

# BIODIESEL MANDATE STUDY

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### BIODIESEL MANDATE ABSTRACT

This study examines the effects that enactment of Senate File 464, a biodiesel mandate, will have on demand, prices, fuel marketers, retail fuel outlets, truck stops, employment and tax receipts. In each instance, the projected results have been determined to produce a negative impact. The amendment requiring a B-5 increase will initiate spillover effects in terms of transportation costs (\$49 million), pipeline upgrades (\$500,000 to \$2 million per location/terminal), jobbers expenses (\$12.5 million), and untold losses emanating from losses in employment, motor carriers bypassing Iowa and related losses in tax revenue. The latter component could exceed \$100 million in lost diesel sales and lost revenue to the state.

Apart from these adverse effects, a mandate modifying ULSD (Ultra Low Sulfur Diesel) is an ill timed proposal as it coincides with an economic crisis dominated by revenue shortfalls, state budget cuts, mandated layoffs, unprecedented unemployment levels exceeding 8% and the failure of the U.S. Congress to extend the federal blenders tax credit. The elimination of the tax credit will add another 5-cents to the projected mandate price increase of 7- to 9-cents, for a total of 12- to 14-cents per gallon.

The single largest promoters of biodiesel in Iowa, based upon recent infrastructure investments, are renewable fuel marketers (Iowa DED, Renewable Fuels Infrastructure Board, and Biodiesel Distribution Facilities). In the context of this environment, a B-5 mandate will only add to Iowa's fiscal and monetary burdens.

### OVERVIEW

A legislative mandate (Senate File 464) requiring a retail fuel outlet to utilize B-5 biodiesel blends was introduced in the 2009 legislative session. Senate File 464 (a strike and replace amendment to the original bill) requires:

1. Retailers to utilize B-5 blends with ULSD
2. Removes a three (3) cent income tax credit on B-2 blends<sup>1</sup> and
3. In order to recapture the three cent tax credit, fuel retailers are required to sell B-10 or higher.

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<sup>1</sup> The tag line B-10 or higher is a catch 22 scenario. Currently retailers selling 50% or more of their total diesel sales at B-2 blends and higher can apply for a three-cent tax credit at year end. The average blending expense for B-2 incurred by truck stops is approximately 3-5 cents per gallon. The suggestion that B-10 blends, in some manner, would be offset by a three-cent tax credit fails to address the need to offset the blending expense of 6-8 cents per gallon. The new result is that major truck stops would be required to absorb 3-4 cents per gallon.

## PUBLIC POLICY: SUPPORTING STUDY

In a recent research study provided by Iowa State University (***Biofuels Policies and Welfare: Is the Stick of Mandates Better than the Carrot of Subsidies***, Working Paper No. 09010, June 2009), Mr. Harvey Lapan and Mr. GianCarlo Moshini concluded the following:

- “... neither ethanol subsidies nor ethanol mandates alone can achieve multiple policy goals, and that in our framework coupling either policy with a fuel tax would be beneficial.”
- “... it then follows that the use of a production/consumption mandate for ethanol actually leads to higher welfare than the use of ethanol subsidies.”

Although the above study focuses upon ethanol, the basis of the study and conclusion depict an effective public policy that approaches renewable fuels with a combination of efforts. One method is not necessarily more effective than the other. However, by intelligently combining the two separate policies, we may formulate a scenario that incentivizes the growth of the renewable fuel industry while minimizing the potential negative impacts upon the public.

This paper contends that the conclusions provided by Mr. Lapan and Mr. Moshini very closely support Iowa’s current Renewable Fuel Standard, which employs an incentive approach only after a minimal threshold (annually increasing) of renewable fuel volume has been achieved by the petroleum/renewable fuel marketer.

I strongly suggest that policy makers review this supporting document as it reinforces the path already taken by our legislature and lends credence to the methodology and philosophy that supports renewable fuels in Iowa.

