

Guest columnist

Biodiesel — the rest of the story

By Bob Benze

Special to The Times

Biodiesel fuel is the current rage in Washington state, with Gov. Christine Gregoire and a number of prominent state legislators lending their weight to bills to finance its use and production.

Rep. Janéa Holmquist is sponsoring a bill requiring all diesel fuel sold in the state be a biodiesel blend. State Reps. Hans Dunshee and Jeff Morris plan to introduce legislation mandating biodiesel in state and local government vehicles. Other bills are being drafted to provide financial incentives to business for crushers and other equipment to extract the oil from canola seeds.

What could possibly be wrong with all this? Well, perhaps a few things.

There is actually a downside to the environmental benefits of biodiesel. While there are fewer particulates (soot), lower unburned hydrocarbons and less carbon monoxide, there are more oxides of nitrogen, which cause smog. This is a major concern in those remaining areas of the U.S. with significant air-quality problems, such as Los Angeles. Using biofuel in an engine certified for regular fuel could make it more difficult for the engine to meet the stringent new Environmental Protection Agency nitrogen oxide emission standards.

And, despite conventional wisdom, the U.S. economy is actually becoming less dependent on foreign oil. Authors Peter Huber and David Mills point out that in the early 1970s, roughly 60 percent of the energy-related gross domestic product of the United States came from the direct combustion of oil and gas; 40 percent came from the direct use of electricity. But today, 60 percent comes from electricity, and 40 percent from oil and gas — and this trend is continuing. Since almost all the electricity is produced with non-petroleum energy, the recent spike in oil prices had much less impact on our nation's economic indicators than in years past.

Biodiesel is more expensive. One recent article noted that unrefined canola oil would need to be priced at more than \$3 per gallon to be profitable to Washington farmers — which is likely to keep the 20-percent biodiesel blends typically found in the Seattle area priced well above No. 2 diesel. The price would be even higher without the current federal tax-credit subsidies that give blenders a penny a gallon for every 1 percent of pure biodiesel added to No. 2 diesel.

There is also the problem of being able to produce enough biodiesel. Federal estimates say that, at most, there is enough cropland to supply no more than 10 percent of the country's diesel consumption.

Is biodiesel safe to use in your engine? The answer, according to at least one engine manufacturer, is: "It depends." While Cummins touts its diesel engines' ability to run on a 5-percent blend, it issues stern warnings about using higher-ratio blends. Cummins' test data indicate that typically smoke, power and fuel economy are all reduced when using biodiesel. Further, Cummins says that concentrations beyond 5 percent by volume could have an adverse effect on the engine's performance and the fuel system integrity/durability.

There appears to be a bright future for efficient diesel automotive power (over 40 percent of cars in Europe are now diesels). And there is a regulatory-driven program to develop cleaner diesel fuels and engines. EPA is reducing allowable sulfur content in diesel fuel from 500 parts per million to 15 parts per million. This is accompanied by a mandated 90-percent reduction in particulate and nitrogen oxide engine emissions from 1994 levels. Thus, diesel engines will become far less polluting — with or without biodiesel.

Ask yourself: Are you willing to support legislation that makes you pay more to get lower mileage and lower power, with potential risks to the integrity of your engine — legislation that may or may not benefit the environment? Or would it perhaps make more sense to support laws that prevent the marketing of fuel that does not conform to engine manufacturers' requirements — requirements that are based on meeting EPA's environmental standards and protecting engine reliability.

Bob Benze is an environmental engineer with 28 years in Navy civil service. He lives in Silverdale, and owns a Dodge-Cummins turbodiesel truck.

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-The Response

By Greg Rock

On Jan 5 Bob Benze wrote an article critiquing many aspects of Biodiesel. While it is important to realize that burning any liquid fuel will produce negative externalities, and there are no silver bullets, but we should still strive to minimize those externalities as much as possible. Bob Benze's article would have you believe that producing and burning Biodiesel is worse for the environment and our state economy than petroleum. This is not true and here is why.

- Burning Biodiesel produces more Nitrous Oxides than conventional diesel. True

According to a study sponsored by Harvard University Biodiesel combustion produces 5% more nitrous oxide emissions than conventional diesel. At the same time it produces 45% less carbon monoxide, 55% less Volatile Organic Compounds, 100% less Sulfur, 55% less particulates, and between 70 to 100 percent less Carbon Dioxide emissions.

Nitrous Oxide emissions lead to acid rain and smog two problems that are not a major issue here in the Northwest. Sulfur and Particulate emissions are believed to be the number one cause of Asthma. Carbon dioxide is the number one human contribution to global warming. Should we reduce by 5% our impact on an issue that is not a problem, or should we make 10 to 20 times the percentage rate reduction in asthma, and global warming related emissions.

