



Biodiesel End-User Survey Final Report

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Background

In January of 2004, Natural Resources Canada in collaboration with Environment Canada conducted a survey among early implementers of biodiesel. There were two target groups included in this survey. One group is using biodiesel on a regular basis for applications such as construction equipment, transit buses, on-road vehicles, heating oil and power generation. The second group has participated in biodiesel demonstrations such as a climate change bus tour, city transit buses, school buses, garbage trucks, street sweepers and construction equipment. The purpose of the survey was to obtain information from experienced users of biodiesel to assist in guiding the efforts of the Biodiesel Initiative group. A copy of the survey is included in Appendix A.

Survey Response

Fifty-seven surveys were emailed to contacts from a number of areas such as federal, provincial and municipal departments, research groups, and industry across Canada. Twenty-seven replies were received with 22 supplying useable data. This represents a 39% response rate.

The majority of the users began with biodiesel during 2002 and 2003 but some reported using biodiesel as far back as 1995 and 1999.

Rationale for using Biodiesel:

When asked what was the rationale for using biodiesel the most common replies were as follows.

- Burning cleaner fuels, reducing emissions
- Commitment to Kyoto, corporate leadership to alternative fuels
- Environmental concerns
- Support "Green" vision
- Alternative fuel that does not require engine modification
- Proactive attitude concerning technologies that are environmentally friendly

Source, Supply and Blend:

The majority of those surveyed (53%) have the fuel delivered to their site already blended. The most common blend purchased is B20. The others reported having biodiesel delivered neat and splash blending with conventional diesel. There were no replies of supply shortages experienced.

- In eastern Canada the source is fish oil supplied by Ocean Nutrition/Wilson Fuels
- Rothsay supplying oil from the rendering process
- Canada Clean Fuels which supplies biodiesel produced from primarily soybean oil and canola to supply to customers in central Ontario
- Bio-Diesel Canada Inc. also distributes fuels produced from animal fats and recycled grease and supplies customers in central Ontario and Kingston

Winter activity:

- 7 users indicated running the same blend during the winter months and did not experience any problems.
- 5 users reduced the percentage blend for the winter months from B20 to either B10 or B5 and experienced no problems
- 3 users did experience some problems during the winter months and will start using again in the spring

Price Differential:

The indication from both regular users and demonstration groups is that the price difference between biodiesel and conventional diesel varies greatly. The results vary from no price difference to 27 cents per litre more than diesel.

- 10 of the respondents are experiencing an increase of 15-20 cents per litre compared with conventional diesel
- 5 are experiencing an increase of 5 – 10 cents
- Only 3 replied paying the same for both fuels and this tends to be for those replies received from eastern Canada.

Uses:

There were a total of 1877 vehicles of various types reporting to be using biodiesel. These include: 1200 vehicles such as street sweepers, garbage trucks, light duty trucks, transit buses, construction equipment, deicing trucks, large utility trucks, as well as other smaller fleets of school buses, light-duty trucks and off-road construction equipment. There were also two reports of using biodiesel for power generation and as heating fuel for buildings. Respondents did not have to make modifications to their storage or maintenance procedures with the exception of more frequent fuel filter changes. One replied did state that they had experienced a problem with warranty coverage on malfunctioning fuel pumps.

Quantity Used:

The wording on the survey regarding the quantity of biodiesel used was perhaps not clear. The previous questions asked what percentage blend was being used and the next questions asked what quantity of B100 that they anticipated being used. If a respondent answered that they used a B20 blend some answered zero in the amount of B100 used. Some respondents who answered a B20 blend did include an amount in the B100 quantity used but it is unclear if the amount reported is B20 or B100. Replies that were included are as follows:

- one municipality reported a usage of 343,671 litres of B100, which was supplied by Rothsay, during their demonstration process in their trucks, street sweepers and garbage packers.
- a municipal transit reported a usage of 101,000 litres during their demonstration in transit buses.
- City of Brampton estimated a usage for 2004 of 1,259,000 litres to be used in their buses, trucks and construction equipment.
- a private company reported a 500,000 litre usage of B20 for their 34 deicing trucks.
- an Ontario Utility reported 150,000 litres annually of B100 to be blended to B20 for use in their trucks and construction equipment.
- Rothsay manufacture 4,000,000 litres per year and use 1,000,000 litres in their own fleet of trucks.
- A manufacturer of biofuel from fish oil replied with a 2,000,000 litres per year usage for power generation and heating fuel.
- Wilson Fuels, a distributor of biofuel from fish oil, distributed 5,000,000 litres of B20 blend for vehicles and furnace oil.

Collection of Information:

The majority of the replies did indicate that they were collecting information in the categories of fuel and oil consumption, emission measurement, operator feedback and maintenance records but they did not report any findings on the survey. There were 3 comments included indicating positive feedback from operators.

