

August 23, 2010

Subject: Transmittal to ISEA Council of the Biofuels Task Force Report

Dear Council Members:

The Board of Directors (Board) of the Idaho Strategic Energy Alliance (ISEA) recognizes and thanks the Biofuels Task Force for their development of this report. The Task Force is comprised of volunteer experts, including energy engineers, developers, private and academic researchers, regulators, and policy experts, who have worked together in the interest of Idaho citizens to suggest actions that will help develop this important Idaho energy resource (biofuels).

The primary objective of the task force analysis and report is the identification of barriers and challenges to expanding the production of biofuels using Idaho-based biomass resources, and policy and other actions that could reduce barriers to increased production and use of biofuels and in Idaho. The conclusions and recommended options are not intended to be exhaustive, but rather form a starting point for an informed dialogue regarding the way-forward in developing this Idaho energy resource.

It is the ISEA Board's responsibility to evaluate recommended options and to articulate to you and other Idaho policy leaders and lawmakers our opinion regarding whether the potential benefits and costs associated with the suggested options create a favorable opportunity for Idaho citizens given the available data. Our initial review comments are summarized in this transmittal. The Board believes that a complete assessment of individual reports cannot be made, however, until all of the Task Force reports and options have been evaluated, including considerations of Economic Development & Finance, Energy Transmission, and Communications. In this respect, both this report and the Board's comments should be viewed as "living documents" that will be updated as significant new information and/or perspectives develop.

Summary of Task Force Recommendations

The 28 actions recommended in the Report are divided into four areas: developing biofuels infrastructure, improving public acceptance, creating demand, and expanding supply by reducing investment risk. Ten of these recommendations (indicated by "Priority" and listed at the beginning of the four recommendation areas) are believed to have the greatest potential for near-term positive impact. The ISEA Board's assessment of these recommendations include:

Recommendations for Developing Biofuel Infrastructure

1. Provide tax exemptions for equipment and materials used to distribute biofuels (Priority). The Board's assessment supported this recommendation within limits; with a limitation of a tax exemption limited to three years. The Board believes that the Renewable Fuel Standard will promote the production of biofuels, but that incentives may be needed to encourage investments in biofuels distribution equipment.

2. Provide a biofuels production equipment tax credit (Priority). This recommendation was also supported within limits with a three year limitation suggested. While the Renewable Fuels Standard should encourage production of biofuels, incentives might be helpful to jump start investment in biofuels production equipment and possibly manufacturing in Idaho.
3. Promote and utilize biofuels investment tax credit/biofuels infrastructure grant programs until they sunset in 2012 (Priority). The Board supported this recommendation to utilize existing incentives for developing biofuel infrastructure.
4. Rescind the Ag Order that currently prohibits oil seed crop production in the Treasure Valley. This recommendation received both conditional support and opposition from the Board, which indicated that it must first be demonstrated that rescinding this order would not harm the existing seed industry and that further consideration should await University of Idaho evaluation.
5. Develop job training programs at universities to produce the work force needed to support a biofuels industry. The Board provided limited support to this recommendation, suggesting that the biofuel industry may not need a dedicated training program and that a comprehensive approach to job training for the renewable energy industry may be more appropriate.
6. Establish an Energy Center at the University of Idaho. This action was opposed by the Board, which was not persuaded that it would catalyze development and was against surcharges on energy usage to fund it.
7. Idaho Department of Commerce should reach out to potential cellulosic biofuel production companies. The Board supported this recommendation, expecting that this is already happening to some extent.
8. State and/or private companies provide funding to research potential biomass crops in Idaho. The Board supported this recommendation as the fastest way to measure Idaho's potential for biofuel production.
9. Streamlined permitting for application of effluent onto crops specifically grown for biofuels. The Board supported this recommendation since energy crops should not require the scrutiny given to food crops; however, such streamlined permitting must include restrictions and substantial penalties for impermissible uses of effluents on crops grown for food.
10. Establish incentives for development of an agricultural residue industry. This recommendation was opposed by the Board since incentives provided by the Renewable Fuel Standard should be sufficient.
11. Establish incentives to develop new types of equipment needed for biomass crops. This recommendation was supported, although it was suggested that the Renewable Fuel Standard should stimulate development of new equipment for harvesting, processing, and handling biomass crops.

Recommendations for Improving Public Acceptance of Biofuels

12. Provide workshops and training for county and municipal fleet managers (Priority). The Board accepted this recommendation to provide information on the usage and properties of biofuels, but also suggested that this should be done in coordination with vehicle manufacturers and that information should be collected to determine specific needs and best locations for the training.
13. Develop public/private partnerships to produce and distribute training materials for small engine and RV mechanics (Priority). The Board approved this recommendation to counter misinformation or lack of credible information regarding biofuels impact on engines. It was suggested that small engine and RV manufacturers be contacted to determine what information they plan to distribute and that small engine and RV shops in Idaho be surveyed to determine the need for these training materials.
14. Distribute existing training materials to automotive technicians to help overcome negative biases against biofuels (Priority). The Board also approved this recommendation and provided the suggestion that it also include plans to follow up with automotive technicians to provide further materials, information, or help with biofuel issues.
15. Conduct community outreach and education. There was both Board support and opposition to this recommendation. Opposition to this recommendation suggested the proposed action was both premature and overkill; the biofuels industry would be more effective in reaching the public than community meetings.
16. Work with the Communications Task Force to develop materials and promote achievements. As with the previous recommendation, there was both support and opposition from the Board. It was suggested that the impact of the Renewable Fuel Standard on biofuels development in Idaho be measured before publicizing the industry.
17. Incorporate biofuels into the "Buy Idaho" campaign run by the Department of Commerce. The Board supported this action, provided that supply of Idaho biofuels is sufficient to meet demand.

Recommendations for Creating Demand for Biofuels

18. Require suppliers to provide biodiesel (B-20 or greater) and ethanol blended fuels at state agency-operated facilities (Priority). The Board was largely supportive of this recommendation with the suggestion that the requirement apply so long as biofuels are less costly. An Executive Order from the Governor encouraging employees to "choose" the alternative fuels at these facilities was also suggested as a better option.
19. Obtain an Executive Order requiring state flex fuel vehicles to use E-85 (or B-20 or greater) where available (Priority). The Board was fully supportive of this recommendation.
20. Encourage county and municipal governments to utilize biofuels in their fleets. Board support for this recommendation was mixed. Concern was expressed that county, municipal, and school

district governing bodies will need more than encouragement to use biofuels; they need information on cost, availability, and maintenance impacts to make informed decisions.

Recommendations to Expand Supply

21. Provide 6-year or 10-year property tax exemptions for biofuels production facilities (Priority). The Board was opposed or unsure regarding this recommendation. Concern was expressed that the proposed number of years was too long with a 5-year exemption suggested as a reasonable maximum. Also, it was suggested that local benefits of such a plant be weighed against the property tax exemption.
22. Renew the 2.5¢ per percent of biodiesel road tax exemption per gallon of diesel fuel (up to B-10) (Priority). The Board was largely supportive of this recommendation since it does provide an incentive for biofuel production and use without costing much money.
23. Set up a revolving loan program for bioenergy projects. The Board was largely opposed to this recommendation since the report does not specify who and how the program would be administered.
24. Provide an interest rate buy-down program for commercial bioenergy loans or loan guarantees. The Board was generally supportive of this recommendation although the specifics of such a program are important.
25. Establish a state bioenergy program to make payments directly to biofuel producers for ethanol or biodiesel produced from Idaho agricultural products. This recommendation was opposed by the Board due to costs and potential legal challenges about market manipulation and pricing.
26. Establish Renewable Energy Enterprise Zone(s) for biofuels. The Board was largely supportive of this recommendation although the terms and conditions, benefits, and costs of such a zone need to be identified.
27. Establish incentives for a commercial oil-seed crushing plant in Idaho. The Board's assessment of this recommendation was mixed with opposition stated on the basis that until Idaho grows significant quantities of oil-seed crops a commercial oil-seed crushing plant is unnecessary.
28. Vary state fuel tax depending on the price of petroleum to compensate for market fluctuations in gasoline and diesel fuel. The Board was opposed to this recommendation since fuel tax receipts for state highway funding would vary and because it appears to violate federal law on pricing practices.

