

Idaho Biodiesel Infrastructure Project
DOE'S INITIATIVE ON COOPERATIVE PROGRAMS WITH STATES FOR
RESEARCH, DEVELOPMENT AND DEMONSTRATION
Grant No. DE-FC136-02GO12021



Interest in biodiesel in Idaho has exploded. In September, former Governor Jim Risch celebrated the opening of Idaho's first commercial scale biodiesel plant in New Plymouth. Several other plants are being planned, and numerous groups and individuals are making their own biodiesel. Chamber of Commerce meetings, economic development groups, farm and other professional associations are all sponsoring education programs on biodiesel. Interest groups, like the Greater Yellowstone Clean Cities and the Treasure Valley Clean Cities Coalitions, are springing up throughout the state and aggressively advocating biodiesel use. The University of Idaho is recognized as the pioneer and continues to be the leader in biodiesel research and education. In addition, Filer High School, the College of Southern Idaho and Boise State University have been building demonstration projects to produce biodiesel. During this past spring a number of Idaho high school seniors wrote their final essay on biodiesel. Many of these asked why a fuel that can be grown and produced locally, resulting in local economic development and which reduces our reliance on imported oil, is not made available to the public. Why is a fuel that requires no engine modifications, significantly reduces harmful emissions, is renewable and carbon neutral, is safer, biodegradable and less expensive than diesel fuel not being used?

In early 2002, the Energy Division started the Treasure Valley B20 Program, a partnership program with local public and private sector organizations. Under this program the Energy Division paid any increased cost difference between B20 (20%, biodiesel, 80% diesel) and diesel fuel to allow fleets to test B20 in their operations and transition them into full scale B20 use. The program was hugely successful but in spring 2005, the price of biodiesel actually dropped below the price of diesel, effectively ending the program. As a result of this program several fleets began and continue to use biodiesel, two cardlock biodiesel pumping stations became available (Pacific Pride-Baird Oil), and several private fueling tanks were switched to provide a biodiesel-blended fuel.

Following an agreement with Department of Energy (DOE) project managers to modify Grant No. DE-FC136-02GO12021, the Energy Division embarked on an expedited process in February 2006 to install biodiesel infrastructure improvements in Idaho. On March 14, a Request for Proposal (RFP) was issued inviting qualified licensed fuel wholesalers, fuel retailers, and vehicle fleet operators to provide proposals to construct and/or install infrastructure for biodiesel utilization in Idaho. The intent was to improve the ability of private and/or non-Federal public entities in Idaho to store, transport, or offer for sale biodiesel within the state. The RFP provided up \$100,000 for co-funding the projects with a minimum 50% cash cost match. On March 23 a bidders' conference was held to answer potential applicants questions, and responses to the solicitation were due April 14.

The Evaluation Committee met on April 18 and evaluated eight proposals. Four of the proposals were funded. One of the four, Busch Distributors of Moscow, subsequently decided not to proceed with the project, and that money was then awarded to a second Stinker Stations proposal that had not been previously funded. Contracts were executed with Coleman Oil of Lewiston, Primeland Cooperative of Lewiston, and two with Fearless Farris Stinker Stations of Boise.

The success of the RFP was enormous. Biodiesel availability to Idaho motorists is far greater today than it was just months ago. It was made immediately available in about 45 stations from Standpoint to Boise, as shown in the summary table below. There were two ribbon-cutting ceremonies where dignitaries explained the benefits of biodiesel, all of the projects attracted an impressive amount of media attention, and consumers have become more knowledgeable about biodiesel. This effort, made possible by this Department of Energy grant, showed that challenges remain but biodiesel is here to stay and it will be an important part of Idaho's future.

