MINNESOTA DEPARTMENT OF AGRICULTURE

Report to the Legislature

Annual Report on Biodiesel

Christina Connelly, 651-201-6220
Kevin Hennessy, 651-201-6223
625 North Robert Street, St. Paul, MN 55155
www.mda.state.mn.us

Date: January 13, 2012

Table of Contents

Pursuant to Minn. Stat. § 3.197, the cost of preparing this report was approximately $1,000.

In accordance with the Americans with Disabilities Act, an alternative form of communication is available upon request. TDD: 1-800-627-3529

An Equal Opportunity Employer

Executive Summary

In 2005, Minnesota became the first state to implement legislation mandating the use of biodiesel by blending biodiesel into its fuel supply at a level of 2 percent—commonly referred to as B2. According to subsequent legislation (Minnesota Statutes §239.77, subd. 2), **all diesel sold or offered for sale in Minnesota must contain 5 percent biodiesel (B5) as of May 2009, increasing to 10 percent (B10) in 2012 and 20 percent (B20) in 2015**.[1],[2]

The Biodiesel Task Force was formed in 2003—comprised of appointees from industry, academia, and various associations—**to advise the Commissioner of Agriculture on implementing the state's biodiesel blend requirement and building the state's biodiesel production capacity.** Since then, the Task Force has helped promote the industry and educate biodiesel developers, marketers, consumers and manufacturers about biodiesel and related issues in Minnesota.

Experience and testing demonstrate that biodiesel blends can perform well in cold weather. During the first winter following implementation of B5 in May 2009, some diesel fuel users in Minnesota reported problems potentially associated with the use of higher blends of biodiesel. In January 2010 the Minnesota Department of Commerce issued a temporary waiver for the B5 requirement in #1 diesel in response to concerns about the potential for clogged filters in extreme cold weather. In spite of sub-zero temperatures this winter, though, no issues with the state's B5 mandate had been reported for the winter of 2010-11 at the time of this report.

Significant progress has been made in providing new industry specifications that establish and improve quality guidelines for biodiesel, biodiesel blends, and diesel fuel oil. The American Society for Testing and Materials (ASTM) introduced additions to existing standards that incorporated biodiesel blends up to B5 into the diesel fuel standard (D975), added a cold soak filtration test for B100 to the biodiesel specification (D6751), and established a new specification (D7467) for blends of biodiesel from B6 through B20. Discussions related to additional specification parameters are ongoing.

The price of biodiesel fuel has continued to grow faster than diesel fuel prices.[3] **The price difference to consumers for biodiesel blends has increased but not as dramatically:** for example, a gallon of B2 has averaged just less than 4 cents more than a gallon of diesel during the winter months of 2011; B5, however, averaged almost 11 cents more a gallon from April to September. The federal biodiesel blender's tax credit of $1.00 per gallon was in force the entire year of 2011 – this after the credit had been reinstated in December, 2010, retroactively for 2010 and to the end of 2011. With the

[1] By law, the 10 and 20 percent minimum content levels would be effective from April 1st through October 31st only. According to MS §239.77, subd. 2a, "The minimum content for the remainder of the year is five percent. However, if the commissioners of agriculture, commerce, and pollution control determine, after consultation with the biodiesel task force and other technical experts, that an American Society for Testing and Materials (ASTM) specification or equivalent federal standard exists for the specified biodiesel blend level in those clauses that adequately addresses technical issues associated with Minnesota's cold weather and publish a notice in the State Register to that effect, the commissioners may allow the specified biodiesel blend level in those clauses to be effective year-round."

[2] According to MS §239.77, subd. 2b, the 10 and 20 percent minimum content levels "become effective on the date specified only if the commissioners of agriculture, commerce, and pollution control publish notice in the State Register and provide written notice to the chairs of the House of Representatives and Senate committees with jurisdiction over agriculture, commerce, and transportation policy and finance, at least 270 days prior to the date of each scheduled increase, that certain conditions have been met (e.g., ASTM specifications exists, adequate supply is available, etc.) and the state is prepared to move to the next scheduled minimum content level."

[3] For 2006-2009, the end of 2010 and 2011 the price of biodiesel is the rack (wholesale) price after the $1.00 federal tax credit. For almost all of 2010, prices reflect wholesale prices without the tax credit, which was reinstated in December 2010.

credit expiring at the end of 2011 and in doubt for 2012 and beyond, the industry may again operate under some uncertainty.

The value of a Renewable Identification Number (RIN) for a gallon of biodiesel, a feature of the EPA's Renewable Fuels Standard program, **has been equal to or greater than the federal biodiesel tax credit**. As this mechanism settles into the marketplace, it could take the place of the federal tax credit and reduce the cost of biodiesel blends to the consumer.

