

SANTEE COOPER

Biodiesel Fuel Usage

**Presentation
To
National Clean Cities Conference
May 5, 2004
Ft Lauderdale, FL**

Santee Cooper's Reasons for Participating in Alternative Fuel Programs

- Desire to participate in environmental programs
- To be compliant with Energy Policy Act (EPA Act) of 1992
- Select a Program that will have a minimal effect on our customer's rate per KWH

Santee Cooper's EPA Act Compliance Requirements are:

1. Classified as a Fuel Provider (we generate, transmit and distribute electricity)
2. 90% of Light Duty Vehicles (sedans thru ½ ton trucks/vans) purchases each model year must be an AFV
3. Santee Cooper must also use an AF to be compliant

Background/History

1. Obtained first AFV's in 1999
2. Through Model Year 2003, have 73 AFV's (with E85 engines) of potential 236
 - 40 Sedans – Ford Taurus
 - 11 Pickup trucks-midsize – GM S-10/Ford Ranger
 - 14 Mini-vans – Dodge Caravan
 - 8 SUV's – Ford Explorer
 - Average 20-28 AFV fleet replacements per model year.

Background/History

Cont'd

3. October 2002, installed three (3) E85 fuel sites. They are 1,000 gallon above ground tanks with cement containment walls. Santee Cooper uses MegaTronics Fuel Management System to capture fuel transactions.
4. Started using B20 Blend biodiesel in 2002

Alternative Fuels Used by Santee Cooper

1. B20 Blend Biodiesel

- Use in on-road diesel engine powered trucks – i.e., aerial device trucks, truck/tractors
- Have six in-house sites for dispensing fuel
- Approximately 200 diesel powered trucks used 54,000 gallons in 2002, 25,000 gallons in 2003 and estimate using 34,000 gallons in 2004.
- Obtain the B20 Biodiesel from United Energy, Aiken, SC – only distributor in South Carolina

AF Used by Santee Cooper

Cont'd

2. E85 (Ethanol blend)

- Use in the Ford Taurus Sedan, Ranger Pickup truck and Explorer (SUV), Dodge Caravan and GM's S-10 pickup truck.
- Santee Cooper has three E85 fueling sites (of six located in South Carolina)
 - Myrtle Beach Area – 2
 - Moncks Corner (Charleston area) – 1
 - All are 1,000 gallon above ground tanks
 - Cost approx. \$18,000 per site – all funded by Santee Cooper – no available grants.

AF Used by Santee Cooper Cont'd

- Eventually 226 vehicles will use E85 fuel – will take approximately 13 years based on replacement cycles.
- Approximately 26,000 gallons was dispensed in 2003 and approximately 32,000 gallons will be dispensed in 2004.
- Obtain E85 blend from United Energy, Aiken, SC – only distributor in South Carolina.

Santee Cooper's Fleet Inventory

Santee Cooper's fleet inventory is approximately 1,940

- 681 On-Road Fleets (226 of the 681 comes under the EPA Act)
- 1,258 Off-Road Fleets (includes lawnmowers, dozers, etc.)

FUEL INFORMATION

- Annually, the fleet consumes approximately 1 million gallons of fuel
- AF usage is approximately 8% of total fuel consumed
- As more fleets are replaced with AFV's in the next few years, the Moncks Corner refueling site will convert one of its two 12,000 gallon in-ground gasoline tanks to E85 blend fuel to accommodate increased usage.

AF EFFECT ON FLEETS

B20 Blend Biodiesel

- Have not experienced any maintenance/repair expense related to the use of B20 biodiesel
- Was anticipating fuel filter problems (at dispenser and vehicle engine fuel filter) due to cleaning agent in the blend – none transpired
- No lost of engine power
- MPG/Hour did not change dramatically – plus minus/1% over regular diesel fuel – a wash, within national guidelines
- Cost per gallon increase – approximately 20-25 cents

AF EFFECT ON FLEETS – CONT'D

E85 Blend Ethanol

- Have not experienced any mechanical repair expense due to the E85 blend
- Have experienced three warranty repairs to adjust on-board computer to use the Blend
- MPG reduced by 20-25%; reduction was anticipated

AF EFFECT ON FLEETS

CONT'D

- For warranty purposes, had to change PM service schedules from 5,000 miles to 3,000 miles – PM service schedule was anticipated
- Also for warranty purposes, have to use 5W30 motor oil – change was anticipated
- Cost per gallon approximately 15-20 cents higher than 87 octane gasoline

AF EFFECTS ON FLEETS – CONT'D

- E85 dispenser fuel filter more expensive than a standard gasoline dispenser fuel filter: E85 - \$18-20; Standard - \$7-8
- E85 fuel nozzle (requires a high percentage of zinc) more expensive than a standard gasoline dispenser nozzle: E85 - \$90; Standard - \$30
- E85 tank gauge float in the 1,000 gallon above ground tank more expensive than a standard float: E85 - \$270; Standard - \$75

AF EFFECTS ON FLEETS – CONT'D

- E85 causes hard starting/stalling of fleets during cold months
- Suggested remedies for hard starting/stalling:
 1. Rotate the ignition key to the run position (once or twice depending if below freezing) which allows fuel pump to fully build up pressure to the injectors (priming)
 2. Maintain a minimum of ½ tank of regular gasoline.

AF RESEARCH

- Researched the availability of AFVs, including electric, from the OEMs
- Researched the availability of AFVs that could run on an AF and/or gasoline – flex fuel, not dedicated
- Researched the availability of electric vehicles that had an operating range of 75 to 100 miles per battery charge

AF RESEARCH – CONT'D

- Research the availability of AF fueling sites within the State of South Carolina – we operate State wide
- Researched the availability of AFVs that would meet the State wide job requirements of Santee Cooper
- Researched the availability of commercial repair facilities and locations versus Santee Cooper purchasing tools/diagnostic equipment and technician training

AF RESEARCH – CONT'D

- Researched the purchase price of each AFV type
- Researched the infrastructure cost of each type of AF refueling site

AFs SELECTED

1. E85 blend ethanol
 - The three OEM's have vehicles in the US DOE complaint range with the E85 engine
 - The vehicles meet the State-wide job requirement of Santee Cooper
 - No additional purchase price for the E85 engine

AFs SELECTED – CONT'D

2. B20 Blend Biodiesel

- No infrastructure expense or modification to vehicles
- If an OEM does not have a compliant vehicle to meet Santee Cooper's job requirement, Santee Cooper will use B20 blend biodiesel for the non-compliant vehicle to remain overall compliant for the model year

AFs Selected – Cont'd

- B20 blend allows our fleet to travel State wide to perform job requirements
- Because there is no additional purchase price for fleet's engine to use the fuel

Santee Cooper's AF Challenges

- Staying in compliance with EPA Act requirements
- Keeping current on new AFV technology – hybrid and hydrogen engines
- Keeping expenses at a minimum – to minimize cost to our customer's electric rates
- Trying to reduce driver frustration during cold months due to “hard starting/stalling” of E85 engines

AF CHALLENGES – CONT'D

- Delivery of E85 ethanol – only one vendor in South Carolina and is located in Aiken, SC – West side of the State; Santee Cooper's three E85 sites are on the Coast.
- Our tanks are 1,000 gallon above ground tanks
- Vendor can only deliver approx. 950 gallons, and coordinates the delivery when delivering other fuels to customers in the Charleston, SC area

AF CHALLENGES – CONT'D

- A site can be closed up to one week awaiting delivery of E85 ethanol
- Frustration for our drivers – will there be fuel or not?

THE END

- THANKS AND ARE THERE ANY QUESTIONS?