Proposed Action Items

In addition to these comments, the Board recommends the following State agencies as those responsible for evaluating and, if in agreement, implementing the recommended options. The Board requests the Council have the following units of government evaluate and decide on the assigned recommended options:

- **Tax Commission**

1. Provide tax exemptions for equipment and materials used to distribute biofuels (Priority).
2. Provide a biofuels production equipment tax credit (Priority).
22. Renew the 2.5¢ per percent of biodiesel road tax exemption per gallon of diesel fuel (up to B-10) (Priority).

- **Office of Energy Resources**

3. Promote biofuels investment tax credit/biofuels infrastructure grant programs until they sunset in 2012 (Priority).
12. Provide workshops and training for county and municipal fleet managers (Priority).
13. Develop public/private partnerships to produce and distribute training materials for small engine and RV mechanics (Priority).
14. Distribute existing training materials to automotive technicians to help overcome negative biases against biofuels (Priority).
15. Conduct community outreach and education.
18. Require suppliers to provide biodiesel (B-20 or greater) and ethanol blended fuels at state agency-operated facilities (Priority). Consider proposing this for an Executive Order from the Governor's Office.
19. Obtain an Executive Order requiring state flex fuel vehicles to use E-85 (or B-20 or greater) where available (Priority).
20. Encourage county and municipal governments to utilize biofuels in their fleets (with Department of Commerce).
24. Provide an interest rate buy-down program for commercial bioenergy loans or loan guarantees.
26. Establish Renewable Energy Enterprise Zone(s) for biofuels.

- **Center for Advanced Energy Studies**

5. Develop job training programs at universities to produce the work force needed to support a biofuels industry.

- **Department of Agriculture**

8. State and/or private companies provide funding to research potential biomass crops in Idaho (with the University of Idaho).
9. Streamlined permitting for application of effluent onto crops specifically grown for biofuels.
11. Establish incentives to develop new types of equipment needed for biomass crops.

27. Establish incentives for a commercial oil-seed crushing plant in Idaho (with Tax Commission).

- **Biofuels Task Force**

16. Work with the Communications Task Force to develop materials and promote achievements.

The Board requests the Council have these organizations develop a plan for evaluation and, if appropriate, implementation of these recommended options, including a timeline, for Board review. The ISEA Board and Biofuels Task Force is available to assist in this endeavor.

Again, the ISEA Board is pleased to commend the work of the Biofuels Resources Task Force and is pleased to submit their report to Council members for review.

Steven E. Aumeier,

Chair, ISEA Board of Directors

Biofuels Task Force Options: Pros and Cons

<i>Recommendation</i>	<i>Page</i>		<i>Explanation</i>
<u>Biofuels Infrastructure</u>			
Priority: Provide tax exemptions for equipment & materials used to distribute biofuels	3,16,19	Pro:	In order to jump start investment in biofuels distribution equipment, a tax exemption might help, but should be limited to three years. With the national standard requiring 10% renewable fuel in gasoline and diesel going into effect in 2010-2011, the biofuels industry should be ready to make these investments.
		Pro:	Encourages the production of alternative energy.
Priority: Provide a biofuels production equipment tax credit	3,16,19	Pro:	In order to jump start investment in biofuels distribution equipment, a tax exemption might help, but should be limited to three years. With the national standard requiring 10% renewable fuel in gasoline and diesel going into effect in 2010-2011, the biofuels industry should be ready to make these investments.
		Pro:	Encourages the production of alternative energy.
Priority: Promote & utilize biofuels investment tax credit/ biofuels infrastructure grant program until they sunset in 2012	3,16,19	Pro:	This existing program and the national standard taking effect in 2010 should provide the necessary incentives for investment in the immediate future.
		Pro:	Encourages the production of alternative energy.
Rescind the Ag. Order that currently prohibits oil seed crop production in the Treasure Valley	9,19		
Develop job training programs at universities to produce work force needed to support a biofuels industry	19	Pro:	Universities and community colleges should consider developing a comprehensive approach to job training for the renewables industry in general. Biofuels would be one aspect of such a program.
Establish an Idaho Energy Center at the University of Idaho	19	Con:	Funding an Energy Center with a surcharge on electric and gas utility bills is a non-starter.

Biofuels Task Force Options: Pros and Cons

<i>Recommendation</i>	<i>Page</i>		<i>Explanation</i>
Idaho Dept of Commerce should reach out to potential cellulosic biofuel production companies	19	Pro:	A broad approach of outreach to all potential renewable fuel developers might be very effective.
State and/or private companies provide funding to research potential biomass crops in Idaho	15,19	Pro:	This recommendation is the fastest way to measure Idaho's potential for biofuels production. This recommendation should be a Priority because the successive and successful development of the biofuels industry in Idaho depends on the findings of this research. Otherwise, biofuels production development in Idaho will remain random, rather than sustainable.
Streamlined permitting application of effluent onto crops specifically grown for biofuels	19	Con:	Permitting of effluent application on food or feed crops is very complicated and time-consuming.
		Con:	This permitting must carry heavy restrictions and penalties for impermissible uses of effluent on crops grown for food.
Establish incentives for development of an agricultural residue industry	14,19	Con:	The incentives provided by the 10% Renewable Fuel Standard and the need for agricultural residue to produce biofuels should be sufficient incentive to encourage the agricultural residue industry. If not, subsidizing this activity would be an economic miscue.
Establish incentives to develop new types of equipment needed for biomass crops	19	Pro:	Implementation of the 10% Renewable Fuel Standard should stimulate and encourage the development of new equipment to harvest, process, and handle biomass crops.
<u><i>Public Acceptance</i></u>			
Priority: Provide workshops and training for county and municipal fleet managers	3,16,20	Pro:	Several fleets have experience and could easily explain to their peers any issues that they have seen or need to be addressed in the use of bio-fuels in their fleets.

Biofuels Task Force Options: Pros and Cons

<i>Recommendation</i>	<i>Page</i>		<i>Explanation</i>
Priority: Develop public/private partnerships to produce & distribute training materials for small engine and RV mechanics	3,16,19	Pro:	Credible informaiton could be gathered from experienced and trusted shops to be used to educate and inform others and correct misinformation.
Priority: Distribute existing training materials to automotive technicians to help overcome negative biases against biofuels	3,16,19	Con:	Distributing training materials will not be sufficient. There should be a plan for following up with automotive technicians to provide further materials, information, or help with biofuels issues.
Conduct community outreach & education	19	Con:	Something like a media campaign, which the biofuels industry itself could pay for, would be more effective in reaching the public in general than community meetings.
Work with the Communications Task Force to develop materials, promote achievements	19		
Incorporate biofuels into the “Buy Idaho” campaign run by the Dept. of Commerce	20		

Biofuels Task Force Options: Pros and Cons

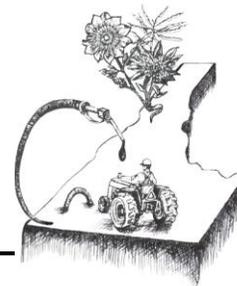
<i>Recommendation</i>	<i>Page</i>		<i>Explanation</i>
<u>Create Demand</u>			
Priority: Require suppliers to provide biodiesel (B-20 or greater) and ethanol blended fuels at state agency-operated fueling facilities	3,16,20	Con:	An Executive Order from the Governor encouraging state employees to "choose" the alternative fuels at these facilities would be better. Otherwise, those pumps for biodiesel and ethanol might sit idle.
		Pro:	Could be structured to be in effect so long as bio-fuels are less costly, this would help tax dollars go further and also help reduce tailpipe emissions
Priority: Obtain an Executive Order requiring state flex fuel vehicles to use E-85 (or B-20 or greater) where available	3,16,20	Pro:	If a state vehicle is already flex-fuel ready, requiring the use of the optional fuel would be fairly simple and logical.
		Pro:	Demonstrates leadership and also reduces tax dollar expenditures. Helps create demand for additional fueling stations to offer bio-fuels, increasing competition.
Encourage county and municipal governments to utilize biofuels in their fleets	20	Pro:	Helps stretch local budgets in these tough economic times, as several county or municipal governments could share their experiences with others
<u>Expand Supply</u>			
Priority: Provide 6-year or 10-year property tax exemptions for biofuels production facilities	4,17,20	Con:	The proposed number of years is too long. When new facilities are constructed and bring new jobs to an area, new public infrastructure requirements and costs, paid for with property taxes, begin occurring immediately. A five-year exemption is a reasonable maximum.
Priority: Renew the 2.5¢ per percent road tax exemption for biodiesel	4,17,20	Pro:	The road tax exemption, although not large, does provide some stimulus for biodiesel production and use.
		Pro:	Provides an incentive without costing the state much money.
Set up a revolving loan program for bioenergy projects	20		