The supply of biodiesel fuel to Minnesota terminals has generally been constant. Few if any B5 outages occurred at terminals because biodiesel fuel was not available; instead, common reasons for B5 outages include local diesel fuel outages and a lack of winter blending equipment at certain out-of-state terminals. Plans for the installation of major new winter blending equipment at a terminal in Sioux Falls, South Dakota, was scheduled for 2011 and was expected to alleviate issues related to winter blending in southwestern Minnesota. This did not materialize during the year, and this part of the state continues to be a problem for biodiesel supply.

Minnesota's B2 and B5 mandates have provided an important incentive leading to the establishment of the state's biodiesel production capacity of 63 million gallons. **The state's existing capacity can provide more than the biodiesel necessary for B5 and B10, and nearly 85 percent required for future statewide B20 requirements**. A new biodiesel plant in Minnesota will likely provide additional capacity over the next few years. With the higher cost of feedstock oils and the temporary expiration of the biodiesel tax credit over most of 2010, one Minnesota plant with a production capacity of 3 million gallons ceased production and is for sale and likely to be moved from the state. The restoration of the tax credit led to the sale of another plant with a production capacity of 30 million gallon, accompanied by resumed production.

Feedstocks for biodiesel production at Minnesota plants are generally determined by the price and availability of the oil or fat used in the process. Given the large soybean oil crushing capacity in Minnesota, **much of the soy oil used in Minnesota biodiesel plants is likely to be sourced from Minnesota oil producers. However, soybean oil prices have been at record high levels recently** (despite a small falloff over the past two years)**, which has reduced** profitability and production**.**

Introduction

This report is submitted pursuant to Minnesota Statutes §239.77, subd. 5:

> *Beginning in 2009, the commissioner of agriculture must report by January 15 of each year to the chairs and ranking minority members of the legislative committees and divisions with jurisdiction over agriculture policy and finance regarding the implementation of the minimum content requirements in subdivision 2, including information about the price and supply of biodiesel fuel. The report shall include information about the impacts of the biodiesel mandate on the development of biodiesel production capacity in the state, and on the use of feedstock grown or raised in the state for biodiesel production. The report must include any written comments received from members of the biodiesel fuel task force by January 1 of that year designated by them for inclusion in the report.*

Background

The Biodiesel Task Force was created by the Legislature in March 2003 to help the state carry out its biodiesel mandate. Since then, the Task Force has met on an ad-hoc basis to discuss issues related to biodiesel production and use. Sub-teams have been formed to address more specific issues such as cold weather operability.

The Biodiesel Task Force members are appointed by the Commissioner of Agriculture. Current membership includes:

- Douglas Peterson, Minnesota Farmers Union
- Kevin Paap, Minnesota Farm Bureau
- Dustin Haaland, CHS Inc.
- David Slade, REG Company
- Robert Krogman, Minnesota Petroleum Marketers Association
- Kelly Marczak, American Lung Association of Minnesota
- Kristin Weeks-Duncanson, At large
- Dave Ladd, At large
- Ronald Marr, Minnesota Soybean Processors
- Darrick Zarling, University of Minnesota Center for Diesel Research
- Doug Root, AURI
- Brent Webb, Flint Hills Resources, LP
- Bruce Goodrich, R&E Enterprises/Minnesota Trucking Association
- Chris Hill, Minnesota Soybean Growers Association
- Bruce Heine, Magellan Midstream Partners, LP

Implementation of Minnesota's Biodiesel Requirements

B10 Implementation

The Biodiesel Task Force met July 21, 2011. Their primary task for this meeting was to address the upcoming requirement for B10 blending set to take effect on May 1, 2012, requiring that 10% biodiesel be blended with petro diesel during the summer months.[4] Based on the discussions of the Task Force and stakeholders, the Commissioners of Agriculture, the Pollution Control Agency and Commerce published notice to the Committee chairpersons of the Legislature recommending a one-year delay in implementation of the B10 mandate, citing:

- Regulatory protocol: The Minnesota Department of Commerce, Weights and Measures Division is the enforcement agent for the state's biodiesel content mandate. Weights and Measures audits and samples biodiesel stored at bulk delivery facilities or sold at retail outlets in the state to ensure adequate biodiesel blends are offered. The division's investigators inspect retail outlets on a regular schedule. The length of the interval between inspections might allow for an opportunity for undetected violations of the content mandate. Also, Weights and Measures does not have the authority to audit or inspect at farms or fleet facilities to determine if Minnesota bulk facilities are delivering mandate-compliant fuel.
- Amount of blending infrastructure: The majority of the state is equipped with adequate biodiesel blending infrastructure. The southwestern portion of the state historically has experienced some issues with access to mandate-compliant fuel, leading to supply issues.

In addition to the delay, the commissioners also declared their firm support for the B5 mandate and the eventual moves to B10 and B20, with an action plan for going forward (addressed in the next sections).

Waiver of B5 Blending Down to B2 during Cold Weather Months

During the first winter following B5 implementation (May 2009), some diesel fuel users in Minnesota reported problems potentially associated with the use of higher biodiesel blends in extreme cold weather. In January 2010, the Minnesota Department of Commerce issued a temporary waiver for the B5 requirement in #1 diesel, reverting back to B2 in the winter months of October, November, December, January, February and March to address these concerns. The waiver is effective through March 2012.

