

Watt's Happening?

by Don Pettit

for Peace Energy Cooperative

www.peaceenergy.ca ph 250-782-3882



Electric vehicles come of age



Top-rated cars like the Tesla Model S are setting a new standard for quality electric vehicles. The large touch screen on the dash controls, well, everything.

In my last column I mentioned that the new Tesla Model S all-electric car has just been rated the best car on the road by *Consumer Report*. The Tesla is not only the best electric car on the road, say the editors, but also the best car you can buy period.

But do electric cars actually make sense? Is their environmental footprint better than fossil fuel cars, and are they less expensive to buy, power and maintain? The answer to these questions is important – transportation accounts for 40 percent

of carbon pollution in North America, and if cars are going electric big-time, then pretty soon we may all be making important choices about what we are going to drive.

RANGE

“Range anxiety” has often been described as a big barrier to electric car adoption. Will I run out of juice half way to my destination, and where will I

recharge?

Thanks to powerful lithium-ion batteries and regenerative braking, this problem has essentially been resolved. The Tesla, for instance, has a 480 km range on a single charge. The new lithium-air batteries now being tested could increase this by 4 times.

RECHARGING

Most electric vehicles today can recharge overnight from a regular 110 outlet. A simple outlet upgrade to 240 V. allows a 4x faster charging rate. New "supercharging" stations will allow up to 16x charging, giving the Tesla, for instance, a full recharge in one hour, or a 50 percent recharge in about 20 minutes.

What about out on the highway, or running around town? There are about 1500 charging stations in Canada, (even Dawson Creek now has a handful) and because charging stations are small, simple, and easy to install, that number can expand quickly to meet demand.

The challenge of finding a charging station is also becoming a thing of the past: interactive maps help drivers find the one closest to their location in real time.

COST

The 7-seat Tesla Model S sedan, although perhaps the best and safest car ever made, is still quite expensive at \$50,000 Canadian. But Tesla has announced a \$30,000 model due next year, and a similarly priced pick-up truck in 4-5 years. The Ford Focus Electric, priced at \$35,000, is a more affordable option available right now. Expect lots more choice over the next few years.

Performance with an electric vehicle will never be a problem because an electric motor can go from zero to full power in a fraction of a second, unlike

a sluggish internal combustion engine. The Tesla, for instance, can reach 210 km/h and can smoothly accelerate from zero to 100 km/h in less than 5 seconds. Nice.

And the cost of electric "fuel"? Transport Canada says that averaged across the country, the cost of driving a gas-powered car is 4 times higher than an electric. In BC right now, it's better than 8 times higher. This goes a long way to compensating for today's (temporarily) higher initial cost for the vehicle itself.

Battery replacement is also turning out to be a non-issue. The Toyota Prius battery is getting 500,000 km in Vancouver taxicabs, and then it's only a few thousand dollars to replace. New lithium ion batteries are even better, cheaper and more easily recycled.

ENVIRO-FRIENDLY?

Only about 15 to 20 percent of the energy in gasoline is converted into real motive power in a gas-powered vehicle. The discharge/charge efficiency of a modern battery, on the other hand, is 80 to 95 percent, and electric motors are at least 90 percent efficient, making an electric car 4 to 5 more energy efficient than a fossil car.

But what if that electricity is coming from a fossil fuel powered generating station, as it so often is today? If you eliminate the fossil fuel chain needed to get gas into your tank (pump electrons through wires instead of liquid fuels through pipelines, for instance) then the equation changes dramatically. Many studies have proven that an all-electric fleet in North America would reduce overall carbon emissions by at least 30 percent. As we move to more renewables like wind and solar, these numbers will only improve.

So yes, electric cars make sense and cents, even now. And we've only just begun.

Quick Fact:

NEW GENERATION WILL BE MOSTLY RENEWABLE:

Bloomberg New Energy Finance says that two thirds of the nearly \$8 trillion that has been earmarked globally for new electricity generating capacity will be invested in solar, wind and other renewables.