

Alternative Fuels Market and Policy Trends



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**National Conference of State
Legislators (NCSL) Webinar on
Alternative Fuels**

June 21, 2013

NREL/PR-5400-59328

National Renewable Energy Laboratory

Only national laboratory dedicated solely to energy efficiency and renewable energy

- Leading clean-energy innovation for 35 years
- About 1,700 employees with world-class facilities
- Campus is a living model of sustainable energy
- Owned by the Department of Energy
- Operated by the Alliance for Sustainable Energy



Alternative Fuel Market and Policy Trends

Synopsis

- Market Overview and Trends
- Market Barriers and State Policies

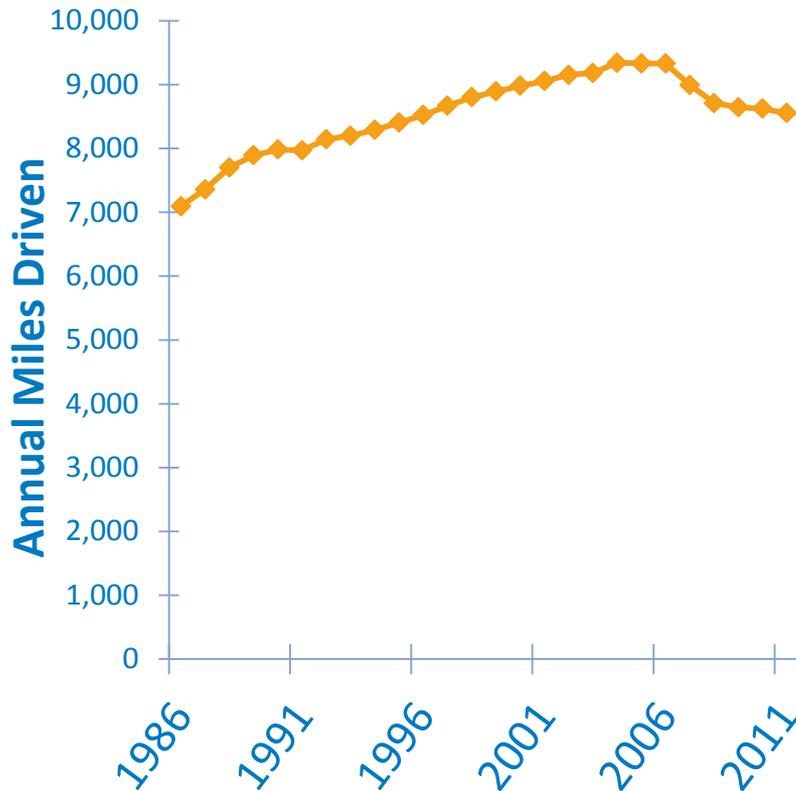
Key Points

- Market Forces and Policies are Increasing Opportunities for Alternative Fuels
- There is No One Size Fits All, Catch All, Silver Bullet to Do it All
- States Play a Critical Role in the Alternative Fuel Market and are Taking a Leading Role

