

Ethanol's Challenges

DTN-The Progressive Farmer Ag Summit 2014

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Overview

I. US Market Disposition for Ethanol and Gasoline

- I. Production Rates
- II. Blending Demand
- III. Gasoline Demand

II. US Gasoline Market

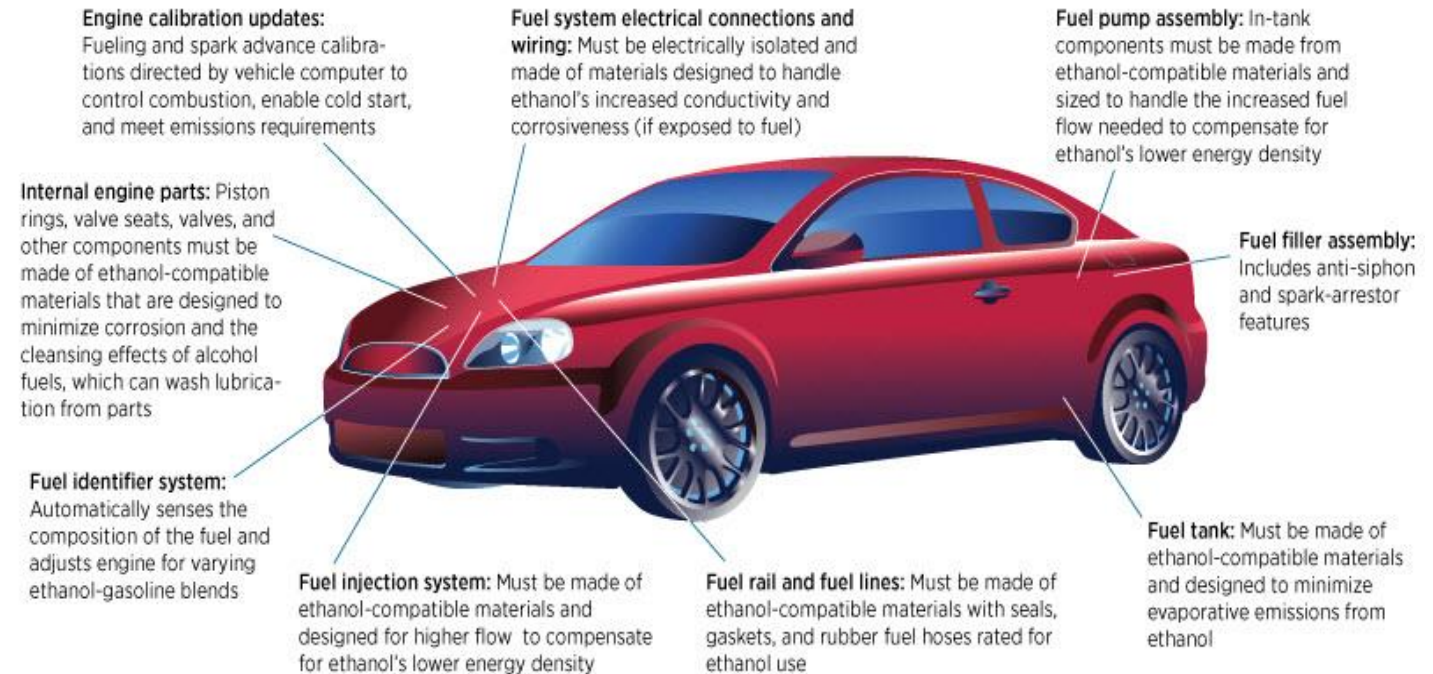
- I. Driving Trend
- II. Behavioral Changes
- III. Vehicle Efficiencies
- IV. Forward Demand

