US Experience in Alternative Transport Fuels

Cary Bloyd

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What are alternative transport fuels?

Alternative fuels can broadly be thought of as any transport energy source which provides an “alternative” to gasoline or diesel.

In the US, we generally cite the definition from the Energy Policy Act of 1992 which includes ethanol, natural gas, propane, hydrogen, biodiesel, electricity, methanol, and p-series fuels (pentane blends).

Alternative Fuel and Advanced Technology Vehicles and Characteristics

- Alternative fuel vehicles in use

	2004	2008
LPG	***194,389***	***151,049***
CNG	***143,742***	***113,973***
E85a	***146,195***	***450,327***
Electric	***55,852***	***56,901***
M85	***4,592***	***0***
LNG	***3,134***	***3,101***
Total	**547,904**	**775,664**

Source: TRANSPORTATION ENERGY DATA BOOK: EDITION 29, Oak Ridge National Laboratory, June 30, 2010, Table 6.1
http://cta.ornl.gov/data/index.shtml

Alternative Fuel and Advanced Technology Vehicles and Characteristics

- Number of alternative fuel refuel sites

	2003	2010
LPG	***3,966***	***2,410***
CNG	***1,035***	***827***
Electric	***830***	***506***
Biodiesel	***---***	***679***
Hydrogen	***---***	***57***
Total	***6,230***	***6,497***

Source: TRANSPORTATION ENERGY DATA BOOK: EDITION 29, Oak Ridge National Laboratory, June 30, 2010, Table 6.4
http://cta.ornl.gov/data/index.shtml

Alternative fuel programs are occur across multiple agencies at both the federal and state levels

- US Department of Energy
- US Environmental Protection Agency
- US Department of Agriculture
- State energy agencies
- Industry trade associations

US DOE has both technology and fuel development programs (1)

- Vehicle Technologies (VTP) Program is developing more energy efficient and environmentally friendly highway transportation technologies that will enable America to use less petroleum (http://www.eere.energy.gov/vehiclesandfuels/)
  - 2010 Vehicle Technologies and Hydrogen Programs Annual Merit Review (AMR)
    - Over 1600 attendees
    - Approximately 600 presentations over one week
  - 2011 AMR scheduled for May 9-13, 2011
    - http://www.annualmeritreview.energy.gov/

US DOE has both technology and fuel development programs (2)

- The Biomass Program develops technology for conversion of biomass (plant-derived material) to valuable fuels, chemicals, materials and power, so as to reduce dependence on foreign oil and foster growth of biorefineries.
  - http://www.eere.energy.gov/biomass/

US Department of Agriculture

- Biobased products and bioenergy program
  - Goal is to finance technologies needed to convert biomass into biobased products and bioenergy in a manner which is cost-competitive in large national and international markets
  - Loans for biomass conversion into biobased products and bioenergy are eligible for financing under the Business and Industry Guaranteed Loan Program

http://www.rurdev.usda.gov/rbs/biomass/biomass.htm

Example: Rural Business Opportunity Grants

- Rural Business Opportunity Grants: Designed to promote economic development in rural communities by making grants to pay the costs of providing economic planning, technical assistance, or training. Applicants must be a public body, nonprofit corporation, Indian tribe, or cooperative with members that are primarily rural residents. Applicants must have expertise in the activities proposed and be able to demonstrate that funding will result in rural economic development. A maximum of $1.5 million is available for the program, with most grants of $50,000 or less.

- http://www.ethanolrfa.org/leg_position_usda.shtml

The US Environmental Protection Agency

- EPA promotes and expands the use of environmentally beneficial alternative fuels and vehicles by providing the states with tools, such as benefits models, State Implementation Plan Credits, and the Clean Fuels Fleet program.
- Two page fact sheets available on:
  - Reformulated gasoline
  - Biodiesel
  - Electric Vehicles
  - Fuel cells
  - Fisher-Tropsch
  - E85 and Flex Fuel Vehicles

http://www.epa.gov/oms/fuels.htm#fact

The Renewable Energy Fuels Association produces a free monthly newsletter

- Provides industry characteristics
  - The U.S. ethanol industry supported 400,000 jobs (2009)
  - Ethanol contributed $53.3 billion to US GDP (2009)

- Provides best practices handbooks are also available

E85 FUEL ETHANOL
Industry Guidelines,
Specifications, and Procedures
March. 2009

www.ethanolrfa.org

US Alternative fuel goals are defined in terms of Congressional mandated goals

- The Energy Independence and Security Act (EISA) 0f 2007, required 36 billion gallons of biofuels by 2022
- US EPA released targets for 2011 in November 2010

	Actual Volume	Final % Standard
Cellulosic biofuel	6.6 mill gal	0.003%
Biomass-based diesel	0.8 bill gal	0.69%
Advanced biofuel	1.35 bill gal	0.78%
Renewable fuel	13.95 bill gal	8.01%

http://www.epa.gov/otaq/fuels/renewablefuels/420f10056.htm

The US is introducing E15 to address E10 "blending wall"

- **E15 Waiver Decision (October 2010)**
  - In March 2009, Growth Energy and 54 ethanol manufacturers petitioned the Environmental Protection Agency to allow the introduction into commerce of up to 15 volume percent (vol%) ethanol in gasoline.
  - EPA's waiver decision allows but does not require the use of E15 in MY2007 and newer cars, light-duty trucks, and SUVs.
  - The decision is based primarily on the Department of Energy's (DOE) Catalyst Study of 19 high sales volume car and light-duty truck models that were all designed for and subject to the Tier 2 motor vehicle emission standards.

www.epa.gov/otaq/regs/fuels/additive/e15

Thank you for your attention!