Biofuels Task Force Options: Pros and Cons

<i>Recommendation</i>	<i>Page</i>		<i>Explanation</i>
Provide interest rate buydown program for commercial bioenergy loans or loan guarantees	20		
Establish a state bioenergy program to make payments directly to biofuel producers for ethanol or biodiesel produced from Idaho agricultural products	20	Con:	The current participants in Idaho's wholesale and retail gasoline and diesel markets would make legal challenges to the State or another entity taking on this role because of interference with markets.
		Con:	If this recommendation intends that the purchases be mandated, then the entities currently supplying petroleum products to Idaho would file a lawsuit concerning pricing and market manipulation.
Establish Renewable Energy Enterprise Zone(s) for biofuels	20		
Establish incentives for a commercial oil-seed crushing plant in Idaho	20	Pro:	Would benefit other sectors of economy as well as energy through bio-fuels
Vary state fuel tax depending on the price of petroleum to compensate for market fluctuations in gasoline and diesel fuel	20	Con:	This recommendation would potentially destroy the State of Idaho's budget by allowing fuel tax receipts to fluctuate to keep gasoline and diesel prices steady.
		Con:	This recommendation violates federal law concerning pricing practices.
		Con:	This would not work at all if the increase in gasoline and/or diesel exceeded the Idaho tax per gallon.
		Con:	If gasoline and/or diesel prices decline, consumers expect to see a lower price at the pump - not a price held steady to prop up the biofuels industry in Idaho.
		Con:	This would not necessarily reduce market fluctuations or the boom and bust cycles.
		Con:	If the biofuels industry in Idaho requires a certain price level to sustain production, then subsidizing that price can only be a short-term fix, not a permanent solution.
		Con:	Would cause state highway funding to become too volatile

July 2010

Idaho Biofuels Task Force Report



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Executive Summary

In the Energy Independence and Security Act (EISA) of 2007, the Federal Government mandated large increases in the use of renewable fuels. Corn-based ethanol will increase from current levels of 9 billion gallons/year to 13.8 billion gallons in 2012 and to 15 billion gallons by 2015. It also makes a commitment to development of advanced biofuels, like cellulosic ethanol, by requiring production of 21 billion gallons by 2022. Biomass-based diesel fuels such as biodiesel will increase from current levels of 0.5 billion gallons/year to 1 billion gallons/year by 2012. To meet these requirements, petroleum refiners must use 10.21% renewable fuels in 2009 and this will approach 20% by 2015.

Idaho residents are largely unaware of this dramatic change in fuel supplies because most of the state's fuel suppliers have been able to take advantage of a small refiner exemption that delays implementation until the end of 2010. However, starting January 1, 2011, *all fuel sold in the state will contain 10% renewable fuel and potentially more if the EPA agrees to allow higher levels of ethanol to be used in conventional vehicles.*

Idaho citizens used over 600 million gallons of gasoline and 520 million gallons of diesel fuel in 2008. Except for a small amount of biodiesel, none of this liquid fuel is produced in-state. While Idaho does not have petroleum reserves that can be used to provide an in-state source of

conventional fuels, it has large biomass resources that could meet the impending need for renewable fuels. It would be in the best interest of all Idaho citizens to develop a state-of-Idaho energy policy that would have at its core the development of in-state liquid fuel resources such as ethanol and biodiesel. Recommendations are suggested in this report to help achieve this end.

Idaho has two ethanol production plants with a combined capacity of 75 million gallons per year; however, only 30 million gallons were actually used within the state of Idaho in 2008. The difference corresponds to the plants producing below capacity or exporting fuel out of the state. Both of these plants have closed due to high feedstock costs and low ethanol prices. There are also two plants capable of producing biodiesel with a combined capacity of 11.5 million gallons per year; however, only about 210,000 gallons of biodiesel were used in 2008. One of these plants is idle and the other is operating below capacity because there is insufficient feedstock available at a price that allows fuel production to be profitable. The fuel crisis of 2008 was primarily due to high prices and generally fuel availability was not a problem; however, future events could include both high prices and limited availability. In addition to providing a local supply of fuel, a stable in-state liquid fuel industry would bring significant economic stimulus to the state in terms of infrastructure development and jobs. A study conducted by BBI International indicated that four ethanol plants could be supported from state resources and would create 3,800 jobs during construction and 1,900 jobs during commercial operation.

As the data in this report show, the state of Idaho has many resources that could be developed for creating an in-state liquid fuel industry. However, under current market conditions and constraints, in-state production is risky, unprofitable, or lacking in sufficient motivation for development. Take the most recent experience for example, when diesel prices were high there was a significant interest in biodiesel; however, vegetable oil prices were also high making it unprofitable to produce biodiesel. Now that diesel prices have subsided interest in biodiesel has waned making it difficult to interest private investors and the consuming public in biodiesel.

A very similar scenario exists with ethanol, except that the Renewable Fuel Standard and legislation in neighboring states requiring a 10 % blend of ethanol in gasoline will sustain ethanol use. As these events show, some compelling action on the part of government is required to create an atmosphere where a sustainable liquid fuel industry can be developed. Reasonable interpretation of these events show that sometimes the local industry will increase prices of fuel. On-the-other hand, over the long term and in the interest of economic sustainability and local control, the local industry will benefit our citizens by creating a stable supply and pricing based on local factors.

Idaho has the capability of sustainably producing 100 million gallons of ethanol per year from grain crops and perhaps another 200 million gallons from cellulosic sources for a conservative estimate of 300 million gallons per year (half of our current gasoline consumption) and 30 million gallons of biodiesel (20% of our diesel consumption), 6 million gallons from used oils and animal fats and the remaining 24 million gallons from agriculturally produced vegetable oils. Idaho state government should facilitate the development of a statewide plan to increase the percentage of in-state produced liquid fuel.

How can we accomplish that objective? The Governor's Idaho Strategic Energy Alliance - Biofuels Task Force has studied the energy situation in Idaho and identified the barriers to a biofuel industry in the state and prepared a list of recommendations for state action. The complete list of barriers and recommendations is provided in the Appendix but those considered most significant are:

Significant Barriers

1. Ethanol and biodiesel are not always cost competitive with gasoline and diesel fuel. The prices paid at the pump for gasoline and diesel fuel do not reflect the true cost to society. The volatility of the petroleum fuels market means the biofuels industry moves between boom and bust extremes that are unpopular with investors.
2. Public perception is that biofuels may be bad for existing vehicles and/or the environment.

Recommendations

1. Steps to develop biofuels infrastructure
 - a. Provide tax exemptions for equipment and materials used to distribute biofuels. Provide a biofuels production equipment tax credit.
 - b. Continue to promote and utilize the biofuels investment tax credit and biofuels infrastructure grant program until they sunset in 2012 so more retailers and wholesalers have necessary biofuel infrastructure, including E-85 pumps, blender pumps, and high blend biodiesel pumps.
2. Steps to improve public acceptance of biofuels
 - a. Provide workshops and training for county and municipal fleet managers with regard to using biofuels in government owned fleets, peer to peer. Use those county and city and/or state government entities that are already using biofuels to train those that have not done so yet. The Idaho National Laboratory, universities and community colleges could play a role in this training.
 - b. Develop public/private partnerships to produce and distribute credible training materials for small engine and recreational vehicle engines to mechanics, helping them understand that biofuels are endorsed and welcomed by manufacturers.
 - c. Distribute currently existing training materials such as the "Changes in Gasoline" CD and manual to automotive technicians helping them overcome negative biases against biofuels.
3. Create demand for biofuels
 - a. Require suppliers to provide biodiesel (B-20 or greater) and ethanol blended fuels at Idaho Transportation Department (ITD) and other state agency-operated fueling facilities and for school buses.

