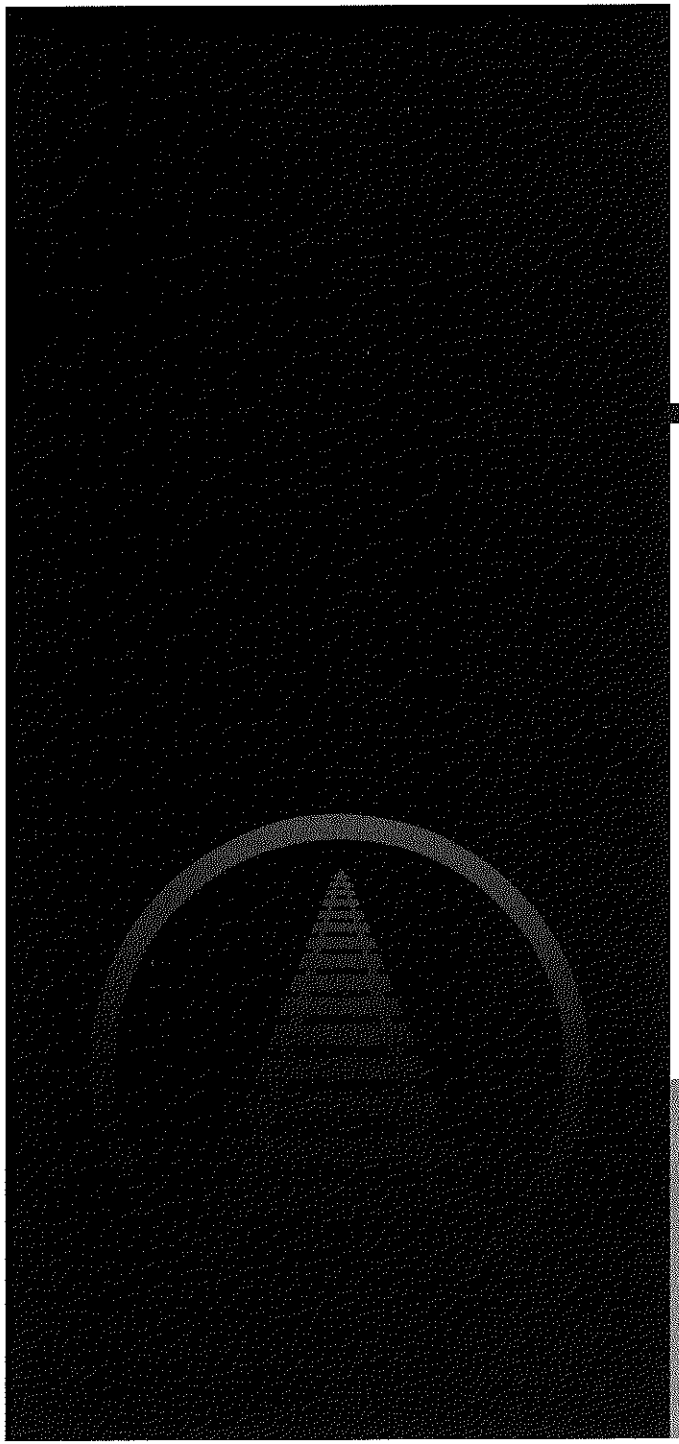


Speed Restriction Impacts to Train Performance & Railroad Capacity

June 10, 2014
Washington, D.C.

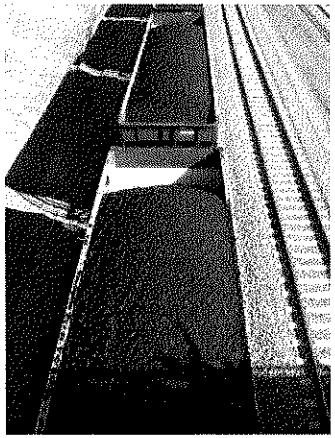
Railroad Presenters:

Rollin Bredenberg – BNSF Railway
Bob Gutman – CSX Transportation
Bob Schmidt – Union Pacific

