

BIODIESEL



Benefits and Drawbacks

- Environmental and Health
- Energy Security (Reliance on Foreign Oil)
- Economic Benefits (Farmers)
- Improves Lubricity (ULSD)
- Easily Blended & Strays Blended

- No real drawbacks-Small Reduction in Energy



Safety, Health, and Environmental Issues

- Biodiesel is nontoxic
- Biodegradable
- Reduces Emissions
 - Hydrocarbon (Smog) is 50% less
 - Carbon Monoxide is 50% lower
 - Particulate Matter is 30% lower
 - Sulfur Oxides (Acid Rain) are completely eliminated



City of Jacksonville, Fleet Management Biodiesel Project

- Discussion
- Motivation: Environment/Economics
- Planning Stage
 - Identification/logistics Raw material
 - Personnel (Not Labor Intensive)
 - Building
 - Processing Plant



Processing Plant



Biodiesel Production Process

- **Titration test of raw material**
- **Determines the catalyst of methanol and sodium hydroxide**
- **Raw material filtered to 20 microns**
- **Oil heated to 120 degrees**
- **Catalyst (methanol and sodium hydroxide) is injected to the raw material**
- **By-product drained off (2 hours)**
- **H₂O process begins (wash)**
- **Residue of water process is drained to normal sewer system as soapy water**
- **Bio-100 is then pumped to settling tank (4-7 days)**



What is the Future?

- ROI (4-6 months)
- Cost per gallon (approximately \$0.70)
- 2,000 to 3,000 gallons per week
- Annual requirement: 500,000 gallons of B100
- Green City - JEA - JTA - School Board, etc.
(1.5 million gallons of B20)
- Identify raw material (virgin oil)