### PUBLIC INTEREST

The core principal is to consider whether the B-5 mandate is in keeping with the legislatures time honored role of protecting the public interest. The answer necessitates a review of issues related to a mandate requiring retail fuel outlets to blend biodiesel (animal fat or vegetable oil) with ULSD diesel.

### DEMAND

The strident question stemming from a mandate is that of demand. In the instance of Senate File 464, the mandate modifies the supply of ULSD diesel. Absent the question of legislative intent, it is appropriate to recall the role of supply in the market mechanism.

The free market system, unfettered by legislative edits, represents what suppliers are willing to do at various possible prices. The classic assumption is that suppliers are willing to supply additional units at higher prices. Implicit in this expectation is the anticipation that buyers are bidding up prices. Application of this premise to the B-5 mandate anticipates that a price increase of 7-9 cents per gallon will motivate buyers.<sup>2</sup>

Unfortunately, the biodiesel mandate is a case of upside down economics. The initial motivation stems from buyers not suppliers. Absent a rational incentive, there is no reason for buyers to purchase B-5 blends at a price which exceeds ULSD diesel by 7-9 cents per gallon.

Additionally, an expense of 7-9 cents per gallon for B-5 blends is an open invitation to motor carriers to drive across Iowa without refueling — rendering Iowa a virtual drive-through state.

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<sup>2</sup> An expense of 7- to 9-cents per gallon for B-5 blends is an open invitation for tractor-trailer operators to drive through Iowa without refueling.

### PRICES

Apart from demand, the foremost issue is price. Price increases vary from 7-9 cents per gallon. The variances depend on the relative distances between refineries, terminals, bulk fuel locations.<sup>3</sup> In recognition of these limitations it is instructive to examine price differentials for B-5 blends in actual markets. An example of the latter occurs on a daily basis in Minnesota, which adopted a B-5 mandate in 2009.

Referencing data published by DTN and OPIS<sup>4</sup>, the average supplier cost of the B-5 blended biodiesel at the Twin Cities racks during the period January 1, 2008 to February 25, 2010 was \$2.45326 per gallon. During the same time period the average supplier cost of standard ULSD was \$2.37857 per gallon. Since the Minnesota mandate became effective, the average premium paid by Minnesota consumers for a gallon of diesel was 7.468 cents per gallon. This premium does not take into consideration the loss of the \$1.00 Federal blender's credit which would increase the premium paid for a B-5 biodiesel blend to 12.468 cents on average. B-5 blended biodiesel is not readily available at any major Iowa racks, so it is difficult to predict exactly what the real world pricing differential would be, but there is no reason to believe that the premium would be materially different than it is in Minnesota.

*“The extreme negative economic incentives to blend biodiesel in 2008 have improved slightly but remained present during 2009. These negative incentives are a direct cost to the diesel user in the state of Minnesota that a diesel user in a non-mandated biodiesel state such as Wisconsin or Iowa does not have. B100, after the \$1.00 per gallon tax credit is applied, averaged a \$.31 per gallon higher price than #2 ULSD in 2008. In 2009, that premium has decreased to \$.16 per gallon. If you assume that 40 million gallons of B100 will be used via the mandate in 2009, the total increased cost to the diesel users in the state of Minnesota in 2009 was \$6.4 million”,* according to Jeremy Bezdek, General Manager of Exchange and Marketing Supply for Flint Hills Resources, LP who shared his comments in a biodiesel stakeholder study group with the Minnesota Department of Agriculture.

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<sup>3</sup> It is not unusual to observe price fluctuation stemming from bottlenecks in supply between Des Moines and Sioux City.

<sup>4</sup> **Data Transmission Network, DTN**, is a private company based in Omaha, NE; a business-to-business provider of real-time market information services across multiple vertical markets. **Oil Price Information Service (OPIS)** is the most comprehensive source for petroleum pricing and news information; is a service subscribed to by various state agencies.