Biodiesel Infrastructure Grant Outcome

RESULTING BIODIESEL FUELING STATIONS

Coleman Oil

300 2nd Avenue, Deary
 751 Riverside Ave., Orofino
 931 Hwy 3, Bovill
 First and Railroad, Kendrick
 610 - 9th Avenue, Nezperce
 3500 Ramsey Rd., Coeur d'Alene
 108 Harrison Ave., Coeur d'Alene
 3160 E. Seltice Way, Post Falls
 523 Larch, Sandpoint
 2305 N Hwy 41, Post Falls
 335 Mill Rd., Lewiston
 212 18th St., Lewiston
 1324 21st St., Lewiston
 1920 North Lewiston (Shell), Lewiston
 Thain Rd. (Chevron), Lewiston
 Nuxoll, Cottonwood

Primeland Cooperative

1200 Snake River Ave., Lewiston
 Hwy 95, Moscow
 Hwy 95, Grangeville
 101 E. Main, Craigmont
 618 Business Hwy 12, Kooskia
 304 Foster Rd. (Card Lock), Cottonwood
 1001 N. Idaho St. (Card Lock), Grangeville
 810 S. Pine (Card Lock), Nezperce
 Greencreek Rd. (Card Lock), Greencreek

Stinker Stations

2323 Main St., Boise
 4925 Glenwood, Boise
 10677 W. Ustick Rd., Boise
 8300 W. Emerald, Boise
 10500 W. State St., Boise
 2550 S. Apple, Boise
 Hwy. 20/26, Notus
 Caldwell Blvd., Caldwell
 S. Washington, Emmett
 Gayway, Fruitland
 524 12th Ave., Nampa
Stations recently added
 16 N. Curtis, Boise
 1607 S. Broadway, Boise
 300 N. Orchard, Boise
 8155 W. Franklin, Boise
 2959 S. Cole Rd., Boise
 3319 Garrity Blvd, Nampa
 530 N. Five Mile, Boise
 5024 E. Cleveland, Caldwell
 5250 Black Canyon exit, Caldwell

The contractors proficiently carried out all four contracts awarded with this grant and the results were far more outreaching than had been anticipated. A detailed description of the four projects associated with this grant follows.

Coleman Oil Company

Biodiesel Storage and Blending Bulk Plant Rail & Truck Facility

Award Amount: \$100,000 Match: \$61,907

Coleman Oil Company has been in the petroleum product distribution business since 1953. It supplies gasoline, diesel fuel and heating oil through wholesale and retail distribution networks. Coleman operates its own truck stop, retail fuel and cardlock facilities and distributes to other jobbers/retailers. Its customers include commercial, industrial, agricultural, transportation and government sectors, and individuals. Coleman Oil believes it is important to support the local oil seed crop growers on the Camas Prairie and the Palouse and wants to be seen as biodiesel experts.

Under Contract No. DWR-CON00712, Coleman installed a 40,000-gallon tank at its existing bulk storage facility in Lewiston. Special blending components, a pump, meter, loading arm, piping, wiring, catwalks, sampling apparatus and associated hardware were installed as well. The project also involved a second 40,000-gallon tank and a new rail spur that were not part of the grant. Both tanks were buried, doubled walled with a steel base and fiberglass outer layer. One tank holds biodiesel, and the other holds diesel. Blending components installed for this project were designed to eliminate problems associated with splash blending and will insure accurate and consistent blending. A breakdown of the cost of the project is shown below and photographs of the installation follow.

40,000 gal. Tank, Delivery & Installation -----	\$77,236
Piping, Fittings, Hardware & Concrete-----	31,009
Electrical -----	26,792
Blending Components -----	20,425
Permits & Administration -----	<u>6,450</u>
TOTAL PROJECT COST -----	\$161,906



Coleman anticipates using 500,000 gallons of biodiesel the first year but will have the blending capability of 20,000,000 gallons per year. Its current plan is to sell B20 at its stations in the warmer summer months and B2 to B5 in the winter months to limit cold weather problems.

