

Commission Secretary  
Suite 410, 900 Howe Street  
Vancouver, BC  
Canada V6Z 2N3

April 13, 2018

**RE: BCUC Project No. 1598941**

**Evidence in the Matter of the Utilities Commission Act, RSBC 1996, Chapter 473, and British Columbia Utilities Commission: An Inquiry into the Regulation of Electric Vehicle Charging Services**

This submission follows up my oral presentation at the Victoria public hearing of the Inquiry. At that meeting, one of your staff invited me to submit information on how a low-cost electricity meter could facilitate EV charging in multi-unit buildings.

Sincerely,

Bruce Mackenzie

---

### Getting Started with Level 1 Charging in Multi-Unit Buildings

In my earlier submission, I recommended that “the Commission should be advising Government to change the Utilities Commission Act to allow strata corporations to charge for electricity by the kWh.”

Most stratas (and rental buildings) have no experience with this idea, so some may be reluctant to invest in actual EVSE infrastructure until they see a proven business model. The Kill-a-Watt meter provides a way to get started with Level 1 charging through an existing 110V outlet at a capital cost of about \$40.00.

### Level 1 charging

Where a 110V electrical cord can reach an EV, the very low capital cost makes Level 1 an attractive ‘starter’ option. Level 1 charging provides 5-6 kms of travel per hour of charge - 70+ kms in a typical 14-hour overnight cycle. This is plenty for locally-used vehicles like Leafs or Electric Smart Cars. And a vehicle doesn’t have to start every trip with a full battery, any more than a gasoline car must.

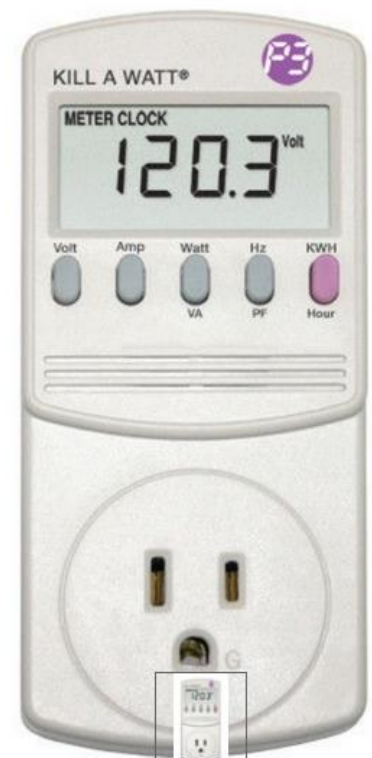
### Kill-a-Watt Meter

The Kill-a-Watt meter by P3 International is a simple device which measures 110V AC electrical current. When plugged into any grounded 110v outlet, it immediately begins to measure:

1. Time (in hours:minutes to 9,999 hours - 416 days) since powered on
2. AC voltage
3. AC frequency (Hz)

When a load is plugged into the meter it also measures:

4. Watts
5. Amps
6. Volt-Amps
7. Power factor
8. kWh since powered on



Kill-a-Watt meters are available through retailers or online for less than C\$40, for example at AARTech Canada <sup>1</sup>. I purchased mine about ten years ago.

### How a Kill-a-Watt can be used

A Strata or rental owner could give permission to an EV owner to plug his or her vehicle into an existing 110V outlet in a parking area. The Kill-a-Watt meter would be plugged in first, and immediately begin to record time and electricity used. The vehicle owner would plug in as usual, and all electricity going into the car would be recorded. Periodically a designate would check the hours and kWh readings to measure electricity use. The management would convert this to a monetary cost, likely at the building's marginal per kWh rate, and bill the owner.

This is simplest for the first EV. If there are two or more, each would need its own meter, connected by extension cords or a power bar rated for at least 15 Amps, and the owners would have to arrange not to overdraw the circuit and trip the circuit breaker.

### Limitations

- The Kill-a-Watt meter has not been certified by Weights and Measures of Industry Canada, but the manufacturer claims 0.2% accuracy. It is UL and CSA certified for safety.
- The Kill-a-Watt meter has no battery backup, so if the power supply is interrupted or it is removed from the outlet all data is lost instantly. The Kill-a-Watt EZ model does have battery backup.
- The LCD display is not lighted so needs a flashlight to read it in a dark area.
- The Kill-a-Watt meter is not waterproof.
- The body of the meter covers both outlets in a standard two-outlet socket, so an extension cord or power bar is needed to share the outlet with another load.
- There may be other brands of similar meters but I could only find Kill-a-Watt meters for sale in Canada .

### Trust

Like many features of shared buildings, a degree of trust is required:

- If other people were able to plug into the meter, they could 'steal' electricity.
- If the meter were unplugged, it would lose the record of electricity used but would also reset the timer, revealing that it has lost power. The Kill-a-Watt EZ model with battery backup would not have this limitation.
- The meter is accurate enough without Industry Canada certification

### Conclusion

Existing 110v outlets provide a way for shared buildings to get started with Level 1 EV charging. If the regulatory regime allows it, the Kill-a-Watt meter provides a simple way to measure and charge (\$) EV owners for the electricity they use at negligible capital cost.

---

<sup>1</sup> <https://www.aartech.ca/power-monitor>