## EXPENSES

### **JOBBERS**

A B-5 biodiesel mandate will impact storage and distribution requirements:

**STORAGE:** To accommodate storage requirements for B-5 blends, pipeline terminal operators will need to purchase and install heated storage and blending equipment at a cost of \$500,000 to \$2,000,000 per pipeline terminal location. At present, the majority of heated storage is provided by petroleum marketers which are blending B100 at their own bulk facilities. To-date, 35 such locations offer blended biodiesel with 10 of these facilities maintaining heated storage for year-round blending. In comparison, Iowa has 23 major pipeline terminals with only two offering B100 heated storage. Costs to install the necessary blending infrastructure at pipeline terminals will range from \$10,500,000 to \$42,000,000.

Pipelines would be forced to assess a per gallon renewable fuel handling charge to off-set the enormous economic costs associated with installing the new infrastructure. These costs would be passed on to consumers.

**DISTRIBUTION:** To facilitate the distribution of B-5 Blends jobbers may be forced, stemming from liability issues, to purchase dedicated trucks to segregate products (e.g. aviation fuel versus biodiesel). To-date, the contamination of aviation fuel by biodiesel, is the single-most prevalent issue preventing the transfer of blended product via most pipeline infrastructure. Transporters of both B-5 and aviation fuel will have to adjust/purchase transports accordingly in order to avoid contaminating aviation fuel in Iowa.

### **RETAIL FUEL OUTLETS**

Underwriters Laboratory, Inc. has not certified any fuel dispensing systems (including all appurtenances) for any biodiesel blends. Biodiesel is known for its corrosive properties which may vary depending upon the feedstock used for each batch. This may lead to compromised equipment capable of releasing contamination into the environment and place unknown liability on transporters, marketers, retailers and any other party handling the product.

### CONSUMERS

The added expense of a B-5 mandate will impact consumers in a number of respects.

1. Terminal operators will pass down expense represented by requirements for heated storage tanks and the purchase of dedicated trucks designed to transport segregated products. Historically higher costs of biodiesel will also increase costs of the final blended product. If the federal blenders' credit (\$1.00) is not renewed in the future, then this variable will only dramatically increase. (i.e. State policy born upon a shifting federal credit that may or may not exist in the future)
2. Instate truckers<sup>5</sup> will pass on the 7-9 cents per gallon expense for B-5 blends in the form of higher costs for goods and services
3. All other motor carriers will by-pass Iowa
4. Consumers will experience increased transportation expense of approximately \$49 million.

The net result is a four-fold transposition in the form of added expenses, higher prices for consumers and higher transportation costs.

### COMPETITION

The market structure of retail fuel outlets in Iowa is comprised of more than 16,000 direct employees, 1,700 locations and 850 owners. The retail fuel market is an example of a market exemplified by competition.<sup>6</sup> This is in contrast to Iowa's biodiesel industry, which currently has just fifteen operations with less than 500 direct employees. Iowa fuel retailers offer a selection of fuels and convenience products designed to meet consumer tastes and preferences. Iowa's retail fuel market is a representative exchange,<sup>7</sup> featuring choices and selections unfettered by mandatory requirements.<sup>8</sup>

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<sup>5</sup> Other motor carriers will likely by-pass Iowa fuel retailers.

<sup>6</sup> In the context of a competitive market represented by many buyers and many sellers, no one buyer and no one seller is in a position to set prices or interfere with the allocation of supply. By comparison the market for biodiesel production in Iowa is dominated by three firms (1) Ag Processing [AGP] (30 MKG), Cargill (37.5 MKG), and REG (192 MKG) which control 78% of production capacity in Iowa. REG has extended its market position by the establishment of marketing – management contracts with five other firms.

<sup>7</sup> Illinois and Nebraska have not adopted B-5 mandates for ULSD Fuel. Passage of Senate File 464 is an open invitation for truckers to drive through Iowa without refueling

<sup>8</sup> Legislative mandates postulating production quotas is a direct interference with the market system. The premise of open markets and the protection of a consumer's choice insures the opportunity of the average citizen to purchase or reject goods and services absent the imposition of statutory mandates designed to benefit investors at the expense of consumers.

