



Improving the quality of life in the communities we serve.



Alternative Vehicle Fuel Initiative

- Exceeds Alternative Fuel Light Duty Vehicle acquisition requirements of the U.S. Department of Energy.
- Received the U.S. Department of Energy Exceptional Fleet Energy Award, May, 2004.
- Initiated the installation of the first and only E85 (ethanol) fueling site in Northeast Florida, August, 2004.

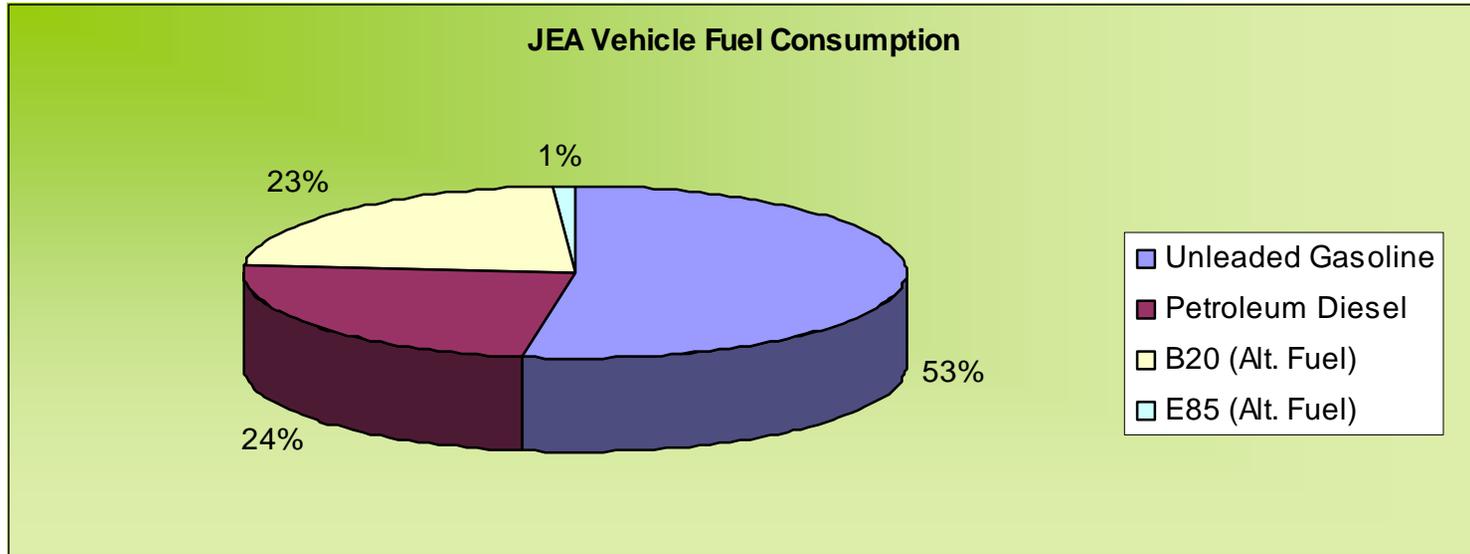


JEA VEHICLE FLEET

44% of the Vehicle Fleet (1017 units) is capable of using alternative fuel.

