

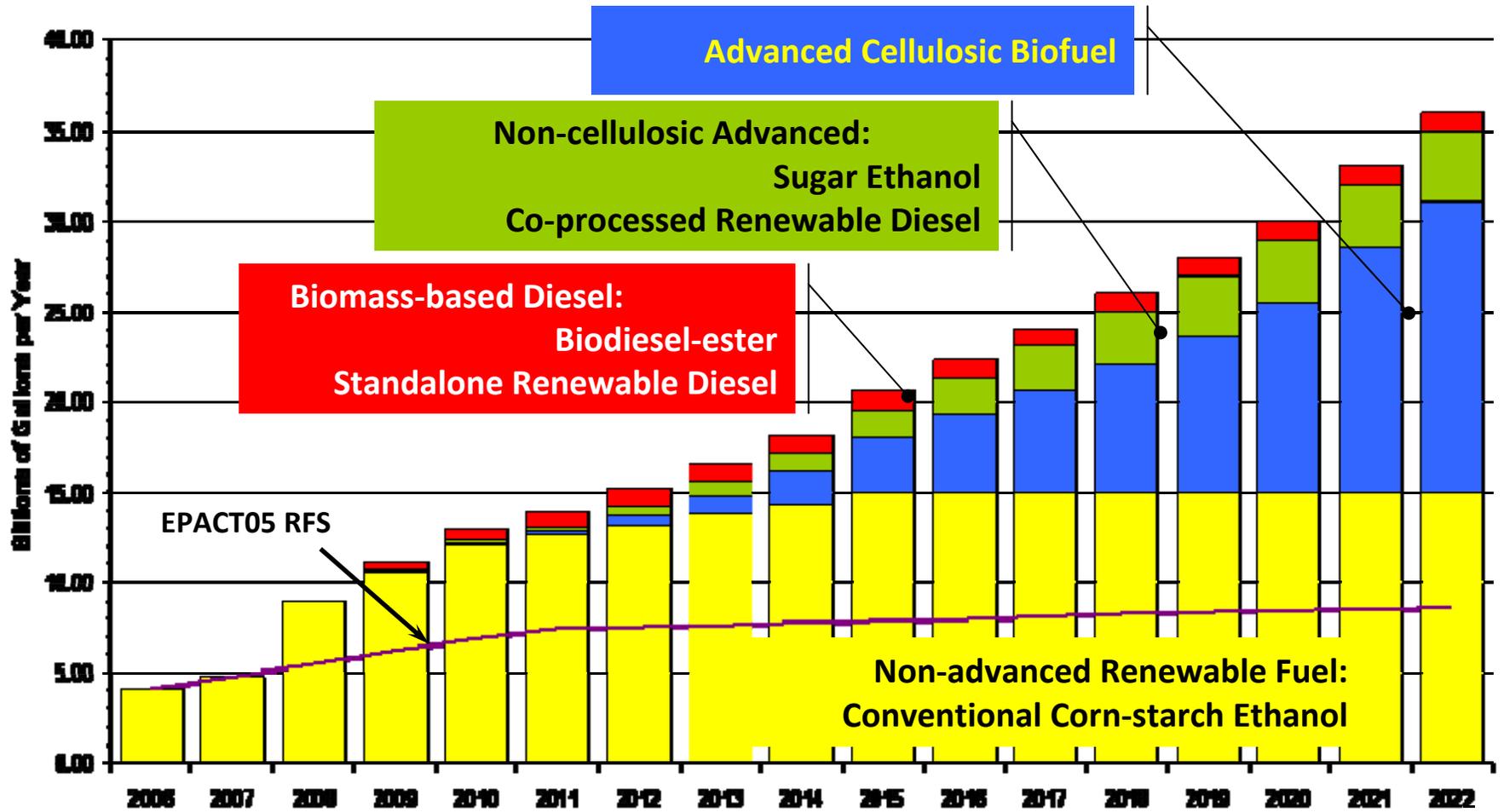
Regulation and Policy I

Federal Government Response for Meeting the Challenges of the Renewable Fuels Standard

