

# Biodiesel: Meeting the Challenges of Clean Air and Energy Security

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Fleet Management

--With additional information from  
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# The Numbers

- 2003—February 1 took first B20 delivery
- 140,000—population of Lakewood
- ~300 vehicles (Lakewood, Jeffco Schools, West Metro Fire)
- ~300,000—gallons of petroleum displaced since program inception.
- Emissions reductions since inception:
  - ~2200 lbs. particulate matter
  - ~2900 lbs hydrocarbons
  - ~24,000 lbs CO
  - ~1500 lbs sulfur dioxide
- 20 cents/gallon more expensive in 2003.

# Biodiesel?

- Clean Cities—many alt fuels
- 2002 Hill Petroleum workshop introducing the fuel, featuring Peterson AFB fleet manager.
- Biodiesel conference in Breckenridge
- Followed up by research and a term paper.
- Persuading Lakewood, Jeffco Schools, West Metro Fire officials.

# The Beginning of the End of an Era



The 100-year period when most of the world's oil will be produced is known as "Hubbert's peak." On this scale, the geologic time needed to form the oil resources can be visualized by extending the line five miles to the left.

- Peak Oil, oil becoming more and more expensive.
- Beginning of the end of the mono fuel era for government fleets. Fuel diversification is not only our ability but our responsibility.
- Energy security, environmental security, broad public support for renewable energy.

# Preparing for success

- Trusting the science.
- Trusting the experience.
- Building in-house support with those that can affect the outcome.
  - ◆ Fleet mechanics important key. They can make or break the program.
  - ◆ Build credibility among operators and decision makers.

# Maintenance

- Preventive maintenance on vehicles... Frequent fuel filter changes.
- Tank maintenance—trusting our fuel supplier and blender for quality fuel and regular tank tests.

# Problems/Issues??

- Lakewood has had zero problems that we could relate directly to biodiesel.
- Jeffco schools and West Metro Fire have had some problems with specific engines.

# Operational Decision

- In some governmental operations vehicle fuel choice is a political decision.
- In Lakewood, an operational decision—bottom up rather than top down.
- More freedom but less political ownership.
- Permanent fuel infrastructure change.

# Value choice

- Lakewood City Council Core Community Values:

- ◆ “We will be fiscally responsible. We will be progressive, innovative and ahead of our time.”

Cost: What would we do if petroleum went up 20 cents/gallon? We pay it.

# Building infrastructure one attitude at a time

- Observation: Employees who use alternatives at work, have a positive experience, are more open to using that fuel in their personal vehicles when cost competitive.
- Operators ask questions about new fuels; want to be educated.
- >1,000 drivers just from Lakewood fueling facility...working towards the “tipping point” in Colorado.



# Biodiesel

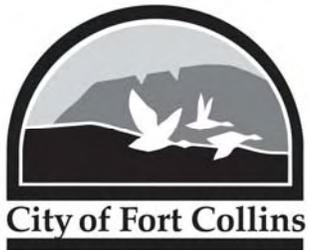


409 units

Average Price in 2006

4 cents over diesel

6/15/2007



# Biodiesel



**B20**

Saved 71,769 gals. of diesel in 2006

**Renewable**

6/15/2007



# E85



15% gasoline  
85% ethanol  
Renewable

6/15/2007



**E85**



**48 Vehicles (17 on order)**

**First pump operational  
by July. Two more  
planned**



6/15/2007

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