



Increasing Environmental Efficiency of Crossville's Fleet


Warren Nevad
 MTAS Management Consultant
 October 4, 2007







Agenda


- I. Fleets/ Alternative Fuel Sources
- II. Blending Gas with Ethanol
- III. Blending Diesel with Biodiesel
- IV. Hybrids
- V. Governor's Task Force on Biofuels
- VI. Strategic Plans Recommendation for Fleets
- VII. State Grants/ Funding Opportunities
- VIII. What Should Crossville Do






- Fleet = City Vehicles/ Trucks/ Tractors/ Related Equipment
- Alternative Fuels- 2 way energy source to fuel transportation
 1. Blending gas or diesel with biofuels derived from biomass
 2. Hybrids- internal combustion engine and electric motors
 3. Other- hydrogen cell, propane, biogas and propane






Blending Gas with Ethanol


- Petroleum and ethanol- E20, E85- E# = % ethanol
- Ethanol- grain alcohol-moonshine
- Feedstocks- corn, sugar cane, sorghum
- Future Feedstocks- cellulose- switchgrass/ wood chips/ poplar/ pine trees






Blending Gas with Ethanol (cont.)


- Ethanol Benefits- reduces greenhouse gases (carbon dioxide/ methane/ nitrous oxide)
- Flex Fuel Vehicles
- Rural Economic Opportunities for Tennessee
- University of Tennessee Pilot Demonstration Facility Plant





Blending Diesel with Biodiesel

- Diesel and biodiesel- B20, B100- B# = % of biodiesel
- Biodiesel- diesel equivalent processed fuel derived from vegetable oil or animal fats
- Feedstocks- soybeans, canola, animal fats, used cooking oil



THE UNIVERSITY OF
TENNESSEE
MORGAN TECHNICAL
ADVANCED SERVICES

Blending Diesel with Biodiesel (cont.)

- Future Feedstocks- Algae/ Trees
- Biodiesel Benefits- reduce hydrocarbons 30%- B20, reduces sulfur dioxide exhaust
- Plants in Morgan County and West Tennessee

Handout- TN Clean Fuels Advisor

FFUTURE
Changing Tomorrow Today

THE UNIVERSITY OF
TENNESSEE
MORGAN TECHNICAL
ADVANCED SERVICES

Hybrid Vehicles

- Definition – Vehicle that uses 2 or more distinct power sources to propel a vehicle
- Hybrids use rechargeable energy storage system (battery) with internal combustion engine
- Benefits – better gas mileage/ reduction of greenhouse gases
- Vehicles – more expensive to purchase and repair

FFUTURE
Changing Tomorrow Today

THE UNIVERSITY OF
TENNESSEE
MORGAN TECHNICAL
ADVANCED SERVICES

Governor's Task Force on Biofuels

- **Website – BIOTENN.ORG**
- Strategic Plan Draft addresses:
 - Outreach
 - Feedstock production
 - Biofuel Production
 - Availability to citizens/fleets
 - Demand/ leveraging regional resources
- Goals –
 - Providing a biofuel annual production capacity of 1 billion gallons by 2017
 - Displacing 17% of traditional petroleum fuels by 2017

FFUTURE
Changing Tomorrow Today

THE UNIVERSITY OF
TENNESSEE
MORGAN TECHNICAL
ADVANCED SERVICES

Recommendations for Fleets

1. Outreach Campaign
2. Tax Rebates – hybrids/flex fuels
3. More grants and tax incentives to reduce alternative fuel costs
4. 2 – 5% fuel rebate to school districts for each gallon of ethanol used
5. Coordinate with Tennessee Diesel Working Group – to encourage school buses to use biofuels

FFUTURE
Changing Tomorrow Today

THE UNIVERSITY OF
TENNESSEE
MORGAN TECHNICAL
ADVANCED SERVICES

Funding Opportunities for Biofuels

- ECD Agricultural Feedstock processing Loans
- TDOT Green Island Biofuel Corridor Funding Agreement
- TDEC Alternative Fuel Innovations Grants
- Chattanooga -\$35,162 – purchase and install one E85 Fuel tank and pump at city yards

FFUTURE
Changing Tomorrow Today

THE UNIVERSITY OF
TENNESSEE
MORGAN TECHNICAL
ADVANCED SERVICES

Funding Opportunities for Biofuels (cont.)

- Oak Ridge - \$18,000 to offset costs of converting city's 70 vehicle fleet to B20
- Kingsport – 439,250 – offset costs of converting 200+ diesel vehicles and educational materials
- Univ of Tennessee - \$40,000 new tank and pump and promotional materials
- State Energy's Office – \$12,000 biodiesel grants

FFUTURE
Changing Tomorrow Today

What Should Crossville Do?

1. Host a Regional Alternative Fuel Summit
2. Work closely with Upper Cumberland Development District to apply for grants
3. Work closely with fuel supplier to obtain funding for fuel dispensing stations before you convert to flex fuel and/or biodiesel vehicles
4. Push for state legislation that allows for rebates for fleet purchases of flex fuel/hybrids
5. Work closely with County Ag Extension Agents to determine best optimum feedstocks