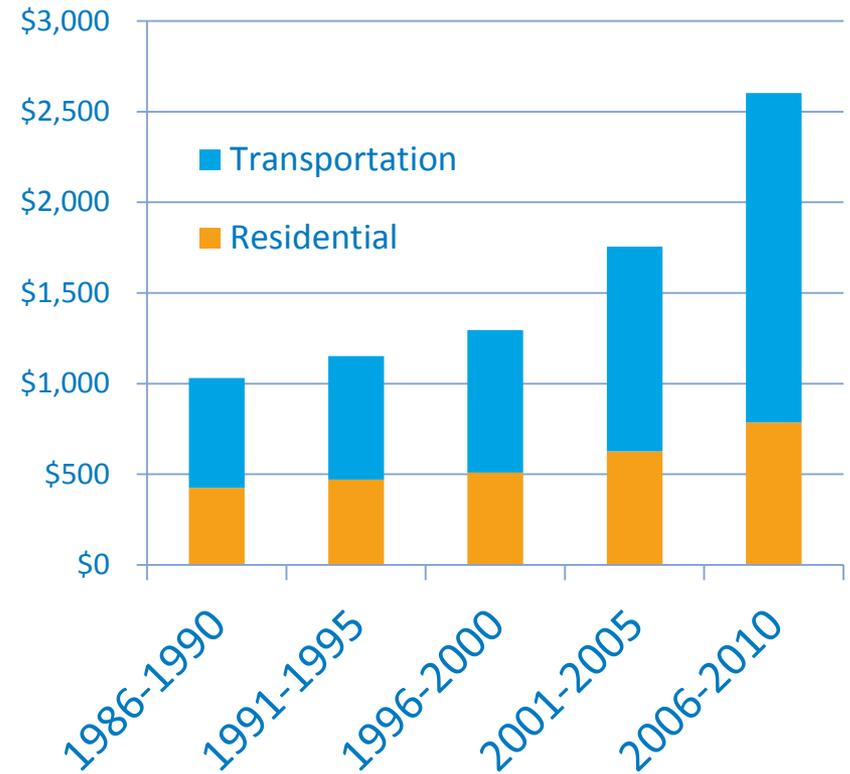


People are Driving Less, but Spending More to Do So

Average Annual Vehicle Miles Traveled



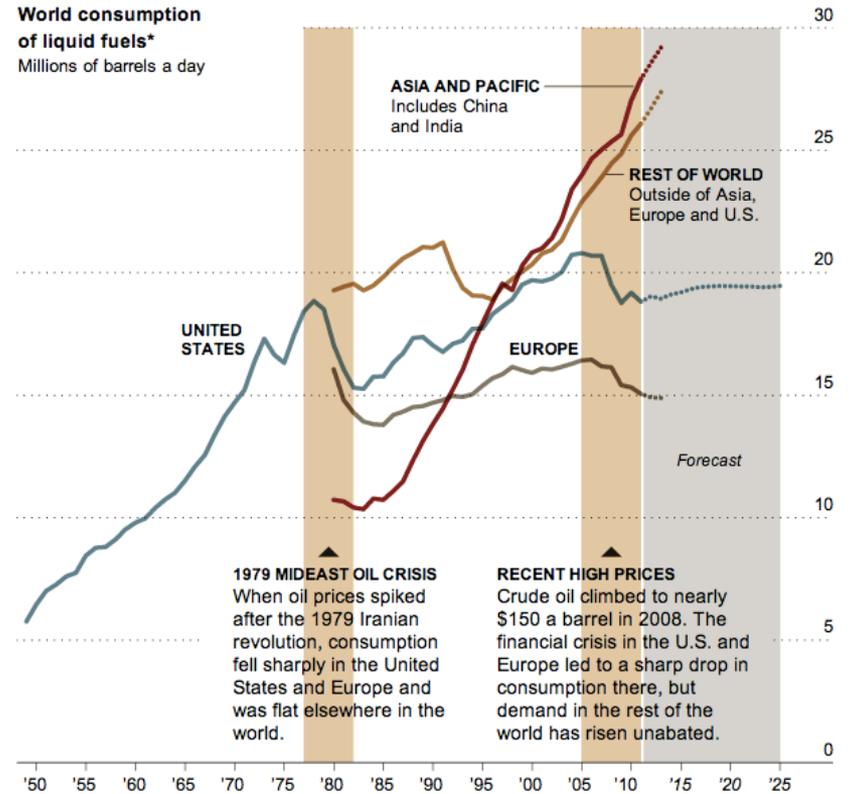
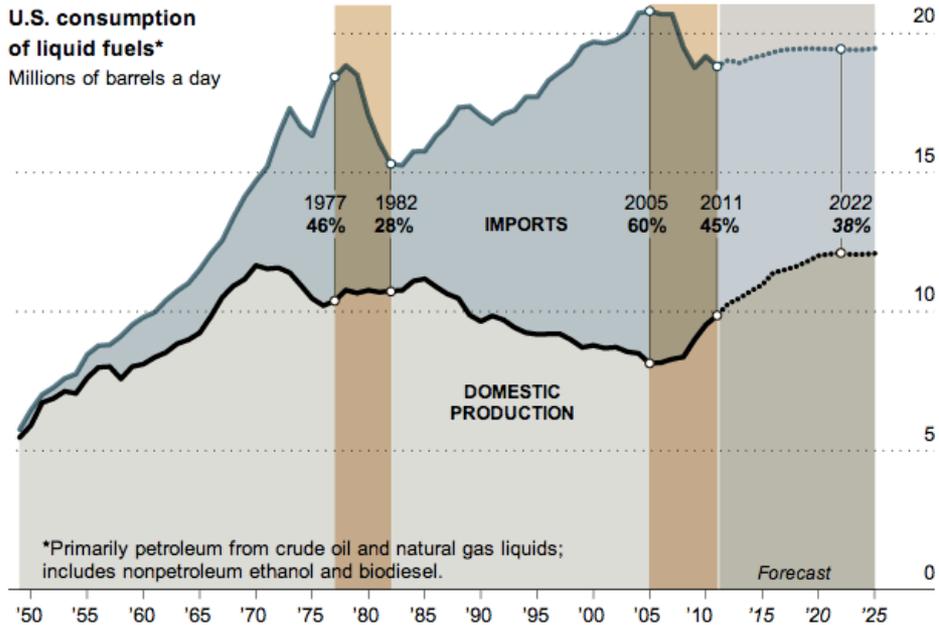
Average Per Capita Annual Energy Expenditures



Source: U.S. Energy Information Administration and U.S. DOE Alternative Fuels Data Center

Newly Accessed Oil Supplies are Changing the Conversation

....kind of



New York Times (3/22/12)

Reduced Dependence on Foreign Oil
Decreasing Consumption
Possibility of Being Net Exporter of Petroleum

Market Growth Being Driven by Other Countries
Global Refining Capacity is Limited
Other Forces are Driving Us Away From Petroleum

