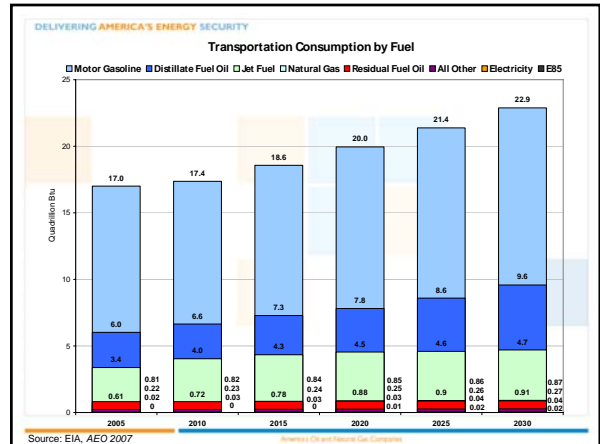
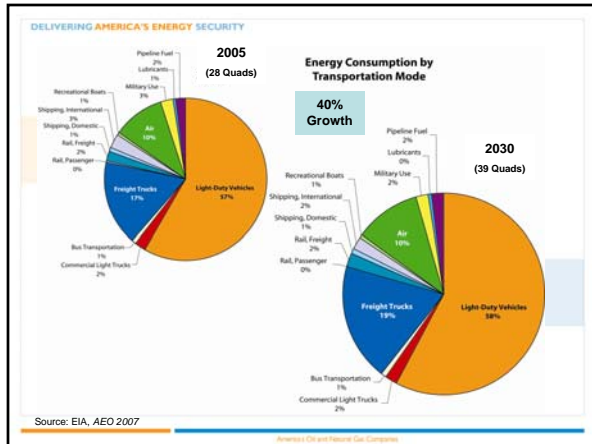
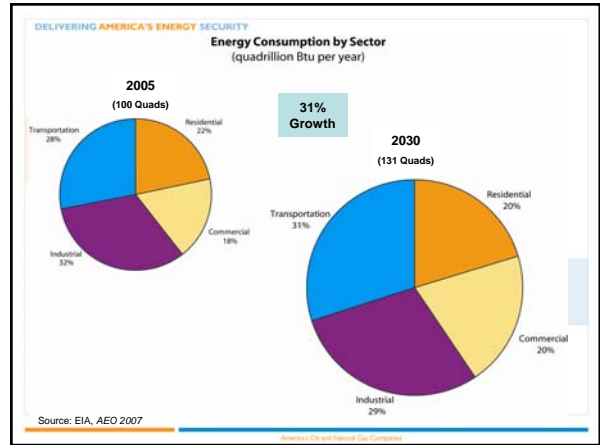
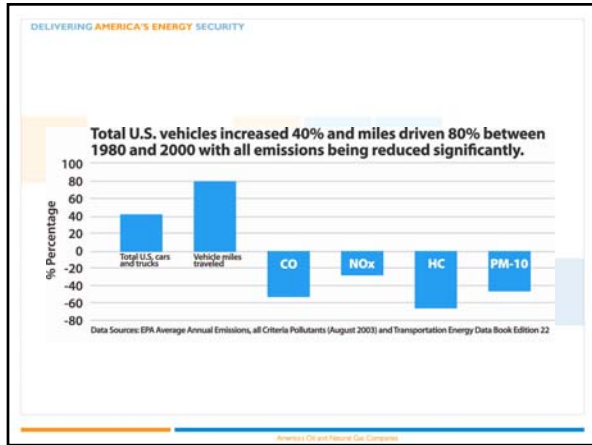
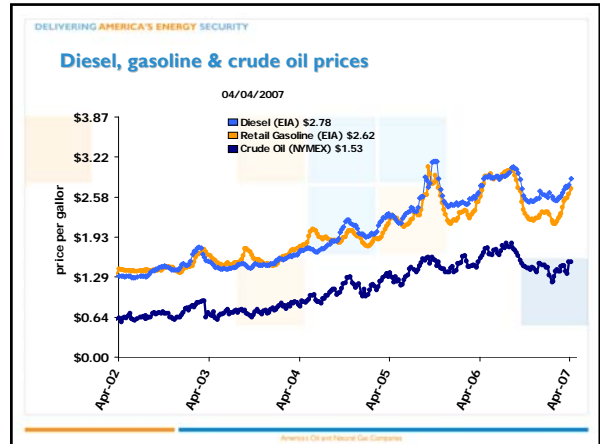


DELIVERING AMERICA'S ENERGY SECURITY

Fuel Choices: A Petroleum Industry Perspective

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AMERICAN OIL AND NATURAL GAS COMPANIES



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Ethanol Overview

- Oil companies are the leading user of ethanol
 - The industry has invested significantly to meet and exceed the existing federal requirement for the RFS.
- Under the terms of the Energy Policy Act of 2005 (EPACT05) gasoline producers will continue to increase the amount of renewables.
 - By 2012, at least 7.5 billion gallons of biofuels per year will be used.
- Flexibility in the RFS program enacted last year by Congress will help ease ethanol and other biofuels integration soonest into the nation's gasoline pool.

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The limits of ethanol

If all US corn acreage was used for ethanol

U.S. gasoline supply

15%

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U.S. Corn Use 2006-2007

Category	Percentage
Direct Feed & Residual*	51%
Food, Seed, & Industrial	30%
Fuel Alcohol	19%
Exports	19%
Beef	12%
Poultry	19%
Pork	14%
Milk	5%
High Fructose Corn Syrup	5%
Glucose & Dextrose	2%
Starch	2%
Beverage Alcohol	1%
Cereals and Other	2%

*Distillers Grain is in addition to this figure.

Source: USDA

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E85 Overview

- Products offered for sale must satisfy our customers expectations.
- Ethanol use may be limited until significant technology breakthroughs permit production from cellulosic biomass.
- E85 is not a viable use of ethanol until cellulosic ethanol is economically viable.
- Market forces and consumer preferences should determine where and how ethanol is consumed.

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Well-to-Wheels

Technology	Fuel Cost (cents per mile, ex. tax)	g CO ₂ /mile	Status
Today's Gasoline ICE	~10	~500	Commercially Available Today
Diesel ICE	~5	~450	Commercially Available Today
Gasoline Hybrid	~10	~400	Commercially Available Today
Gasoline Fuel Cell	~10	~350	Emerging Technologies
Diesel Hybrid	~5	~300	Commercially Available Today
Fuel Cell-H ₂ from Natural Gas Various Methods	~15	~350	Emerging Technologies
Fuel Cell-H ₂ from Retail Electrolysis U.S. Mix Electricity	~25	~700	Emerging Technologies
Using Renewable and Nuclear Sources of Electricity will have near zero CO ₂ ; Current Cost is High	~25	~700	Emerging Technologies

Sources: Argonne National Labs, GM, BP, Shell, ExxonMobil, SFA Pacific, EIA

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Key Considerations

- Consumer acceptance is key to success of any vehicular system, and industry competition is the fastest means of bringing forward the next generation of transportation options.
- Conversion to advanced vehicles and fuels likely to be evolutionary rather than revolutionary
- Efficiency and emission comparisons of new fuels and vehicles must be developed with a full understanding of the complete economic, environmental and social consequences of any choice.
- The complete safety, health and environmental consequences of any new fuel and vehicle system must be carefully addressed.
- A cooperative approach among stakeholders will speed the transition to future vehicles and fuels.

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