Company Name: BNSF

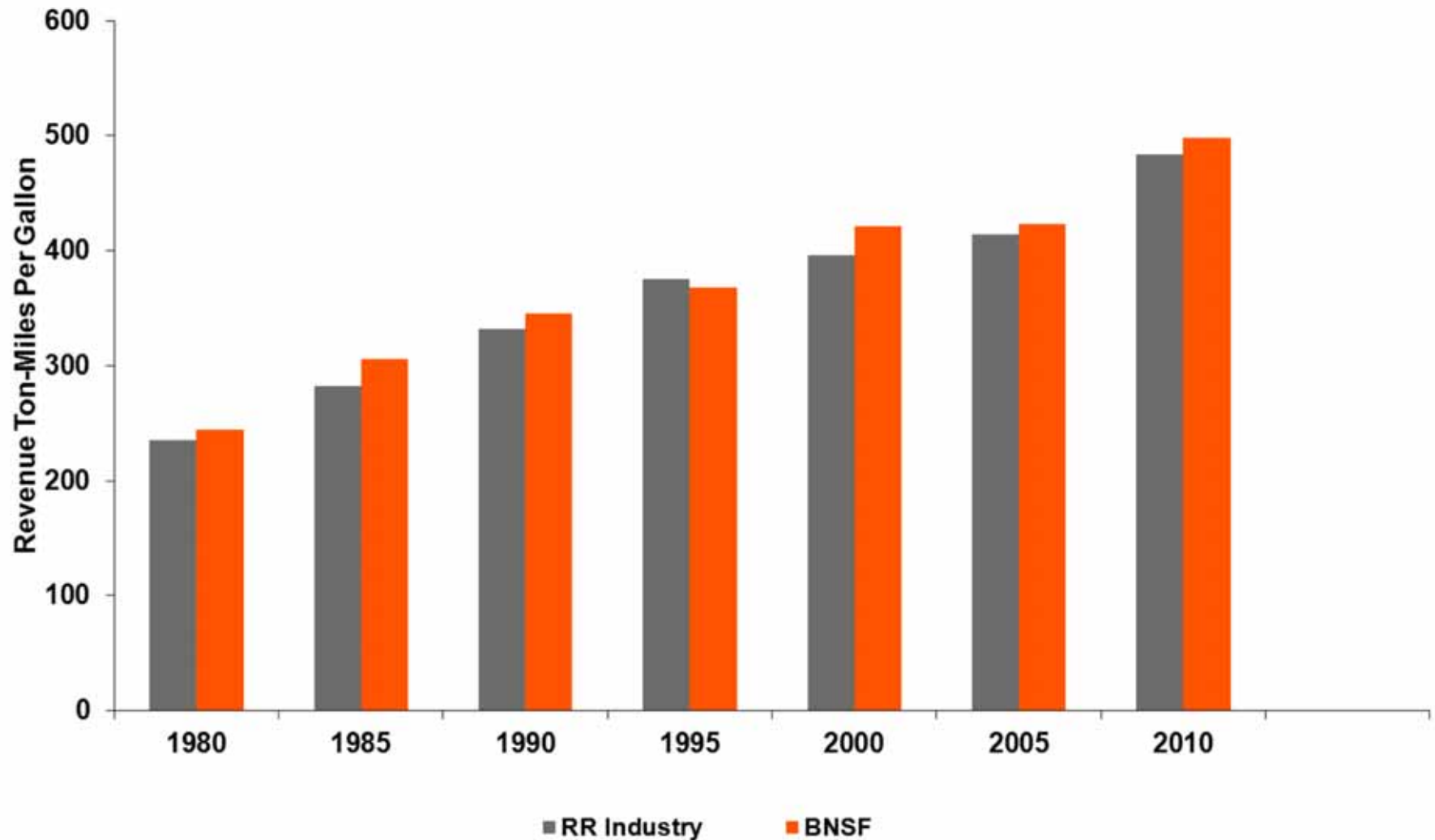
	Shipment #1	Shipment #2	Shipment #3
Step 1: Commodity			
* Commodity Group:	Intermodal	Select One	Select One
* Commodity Type:	Trailers	Select Commodity Group	Select Commodity Group
* Tons per Unit:	15.6		
Step 2: Rail Volume			
* Number of Rail Units:	500		
Step 3: Geography / Mileage			
Origin:	LOS ANGELES, CA		
Destination:	CHICAGO, IL		
* Miles:	2,192		
Step 4: Comparable Truck Volume			
* Equivalent Trucks Required:	500		
Detailed Truck Performance Assumptions			
Use BNSF Data Assumptions?	YES		
* Indicates required values			
<input type="button" value="Calculate"/> <input type="button" value="Clear"/>			

	Shipment #1	Shipment #2	Shipment #3
Your Carbon Footprint and Comparison			
Estimated Rail Carbon Footprint (Metric Tons CO ₂ equivalent):	1,117.6		
Estimated Long Haul Truck Carbon Footprint (Metric Tons CO ₂ equivalent):	2,105.8		
Using a carload or intermodal rail solution instead of truck only would reduce this shipment's estimated Carbon Footprint by:	49%		
<input type="button" value="Excel Export"/>			

Please Note:
Actual carbon emissions may vary from the results provided here as a result of variable factors such as topography, weather, unique product characteristics, etc. BNSF's carbon emission estimator was formed in collaboration with ClearCarbon Consulting, Inc. to illustrate the estimated environmental benefit that is obtained by utilizing rail as part of your company's supply chain. These carbon estimations rely on data sources including BNSF shipment history and internal shipping metrics, along with assumptions for route mileage calculation, trucking industry averages for empty miles, out-of-route miles, and fuel efficiency (Truck Assumption: 6.5 mpg highway, 6.1 mpg city), and other data sources such as the U.S. EPA's Climate Leaders program emission factors (Direct Emissions from Mobile Combustion Sources, May 2008).



Results – Roughly 100% Improvement in System Fuel Efficiency from 1980 to 2010



Intermodal Transport

- **Definition: Intermodal shipping** - movement of goods in containers and trailers across multiple transportation modes including ships, trains, trucks and barges
- **Optimum mode mix:**
 - Ocean transport - Ships
 - Long-distance land transport – Rail
 - Lower cost, less fuel, fewer emissions, less traffic congestion
 - Short-haul land transport – Trucks
 - Transport to diverse locations from intermodal hubs
 - River transport - Barges



BNSF Intermodal Partnerships

- Historic transportation mode competitors often partnering to reduce cost, improve sustainability, and maintain strong service.

- **BNSF Railway/Major Shipping Line**

- Date certain shipping from Asia to Chicago and Memphis

- **BNSF Railway/Major Trucking Company**

- BNSF for lower cost and higher sustainability long-haul
 - Trucking company for short-haul distribution



Summary

- Rail is most environmentally preferred means of freight transport
- BNSF is investing in more sustainable technology and operations to improve:
 - Fuel efficiency and reduce air emissions
 - Community sustainability
- BNSF partners w/ other modes of transportation for lower customer shipping costs, improved sustainability, and optimum service and reliability



FUEL
EFFICIENCY



FEWER
EMISSIONS



REDUCED
HIGHWAY
CONGESTION

BNSF
RAILWAY



BNSF[®]
RAILWAY

BNSF[®]
RAILWAY