We are Still Dependent on a Single Fuel

Annual U.S. Fuel Consumption

All Transportation

~93% comes from petroleum
4.9 Billion Barrels of Oil Annually

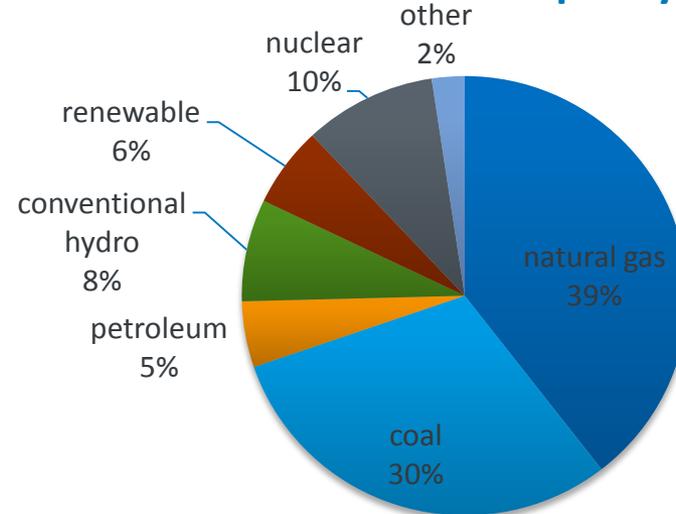
Light Duty Market

3.1 Billion Barrels of Oil Annually
63% of total petroleum use

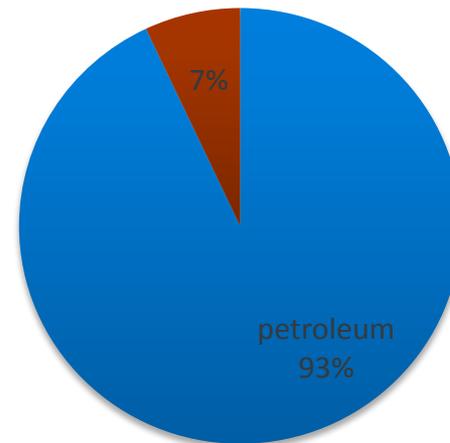
Heavy Duty Market

1.1 Billion Barrels of Oil Annually
22% of total petroleum use

Electric Generation Capacity (2011)



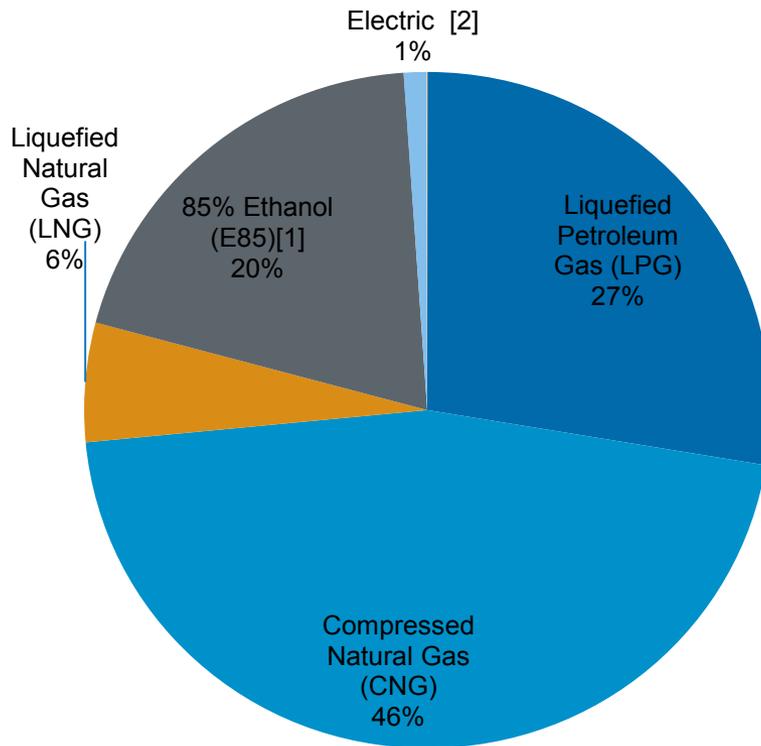
Transportation Fuels Portfolio (2011)



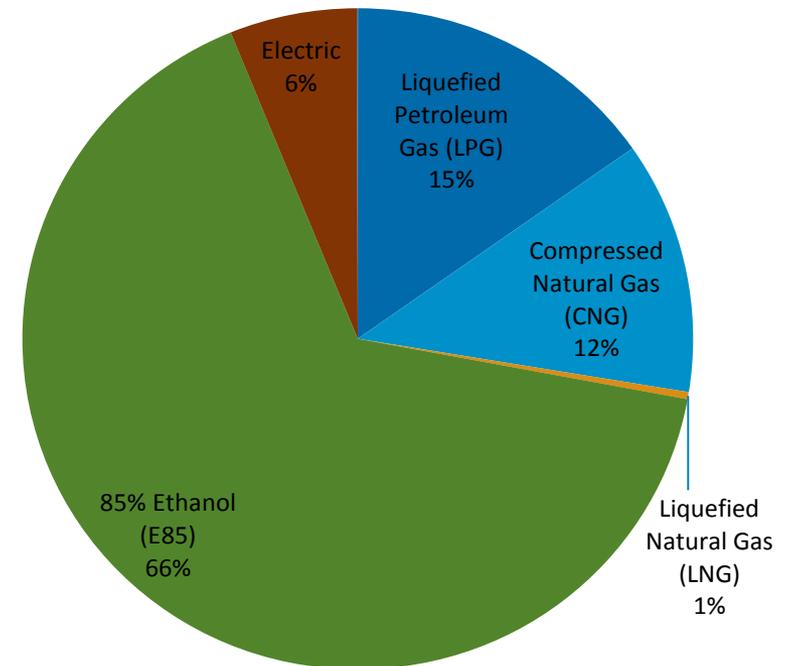
Source: U.S. Energy Information Administration

Alternative Fuel Consumption Does not Correlate with Vehicle Availability

Estimated Consumption of Alternative Fuel by AFVs in the U.S. (2010)