III. Higher Blends

- I. E15 Challenges
- II. E85 Opportunity

IV. Exports

Special Components of a Flex Fuel Vehicle

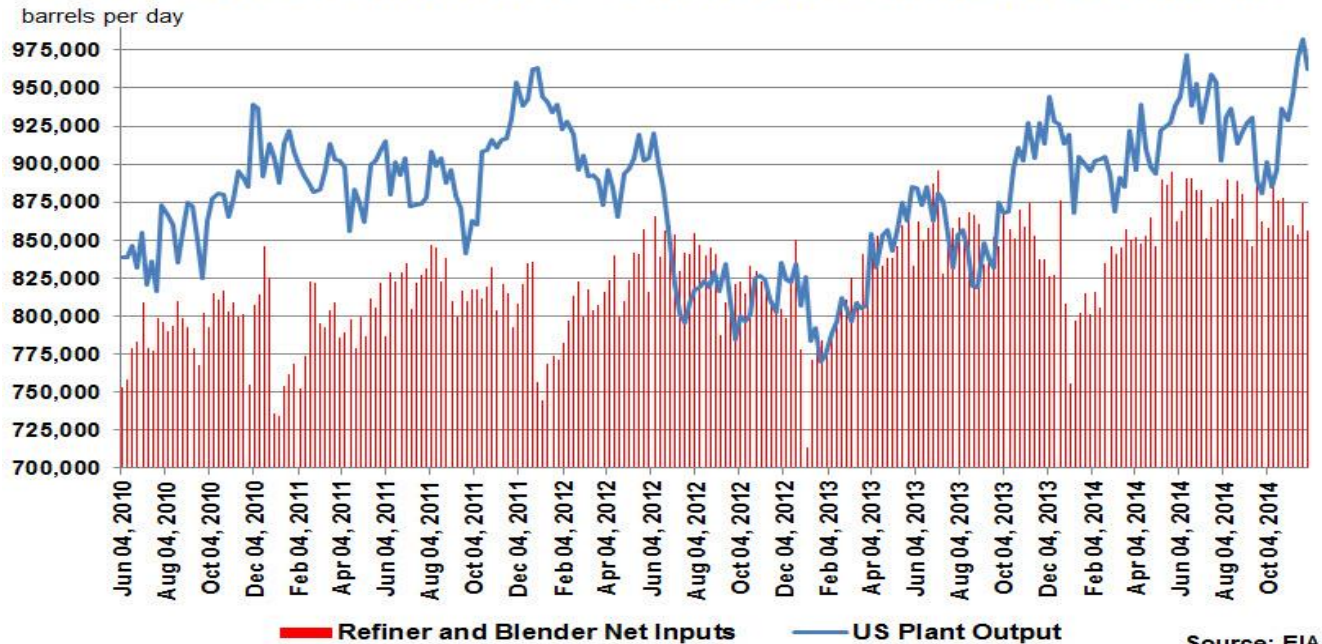


Graphic Sourced from DOE's Energy Efficiency & Renewable Energy

The Choppy Ethanol Market

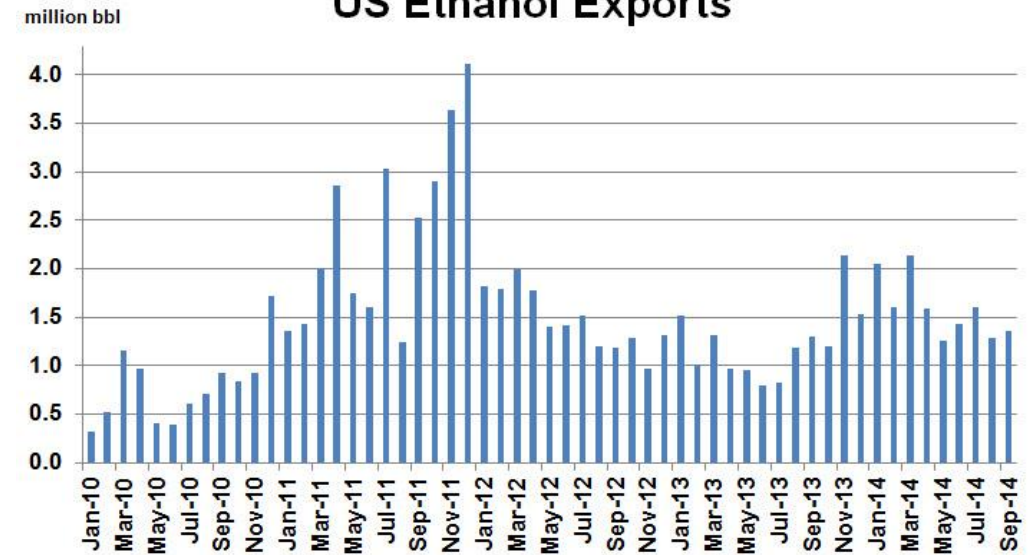
- I. Production at Record High
 - I. Low Corn Costs Offset Drop in Gasoline Prices
- II. Supply/Demand Disposition Still Tight
 - I. Logistical Challenges Persist
- III. Exports Set to Expand
 - I. Sensitive to Arbitrage

