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USDA - RURAL BUSINESS ENTERPRISE GRANT
ETHANOL BUSINESS MODEL – FINAL GRANT REPORT
MAY 22, 2008

Northeastern Wyoming Resource Conservation and Development Area

Member Organizations: Coal Bed Natural Gas Alliance, Sheridan County CD , Campbell County CD, Big Horn Mountain Country Coalition ,Crook County NRD, Lake DeSmet CD, Niobrara CD, Northeastern Wyoming Economic Development Corporation, Powder River CD, Sheridan County, Weston County NRD, UW Cooperative Extension.

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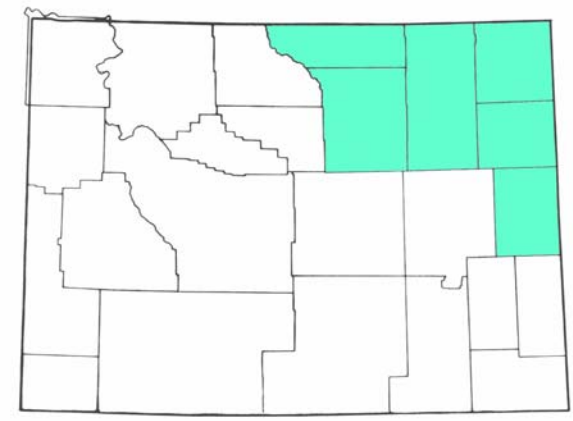

NE Wyoming RC&D Area

RC&D Background

The Northeastern Wyoming Resource Conservation and Development Area (RC&D) is a 501(c)3 non-profit organization with 17 years of experience in economic development and conservation assistance in rural communities. The goals of the RC&D are to nurture regional businesses, improve community infrastructure and encourage the appropriate development of natural resources. The RC&D is currently providing technical assistance on over a dozen projects in Northeastern Wyoming. The RC&D Board of Directors includes representation from local governments and statewide organizations working in a six county area.

Project Setting

The Energy Independence and Security Act of 2007 set out a renewable fuels standard (RFS) of 36 billion gallons of biofuels by 2022 and supersedes previous Federal legislation. In the context of high motor fuel prices, this standard is well positioned to assist consumers and businesses that are currently squeezed by limited refining capacity and short fuel supplies. At the time of this report, crude oil prices had exceeded $125/barrel.

In the US, 10% ethanol - gasoline fuel blends (E10 or gasohol) are widely available, due to positive blending economics and the RFS. However, high percentage ethanol fuel blends, such as 85% ethanol (E85) are not widely available in most states. This is despite the fact that over 6 million vehicles in the United States are designated as flexible fuel (FFV) or E85 compatible. Furthermore, automakers are poised to increase FFV vehicle production in response to market demand. Realizing the important energy security, rural development and clean environment objectives of the RFS will require that consumers have better access to E85 in the marketplace.

The Primary goal of this project was to develop a business model that would assist fuel retailers in Northeastern Wyoming with the marketing and sales of all ethanol blended fuels, especially E85. Data collected during year one of the project was intended to lead to a possible multi-year program to assist with ethanol infrastructure and marketing needs for rural small businesses.

Project Scope

1) Document the specifications for E85 infrastructure needs including pumps, marketing and product availability.
2) Perform outreach with gas retailers in Northeastern Wyoming to identify specific needs and concerns and to educate them about ethanol. Organize in person meetings and perform site visits as necessary.
3) Using the needs assessment, assist the RC&D Board of Directors investigate grants to help fund E85 retailers with infrastructure in future years.
4) Assist a Sheridan, Wyoming fuel retailer with the introduction of E85 ethanol in 2007.
5) Lead outreach to Sheridan, Wyoming citizens, businesses and agencies about the availability and benefits of E85.

The RC&D hired a full-time project manager in 2006 to complete this scope of work. Assisting the project manager was the RC&D Board of Directors and a federal RC&D Coordinator.