- b. Obtain an Executive Order requiring state flex fuel vehicles to use E-85 (or B-20 or greater) where available
- 4. Expand supply by reducing investment risk for biofuels companies
 - a. Provide 6-year or 10-year property tax exemptions for biofuels production facilities.
 - b. Renew the 2.5¢ per percent road tax exemption for biodiesel.

There are many actions that the state can take to encourage the development of a biofuels industry that could supply 25% of the state's transportation energy supply by 2025. While most of the actions proposed here require state action, the Governor should direct all levels of state and local government to work closely with the Idaho congressional delegation to ensure that the state takes full advantage of the opportunities provided in the 2008 Farm Bill for biofuels production. The state should also prepare to participate in bioenergy development programs that are part of the federal economic stimulus program passed in 2009. Note also that these recommendations support actions identified for alternative fuels in the 2007 Idaho Energy Plan.

Idaho Biofuels Task Force Report

Introduction

In the Energy Independence and Security Act (EISA) of 2007, the Federal Government mandated large increases in the use of renewable fuels. Corn-based ethanol will increase from current levels of 9 billion gallons/year to 13.8 billion gallons in 2012 and to 15 billion gallons by 2015. It also makes a commitment to development of advanced biofuels, like cellulosic ethanol, by requiring production of 21 billion gallons by 2022. Biomass-based diesel fuels such as biodiesel will increase from current levels of 0.5 billion gallons/year to 1 billion gallons/year by 2012. To meet these requirements, petroleum refiners must use 10.21% renewable fuels in 2009 and this will approach 20% by 2015. The recommendation in the 2007 Idaho Energy Plan to develop in-state renewable resources can help to meet these requirements.

Idaho residents are largely unaware of this dramatic change in fuel supplies because most of the state's fuel suppliers have been able to take advantage of a small refiner exemption that delays implementation until the end of 2010. However, starting January 1, 2011, *all fuel sold in the state will contain 10% renewable fuel and potentially more if the EPA agrees to allow higher levels of ethanol to be used in conventional vehicles.*

Idaho Citizens used over 600 million gallons of gasoline and 520 million gallons of diesel fuel in 2008. Except for a small amount of biodiesel, none of this liquid fuel is produced in-state. It would be in the best interest of all Idaho citizens to develop a state-of-Idaho energy policy which would have at its core the development of in-state liquid fuel resources.

Ethanol is produced at two plants with a combined capacity of 75 million gallons per year, however, only 30 million gallons were actually used within the state of Idaho in 2008. The difference corresponds to the plants producing below capacity or exporting fuel out of the state. Both of these plants have closed due to high feedstock costs and low ethanol prices. There are also two plants capable of producing biodiesel with a combined capacity of 11.5 million gallons per year; however, only about 210,000 gallons of biodiesel were used in 2008. These plants are essentially idle because current economics make their operation unprofitable. As seen by recent events Idaho citizens are totally at the mercy of outside influences for their liquid fuel supply. Recent history included only high prices, generally fuel availability was not a problem; however, future events could include both high prices and limited availability. In addition to the supply and price issues, a stable in-state liquid fuel industry would bring significant economic stimulus to the state in terms of infrastructure development and jobs.

As the attached data show, the state of Idaho has many resources that could be developed for creating an in-state liquid fuel industry. However, as long as outside influences control the market, in-state sources are risky, unprofitable, or lacking in sufficient motivation for development. Take the most recent experience for example, when diesel prices were high there was a significant interest in biodiesel; however, vegetable oil prices were also high making it unprofitable to produce biodiesel. Now that diesel prices have subsided interest in biodiesel has waned making it difficult to interest investors and the consuming public in biodiesel.

A very similar scenario exists with ethanol, except that the Renewable Fuel Standard and legislation in neighboring states requiring a 10 % blend of ethanol in gasoline will sustain ethanol use. As these events show, some compelling action on the part of government is required to create an atmosphere where a sustainable liquid fuel industry can be developed. Reasonable interpretation of these events show that sometimes the local industry will increase prices of fuel; on-the-other hand, over the long term and in the interest of economic sustainability and local control, the local industry will benefit our citizens by creating a stable supply and pricing based on local factors.

Idaho has the capability of sustainably producing 100 million gallons of ethanol per year from grain crops and perhaps another 200 million gallons from cellulosic sources for a conservative estimate of 300 million gallons per year (half of our current gasoline consumption) and 30 million gallons of biodiesel, 6 million gallons from used oils and animal fats and the remaining 24 million gallons from agriculturally produced vegetable oils (20% of our diesel consumption.) Idaho state government should facilitate the development of a statewide plan to increase the percentage of in-state produced liquid fuel.

Idaho Transportation Fuels and Biofuels Status

The United States has a heavy reliance on petroleum and imports over 60 percent of the petroleum we consume. The last time the U.S. was able to meet its consumption needs was 1951. Domestic oil peak production occurred just after the 1973 Arab oil embargo and has moved steadily in a downward trend since that time.

Idaho does not have any petroleum production wells and is one of about a dozen states that does not have a refinery. All petroleum used in Idaho is imported into the state by truck, rail or pipeline. Most Idaho markets receive petroleum from refineries in Montana and Utah via two pipelines, one owned by ConocoPhillips (Yellowstone Pipeline) and the other by Chevron (Figure 1).

The Chevron Pipeline accounts for about 70 percent of motor fuel transported into Idaho from Utah's five refineries in or near Salt Lake City. Beginning in Salt Lake City, two 8-inch pipelines follow the U.S. Interstate I-84 route into Southeastern Idaho and traverse southern Idaho before continuing on to Pasco and Spokane, Washington. At the junction of I-84 and I-86, near Declo, Idaho, a spur line runs to a storage facility in Pocatello. Chevron has other storage locations in Burley and Boise. This pipeline has been essentially at full capacity for a number of years. Chevron was considering reversing the flow of the pipeline from Pasco to Boise several years ago to provide additional capacity into the Idaho market, but has not pursued the idea. Because of this, Idaho has a constrained petroleum supply, particularly during periods of high demand, that must be met primarily by trucking fuel from out-of-state into southern Idaho.

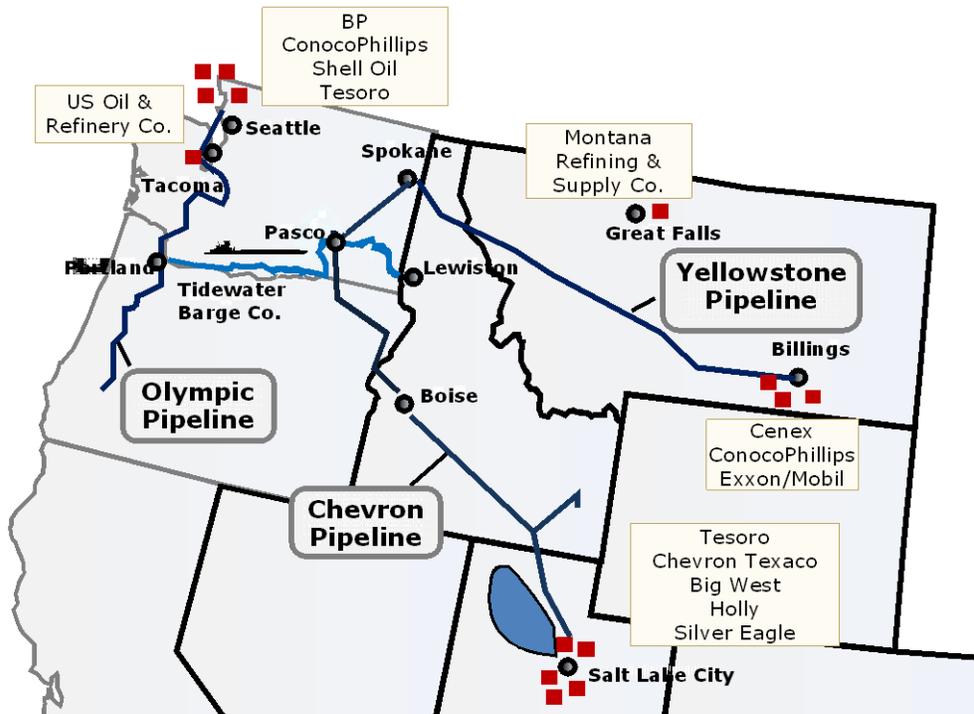


Figure 1. Idaho's Petroleum Pipelines

The Yellowstone Pipeline, owned and operated by ConocoPhillips, accounts for approximately 30 percent of motor fuel transported into Idaho. Beginning in Billings, Montana, the 10” pipeline crosses into Idaho following Interstate 90 and terminates in Spokane. Portions of the pipeline are above ground, piggy-backing the Interstate 90 bridges as they span waterways along the route.

