

## **Increasing Energy Efficiency through Increased Ethanol Use**

Submitted by Three Rivers RC&D

### **Purpose**

Minnesota used approximately 2.7 billion gallons of gasoline in 2004 according to the American Lung Association. Our dependence on imported oil adversely affects air quality. Gasoline exhaust from motorized vehicles is still the single largest source of outdoor air pollution in Minnesota according to a Pioneer Press article Alternative fuels help fight air pollution, by Mr. Robert Moffitt (May 22, 2006). High blend ethanol can reduce carbon monoxide (-40%) and pollutants that form smog by (-15%) according to the US Environmental Protection Agency. Use and production of E85 results in the reduction of greenhouse gas emission of close to 30% (American Lung Association). Ethanol is a part of the solution to our addiction to oil. This project was designed to increase the awareness and use of biofuels, ethanol in particular, in the south central Minnesota region, thereby improving air quality and creating new markets for local farmers. The R9 Renewable Energy Task Force (comprised of local community leaders, educators, organizations, and citizens) created a “biofuels resolution” for local jurisdictions to demonstrate support (near 90 have already signed on). Elements of this grant included determining what citizens and stakeholders know about biofuels and hosting educational and media activities to improve knowledge of ethanol, flexible fuel vehicles and increased awareness of renewable fuels.

### **Project Goals and Objectives**

**Goal:** To increase the use of ethanol in Region 9, and educate residents about the benefits of ethanol.

#### **Objectives:**

- Increase at least 400 citizen’s knowledge of ethanol.
- Increase at least 75 stakeholders (gas station owners, car dealers, etc) knowledge of ethanol.
- A Biofuels Marketing Task Force begins creating a marketing plan.

### **Partnering Organizations**

**Project partners include:** AgStar Financial Services, ACA; American Lung Association of Minnesota; Greater Mankato Economic Development Corp.; Greater Mankato Area Chamber of Commerce; Oldies FM 100.5, 96.7 & 94.7 KDOG, and KRRW County 101.5; Minnesota Corn Growers Association; Minnesota Soybean Research and Education Council; North star Ethanol LLC; Region Nine Development Commission; R9 Renewable Energy Task Force (Blue Earth County, Nicollet County, Watonwan County, Martin County, Minnesota State University-Mankato, Gustavus Adolphus College, MN Project, Rural Advantage, Benco Electric; Minnesota State University Mankato Students for Sustainability; Three Rivers Resource Conservation and Development); Snell Motors;

Blue Earth County Corn Growers; Nicollet County Corn Growers; Sibley County Corn Growers; Blue Earth County Soybean Growers; Archer Daniels Midland; Southern Minnesota Initiative Foundation; Ethanol Promotion & Information Council (EPIC);The Land; University of Minnesota Extension Service; Southern Minnesota Initiative; Clean Energy Renewable Teams; and others. Numerous individual volunteers assisted with the event.

## **Publicity**

Publicity was sent out through media news releases, direct mailing, e-lists, local newspapers, Three Rivers Resource Conservation and Development web site, articles in newsletters and direct invitations at meetings and events. In addition all project partners helped to disseminate the information.

- **Media coverage:** The event was open to the public and widely advertised. Lynn Kettleson, Linder Farm Network and Peter Steiner of KTOE radio were on site broadcasting live from the event.

## **Biofuels Educational Event**

On Thursday, September 7th the *Ethanol and Biodiesel Expo: Takin it to the Streets* was held at Snell Motors, Mankato from 10 am to 6 pm. Keynote presenter, Dr. Bruce Jones, Minnesota State University Mankato Automotive Engineering Technology spoke about alternative fuel research and showed some of their vehicles. This educational event featured presentations from many persons working on renewable transportation fuels and a wide variety of renewable energy vendors had informational booths set up at this event.

Buses were available to take people out to North Star Ethanol Plant for tours throughout the afternoon. In addition, there were many exhibitors and vendors.

There were over 300 people who attended this event. Tom Andrews, Ultra Marathon Runner, ran from North Star Ethanol Plant to Snell as an educational and promotional event for clean air.