Domestic Ethanol Production and Blending Demand



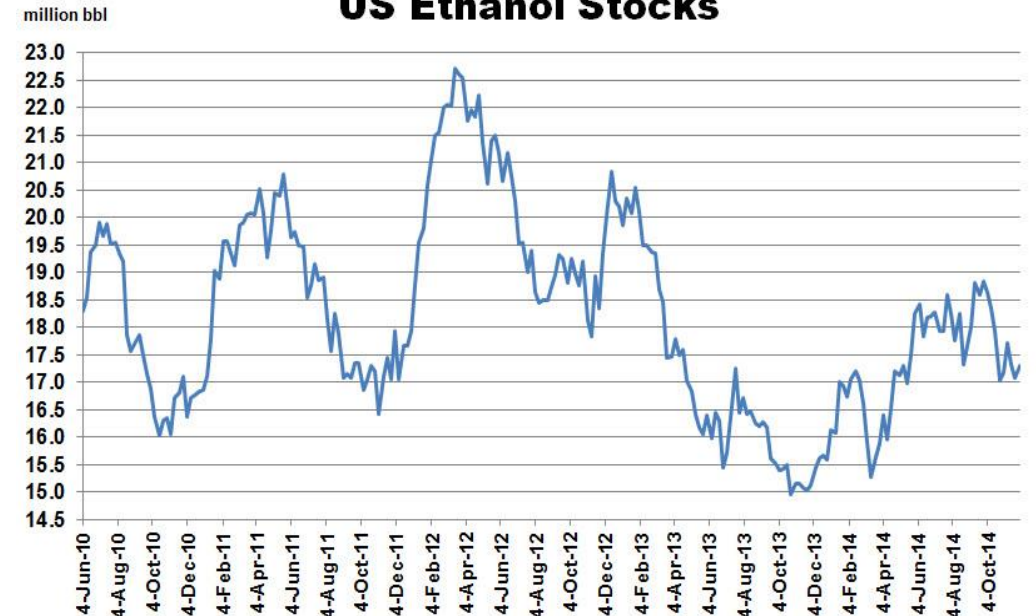
Source: EIA

US Ethanol Exports



Source: EIA

US Ethanol Stocks

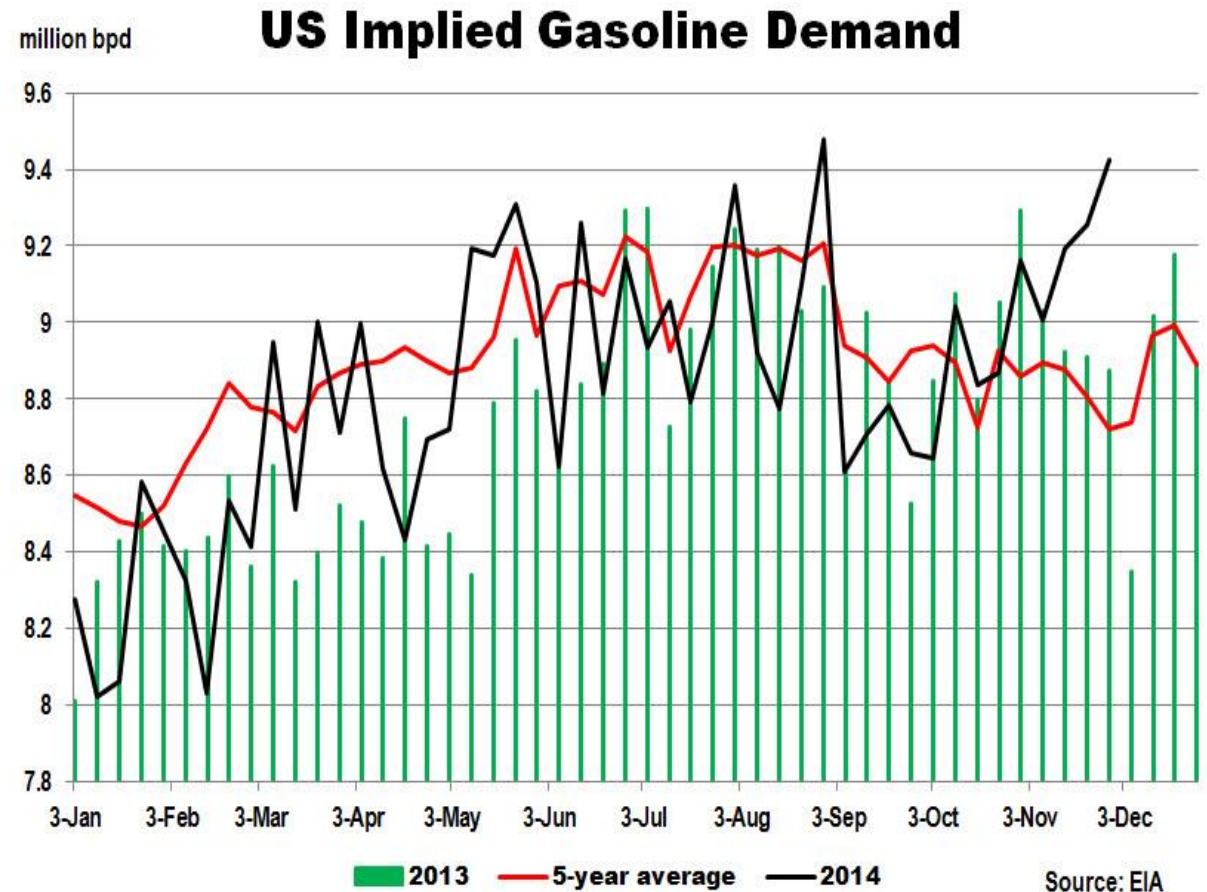
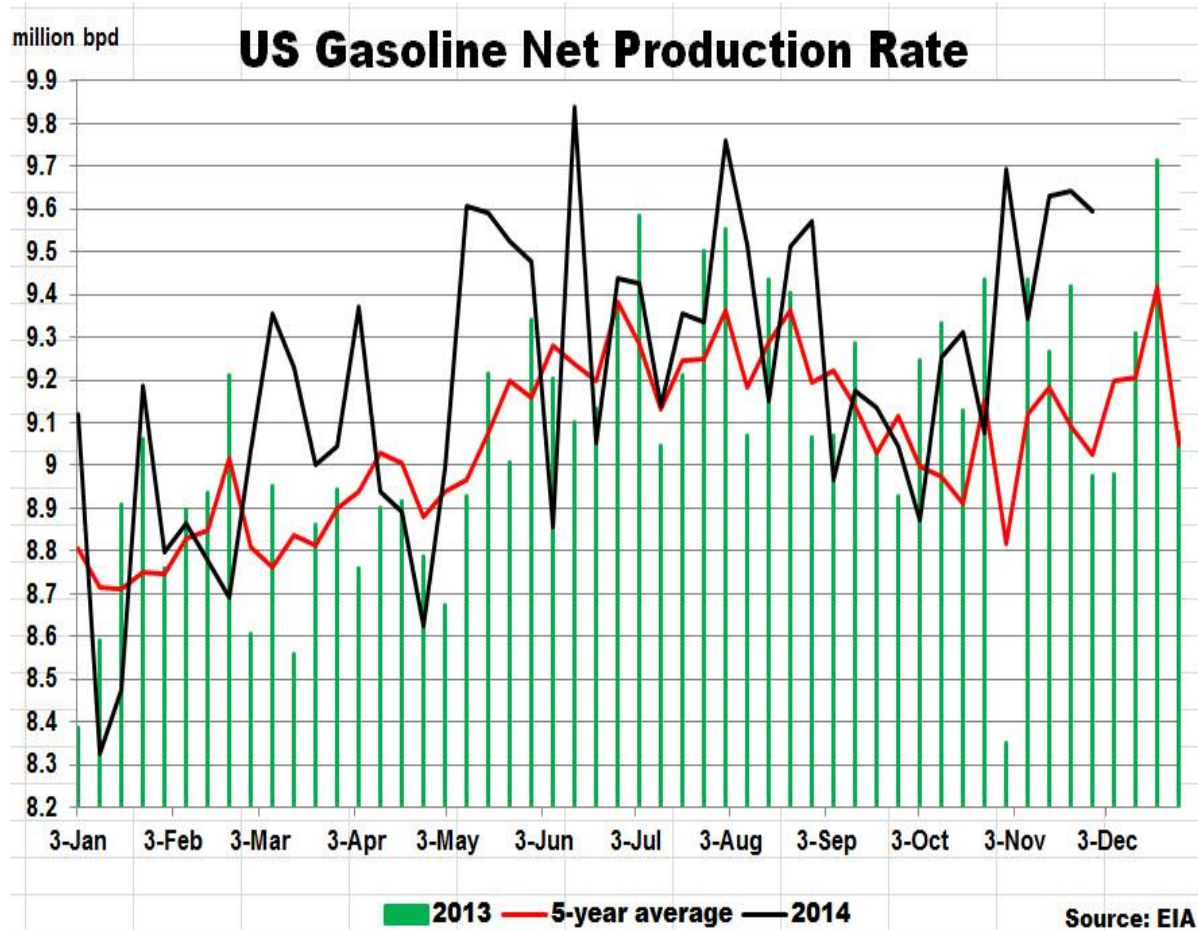