It is unlawful to act as a fuel distributor in Idaho without a fuel distributor license issued by the Idaho State Tax Commission. There are approximately 180 licensed fuel distributors in Idaho, many of which are not located within the state. Idaho has approximately 900 gasoline retail stores and the approximate distribution of brands of fueling stations is shown in Figure 2. Idaho is one of a few states that does not require, or have cities that require, specific blends of gasoline or diesel fuel. Several Idaho fuel suppliers also serve stations in neighboring states where specific fuel blends are required.

Idaho transportation fuel usage for 2006 through 2008 is shown in Table 1. Idaho gasoline, diesel and biodiesel usage actually dropped in 2008 while there was a significant increase in ethanol usage, possibly due to high summer fuel prices. Historically, ethanol usage in Idaho has been consistent and small. Since the 1980s, about 3 million gallons of ethanol were sold in the state each year. In 2006, there was a boost in ethanol sales, jumping to about 3.3 million gallons. These sales were from fewer than 60 stations.

Table 1 – Idaho Transportation Fuel Usage in Gallons

County	2006	2007	2008*
Gasoline	647,518,256	655,351,134	620,000,000
Ethanol	3,283,528	4,408,566	29,867,701
Diesel	464,093,713	544,096,519	520,000,000
Biodiesel	64,259	230,063	210,231

Table does not include aviation fuel. Gasoline and diesel amounts include ethanol and biodiesel.

* Estimate

Source: Idaho Tax Commission.

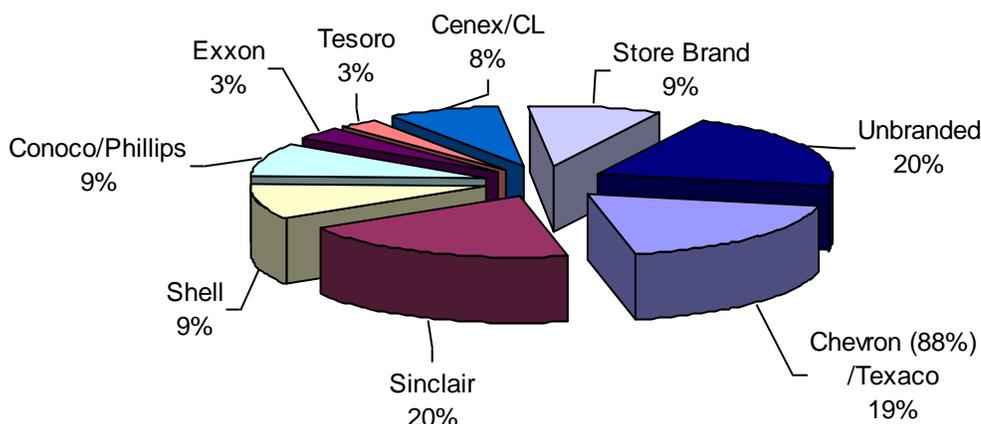


Figure 2 – Idaho Retail Fueling Stations by Brand

Courtesy of John Crockett, Idaho Office of Energy Resources

In 2008, 10-percent ethanol blended gasoline, or E10, became widespread in Idaho and incorporation of ethanol exceeded 20 million gallons. Several factors contributed to this transformation. One reason was when the price of fuel exploded ethanol was significantly cheaper than gasoline. Another major reason was many fuel suppliers were being required to supply ethanol in neighboring states and only wanted to handle one type of fuel. There are currently only four stations, one each in Boise, Nampa, Lewiston and Twin Falls, that have an E85 pump.

In Idaho, ethanol can be produced from two plants. In February 2007, a British firm, ED&F Man, reopened the ethanol processing facility formerly operated by the J.R. Simplot Company at its potato processing plant in Caldwell. The plant has a production capacity of 15 million gallons per year using potato waste and corn and is operated as Idaho Ethanol Processing LLC. This plant is the largest ethanol plant in the nation that uses a waste product for the feedstock. Idaho

Ethanol Processing is also working with Idaho's three universities and the Idaho National Laboratory to investigate other possible feedstocks, including cellulose, that are available in the area.

On May 16, 2008, Idaho Governor Otter also joined the California-based Pacific Ethanol, Inc. in celebrating the grand opening of its new 60 million gallon per year ethanol plant in Burley. The facility is located on 177 acres, with access to the Union Pacific Railroad, Eastern Idaho Railroad, and Interstate 84. Burley is in the Magic Valley region of Idaho, where a resident population of over 300,000 dairy cattle and 100,000 feedlot cattle provide a ready local market for a key co-product of ethanol, wet distiller's grain (WDG), a high protein feed source. The plant will process 21 million bushels of corn per year, producing both ethanol and 500,000 tons of WDG annually. According to the Idaho Department of Commerce, this project has created \$7.2 million in additional household income in Cassia County.

With the help of two grant opportunities biodiesel-blended fuel is also available throughout the state. In 2006, Coleman Oil Company, Stinker Stations and Primeland Cooperatives entered into a grant partnership with the Office of Energy Resources (OER) to install biodiesel infrastructure. This provided some 35 fueling stations from Coeur D'Alene to Boise with biodiesel-blended fuel. In 2008, Baird Oil, Bingham Cooperative, Conrad and Bishoff and Hailey Chevron took advantage of the Biofuels Infrastructure Grant (BIG) Program, another program administered by the OER, to install biodiesel facilities. This has essentially made biodiesel available throughout the state. The blend percentage varies from 5-percent at Stinker Stations to 50-percent at the Chevron station in Cottonwood.

Over the past few years there have also been numerous parties investigating the construction of biodiesel production facilities in Idaho. In September 2006, Blue Sky Biodiesel began commercial operation of a 10 million gallon per year biodiesel plant in New Plymouth. The plant produces biodiesel from soy oil railed into the site. Since the cost of soy oil jumped from about 25-cents per pound in 2006 to above 70-cents a pound in early 2008, the plant only operates when it can be profitable. The plant has successfully processed used frying oil into biodiesel for the J.R. Simplot Company. The plant owner's long-term plan has been to use a local crop although an Agricultural Order (IDAPA 02.06.13.000) prohibits growing the oil seed crop that would likely be the most successful in the area. This Agricultural Order prohibits growing of rapeseed and canola in District IV (Ada, Canyon, Gem, Owyhee [north of Murphy], and Payette Counties) because of concerns about disease transmission from Canada and genetic drift to broccoli and cauliflower seed crops.

In late fall of 2008, Pleasant Valley Biodiesel began operating a 1.5 million gallon per year plant in American Falls. The feedstock for this plant is used frying oil. In addition to Idaho's two commercial-scale facilities, there are numerous small-scale biodiesel operations throughout the state. It is estimated at least 40 individuals or groups are making their own biodiesel in the state.

There is considerable interest in biofuels in Idaho. Many community and economic development groups, state legislators, farm and other professional associations are working to develop a biofuels industry in the state. The Greater Yellowstone Clean Cities Coalition in eastern Idaho and the Treasure Valley Clean Cities Coalition are both strong advocates for biofuels, and are

promoting biofuels use and working with local fuel retailers to provide biofuels filling stations. The Idaho Farm Bureau is another strong advocate for biofuels. The University of Idaho, which is recognized worldwide as a pioneer and leader in biodiesel research, continues to work with the OER, Idaho National Laboratory, and the other universities to find a pathway to building a biofuels industry in the state.

