

Getting the most out of your smart meter:

A case study in energy cost management.

Many of us have been unpleasantly surprised by the size of our electrical bills as our new smart meters are initiated to allow time of use (TOU) billing in Ontario. While Hydro One has provided some good suggestions on how to manage your bill by switching energy intensive tasks to lower cost TOU billing, that doesn't always work well for a lot of consumers. What hasn't been widely reported is how much information and detailed use data is now available to you from Hydro One for your location. Understanding just what data is now available, and how to use it to manage your electricity consumption can dramatically reduce both your ecological footprint, and your cost. The following case study outlines how one family, shocked by a nearly \$1500.00 three month bill on their seasonal property learned how to manage their electricity use and **cut their monthly electric bill by nearly 70%**, without noticeably impacting their lifestyle. They did this, primarily, with their Smart Meter data.

Our situation:

Our 120 square meter (1292 sq ft) cottage was recently renovated and winterized. Much care was taken to insulate well and use energy efficient systems throughout. Also on the property is a well insulated 60 square meter (646 sq ft) garage/shop with a hydronic heated floor, designed to be kept just above freezing. Water is drawn from a lake using a partially buried water line with a regulated line heater to prevent freezing. The cottage is empty through the week and gets used approximately 3 weekends a month through the winter. When unoccupied, the cottage is kept at 10C using a propane fired hydronic system with electric backup. The first post renovation 3-month hydro bill was nearly \$1500! (Note that this includes actual electricity use, debt retirement, seasonal delivery rates etc, all of which drive the real cost of your electricity up to around 20 cents/kWh for seasonal users, a little less for full time residents. To figure out your real cost divide the Kilowatts used on your bill by the total amount you have to pay.)

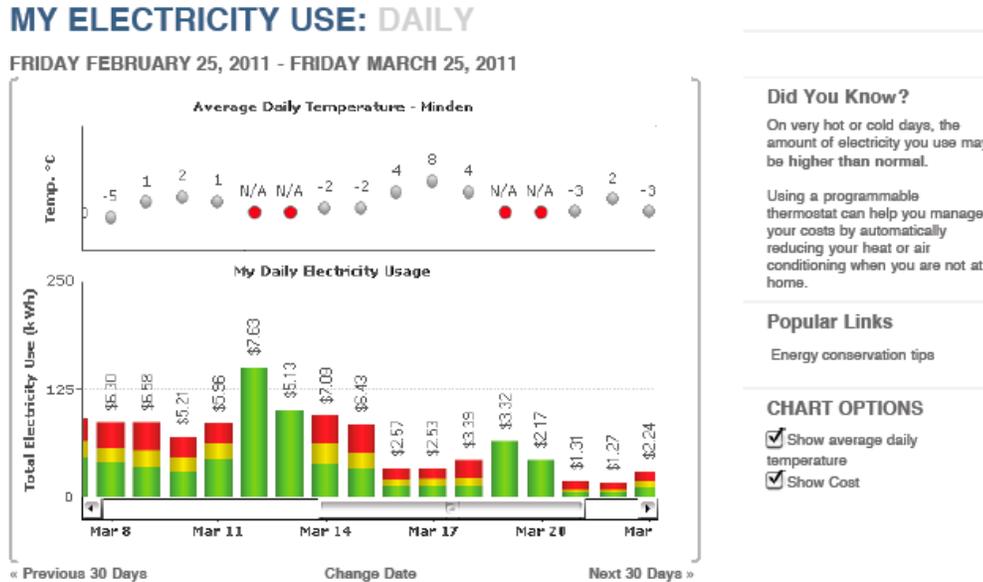
Although shocked by our TOU bill, we were also intrigued by the insert in the bill, that directed us to the Hydro Ones new customer website that provided detailed time of use graphs by the month, day and hour.

That website Address is: <https://www.myaccount.hydroone.com>

Go to that web site and set up your user name and password etc. You will now be able to access a wealth of hourly, daily and monthly electricity use information for your home. Armed with that information, you can now use your smart meter to cut your electricity costs.

Your daily use chart should look like figure 1. Below

Figure 1: Hydro One customer use page, our starting point



Notes for figure 1:

- Costs shown are for electricity only and do not include delivery and service charges
- We started our conservation efforts on March 14, **note the drop in costs**

What we did:

Our first step was to review the hourly, daily and monthly charts from hydro one. It showed that our base load was in the order of 3 kW, even when the cottage was unoccupied. It also showed that a lot of heavy use items like the water line heater and garage heat were coming on during peak cost hours.

The next step was to identify all electrical loads in the house. We did a “plug walk” then recorded everything that was plugged in. On hard wired, heavy use items like heaters and pumps we read the meter at the start of an hour, then again at the end of the hour to give us a base load. (Being digital, the new meters are easy to read.) Then, for an hour or two at a time we turned off the breakers on those items and reread the meter. That gave us a good feel for what the big items were drawing and quickly identified our biggest targets. Some meters also give a real time current draw number as they cycle through their display. If yours does this, it makes the process even easier, just turn off a load and look at what happens at the meter.