Although the Minnesota Biodiesel Task Force Cold Issues Team did not meet in 2011, the Department of Agriculture is committed to convene the team early in 2012. The Cold Issues Team was created in 2008 to provide essential guidance to the state on technical issues related to the production, handling and use of biodiesel in cold weather conditions. The team will discuss findings from previous analyses of cold weather issues and whether future waivers on #1 diesel may be needed.

Department of Commerce Pricing Report

A report regarding wholesale pricing of diesel fuel and blends from the commissioner of commerce, in collaboration with the commissioner of agriculture, is due to the legislature by February 1, 2012.[5] This

[4] A biodiesel blending guide, produced by the Biodiesel Task Force's Cold Weather Issues Team, can be accessed on MDA's website: http://www.mda.state.mn.us/~/media/Files/renewable/biodiesel/biodieselblendguide.ashx.

[5] According to MS §239.77, subd. 2e: (e) "By February 1, 2012, and periodically thereafter, the commissioner of commerce shall determine the wholesale diesel price at various pipeline and refinery terminals in the region, and

report will look at prices at various terminals both in and out of the state to see what effect the biodiesel blends have on the overall price of diesel fuel. This information will be reported to the governor who, after consultation with the commissioners of commerce and agriculture, may adjust the mandate should a price disparity appear to be causing economic hardship to retailers of diesel in Minnesota. Any adjustment would be for a specified period, after which the blending requirements would be returned to those specified in the statute. At no time would the blending requirement fall below the current levels specified by the B5 mandate and the temporary waiver on B5 during the winter months.

ASTM Specifications

ASTM is the premier international industry association that designates quality specifications for a wide variety of industrial products including fuels and lubricants. Updates in 2008 to the existing ASTM "Standard Specification for Diesel Fuel Oils D975" incorporated biodiesel blends up to 5 percent. The specification D975-09 was not adapted into Minnesota Statutes; however, because of objections from some members of the petroleum industry who believed that adding 5 percent biodiesel into #1 diesel fuel would not allow that fuel to meet required distillation properties. An ASTM committee is currently working to resolve this issue; however, the state waiver for B5 in #1 fuel temporarily addresses this concern in Minnesota. No changes or additions were made to D975 in 2010 – the current version is D975-10c.

At a December 2010 meeting of the ASTM, a voluntary specification for a winter biodiesel product ("Grade #1B") was proposed as an amendment to D6751. This amendment included some of the same elements that were adopted in standards used by some Minnesota terminals and refiners. However, ASTM members had asked for specific additional data to document that such an amendment was needed and would be effective, but the data was not provided. Therefore the proposal was rejected and the amendment was not adopted. In the meantime, various suppliers who did not experience significant problems attributed to biodiesel elected not to adopt the more stringent requirements.

In February, 2011, an appendix item was added to D6751 titled "Low Temperature Operability Considerations." The appendix lists many different factors affecting the low temperature operating concern, and also mentions the ongoing work in this area by the Coordinating Research Council (CRC) Diesel Performance Group and the ASTM Biodiesel Task Force. These groups are investigating field reports involving filter plugging of distribution system filters and vehicle filters, causal factors for filter plugging with biodiesel blends and controlled laboratory analysis of vehicle performance under cold conditions.

Various refiners and terminals have their own standards for delivery of biodiesel and other products into their systems and these may actually be more stringent than current ASTM specifications. In fact, biodiesel requirements among some Minnesota terminals and refiners are more stringent than ASTM D6751, but not all have adopted these strict requirements.

The existing ASTM "Standard Specification for Biodiesel Fuel Blend Stocks for Middle Distillate Fuels D6751" was amended in 2008 to include the cold flow filtration test into the recommended test

---

the biodiesel price determined after credits and incentives are subtracted at biodiesel plants in the region. The commissioner shall report wholesale price differences to the governor who, after consultation with the commissioners of commerce and agriculture, may by executive order adjust the biodiesel mandate if a price disparity reported by the commissioner will cause economic hardship to retailers of diesel fuel in this state. Any adjustment must be for a specified period of time, after which the percentage of biodiesel fuel to be blended into diesel fuel returns to the amount required in subdivision 2. The biodiesel mandate must not be adjusted to less than five percent."

parameters to address cold flow issues. In addition, the federal government established a penalty for trading biodiesel not passing the cold flow filtration test that would be sold, transported or used after September 1, 2009.

The ASTM "Standard Specification for Diesel Fuel Oil, Biodiesel Blend (B6 to B20)" was approved in 2008 as D7467. The standard establishes specifications for biodiesel blends including B10 and B20, which are proposed for general usage in Minnesota in the years 2012 and 2015, respectively.

