



MAFC/ITTS

Joint Annual
Conference

Bio-Fuels: Trends
& Impacts on
Agricultural
Transportation

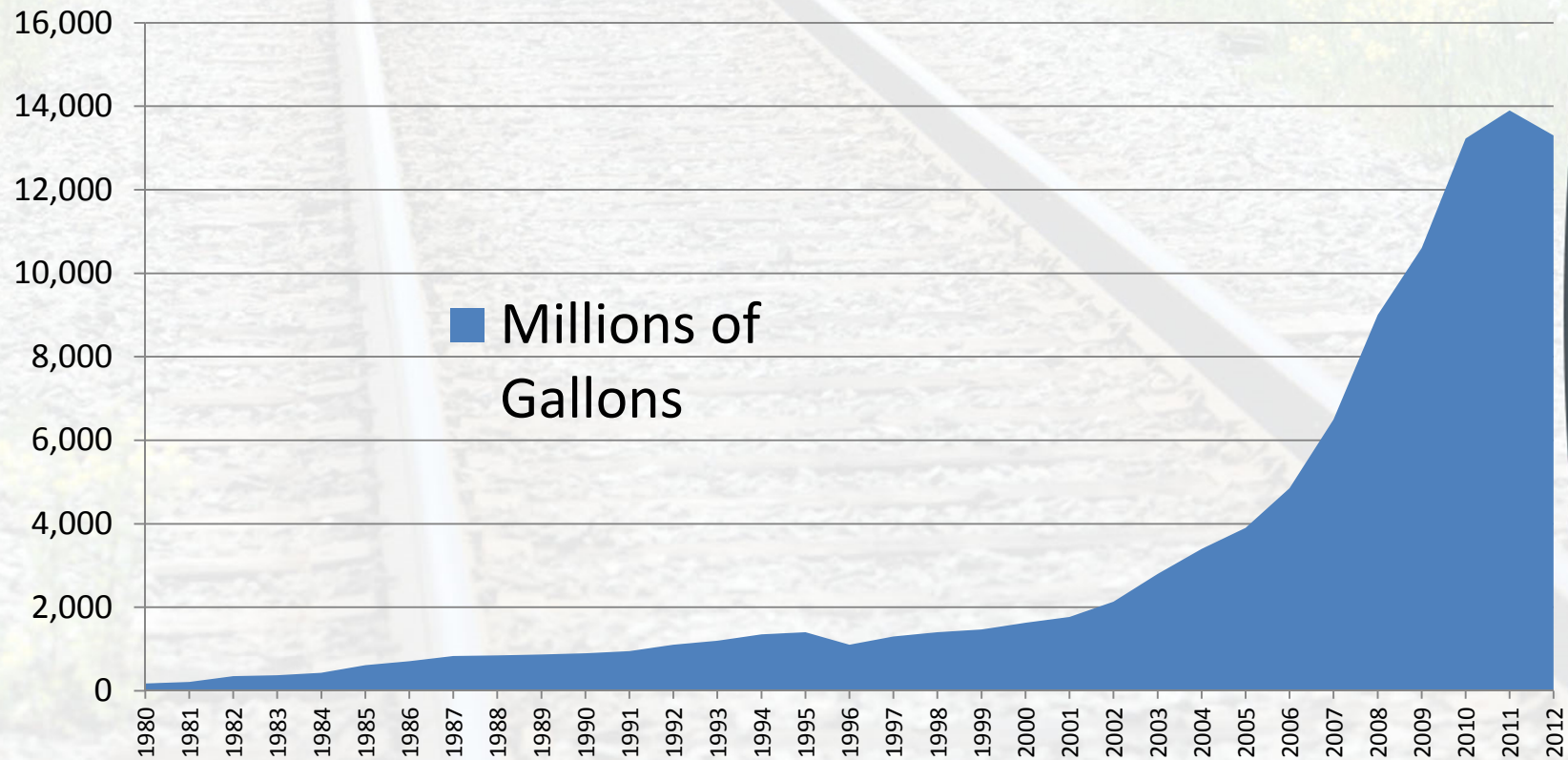
March 13, 2013

OLSSON[®]
ASSOCIATES

Olsson Associates - Services

- Land development
- Environmental compliance and Air quality
- Industrial site development
- Telecommunications
- Energy; Oil, gas and wind
- Traffic engineering and roadway design
- Rail services
- Transportation and Transit Planning

US Ethanol Production



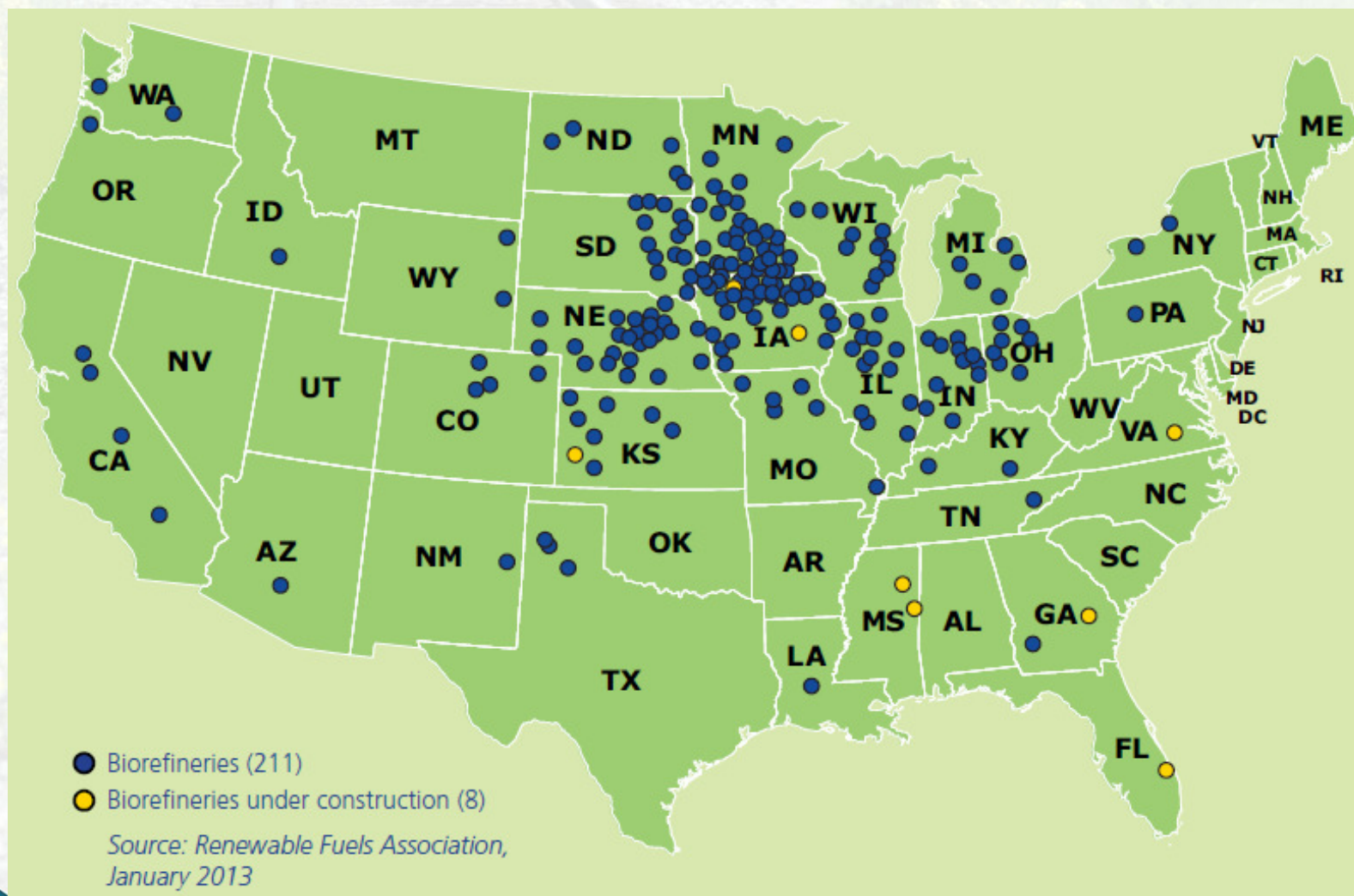
Source: U.S. Energy Information Administration