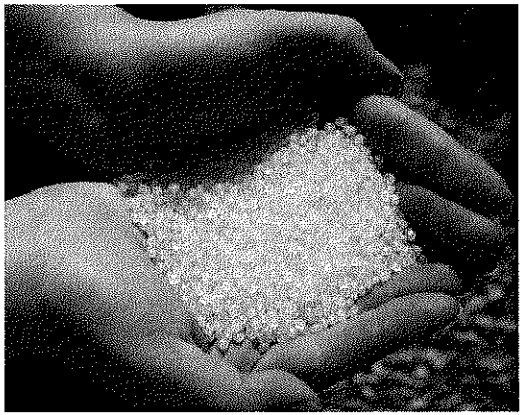
ASSOCIATION OF AMERICAN RAILROADS

Carrying the Things America Depends On

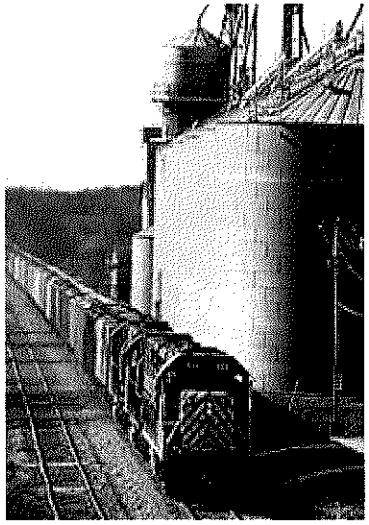
Intermodal:
12.8 million trailers and containers



Coal:
694 million tons



Plastics, fertilizers, and other chemicals:
175 million tons



Grain:
125 million tons

Stone, gravel, sand:
116 million tons

And much more!

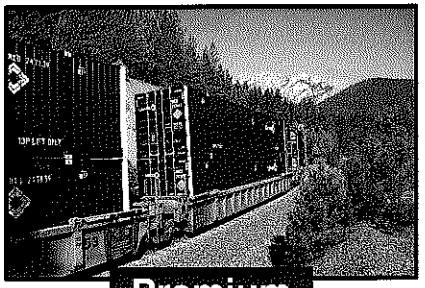
Data are 2013.

Railroad resources are shared by all traffic groups

Major Traffic Groups

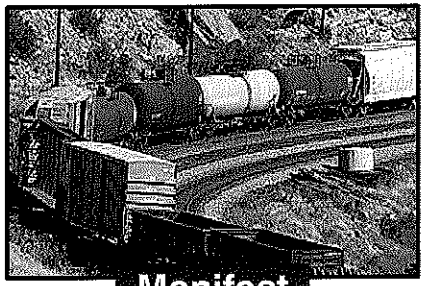
Passenger

- Amtrak
- Commuter



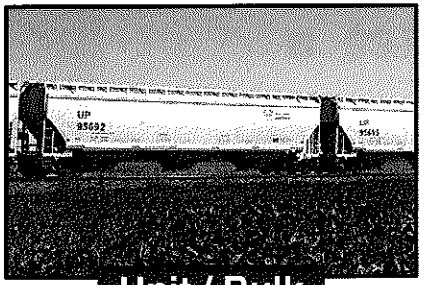
Premium

- Intermodal
- Automotive



Manifest

- Agricultural Products
- Chemicals
- Industrial Products

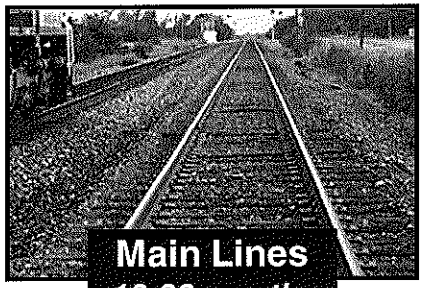


Unit / Bulk

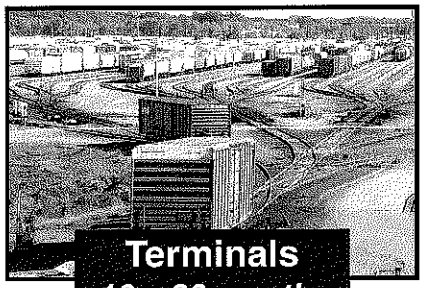
- Coal
- Ore
- Military
- Ethanol
- Grain
- Rock
- Crude Oil