During the course of this effort there were several newspaper articles written on this project. Coleman's ability to distribute biodiesel has dramatically increased the availability of biodiesel to a wide geographic area and to a wide range of customers. In addition to its own sites, Coleman supplies several resellers in Northern Idaho that now have the option to sell biodiesel. One such retailer, the Nuxoll Shell station in Cottonwood, made the newspapers throughout the Pacific Northwest when it was selling B20 for \$.43 a gallon less than straight diesel fuel. The article is reprinted below. Once the rail line spur is completed this coming spring, and Coleman's biodiesel distribution system is fully operational, Coleman will launch a complete public relations/advertising campaign to educate the public on the benefits of biodiesel and to advise customers where it is available.

Some Idahoans give biodiesel a try
Three out of four customers at Lewiston gas station opt for cheaper diesel-canola oil blend when filling up

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LEWISTON — A gas station in northern Idaho began offering a biodiesel blend this week, and three out of four customers are opting to put the cheaper fuel in their vehicles. Customers at Nuxoll Shell Service in Cottonwood on Wednesday paid \$2.96 per gallon for the blend that was 80 percent diesel and 20 percent canola and soybeans. Diesel was selling for \$3.39 a gallon. Don Nuxoll, co-owner of the station, said the cost of diesel at his station has risen about \$1 per gallon during the past eight months.

The station is the first of up to 25 retail outlets affiliated with Coleman Oil in Lewiston that will sell the biodiesel blend, Bob Coleman Jr., president of Coleman Oil, told The Lewiston Tribune. The company plans to have biodiesel blends in all its stations in northern Idaho and eastern Washington by September, he said. The company is using a \$100,000 state grant to build a storage and blending center that includes a 325-foot rail spur, and two 40,000-gallon underground fuel storage tanks.

The steel tanks were lowered into the ground on Wednesday with a crane. "They move these things by inch increments," said Coleman. "It's very impressive." As a safety feature, the tanks have an outer layer of fiberglass with a monitoring system inside to detect leaks. Narrow bands of steel were used to secure the tanks to a concrete pad. Coleman said that's intended to keep the tanks from moving in case the water table rises in high-water years.

The mixing system and tanks should be ready for use by mid-September, while the rail spur won't be done until early next year, Coleman said. Once finished, Coleman Oil will be able to receive shipments of biodiesel by rail instead of truck, lowering the cost. Besides having a market for biodiesel, Coleman said some of the ingredients — canola — is produced nearby in the Camas Prairie.

Nuxoll said customers were asking him if biodiesel could damage their vehicles. He said engines would not be harmed as long as the fuel filter was replaced at regular intervals.

Primeland Cooperatives

Biodiesel Storage and Blending Bulk Plant Rail & Truck Facility

Award Amount: \$12,267 Match: \$14,265

Primeland Cooperatives, an agricultural cooperative based in Lewiston, is a division of CHS Inc., of St. Paul, Minnesota. Primeland's marketing area is from north of Moscow to south of Riggins and from the Washington border to Kooskia. Its petroleum division consists of three-bulk fuel depots located in Lewiston, Moscow and Grangeville. It also has seven retail fueling sites located in Moscow, Lewiston, Craigmont, Nezperce, Greencreek, Cottonwood and Grangeville. Its annual diesel sales are 5,500,000 gallons. Support and promotion of the increased utilization and distribution of biodiesel is an integral part of Primeland's corporate directive.

Under Contract No. DWR-CON00709, Primeland installed a 6,000-gallon B100 tank at its existing bulk storage facility in Lewiston. The tank is above ground, insulated, and electrically heated. The tank has four-inches of fireproof foam insulation and is heated with a 7.5 kw heater to maintain a minimum of 45°F. A breakdown of the cost of the project is shown below and a photograph of the installation is shown below.

Insulated Tank & Installation -----	\$5,706
Piping, Fittings, Hardware & Installation-----	10,903
Electrical, Heater & Heater Installation -----	9,187
Permitting & Design -----	<u>736</u>
TOTAL PROJECT COST -----	\$26,532

Primeland anticipates using 150,000 gallons of biodiesel in its stores and 80,000 gallons through its wholesale distribution for a total of 230,000 gallons of biodiesel the first year. Their current plan is to sell B15 to B20 at its stations in the warmer summer months and B5 in the winter months to limit cold weather problems.