Top 10 Ethanol Producing States

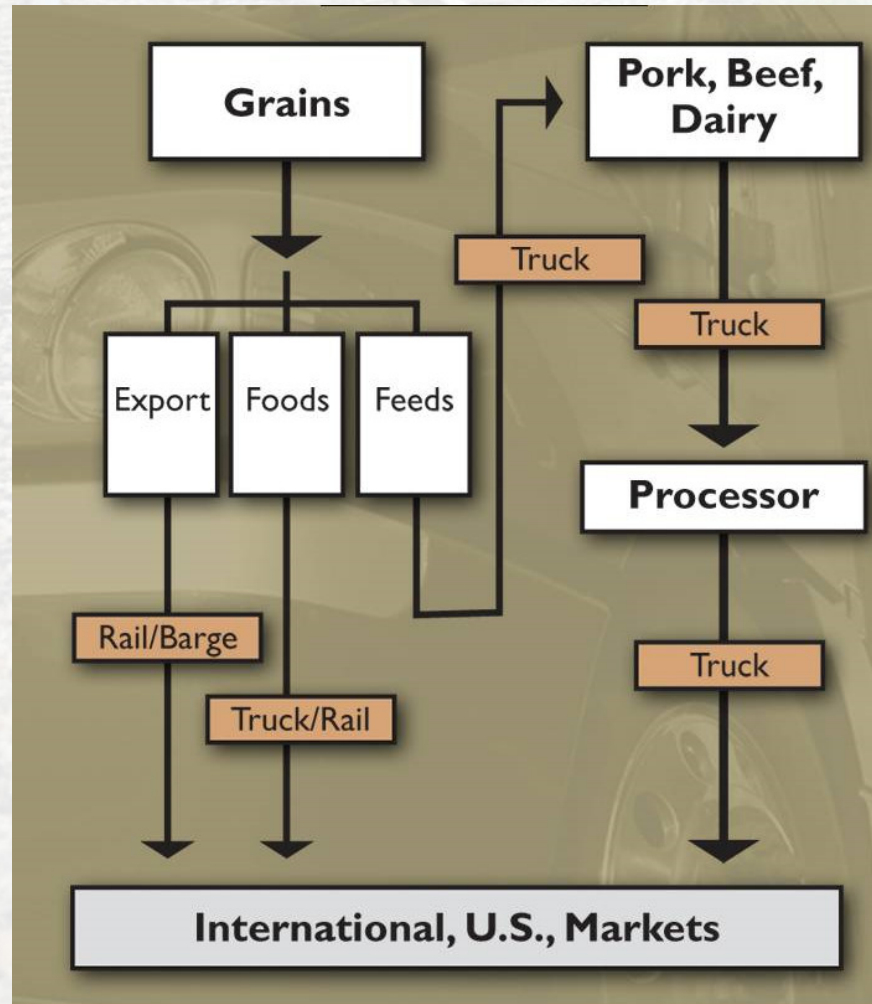
	Nameplate	Operating	Under Construction/ Expansion	Total
Iowa	3,848.0	3,843.0	0	3,848.0
Nebraska	2,058.0	1,744.0	0	2,058.0
Illinois	1,412.0	1,374.0	0	1,412.0
Indiana	1,148.0	826.0	0	1,148.0
Minnesota	1,147.1	1,010.6	0	1,147.1
South Dakota	1,016.0	1,016.0	0	1,016.0
Kansas	503.5	381.5	45	548.5
Ohio	538.0	478.0	0	538.0
Wisconsin	504.0	504.0	5	509.0
North Dakota	370.0	360.0	0	370.0