Potential for Biofuels in Idaho

There Are Different Types of Biofuels

Biofuels are alternatives for motor gasoline and diesel (distillate) fuels. Currently, the motor gasoline biofuel substitute commercially produced in Idaho is ethanol produced from corn grain and potato waste using a fermentation process. Ethanol production could be increased by using more corn or by using other grains as feedstocks; however, the use of grains for this purpose competes with grains for human food and animal feed. In 2007, the 6,500 million gallons of ethanol produced in the United States used 23% (3.0 billion bushels) of the domestic corn crop (although when the distillers grain by-products used for animal feed are considered, the net use for ethanol was about 16% of corn production)¹. As an alternative to using corn and other food grains as feedstocks, significant commercial development interest involves using cellulosic materials as production feedstocks and the first cellulosic ethanol plants are being constructed. Cellulosic feedstocks include agricultural residues (e.g., wheat straw and corn stover), forest residues and wood wastes, and dedicated energy crops (crops grown solely for energy, e.g., switchgrass and miscanthus). These so-called advanced biofuels do not generally compete with human food and animal feed (although there could be some competition with dedicated energy crops grown on non-marginal lands), but care must be taken to produce them in a sustainable manner. Cellulosic ethanol is produced from these feedstocks through fermentation and by thermochemical processes. Whether these processes and their variants will be economically competitive is yet to be demonstrated, but they are key to being able to significantly increase production of ethanol above current levels. These feedstocks and production processes can also be used to produce higher alcohols (e.g., butanol) and other biofuels.

Biodiesel fuel is commonly produced by the transesterification of vegetable oil or animal fat. It is produced from oil seed crops (e.g., soybean, rapeseed, and canola), used cooking oil, and animal fat. Soybean oil is the predominant feedstock for biodiesel in the United States. Oil seed feedstocks also compete with food and feed uses so there is growing interest in potential non-food vegetable oils (e.g., jatropha) and algal oil. Biodiesel is typically produced in a base-catalyzed batch process where the vegetable oil or animal fat is added to a mixture of methanol and a catalyst (sodium methylate). This results in the production of biodiesel and glycerin phases, which are usually gravity separated. Biofuels can also be produced by thermochemical processes using biomass feedstocks but these fuels are not currently available at commercial scale

¹ Renewable Fuels Association

Idaho Can Produce Significant Quantities of Biofuels

The U.S. Department of Energy, in collaboration with the U.S. Department of Agriculture evaluated the availability of a sustainable supply of biomass to displace 30% of the country's petroleum consumption. Achieving this goal would require approximately 1 billion dry tons of biomass feedstock per year and the study found over 1.3 billion dry tons per year of domestic biomass potential².

Table 2 shows estimates of Idaho's ethanol production potential from several different models and reports. Based on a DOE model^{3,4}, 40% of the corn and sorghum grown in Idaho in 2006 (0.2 million dry tons) could produce 12 million gallons of ethanol. More significantly, it estimates that the 7.2 million dry tons of cellulosic biomass produced in Idaho in 2002 could be used to produce 459 million gallons of ethanol. (The model estimates no production of biodiesel in Idaho since oil seed crop production in the state was negligible.) Using the more recent (2007) state of technology estimate of 72 gallons of ethanol per dry ton of cellulosic biomass⁵, this amount of biomass could produce 518 million gallons of ethanol.

A 2002 report by BBI International for the Idaho Department of Water Resources⁶ identified statewide ethanol production potential to be approximately 98 million gallons annually using 25% of wheat, barley, and corn grain production. According to the BBI report, this production would occur from four dry-mill refineries located in the southeast, south central, southwest, and panhandle regions of the state.

Statewide ethanol production potential is enhanced by the advancement of technologies to convert cellulosic biomass, which also avoids the issues associated with competition with food and feed uses when ethanol is produced from grain. According to a 1995 University of Idaho report for the Idaho Wheat Commission⁷, Idaho produces 2.3 million tons of available and sustainable wheat, barley, and oat residues. Based on projected technology (90 gallons of ethanol per ton), this residue has a total ethanol potential of 207 million gallons annually.

More recent work⁸ considers residue to grain yields for corn, wheat, and barley with residue collection efficiencies of pioneer (current equipment), intermediate (2017), and advanced (2030) equipment for agricultural residues (but does not include restrictions on residue removal rates, i.e., soil maintenance requirements). It suggests net residue yields of from 1.3 to 3.0 dry tons per acre (dependent on the crop and collection equipment efficiency). Applying these values to 2007

² DOE/GO-102005-2135, "Biomass as Feedstock for a Bioenergy and Bioproducts Industry: The Technical Feasibility of a Billion-Ton Annual Supply" (April 2005)

³ <http://afdc.energy.gov/afdc/sabre/sabre.php?state=idaho>

⁴ National Renewable Energy Laboratory, Golden, CO

⁵ National Renewable Energy Laboratory, "Biochemical Production of Ethanol from Corn Stover: 2007 State of Technology Model, NREL/TP-510-43205, May 2008

⁶ BBI International, "Ethanol Impact Assessment for the State of Idaho" (January 2004)

⁷ Patterson, P., et. al., "The Availability, Alternative Uses and Value of Straw in Idaho", University of Idaho for the Idaho Wheat Commission, September 1995

⁸ Private Communication, Kevin Kenney, Idaho National Laboratory

Idaho planted acres for corn, wheat, and barley⁹ and using an ethanol to residue conversion ratio of 72 gallons per dry ton for the pioneer condition and 90 gallons per dry ton for the advanced condition results in cellulosic ethanol production of from 199 to 433 million gallons per year.

Idaho forest (at last inventory in 1991)¹⁰ was 22.3 million acres (41.8% of the state's area). It has a net volume of 39,560 million cubic feet of biomass with a net annual growth of 816 million cubic feet. There is annual removal of 309 million cubic feet per year from these forests and net annual mortality of 290 million cubic feet per year. If one-quarter of the annual mortality product could be recovered (72.5 million cubic feet or about 1.2 million tons per year) and converted to ethanol at 72 gallons per dry ton, approximately 86 million gallons of ethanol could be produced annually.

Perennial energy crops, which could be grown on marginal lands, further increases the total cellulosic ethanol production in the state. Test plots of miscanthus are being grown today at the University of Idaho facility at Aberdeen to determine its growth characteristics. Efforts are underway with the Idaho Farm Bureau Federation to identify test plots across the state to gather agronomic data on various potential energy crops under the range of conditions. The potential amount of cellulosic ethanol produced from dedicated energy crops is dependent upon the specific crops chosen, the number of acres planted, and the collectible yield per acre.

Another study considering biomass from forest residues, primary mill residues, agricultural residues, and urban wood waste estimates that Idaho could deliver 7,165,782 dry tons per year at <\$50 per dry ton.¹¹ These estimates do not include dedicated energy crops. At a conversion rate of 72 gallons of ethanol per dry ton of cellulosic biomass, this suggests that Idaho could produce 516 million gallons of cellulosic ethanol per year. However, some residue included in this study is used for other purposes (e.g., primary mill residues used for fuel, pulp or composite wood products, and mulch) and may not be available for cellulosic ethanol production.

In summary, the potential production of cellulosic ethanol in Idaho depends upon the residue sources considered, estimates of their availability, and the current and future conversion efficiency of cellulosic residues to ethanol. Costs associated with feedstock logistics are a major barrier to the development of advanced biofuels. It is worth noting that the Idaho National Laboratory is the U.S. Department of Energy lead for feedstock logistics. (and is constructing a \$15M process demonstration facility). Considering ethanol production using grain and cellulosic feedstocks from the studies and estimates above, it is reasonable to believe that Idaho could sustainably produce 300 million gallons of ethanol per year (100 million gallons per year from grain crops and 200 million gallons per year from cellulosic residues, with potentially additional production from dedicated energy crops). At this level, all of the gasoline sold in Idaho could be E10 (10% ethanol) and still have over 230 million gallons of ethanol available for export to markets in other states. Alternately, one-half of the gasoline sold in the state could be E85 (85% ethanol) if a sufficiently large flexible fuel fleet were to exist in the future.