PROJECT ACTIVITIES AND FINDINGS

1) E85 infrastructure Considerations

In order to provide increased availability of E85 to consumers, the RC&D considered three main elements of the retail fuels business in Northeastern Wyoming.

Fuel Supply

- Availability – Most NE Wyoming retailers have the option of purchasing E85 for their stations. Fuels terminals in Casper, WY, Rapid City, SD and Laurel, MT all have ethanol listed on their weekly price sheets. Many jobbers (distributors) already blend 10% ethanol to enhance octane or increase margins.
- Cost – Ethanol is cheaper than gasoline, In addition, blenders of ethanol with gasoline receive a 45¢/gal federal tax rebate.[1] When some portion of this discount is passed to the retailer, effective marketing of E85 can occur. At the time of this report, wholesale ethanol was at least 80¢ cheaper than gasoline considering its cost and the tax rebate. Interviews conducted as part of this project indicate that ethanol cost savings were by no means automatically offered to retailers or publicized on price sheets.
- Branding – RC&D found that 81% of the stations surveyed were branded. Branded stations require their retailers to follow certain marketing specifications common to other similar stations (Shell, BP, Exxon stations etc...) Branded stations also have contractual specifications. As an example, most branded stations do not allow E85 to be sold “under the canopy”. Most large petroleum companies do not have their own brand of E85. In addition, major oil companies will freely admit that they view ethanol as a mere fuel enhancement. E85 (i.e. only 15% petroleum) is therefore seen as a competing product not controlled by the oil industry. It is not surprising that independent stations have taken the lead in promoting E85 nationwide.

[1] Ethanol Blenders Credit enacted by 2008 Farm Bill.

Consumer Demand

- Flex Fuel Vehicles – Identifying flex fuel vehicles (FFVs) that can use E85 fuel is a key component of stimulating consumer demand. Research conducted as part of this project was unable to determine the exact numbers of FFVs in specific NE Wyoming communities. Still, it is important to note the large numbers of new and used models the US auto manufacturers have manufactured and educate the consumer about their FFV. It is also important to note that all gasoline models manufactured since 1982 can use 10% ethanol blends. A number of readily available reference products allow the retailer to recognize FFV models, and reference vehicle identification numbers.
- Ethanol Myths – As part of this project, the Northeastern Wyoming RC&D has taken a proactive role in educating consumers and business about myths related to ethanol. These myths have some origins in competing industries looking to discredit alternative fuels. Some ethanol myths come from early experiences with ethanol that are no longer relevant. Consumer confidence in ethanol is important, if it is to be accepted by the American consumer. Please see Appendix A for a list of common myths about ethanol and some of the information distributed by the RC&D.
- Price/Marketability – E85 marketing requires that the fuel be sold at a discount to regular unleaded. This is due to the fact that ethanol is cheaper (see cost discussion above) and that ethanol has fewer British Thermal Units (BTUs) than gasoline. E85 has been shown to reduce mileage in some vehicles. Therefore the consumer must be able to realize a per gallon cost savings to offset any perceived loss in mileage. With onboard computers in newer vehicles, consumers are very aware of cost per mile parameters.

Infrastructure

- Space – Businesses vary in their physical ability to expand at their current location. RC&D found that 20% of the retailers had some physical limitation to selling E85 ethanol or any alternative fuel. These were commonly small lot size or an inability to add additional underground fuel storage.
- Equipment – A good deal of variability was found in tank and dispenser technology. The most common equipment constraint to E85 was the inability to add a new product without replacing another. While premium unleaded was often a potential candidate to be replaced with E85, premium was also blended with regular unleaded at many locations to create a mid-grade product. While premium itself was not a significant share of sales, the premium product was essential to blending mid-grade.

- Technology – Since November 2006, Underwriters Laboratory (UL) has been developing E85 dispenser specifications for the retail fuel market. Alcohol products can corrode aluminum and brass components and some older rubber seals over time. Ethanol may also have a solvent effect on petroleum deposits in underground tanks previously used for gasoline or diesel. While many existing dispensers in established ethanol markets have been used for many years successfully, new pump configurations are being developed. For NE Wyoming retailers using older dispensing technologies, a lack of clear technical guidance from the ongoing UL research was a significant source of uncertainty.

