

# Watt's Happening? #146

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## The *REAL* cost of transportation

*Electric vehicles will cost much less for fuel and maintenance than conventional combustion vehicles powered by gasoline or diesel fuels.*

*Here Peter vonTiesenhausen fuels his all-electric Tesla with electricity from the solar array at Peace Energy Co-op headquarters in Dawson Creek.*

*Free fuel from sunlight and zero pollution – now, finally, we're getting somewhere!*



A friend of mine, with a particular interest in facts and figures, recently did a very unusual thing. He accurately tracked what it cost to purchase and run his new quarter-ton pickup truck. The results were surprising.

He purchased his brand-name new truck in 2015 and then tracked, to the penny, exactly what it

cost for insurance, gasoline, service and repairs, washing, etc. until late last year. In rounded figures, here are his results: cost of vehicle = \$40,000; cost of all expenses = \$8000 per year (an average of \$3500 per year for fuel, \$1600 per year for parts and service).

Stretching that out to 10 years, about how long he would

probably run it before replacing it, we get \$80,000 cost to run, \$25,000 in lost value through depreciation, for a total cost of just over \$100,000!

That's a lot of money. We've been willingly paying it because we need and want personal transportation, and there have been no alternatives. Until now.

## EVs COST LESS

Here come the electric vehicles (EVs), and for at least three good reasons: electricity is cheaper per mile than fuel; combustion engines are inherently inefficient and therefore heavy polluters; and EV repairs are extremely low.

### **ELECTRIC FUEL: LOW COST to NO COST**

In BC powering an EV by plugging it into the BC Hydro grid will cost less than half of what you'd pay for the same mileage with gasoline. Put a small solar array on your home roof and a fast-charger in your garage, and you can charge your EV with solar electricity for free for the next 50 years or so. Free fuel from sunlight for life and zero pollution. Good news.

### **EFFICIENCY**

Electrics are many times more energy efficient than combustion vehicles. That results in real savings for you and me.

Most of the cost of fueling a combustion vehicle comes out of the tailpipe as pollution, which is why most of the world (including Europe and China) is in the process of banning them outright in favour of pollution-free electrics.

About 85% of the energy from gasoline is lost as heat, pollution, and noise in the power train and in idling (at zero miles per gallon!). (As a side note, it is interesting how noise in a vehicle has somehow become associated with power, when in fact the exact opposite is true). Fifteen percent of the energy that finally reaches the wheels moves the vehicle, but that leaves just 1% to move the people who are in it.

For a machine that has been in development for over 100 years, not a shining example of technological progress.

An EV, by contrast, stores grid electricity in its battery and converts that to motive power with less than 10% loss overall.

## REPAIRS

My friend's pickup has over 1000 moving parts, all requiring maintenance, eventual replacement and lubrication. A modern EV has less than 20, including the wheels and windshield wipers.

There's really not much in an electric vehicle, and therefore not much to go wrong. There is just a large battery, usually integrated into the vehicle structure so it disappears, and one or two powerful electric motors. That's about it.

To maintain the warranty on one of the famous Tesla brand EVs, you have to take it to the dealership for a check up just once every four years. We're talking virtually maintenance-free.

### **EV COST FALLING**

Yes, electrics are still expensive with only a few models available, but that is about to change, and fast.

A Reuters analysis of 29 global automakers has found that they are investing a least \$300 billion in EVs over the next 5-10 years, with almost half of that earmarked for the immense Chinese market where EVs are being aggressively mandated.

Germany's Volkswagen/Audi/Porsche is leading the charge, introducing 50 battery electric and 30 hybrid electric models by 2025, including 12 Audi EVs, with plans to electrify all 300 models of its 12-brand global portfolio by 2025.

How fast will EVs take over? Much faster than you think. Norway (a cold climate country) started into electrics just six years ago. Now, one third of cars sold there are pure electric, and if you include hybrids, that goes to two-thirds. That's fast.

But not fast enough for me. Like my friend and his pickup truck, I'm tired of paying heavily for tailpipe pollution and endless repairs. And I'm not alone.

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