Source: Renewable Fuels Association

US Biorefineries

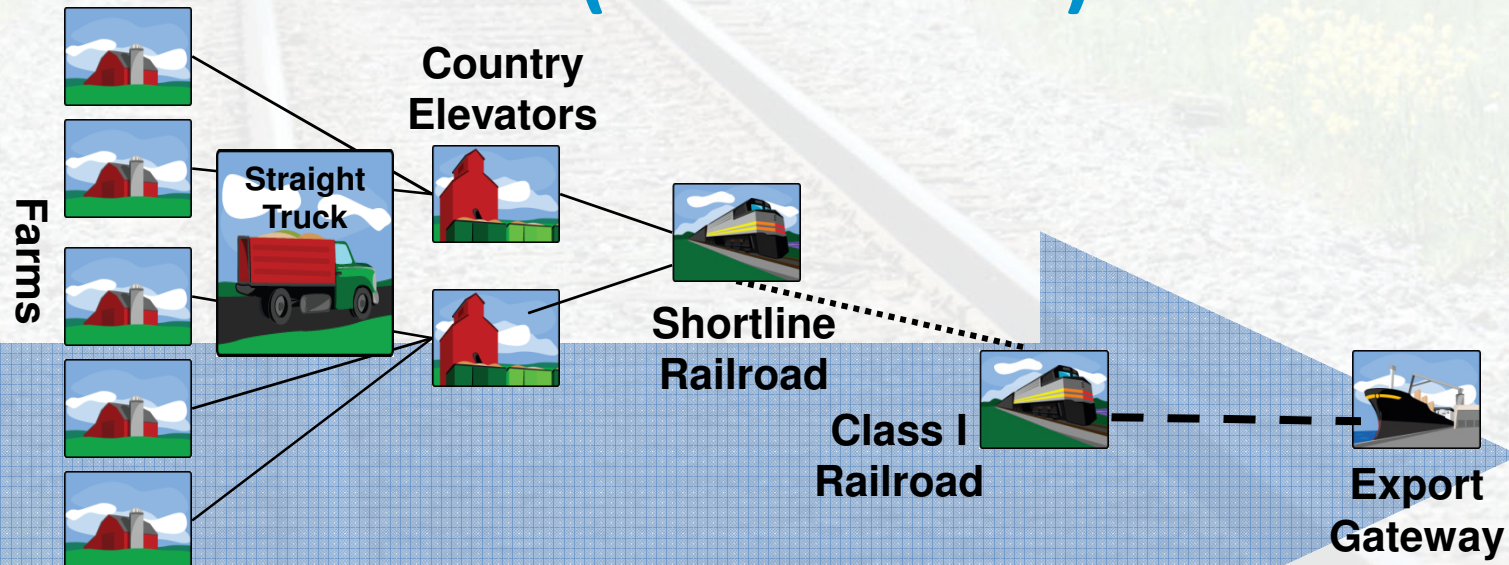


Traditional Agriculture Supply Chain



Source: MnDOT
District 7 Freight Study

Traditional Grain Transport Supply Chain (1960-1990s)



First Haul:

- Farm to local elevator
- Short haul (5 – 25 mi)
- Single Unit Trucks
- County/Township Roads

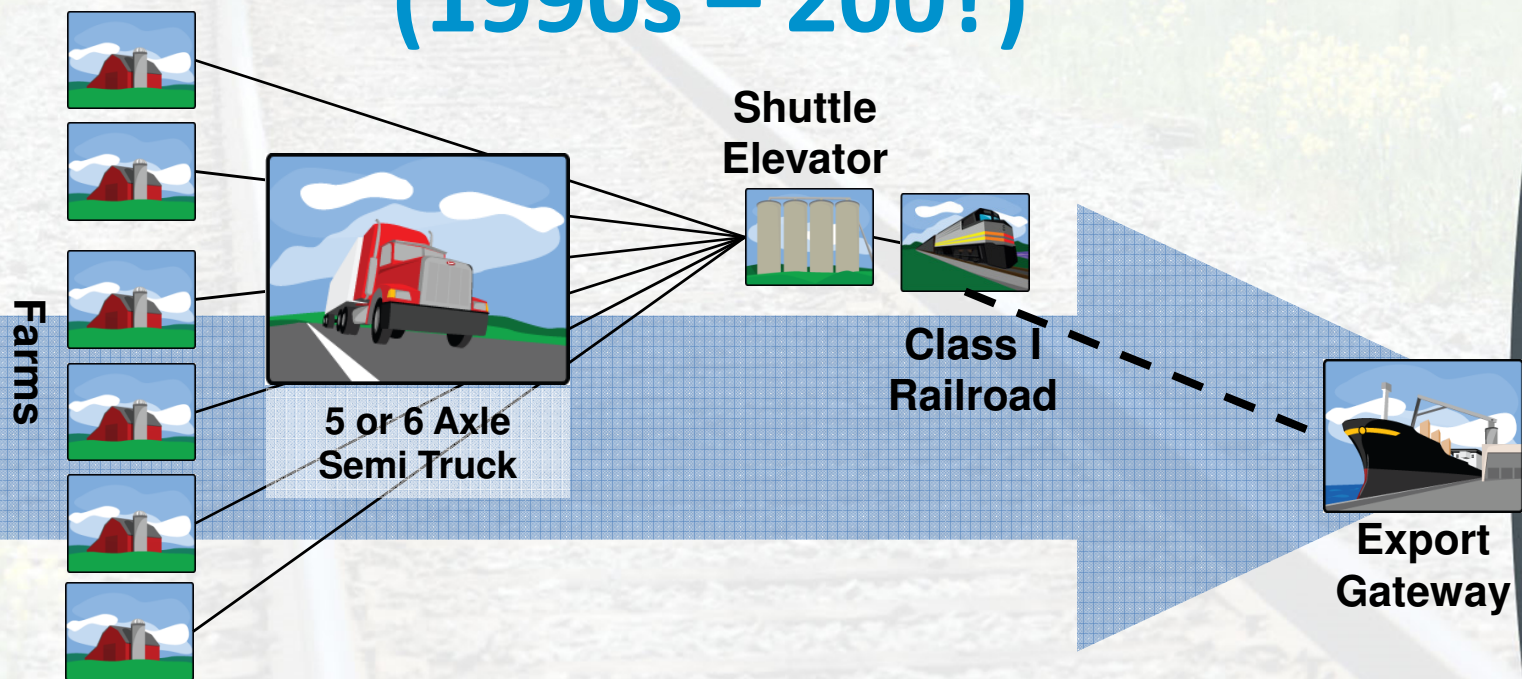
Intermediate Haul:

- Short-line railroads
- Interline agreements to mainline elevators
- 136,000 hopper cars

Line Haul:

- Fungible commodity
- 75-80 car unit trains
- River, inland and coastal port gateways

Grain Transport Supply Chain (1990s – 200?)