Five Critical Resources

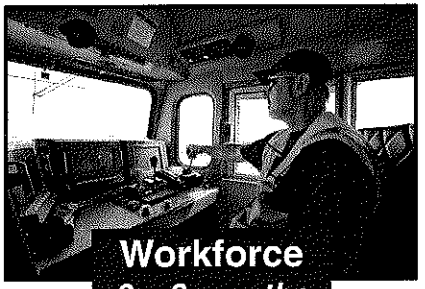
Lead times in italics



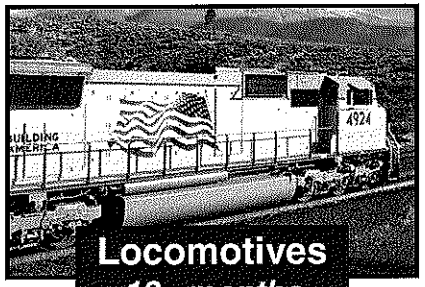
Main Lines
18-36 months



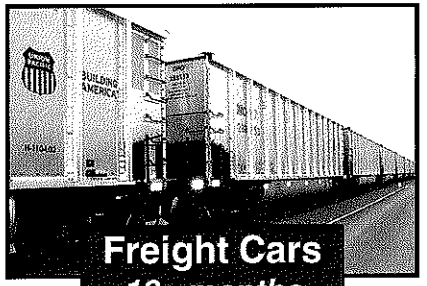
Terminals
18 – 36 months



Workforce
6 – 9 months



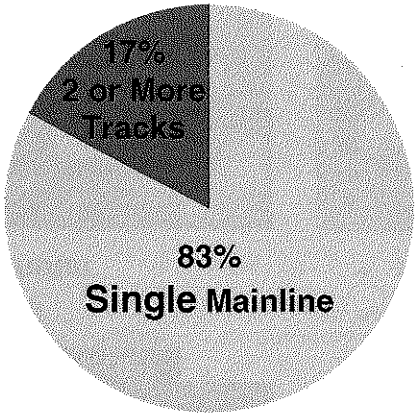
Locomotives
12+ months



Freight Cars
12+ months

Slow trains delay all other traffic

U.S. Rail Network*

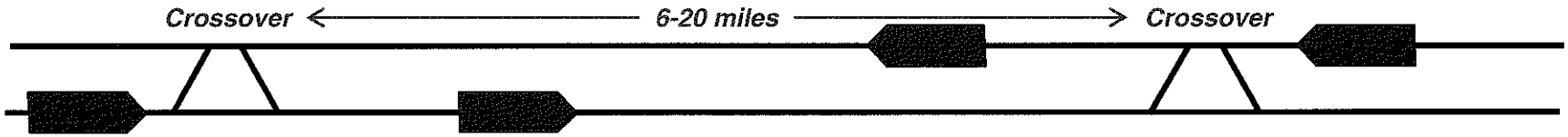


Railroads have limited opportunities for fast trains to pass slow trains

- 83% of U.S. rail network is single track with passing tracks spaced every 5 to 50 miles.
- 17% has two or more tracks, with crossovers spaced every 6 to 20 miles