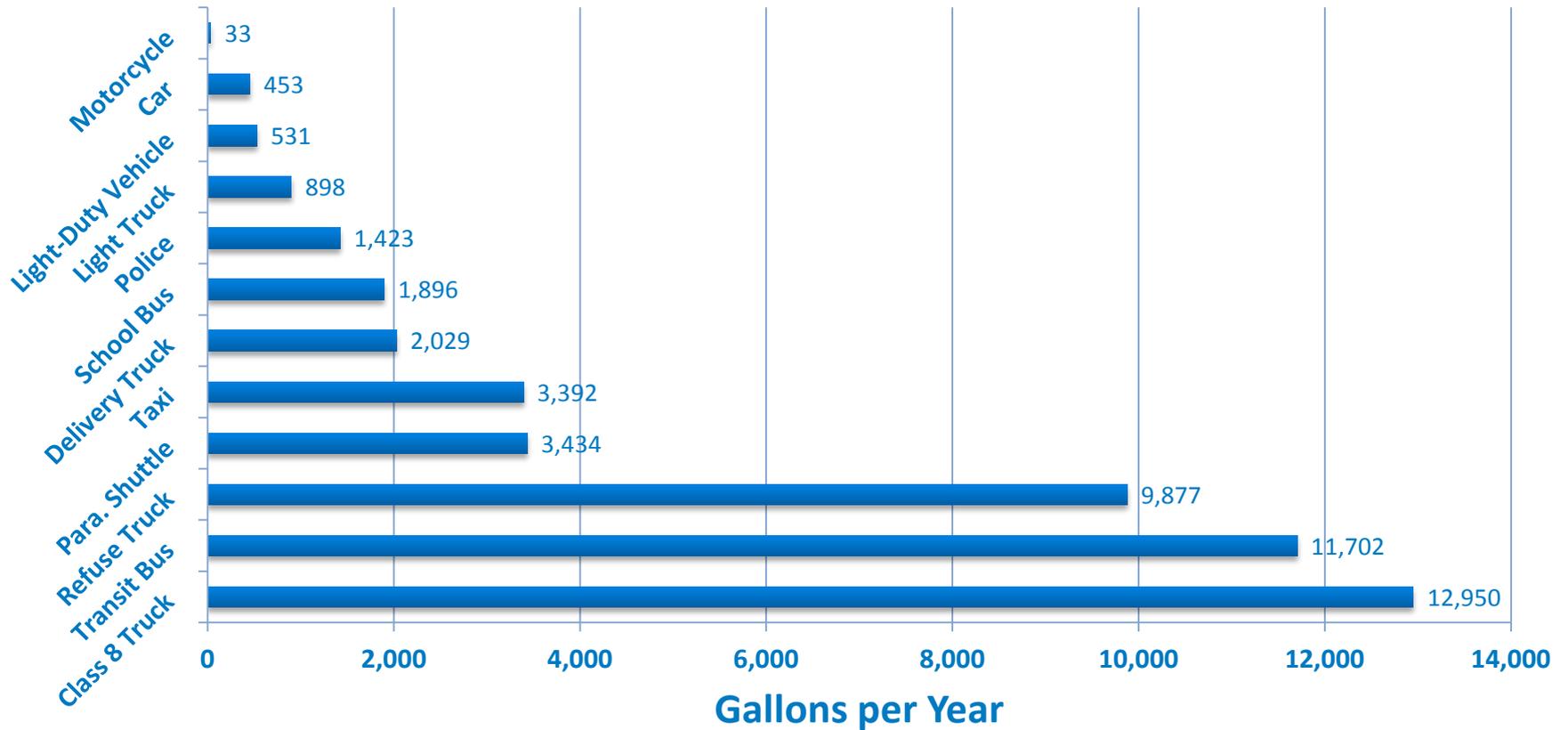
Estimated Alternative Fueled Vehicles in Use (2010)



