

# Watt's Happening? #185

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## Electric vehicles: *charging ahead!*



*Toronto now runs North America's largest fleet of battery-electric buses.*

**E**lectric vehicles and the infrastructure to charge them have come a long way over the last few years. EV range has more than doubled and millions of charging stations have been installed, so that the dreaded "range anxiety" is quickly becoming a thing of the past.

The just-announced new EV from Lucid, for instance, (an EV company headed by former Tesla engineer Peter Rawlinson) will have a range of 800 kilometers, even more than the Tesla Model S Long Range Plus with a 640 km. range. Tesla was the first EV widely available with a range of more than 600 km. on a single charge. But that was just a start.

The first Lucid Air (which will do zero to 100 in 2.5 seconds) will be rolling off their US production line early next year. Lucid is one of many new companies hoping to compete against the big EV players, including Tesla and now GM, Volkswagen and Ford.

In northern BC where I reside, EV's are taking off as well. Between Fort St. John and Dawson Creek there are about a dozen Tesla owners, several Nissan Leaf owners and several Prius Prime plug-in hybrids, and others.

Owners are giving nothing but glowing reports, even during cold winter driving. Yes, range is reduced as the outdoor temperature falls, but so does the range of gas and diesel vehicles. But with an EV there are no cold-weather starting issues, and the all-electric cab, seat and steering wheel heaters provide instant comfort.

### **CHARGING AHEAD**

The number of charging stations globally has increased from less than a million in 2014 to over 7.3 million chargers worldwide in 2020. The new "fast chargers" will give an EV several hundred kilometers of range in just a few minutes, while charging at home with a low-

cost regular charger will give most EVs a full charge overnight when power is the cheapest.

Hi-speed fast chargers are also making their way north. Last year BC Hydro installed a network of roadside fast chargers up to Prince George, and will be expanding it all the way to Fort St. John next year. These fast chargers, spaced roughly 80 kilometers apart, will top up an EV in just a few minutes or provide a significant charge in less than half an hour.

### **BUS BINGE**

Toronto now boasts North America's largest battery electric bus fleet. The Toronto Transit Commission now operates 60 battery electric buses, with the goal of being 100% zero emission by 2040. A growing number of Canadian cities, such as Oakville, Halifax, Edmonton and Vancouver have deployed, or plan to deploy, fully electric buses to decarbonize their transit fleets.

China's bus fleet, however, puts Canada to shame. Faced with outrageous vehicle pollution problems, China began prioritizing vehicle electrification more than a decade ago with subsidies and national regulations. China now has more than 400,000 electric buses, about 99% of the world's total.

GM is getting serious about electrics with a multi-billion dollar deal with zero-emission vehicle startup Nikola Corp. GM will be building Nikola's

new Badger pickup truck which is intended to compete with the Tesla Cybertruck as well as electric pickups planned by startup Rivian and Ford. The Badger pickup will boast a range of just under 1000 kilometers on a charge. (yes, I said 1000 kilometers!).

# The Badger pickup will boast a range of just under 1000 kilometers on a charge.

### **UPS, AMAZON GOING ELECTRIC**

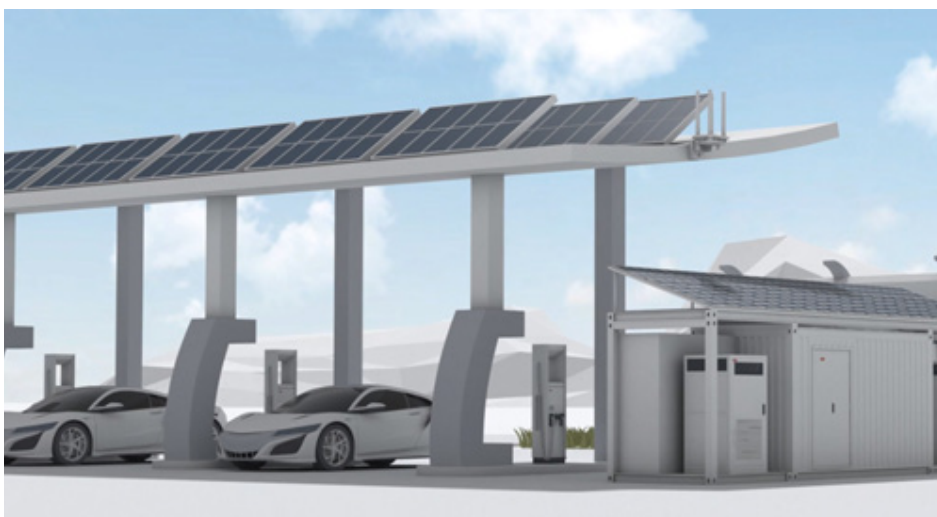
Delivery fleet operators are also looking to get off of diesel and gas-guzzling trucks and vans. They want more than just an EV van, however. They want what's called an "integrated technology vehicle" that will bring cost-savings, autonomous or safety features to their fleet automatically.

Tesla is already doing that with all of their EVs. Efficiency upgrades, safety upgrades and other performance enhancing improvements are automatically downloaded into their vehicles, free of charge, as they become available. These vehicles get smarter, cheaper to run and safer to drive the longer you own them.

So, here come the electrics: cheaper to drive, safer to drive, they improve with age, need very little maintenance with only a handful of moving parts,

"fast chargers" every eighty kilometers or so on most highways, cheap overnight charging at home, zero pollution . . .

. . . and we're just getting rolling.



*Electric vehicle charging stations are spreading rapidly around the world, making "range anxiety" a piece of ancient history.*

*Solar is a good match for EV charging (shown here) since solar produces power during the day when most people are driving.*