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Why Corporate Fleet Owners Should Test Drive Renewable Natural Gas

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Electric vehicles got a boost this week as the White House, EV charging firms and vehicle manufacturers including General Motors, BMW and Nissan agreed to build 48 national EV charging networks in 35 states.

But there's another low-carbon fuel that, while it continues to fly — or drive — under the radar, could have big cost and emissions benefits for corporate and municipal fleets. Renewable natural gas has the potential to reduce the US heavy transport sector's reliance on diesel and gasoline. And it's compatible with engines that run on natural gas.

Renewable natural gas, which is made from methane emitted as organic wastes decompose, is also used for electricity generation and heating, but proponents say its best use is to fuel buses and heavy-duty trucks.

According to the California Air Resources Board, it is the lowest-carbon fuel available.

Corporate fleets and government officials are starting to take note.

A new bipartisan bill in Congress would cut federal excise taxes on trucks that run on compressed natural gas (CNG), liquefied natural gas (LNG) or renewable natural gas (RNG). CNG is methane drawn from gas wells and stored on the vehicle in high-pressure tanks. LNG is natural gas stored as super-cooled liquid. The bill will undoubtedly face stiff political opposition from the Koch brothers and other petroleum interests. But, if passed, it will also make it easier for fleet owners to purchase alternative-fuel trucks.

“For our customers that wish to enter into the natural gas truck market, this legislation will help facilitate the purchase of cleaner and more fuel efficient trucks by reducing the onerous tax burden caused by the FET,” said Jake Jacoby, president and chief executive officer of the Truck Renting and Leasing Association, in a statement supporting the proposed legislation.

Additionally, the EPA included RNG in its Renewable Fuel Standard volume requirements, boosting RNG as a transportation fuel. And Vancouver BC recently announced it would phase out non-renewable natural gas by 2050 and is working to use more RNG in its trucks.

“When you convert a truck from diesel to CNG, which is a fossil fuel, you may get a 40-to-60 percent greenhouse gas emissions reduction,” said Joanna D. Underwood, founder and chair of Energy Vision, a nonprofit that promotes low-carbon energy and transportation fuels. By comparison, RNG, Underwood said in an interview, when made from food waste processed in anaerobic digesters and used as vehicle fuel, can be net carbon-negative over its lifecycle.

“It’s better than fossil natural gas in many critical ways,” she said. “It’s made from biogases that are emitted wherever organic materials decompose. If you have food waste, manure from farms, food scraps from food production facilities, anywhere you have organic material that’s breaking down it generates methane biogas. To make the fuel you collect that biogas. What you end up with is about 95 percent pure natural gas — the same fuel we get from the ground but we don’t have to drill for it.”

Additionally, every community in the US generates food waste, which provides a constant and renewable feedstock for RNG. “We have about 70,000 tons of organic waste coming out of municipalities — this is a large resource,” Underwood said. “If you really used all that material you could displace 25 to 50 percent of all the diesel used in transportation.”

Underwood recently co-authored an op-ed in The New York Times that argued New York City municipal fleets should stop buying diesels and start buying RNG trucks to help meet the city’s ambitious climate goals. Several California cities and counties including Sacramento, South San Francisco, Orange County, Long Beach, Culver City and Santa Monica are already using or have committed to using RNG from local waste sources to power garbage trucks, transit buses and other municipal vehicles, the op-ed says.

While the power and torque that heavy-duty vehicles require is often beyond what electric motors and batteries can deliver, RNG has the energy density and the production potential to decarbonize heavy transport, Underwood told Environmental Leader. Buses and trucks, which only represent 4 percent of US vehicles, use 24 percent of all road fuel, mainly in the form of petroleum-based diesel. RNG currently has about 20 percent of the market for natural gas as a transport fuel, and that share is increasing.

Clean Energy produces and sells RNG, or bio-methane fuel. UPS and Ryder are customers, Clean Energy president Harrison Clay said in an interview. The company is also building two new RNG projects at landfills. Clay says he can’t provide too many details about those, but expects them to produce a combined 15 million gallons of RNG annually.

“We sold 20 million gallon-equivalent of bio-methane fuel in 2014 and 50 million in 2015,” Clay said. “This year, I think we will be north of 60 million. I wouldn’t be surprised to see the market more than double in the next couple years.

RNG presents a “very unique opportunity” for medium- and heavy-duty fleets because “there are very few cost-effective ways for them to cut carbon emissions,” Clay said. “This is one — especially in fleets that already use natural gas, like refuse vehicles.”

Clay points to the new Cummins Westport ISL G Near Zero NOx natural gas engine as another RNG production driver. The engine can be used in medium-duty trucks, buses and waste collection fleets and operates on natural gas: CNG, liquefied natural gas (LNG) or RNG.

Cummins Westport says that with this engine, trucks’ exhaust emissions will be 90 percent lower than the current EPA NOx limit of 0.2 g/bhp-hr.

“When you combine the new Cummins Westport engine with RNG in the medium- and heavy-duty trucking space, you’re able to get an environmental footprint that is cleaner than electricity, even if there were electric trucks that could perform the basic requirements of those vehicles,” Clay said. “This is a remarkable reduction in NOx, taking it down 90 percent. You combine this with RNG and you have arguably the cleanest possible vehicle you could have on the road.”

Underwood says buying a truck that runs on RNG costs slightly more than a diesel truck: about \$30,000 to \$40,000 more for a natural-gas refuse truck compared to its diesel counterpart. But she says the maintenance costs are lower “because you have much less grit — a cleaner engine that stays cleaner.

“It’s also a local, sustainable fuel and at some point when diesel fuel starts to go up again, then you’ve got a tremendous saving on your fuel bill.”

Considering that fuel is the largest single cost for trucking fleets — and that the transportation sector is the second biggest contributor to US carbon dioxide emissions — we expect corporate and municipal fleet owners to take note and look to RNG-powered trucks and buses in the near future.