

Global Biofuels: Trends and Outlook

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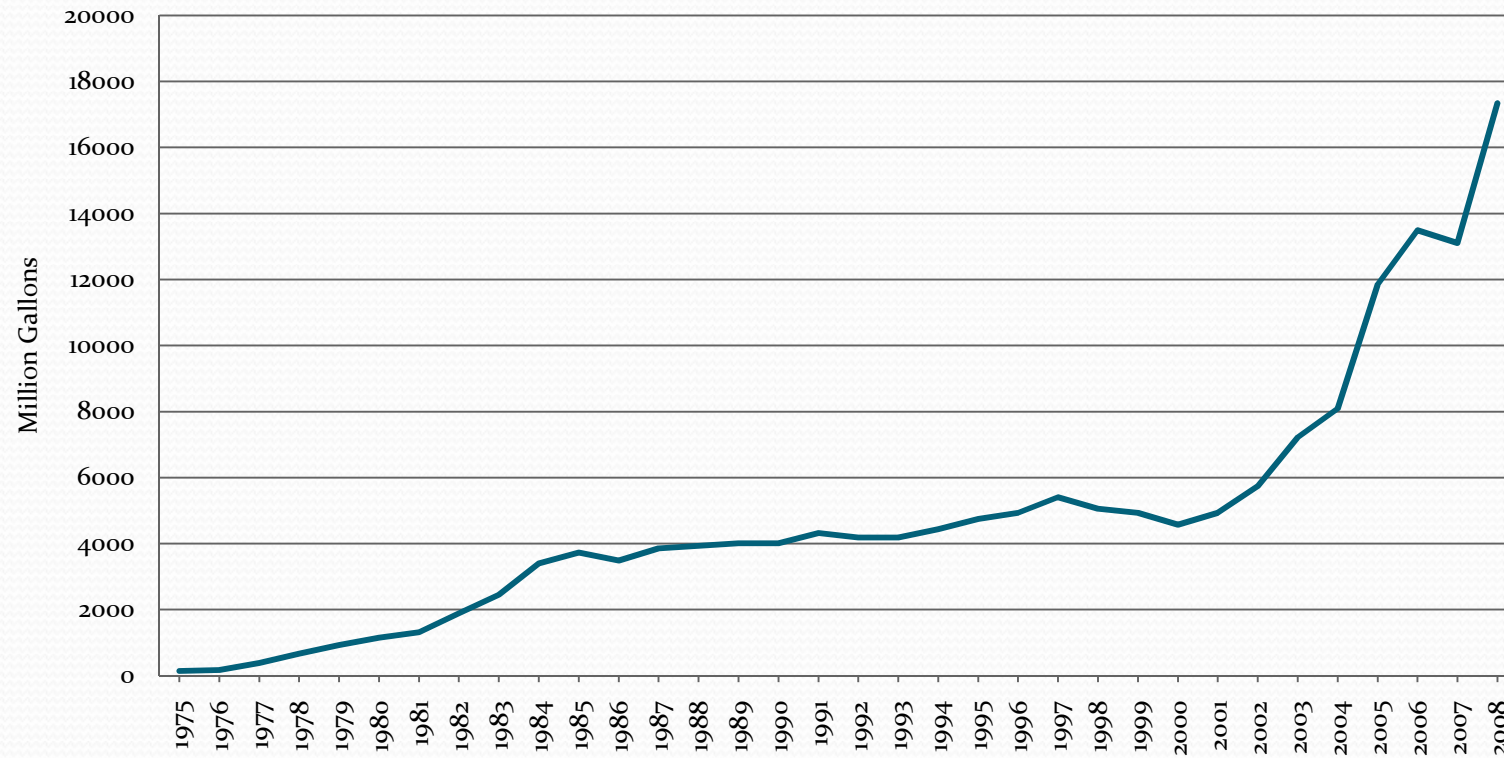