Biodiesel Prices

Diesel prices statewide and across Minnesota's border—to the south (Omaha, Nebraska) and west (Denver, Colorado)—have shown remarkably close pricing historically. Figure 1 compares average yearly prices for ultralow sulfur diesel over the past three year period. Ranges include $1.7268 – $1.7660 (low at Omaha, NE – high at Fargo, ND, difference of ($0.0392) for 2009; $2.1915 – $2.3087 (low at Minneapolis-St. Paul, MN – high at Superior, WI, difference of $0.1172); and $3.0991 - $3.1755 (low at Omaha, NE – high at Superior, WI, difference of $0.0764).

Prices for B100 vary more than diesel prices, with average monthly prices for regularly reporting regions varying as much as 21 cents in 2009 (Minneapolis-St. Paul's low to Mankato's high), 50 cents in 2010 (Marshall's low to Denver's high) and 25 cents in 2011 (Marshall's low to Grand Fork's high). The cities of Omaha, Sioux Falls, South Dakota, and Superior, Wisconsin, do not provide pricing for B100. Figures 2 and 3 compare average yearly prices for B100 for the reporting regions.

Figure 1. Diesel pricing by city (average of terminals reporting), 2009-2011 (table).

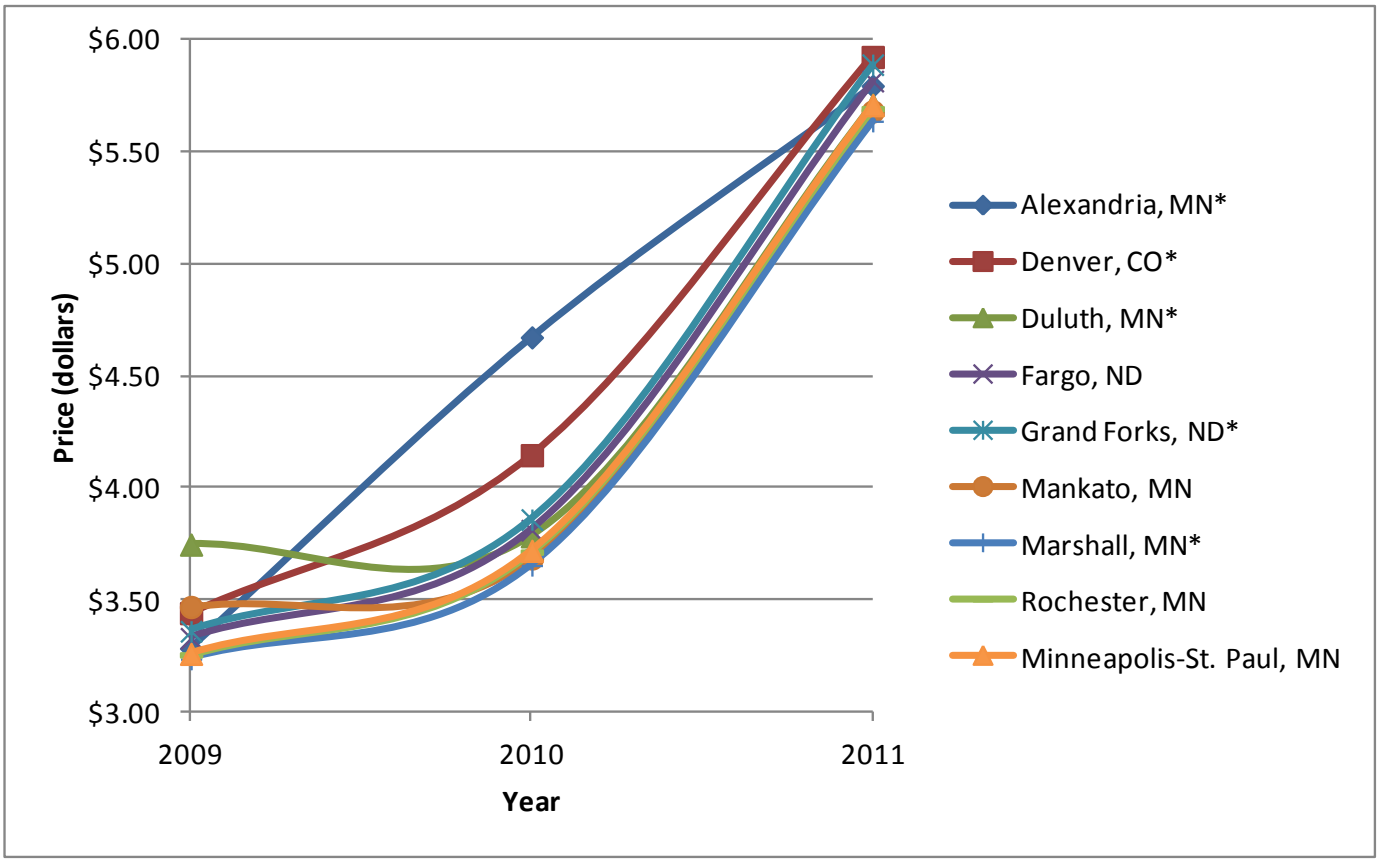
Yearly diesel price			
City/Region, State	**2009**	**2010**	**2011**
Alexandria, MN	1.7600	2.2860	3.1357
Denver, CO	1.7377	2.2975	3.1170
Duluth, MN	1.7532	2.3006	3.1357
Fargo, ND	1.7660	2.2941	3.1459
Grand Forks, ND	1.7628	2.2899	3.1424
Mankato, MN	1.7515	2.2740	3.1190
Marshall, MN	1.7538	2.2811	3.1223
Omaha, NE	1.7268	2.2513	3.0991
Rochester, MN	1.7437	2.2714	3.1198
Sioux Falls, SD	1.7375	2.2617	3.1084
Superior, WI	1.7616	2.3087	3.1755
Minneapolis-St. Paul, MN	1.7456	2.1915	3.1236

