Minnesota Ethanol Update

Minnesota Coalition for Ethanol Publication

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Most conservative estimates put our world's oil supply at about 50 years. The oil spill in the Gulf and ongoing concerns about the sustainability of our world's energy supply have prompted renewed debate over a long-term energy solution. Ethanol has been a success story, both for Minnesota and the nation. As the industry continues to advance, we want to share with you the latest on the ethanol industry and its ongoing potential for future success.

We Can Use Corn for Fuel

FACT: There is no shortage of corn. On August 10, 2010, the U.S. Department of Agriculture predicted a harvest of 12.7 billion bushels, the third largest crop on record. In 2007, U.S. farmers produced a then record 13.1 billion bushel corn harvest—and some 2.3 billion bushels (about 13 percent) were used in ethanol production. There is still room to significantly grow the ethanol market without limiting the availability of corn. Steadily increasing average corn yields and the improved ability of other nations to grow corn make it clear that ethanol production can continue to grow without affecting the food supply.

Ethanol production efficiency is increasing. A recent University of Illinois at Chicago study found increased production efficiencies. Ethanol per bushel of corn increased from 2.64 gallons per bushel in 2001 to 2.78 gallons per bushel in 2008, a 5.3 percent increase. Many Minnesota ethanol plants exceed this average yield today and continue to improve.

The corn used for ethanol production is field corn typically used to feed livestock. Ethanol production also results in the production of distillers grains and gluten feed—both of which are fed to livestock as well. Seventeen pounds of distillers dry grains are produced per bushel, resulting in 2.6 million tons of animal feed production annually in Minnesota alone. Ethanol coproducts are helping to produce high quality meat products for distribution domestically and abroad. In addition, these coproducts substitute for other feed components, offsetting fossil fuel use and associated greenhouse gas emissions required to produce the substituted feed components.

Much research has been conducted on this topic, and the fact is that rising oil and fuel prices have a much greater impact on food prices than any increased use of corn as a source of biofuel. This summer, the World Bank released a study concluding that biofuels have played only a marginal role in world commodity and fuel prices. Volatile oil prices, speculation and adverse weather have all played a more significant role. Other factors that may affect food prices include an increase in cost of fertilizers, pesticides, and other costs associated with growing, processing, packaging, and transporting food. It is time to move beyond the misplaced "food vs. fuel" discussion and begin to realistically discuss the energy future of the United States.

Source: National Corn Growers Association, www.bionomicfuel.com and University of Illinois at Chicago

Ethanol Facilities Continue to Improve Water and Energy Efficiency

Ethanol producers in Minnesota and across the country continue to improve their energy and water efficiency through improved technology and ongoing research and development. Over the past decade, ethanol facilities have dramatically increased their water efficiency. New facilities in Minnesota use between 2.5 - 2.7 gallons of water per gallon of ethanol, and improved technology will continue to reduce this number.

Gasoline production requires a similar amount of water. For comparison, it takes 11.6 gallons of water to produce one pound of chicken. A typical 40 million gallon per year ethanol plant uses an amount of water daily that is equivalent to the daily water use of a standard 18-hole golf course.

Ethanol facilities are also improving their energy efficiency. A recent news release noted that according to a study produced by the U.S. Department of Agriculture, the net energy balance for corn ethanol increased from 1.76 to 2.3 BTUs of required energy from 2001 to 2008. That means that for every 1 BTU of energy put into corn ethanol (from growing the corn through making ethanol), 2.3 BTUs of energy is produced.

Ethanol plants in 2008 used an average of 25,859 BTU of thermal energy and 0.74 kWh of electricity per gallon of ethanol produced – that's 28 and 32 percent less than 2001, respectively. Ethanol per bushel of corn, meanwhile, increased 5.3 percent from 2.64 gallons per bushel to 2.78 gallons per bushel.

The reality is that we continue to need fuel. It has to come from somewhere, and national security interests are protected when that fuel can be derived within the United States. No energy production is more local than ethanol. The University of Illinois at Chicago says that ethanol facilities, on average, source their corn from within a 47-mile radius of the plant. As processes advance, it is critical that Minnesota continues to remain on the forefront of new biofuel technology and processes.