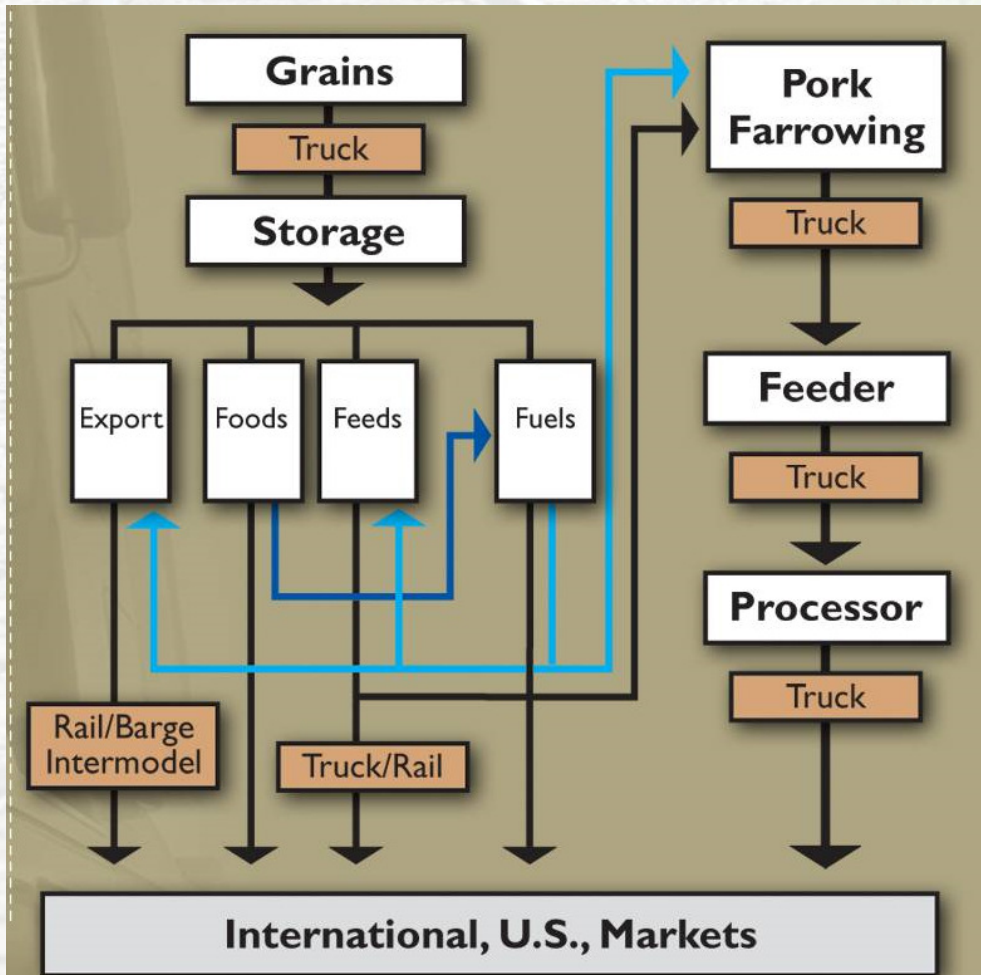
First Haul:

- Farm to shuttle elevator
- medium haul (5 – 75 mi)
- Tractor semitrailer combination trucks
- State/County/Township Roads

Line Haul:

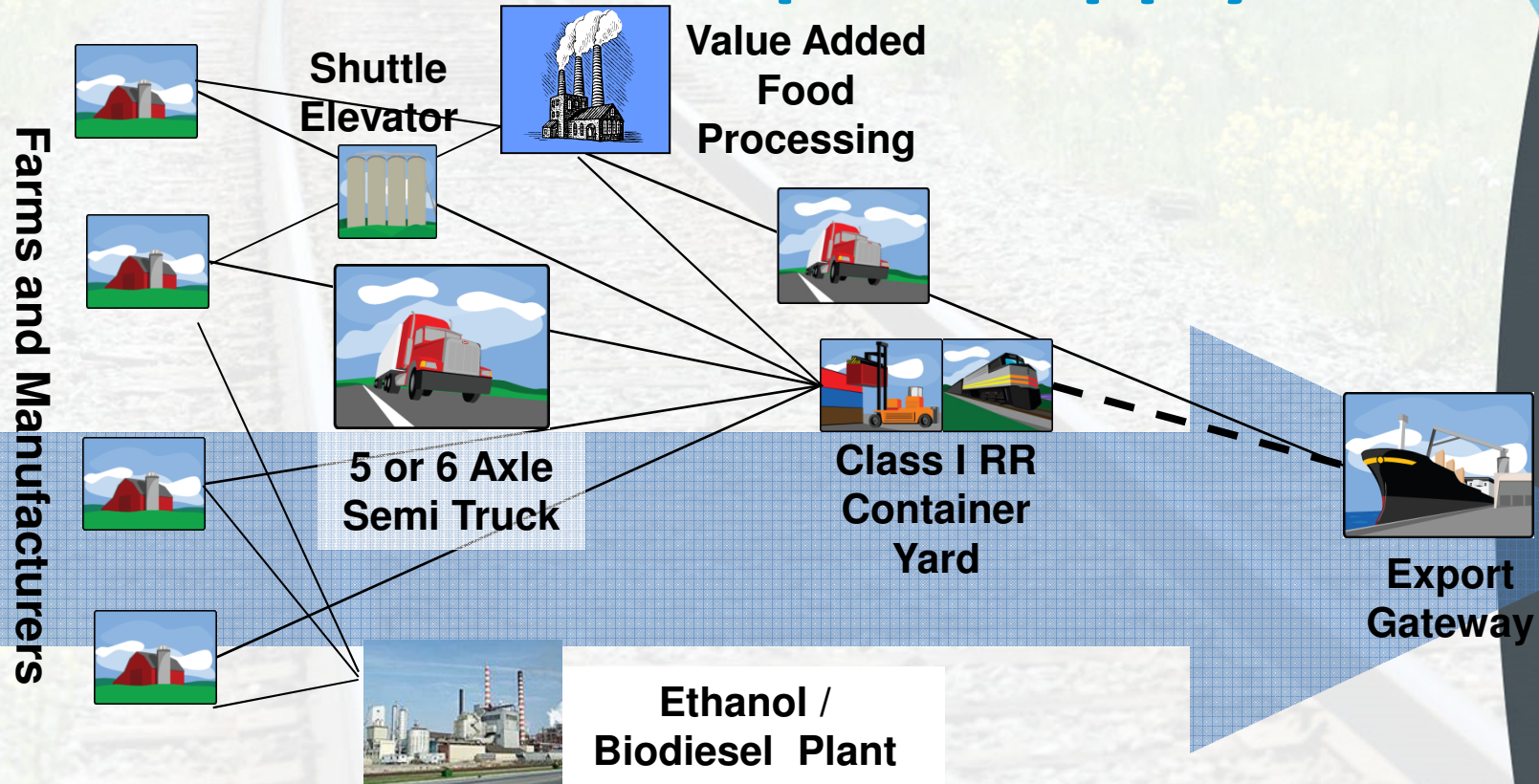
- Fungible grain commodities
- 100-120 car unit trains
- 186,000 hopper cars
- Coastal port and NAFTA gateways