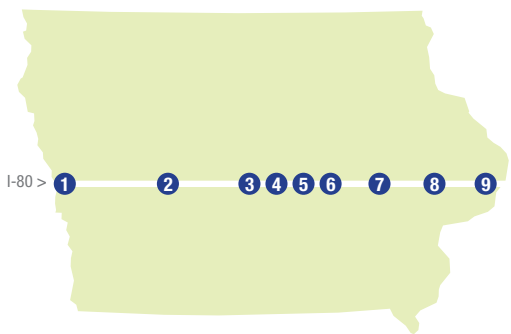
## TRUCK STOPS

There are 19 major truck stops in Iowa. Ten are located on I-80 and the balance are located on I-35, I-380, and I-29. The major truck stops sell approximately 19 million gallons per month or total sales of 228 million gallons per year.<sup>9</sup>

Unlike sales of gasoline,<sup>10</sup> diesel sales are primarily a business-to-business transaction. Prospective sales are determined through the auspices of a daily auction.<sup>11</sup> In this setting a two cent variance in price<sup>12</sup> can result in a 20% decrease in daily sales.<sup>13</sup> For the typical major truck stop, diesel fuel represents the principal source of revenue.

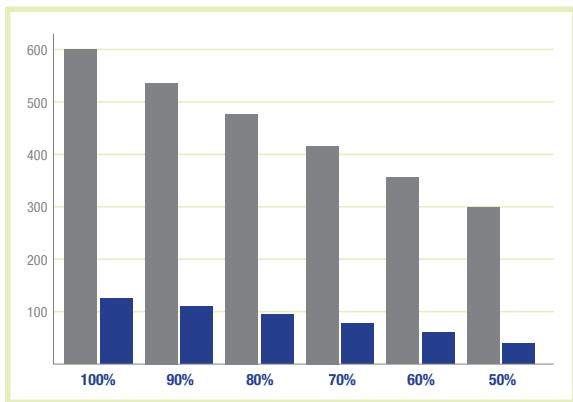
### MAJOR TRUCK STOPS ON I-80

Annual Sales: 120 million gallons

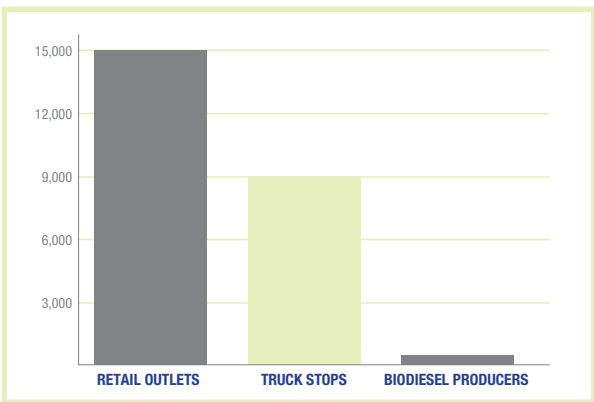


|                   |   |              |  |
|-------------------|---|--------------|--|
| 1. COUNCIL BLUFFS | <ul style="list-style-type: none"> <li>Sapp Bros</li> <li>Pilot</li> <li>TA</li> </ul>        | 4. ALTOONA   | <ul style="list-style-type: none"> <li>Pilot</li> </ul>                      |
| 2. AVOCA          | <ul style="list-style-type: none"> <li>Wings</li> </ul>                                       | 5. NEWTON    | <ul style="list-style-type: none"> <li>Loves</li> </ul>                      |
| 3. DES MOINES     | <ul style="list-style-type: none"> <li>Quick Trip</li> <li>Pilot</li> <li>Flying J</li> </ul> | 6. VICTOR    | <ul style="list-style-type: none"> <li>Pilot</li> </ul>                      |
|                   |   | 7. ATALISSA  | <ul style="list-style-type: none"> <li>Pilot</li> </ul>                      |
|                   |   | 8. WALCOTT   | <ul style="list-style-type: none"> <li>Iowa-80</li> <li>Pilot (2)</li> </ul> |
|                   |   | 9. DAVENPORT | <ul style="list-style-type: none"> <li>Flying J</li> </ul>                   |

### MAJOR TRUCK STOPS: DIESEL SALES/TAX REVENUE



### EMPLOYMENT: TRUCK STOPS, RETAIL OUTLETS, BIODIESEL PLANTS



<sup>9</sup> Sales at the other 121 locations average approximately 1,400,000 gallons per year.