Comments from Users:

- Lets start producing biodiesel in Ontario
- Very easy to institute into a fleet
- Cost, supply and blending issues make it a challenge for proponents of Biodiesel
- Biggest challenge is cost justification
- Experienced problems in winter
- Encountered issues with warranty on fuel pump.
- Trouble free operation

Conclusion:

All of the present users had favourable comments with regards to their biodiesel experience. 82% of the replies did mention an increased cost compared to conventional diesel and the cost justification was also noted in the comments section on several replies. Cold conditions are having an effect on some users but it does depend on their location in Canada and the blend percentage that is being used.



SURVEY FOR EARLY IMPLEMENTORS of BIODIESEL

*Please describe in general the scope of your biodiesel use by completing the applicable section below for either **Regular use** or **Demonstration** (page 5). Please provide as many details as possible in the space provided.*

Regular Use

1. What was the start date of using biodiesel?

2. What was the rationale for using biodiesel? What process did you have to go through to incorporate biodiesel into your fleet? (ie. technical challenges, training requirements)

3. Relative to conventional diesel, what is the price differential for biodiesel?

4. What is the nature of the fuels that are being used?
a. What is the conventional diesel, i.e. commercial D1 or D2, ultra-low sulphur diesel?





SURVEY FOR EARLY IMPLEMENTORS of BIODIESEL

- b. What is the source of the bio component, i.e. waste fry oils, rendering, canola or other vegetable mass?

- c. What company is supplying the biodiesel?

- d. What percentage blend are you using, i.e. B2, B5, B20, B100,?

- e. What is the quantity of (B100) biodiesel that you anticipate you will be using?

5. Did you (do you plan to) run biodiesel through the winter months and if so, did you change the biodiesel blend/composition for cold temperature?

6. How is the biodiesel being blended or dispensed to the vehicles? (i.e. is the biodiesel delivered to your location blended or neat-B100?)



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SURVEY FOR EARLY IMPLEMENTORS of BIODIESEL

7. Have you ever experienced any supply shortages or a quality problem? Please indicate the reason.

8. What are the vehicle or engine types that the fuel is being used in, i.e. urban transit buses, trucks, construction equipment, heat and/or power generation?

- a. Vehicle type(s)

- b. Engine type(s), manufacturer and model year if available

- c. Number of vehicles of each type

- d. Approximate age of the vehicles

- e. Approximate annual fuel usage of these vehicles



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SURVEY FOR EARLY IMPLEMENTORS of BIODIESEL

9. What information are you collecting under your fuel program and how are you collecting it?

a. Fuel consumption

b. Oil consumption

c. Emissions measurements

d. Operator or driver feedback

e. Maintenance issues or records

f. Other(s)?



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SURVEY FOR EARLY IMPLEMENTORS of BIODIESEL

10. Other points for Environment Canada and Natural Resources Canada to Note?

Demonstration

1. What was/is the schedule for conducting the biodiesel demonstration?

Start Date?

Completion Date?

2. What was the rationale for demonstrating biodiesel? What process did you have to go through to incorporate biodiesel into your fleet? (ie. technical challenges, training requirements)



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SURVEY FOR EARLY IMPLEMENTORS of BIODIESEL

3. Relative to conventional diesel, what is the price differential for biodiesel?

4. What is the nature of the fuels that are being used in the demonstration project?
- a. What is the conventional diesel, i.e. commercial D1 or D2, ultra-low sulphur diesel?

- b. What is the source of the bio component, i.e. waste fry oils, rendering, canola or other vegetable mass?

- c. What company is supplying the biodiesel?

- d. What percentage blend are you using, i.e. B2, B5, B20, B100,?

- e. Has the percentage of the blend changed throughout the demonstration or will the percentage change and how?



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- f. What is the quantity of (B100) biodiesel that you anticipate you will be using under the demonstration?

5. Do you plan to run the demonstration through the winter months and if so, are you changing the biodiesel blend/composition for cold temperature?

6. How is the biodiesel being blended or dispensed to the vehicles? (i.e. is the biodiesel delivered to your location blended or neat?)

7. Have you ever experienced any supply shortages or a quality problem? Please indicate the reason.



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SURVEY FOR EARLY IMPLEMENTORS of BIODIESEL

8. What are the vehicle or engine types that the fuel is being used in, i.e. urban transit buses, trucks, construction equipment, heat and/or power generation?

a. Vehicle type(s)

b. Engine type(s), manufacturer and model year if available

c. Number of vehicles of each type

d. Approximate age of the vehicles

e. Approximate annual fuel usage of these vehicles

f. What is the size of the test fleet compared to the total fleet, i.e. 10 buses out of 30



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SURVEY FOR EARLY IMPLEMENTORS of BIODIESEL

9. What information are you collecting under the biodiesel demonstration?

a. Fuel consumption

b. Oil consumption

c. Emissions measurements

d. Operator or driver feedback

e. Maintenance issues or records

f. Other(s)?

10. Other points for Environment Canada and Natural Resources Canada to Note?



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