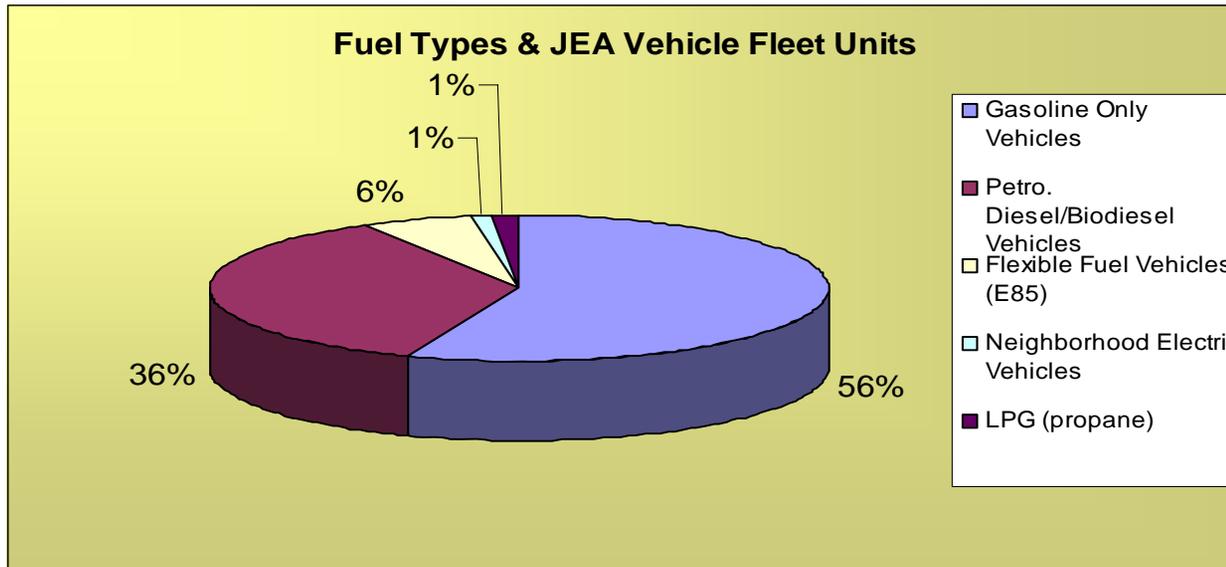
Pick up trucks (Propane)	15
Minivans (E85)	24
Sport utility vehicles (E85)	31
Pick up trucks (E85)	5
Neighborhood Electric Vehicles	<u>11</u>
Light Duty Alternative Fuel Vehicles	86
Diesel Service Trucks (B20)	<u>363</u>
Total Alternative Fuel capable	449

JEA Vehicle Fuel Quantities



JEA Vehicle Fuel Consumption		
	Total Gallons 12 months	% of All Vehicle Fuel
Unleaded Gasoline	665,101.01	53%
Petroleum Diesel	302,575.64	24%
B20 (Alt. Fuel)	285,065.00	23%
E85 (Alt. Fuel)	12,345.30	1%
Total Vehicle Fuel Gallons	1,265,086.95	

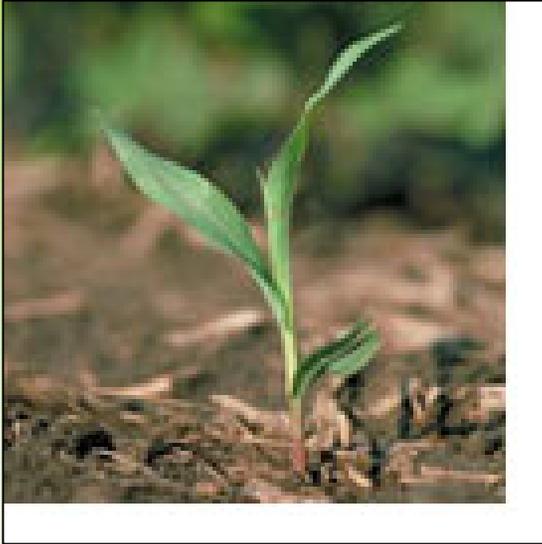
JEA Alternative Fuel Vehicles in the JEA Fleet Inventory



Fuel Types & JEA Vehicle Fleet Units		
	# of Units	% of Total Vehicle Fleet
Gasoline Only Vehicles	568	56%
Petro. Diesel/Biodiesel Vehicles	363	36%
Flexible Fuel Vehicles (E85)	60	6%
Neighborhood Electric Vehicles	11	1%
LPG (propane, phasing out)	15	1%
Total Vehicles	1017	



What is biodiesel?



Biodiesel is a cleaner burning diesel replacement fuel made from natural, renewable sources such as new and used vegetable oils and animal fats.

Biodiesel contains no petroleum, but it can be blended at any level with petroleum diesel to create a biodiesel blend.

Biodiesel operates in any diesel engine without modification.

B20 is a blend of 20 percent by volume of biodiesel with 80 percent by volume of petroleum diesel.

Biodiesel is Green:

Ingredients are non-toxic, biodegradable, renewable resources.

- Biodiesel is made from used vegetable oils or animal fats.
- Biodiesel is made from new vegetable oils - primarily from soybeans. New programs are being developed using mustard seeds.
- Biodiesel is made through a chemical process called transesterification whereby the glycerin is removed from the fat or vegetable oil.