Source: USDA; University of Illinois at Chicago; University of Minnesota; Institute for Agriculture and Trade Policy; U.S. Geological Survey; National Renewable Energy Laboratory

Ethanol and the Minnesota Pollution Control Agency

Members of the Minnesota Coalition for Ethanol ("MCE") are working with the Minnesota Pollution Control Agency ("MPCA") to improve the relationship between the industry and the agency and address key regulatory issues important to ethanol plants in the state. MCE members have identified specific targets for improvement in the state regulatory system, including designing permits to account for future facility modifications, (saving both the facility and the MPCA time and money that can be better spent on other activities), streamlining the water treatment chemical approval process, increasing training opportunities, creating a compliance inspection program that allows facilities and MPCA staff to voluntarily find and fix most problems without fear of enforcement and creating clearer guidance from the MPCA regarding compliance expectations for facilities.

In addition, the MCE is discussing environmental review regulations with the MPCA, specifically relating to the disparity in review for ethanol facilities versus other types of facilities. Current rules require that every new ethanol facility prepare an initial EAW and a subsequent EAW for any expansion of 5 million gallons per year or more of capacity. The expansion EAW is required even though the facility prepared an initial EAW and has been operating under strict permitting requirements. As a result, ethanol facility expansions in Minnesota are subject to stricter environmental review requirements than any other type of facility. In comparison, an oil refinery must prepare an EAW for a capacity expansion of 10,000 barrels per day. This is equal to 420,000 gallons per day or a potential annual production increase of over 153 million gallons per year.

While Minnesota has been a leader in ethanol production in the past, most new facilities are being built in Iowa, South Dakota and other neighboring states. Changes to Minnesota's environmental review process can help reverse this trend. MCE facilities have received excellent support from the MPCA on this initiative and believe that important changes will result from the partnership.

Outlook – New Technologies and Better Yields

According to the USDA, ethanol yields have increased by approximately 10 percent in the past two decades. This means more ethanol is produced from less corn. Through improved technology, including more efficient nitrogen applications to genetic improvements in corn seeds, corn has become a much bigger power house.

A traditional dry grind ethanol plant that produces and sells dry distillers grains and uses conventional (fossil) fuel power produces nearly two times more energy in the form of ethanol delivered to customers than it uses for corn, processing, and transportation. For plants that use up to 50 percent biomass power, the energy output is increased to nearly 2.8 times the energy inputs.

Ethanol has made the transition from an energy sink, to a moderate net energy gain in the 1990s, to a substantial net energy gain in the present. *Minnesota's ethanol industry continues to improve efficiencies and technologies*. Traditional corn ethanol already reduces greenhouse gas emissions by up to 59 percent relative to gasoline. Based on studies of cellulosic ethanol production from corn cobs and other agricultural residue, this developing technology has a potential emissions reduction of 111 percent over traditional gasoline.

Source: 2008 Energy Balance for the Corn-Ethanol Industry – USDA, June 2010, www.poet.com

Economic Impact – Job Creation When it's Needed Most

In July 2010, the Minnesota Department of Agriculture ("MDA") released its latest report on the impact of the ethanol industry in Minnesota. The true measure of success for Minnesota's ethanol industry is its "multiplier effect" on the state's economy, benefitting many economic sectors in the state including agriculture, manufacturing, transportation, services, construction and trade. Thousands of jobs are created and sustained through the local and national demand for ethanol. In 2009, Minnesota's ethanol industry generated more than $2.5 billion in economic activity in the state and supported more than 6,800 jobs. The impact is projected to exceed $3 billion in 2010, while creating another 1,500 jobs.

The report reflects the importance of ethanol to Minnesota's economy, and provides insight into the growth of the ethanol industry in Minnesota over the past ten (10) years. Minnesota currently has twenty-one (21) ethanol plants with a total annual production capacity projected for 2010 of 1.1 billion gallons. After a difficult financial year for ethanol in 2009 due to low ethanol prices, the improved numbers are a strong sign for Minnesota's ethanol plants.

