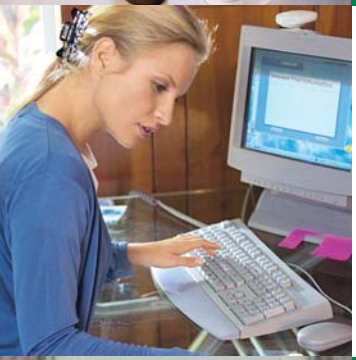


GETTING SMART ABOUT

SMART METERS

ANSWER BOOK

SMART METERS: A NEW WAY TO THINK ABOUT ELECTRICITY

Your SMART METER is a key part of Ontario's new smart metering system – and of building a culture of conservation across this province.

By 2010, every home and small business in Ontario will have a SMART METER.

This guide explains what SMART METERS are, why Ontario is introducing them, and how they can help you manage and reduce your electricity costs.

As you'll see, with smart metering, you'll have new options for managing and reducing your electricity costs. And as you'll learn, if we all make some small changes to how we use electricity, we can also have a positive impact, both on the environment and on Ontario's energy system.

WHY IS ONTARIO INTRODUCING SMART METERS?

SMART METERS? TELL ME MORE ABOUT THEM.

TIME-OF-USE PRICING? GIVE ME THE DETAILS.

WHAT ARE THE BEST STRATEGIES FOR CONSERVATION AND SMART METERING?

A FEW MORE Q & A's.

WHY IS ONTARIO INTRODUCING SMART METERS?

SMART METERS WILL HELP ONTARIO MEET ITS ENERGY NEEDS.

Between now and 2025, Ontario must build almost a whole new electricity system. This includes replacing about 80 per cent of our current generating facilities as they retire over time, and expanding the system to meet our future growth.

Building new supply is vital. So is conservation. Conservation will help us to make the best use of our existing electricity resources and slow the growth in our demand.

That's why Ontario is introducing new tools – like SMART METERS – that can help. SMART METERS will encourage us all to think more about how and when we use electricity.

SMART METERS WILL HELP SMOOTH PEAK DEMAND.

When we're all using a lot of electricity at the same time we create a "peak demand" period. And supplying electricity at those peak times has a range of impacts:

1. It adds to our electricity costs because higher demand often means higher market prices.
2. It's hard on the environment because more of the less attractive forms of generation must be run to meet them.
3. It adds to the amount Ontario needs to invest in the system because meeting the peaks requires even more new generation, and more transmission and distribution infrastructure.

So, working together to reduce our use at peak times makes good sense.

SMART METERS?
TELL ME MORE ABOUT THEM.

HOW IS A SMART METER DIFFERENT?

A SMART METER is a huge advance over Ontario's current devices.
Our old-style meters can only measure the total amount of electricity used over an entire billing period because they have to be read manually. That's why, between actual readings, you might get an estimated bill that will be "trued up" at a later date.

A SMART METER automatically records when electricity is used.
That's what makes a SMART METER so different. Your SMART METER will record your total electricity consumption hour by hour, and it will send that information to us automatically through wireless technology.

SMART METERS make time-of-use (TOU) prices possible.
With the ability to measure when electricity is used, different prices can apply at different times of the day. Time-of-use pricing offers you a new way to manage your electricity use and your bills.

WHAT ARE THE BENEFITS OF SMART METERING FOR ME?

Here are just some of the benefits of your SMART METER and time-of-use pricing:

1. You can take action to manage your electricity bills.
   With attention to how and when you use electricity, you'll be able to contain or reduce your electricity costs.

2. You can get real feedback about your electricity use.
   Now, detailed information will be available to you via the Internet.

3. You'll get more timely electricity bills.
   Your bills will reflect the hourly readings taken and sent by your SMART METER over the previous period.

TIME-OF-USE PRICING?
GIVE ME THE DETAILS.

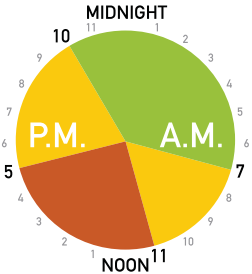
HOW DO TIME-OF-USE PRICES WORK?