In our “plug walk” we identified many phantom or parasitic loads like phone and battery chargers, a printer, LED displays on appliances etc. Using a borrowed current draw meter we measured all those little parasitic draws. Amazingly, the 5 watts here, 10 watts there, etc, added up to over 120 watts. That’s like leaving two 60 watt light bulbs on 24/7. We put those items on wall switches or switched power bars and now leave them off when not in use. **That alone cut our cost by about \$17/mos.**

Then we went after some larger items. We had a small chest freezer and bar fridge, both about 10% full and plugged in. We consolidated their contents into our main fridge and unplugged them. Now we only use them when necessary. **Savings: About \$19/mos.**

We discovered that an old desktop computer with a CRT monitor drew almost 175 watts in standby. We replaced it with an old laptop, which we left off and unplugged. **Savings: Over \$20/month!**

We put our entertainment system on a wall switch. When not in use we flip the switch off to eliminate phantom load. It now takes 2 minutes to warm up when we turn it on. **Savings: \$15/mos.**

We went after our security lighting as well. We had it set on soft start and twilight, which meant that for 2 hours after sunset, all 10 - 100 watt bulbs were on at half current. We dropped the twilight setting entirely, raised the sensitivity on the motion sensors so they came on when it was darker and changed the bulbs to LEDS. **Savings: About \$12/month.** (Payback on the bulbs is about a year.)

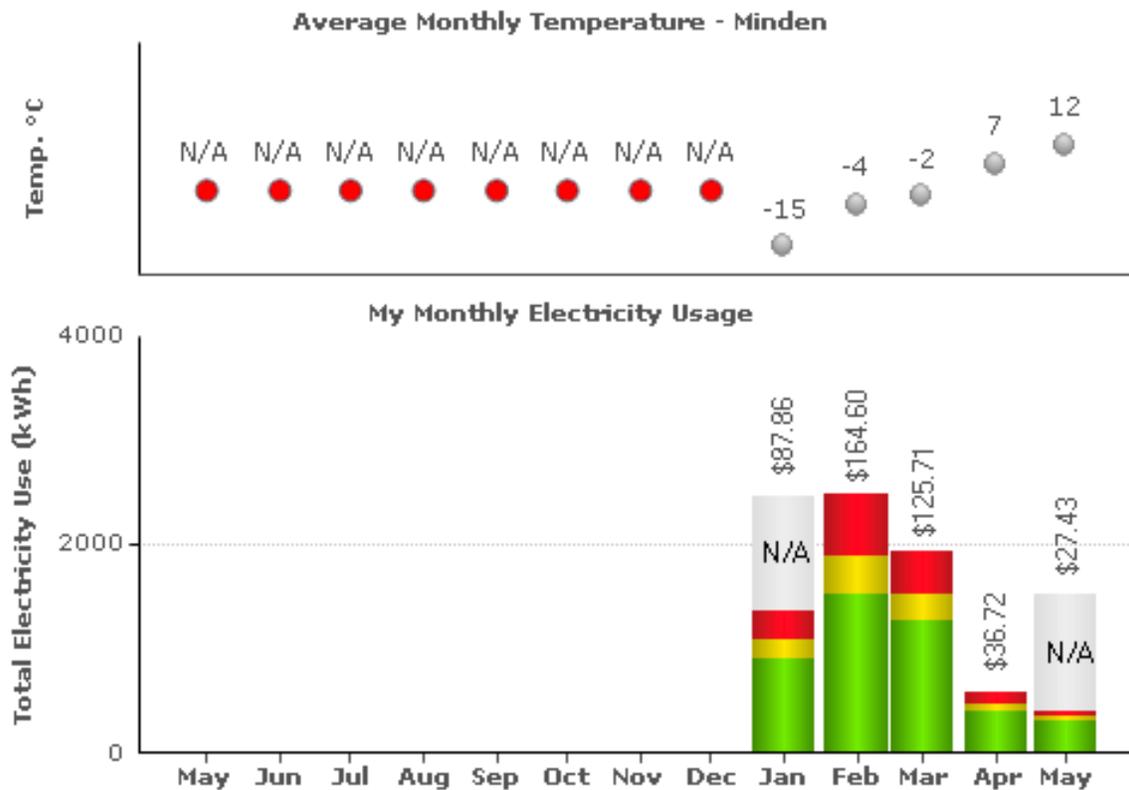
All those little things, which we didn’t notice at all from a convenience perspective, dropped our monthly bill by over \$80/month. That is significant.

We went after the big seasonal items too. We discovered, when we forgot to plug in our water line heater after our test, that our outside water line won’t freeze above -5 and rarely freezes above -15. The heater will thaw a frozen line in about an hour. So, we put it on a timer that leaves it off when we are away and turns it on for 2 hours Friday evening so its thawed when we get there. It also comes on from 6AM to 7AM on weekend mornings to ensure running water when we wake up. (A

caveat here: When we installed the lake water line we opted for a pipe material that could hard freeze without damaging the line. That’s critical, since burst pipes will quickly negate any cost savings in electricity.... Check with your plumber!) We dropped the set point temperature in the garage to 2 degrees C from 10. Nothing froze. **The actions on the water line and garage heat saved us nearly \$120 per month during the heating season.**

By checking back frequently with the Hydro One website, we can accurately monitor the impact of our conservation efforts on our hourly, daily and monthly electricity use. As you can see in figure 2, our efforts are paying off.

Figure 2: Monthly electrical use from Hydro One website



Notes: January and May Data on figure 2 are incomplete. Our conservation efforts started March 20, which helped the month, but the real effect is in April and May.

Conclusion:

Using the smart meter data available on Hydro One’s new website, we were able to dramatically reduce our energy cost and our carbon footprint without noticeably affecting our lifestyle. So can you, with surprisingly little effort, but great rewards.