www.afdc.energy.gov/afdc/data/

Different Vehicle Classes Have Different Needs

Average Annual Fuel Use by Vehicle Type

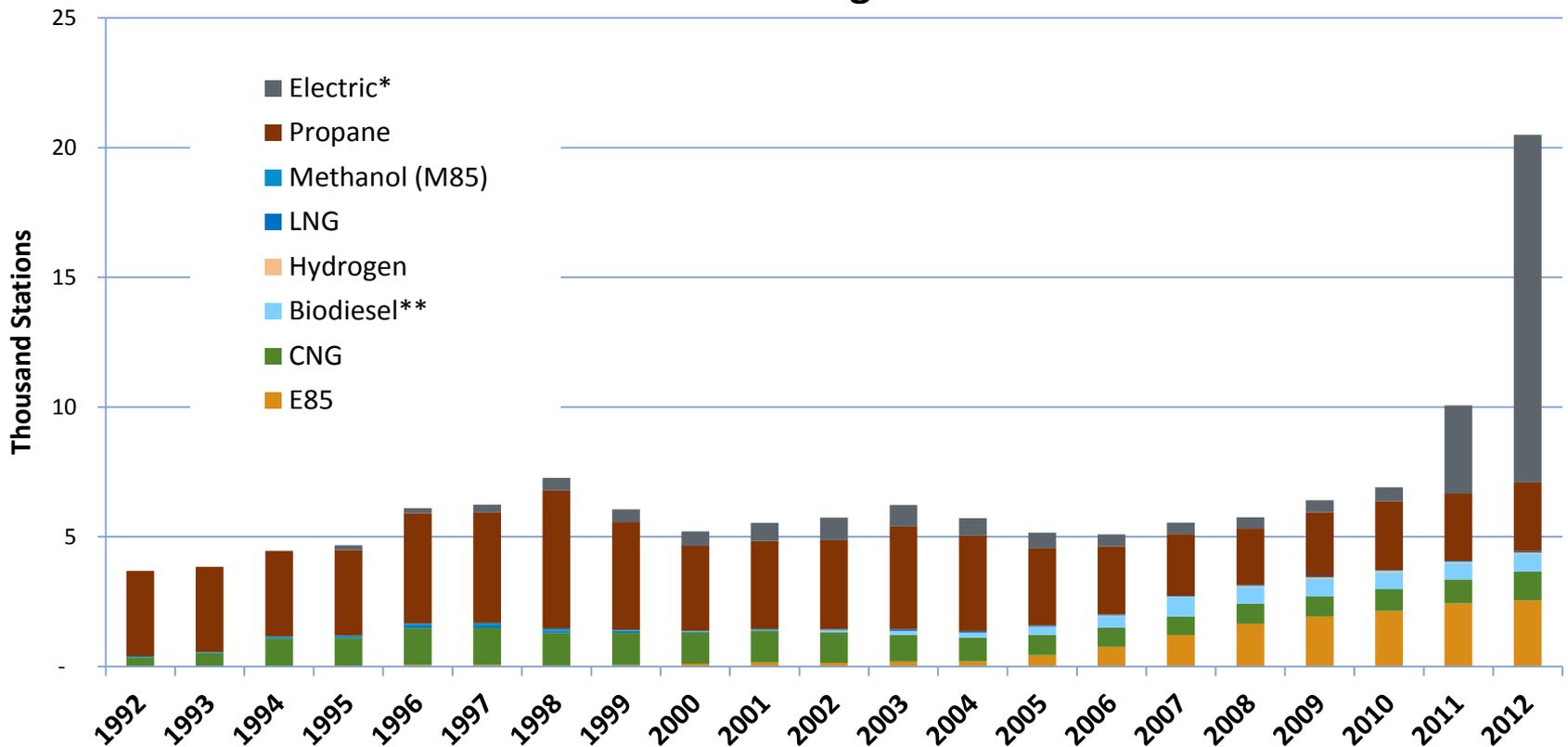


www.afdc.energy.gov/data/

AFV Infrastructure is Growing...

...but has a long way to go. There were 157,000 gasoline stations in the United States in 2011

