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# **Clean Fuels and Technologies**

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**Diesel Emissions Reduction Strategies Workshop  
June 29, 2005**

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## Technologies and Fuels that Reduce Diesel Emissions

- ❖ Idle Reduction Programs

- ❖ Idle Reduction Technologies

  - Auxiliary Power Units (APUs)

  - Truck Stop Electrification

- ❖ Clean Fuels

  - Biodiesel

  - ULSD with catalysts and particulate traps

  - Compressed Natural Gas (CNG)

## Idle Reduction Technologies

### ❖ Auxiliary Power Units (APUs)

small diesel-powered engines that are installed in the truck. Depending on the model selected, auxiliary power units can provide heat only or heat, air conditioning and electric power.

### ❖ Truck Stop Electrification

Truck stop electrification allows truckers to "plug in" vehicles to operate necessary systems without idling the engine. In some cases, a stand-alone system can provide heating, ventilation, and air conditioning directly to the sleeper compartment.



## Biodiesel Emissions Benefits

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

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



## Heavy Duty CNG Vehicles

❖ There are many clean fuel heavy duty CNG vehicles available today

Toyota 2005 forklift

Ford and GM heavy duty trash haulers

BAF Technologies up fits to OEM product

BayTech Corporation up fits to OEM product



## Local Clean Fuel Efforts

### ❖ Biodiesel

Ashton Construction, Davis-Monthan Air Force Base  
Raytheon Missile Systems, Tucson Electric Power

### ❖ Ethanol E85

Davis-Monthan Air Force Base, State of Arizona,  
increase in consumer use

### ❖ Compressed Natural Gas

City of Tucson waste haulers, Sun Tran mass transit,  
Pima Community College

### ❖ Propane

Schwanns Foods, University of Arizona



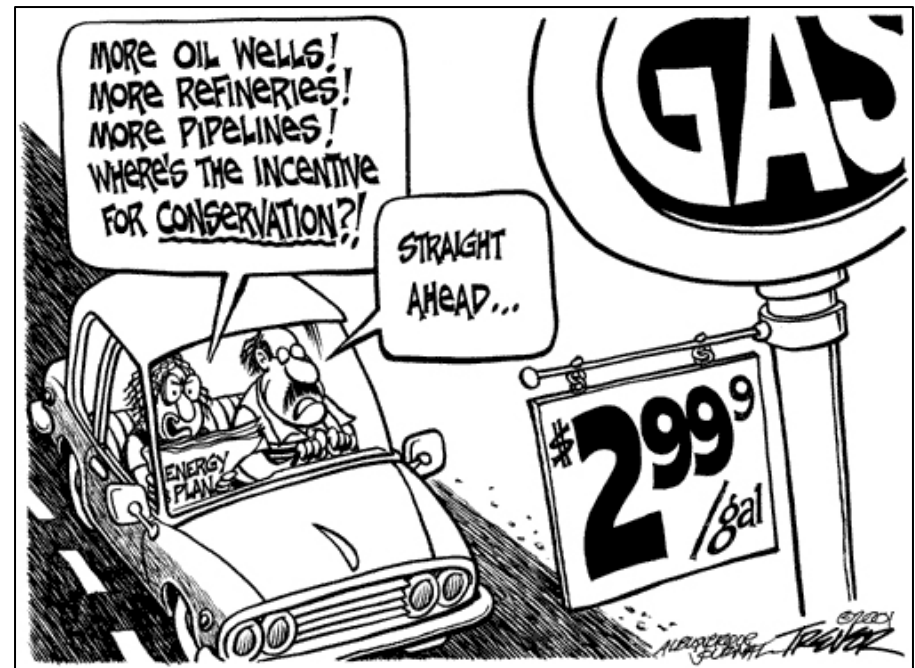
## Regional Clean Fuel efforts

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- ❖ **Ambos Nogales Air Quality Task Force**
  - ❖ **Grant application for Truck Stop Electrification at the Mariposa Port of Entry**
  - ❖ **School Bus Initiatives – Rio Rico, Tucson**
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## Why look to clean fuels?

❖ Petroleum costs are unstable and fluctuate daily. Consumers can not monitor fleet budgets for fuel under these circumstances.



## Why decrease dependency on foreign oil?

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



## To seek energy independence!

❖ 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.