With TOU pricing, electricity prices vary, based on when it is used.
That includes by time of day, by day of week (weekdays versus weekend), and by season (winter or summer).

TOU pricing will encourage Ontarians to shift some electricity use to off-peak hours. TOU pricing better reflects the way the electricity market works. Prices rise and fall over the course of the day and tend to drop overnight and on weekends based on the amount of supply available and our levels of demand. Until now, the more expensive (daytime) and cheaper (night time) prices of electricity had to be captured in a single rate, simply because our meters could not report when electricity was used.

WHAT ARE THE CURRENT TOU PERIODS AND PRICES?

The Ontario Energy Board (OEB), which sets our prices for electricity under the Regulated Price Plan (RPP), has developed the daily and seasonal TOU prices and periods shown in the charts below. Please be aware that these prices and periods may change biannually. (For more information on current TOU pricing, visit www.oeb.gov.on.ca.)

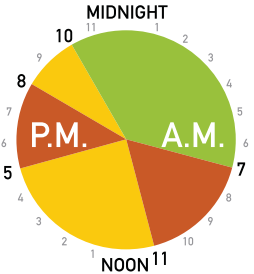


The Summer
weekdays

The highest energy prices occur over the afternoon, largely due to greater air-conditioning use. That's why the on-peak rate is from 11 a.m. to 5 p.m.

Weekends and
Holidays

Demand and electricity prices are lower on weekends and holidays – as well as overnight – so these periods are all off-peak.



The Winter
weekdays

Energy prices peak twice – in the early morning and in the evening – mainly due to space heating, plus increased lighting and appliance use.

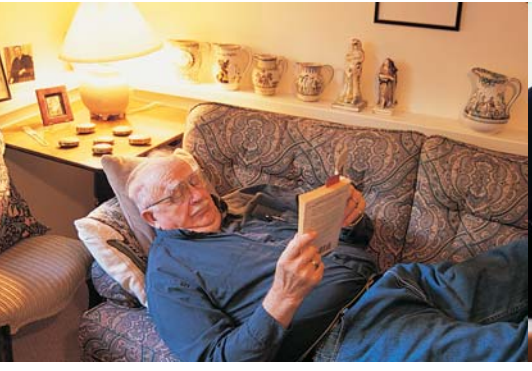
There are three time-of use periods:

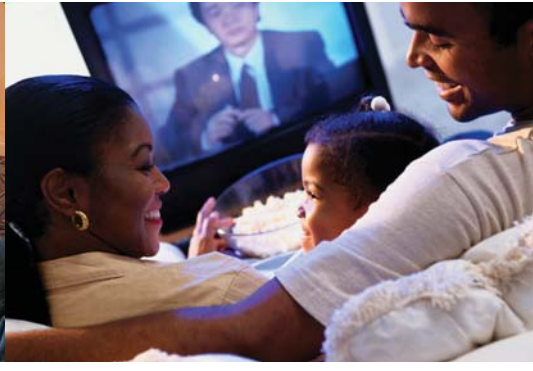
On-peak
– demand is highest
8.7¢ per kWh

Mid-peak
– demand is moderate
7.0¢ per kWh

Off-peak
– demand is lowest
3.0¢ per kWh

WHAT ARE THE BEST STRATEGIES FOR CONSERVATION AND SMART METERING?





There are lots of simple things that we can do to save electricity and reduce electricity costs. Over the next few pages, you'll find some useful advice.

FIRST, GIVE ME THE FUNDAMENTALS.