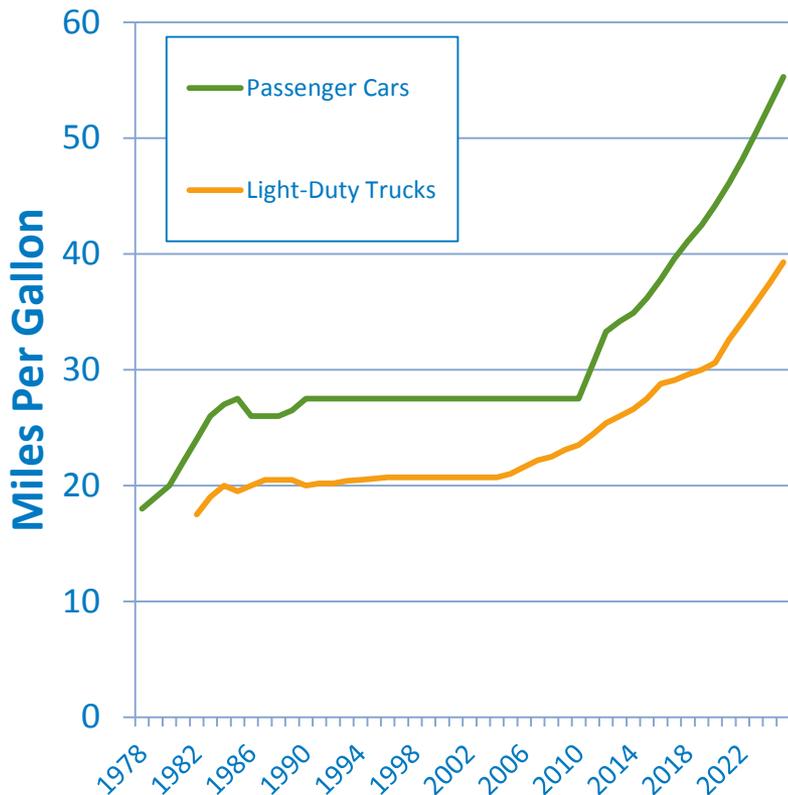
U.S. Alternative Fueling Station Count



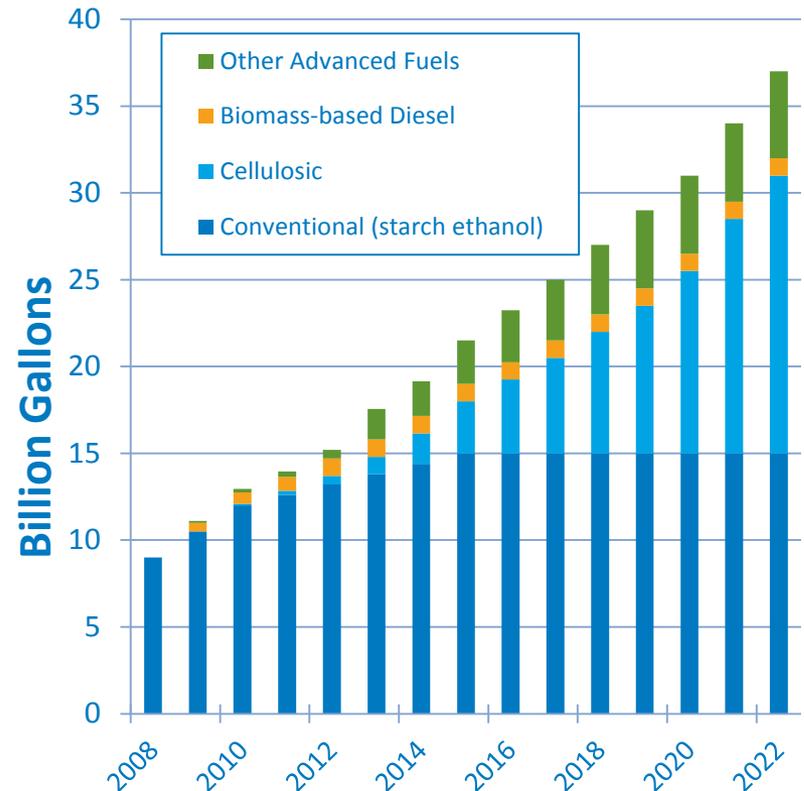
www.afdc.energy.gov/data/

National Policies are Shaping the Market

CAFE Standards



Renewable Fuel Standard II

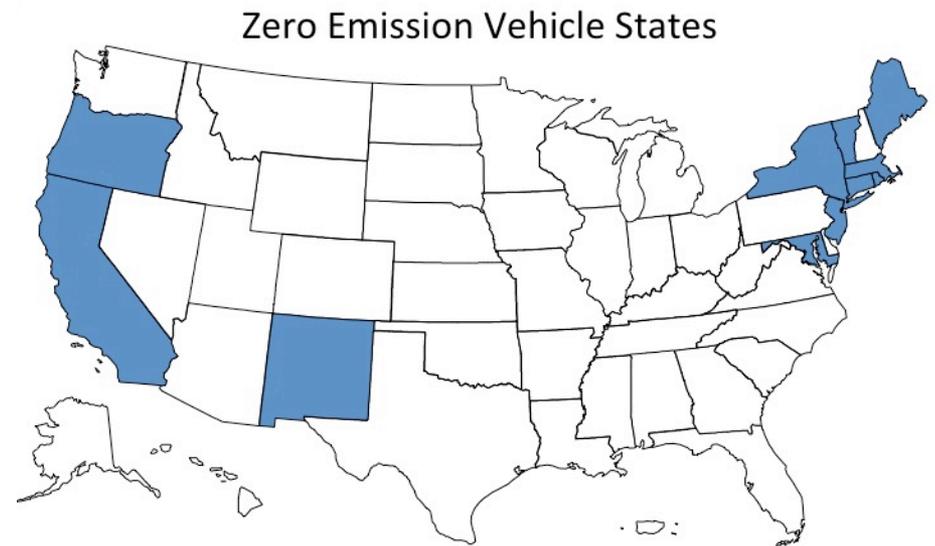


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States Taking the Lead – Zero Emission Vehicles