Source: EIA

US Refiners Producing More Gasoline amid Oil Boon

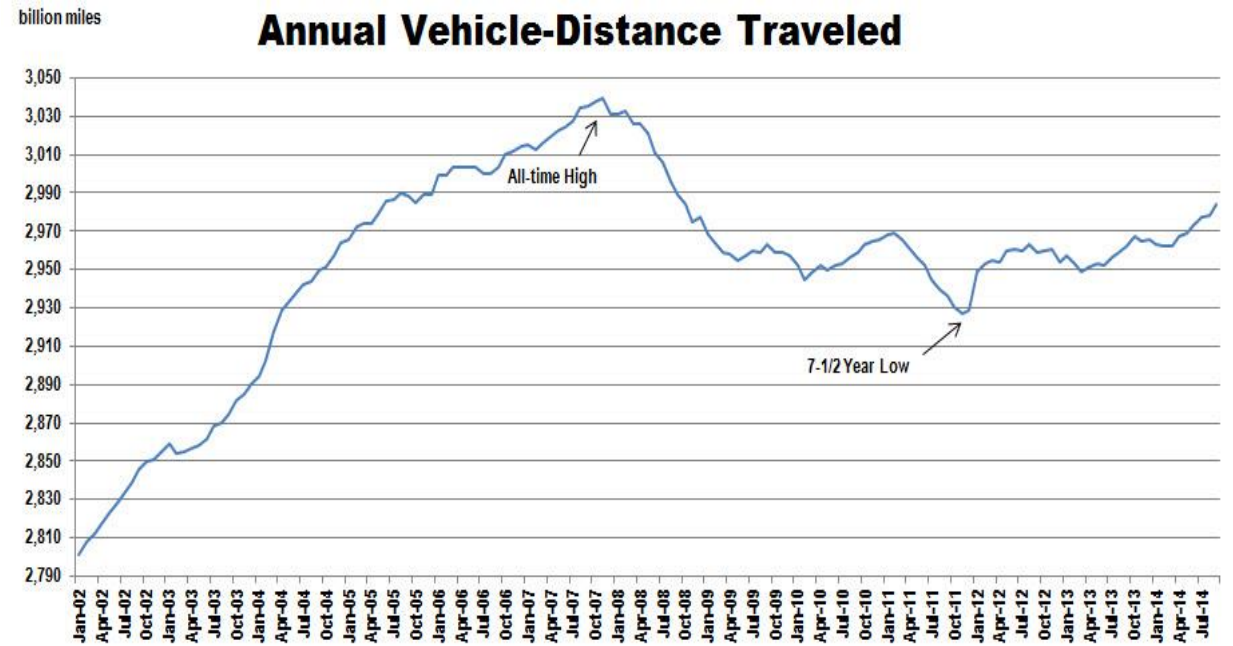
I. Lower Retail Gasoline Prices Spurring Increased Demand

I. Will this Trend Continue?

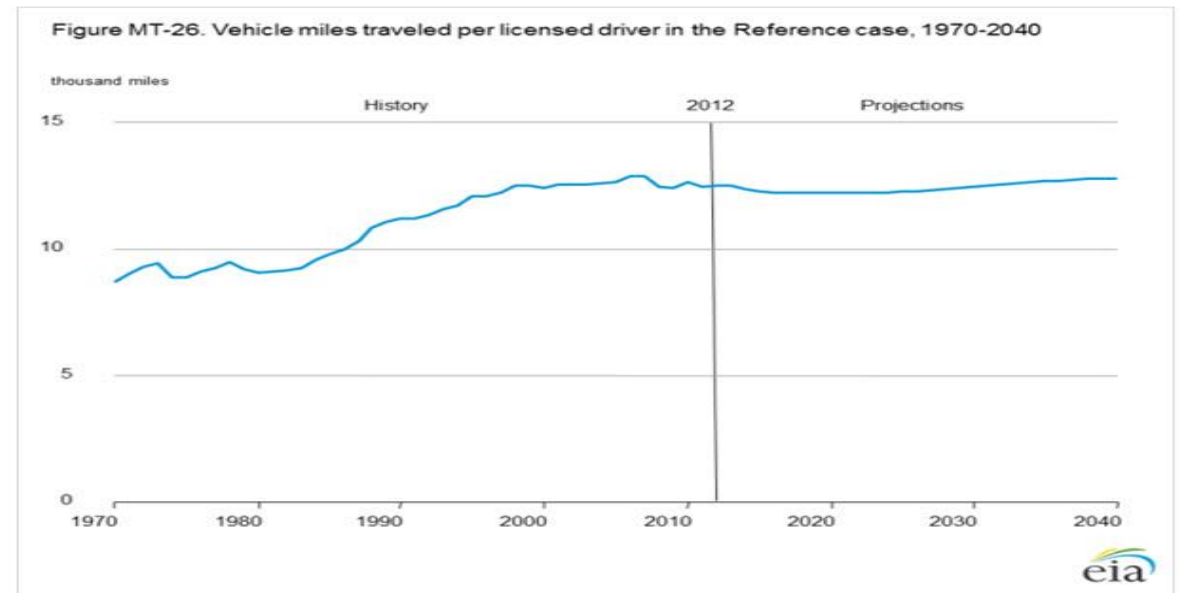


New Behavior, Attitude

- I. Consumer Price Sensitivity—Elasticity
 - I. Higher household expenditures on fuel costs
- II. Demographics Affect Driving Demand
 - I. Aging Baby Boomers Drive Less
 - I. Roughly 78M in 2010/56M in 2030
 - II. Millennials have Lukewarm Attitude for Driving
 - I. Roughly 79M in 2010/78M in 2030
 - II. Evidence in New Driving Licenses for 19 Year Olds per US Public Interest Research Group
 - I. 87% held license in 1983
 - II. 69% held license in 2011
- III. Personal Vehicle Travel has Declined
 - I. Less VMT for Commuting, Shopping, Recreation cites Travel Behavior Analyst Nancy McGuckin
- IV. Possible US Reached Point of Vehicle Saturation
 - I. Previous “Wealth Effect” Driving Higher Demand Diminished