There are a number of effective ways to approach conservation. Your best strategy might combine some or all of the following:

1. Shift some electricity use to off-peak periods.
   Under TOU rates, shifting activities that are energy-intensive to the less expensive mid-peak and off-peak hours will make a lot of sense. (See *"What are the big electricity users in my home?"* on page 12.)
2. Reduce electricity use across all periods of the day.
   Conservation always makes good sense. (See *"How about some energy-saving tips that I can use right now!"* on page 17 to learn some easy ways to reduce your electricity use.)
3. Ensure you're not paying for nothing! Many electronic items – for example, computers, TVs and cell phone chargers – aren't fully off unless you pull the plug. Since each can use between four and 10 watts of electricity, try to plug them into a power bar that you can turn off.
4. Opt for energy-efficient products wherever you can.
   ENERGY STAR® appliances and compact fluorescent light bulbs (CFLs) use less power, reducing both your electricity consumption and your costs.
5. Take advantage of conservation promotions.
   Many utilities, and the Ontario Power Authority (OPA), are creating programs that can help you conserve. Call us or visit powerWISE.ca to find out more.

WHAT ARE THE BIG ELECTRICITY USERS IN MY HOME?

All appliances are not created equal. Some of the most costly appliances to run are those that either heat or cool, such as the following:

- Air conditioning
- Clothes dryers and washers
- Electric heating
- Electric stoves
- Electric water heaters

Be aware, too, that old appliances and equipment are not as efficient as today's models. A refrigerator that is 10 or more years old might be using twice as much electricity, and an older electric hot water heater that is not insulated well will also consume more.

The tables that follow below show the approximate cost for each one hour of electricity use within today's two-price structure (for consumption below and above the seasonal threshold) and at the prices currently set for the three time-of-use periods. For electric water heaters, the costs shown reflect the number of kilowatt-hours required to heat a full cold tank.

Please note: These tables reflect the electricity cost only. That is just one of the factors that determines the final cost per kilowatt-hour (KWh). Each kWh is also multiplied by the following:

- Regulatory charges – 0.62¢/kWh – primarily for services required to operate our electricity market.
- Debt-retirement charge – 0.7¢/kWh – to pay down the residual stranded debt of the former Ontario Hydro.
- Delivery charges (for transmission and distribution) – vary from utility to utility.

Air Conditioning

Air conditioning can account for half or more of summer electricity bills. Setting that room air conditioner to 25°C (77°F) will provide the most comfort at the least cost. (Every degree below that costs three to five per cent more energy.) But consider, too, that a ceiling fan or portable fan would cost a fraction of what a central or room air conditioner would cost for every hour of active use.

		Today per kWh		Time-of-Use per kWh		
	Approx. Wattage	Tier 1 5.0¢	Tier 2 5.9¢	Off-peak 3.0¢	Mid-peak 7.0¢	On-peak 8.7¢
Air Conditioner (central) 2.5 TON	3,500	18¢	21¢	10¢	24¢	30¢
Air Conditioner (room) 9,000 BTU	1,050	5¢	6¢	3¢	7¢	9¢
Air Conditioner (room) 6,000 BTU	750	4¢	4¢	2¢	5¢	7¢
Fan (portable)	115	0.6¢	0.7¢	0.4¢	0.8¢	1¢
Ceiling Fan	60	0.3¢	0.4¢	0.2¢	0.4¢	0.5¢

*Maximum kWh - The costs listed are based on the maximum rating for the unit.

Clothes Dryers (and washers)

An average clothes dryer will consume up to 5 kilowatt-hours (kWh) for every hour of use, and that can add up fast. So, when time-of-use rates are in effect, aiming to shift clothes washing and drying to off-peak hours will result in real savings.

		Today per kWh		Time-of-Use per kWh		
	Approx. Wattage	Tier 1 5.0¢	Tier 2 5.9¢	Off-peak 3.0¢	Mid-peak 7.0¢	On-peak 8.7¢
Clothes Dryer	5,000	25¢	30¢	15¢	35¢	44¢
**Clothes Washer	500	2¢	3¢	2¢	4¢	4¢

*Maximum kWh - The costs listed are based on the maximum rating for the unit.

**Plus the cost of heating water.

Electric Heating

Electric heating is one of the more costly methods of home heating. Installing programmable thermostats, however, can help control this expense. (For baseboard heaters, this job should be undertaken by a licensed electrician, as it can be complex.) Baseboard heaters should also be kept free of dust build up. Just ensure that the power is turned off at the breaker panel before starting this task.