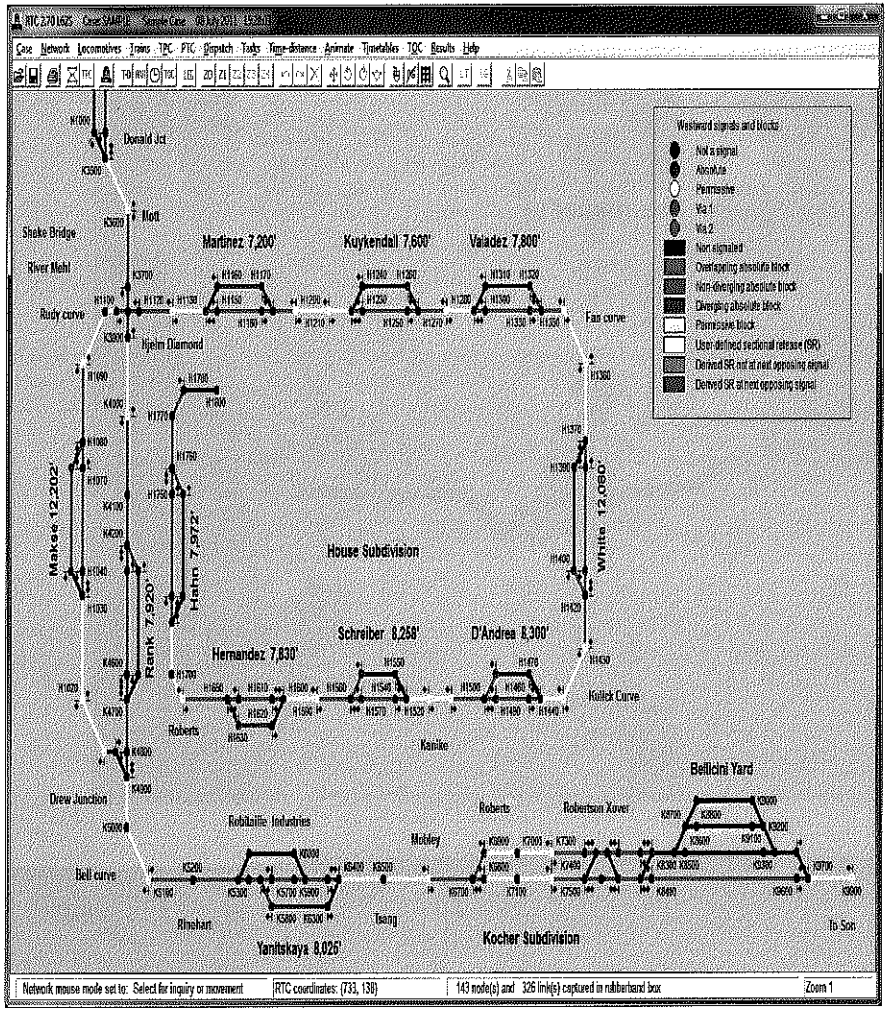
Single Track

Double Track



* AAR 2012 Analysis of Class I Railroads

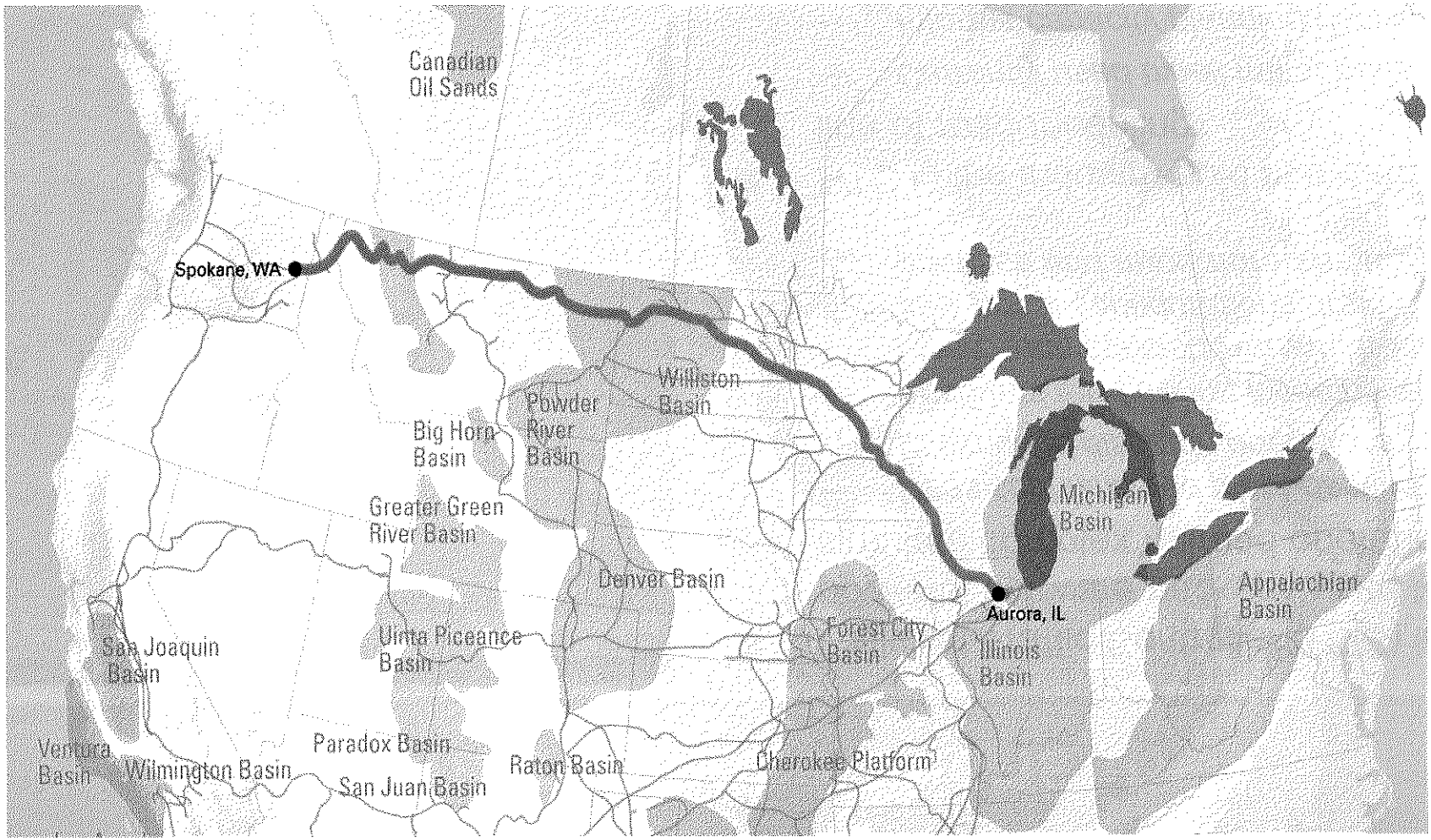
Rail Traffic Controller used to model railroad operations