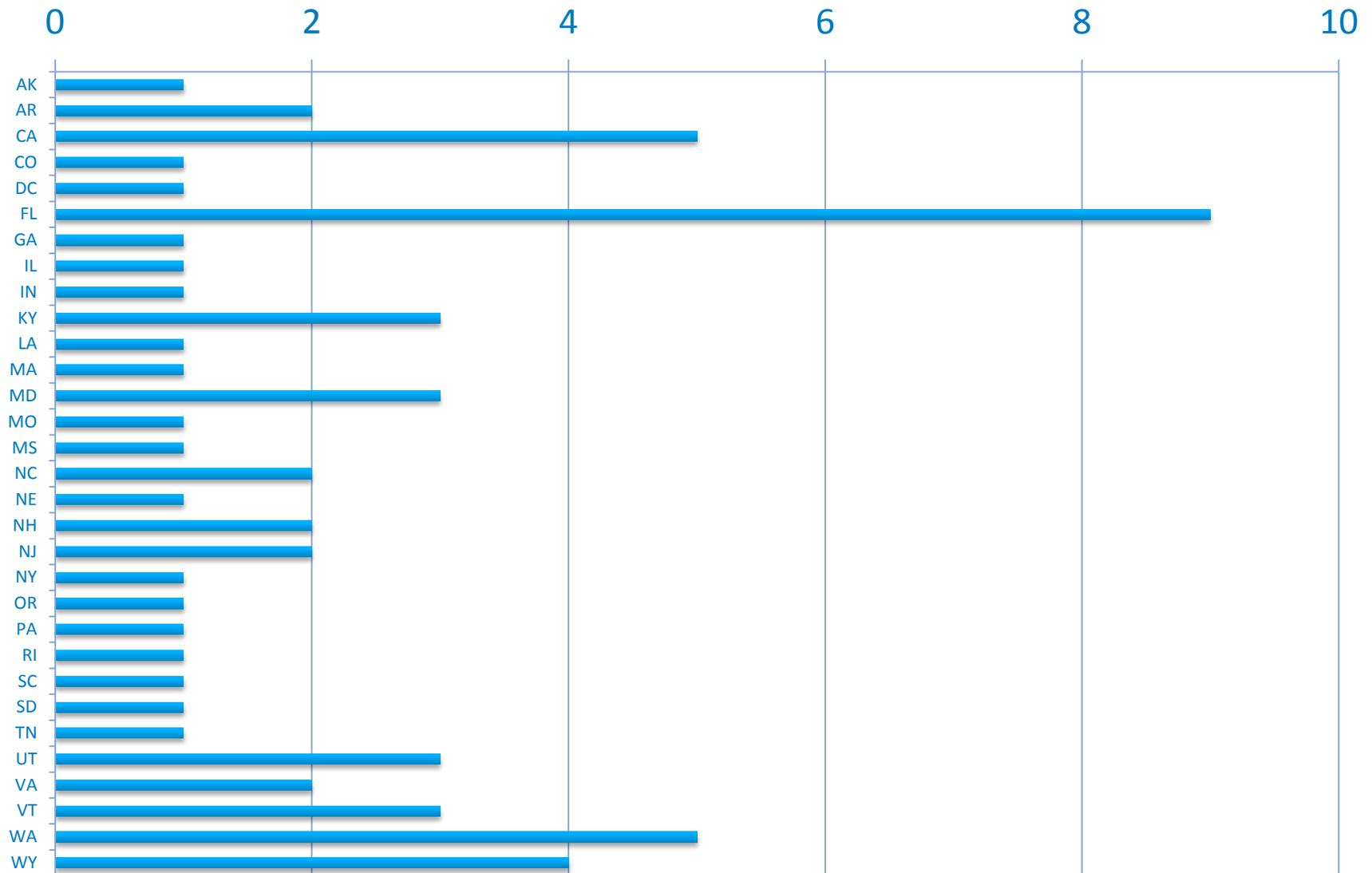
Zero Emission Vehicle Standards

- The Clean Air Act allows California to pass more stringent emissions standards than the federal government.
- California's zero emissions vehicle standard requires that by 2025, 15.4% of all vehicles sold will need to produce zero emissions. This is estimated to be equivalent to 1.4 million vehicles.
- 10 states and Washington DC have adopted California's zero emission vehicle requirements.
- ZEV states account for almost 1/3 of new car sales.
- Hydrogen and plug-in electric vehicles are being pursued by multiple automakers as a means to meet ZEV requirements.



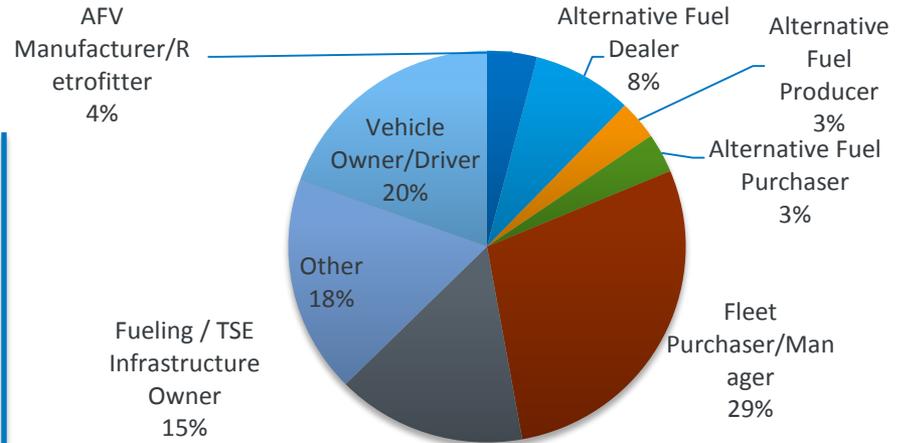
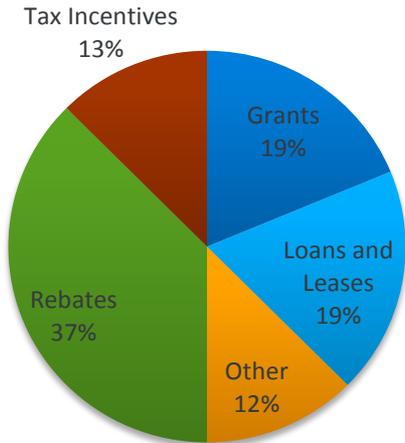
Trends in State Policy for Alternative Fuels

-2012 Laws, Regulations, and Incentives by State



Trends in State Policy for Alternative Fuels

-2012 Laws, Regulations, and Incentives by Type

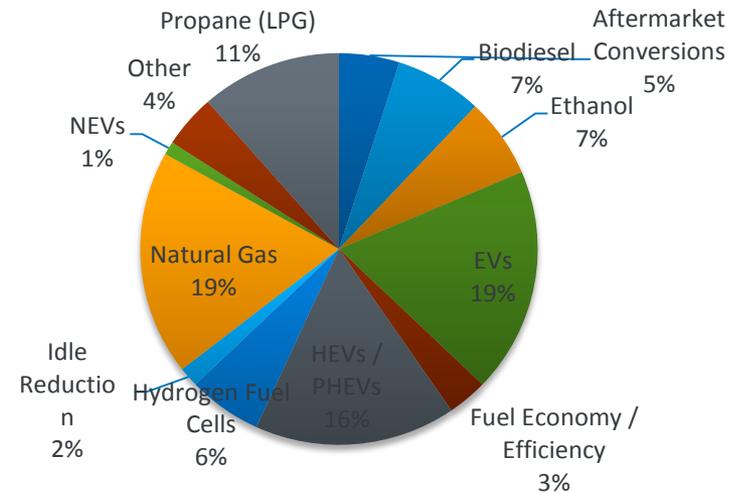
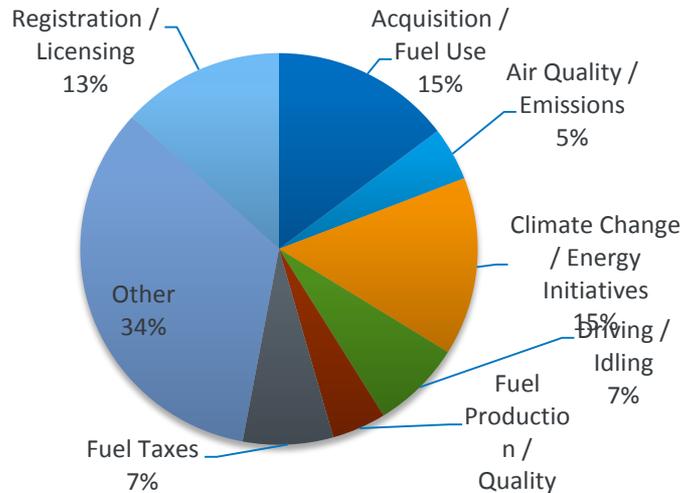