March 17, 2009

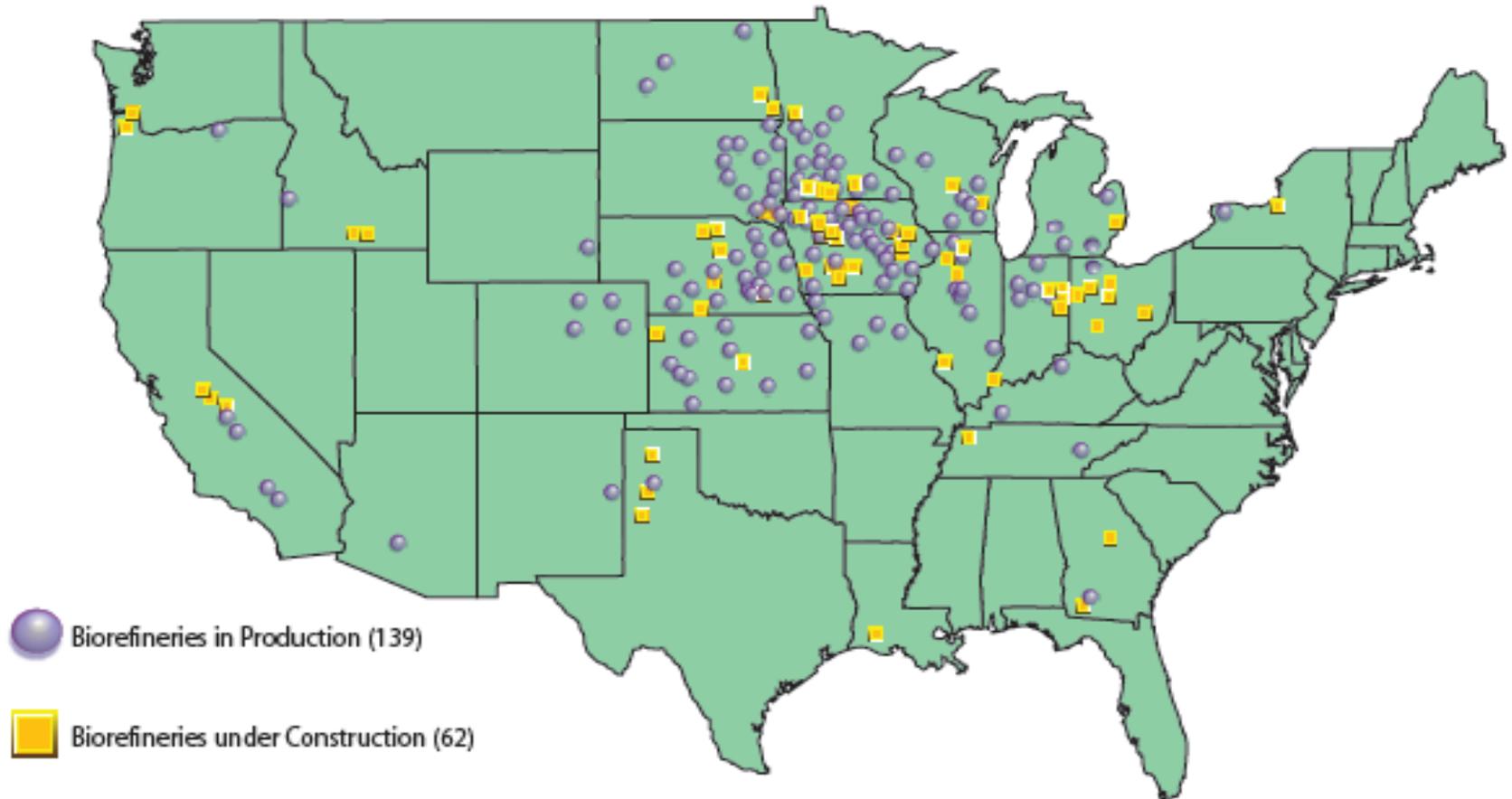
*Shirley Neff, President and CEO, Association of Oil Pipe Lines
Member, Federal Biomass R&D Technical Advisory Committee*

EISA Renewable Fuel Standard (2007-2022)