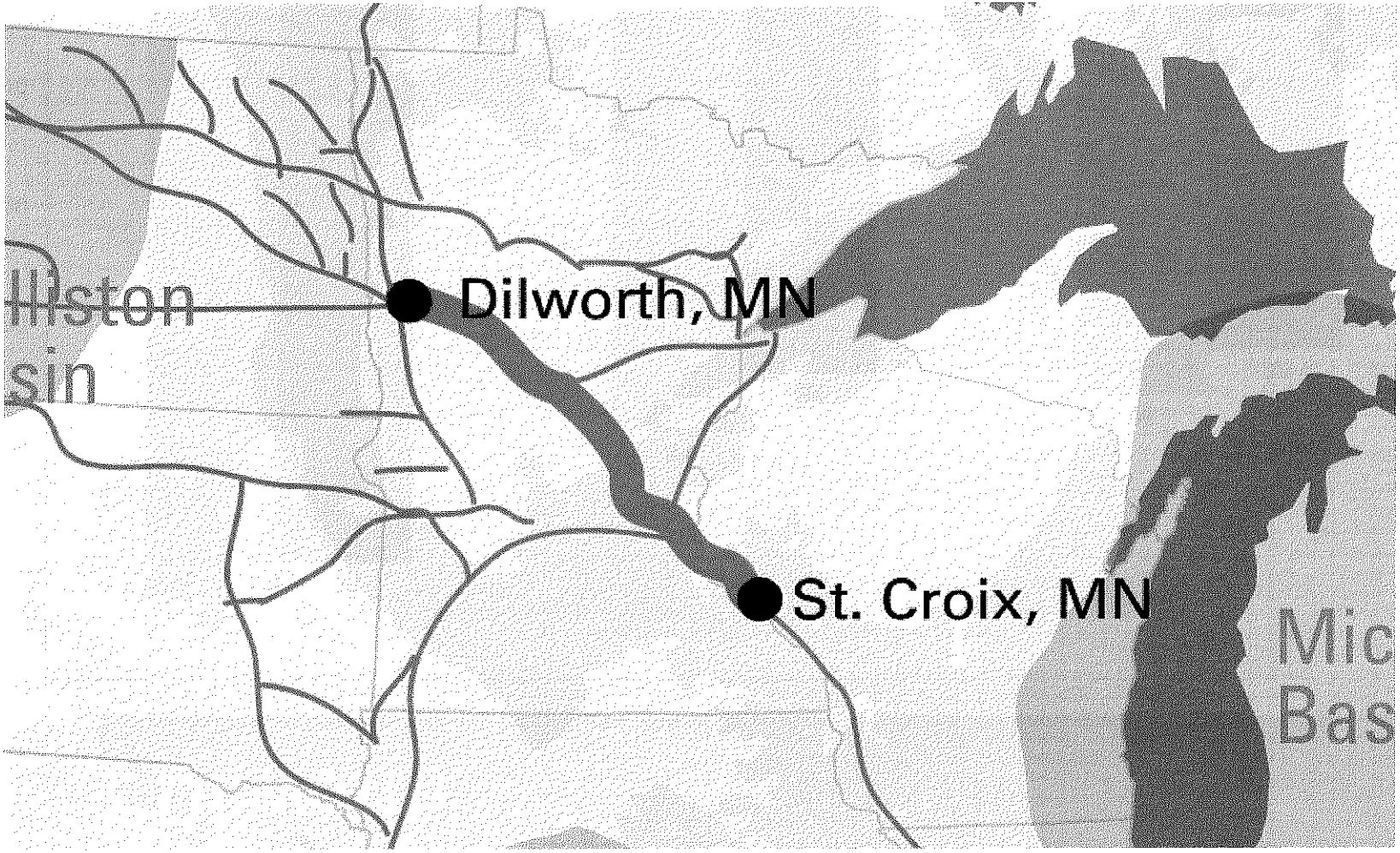
* Sample illustration from RTC website

- Railroad Traffic Controller (RTC) is a powerful software package used to simulate complex railroad operations
  - *Uses sophisticated meet-pass logic to simulate dispatch operations*
  - *Accounts for differing locomotive types, train consists, terrain, track and signal configurations, train priorities and* ***maximum speeds***
- RTC is the industry gold standard for line of road modeling
  - *Currently used by all major railroads*
  - *Informs capacity planning decisions*
  - *Accepted by the Surface Transportation Board and US Department of Transportation*