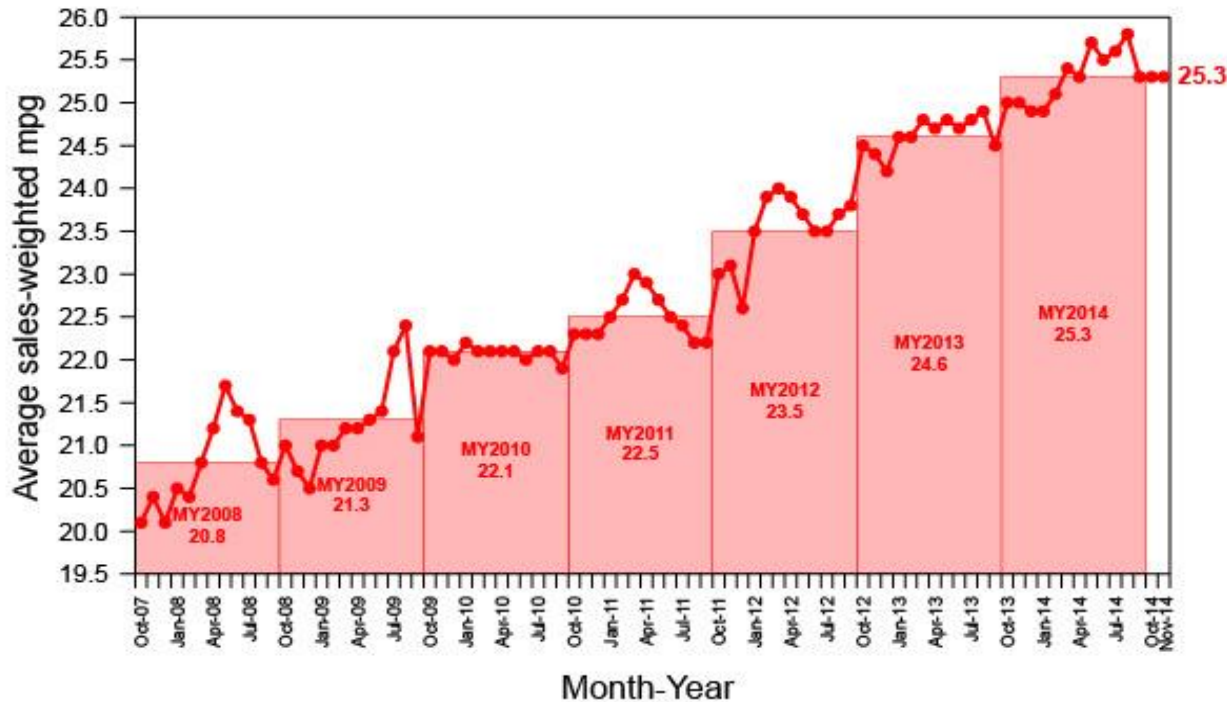


Source: Federal Highway Administration

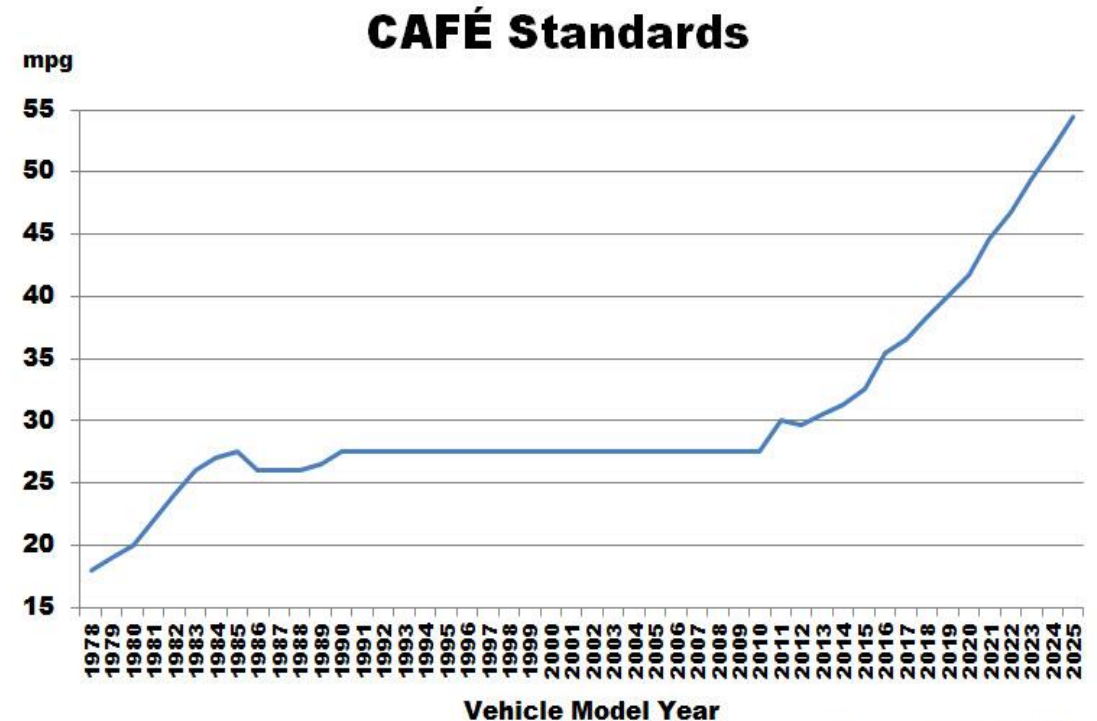


Vehicle Efficiencies Biggest Factor in Lower Demand

- I. Researchers Find Vehicle Fuel Economy for New LDV Sales Up 5.2 mpg since October 2007
- II. US Light Duty Vehicle Fleet in 2014 is Old at 11.4 Years per IHS
 - I. New Vehicle Sales Growing Robustly
 - II. Largest Gain since 2003 in November—Tops 17M
- III. US Policy Guarantees Efficiency Trend will Continue