Attendees were asked to fill out a short survey and receive a fuel discount coupon regarding their knowledge of ethanol and biodiesel before and after the tour. This survey provided Three Rivers RC&D and project partners' information about the effectiveness of this educational event.

### ***Takin' it to the Streets Agenda – September 7, 2006***

**7:30 a.m. - Southern Minnesota Advocates Kick off breakfast**

**8 a.m. – Tim Gerlach, American Lung Association and Gary Pectorious, Ethanol Promotion and Information Council**

**10 a.m. – Lt. Governor Carol Molnau**

Welcome and kick-off

**10:15 – Send off Marathon Runner Tom Andrews**

**10:30 a.m. – Dr. Bruce Jones MSU-M – Keynote Speaker**

“Automotive and Manufacturing Engineering Technology and Biofuels”

**11:45 a.m. – Legislative Panel**

Representatives Ruth Johnson, John Dorn, Tony Cornish, Laura Brod and Senators John Hottinger and Julie Rosen will discuss biofuels. Moderated by Kevin Schulz, The Land Magazine.

**1:30 p.m. – Gene Hugoson, Minnesota Department of Agriculture**

“Biofuels in Minnesota”

**2 p.m. – Katy Wortel, Region Nine Renewable Energy Task Force**

“Local Efforts for Renewable Transportation Fuels”

**2:30 p.m. – Reece Nanfito, Ethanol Promotion and Information Council**

“Benefits of Ethanol”

**3 p.m. – Kris Duncanson, Governors Biodiesel Task Force and American Soybean Association Board**

“Biodiesel – A Soybean Grower’s Perspective”

**3:30 p.m. – Mark Lindquist, Minnesota Project**

“Cellulosic Ethanol: A Long-Term Farm Based Energy Solution”

**4 p.m. – Tim Gerlach, American Lung Association of Minnesota**

“Ethanol and Flexible Fuel Vehicles”

**5 p.m. – Dale Busch, Minnesota Corn Growers**

“Ethanol from a Corn Grower’s Perspective”

**5:30 p.m. – Rich Gunther, General Motors**

“Ethanol – An Automobile Producer Perspective”

*Ethanol Plant tours at 1 p.m., 2 p.m., 3 p.m., & 4 p.m.*

**Region 9 Renewable Energy Task Force**

Three Rivers RC&D established a Renewable Energy committee in 2005. In 2006 they joined forces with Region 9 Development Commission and became the Region 9 Renewable Energy Task Force. In 2006 Three Rivers RC&D established a Biofuels committee to promote Ethanol and Biodiesel, as many saw the growth of those fuels as economic development in the rural areas. Several counties in the region were courting ethanol plants at the time (Waseca, Brown, Martin and Watonwan). So as not to duplicate efforts, several months after forming, the work of the Biofuels committee was folded into the work of the Region 9 Renewable Energy Task Force. The Region 9 Renewable Energy Task Force (R9 RETF) sought and successfully obtained small grants from Southern MN Initiative Fund and Clean Energy Resource Teams (CERTs) to carry out some promotion work on ethanol as identified by the former Biofuels Committee. Ethanol was discussed during sometimes lengthy portions of almost all of the meetings of the R9 RETF, which meets monthly other than the summer months. R9 RETF established 3 sub-committees reflecting the choice of projects to be undertaken: Ethanol, Community Wind, and Energy Conservation. The list of members of the task force is included under the "Partnering Organizations" topic.

## **Grant Outcomes and Impacts**

Three Rivers Resource Conservation and Development worked with numerous local partners to host a Biofuels Educational Event in Mankato to increase the awareness of renewable fuels in the South-Central Minnesota region. We also made other outreach efforts where we sent out a number of questionnaires/surveys to local gas stations, car dealerships and newspapers in order to find out their views on E85. The project was targeted towards all citizens in the area who were interested in increasing their knowledge about ethanol, flex fuel vehicles and renewable fuels. Over 300 people attended the educational event at Snell Motors. The budget for the project was \$8,790.33. Results from the surveys showed that this educational event did increase the attendee's knowledge of the use of ethanol, flexible fuel vehicles and renewable fuels. It also showed that consumer interest was low for E85 because there is a limited number of flex fuel vehicles in the area and on the road. We found that there was a need for marketing of E85.