<sup>10</sup> Gasoline sales are business-to-customer sales.

<sup>11</sup> Tractor-trailer operators use a computer program – “optimizer” – that analyzes miles to destination, reports diesel prices at all truck stops, identifies the best roads to take and lists fuel stops including the amount of fuel to be added at each stop.

<sup>12</sup> Truck stops on I-80 are currently at a disadvantage of approximately 2.34 cents per gallon between prices at Princeton, Ill. And truck stops in Iowa due to an Illinois fuel sales tax credit.

<sup>13</sup> The implementation of a 7-9 cent increase per gallon will place Iowa truck stops at a comparative disadvantage which will decimate diesel sales resulting in layoffs and loss of tax revenue. Iowa-80, which sells 4% of statewide diesel sales, has 326 employees. A 30% decline in diesel sales (B-5) would lead to a 30% labor reduction and a layoff of 97 employees. [Data courtesy Delia Meier].

## BIODIESEL MANDATE STUDY

### PRODUCTION

There are currently 14 biodiesel plants in Iowa with a capacity of approximately 326.5 million gallons. Of the 14 plants, 10 are vegetable oil and/or multi-stock plants<sup>14</sup> with operating capacities between 1.5 and 60 million gallons. The other five plants have an operating capacity between 1.5 and 30 million gallons.

Historical pricing data shows animal fat-based biodiesel to be cheaper year round, effectively pricing vegetable oils<sup>15</sup> out of the biodiesel market place.

Of the 14 Iowa plants, vegetable oil and/or multi-stock plants control 75% of industry capacity. As supported by documented research,<sup>16</sup> biodiesel plants with capacities less than 30 million gallons experience disadvantages stemming from scale and consequently are unable to produce returns adequate to cover operating expenses.<sup>17</sup> For plants representing 30 – 60 million gallon capacities, the question of profitability hinges on prices for feed stocks, petroleum prices and the expectation that farmer's elections to plant corn in lieu of soybeans will not adversely affect the price of soybeans.<sup>18</sup>

### BIODIESEL PLANTS IN IOWA Source: Biodiesel Producer Magazine and REG.com

| Company                    | Management         | Location       | MGY          |
|----------------------------|--------------------|----------------|--------------|
| East Fork Biodiesel, LLC   | REG                | Algona         | 60           |
| Cargill Inc.               | Cargill            | Iowa Falls     | 37.5         |
| Western Iowa Energy, LLC   | REG                | Wall Lake      | 30           |
| Central Iowa Energy, LLC   | REG                | Newton         | 30           |
| Western Dubuque Biodiesel  | REG                | Farley         | 30           |
| Io Renewable Energy, LLC   | REG                | Washington     | 30           |
| Ag Processing Inc.         | Ag Processing Inc. | Sergeant Bluff | 30           |
| Freedom Fuels, LLC         | Freedom Fuels      | Mason City     | 30           |
| Soy Energy, LLC            | Soy Energy         | Marcus         | 15           |
| REG Ralston, LLC           | REG                | Ralston        | 12           |
| Nova Biofuels Clinton City | Nova Biofuels      | Clinton        | 10           |
| Riksch Biofuels            | Riksch Biofuels    | Crawfordsville | 9            |
| Sioux Biochemical Inc.     | Sioux Biochemical  | Sioux Center   | 1.5          |
| Soy Solutions              | Soy Solutions      | Milford        | 1.5          |
| <b>TOTAL CAPACITY</b>      |                    |                | <b>326.5</b> |

**Total Market Capacity: 326.5 MGY**

**Production Capacity  
Controlled by REG: 192 MGY**

**Market Controlled by REG: 57.9%**

<sup>14</sup> Multi-stock plants are capable of using varying feed stocks such as animal tallow (fat), waste vegetable oil and virgin vegetable oil.