A ceremony to mark the opening of the biodiesel fuel pumps to the public was held at the Primeland Fueling Station in Lewiston on October 3. State Senator Gary Schroeder opened the event and explained the importance of the event to Idaho. The senator then introduced the pioneer in biodiesel research, Dr. Chuck Peterson of the University of Idaho, Lewiston City Manager Jay Krauss, and finally Jeff Hagemann, energy manager for Primeland Cooperatives. The University of Idaho had several of its vehicles using biodiesel on hand for the ceremony, which was broadly covered by the local media.



Fearless Farris Stinker Stations - Biodiesel Storage and Blending Facility

Award Amount: \$100,000 Match: \$59,255

Fearless Farris Stinker Stations have been operating in Idaho since 1936. Its chain of 45 small-town and rural retail sites throughout Idaho includes 42 that sell Sinclair products, three stations that are unbranded, and thirty-two of the stations sell diesel fuel. Shawn Davis and Charley Jones, owners of the Stinker Stations, also operate Westpoint Transportation, a fleet of 17 tractor-trailers that distribute liquid fuels and have five above ground petroleum sites in Idaho. Biodiesel is a natural progression for Stinker, which has been Idaho's leader in the marketing of ethanol-blended fuel for over 25 years.



Under Contract No. DWR-CON00710, Stinker Stations installed two 40,000-gallon tanks at its existing fuel storage facility in Boise. The tanks are above ground, insulated, electrically heated, and circulation pumps to optimize blending. One of the tanks holds B100 until it is needed for blending. The other holds the blend biodiesel for Stinker's stores. This assures a complete blend of biodiesel with conventional diesel in the coldest weather conditions. Both tanks are heated to maintain a fuel temperature of no less than 50°F and Stinker is able to provide any blend of biodiesel. A breakdown of the cost of the project is shown below and photographs of the installation follow.

2 - 40,000 gal. Tank Manufacture & Delivery -----	\$63,196
Heaters, Gauges, Valves, Pump, Filter, Meters & Piping -----	51,998
Electrical -----	30,051
Loading Equipment, Truck Fills, Hoses, Insulation -----	11,650
Permits & Administration -----	2,360
TOTAL PROJECT COST -----	\$159,255



Stinker's proposal estimated using 120,000 gallons of biodiesel in its 10 stores and 20,000 gallons through their wholesale distribution for a total of 170,000 gallons of biodiesel the first year. Public acceptance was so strong and positive, however, that Stinker expanded biodiesel to all 20 stores selling diesel in the Boise Valley. Its wholesale sales were also better than anticipated. For instance, Stinker has now provided B20 to the Idaho National Laboratory (INL) in eastern Idaho. The INL has been using, on average, 24,000 gallons per month of B20 for the past few years. As a result of this project the Stinker Stations were able to deliver a product that INL personnel consider a better quality blended fuel than they had been getting in the past.

Stinker's original blend rate at its stores was 10% biodiesel with the intent of increasing to 20% as soon as it gained experience with the handling and marketing procedures. According to Stinker executives, Ford Motor Company issued a service directive in October recommending a biodiesel blend rate of no more than 5%. Sinclair Oil, citing the Ford service directive, directed Stinker to blend at no more than 5% at Sinclair branded stores. Stinker is complying with the directive.

Stinker has set its selling price at the same price as conventional diesel. Current prices for biodiesel, with the one dollar per gallon blender's credit, are lower than diesel fuel. So as the percentage of biodiesel increases, so do the profits. Stinker believes that the informed consumer prefers biodiesel, if the price is the same or below conventional diesel, but see no reason to discount biodiesel below conventional diesel, regardless of the wholesale cost disparity.