⁹ US Department of Agriculture - National Agricultural Statistics Service

¹⁰ US Department of Agriculture - Forest Service

¹¹ Walsh, et.al., "Biomass Feedstock Availability in the United States: 1999 State Level Analysis" (January 2000)

Table 2 - Idaho's Ethanol Production Potential

Ethanol Type/Feedstock	Potential Production, million gallons/year
Conventional Ethanol - Grain Feedstock	
DOE Model (3,4)	459
DOE Model with 2007 State of Technology (5)	518
BBI International Report (6)	98
Cellulosic Ethanol - Agricultural Residues	
University of Idaho Report (7)	207
University of Idaho Report with updated residue collection (8)	199-433
Cellulosic Ethanol - Forest Residue	
Estimate based on collecting 1/4 annual forest mortality	207
Estimate based on 1999 Idaho State Level Analysis (11)	<516
Cellulosic Ethanol - Dedicated Energy Crops	
No estimate to date	no estimate

Table 3 - Idaho's Biodiesel Production Potential

Feedstock	Potential Production, million gallons/year
Vegetable Oils	
Canola through crop rotation (14,15)	20.6 - 53.0
Used Oils/Grease/Tallow	
Estimate based on used cooking oil (16)	1.6
Estimated based on waste oil from food processing (18)	1.0 - 1.8
Estimate based on animal tallow (19)	<8.2

Table 3 shows estimates of Idaho's biodiesel production potential. While biodiesel can be produced from used cooking oils and animal fat, the production of large quantities of biodiesel in Idaho would likely be from oil seed crops, which currently are not grown in substantial amounts. Idaho has the potential to grow oil seed crops and an interesting scenario to consider is if canola were grown in rotation with wheat. In 2007, Idaho had 1,235,000 acres planted in wheat¹². If one-half of this wheat production were rotated with canola every four years at a yield of 1,250 pounds of canola per acre¹³, approximately 9.2 million gallons of biodiesel (B100) could be produced per year (assuming a recovered canola oil content of 35 wt%). The University of Idaho

¹² US Department of Agriculture - National Agricultural Statistics Service

¹³ 2007 canola yield, US Department of Agriculture - National Agricultural Service

and the Idaho Department of Water Resources made an estimates of potential biodiesel production based on replacing, through crop rotation, 8-20% of harvested acres in the Treasure Valley and Magic Valley regions of Idaho with canola yielding 1,500 to 2,500 pounds per acre and 36 wt% recoverable oil.^{14,15} These studies resulted in oil seed biodiesel potential estimates of 20.6 to 53.0 million gallons of biodiesel per year. Note however that there are currently no commercial seed crushing plants in Idaho.

The National Renewable Energy Laboratory estimates that about 1.1 gallon of used cooking oil per person per year is produced by restaurants and other sources.¹⁶ Based on Idaho's 2006 population estimate¹⁷, used cooking oils and waste grease have the potential to produce about 1.6 million gallons of biodiesel per year. Approximately 1.0 - 1.8 million gallons per year of other waste oils result from food processing operations in the Treasure and Magic Valleys.¹⁸ South central Idaho is estimated to produce about 61 million pounds of tallow per year, from which 8.2 million gallons per year of biodiesel could be made.¹⁹ There are other markets for these waste oils and tallow so it is unlikely they would all be available for biodiesel production. However, if it is assumed that one-half of these materials were available for biodiesel production (and considering tallow and food processing waste oils from other parts of the state), it is not unreasonable to estimate a biodiesel production of the order of 6 million gallons per year from used oils and animal fats.

In summary, the potential production of biodiesel in Idaho depends upon the production and availability of seed oils, cooking and food processing oils, and animal fat. Considering biodiesel production from the studies and estimates above, it is reasonable to believe that Idaho could sustainably produce the order of 30 million gallons of biodiesel per year (24 million gallons per year from agriculturally produced vegetable oils and 6 million gallons per year from used oils and animal fat). If this B100 were mixed with petroleum diesel to produce 150 million gallons of B20 (20% biodiesel in petroleum derived diesel) annually, about 36% of the diesel fuel consumed in Idaho would contain Idaho biodiesel.

There Are Economic Advantages to Production of Biofuels in Idaho

In addition to the energy security and environmental benefits, there are significant economic advantages to the production of biofuels in Idaho using Idaho biomass feedstocks.

Biofuel production has the potential to bring significant economic development to Idaho by adding direct and indirect jobs to rural regions and by adding value to local crops and crop residues. . The four ethanol plants identified in the BBI International study, if capable of utilizing both starch and cellulosic-based feedstocks, would conservatively create 3,800 jobs during construction and 1,900 jobs during commercial operation. The four ethanol plants

¹⁴ University of Idaho, "Feasibility Study for Commercial Production of Biodiesel in the Treasure Valley of Idaho" (May 2006)

¹⁵ Idaho Department of Water Resources-Energy Division, "Feasibility Study for Commercial Production of Biodiesel in the Magic Valley of Idaho" (December 2006)

¹⁶ Wiltsee, National Renewable Energy Laboratory, "Urban Waste Grease Assessment" (1998)

¹⁷ U.S. Census Bureau population estimate of 1,466,465 for Idaho in 2006

¹⁸ Ibid references 16 and 17

¹⁹ Ibid reference 17

identified in the BBI International study, if capable of utilizing both starch and cellulosic-based feedstocks, would conservatively create 3,800 jobs during construction and 1,900 jobs during commercial operation. These new jobs were estimated to generate \$122 million in new household income and provide additional corporate and personal income tax revenues to the state. In addition, the value added to local crops and crop residues was estimated to be approximately \$0.67 per bushel of grain and between \$5-10 per ton of straw residue respectively.

The cellulosic ethanol plant that Iogen, a Canadian corporation, planned to build in Shelley, ID was to process 800,000 tons of straw per year, producing 60 million gallons of ethanol per year. This plant was estimated to cost over \$325 million with a 24-30 month construction time. Plant construction would provide an estimated 1,000 jobs while subsequent plant operation would provide 180 direct jobs for skilled labor²⁰. This does not include the additional jobs and income created in the region as a result of the economic multiplier. Using an average output multiplier for manufacturing of 2.0²¹ and a state average rack price of \$2.50 per gallon²²(which is comparable to the current estimated production cost of cellulosic ethanol), annual plant sales of \$150 million for 60 million gallons of ethanol would bring about \$300 million per year into the area.

How Can Idaho Realize its Biofuels Potential?

An essential prerequisite to any plan that will allow the citizens of Idaho to realize the potential in the state for biofuels is to determine just what that potential is. Years of research at the University of Idaho and by others have established that significant potential exists, but estimates vary and are largely dependent upon the sources of feedstock used and their availability. Can we replace all of our transportation needs with biofuels derived from Idaho crops? The answer is probably not, at least with our current combination of vehicles on the road and transportation patterns. How much can we increase production without adversely affecting our traditional agricultural crops upon which so many Idaho families rely? We have resources in the state that can help answer these questions. Along with the University of Idaho, researchers at Boise State and Idaho State partner with INL in the Center for Advanced Energy Study. This private/public/academic partnership is home to the newly-established Energy Policy Institute and brings together a unique combination of expertise that could be tasked to answer these fundamental questions. This task force has started the process of identifying the major barriers to greater use of biofuels in Idaho. A complete list of the barriers identified by the task force is provided in the Appendix (and builds on information contained in the 2007 Idaho Energy Plan). The most significant barriers are:

1. Ethanol and biodiesel are not always cost competitive with gasoline and diesel fuel. The prices paid at the pump for gasoline and diesel fuel do not reflect the true cost to

²⁰ Maurice Hladik, Iogen Corporation

²¹ Miller, W., "Economic Multipliers: How Communities Can Use Them in Planning," University of Arkansas Extension Service, 1999

²² Average state rack price per gallon on September 25, 2008

society. The volatility of the petroleum fuels market means the biofuels industry moves between boom and bust extremes that are unpopular with investors.

2. Public perception is that biofuels may be bad for existing vehicles and/or the environment.

To overcome these barriers will take significant commitment and investment from state government.

In the meantime, we can suggest a series of measures that can increase the supply of and the demand for biofuels, both of which will move us closer to realizing our potential. These steps can be taken by industry, government agencies and Idaho's academic institutions.

