Clean Fuel Supply, Use and Benefits 2007 National Association of Clean Air Agencies Phoenix, AZ

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Why Clean Alternative Fuels?

- Petroleum costs are unstable and fluctuate daily, consumers can not monitor fleet budgets for fuel under these circumstances.

How Clean Alternative Fuels help

- Oil prices at an all time high! And analysts predict prices will not go down, even though production is increasing.

Why Renewable Clean Fuels?

- The Geopolitical situation requires energy independence. NOW!

According to the DOE, total world petroleum output will have to grow by approx. 44 million barrels per day between now and 2025 which is a 57% increase, to satisfy anticipated world demand.

What are the clean fuel options?

- Biodiesel (B20 or B100)
- E85 (ethanol)
- Compressed Natural Gas (CNG)
- Hybrid Electric
- Propane
- Hydrogen

Biodiesel Tailpipe Emissions Benefits

Biodiesel is made from oils such as soy or safflower or can be made from recycled yellow grease from restaurants.

Emission Type	B20	B100
Regulated		
Total Unburned Hydrocarbons	-10%	-40%
Carbon Monoxide	-10%	-50%
Particulate Matter	-15%	-70%
NOx	+2%	+9%
Non-Regulated		
Sulfates	-20%	-100%
Ozone potential of speciated hydrocarbons	-10%	-50%

How can biodiesel make a difference

Biodiesel

CNG Tailpipe Emissions Benefits

Emission Type	Reduction from Gasoline	
Regulated		
Carbon Dioxide	-25%	
Carbon Monoxide	-90% - -97%	
Particulate Matter	Little to no pm	
NOx	-35% - -60%	
Non-Regulated		
No evaporative emissions		
Non- methane hydrocarbons	-50% - -70%	

CNG

Electricity

Ethanol (E85) Tailpipe Emissions Benefits

Ethanol E85 is 100% pure grain alcohol made unfit to drink by adding 15% gasoline. Ethanol can be made from corn, potatoes, wood, waste paper and other ag products. 90% of the ethanol production in the US comes from corn.

Emission Type	
Regulated	
Total Unburned Hydrocarbons	-15%
Carbon Monoxide	-40%
Particulate Matter	-20%
NOx	-10%
Non-Regulated	
Sulfates	-80%

Flex Fuel Vehicles E85

Challenges for Clean Alternative Fuels

- Infrastructure-Lack of fueling infrastructure discourages consumers from purchasing vehicles that use clean alternative fuels.

Challenges for Clean Alternative Fuels

- Cost structure-clean alternative fuels need to be supported by states as a benefit by offering incentives for use like the Federal Jobs Bill offered for biodiesel and ethanol.

Challenges for Clean Alternative Fuels

- Supply chain-Manufacturing of renewable fuels and lack of production facilities make transportation costs high, which keeps the end user cost high.

Challenges for Clean Alternative Fuels

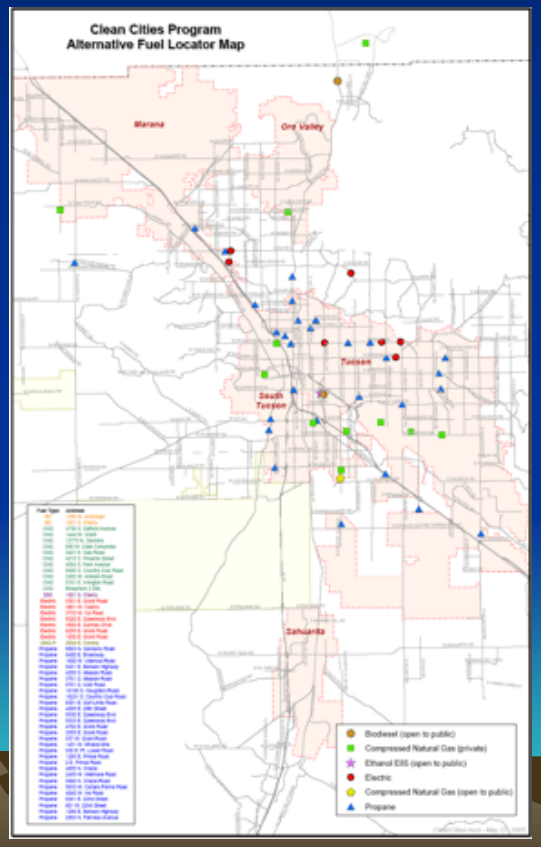
- Education-It is imperative to educate the general public and policy makers on the need for energy security and petroleum independence, it's not just a phrase anymore.

Finding Clean Alternative Fueling Stations

US Department of Energy's Clean Cities website

http://afdcmap.nrel.gov/locator/LocatePane.asp

Finding Clean Alternative Fueling Stations



Pima Association of Governments Clean Cities website

www.pagnet.org/cleancities