- The U.S. Economy is becoming less dependent on foreign oil. False

In 1970 the U.S. consumed roughly 67 Quads of energy, 60% (40 Quads) was through direct combustion of oil and gas. In 2005 the U.S. consumed 100 Quads of energy, 40% (40 Quads) from direct combustion of oil and gas. We are using the same quantity of direct combustion oil and gas today as we were in 1970. However in 1970 we domestically produced 25 Quads of oil, and today we only produce 17 Quads. This is because U.S. oil production peaked and has been in a steady decline since 1973. Our dependency on foreign oil has grown from 38% to 58% since 1970. Today we use a higher percentage of electricity in our economy but most of that new electricity comes from burning natural gas. Almost all of the new electric power plants constructed in the last 20 years have been natural gas fired. Natural gas production peaked in North America in 2002 and is now in a decline. This means we will soon become dependent on foreign natural gas if we don't create domestic alternatives.

- Is Biodiesel safe to use in your diesel engine? Yes

Biodiesel is an ASTM approved fuel which has been tested for over 9 years. Biodiesel has a higher lubricity than conventional diesel and actually extends the life of the engine.

Lubricity will become a major issue this year when Low Sulfur Diesel is introduced. This fuel has low lubricity and is commonly blended with biodiesel in Europe to prevent engine damage. Biodiesel has an 8% lower energy content per gallon than petrol diesel but its cleaner combustion and higher lubricity make the engine more energy efficient.

- Engine manufactures like VW and Cummins do not warranty the use of high Biodiesel blends. True

Biodiesel is still a new fuel; many auto manufactures are just beginning to come under pressure to warranty its use. Most engine manufactures void their warranty if you use any fuel additives or stabilizers because it can not control what you put in the fuel tank. However as public pressure mounts you will see many manufactures offering warranties for use of higher and higher blends. In fact, many of the same vehicles we drive here are sold in Europe with warranties that honor much higher blends of Biodiesel use. People have been using 100% Biodiesel in there vehicles for many years without any problems. I drive a 2002 VW Golf TDI which I primarily fill with B99; 99% biodiesel. I have never had a fuel related problem in my vehicle.

- There is only enough cropland to supply 10% of the country's diesel consumption. False

Potential Biodiesel crops here in Washington include mustard seed and canola oil. These crops are currently grown in crop rotations, but because there is no crusher to convert the seeds into vegetable oil and meal they are tilled into the ground rather than harvested. These crops are grown to increase soil fertility and the yields of the primary crop. Waste crops like these are grown all over the country and offer a huge potential for Biodiesel production. There is enough cropland to supply 10% of our country's diesel consumption without affecting current food production or unfarmed CRP lands. According to a University of Idaho study there is enough cropland in the U.S. to produce 120% of our current diesel consumption. Also, new methods for producing Biodiesel from algae can create much higher yields per acre, and do not require the use of farm land.

- A price of \$3 per gallon would be needed to make Biodiesel production profitable to Washington State farmers. True

Biodiesel is a new industry which can not yet take advantage of economies of scale. The oil industry earns billions of dollars in subsidies mainly through the resource depletion allowance. Biodiesel is a renewable energy source, capturing our annual solar energy allotment rather than burning up a million years of stored solar hydrocarbon energy. All of these factors make biodiesel more expensive than petrol diesel. Retail Biodiesel is sold for between 5 to 20 cents more per gallon than petrol diesel. But, most drivers will actually save money if they switch to Biodiesel. A driver that switches into a VW Jetta TDI from a 20 mpg gasoline car will reduce their fuel cost from 11 cents per mile to 8 cents per mile due to the higher efficiency of the diesel engine.

Readers should realize that \$3 per gallon is cheap fuel. Most of Europe is currently paying well over \$5 per gallon. With the tightening liquid fuel market we will soon be paying similar prices here. Biodiesel production offers a huge benefit to the world economy by reducing oil demand, and lowering the price of all fuels. Washington State currently spends 9 billion dollars a year on fuel. Local Biodiesel production will keep some of those petrol dollars in state supporting our local farmers and businesses. Iowa grows most of the soybeans currently used for Biodiesel production. It also has the fastest growing state economy, and the second fastest growing average income.

So ask yourself: Are you willing to support legislation that creates incentives for a young industry that is competing against the goliath that is oil - legislation that will expand production capabilities of a clean, secure, renewable liquid fuel source here in Washington. Do you support the development of a local fuel economy that will create more jobs, retain more petrol dollars, and reduce our fuel costs?

Greg Rock is a sustainability engineer who graduated Suma cum Laude from Cal Poly. He lives in Ravenna, and is a co-owner of The Green Car Company.