This project provided valuable experience for the Region 9 Renewable Energy Task Force and helped solidify the task force, and the results of the surveys helped focus the committee's work.

- Increased citizen's knowledge and awareness of the use of ethanol as a renewable fuel.
- Encouraged local gas stations/ car dealerships to market E85.
- Captured how people viewed ethanol and its benefits and disadvantages.
- Allowed Three Rivers RC and D and Region 9 to develop a "Renewable Energy Task Force/E 85 Committee" which joined forces to help put on the Biofuels Event as well as begin to develop an E85 marketing plan.
- The event gave people a variety of views on ethanol as a renewable fuel since there were a number of speakers and vendors present at this event.
- Citizens got a chance to tour the North Star Ethanol plant in Mankato.
- The committee was made aware of the limited demand for E85 due to limited number of E85 vehicles in the area, as well as flex fuel vehicle owners who did not buy E85 because there was not a perceived benefit (the E85 was not priced so that they would purchase it).

## Survey Results

### *Citizen Ethanol IQ survey*

- Surveys were distributed at the Biofuels Expo at Snell motors. Surveys were also distributed at several other regional events where Three Rivers RC&D was represented. These events include the Rural Land Opportunities Show in St. Peter.
- There was a lack of response with the newspaper ad surveys.

### **Customer E85 Survey**

#### **Of 131 responses:**

#### **Demographics**

- 80% of respondents were male and 16% were female with 4% not responding
- 21% were under the age of 25. 27% were between the ages of 26-55. 48% were over the age of 56
- 41% Reported being rural residents
- 27% reported being residents of small towns
- 19% reported being residents of cities with populations of over 20,000

#### **Responses**

- When asked what E85 means, 96% chose answer a) Fuel containing 85% corn or bio based ethanol. 4% of respondents answered b) 85% petroleum fuel.
- The participants were asked to choose from a list of possible ethanol benefits. The list included a) locally produced b) priced less than gasoline c) improved air quality d) supports local farmers. 72% of respondents checked all 4 answers. 4% checked only answer a. 11% checked a, c, and d. 2% checked only answer c.

According to these results 89% of respondents believe ethanol supports local farmers and 76% believe ethanol is priced less than gasoline.

- 15% reported driving a flex fuel vehicle, and using E85. 4% own flex fuel vehicles, but don't use E85. 17% don't own flex fuel vehicles, but still use E85. 43% reported neither having a flex fuel vehicle nor using E85.
- When asked how many E85 stations there were in Minnesota, 23% replied 0-99 stations. 37% replied 100-200 stations. 37% replied 200-400 stations. 3% did not respond
- In response to the question "What is biodiesel?" 9% replied same as raw vegetable oil. 87% responded biodegradable, nontoxic and essentially free of sulfur and aromatics fuel. 2% replied fuel not approved for use in the US. 2% did not respond

- On a scale of 1-5 respondents were asked to rate their knowledge of ethanol and bio diesel before the Ethanol and Biodiesel Expo. The rankings were as follows:
- Before Expo      After Expo
 

1- 7%	1- 2%
2- 12%	2- 2%
3- 42%	3- 11%
4- 24%	4- 35%
5- 13%	5- 16%
No response- 2%	No response – 33%

*Gas Station Survey*

- Surveys were mailed out to all of the local area gas stations and car dealerships.

**Of 31 responses:**

- 6 currently sell E85 (19%)
- 13 report customer requests for E85 (42%)
- 3 report that sales have increased since adding E85 (9.6%)
- 18 respondents answered the question regarding future plans to offer E85. One station plans to sell E85 in the next 6 months to 1 year, 3 (17%) plan to sell E85 in 1-2 years, 2 (11%) plan to sell E85 in 2 or more years, and 12 (67%) don't have any plans to sell E85

Comments on Ethanol and E85 included:

“We would like to sell E85, cost of new tank and pump are a large factor”  
 “Have been looking into E85, but the price for me as a small independent station would not allow me to be competitive”  
 “There needs to be more consistency in the retail pricing of E85. E85 should be available at pipeline competitive prices. Freight costs are high under the current delivery system.”