2) Results of Fuel Retail Outreach – 2006

In a 2006 NE Resource Conservation and Development Area retail assessment, a number of questions were asked to the 100 retailers in the Area. The survey was conducted through a combination of on-site visits, phone communications and follow-up.

- ❖ 26% had substantial knowledge of ethanol (E85) fuel.
- ❖ 44% claimed average knowledge of E85.
- ❖ 29% had little to no knowledge of E85.
- ❖ 63% had little to no need or desire to sell E85.
- ❖ 30% claimed some interest in selling E-85.
- ❖ 81% of stations were branded.
- ❖ 69% of stations had a particular interest in biodiesel.

The results of the outreach are reflected throughout this report. Several key conclusions can be made based on the outreach with retailers.

- Retailers strongly agree with the energy security aspects of alternative fuels.
- They are interested in new fuel products, marketing opportunities and partnerships where they have more control over supply and prices.
- Due to the cost of replacing pumps and tanks, financial incentives are needed to stimulate widespread infrastructure changes.
- Both consumers and retailers would benefit from an extensive outreach and education campaign on ethanol and biofuels. Myths are rampant.
- Distributors ("jobbers") and brand contracts influence retailers in their business decisions.

3) Future Funding Opportunities

Despite a concerted effort to develop new funding sources, the RC&D was unable to secure additional funding as part of this project. Funding for continued technical assistance, business outreach and for fuel infrastructure incentives are all needed by retailers.

Federal energy policy does allow for a tax rebate on the first 30% up to a $100,000 investment in ethanol or biodiesel compatible pumps and tanks. The RC&D was able to assist the Gillette Farmers Cooperative through awareness of this program. The Coop updated equipment and subsequently sold lower percentage blend ethanol (E10) and biodiesel (B5) products as a result.

Most programs to assist fuel retailers sell E85 are found at the State level and are administer by state Agencies.[2] These programs are common in states with significant ethanol production facilities or progressive environmental mandates. While Wyoming has a strong ethanol producer tax credit, it does not currently provide incentives to retailers.

[2] Further information on State and Federal incentive programs is found a the Alternative Fuels Data Center of the US Department of Energy - http://www.eere.energy.gov/afdc/incentives_laws.html

4) Sheridan, Wyoming E85 Introduction and Marketing

Prior to this project, there was no E85 available in Northeastern Wyoming and only four stations statewide. The RC&D identified a retailer early in the project to begin selling the product in the Sheridan market. The RC&D project manager initiated a consumer education campaign in advance of expected retail availability of E85 in 2007. This campaign included multiple speaking engagements to business groups, governments and citizens. Radio interviews to promote the project were also conducted.

Due to unforeseen contractual limitations with their brand and distributor, this retailer was unable to follow-through on their project commitments. As a result, the RC&D approached the Sheridan Farmers Cooperative and partnered with them to begin selling E85. In order to secure the partnership with the Sheridan Cooperative, the RC&D contracted with them to insure that E85 would be available for at least one year with correct pricing and marketing. In exchange, the RC&D provided a $10,000 incentive to the Cooperative to pay for equipment reconfiguration costs, marketing and risk associated with the E85 introduction. This incentive was funded through the RBEG program.

The first sales of E85 took place in March 2008. E85 is being sold at a price that is a significant discount to regular unleaded (75-80%) while providing an adequate margin to the Coop. Customers have been very satisfied with the value and performance of the fuel in the first two month and sales are increasing with awareness of product availability.

Sheridan E85 marketing included radio advertising, outreach to federal agencies with FFVs and promotions with car dealerships. An open house at the Sheridan Cooperative was held on May 21, 2008.

Sheridan Farmers Cooperative – FFV, E85 Pump and Signage

APPENDIX A - COMMON CONSUMER MYTHS ABOUT ETHANOL

There many myths or misconceptions about ethanol that get circulated in news media and by the fossil fuel energy sector. Twelve common questions are discussed at http://www.ethanolrfa.org/resource/facts/answers/ with references provided. Other discussions are widely available.