Fearless Farris Stinker Station Biodiesel Retail Sales

Award Amount: \$24,000 Match: \$12,000

Under Contract No. DWR-CON00716, Stinker Stations prepared its stores for providing biodiesel by cleaning the tanks, replacing filters, replacing signage and dispenser labeling, and by developing and implementing a customer education program. A breakdown of the cost of the project is shown below.

Tank Cleaning -----	\$20,625
Filters -----	1,890
Signage & Promotional Materials -----	6,574
Advertisements and Promotions -----	<u>6,911</u>
TOTAL PROJECT COST -----	\$36,000

The initial offering of biodiesel-blended fuel was at 11 stores in the Boise Valley. Prior to delivering biodiesel the diesel storage tanks at each store were emptied and cleaned by a contractor and high quality fuel filters were installed on the dispensers. As indicated previously, customer acceptance was so positive that Stinker expanded biodiesel to all 20 stores selling diesel in the Boise Valley.

Stinker hired an intern for the summer from the Marketing Department at University of Idaho to implement the customer education program. The student worked closely with Energy Division staff and the partnership was mutually beneficial since the promotional efforts could be used as a template for Coleman Oil, Primeland Cooperative and any other biodiesel retailers. One of the first steps for Stinker was to contact its largest diesel customers to inform them of their transition, answer any question and ask for any input they may have. Informational brochures, promotional banners and dispenser labels were developed or acquired for the introduction of biodiesel. At the stores Stinker gave away magnetic "My Ride Burns Vegetables" bumper stickers that were popular with the customers.



An event to mark the public offering of biodiesel was held at the Stinker Station on Main Street in Boise on September 18. The ceremony was announced by invitations, press releases and radio announcements. On hand to provide comments were Karl Dreher, Director of the Idaho Department of Water Resources, Dr. Chuck Peterson, dean of the College of Agricultural Engineering at the University of Idaho, Boise Mayor Dave Bieter, Dustin Miller from Sen. Larry Craig's office, and Charley Jones, Stinker president and CEO. At this event Mayor Bieter issued a directive for the use of biodiesel in city vehicles. The event was well attended and was widely covered by the local media.

Following the opening ceremony radio remotes were held at six stores where biodiesel was sold at a discounted price. The media attention from Stinker's efforts to promote biodiesel was successful. As was expected, the attention also resulted in numerous telephone calls to both Stinker and the Energy Division. On the morning following the opening ceremony, for instance, Channel 7 News in Boise contacted the Energy Division working on a follow-up story. The local Ford dealership, Lithia Ford, was reported to be telling customers that using biodiesel would void the auto manufacturer's warranty. Stinker immediately met with Lithia Ford and the Energy Division coordinated a satellite link with biodiesel expert Dr. Jon Van Gerpen at the University of Idaho in Moscow to discuss the effect of using biodiesel on engine manufacturer's warranties. Responses to this and other biodiesel concerns were dealt with in a timely and professional manner.



Conclusion

Results of this project fulfilled the Department of Energy's objective to pursue applied research, development and demonstrations designed to advance technologies that promote energy efficiency in the transportation sector. The Energy Division wishes to express its appreciation to the DOE, particularly to Project Officer Doug Hooker and Contracting Officer Stephanie Carabajal, for this grant opportunity and for the care and patience in which it was administered. A summary of the cost of the project is shown below.

DOE Grant Amount-----	\$315,000
Match -----	<u>\$147,427</u>
TOTAL PROJECT -----	\$462,427

IDWR Administration-----	\$78,733
Pass Thru Grant Amount -----	\$236,267
	Award Match Total
Coleman	\$100,000 \$61,907 161,906.89
Primeland	\$12,267 \$14,265 26,532.02
Stinker #1	\$100,000 \$59,255 159,255.00
Stinker #2	\$24,000 \$12,000 36,000.00
TOTALS	\$236,267 \$147,427 \$383,694