		Today per kWh		Time-of-Use per kWh		
	Approx. Wattage	Tier 1 5.0¢	Tier 2 5.9¢	Off-peak 3.0¢	Mid-peak 7.0¢	On-peak 8.7¢
Baseboard - per 8 foot unit	2,000	10¢	12¢	6¢	14¢	17¢
Baseboard - per 4 foot unit	1,000	5¢	6¢	3¢	7¢	9¢

*Maximum kWh - The costs listed are based on the maximum rating for the unit.

Electric Stoves

Since an electric stove is also a heavy electricity consumer, it makes sense to maximize every hour of use. For example, try to plan meals that allow more than one dish to be cooked in it. Or, consider using another option like a microwave or toaster oven, whenever you can.

		Today per kWh		Time-of-Use per kWh		
	Approx. Wattage	Tier 1 5.0¢	Tier 2 5.9¢	Off-peak 3.0¢	Mid-peak 7.0¢	On-peak 8.7¢
Electric Oven	5,000	25¢	30¢	15¢	35¢	44¢
Electric stove - oven and four burners	12,500	62¢	74¢	38¢	88¢	$1.09
Toaster Oven	1,250	6¢	7¢	4¢	9¢	11¢
Microwave Oven	1,000	5¢	6¢	3¢	7¢	9¢

*Maximum kWh - The costs listed are based on the maximum rating for the unit.

Electric Water Heaters

An electric hot water heater is second only to electric heat in terms of electricity use. Depending on your consumption, an alternative, such as solar system or one that will produce hot water “on-demand”, may be worth considering. It’s also possible to save significantly through the use of a programmable thermostat – this will be particularly true when TOU pricing takes effect. Installation, however, should be undertaken by a licensed electrician. The table below shows the costs to completely heat one 50 gallon tank of cold water.

		Today per kWh		Time-of-Use per kWh		
	Approx. Wattage	Tier 1 5.0¢	Tier 2 5.9¢	Off-peak 3.0¢	Mid-peak 7.0¢	On-peak 8.7¢
Water Heater - 50 gallon tank Approx. 14 kWh per full tank	3,800	70¢	83¢	42¢	98¢	$1.22

*Maximum kWh - The costs listed are based on the maximum rating for the unit.

HOW DO I DETERMINE HOW MUCH ELECTRICITY MY APPLIANCES USE?

It's always a good practice to know just how much electricity your equipment and appliances might be using. That way you can make informed choices about how and when you use them.

- watts (W) = amps x volts
- 1 kilowatt (kW) = 1,000 watts
- 1 kilowatt-hour (kWh) = 1,000 watts x 1 hour

Here's the formula:

Total hours of use
x
appliance wattage
÷
1,000 (converts watts to kilowatts)
=
Total kWh of electricity consumed

For example, if you want to know how many kWh of electricity it might use to run a clothes dryer for two hours:

2 hours (total usage)
x
5,000 watts (wattage for clothes dryer)
÷
1,000 (watts to kilowatts conversion)
=
10 kWh

HOW LONG DOES IT TAKE TO USE A KILOWATT-HOUR OF ELECTRICITY?

Another way to think about your electricity use is to consider how the kilowatt-hours add up. Naturally, the answer depends on the appliance or piece of equipment. Take a look at the table below to see just how fast – or how slowly – different items will use a kilowatt-hour of electricity. And consider just how many of these items a household might be using at the same time.

- 100 watts = 10 hours
- 1,000 watts = 1 hour
- 500 watts = 2 hours
- 5,000 watts = 12 minutes

		How long?	
Appliance/Equipment	Approx. Wattage	Approx. Hours	Or Minutes!
BEDROOM & BATHROOM			
Electric Blanket	180	5.5	
Hair Dryer (portable)	1,000	1	
HEATING & COOLING			
Air Conditioner (central) 2.5 TON	3,500		17
Air Conditioner (room) 9,000 BTU	1,050		57
Air Conditioner (room) 6,000 BTU	750	1.3	
Ceiling Fan	60	16.6	
Fan (portable)	115	8.7	
Electric Baseboard - per 4 foot unit	1,000	1	