ITTS 2010 Conference
Freight in the Southeast: Moving our Region's Business
January 25 - 27, 2010
Memphis, TN, USA

Global Ethanol

- 17.3 Billion Gallons in 2008
 - 9 Billion by U.S.
- Ethanol – Blended to make E10 and E85
- Ethanol Suppliers – United States and Brazil – 88% of World Supply
- Feedstocks
 - Corn in United States
 - Sugar Cane in Brazil

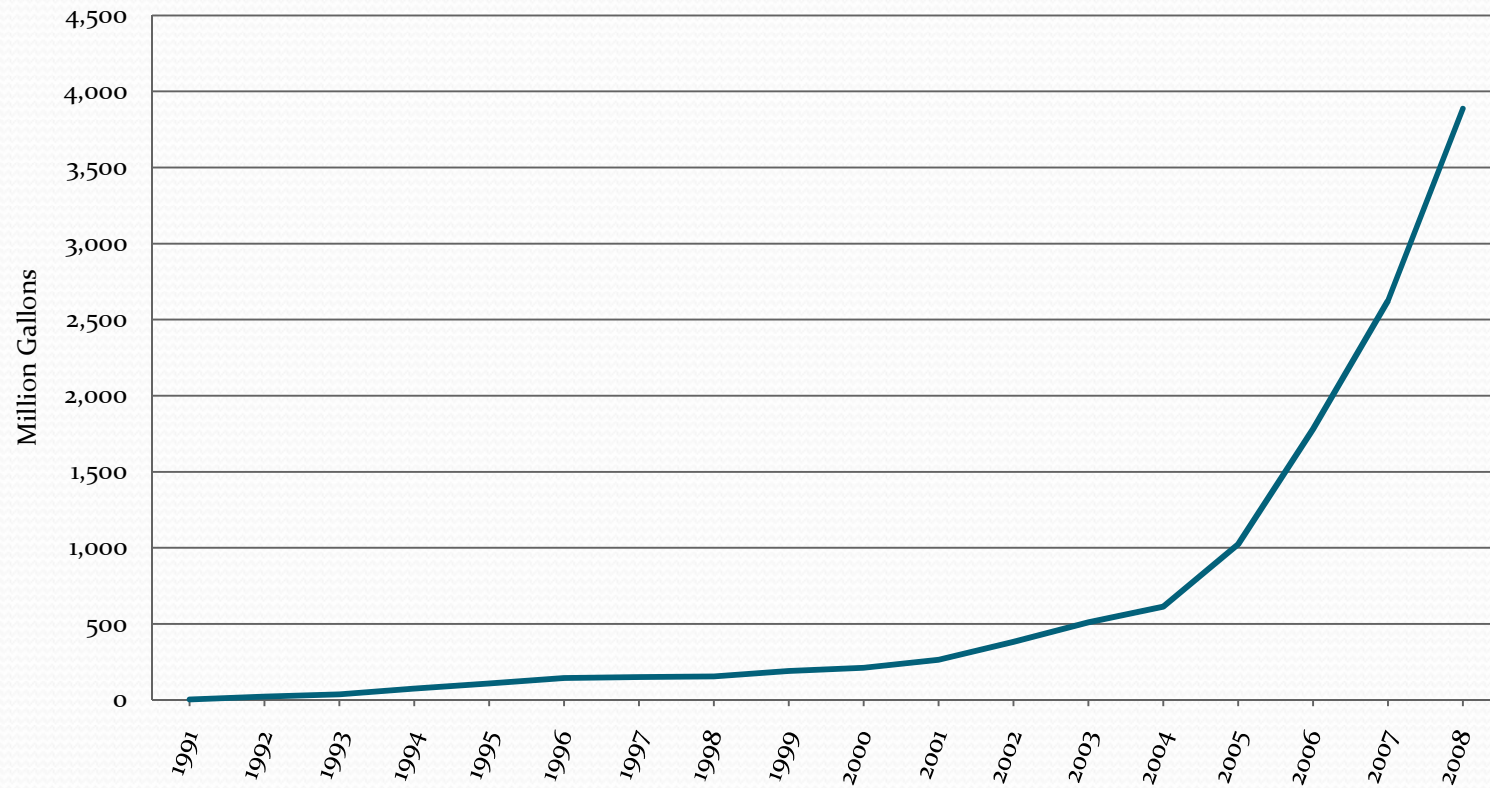
World Ethanol Production (1975-2008)