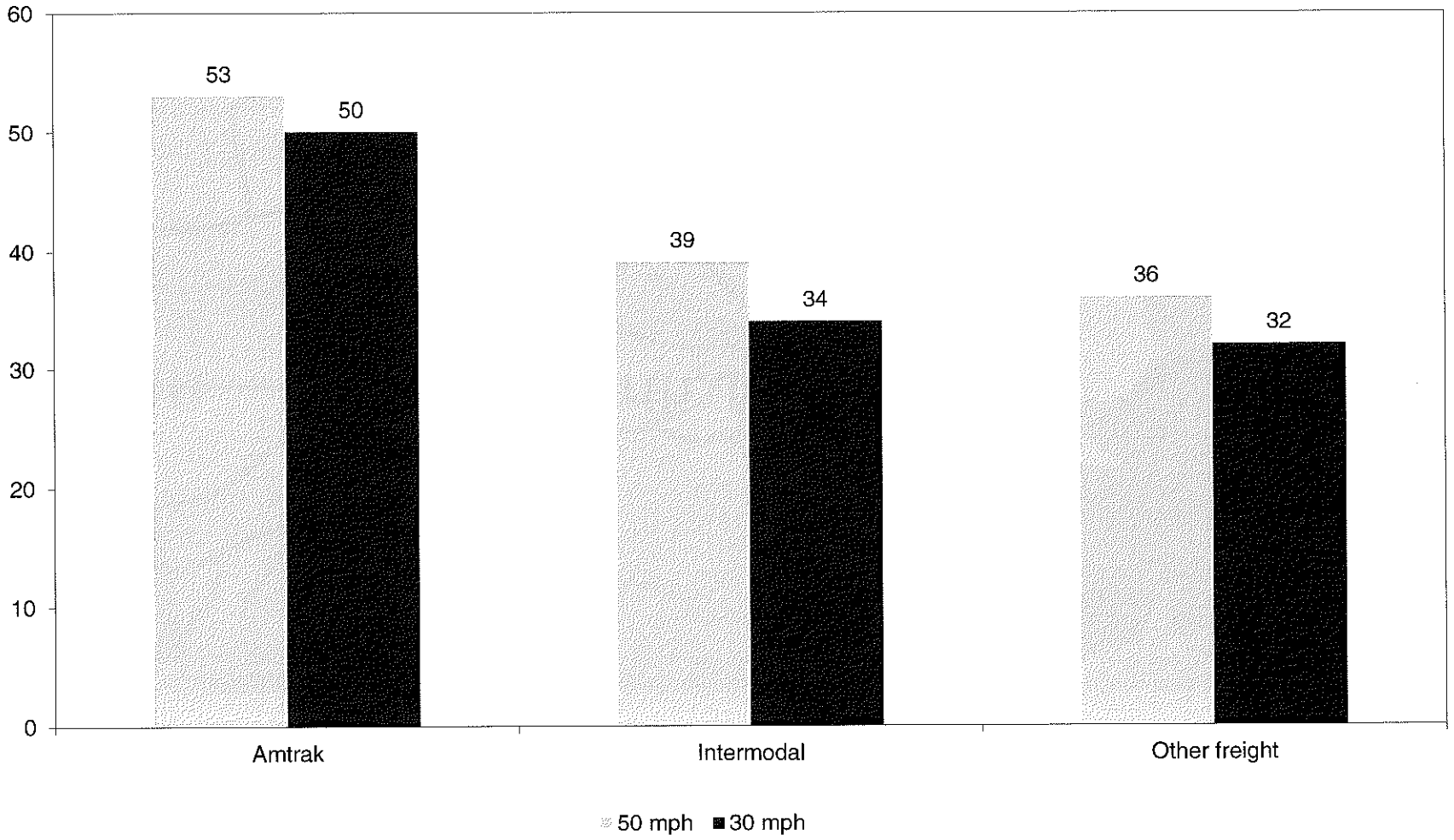
BNSF Aurora – Spokane route



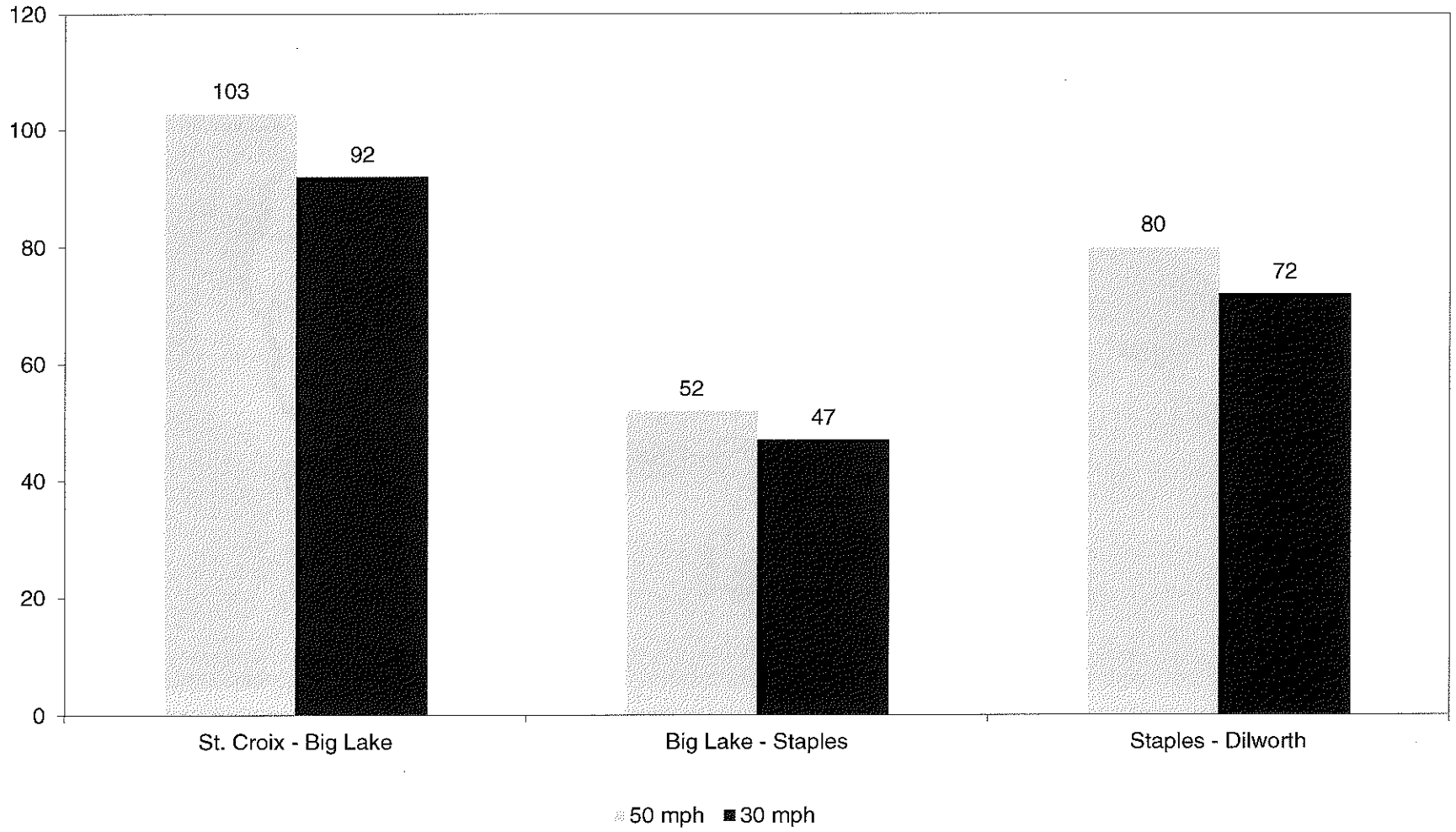