*Government Use of Bio Fuels*

**Government Employee Biofuel Survey Results**

1. 81% answered that E85 was a fuel containing 85% ethanol
2. 100% thought that all vehicles can use E85
3. 85% responded that they did drive flex fuel vehicles
4. When asked to rank the benefits of using ethanol, support for local farmers ranked highest, followed by local production of ethanol, air quality improvement, and price less than gas was ranked lowest in importance.
5. 43% of respondents thought there were 0-99 E85 filling stations in Minnesota, 39% replied that there were 100-199 e85 stations in Minnesota, and 18% thought there were 200-400 stations in Minnesota
6. 89% replied that biodiesel is a biodegradable, nontoxic and essentially free of sulfur and aromatics.

7. On a scale of 1 to 5, 5 being the highest level of knowledge about bio fuels, respondents ranked themselves: 1) 17% 2) 28% 3) 35% 4) 17% 5) .04%
8. When asked “What do you think of Ethanol and biodiesel?” respondents answered:
  - I think it is a very good start to improving air quality, economy for the farmers and do not have to import so much crude from abroad.
  - A great way to move us from complete dependence on crude oil. A part of the solution.
  - High potential – need improvements in processing and end subsidy. As profitability rises subsidy should sunset. Need to get away from corn to lower input crops. These are good sources of alternative fuel to use instead of petroleum products taken in our vehicles.
  - Good for the environment and cheaper.
9. 77% of respondents were male, 23% indicated they were female
  - 71% were ages 26-55
  - 29% were older than 56 years
  - 40% reported living in rural areas
  - 60% reported being from a small town

## **DISCUSSION**

From the results of the surveys conducted for this grant, there seems to be broad public support for the use of ethanol as a transportation fuel. The support for ethanol largely is due to the public perception of ethanol as an environmentally positive alternative to imported oil, in addition to a sense that ethanol provides support for the local farm economy.

The biggest factors limiting consumer adoption of E85 as indicated by these survey results are the lack of retail outlets, the price of E85, and limited vehicles with the capacity to run on E85. One challenge encountered during this project was the misperceptions and misinformation fueled by the rising price of corn - the food versus fuel debate. Future efforts of the R9 Renewable Energy Task Force will include getting out the correct information in our area as this debate continues.

Another challenge the committee discussed at length was the relationship of the price of E85 to the price of gasoline and the lack of control farmers, ethanol plants and independent gas stations have over the price of E85. Because of the mileage loss in burning E85, it does have to be priced proportionally less than gasoline for E85 vehicle owners to buy it.

Public policy may be needed to prevent oil companies from manipulating the price of E85 so that it is uncompetitive. This may be more critical in the future if there is a temporary oversupply of ethanol. Stronger sales of E85 will be needed to handle the increased supply, but critical to those sales is not only access, but price. The committee decided the future for ethanol may be E10 or E20 throughout the country, but national

distribution channels are not all in place today, thus the need for continued promotion of E85 in the short term.

Critical to increased use of E85 is having more flex-fuel vehicles at the marketplace, which appears to be happening, but also to have E85 priced competitively so flex-fuel vehicle owners will consistently buy it. Perhaps Congress will need to allow ethanol plants to mix and sell E85, such that the oil companies cannot control the price and keep it uncompetitive.

The demand for ethanol has raised the price of corn to the point that corn farmers are enjoying good profitability. The committee would hate to see this newfound rural prosperity crash, and feels that Congress may need to put in place some controls so that farmers can continue to have income stability.

In regard to the food vs. fuel debate, especially the higher price of corn leading to higher feed prices for livestock farmers, the committee did an economic analysis which they intend to widely share, which shows the price of pork, would only go up 6 cents a pound with corn the price it is today.

In regard to the corn versus conservation debate, the committee discussed many times that corn ethanol is a bridge to the future. Important research on perennial crops is ongoing and there is every hope that the feedstocks of the future will provide high levels of land conservation.

The committee's ethanol promotion work will be ongoing and two-fold: responding to the food vs. fuel debate and the corn vs. conservation debate with good information, and working with the state E85 promotion board to continue to promote ethanol use in the Region 9 area.

Thank you for your support,

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Greg Roiger  
Three Rivers RC and D Council, Chair