Global Biodiesel

- Biodiesel – 3.9 Billion Gallons in 2008
 - 700 Million by the U.S.
- Blended with Petroleum Diesel – 20% and Higher
- Biodiesel Suppliers – European Union, United States & Brazil – 90% of World Supply
- Feedstocks
 - Rapeseed and Sunflower Oil in EU
 - Soybean Oil and Waste Grease in US and Brazil

World Biodiesel Production (1975-2008)



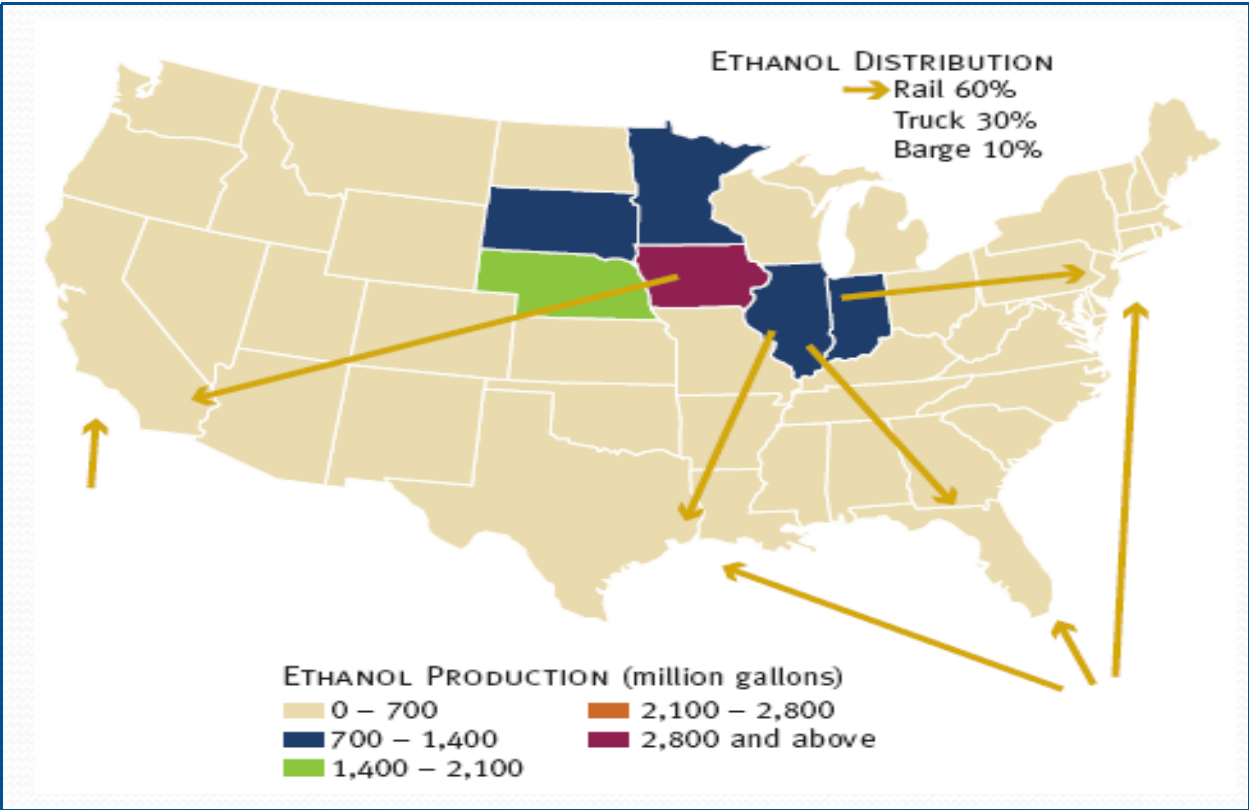
Factors Driving Growth in Biofuels

- Energy Independence & Environmental Concerns
- Public Policies that Support the Biofuels Industry
 - Mandatory Blending, Production Incentives, Tax Credits
- Recent Growth Driven by High Oil Prices and Relatively Cheap Corn