Figure 2. B100 pricing by city (average of terminals reporting), 2009-2011 (table).

Yearly B100 price			
City/Region, State	**2009**	**2010**	**2011**
Alexandria, MN*	3.2834	4.6725	5.7960
Denver, CO*	3.4409	4.1464	5.9249
Duluth, MN*	3.7471	3.7842	5.7123
Fargo, ND	3.3285	3.8114	5.8174
Grand Forks, ND*	3.3600	3.8587	5.8907
Mankato, MN	3.4683	3.6852	5.6818
Marshall, MN*	3.2352	3.6536	5.6378
Omaha, NE	No B100 data available		
Rochester, MN	3.2544	3.7133	5.6940
Sioux Falls, SD	No B100 data available		
Superior, WI	No B100 data available		
Minneapolis-St. Paul, MN	3.2592	3.7193	5.7100

*-missing prices (shaded cells) for:
Alexandria: December 11, 2009 – December 8, 2010,
Denver: June 26, 2009 – July 22, 2009; March 3, 2011 – September 29, 2011,
Duluth: April 28, 2009 – July 22, 2009,
Grand Forks and Marshall: June 5, 2009 – June 19, 2009, July 14, 2009 – July 22, 2009

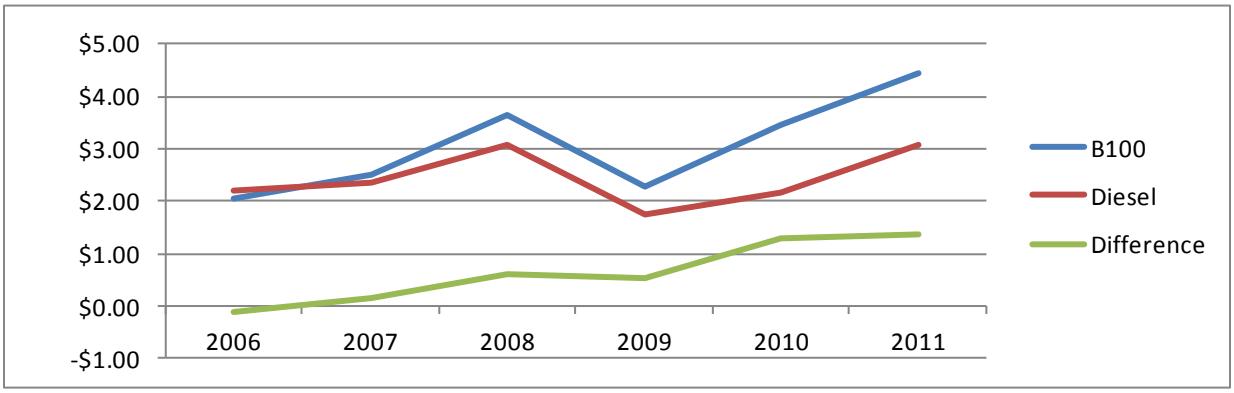
Figure 3. B100 pricing by city (average of terminals reporting), 2009-2011 (graph).



*-incomplete pricing data, see figure 3.

A graph of the net average wholesale prices (at the rack)—adjusted to illustrate after-tax costs of B100 compared to the wholesale cost of diesel at major Minneapolis/St. Paul terminal locations—can be seen in Figure 4.

Figure 4. Minneapolis-St. Paul Diesel[6] and Biodiesel[7] Price Trends, 2006-2011.[8]



Source: Minnesota Department of Agriculture analyses of Axxis pricing data through December 31st, 2011.