Modern Agriculture Supply Chain



Source: MnDOT
District 7 Freight Study

Current Grain Transport Supply Chain



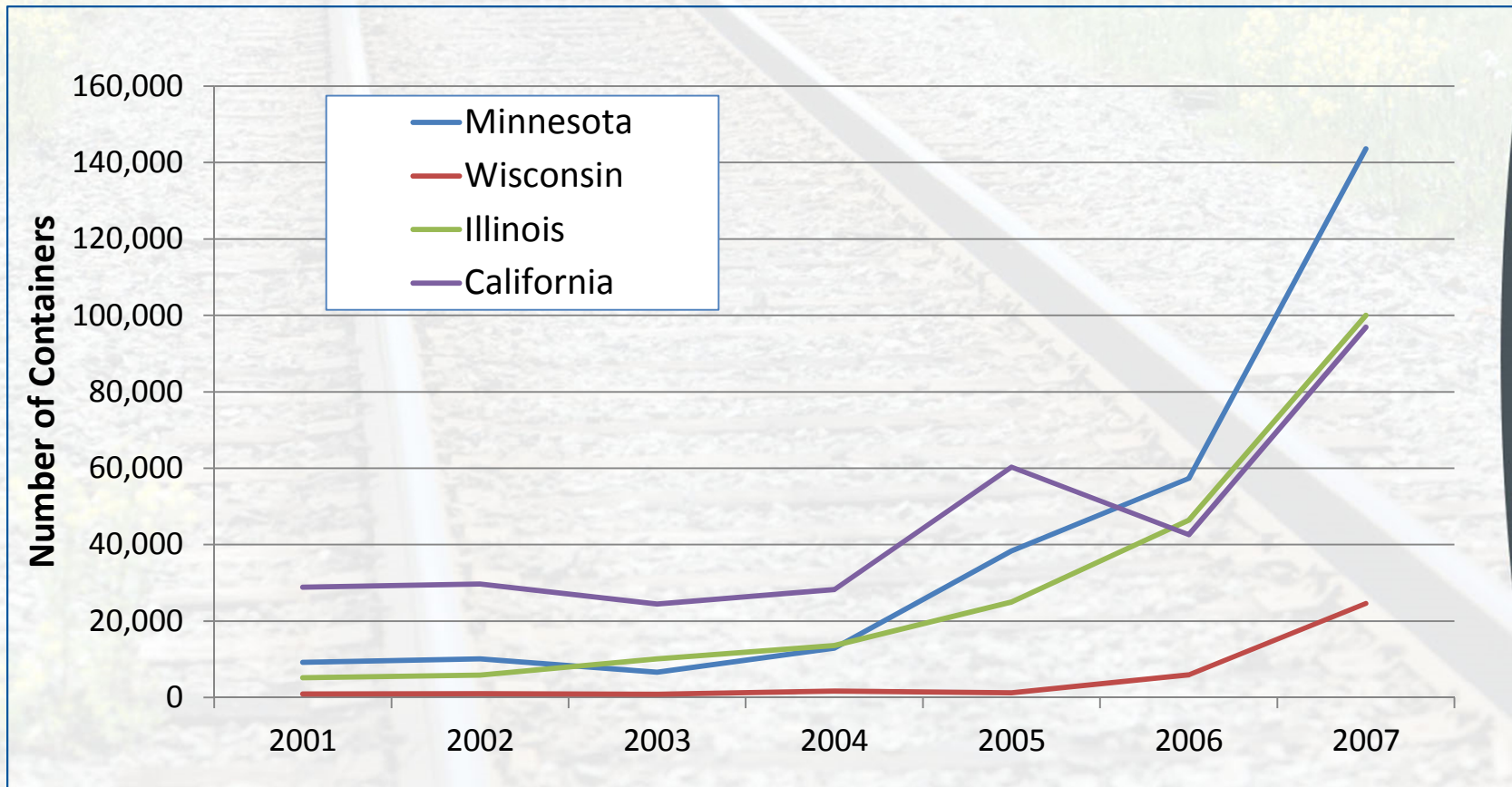
First Haul:

- Farm to container yard
- Long haul (50 – 250+ mi)
- Tractor Semitrailer Combination Trucks
- Interstate/State/County Roads

Line Haul:

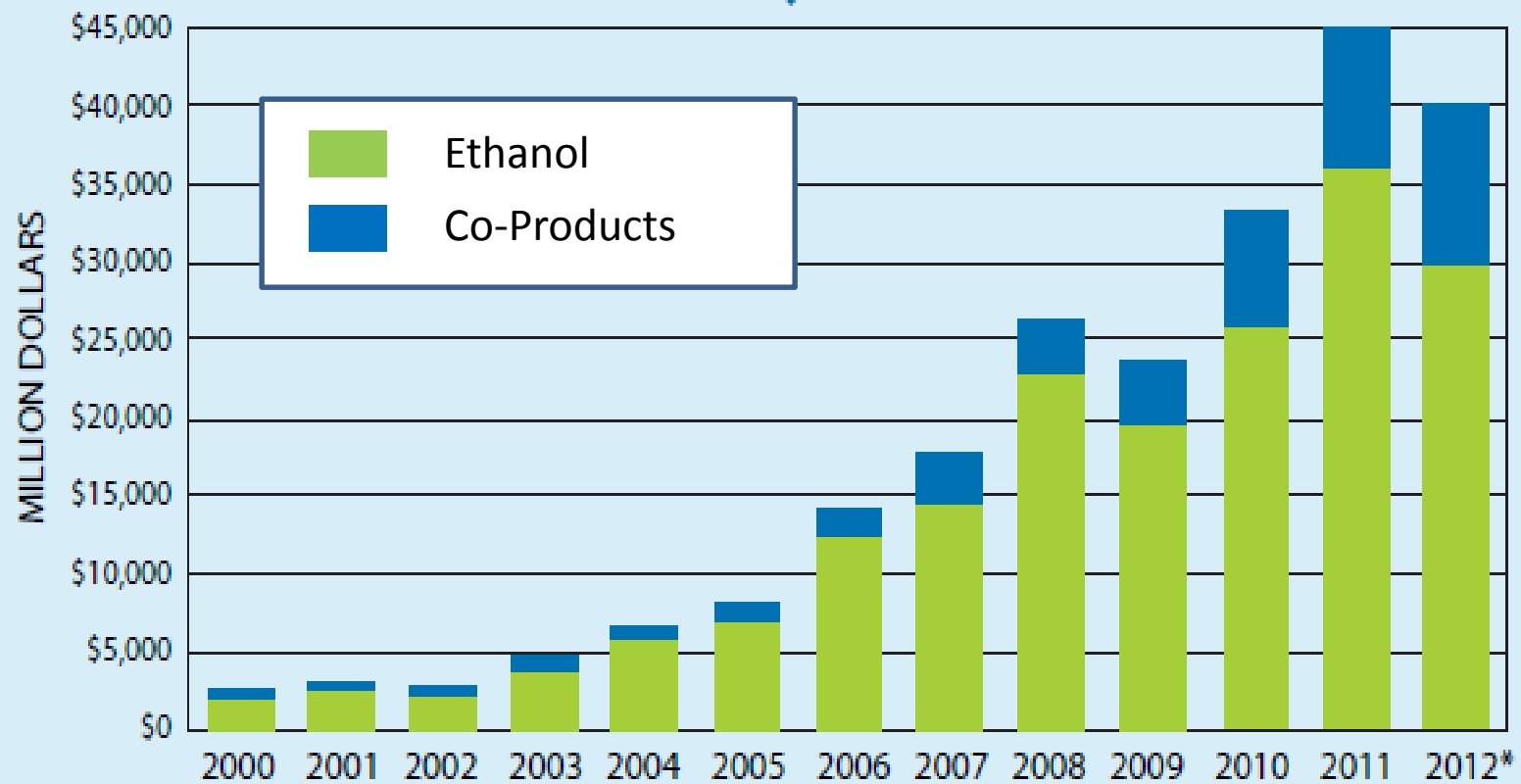
- Identity preserved commodities
- 100-120 car unit trains
- 186,000 hopper cars
- Coastal deep water ports

