Using Organic Waste to Fuel Your Car

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Joanna Underwood sees a time when each garbage pickup is a potential fuel stop.
It's a message the New York environmentalist will bring to Canada next month: municipalities and businesses, she believes, should be looking at natural gas derived from organic waste for mass-transit and fleet vehicles, including trucks that collect garbage.

"Our interest is bio-methane as a transportation fuel," Underwood, president of Energy Vision, said. Energy Vision is a non-profit organization dedicated to analyzing and promoting cleaner transportation fuels.

While the rest of the world has long viewed natural gas vehicles as cleaner and more environmentally friendly, North America has been slow to consider it as an option. About 150,000 of the more than five million natural gas vehicles on the roads are driven in the United States, many of them in fleets for transit, taxi or garbage collection. Far fewer are driven in Canada.

Soaring fuel prices - oil, diesel and gasoline - are forcing more communities to look closer at alternatives to cut transportation costs. Reducing carbon footprints is also important. And as discussions of biofuels causing food shortages rise, the potential of reusing garden waste is a bonus.

Biomethane technology as a transportation source has been growing in Europe, but it's largely unknown to most Canadians and slowly gaining attention in the United States.

"You're not waiting for a huge breakthrough; the technology is already there," Underwood said. She will be speaking at a Toronto conference June 2 and 3 organized by Pollution Probe to discuss lowering carbon fuel standards.

Ontario and British Columbia have proposed adopting standards similar to California, where air pollution concerns have made the state a leader in the use of alternate fuels. Natural gas is the cleanest fossil fuel and sends far fewer greenhouse gases into the atmosphere, while biomethane has the same chemical breakdown and is renewable. It's made by transforming the greenhouse gases that escape from landfills and organic waste sites into clean transportation fuel.

With Canada a major producer of natural gas, Underwood is surprised it is not largely utilized in transit and fleet operations. Many landfills around the world use the carbon dioxide generated by the rotting organic material to create electricity _ sometimes for local heating or possibly to sell as excess clean energy. But technologies have been developed to clean up the biogas being generated and create biomethane that can be used in vehicles.

Underwood recently asked Alberta businessman Scott MacKay, CEO of Sustainable Energy Holdings Ltd., to join an advisory group that would critically examine and assess transportation fuel options being used in Europe: information that would be passed on to American legislators and the public.

MacKay, whose company is based in Stony Plain, AB, has spent the last two years trying to get North Americans to adopt European technology that turns kitchen waste into biogas. The technology, called Kompogas, uses a 14-day anaerobic digestion system to ferment organic material such as vegetable scraps, coffee grounds and grass clippings into several different products: high-grade compost, liquid natural fertilizer and biogas that can be compressed into vehicle fuel.

"It's not just economic, it's the carbon footprint," MacKay said. The Swiss-based technology, he said, is used in 36 facilities around the world, while buses in several European cities operate on biomethane generated from its plants. Sustainable Energy Holdings, which has been exclusively marketing the KOMPOGAS technology in both Canada and the United States, is currently pursuing opportunities in BC, Alberta, Saskatchewan, Ontario, Connecticut, New York, New Jersey and Pennsylvania.

Underwood said the advisory group's final report would point out if technologies have bugs or potential problems, noting that the goal is to determine what operations are highly sophisticated and ready to use now.

"If we give them an inaccurate picture, they make a real investment and then find out it's not as good as it's cracked up to be, they are likely to go away and not try again," she said.
Some areas are starting to buy in to the concept.

New Jersey, with a population of 7.6 million people, has the highest population density in the United States and air pollution levels which have garnered failing assessments from the American Lung Association. Communities have started to demand their garbage contracts use natural gas as fuel, partly because it costs dramatically less than diesel.

In turn, that is building a market.

"People are starting to see energy equity in garden waste," said Robert Simkins, solid waste co-ordinator for Burlington County in New Jersey, where a pilot project in 2005 convinced him of biomethane's potential.

"New Jersey has its own natural gas reserves in organics collected every day," he said, adding much of that is shipped out of state.

"If we were to convert all organic waste that's digestible in New Jersey, we could power every garbage truck in the state. In that sector, it would have a huge impact."
Simkins predicts the change to natural gas, and in turn, biomethane, will come quickly once it starts.

Transit systems in California already run on compressed natural gas, while New York City and New Jersey are gearing up to switch their garbage fleets for natural-gas vehicles - a move subsidized by the U.S. government which is trying to reduce the country's reliance on foreign oil.

Underwood says once vehicles have converted to natural gas, the switch to biomethane is much easier. She says over the last decade, an entire industry of entrepreneurs has developed an infrastructure, including filling stations that can be expanded to biomethane.

"I think the (existence) of biomethane as a real new commercial resource is terribly exciting," said Underwood. "We know how much use of biomethane is going on abroad. It just hasn't taken root here."

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