A commonly cited negative of corn ethanol is that it is causing food prices to increase world-wide. In fact, economic analysis has shown that, while ethanol demand has raised prices for corn by about 15%, it has little impact on other commodities such as wheat or rice. High foreign demand from developing counties (i.e. export demand) and high energy costs are the single largest factors in all commodity price increases.[3]

The following brief was developed by the RC&D as part the Ethanol Business Model at the request of local fuel retailers who were confronting ethanol myths with the public:

SOME COMMON MYTHS ABOUT CORN ETHANOL

November 2007

The United States currently produces about 7 billion gallons of corn ethanol annually, that is blended in about one-half of all gasoline sold. The 130 "agri-refineries" that produce this fuel have created over 200,000 jobs in rural communities across America while reducing US dependence on foreign oil.

Corn ethanol is an important first step toward a future where motor fuels can be produced from a wide range of agricultural and forest wastes. The scientific knowledge that allows these "cellulosic" advancements has been developed because of our 30 years of experience with corn ethanol. The wood cellulose ethanol plant in Upton, Wyoming is a perfect example of this.

Myth #1 – Ethanol is not really good for the environment or clean air

Fact: Ethanol is a clean-burning renewable fuel that helps reduce emissions of carbon monoxide, toxic emissions, particulate matter and smog-forming volatile organic compounds from 12-30 %

The American Lung Association of Metropolitan Chicago credits ethanol-blended reformulated gasoline with reducing smog-forming emissions by 25 percent since 1990. Ethanol is an "oxygenate" that is blended in over 50% of all gasoline sold because it has proven environmental benefits. The body of research supporting this is overwhelming. There is really no credible research that counters this fact.

See: Farrell et al. 2006 Ethanol Can Contribute to Energy and Environmental Goals. *Science* Vol. 311 p. 506-8

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[3] See: The Effects of Ethanol on Texas Food and Feed. Agricultural Food Policy Center – Texas A&M University. April 2008

Myth #2 – Corn Ethanol will not solve our Energy problems. Even if all the Corn in American was converted to Ethanol it wouldn't make much difference.

Fact: This is a false dilemma or "red herring" since absolutely no one is proposing ethanol as a replacement for all gasoline. It is human nature to search for a "silver bullet", but the truth is that with energy there just isn't one. Ethanol improves gasoline and be blended at 10% and used in any motor vehicle right now. Flex fuel vehicles can use higher blends. Corn ethanol is just one answer in a portfolio of solutions that include technology and conservation.

However, 10% does make a difference. We import 10% of our gasoline as refined product because we can't refine enough domestically. We import over 10% of the crude petroleum we use from Saudi Arabia and Iraq combined. We import over 60% of all our petroleum.

Note: In 2007, the US grew 13 billion bushels of corn. Livestock feeding will continue to be the largest user of domestic corn production, consuming about six billion bushels annually. Current projections indicate that corn ethanol should be able to displace 10% of our gasoline needs while supplying all other users of corn.