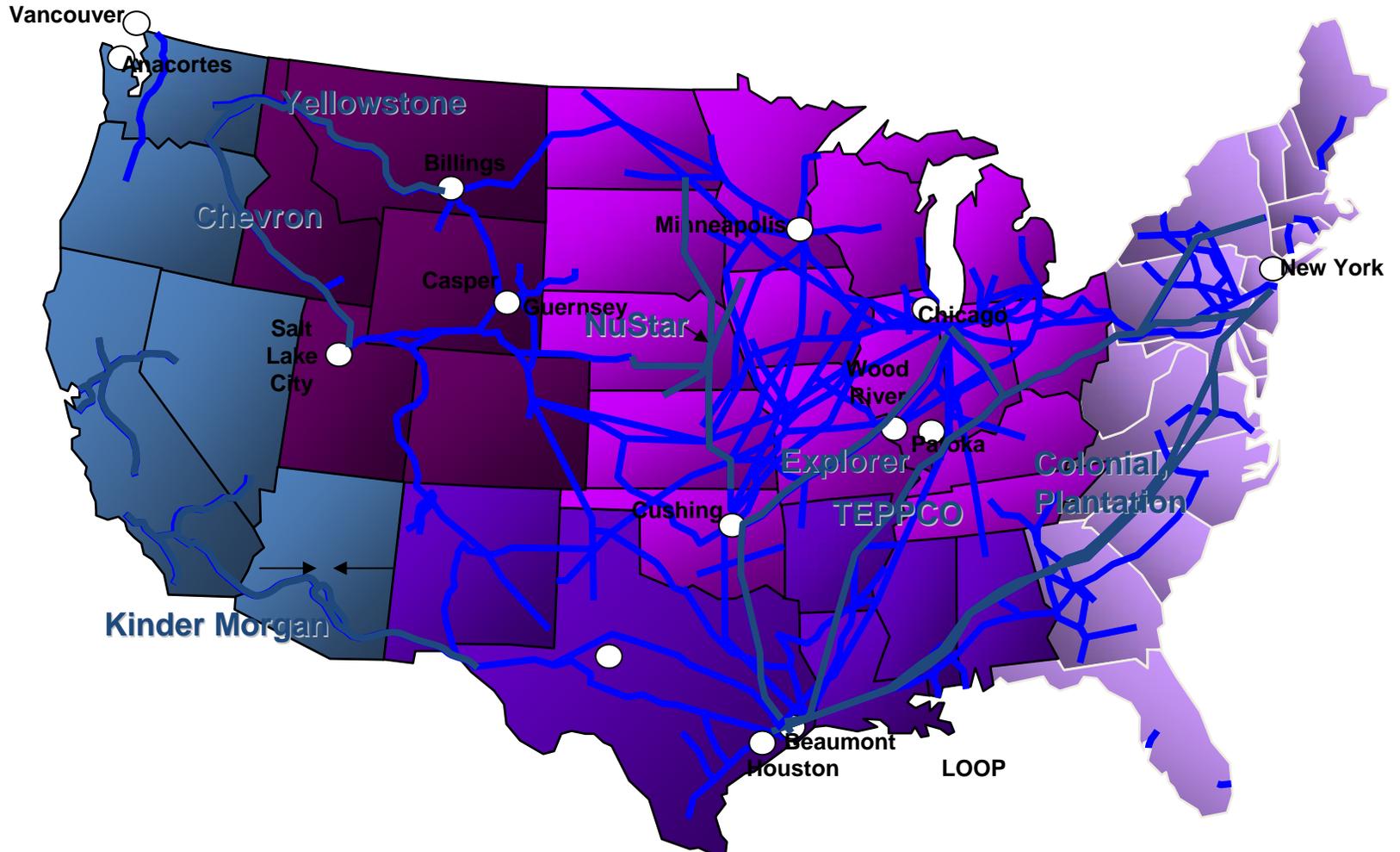
Source: API

Biorefineries



Source: Renewable Fuels Association
01.24.08

Selected Major Refined Product Pipelines



Gasoline/Ethanol Movements within the U.S. Fuels Transport is Multi-Modal

1.7 million barrels per day of gasoline are shipped from Gulf Coast refineries to Midwestern and East Coast markets.

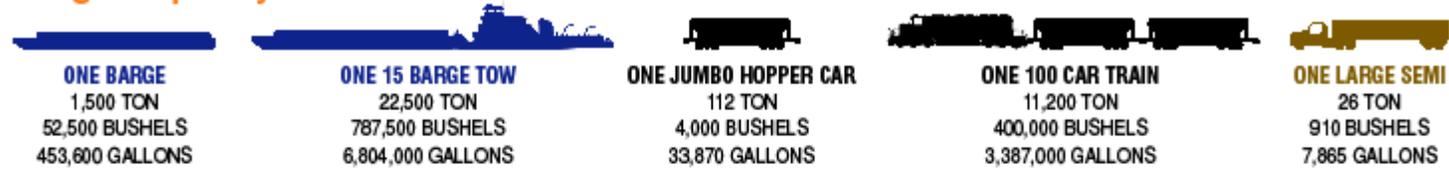
Most ethanol movements are in the opposite direction of current pipeline flows.

