The Economics of Driving an Electric Car – My Experience

In late November 2017 I purchased a Chevrolet Volt equipped with all available safety and convenience options. I applied for and received a federal $7500.00 tax credit for this purchase which, I estimate, approximately compensated for the Volt's cost when compared with a comparably-equipped conventional car.

During 2018, its average monthly electricity usage was 171 kWh, and the average monthly driving distance was 608 miles. If 1t were not powered from the solar electric system, the incremental monthly electricity cost would have been $11.97 (at $0.07/kWh). Since it is powered from the solar system the electricity cost is zero. A solar array of approximately 2 kW (DC peak power rating) is sufficient to annually provide that much power.

When the Volt's propulsion battery is exhausted (after about 47 miles in the winter and 70 miles in the summer), it reverts to a hybrid mode with a gasoline engine sharing propulsion with, and charging, the battery. In that mode, it gets about 42 MPG. OnStar® reports that it used gasoline at the average rate of 1.4 gallon/per month. At $3.20/gallon, that adds $4.48/month to the fuel cost, regardless of the source of electricity.

By comparison, a conventional car getting 30 MPG would require 20.27 gallons per month to cover that distance, costing $64.89.

Additional savings come from reduced service costs. For example, "regenerative braking" in which the car is slowed by transferring its momentum energy into the battery greatly reduces the wear on the brake shoes; the seldom-used gas engine needs very little service; and the car doesn't even have a transmission in the classical sense.

In summary, and not counting reduced service costs, the Volt saved approximately $725 per year in fuel costs. If it were not powered from the solar system, the savings would still be a respectable $581. If the car had a longer battery-only range the costs would be reduced by another $4/mo.