Source: Minnesota Department of Agriculture, Agricultural Marketing Services report, "Ethanol Plants in Minnesota 2010"

Minnesota Ethanol Production and Economic Impact

Year	Production (Million Gallons)	Output Impact ($ million)	Employment Impact (# of jobs)
2000	220	$486.12	1,330
2001	252	$600.32	1,642
2002	300	$566.17	1,549
2003	359	$807.73	2,209
2004	400	$1,109.76	3,035
2005	420	$1,175.73	3,214
2006	550	$2069.29	5,660
2007	670	$2,217.84	6,066
2008	830	$3,146.78	8,607
2009	862	$2,506.11	6,854
2010*	1,117	$3069.53	8,395

**Projected*

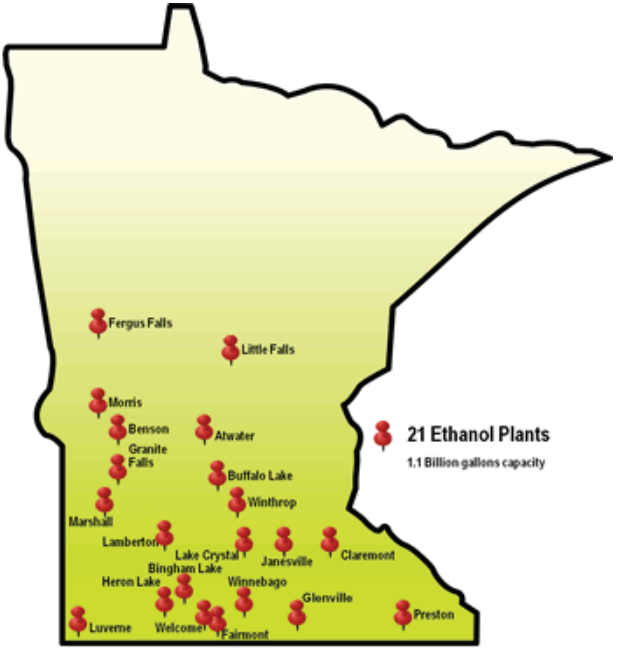
Source: MDA, AMS

Minnesota's Ethanol Leadership

Minnesota is currently home to 21 ethanol plants. These 21 plants, many of which started out as farmer-owned co-ops, have a combined production capacity of more than 1 billion gallons, or 23.8 million barrels of ethanol. In 2008, Minnesota consumed 62.9 million barrels of gasoline.

There is a clear path to increased ethanol utilization. Recently, the US EPA approved an increase in the maximum amount of ethanol blended with gasoline for use in newer motor vehicles. Gas stations will now be allowed to sell a blend of up to 15 percent ethanol, a marked increase over the previous 10 percent cap.

In order to remain competitive, Minnesota's ethanol leaders need the opportunity to compete with plants in surrounding states and throughout the nation. Ethanol's future is bright, leading to new jobs and increased economic output.



Source: http://www.mda.state.mn.us/en/renewable/ethanol.aspx

Ethanol Quick Notes

U.S. motorists get more fuel from American ethanol than from Saudi Arabian oil. With U.S. dependence on foreign oil projected to grow from 57 percent in 2002 to 68 percent in 2025, our country increasingly relies on crude oil supplies from very unstable regions of the world. The use of ethanol directly displaces imports of foreign oil and gasoline additives. Today, ethanol reduces the need to import 128,000 barrels of oil and gasoline additives per day.

Ethanol is warranted by every automobile manufacturer in the world, and is safe for all engines. Ethanol enhances engine performance by increasing the octane level in gasoline. Many world-class motorcycle and snowmobile racers prefer ethanol because of its performance advantage over other fuels. Beginning in 2007, the Indy Racing League Indy Car Series cars are now fueled with E100 which is 100 percent ethanol.

Source: MN Corn Growers Association, Renewable Fuels Association

Additional Ethanol Resources

Renewable Fuels Association
http://www.ethanolrfa.org

MN Farmers Union
http://www.mfu.org

MN Farm Bureau
http://www.fbmn.org

Minnesota Corn Growers Association
http://www.mncorn.org

U.S. Department of Agriculture
http://www.usda.gov

National Corn Growers Association
http://ncga.org

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