Type of Incentive

Targeted Market

Regulatory Topic

Fuel/Technology



www.afdc.energy.gov/afdc/data/

Alternative Fuel Incentives and Regulations - Infrastructure

Sample Incentives for Infrastructure

Arizona

Up to \$75,000 is available to public and private entities for the incremental cost of projects that result in new or converted biofuel storage and dispensing equipment.

Colorado

Provides grants for electric vehicle charging stations to government entities and multi-family dwellings. Initial funding was from DOE and is supplemented by a decal that EV owners purchase.

Wyoming

Provides low-interest loans of up to \$750,000 for the installation on CNG infrastructure. Loans payments are not required in the first two years.

US DOT – CMAQ Funding

Federal formula funding that is distributed to the states for projects that support air quality improvements and congestion mitigation. Funding has been applied towards both alternative fuel stations and vehicles.

For more details on incentives, visit: www.afdc.energy.gov



Defining the Role of Utilities for NGVs and EVs



Transportation has significant, but uncertain, growth potential for electric and gas utilities

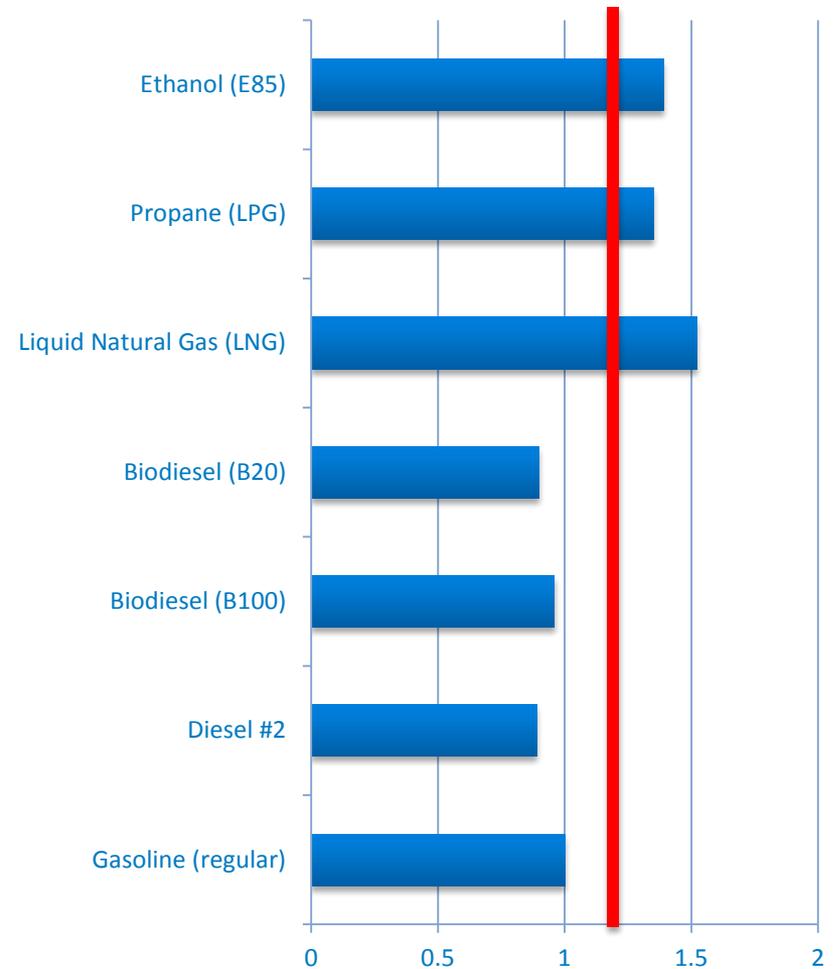
- Every electric car is a natural gas car is an electric car
- Electric demand is flat in most parts of the country
- Most state utility markets are regulated requiring a dialog between utilities, regulators, policymakers, and other stakeholders

Examples of key utility considerations in the development of alternative fuel infrastructure

- Electric demand charges
- Provisions for third-party sales of regulated services/products
- Infrastructure/construction allowances

Alternative Fuels and Excise Taxes

- Increased efficiency and alternative fuel use is straining gas tax revenues
- Several states have decal programs for various alt fuels
- Some states provide discounted rates for alt fuels as an incentive
- If taxes are charged on a per gallon basis, defining energy content is needed to ensure parity
- There are no current programs that compensate directly for home fueling/charging



Gasoline Gallon Energy Equivalence

Questions?