BNSF St. Croix – Dilworth route



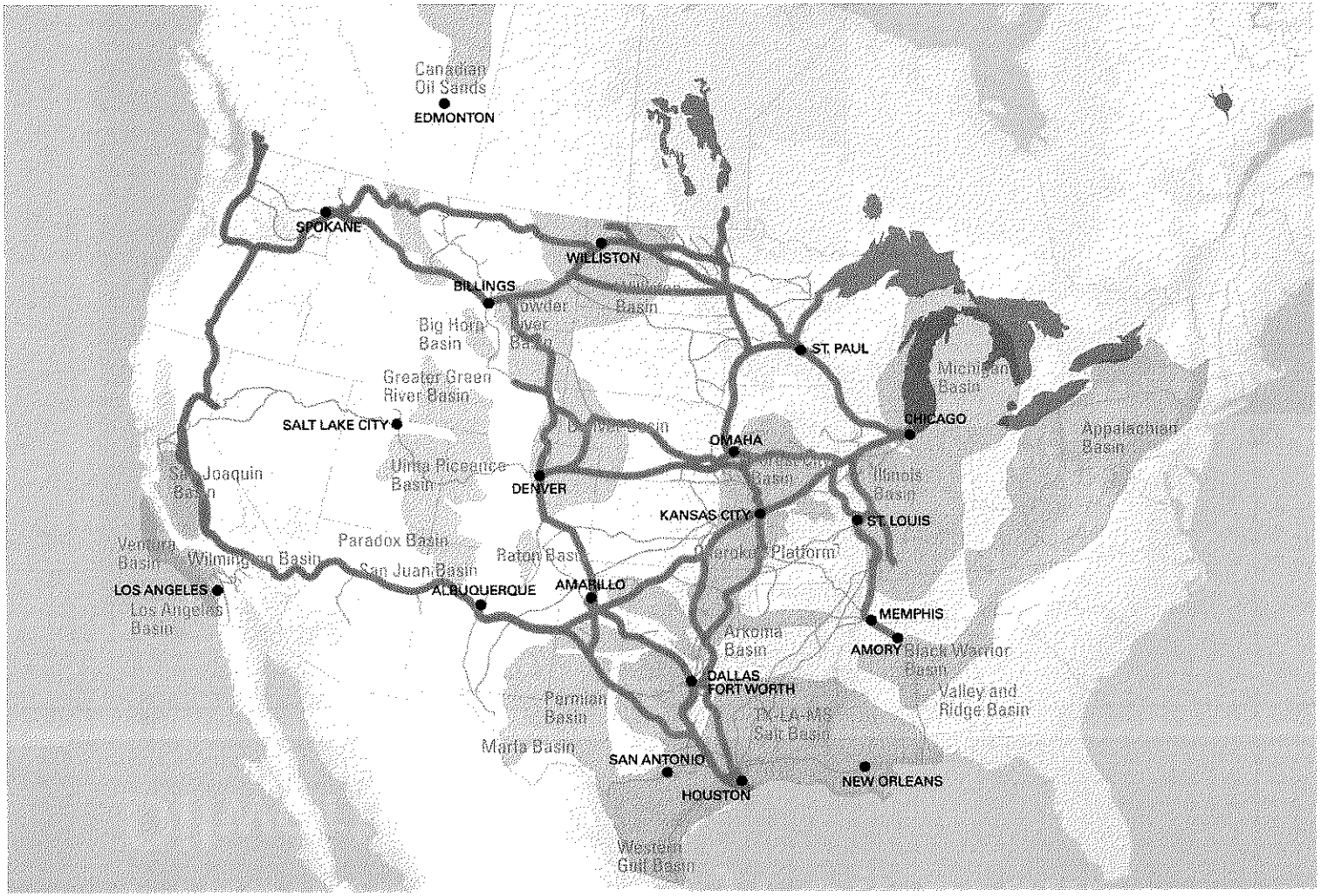
Train speeds (mph): St. Croix - Dilworth