Biodiesel is Clean:

Average Biodiesel Emissions Compared to Conventional Diesel According to the EPA

<u>Emission Type</u>	<u>B100</u>	<u>B20</u>
<u>Regulated</u>		
Total Unburned Hydrocarbons	- 67%	-20%
Carbon Monoxide	- 48%	-12%
Particulate Matter	- 47%	-12%
Nitrous Oxide(NOx)	+10%	+ 2%
<u>Non-Regulated</u>		
Sulfates	-100%	- 20%
PAH (Polycyclic Aromatic Hydrocarbons)	- 80%	-13%
nPAH (nitrated PAHs)	- 90%	- 50%
Ozone potential of speciated HC	- 50%	- 10%

JEA vehicles are fueled with B20 during off-shift hours by mobile fueling services



Ultra Low Sulfur Diesel Use Benefits the Environment in Older and Newer Models

Pollutant	2006 and prior years engines	2007 and later engines*
Particulate matter (PM)	-13%	20-85%
Hydrocarbons (HC)	-13%	-90%
Carbon Monoxide (CO)	-6%	-90%
Nitrogen oxide (NOx)	-3%	-15-20%
Sulfates (SO ₂)	-97%	-97%

*Equipped with particulate filters and oxidation catalysts.

Sulfur Limit Requirements

Diesel Fuel	Sulfur Limit
Low Sulfur Diesel	500 ppm
Ultra Low Sulfur Diesel	15 ppm

Ultra Low Sulfur Diesel Phase-In

Effective Dates for Highway ULSD Fuel

Who	What	U.S.	California
Refiners & Importers	Import/produce at least 80% ULSD for on highway use	6/01/06	
	Import/produce at least 100% ULSD for on highway use	6/01/10	6/01/06
Downstream from Refineries through Fuel Terminals	Facilities that choose to carry ULSD must meet 15 ppm sulfur specification	9/01/06	
	All highway diesel must be ULSD	10/01/10	7/15/06
Retail Outlets	Facilities that choose to carry ULSD must meet 15 ppm sulfur specification	10/15/06	
	All highway diesel must be ULSD	12/01/10	9/01/06

What is ethanol?

Ethanol is an alcohol-based alternative fuel produced by fermenting and distilling sugar crops. JEA uses an ethanol product that is produced from corn.

Ethanol can be blended with gasoline to increase octane and reduce the emissions of pure gasoline.

Ethanol is most commonly blended with gasoline to form an E10 blend (10% ethanol and 90% gasoline), but it can be used in higher concentrations such as E85 (85% ethanol and 15% gasoline).

Original equipment manufacturers produce flexible-fuel vehicles that can run on E85 or any other combination of ethanol and gasoline. Any gasoline engine can run on E10.



Ethanol is Green:

Ethanol can be produced from any biological feedstocks that contain appreciable amounts of sugar or materials that can be converted into sugar such as starch or cellulose. Sugar beets and sugar cane are commonly used feed stocks.

Ethanol plants in this country utilize a no-waste process.

Ethanol is Clean:

- Reduction in carbon monoxide.**
- More complete combustion.**
- Reduction in hydrocarbons.**
- As with biodiesel, there may be slight increases in NOx.**
- The Office of Energy Efficiency and Renewable Energy (EREN) emphasizes the overall environmental advantages of using ethanol as a fuel oxygenate.**

How Can Ethanol be Part of the Petroleum Dependency and Clean Air Solution?

- Manufacturers produce smaller flexible fuel (E85/Unleaded) vehicles.
- Fuel Retailers make E10 and E85 available to consumers.
- Support development of cellulosic ethanol.

Real Gains in Petroleum Reduction and Air Quality Improvement Depends on . . .

- **ALT FUELING INFRASTRUCTURE**
- **ALT FUEL AVAILABILITY**
- **COMPETITIVELY PRICED ALT FUELS**
- **ALT FUEL VEHICLE AVAILABILITY – IN PARTICULAR SMALLER LIGHT DUTY ENGINES**
- **LAWS THAT INCLUDED INCENTIVES & GRANTS**
- **COMMUNITY DEVELOPMENT & EDUCATION**
- **LEGISLATIVE ALIGNMENT WITH ALTERNATIVE FUEL VEHICLE & FUEL AVAILABILITY**
- **COMMITMENT TO USE PERSONAL VEHICLES LESS**

JEA Fleet Services

Alternative Vehicle Fuel Ongoing Initiatives

- **Internally:** Increase the use of B20 and E85 in JEA Fleet Vehicles.
- **Community-wide:** Serve as a resource for other agencies considering alternative vehicle fuels.
- **Regionally:** Collaborate with other stakeholders to accomplish a Clean Cities Coalition designation; Follow and support development of the plug-in electric hybrid vehicle.
- **Nationally:** Follow legislation and attend national conferences.





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