Grain Container Exports by Origin State



Source: Kimberly Vachal and Mark Berwick, *Exporting Local Grains via Container from an Illinois River Agricultural Hub*. Illinois Soybean Association

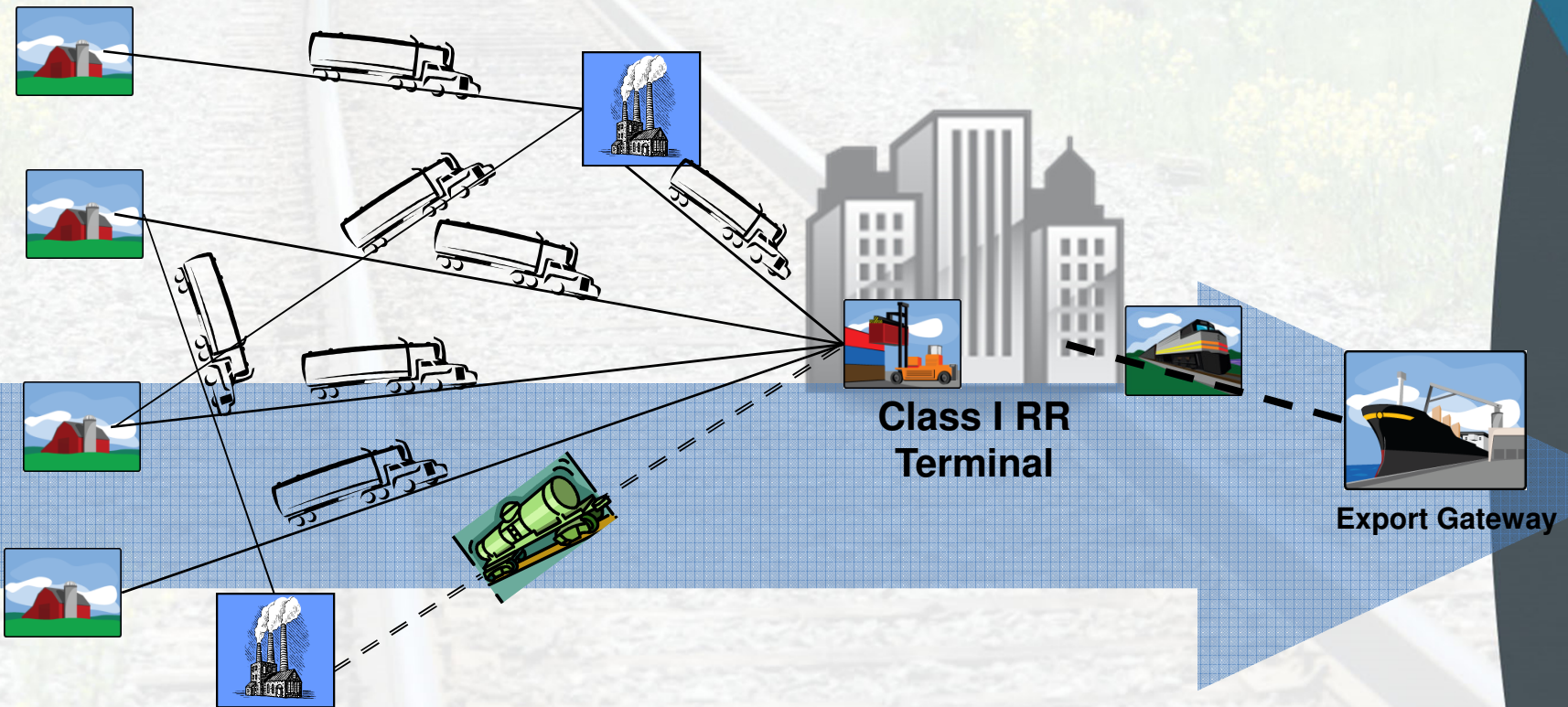
Value of US Ethanol Output



Source: Renewable Fuels Association

Emerging Grain Transport Supply Chain