	Gasoline	Ethanol
• Pipeline	58%	< 1%
• Barge/Tanker	30%	<10%
• Truck	7%	>30%
• Rail	5%	60%

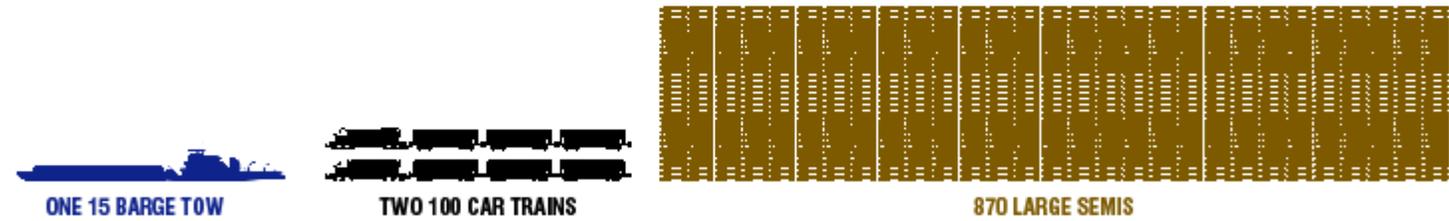
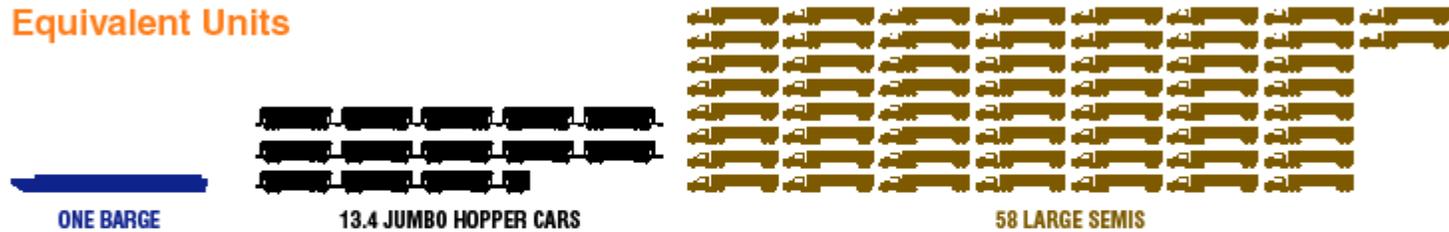
As the market scales up, transport mode will have a significant impact on congestion and cost. One 15 inch pipeline can ship as much as a 15 tow barge on a daily basis.

Compare...

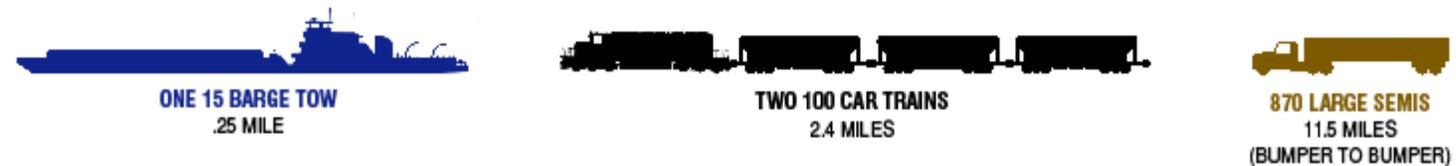
Cargo Capacity



Equivalent Units



Equivalent Lengths



E10 Blend Wall: Implications for Market Expansion

Based on projected gasoline demand, obligated parties will be required to blend or purchase RINS to meet the following average ethanol blend percentages:

<u>Year</u>	<u>Percent Ethanol</u>
2009	8.9%
2010	9.9%
2011	9.1%
2012	9.8%
2013	10.8%

How will the end use market develop beyond 10%:

Slightly higher blends, E-15 or E-20, nationally?

E85 expansion regionally? nationally?

Overcoming Challenges to Pipeline Transportation of Ethanol

Technical Challenges

Fuel Quality: hydrophilic and cleansing properties of ethanol can degrade quality.

Stress Corrosion Cracking (SCC): Technical studies by DNV under the Petroleum Research Council International (PRCI) with support of U.S. DOT. Inhibitors to prevent SCC are being tested. (Participants sought)

Pipeline Commercial Options

- Batching in multi-product pipelines (KM Florida P/L)
- Shipping blends in existing pipelines
- Building dedicated ethanol pipelines