Federal Policies

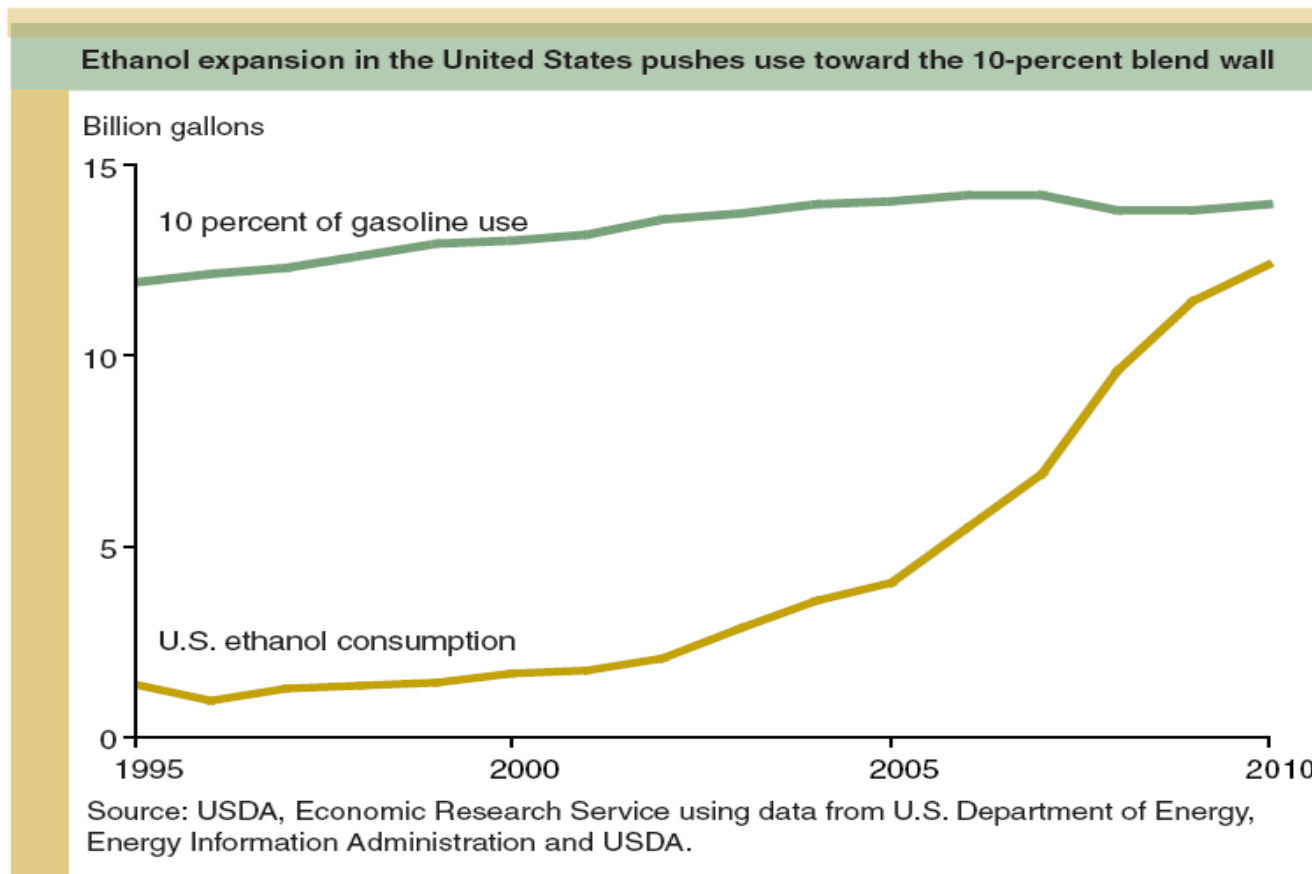
- 2004 - American Jobs Creation Act - Federal Tax Credits
- 2005 - Energy Policy Act – Renewable Fuels Standards & Elimination of MTBE as an Additive
- 2007 - Energy Independence and Security Act – 36 Billion Gal by 2022
- 2008 –The Emergency Economic Stabilization Act; The Energy Improvement and Extension Act; The Food, Conservation and Energy Act (The Farm Bill)