Rural Farms and Manufacturers



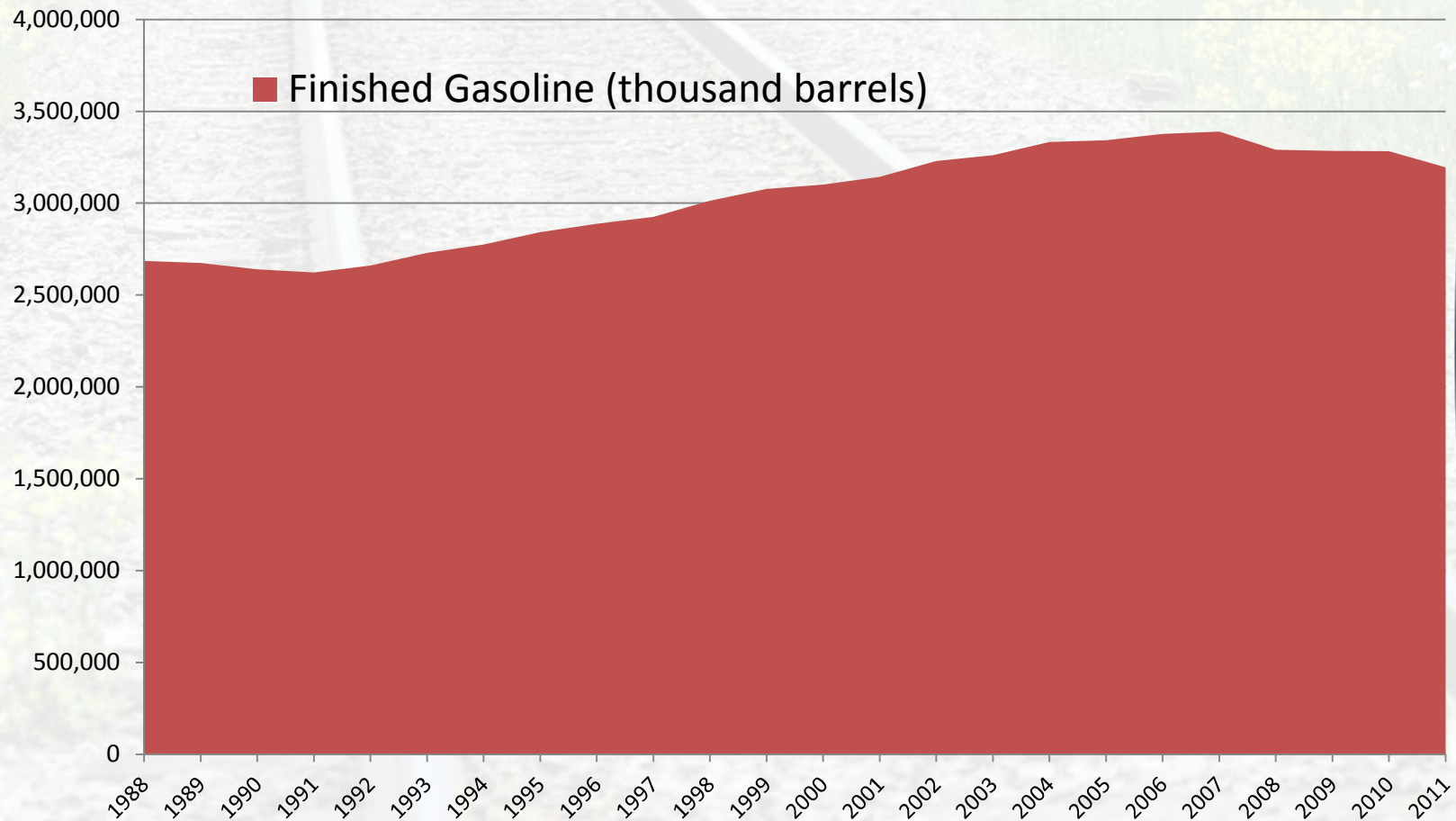
First Haul:

- Farm to container yard
- Long haul (50 – 250+ mi)
- Tractor Semitrailer Combination Trucks
- Interstate/State/County Roads

Line Haul:

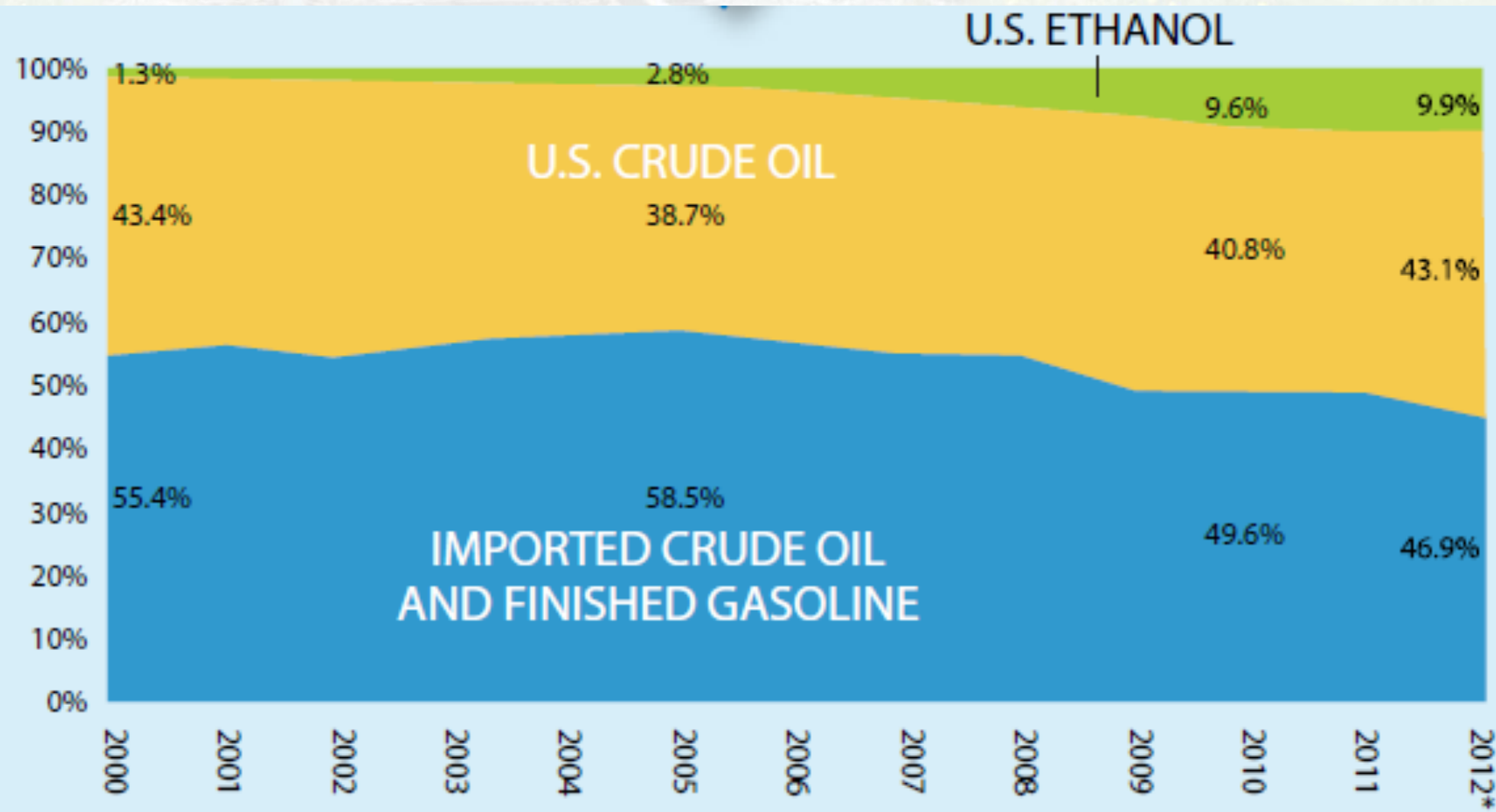
- Identity preserved commodities
- 100-120 car unit trains
- 186,000 hopper cars
- Coastal deep water ports