Michael Sivak and Brandon Schoettle
University of Michigan Transportation Research Institute

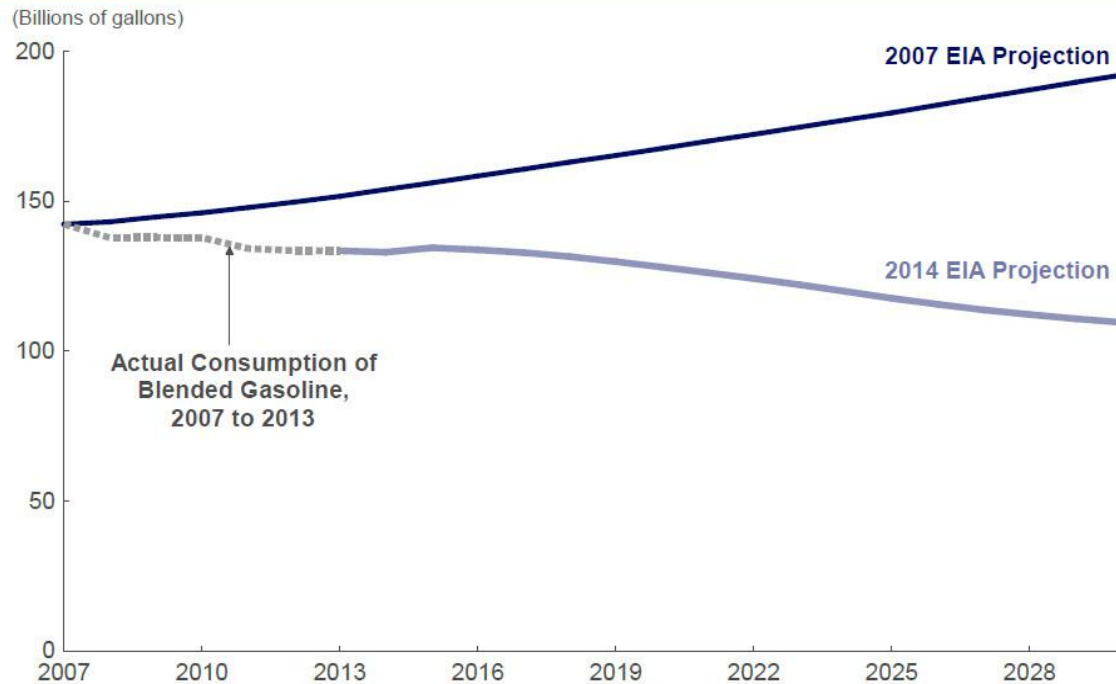


Source: EPA, NHTSA

Durability of RFS amid Downgraded Assumptions

- I. Blend Wall Constraints
- II. Limited Sales for Higher Blends
- III. New Era of Low Oil

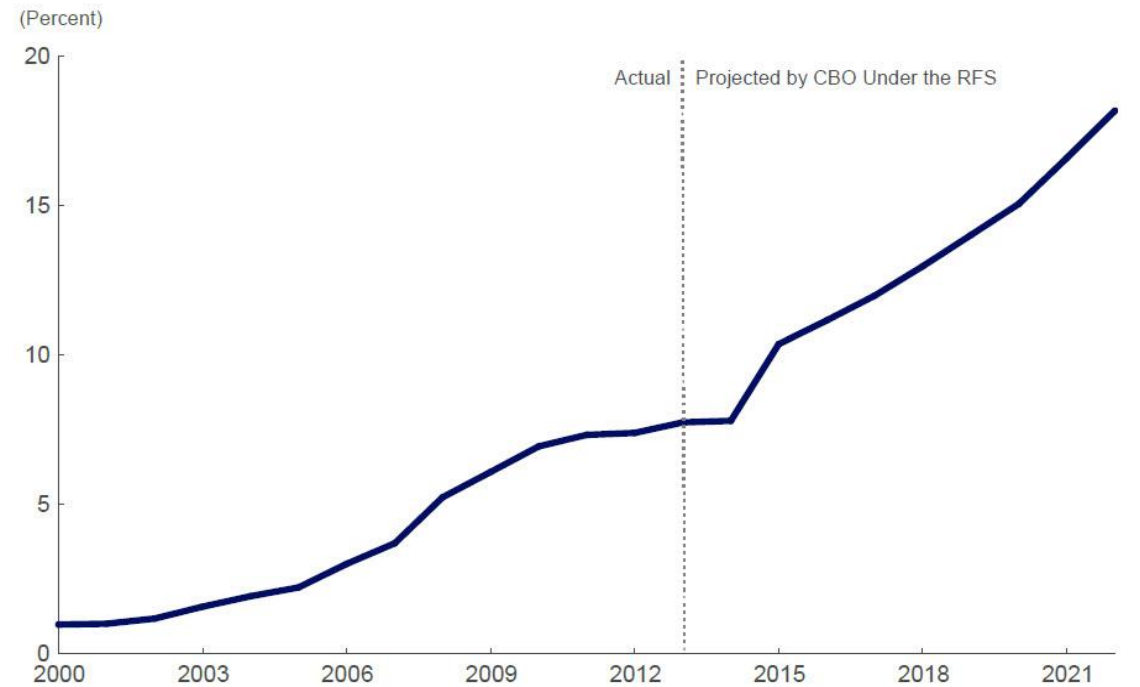
Changing Expectations About the Future Consumption of Blended Gasoline



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Renewable Fuels as a Share of the Total U.S. Supply of Transportation Fuels

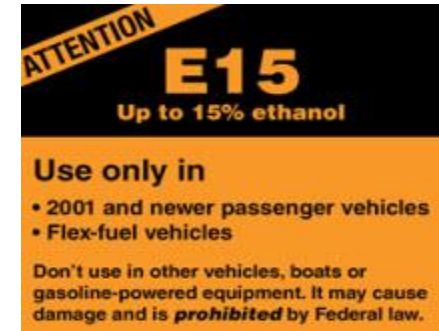


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*Slides from October presentation by CBO on issues with RFS