The complete list of recommendations in Appendix A includes recommendations (1) to develop a biofuels infrastructure, (2) to improve public acceptance of biofuels, (3) to create demand for biofuels, and (4) to expand supply by reducing investment risk for biofuel companies. The recommendations with the greatest potential for near-term impact are listed below.

1. Steps to develop biofuels infrastructure
 - a. Provide tax exemptions for equipment and materials used to distribute biofuels. Provide a biofuels production equipment tax credit.
 - b. Continue to promote and utilize the biofuels investment tax credit and biofuels infrastructure grant program until they sunset in 2012 so more retailers and wholesalers have necessary biofuel infrastructure, including E-85 pumps, blender pumps, and high blend biodiesel pumps.
2. Steps to improve public acceptance of biofuels
 - a. Provide workshops and training for county and municipal fleet managers with regard to using biofuels in government owned fleets, peer to peer. Use those county and city and/or state government entities that are already using biofuels to train those that have not done so yet. Universities and community colleges could play a role in this training.
 - b. Develop public /private partnerships to produce and distribute credible training materials for small engine and recreational vehicle engines to mechanics, helping them understand that biofuels are endorsed and welcomed by manufacturers.
 - c. Distribute currently existing training materials such as the "Changes in Gasoline" CD and manual to automotive technicians helping them overcome negative biases against biofuels.
3. Create demand for biofuels
 - a. Require suppliers to provide biodiesel (B-20 or greater) and ethanol blended fuels at Idaho Transportation Department (ITD) and other state agency-operated fueling facilities and for school buses.
 - b. Obtain an Executive Order requiring state flex fuel vehicles to use E-85 (or B-20 or greater) where available

4. Expand supply by reducing investment risk for biofuels companies
 - a. Provide 6-year or 10-year property tax exemptions for biofuels production facilities.
 - b. Renew the 2.5¢ per percent road tax exemption for biodiesel.

Summary

The requirements of the Federal Renewable Fuel Standard guarantee that biofuels will be an important part of Idaho's energy future. Presently, with its almost complete dependence on petroleum for transportation fuels, Idaho is forced to import its fuels from neighboring states. Those states benefit from the jobs and income derived from exporting fuels to Idaho. Idaho's lack of domestic petroleum resources has always mandated this dependence. With the Renewable Fuel Standard, there is now an opportunity to use Idaho's plentiful natural and agricultural resources to produce a portion of its own fuel supply. Idaho should have natural competitive advantages in the production of biofuels, which will yield new jobs for Idaho citizens.

Appendix A Complete List of Barriers and Recommendations

List of Barriers

3. Ethanol and biodiesel are not cost competitive with gasoline and diesel fuel. The prices paid at the pump for gasoline and diesel fuel do not reflect the true cost to society. The volatility of the petroleum fuels market means the biofuels industry moves between boom and bust extremes that are unpopular with investors.
4. Public perception is that biofuels may be bad for existing vehicles and/or the environment.
5. Current Idaho tax code is not supportive of renewable fuel projects.
6. Biofuels are not widely available in Idaho, especially E-85 and biodiesel blends greater than 5%.
7. Freight costs for feedstocks from the Midwest are too high for local production to be competitive. Idaho is at a disadvantage for ethanol from corn when the corn must be brought in because of the freight charges. There is also not enough rail car availability to transport out-of-state feedstocks for in-state biofuel production.
8. Idaho doesn't grow enough corn or oilseeds to support local production of ethanol and biodiesel. Idaho-grown small grains are too expensive for ethanol production (wheat, barley). Biodiesel is hampered by a lack of in-state vegetable oil crushing facilities. The Idaho Agricultural Order limiting brassica production hinders production of these oil seeds in certain areas of the state.
9. The production of second generation (cellulosic ethanol) and third generation biofuels is not technically mature, with high costs relative to alternate fuels and high risk relative to achieving production yields and financing. Agricultural crops are optimized for their food value without consideration of their cellulosic residue value.
10. Need additional agronomic data on crops/varieties that will work best in the various areas of the state for both cellulosic ethanol and biodiesel.
11. Biofuels are viewed as raising the cost and availability of human food and animal feed. Corn-based ethanol is particularly viewed as being responsible for raising the cost of production for livestock feeders.
12. The state is not currently capable of enforcing biofuel quality standards.
13. Logistics infrastructure for cellulosic feedstocks is immature or nonexistent. Additional infrastructure is needed for transportation, storage, and end-use (flexible fuel vehicles) for biofuels.
14. There is no market for energy crops (by definition crops grown only for their energy value with no competing food uses) with the result that the inability to predict sustainable supply makes it difficult to justify biorefinery investment.

Recommendations

Steps to develop biofuels infrastructure

1. Provide tax exemptions for equipment and materials used to distribute biofuels. Provide a biofuels production equipment tax credit.
2. Rescind the Agricultural Order that currently prohibits oil seed crop production in the Treasure Valley.
3. Develop job training programs at universities and community colleges to produce the work force needed to support a biofuels industry.
4. Establish an Idaho Energy Center at the University of Idaho (UI). Fund the center from surcharges on natural gas and fossil-fuel based electricity. The center should sponsor and encourage research and education on energy conservation and renewable fuels.
5. Continue to promote and utilize the biofuels investment tax credit and biofuels infrastructure grant program until they sunset in 2012 so more retailers and wholesalers have necessary biofuel infrastructure, including E-85 pumps, blender pumps, and high blend biodiesel pumps.
6. Idaho Dept of Commerce should reach out to potential cellulosic biofuel production companies to tout the benefits of locating in Idaho.
7. State and/or private companies should provide additional funding to expand the current INL, U I, and Idaho Farm Bureau research project to determine which biomass crops have the most potential for Idaho
8. Allow a streamlined permitting process for land application of effluent from either municipal or industrial waste treatment plants onto biomass crops specifically grown for biofuels and/or other energy production.
9. Establish incentives for development of an agricultural residue industry and new agricultural implement development to provide the new types of equipment needed to optimize harvesting, processing, and handling of biomass.

Improving public acceptance of biofuels

1. Conduct community outreach education to develop collaborative, locally determined outcomes for the biofuel industry in Idaho.
2. Work with the Communications Task Force to develop/promote a biofuels value proposition, promote achievements to date in the state (e.g., BIG program achievements) and develop community discussion.
3. Develop public /private partnerships to produce and distribute credible training materials for small engine and recreational vehicle mechanics helping them understand that biofuels are endorsed and welcomed by manufacturers.
4. Distribute currently existing training materials such as the “Changes in Gasoline” CD and manual to automotive technicians helping them overcome negative biases against biofuels.

5. Provide workshops and training for county and municipal fleet managers with regard to using biofuels in government owned fleets, peer to peer. Use those county and city and/or state government entities that are already using biofuels to train those that have not done so yet. Universities and community colleges could play a role in this training.
6. Incorporate biofuels into the “Buy Idaho” campaign run by the Dept. of Commerce. This is the only source of transportation fuel that currently is truly an Idaho resource.

Create demand for biofuels through the following steps

1. Encourage county and municipal governments to utilize biofuels in their fleets to the greatest extent possible.
2. Obtain an Executive Order requiring state flex fuel vehicles to use E-85 where available
3. Require suppliers to provide biodiesel (B-20 or greater) and ethanol blended fuels at ITD and other state agency-operated fueling facilities and for school buses.

Expand supply by reducing investment risk for biofuel companies

1. Renew the 2.5¢ per percent road tax exemption for biodiesel.
2. Provide multi-year property tax exemptions for biofuels production facilities.
3. Set up a revolving loan program for bioenergy projects. Provide no interest loans that allow additional loans as they are paid back. This could be separated into a program for farm scale projects and a larger program for commercial-scale projects.
4. Provide interest rate buydown program for commercial bioenergy loans or loan guarantees.
5. Establish a state bioenergy program that would make payments directly to biofuel producers for ethanol or biodiesel produced from Idaho agricultural products.
6. Establish Renewable Energy Enterprise Zone(s) for biofuels. For example, they could be established to encourage cellulosic ethanol plant development around Bingham County where Iogen was planning to build and/or in northern Idaho around forest residues and for dedicated energy crops and/or oil seed production.
7. Establish incentives for a commercial oil-seed crushing plant in Idaho.