From 2006 to 2011, the net after-tax cost of B100 to the blender has been both lower and higher than the commensurate cost of diesel fuel. For example, in 2006 the net price of B100 was about 14 cents lower per gallon than the price of one gallon of diesel fuel, while it was 51 cents higher in 2009.
To consumers buying biodiesel blends, however, these differences are not as dramatic as it might appear—Figure 5 demonstrates computed prices for biodiesel blends based on actual B100 and diesel prices at the rack, as follows:

Where:
Pb = Net price of one gallon of biodiesel to blender (after tax credit)
Pd = Price of one gallon of diesel at the rack
%b = Percent of biodiesel in blended fuel
%d = Percent of diesel in blended fuel

*(Pb * %b) + (Pd * %d) = Computed price of biodiesel blend*

[6] Price of diesel at the rack (wholesale).
[7] For 2006 to 2009, the price of biodiesel is the rack (wholesale) price after the $1.00 federal tax credit. For 2010, prices reflect wholesale prices with the tax credit until December 20, although the tax credit retroactively reinstated in December through 2011.
[8] Generally, prices were recorded by Axxis daily (on business days). However, in 2006 prices were only recorded weekly and did not start until February for biodiesel and May for diesel. In 2007, diesel prices were consistently recorded on a daily basis throughout the year, while biodiesel prices were only recorded weekly from January through June and then daily for the remainder of the year. As such, averages prices for 2006 and 2007 represented in the chart may be less consistent than those in subsequent years. In addition, from March 24, 2008 to May 2, 2008, data on the price of biodiesel was not available through the Axxis pricing service. After a review of data in May, Axxis determined that the increase in price was not an error, but actually reflected market conditions. Axxis reestablished B100 prices effective May 2, 2008. To avoid the appearance of understating the price of biodiesel during that period, the average price of the last day of available data (March 28) and the first day of data (May 2) was inserted for the month of April. Prices since then have continued uninterrupted for both diesel and B100.

Figure 5. Diesel and Biodiesel Blend Prices (per gallon), 2006-2011.

Year (Blend Mandate)	Net Cost of B100 to Blender	Average Rack Diesel Price	Computed Price of B2	Computed Price of B5	Net Price Impact of Biodiesel
2006 (B2)	$2.0584	$2.1944	$2.1917		-$0.0027
2007 (B2)	$2.4983	$2.3388	$2.3420		$0.0032
2008 (B2)	$3.6607	$3.0538	$3.0659		$0.0121
2009	$2.2592	$1.7456			
2009 (1-4 to 4-30) (B2)	$2.2064	$1.4120	$1.4278		$0.0159
2009 (5-1 to 12-31) (B5)	$2.2864	$1.9176		$1.9361	$0.0184
2010	$3.4447	$2.1776			
2010 (w/o tax credit, 1-15 to 3-31, 10-1 to 12-17) (B2)	$3.3943	$2.1140	$2.1396		$0.0256
2010 (w/o tax credit, 1-2 to 1-14, 4-1 to 9-30) (B5)	$3.4678	$2.1978		$2.2613	$0.0635
2010 (w/tax credit, 12-20 to 12-31)	$3.6822	$2.6064	$2.6279		$0.0215
2011	$4.4522	$3.0760			
2011 (1-3 to 3-31, 10-3 to 12-30) (B2)	$3.9732	$2.9458	$2.9664		$0.0205
2011 (4-1 to 9-30) (B5)	$4.9047	$3.1990		$3.2843	$0.0853

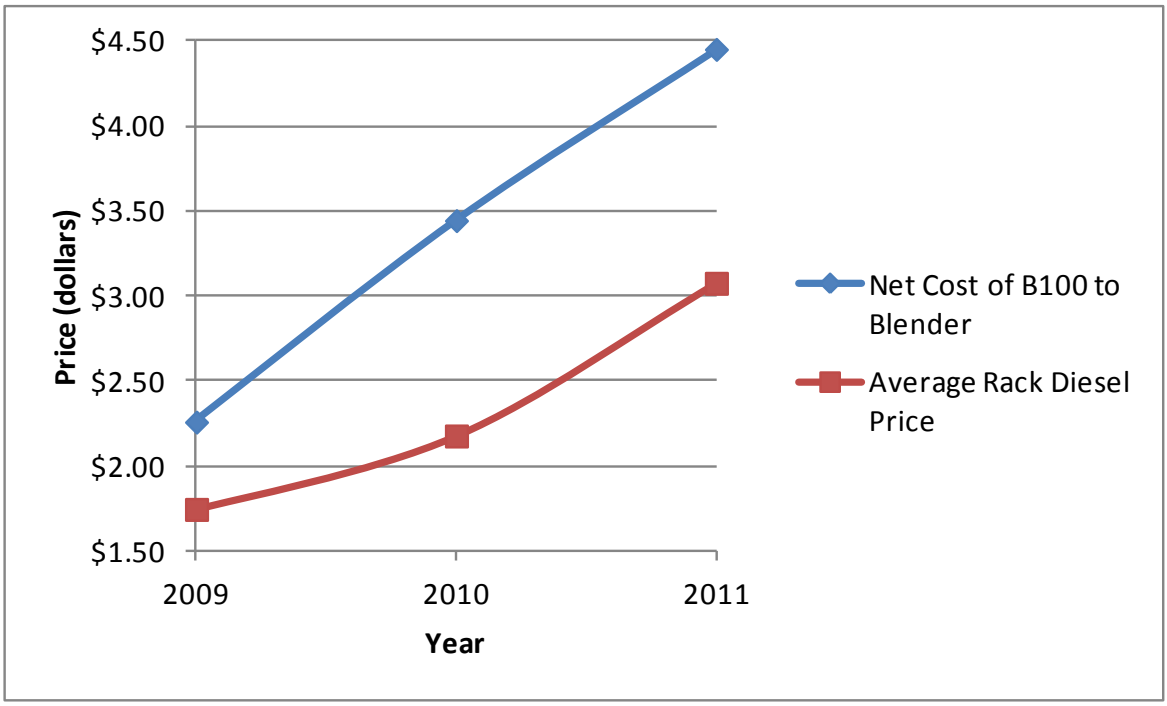
The computed price of biodiesel blends has generally been between 1 and 2 cents higher per gallon than diesel fuel. B5 prices over the past two years have produced the outliers in the historical data with 6 cents over for 2010 and 8.5 cents over for this past summer. Computed prices for B2 and B5 have tracked closely with actual prices for these fuels at the rack, which generally ranged from about 3 cents less to 11 cents more per gallon compared to diesel. These differences may be attributed to a variety of factors including the additional impact of the timing and length of marketing contracts; the marketing strategies of biodiesel producers, petroleum refiners, pipeline operators and position holders (marketers), the temporary loss of the federal tax credit; and the amortization of the cost of blending equipment installed at refiners and terminals.