U.S. Gasoline Consumption



Source: U.S. Energy Information Administration

The “Blend Wall”



* Estimated

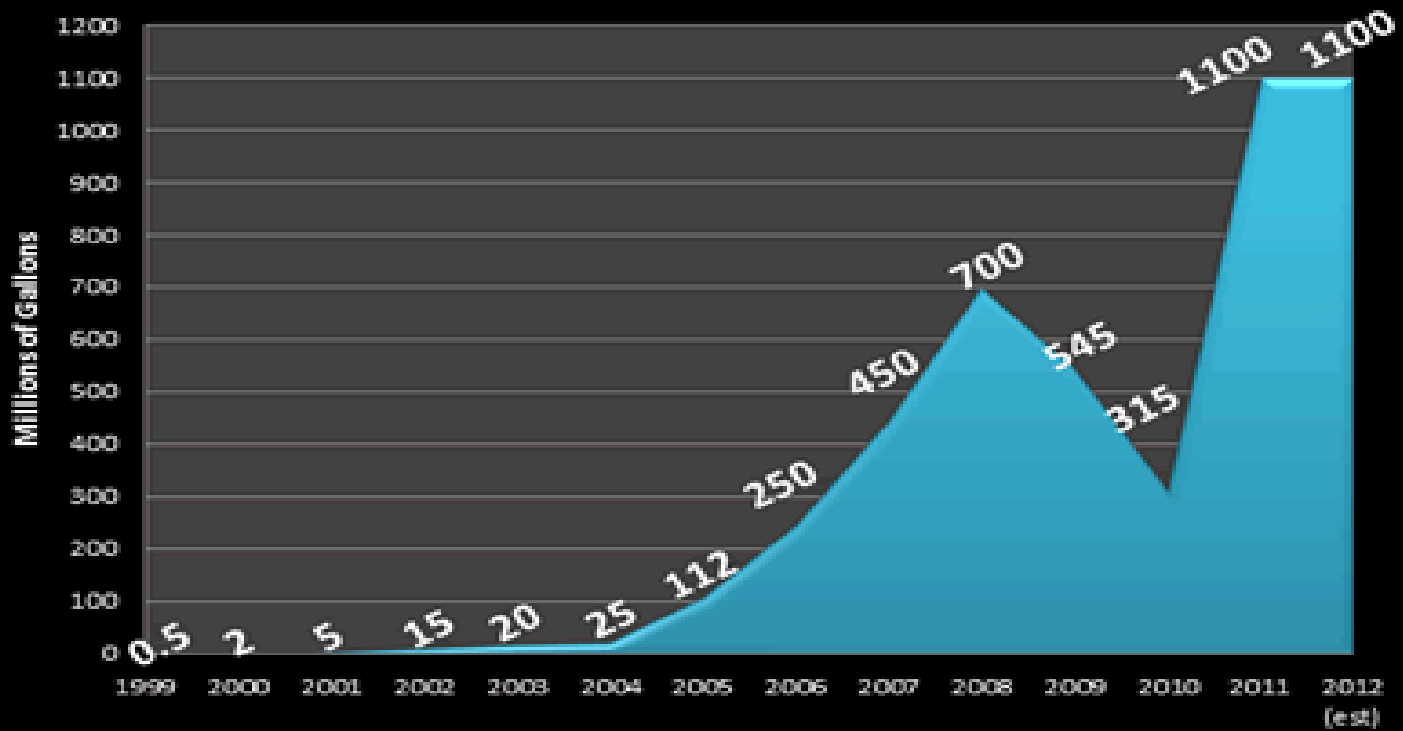
Source: Energy Information Administration and Renewable Fuels Association

Cellulosic Ethanol

- In 2007 RFS2 target for 2010 was 100 million gallons
- By 2012 the production target was to ramp up to 500 million gals.
- Several facilities advancing toward commercial level production
- In addition to technical production difficulties, the collection and transportation of many feed stocks poses significant challenges.

U.S. Biodiesel Production

Source: National Biodiesel Board Annual Estimates



Source: National Biodiesel Board

US Biodiesel Plants



Summary

- Production, marketing and transportation of renewable fuels is increasingly complex
- Current market for ethanol is mature and future growth dependent on:
 - Regulation (E15)
 - Fleet conversion to natural gas
 - Opportunity costs

Summary (continued)

- Recent investments in ethanol distribution have been geared toward efficiency improvements
 - Rail unit trains
 - Load/unloading capacity
 - Pipelines
- Bottom line: level or slow growth due to special interest opposition, regulation and emerging energy markets

Acknowledgements

- Chuck Woodside, CEO KAAPA Ethanol
- Todd Sneller, Administrator of the Nebraska Ethanol Board
- Dr. Jerry Fruin, Professor of Agriculture Economics, University of Minnesota

TRB Ag-Transport Committee (AT030)

Goals:

- Foster and contribute to the research, development, and implementation of improvements and best practices in the domestic and global transportation of agricultural products.
- Educate transportation system stakeholders on the value and application of research on agricultural transportation issues.

AT030 Research Areas

- Agriculture for energy use: What is the impact on agriculture and transportation?
- What is the impact of new oil and gas plays on rail capacity for grain and related export markets?
- Re-examine NAFTA Trade as a retrospect and begin to look at some of the emerging markets.
- Movement of food for humanitarian relief – how has this changed and how do other countries address these needs?

Thanks for Your Attention!

Contact Info:

mberndt@olssonassociates.com

Phone: 763-438-9299