Current U.S. Ethanol Production and Distribution



Source: National Commission on Energy Policy. Biofuels Infrastructure Task Force. 2008

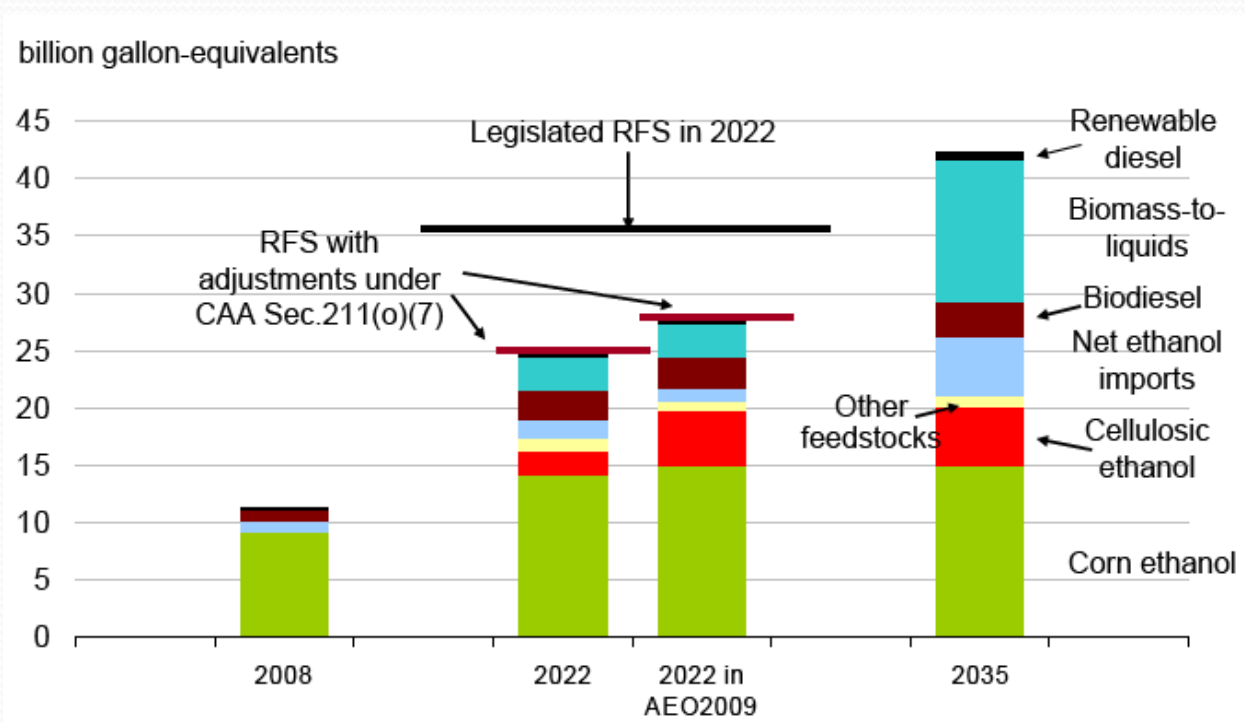
Ethanol Expansion Approaches E10 “Blend Wall”