Looking forward to projected prices for B10 blending, the following projections for the past three years would appear as in Figure 6. These projections use average prices of diesel fuel and B100 for the entire years and apply the same formula listed above. No adjustment is made for a tax credit or RIN values. The increase in price reflects the divergent relationship of costs in B100 and diesel fuel over the past three years (see figure 7).

Figure 6. Projected cost of B10 over the past three years with its associated cost difference with straight diesel fuel.

Year (Blend Mandate)	Net Cost of B100 to Blender	Average Rack Diesel Price	Computed Price of B10	Net Price Impact of B10 Blend
2009	$2.2592	$1.7456	$1.7970	$0.0514
2010	$3.4447	$2.1776	$2.3043	$0.1267
2011	$4.4522	$3.0760	$3.2136	$0.1376

Figure 7: B100 and diesel fuel price trends, 2009-2011.



Impact of Federal Tax Credit

Production of biodiesel for 2011 set a new record at approximately 802 million gallons. This broke the 2008 mark of 690 million gallons in 2008, and more than doubled the 315 million gallon output of last year. This increase in production has been directly tied to the reinstatement of the Federal Tax Credit reinstatement in December, 2010.

The tax credit expired on December 31, 2011. Lacking the tax credit, the value of the RIN through RFS2 renewable fuel use requirements would be the only government intervention helping bring down the value of biodiesel fuel from its straight market value, which currently follows the value of soybean oil.

Impact of RIN's

The federal Renewable Fuel Standards (RFS2) program allocates Renewable Identification Numbers (RINs) to each gallon of biodiesel produced or imported. Each qualified gallon of biodiesel earns 1.5 RINs, which can be used by the blender to offset the cost of biodiesel. In early December 2011 the value of a biodiesel RIN was between 135 cents and 140 cents—therefore each qualifying gallon of biodiesel has a RIN equivalent value between $1.95 and $2.18. Values earlier in the year (before production took off later in the year) reached as high as $1.90/biodiesel RIN and $2.80/gallon of biodiesel. This value is over and above the federal biodiesel tax credit ($1.00). RIN's are bought in the market by energy companies who do not blend renewable fuel (or don't blend enough) and need RINs to demonstrate compliance with RFS2.

In a letter sent to petroleum distributers from Commissioner of Agriculture Dave Fredrickson dated March 18, 2011, the nature of RINs was addressed. There had become concern that little, if any of the RIN value was being passed along to dealers or consumers, leading to distorted fuel prices. It was recommended that dealers inquire with the fuel suppliers or with biodiesel producers to determine if the value of the RIN could be made available to them.

Summary

The cost of biodiesel depends on a number of factors; with the expiration of the tax credit, RIN prices will be an important element to watch. RINs and other mitigating factors can also contribute to fluctuations in profitability, the loss of jobs and the price of B100 becoming uncompetitive with diesel, putting the industry at risk. In past years, RINs have provided an offset to compensate for a lapse in the federal tax credit; this could again be the case in 2012. However, establishing RINs as a de-facto replacement for the tax credit could increase the volatility of biodiesel prices and plant profitability, adversely impacting small and farmer-owned plants. Total dependence on RINs could also work as a cap on renewable fuel production and use, possibly making smaller independent plants even more vulnerable to competition from larger entities.

Thus, the net cost of biodiesel to the blender (which could ultimately be passed onto the consumer) is dependent on a number of variables including unpublished wholesale customer discounts, term contract prices versus spot market differentials, the value of RINs, profit margins and marketing strategies. The ability to manage these variables can add to the profitability of blending; thus, the "actual cost" of biodiesel to blenders is not always reflected by rack or retail prices alone.