Many Obstacles for Wide Penetration of E15

- I. EPA Partial Waiver Allowing E15 for 2001 or Newer Vehicles Covers 60% of US Fleet
 - I. Only Two-thirds of New Vehicle Sales Allow for E15 Fueling
- II. Many States Prohibit Higher Ethanol Blends Except for Flex-fuel Vehicles
 - I. Regulations and Fuel Specifications Vary among States
 - II. Florida Recently Allowed E15 Sales after Plus Two Years of Working with State
- III. E15 Does Not Have 1 Pound RVP Waiver Like E10
 - I. Restricts E15 Sales in Summer when RVP is most Stringent
- IV. No Retail Stations Offered E15 Until mid-2012
 - I. Roughly 100 Stations in 15 States out of More than 150,000 Now Offer E15
- V. Liability Concerns for Retailers over Misfueling for Vehicles Built before 2012
 - I. Automobile, Marketers Associations Discourage Retailers from Selling E15
- VI. Retailers would Need to Invest in New Tanks, Pumps
 - I. American Petroleum Institute Pegs per Station Costs at \$80,000



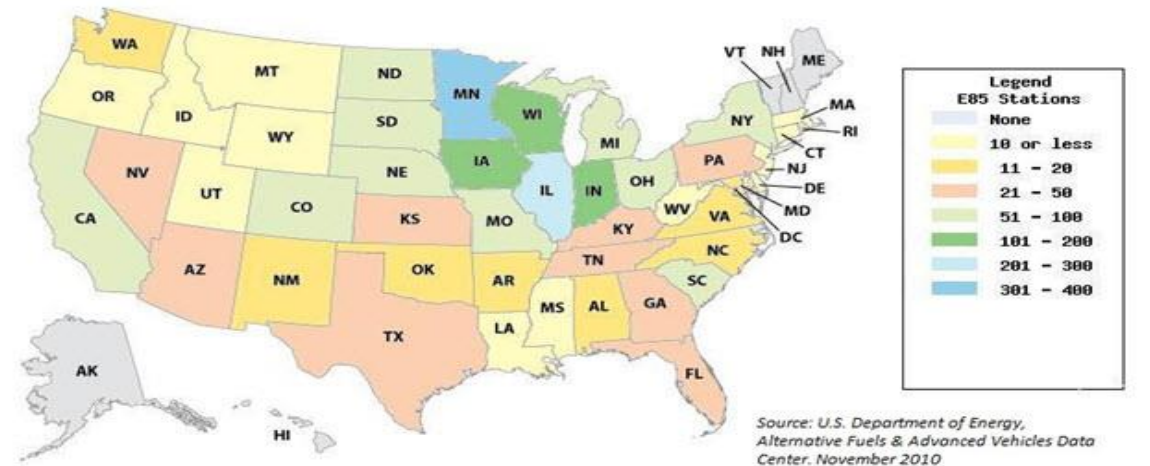
Developing E85 Market would Boost Ethanol Sales

I. Plus 17.4M Flex-fuel Vehicles on US Roads

- I. Accounted for 6% of LDVs
- II. EIA Forecasts FFVs at 11% of LDV Sales in 2040
- III. EIA Projects FFV Sales to Flat Line after 2019 when Incentives Expire

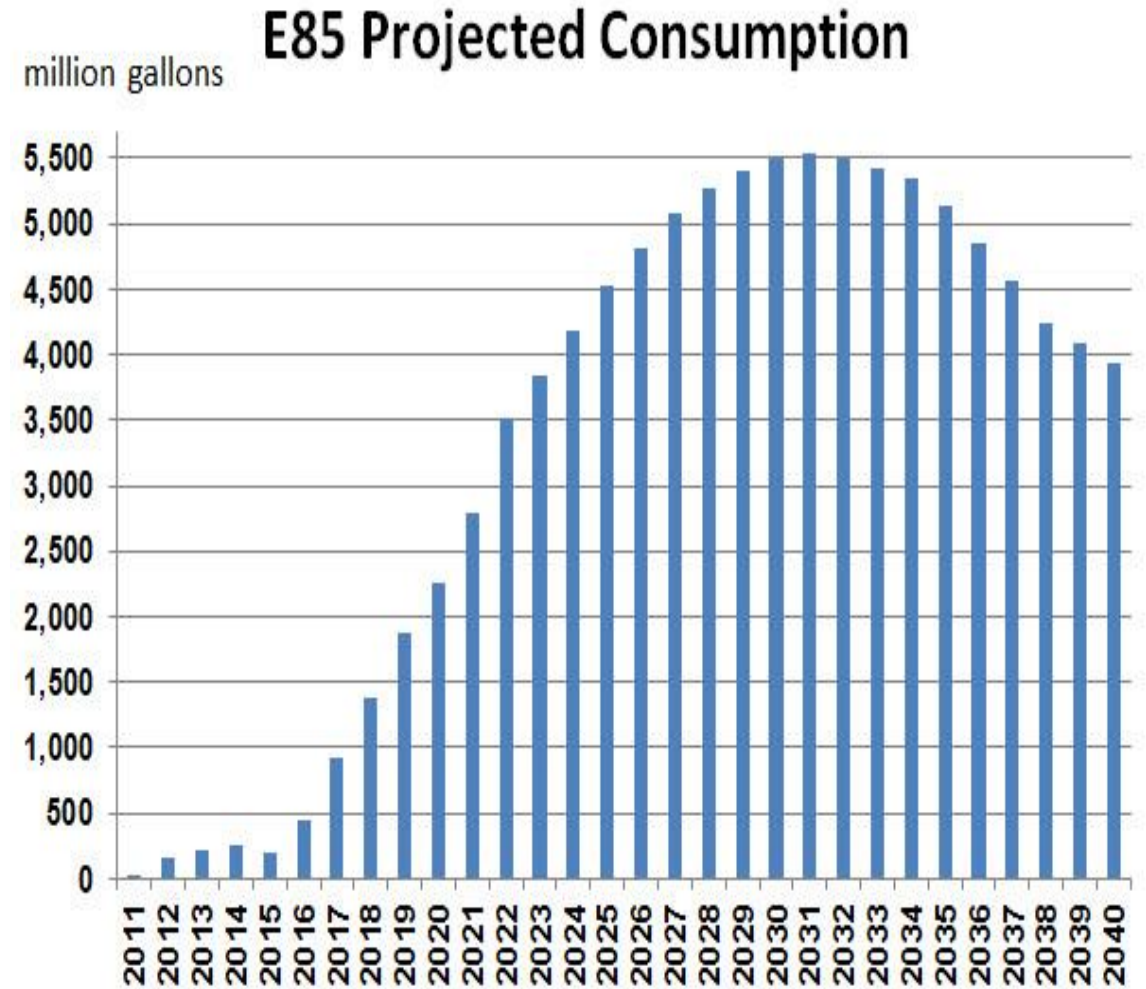
II. As of June, 2,685 Stations Sold E85 per Alternative Fuels Data Center

