

---

# MEMO

**To:** K.Soltis, Director of Corporate Services  
**From:** S. Bone, Manager, Supply and Fleet Services  
**Date:** October 4, 2006  
**Subject:** **Bio-Diesel Program**

---

## **Recommendation:**

That the City of Prince George implement a Bio-Diesel Program for the City fleet.

## **Background:**

In order to support City Council's Vision to sustain, protect, and enhance the environment, the City Supply and Fleet Services division recommends the use of biodiesel fuel products in the City fleet. The following information illustrates the significant environmental benefits through the use of the alternative fuel.

## **What is Biodiesel?**

Biodiesel is a clean-burning renewable fuel made from vegetable oil, animal fats or recycled cooking oil that contains no petroleum, but can be blended at any level with petroleum diesel to create a biodiesel blend. It can be used in diesel engines with no major modifications, and it's simple to use, biodegradable, non-toxic and essentially free of sulfur and aromatics. Biodiesel can be used as a pure fuel, or blended with petroleum diesel in any percentage. B5 (a blend of 5 percent biodiesel, by volume, with 95 percent diesel, by volume) has demonstrated significant environmental benefits with a minimal increase in cost to the City Fleet operations. The City expects to use a B5 blend during the winter months and increase to a B20 blend during the warmer months.

## **What are the environmental and economic benefits of using Biodiesel?**

Compared to petroleum diesel, biodiesel significantly reduces greenhouse gas emissions and harmful tailpipe emissions, including particulate matter (PM). Using biodiesel not only helps mitigate climate changes, but also improves air quality and public health. Biodiesel also increases fuel lubricity, and reduces engine wear and maintenance costs. The information below illustrates the environmental benefits by using Biodiesel at a B20 mixture.

Biodiesel emissions reductions compared to petroleum diesel at a B20 Mixture:

1. Carbon Dioxide (a key Greenhouse Gas)1- 16%
2. Particulate Matter (linked to respiratory disease)1- 18%
3. Unburned Hydrocarbons (smog/ozone) - 11%

### **How much Biodiesel product is used in British Columbia today?**

To date, the municipalities of Vancouver, West Vancouver, Richmond, North Vancouver, Burnaby, Delta and Whistler began a pilot program in 2004, testing the viability of biodiesel on a range of on-road and off-road vehicles. Results from this pilot demonstration have been very positive.

As a result, these municipalities, with the assistance of Western Economic Diversification Canada and other partners, now participate in Canada's largest biodiesel demonstration project ever. A tender call was awarded to 4Refuel Products for up to 3 million litres of biodiesel to use in their fleets over the next two years.

The Vancouver Island Biodiesel Evaluation Study (VIBES), in Victoria, is another biodiesel test project. It involved eight public and private fleets operating 17 vehicles on B20 biodiesel, for six months, in the Greater Victoria region. Participating fleets include BC Mail, BC Transit, Canada Post (first federal fleet on biodiesel), City of Victoria, Columbia Fuels, District of Saanich, School District 62 (first school bus on biodiesel in Western Canada) and Vancouver Island Powerline.

### **How wills the use of Biodiesel impact human health?**

Diesel engines account for 79% of all particulate matter emitted by vehicles. Their emissions consist of a wide range of organic and inorganic compounds produced during the gaseous and exhaust phases. These particles have hundreds of chemicals absorbed onto their surfaces, including many known, and suspected, mutagens and carcinogens. 92% of these particulates are less than 1.0 micron by mass, making them fully respirable.

80% of the total cancer risk, from all hazardous air pollutants, is associated with the inhalation of diesel exhaust.

Biodiesel is the only alternative fuel to have completed the rigorous Health Effects Testing requirements of the U.S. Clean Air Act. A significant reduction of harmful air-borne particulate matters in the atmosphere can reduce cancers and respiratory illnesses.

### **What are the emissions of Biodiesel in relation to Diesel?**

Biodiesel reduces tailpipe particulate matter (PM), hydrocarbon (HC), and carbon monoxide (CO) emissions from most modern engines. In 2002, the US Environmental Protection Agency (EPA) released a comprehensive technical report of biodiesel emissions data that shows biodiesel use can reduce emissions of particulate matter by 47% when compared to petroleum diesel in unmodified diesel engines. The report also verified a 67% reduction in hydrocarbons and a 48% reduction in carbon monoxide with pure biodiesel (B100). The use of B5 mixtures, in the City diesel engines, results in substantial reductions of unburned hydrocarbons (-20%), carbon monoxide (-12%) and particulate matter (-12%) when compared with emissions from diesel fuel.

In addition, the exhaust emissions of sulfur oxides and sulfates (major components of acid rain) from biodiesel are essentially eliminated compared to diesel.

### **What are the financial issues surrounding the use of Biodiesel?**

Essentially, using the biodiesel additive to the City fleet is cost neutral and will not have any significant negative financial impact on the operational budget for the fleet.

### **How much Biodiesel product will the City use annually?**

The City uses approximately 750,000 litres of diesel annually, and with our plan to use a combination of B5 and B20 mixtures, we expect to purchase about 36,000 litres of biodiesel additive per year. The City, through our annual fuel contract with the BC Fleet Fuel Buyers Group, have entered into a long term contract with 4Refuel Products to blend the biodiesel additive with our diesel fuel and distribute the final product through the above ground tanks, located at the 18<sup>th</sup> Avenue Yard.

### **How can the City expand the use of Bio Diesel into the community?**

In view of our commitment to enter into a long-term contract for the supply of Biodiesel fuel, we believe this will assist the supplier in establishing the appropriate infrastructure in order to promote this service to other fleet operators in our community. The City Fleet Services will be an active participant in assisting other local public sector agencies, and the private sector, to analyze their needs and promote the environmental, and economical benefits of this program.

### **Summary:**

Following the appropriate approvals to proceed with this contract, Fleet Services staff will implement the program by fueling all diesel fuel units in the City fleet, with the exemption of Fire Services emergency vehicles with B5 mixture.

Scott Bone  
Manager, Supply and Fleet Services  
City of Prince George  
Tel: 250-561-7511  
email sbone@city.pg.bc.ca