Practical capacity: St. Croix - Dilworth



BNSF system crude oil routes



BNSF system: estimated customer and financial impacts

Capital improvements

- Track capacity loss is roughly 7% on BNSF's highline route.
- $800 million in estimated capital costs to regain lost capacity on highline.
- Entire system estimate for capital to replace lost capacity would be $2.8 billion, and a minimum of four years to complete.

Customer and Revenue impact

- Increased cycle times will require BNSF's crude oil customers to add 11,280 tank cars to their fleets (approx. $1.5 billion dollars in replacement equipment)
- Slower run time hours to highline freight trains would (at a minimum) put the domestic intermodal business at risk.
- The revenue on the domestic intermodal business alone is $600 million per year.
- International container business and automotive business would also be at risk.

Operating expense impact

- Reduced train velocity will require additional train crews at a cost of $340 million per year.
- Reduced train velocity will result in equipment car rentals, locomotive, and fuel costs increasing by $200 million per year.
- Reduced train velocity will result in lost productivity of track maintenance workers, costing an additional $90 million per year.
- Total operating expense increases estimated at $630 million per year.

Collateral Customer and Network Impact

- It is estimated that it will take at least four years to build-out this level of new Network capacity
- As a result, immediate loss of capacity on principal routes which are now fully utilized would mean that some existing customer traffic would be forced off the railroad until new network capacity replaces the lost utility resulting from the speed restrictions
- Beyond the immediate loss of existing business, the ability for BNSF customers to grow would be severely constrained until such time that new network capacity was constructed and placed in service

Speed restriction impacts

Train Delay	■ Impacts extend beyond crude trains to passenger and all other freight trains using the same routes ■ Limits service recoverability and hurts customer performance ■ Expect conversion of service sensitive business to trucks ■ Delays and impacts for ethanol restrictions would be even larger
Infrastructure Needs	■ Larger speed differentials have a multiplier effect on capacity constraints including rail terminals ■ Limits ability to grow freight or passenger traffic with existing track infrastructure ■ New capacity will take years to build
Additional Assets	■ Slowdown means more trains will be active en route at any given time and trains will require more stops for crew change due to Hours of Service Laws ■ Employees will earn less pay and have to work more days ■ More cars, locomotives, and crews will be needed to move the same freight

Far reaching economic impacts

Rail Shippers / Customers	■ Higher shipping costs for business converted to trucks ■ Higher shipping costs for rail business ■ Higher inventory carrying costs due to longer transit times ■ Higher capital costs to purchase more rail cars (Privates)
Public	■ Greater highway congestion and highway capital ■ Increased motorist commuting time ■ Increased passenger train rider commuting time ■ Higher product costs with longer delivery times ■ More carbon emissions – environmental ■ Longer waiting times for motorists at public railroad crossings
Passenger & Freight Railroads	■ Loss of passenger train riders ■ Higher operating costs ■ Higher capital costs to replace lost capacity ■ Less capital to invest for growth and other needs