- I. Equates to 2.2% of All Fueling Stations
- II. National Petroleum News Reports 152,900 Fueling Stations in 2013



EIA Estimates 780% Surge in E85 Demand from 2014 to 2020

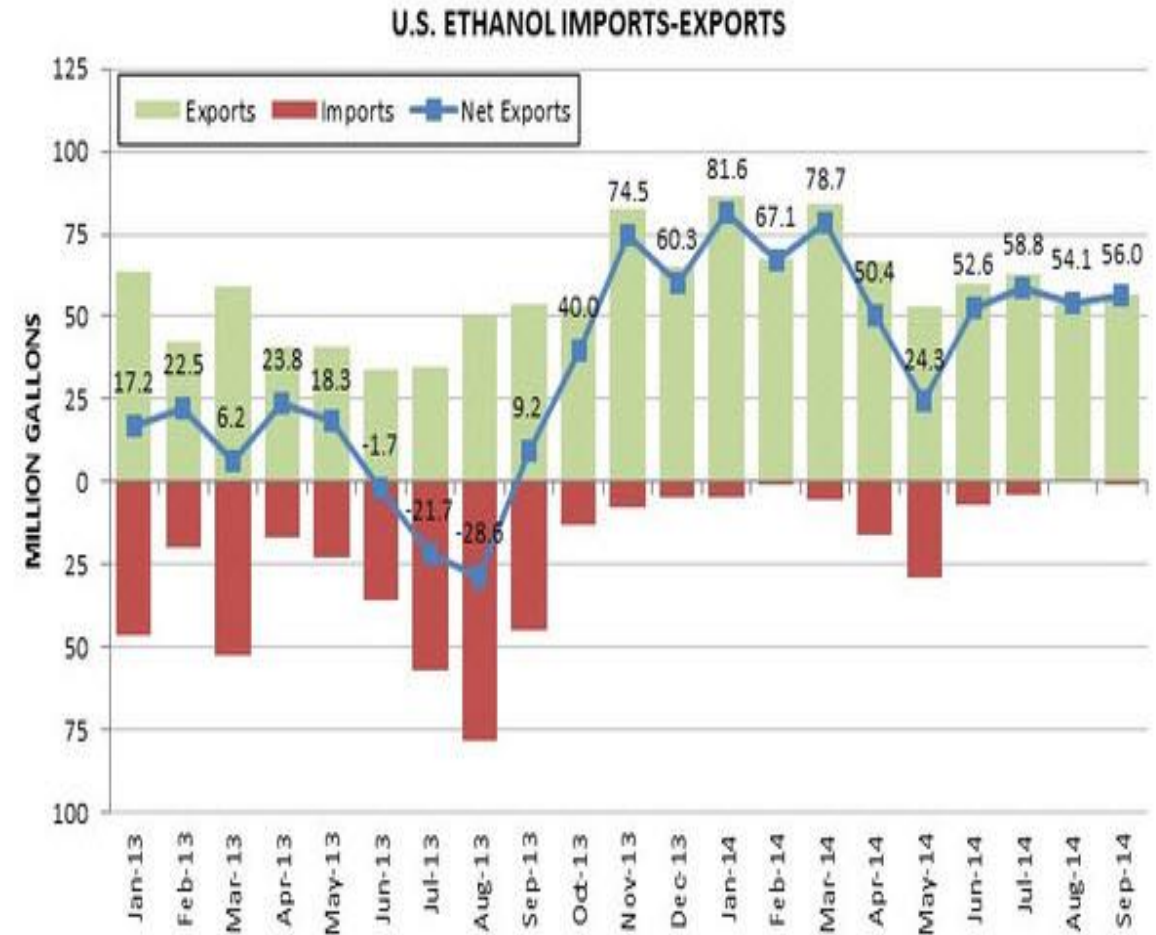
- I. E85 seen as a Way to Bypass Blend Wall
 - I. E85 Sales would need to Accelerate
 - II. CBO Notes at Current Pace, would Reach 1B Gallons out of Projected 125B Gallons of Blended Gasoline in 2022
- II. Expansion of Retail Outlets Selling E85 is Critical
- III. So is Retail Pricing Strategy
 - I. E85 has 22.8% Less Energy Content than Gasoline
 - I. More Trips by Consumers to Stations for Refueling
 - II. Fuels Institute Analysis of E85 Released in November shows Pricing at Discount to Gasoline Essential to Move Gallons
 - III. Consumers make Decision to Purchase E85 over E10 based on Economics, not Loyalty to Higher Ethanol Blend



Source: EIA's AEO 2014

Exports Offer US Producers Growth Opportunities

- I. US Now a Net Ethanol Exporter
- II. Top Export Markets Include:
 - I. Canada
 - II. Mexico
 - III. Brazil
 - IV. United Arab Emirates
 - V. Philippines
 - VI. Europe
- III. Most Waterborne Exports from US Gulf
 - I. Houston
 - II. Texas City
 - III. New Orleans
- IV. Ethanol also Exported from New York Harbor



Sources: U.S. Department of Commerce, U.S. Census Bureau, Foreign Trade Statistics

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