<sup>15</sup> The largest factor affecting costs of production for vegetable oil plants is the cost of soybeans. Soybean prices in excess of \$9 per bushel entail higher variable costs which leads to operations below production capacity. See supporting data @ pp10-12.

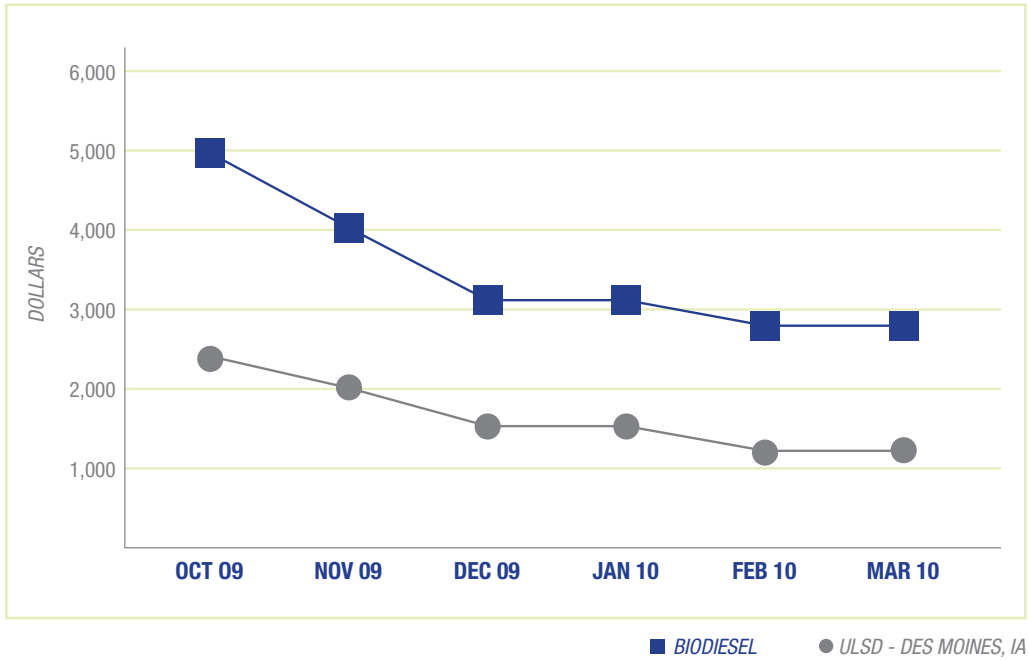
<sup>16</sup> See Nick D. Paulson and Roger G. Ginder ISU May 2007.

<sup>17</sup> Iowa currently has seven plants with less than 30 million gallons of capacity.

<sup>18</sup> Support for the latter proposition rests on the precocious assumption that the opportunity cost attending the shift in acreage allotments will not adversely affect the domestic and international market for soybeans. The probability of this result is predicated on assumptions related to yields, weather and the inclinations of farm operators located principally in South America to increase acreages devoted to soybeans. In summary, it suffices to say that the assumption of stable or declining prices for feed stocks will guarantee margins sufficient to maximize returns accruing to venture capitalists is subject to doubt. The difficulty is the prospect of generating prices which are sufficient to cover operating expenses and margins anticipated by venture capitalists. The likelihood of this prospect will depend on the construction of plants with a capacity in excess of 60 million gallons and diesel prices in excess of \$3 per gallon. See Giampietro, M.S. Ulgiati and S. Pimental – Bioscience 47 (9).

BIODIESEL MANDATE STUDY

**EXHIBIT - PRICES: Iowa Diesel Sales Oct 08 – Mar 09** *Iowa Department of Revenue*



**BIODIESEL MARKET SHARES – MKG**