Biodiesel Supply

The supply of biodiesel fuel to Minnesota terminals has generally been constant. Few, if any, B5 outages occurred because B100 was not available. More common reasons for blend outages were the lack of diesel fuel at terminals or the lack of winter blending equipment at some out-of-state terminals.

Over the past several years, Magellan has indicated plans to construct biodiesel blending infrastructure at its petroleum distribution terminal in Sioux Falls, SD. However, the company has put its plans on hold several times for a variety of reasons; the outcome is now uncertain. Other companies may also consider taking on this project to address an issue that Minnesota has faced for some time. The availability of biodiesel blends at this terminal would provide petroleum marketers in the southwest portion of the state an additional option to comply with the statutory requirements for biodiesel sales in Minnesota.

Production Capacity

Assuming approximately 600 billion gallons of annual state diesel fuel use,[9] it is estimated that the B5 mandate requires 30 million gallons of biodiesel; the B10 mandate would require 45 million and the B20 mandate would require 75 million gallons of biodiesel to meet state blending requirements.[10] The state's existing 63 million gallons of production capacity therefore provides more than the biodiesel necessary for B5 and B10, and nearly 85 percent of that required for B20. Differences in the actual rate of state diesel fuel usage and gallons of state production will increase or decrease the percentage of biodiesel available from state producers.

Minnesota's biodiesel mandate was an important incentive leading to the establishment of the state's existing biodiesel production capacity of 63 million gallons. Plans to further increase the minimum biodiesel content to B10 and B20 will no doubt be an important driver of additional state biodiesel production capacity. However, the expiration of the federal tax credit may cause producers to struggle to meet production capacity, as was the case in early 2011. Some investors may also become discouraged. If the RIN value for biodiesel is used to reduce the cost of biodiesel to the consumer, this could bring profitability back to the biodiesel producer and restore investor confidence.

The prospect for new and increased biodiesel production capacity will also depend on developing markets and the relative price of organic fats and oils compared to diesel fuel. The EverCat Fuels biodiesel plant in Isanti, currently with 3 million gallons of production capacity, plans to expand capacity to 30 million gallons in the future. If that expansion occurs, the state would have at least 93 million gallons of capacity, which would provide sufficient biodiesel for a statewide B10 blend and more than 50 percent of a B20 blend. However, FUMPA Bio-Fuels in Redwood Falls is no longer producing biodiesel (a loss of 3 million gallons of capacity).

The RFS2 is likely to have additional impact on any increased production that occurs in Minnesota and elsewhere around the country. In November 2010, the EPA (which sets the rules for implementing the RFS2) significantly lowered the 2011 requirement for cellulosic biofuels (from 250 million gallons specified in the Clean Air Act to just 6.6 million gallons) while holding steady the 2011 requirements for biomass-based diesel (800 million gallons), advanced biofuels (1.35 billion gallons) and total renewable fuel volume requirements (13.95 billion gallons). Cellulosic fuels and biomass-based diesel sold in excess of RFS2 requirements will count towards the advanced biofuel and total renewable fuel volume requirements. Given that biodiesel earns 1.5 RINs per gallon, the entire advanced biofuels requirement for 2011 could be fulfilled by 900 billion gallons of biodiesel. Thus, the RFS2 could prove an important driver of biodiesel production throughout the United States.

The RFS2 plus the considerable value of biodiesel RINs could be a potent force to greatly expand the use of biodiesel. Finally, while the recent cost of biomass oil has been high, the world crude oil market has also proven to be very unpredictable. Some experts have predicted that gasoline prices could exceed $4.00 per gallon before the end of 2011, which means that diesel fuel could be in excess of $4.50. There is, therefore, no guarantee that the cost of biodiesel will remain higher than that of diesel.

[9] Minnesota Department of Revenue, Petroleum Collections, 1/01/11 through 12/31/11.

[10] B10 and B20 would only be effective during the summer months of April, May, June, July, August and September; during the winter months, it is assumed that the amount of biodiesel blended with diesel would revert back to 5%.

Feedstocks

The feedstocks used at biodiesel plants are generally determined by the price and availability of the various oil or fat products and the ability of plants to process the oil being considered. Minnesota Soybean Processors (MnSP) in Brewster will use oil from their own soybean crushing plant. The SoyMor plant in Glenville has bought oil from various soybean oil producers; however, the plant has been inactive and is reported to be in the process of remodeling their 30 million gallon operation to allow for the processing of a wide variety of fats and oils. The EverCat fuels plant in Isanti reportedly has the capacity to produce biodiesel out of plant and animal fat, spent cooking oil, or even fatty acid materials from various industrial sources.

Although various lipid feedstocks can be used, the large soybean oil crushing capacity in Minnesota suggests that much of the feedstock used in Minnesota's biodiesel plants can be sourced from Minnesota soybean oil producers. Currently, high soy oil prices make this very difficult. The most current Minnesota Department of Agriculture report (2006) on soybean and biodiesel production impact on the state is available at:
http://www.mda.state.mn.us/news/publications/renewable/soyecoimpactsummary.pdf.