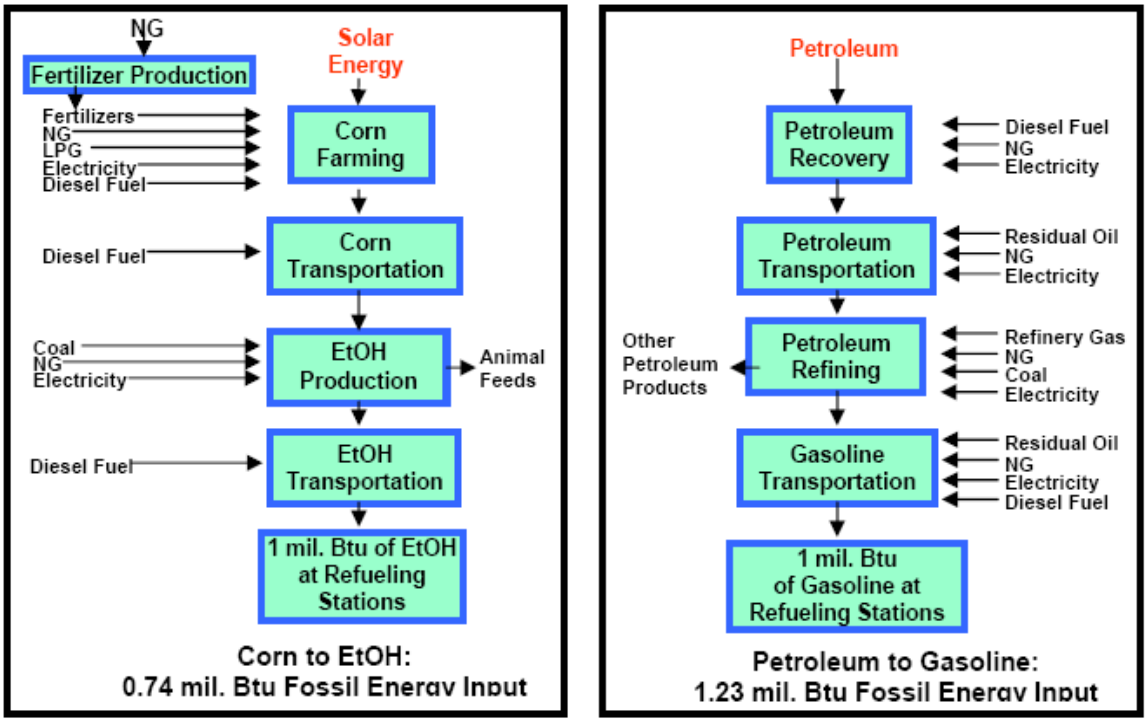
Myth #3 – Corn ethanol has a negative energy balance or takes more energy to make than it yields.

Fact: The energy balance of corn is at least 1.3:1. One unit of energy used to grow, store, ship and process corn into ethanol yields 1.3 units of energy as fuel. This is a positive energy balance. These results have been duplicated by dozens of independent researchers at the Departments of Energy, Agriculture and a number of Universities. This 1.3:1 figure is considered accurate by the vast majority of the scientific community.

The only way to give corn ethanol a negative energy balance is to ignore the current levels of productivity in agriculture and the secondary products that ethanol plants produce such as distillers' grains.

Unfortunately, there have been repeated attempts by a very few individuals to skew the energy balance of ethanol by modeling a "worst case scenario" that is neither real nor defensible.

(Note: As it turns out, it takes 1.23 units of energy to recover and refine petroleum into gasoline that yields 1 unit of energy – a negative energy balance.)



See: Michael Wang. 2005. Energy and Greenhouse Gas Emissions Impacts of Fuel Ethanol. US Department of Energy – Argonne National Laboratory.

http://www.ncga.com/ethanol/pdfs/Wang2005.pdf

Myth #4 – Ethanol uses far too much water when it is grown and when it is converted into ethanol.

Fact: According to the USDA Census of Agriculture, 86% of all corn acres are non-irrigated. These are rainfed Midwestern farms that are ideally suited to grow corn in rotation with other crops. While this rainfall is technically "used" by the corn plant it also transpired back to the atmosphere and becomes rainfall downwind. It is very misleading to blame ethanol for water misuse when it is a rainfed system.

In locations like Nebraska where irrigation is used, farms experience yields up to 30% higher to make up for the cost of irrigating. In any case, farmers who have invested in irrigation systems would be expected to use them regardless of whether they grow corn or some other crop. Most of the growth in corn acres to supply ethanol demand has been on non-irrigated farms.

It takes about 3 gallons of water to process a gallon of ethanol because ethanol plants recycle much of the water they use. A 40 million gallon ethanol plant consumes about the same amount of water as an 18-hole golf course.

(Note: It takes 1,851 gallons of water to refine a barrel of crude oil)

http://ct.water.usgs.gov/education/trivia.htm