Despite Rapid Growth in Recent Years, Growth in Biofuels is expected to Slow

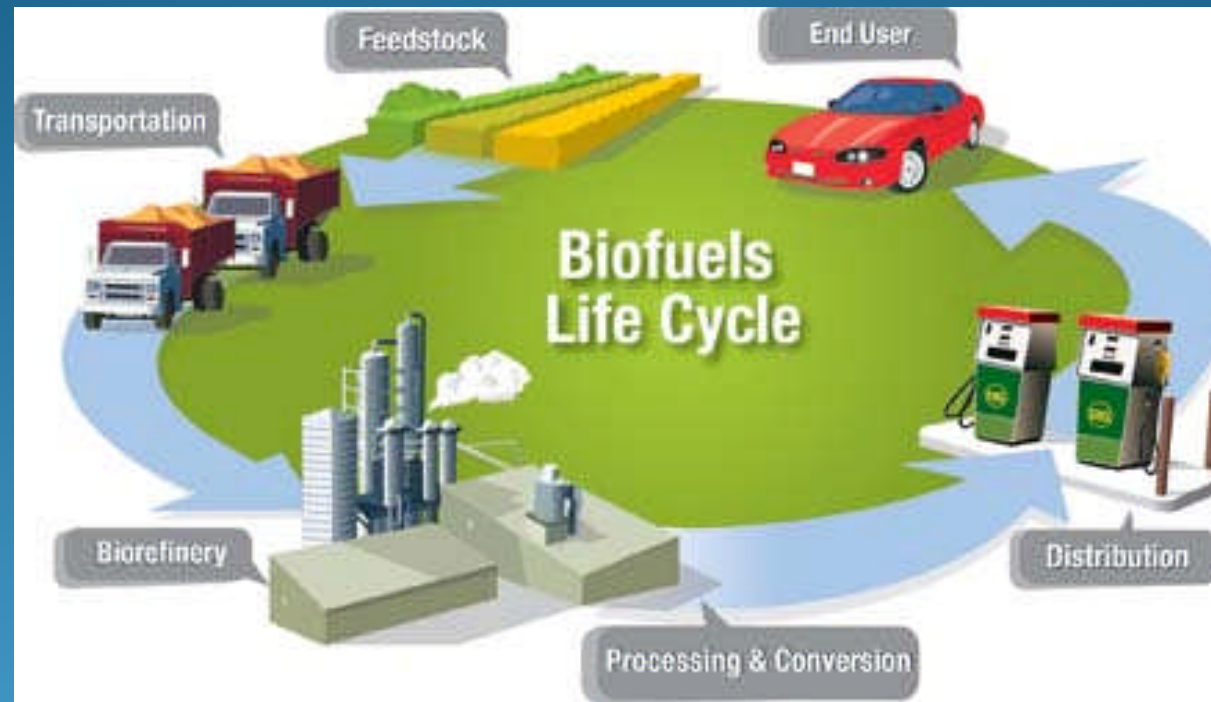
- Future Expansion Depends on ...
 - Overcoming challenges of cellulosic feedstocks
 - Expanded use of Ethanol and Biodiesel in Automobiles
 - Expansion of E85 Infrastructure

U.S. Biofuels Are Not Projected to Reach 36 Billion by 2022 – Cellulosic Challenges?



Source: Annual Energy Outlook, 2010

Economic Viability at Regional or State Level



Issues concerning technical and economic feasibility, political factors, capital investment and infrastructure, as well as other factors and challenges exist at each phase.

Implications for Transportation Industry

- Expansion of Cellulosic Ethanol and E85 Demand
 - Transportation and Storage of Feedstocks
 - Expansion of E85 Infrastructure and transportation of ethanol from major producing regions
 - Refitting/Constructing E85 Fueling Stations
 - Additional Demands on Rail, Truck and Barge

Thank You!

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