Appliance/Equipment	Approx. Wattage	How long? Approx. Hours	How long? Or Minutes!
HOME ENTERTAINMENT / OFFICE			
Computer - Monitor & Printer	200	5	
Stereo	30	33.3	
Standard Television-36”	87	11.5	
TV-LCD, rear projection-52”	174	5.75	
TV-Plasma-50” High Definition	357	2.8	
INDOOR - MISC.			
Vacuum Cleaner (portable)	800	1.25	
KITCHEN			
Coffee Maker	900	1.1	
*Dishwasher	1,300		46
Electric Oven	5,000		12
Kettle	1,500		40
Toaster Oven	1,250		48
Microwave Oven	1,000	1	
LIGHTING			
100 watt incandescent	100	10	
60 watt incandescent	60	16.6	
Compact fluorescent-60 watt equivalent	18	55.5	

*Plus the cost of hot water

HOW ABOUT SOME ENERGY-SAVING TIPS THAT I CAN USE RIGHT NOW!

Here are some low and no-cost ways to start saving electricity right now.

Heating and Cooling

- Keep your heating and cooling equipment in good repair. Change or clean filters regularly. Anything that blocks airflow is making your equipment work harder and costing you more.
- Check for drafts and leaks that will let winter heat out and invite muggy summer air in. Caulking and weather-stripping are simple and inexpensive.
- Install a programmable thermostat and set it to reduce the heat when you're not home and when you're sleeping.
- Consider a fan first for cooling. Ceiling and portable fans cost pennies to operate, and can either replace or reduce your need for air conditioning.
- Keep your curtains closed to keep the summer heat out and the winter heat in. But you can open them on sunny winter days to take advantage of solar heat.

Appliances and Home Equipment

- Economize on your dishwasher. Always run full loads, set your dishwasher to the economy cycle and use the air-dry setting.
- Make sure your refrigerator and freezer doors are sealing tightly by testing how firmly they close and hold onto a piece of paper, such as a five-dollar bill. If it slips out easily, the rubber seals should be replaced.
- Don't overfill your refrigerator, as it prevents the cold air from circulating. (But do keep a chest freezer full as it will perform better.)
- Don't keep an old, extra refrigerator running just for occasional use. It could cost you $150 or more per year in electricity.
- Clean your dryer's lint trap after every few loads to reduce drying time. And clean its exhaust ducts at least once a year for the same reason.
- If you have a pool pump, use a timer that will allow you to run it just a few hours a day. Using a solar blanket will keep the water warm overnight and also reduce heater use.
- Plan energy-efficient meals. Smaller appliances, such as toaster ovens or microwaves, use less energy than stoves. When using an oven, try to plan a meal that will allow you to use it for more than one dish.

Electronics

- Shut your computer down when it's not in use. Powering up and down does not use extra energy and actually reduces wear. And turn the monitor off instead of using screen savers. Screen savers actually increase energy use by preventing your monitor from sleeping.

Hot Water

- Fix leaking hot faucets to save on hot water heating. A one drip per second leak will waste about 9,000 litres per year! That's enough water for about 95 five-minute showers (and that's using a less than efficient showerhead).
- Wash in cold water. With today's detergents, clothes come just as clean.
- Wrap your electric hot water tank and pipes in a special tank blanket to help it keep its heat. (Don't wrap a gas heater as an inappropriate or incorrectly installed blanket is dangerous.)

Lighting

- Replace your most frequently used incandescent bulbs with compact fluorescent light bulbs (CFLs) which use 75 per cent less power and last up to 10 times as long. There are many kinds of CFLs for indoor and outdoor use. Make sure you choose the right ones for you.
- Consider automatic timers, motion sensors and dimmers, where you can't use CFLs, to help maximize your control over lighting costs. Only timers with a mechanical switch can be used with CFLs.

A FEW MORE
Q & A's

Will I see a SMART METER charge on my bill?
The cost of the SMART METER initiative will be recovered through the electricity rates paid by all customers in the same way that costs for existing meters and services are recovered today.

When will I begin paying time-of-use prices?
A date has not yet been established for the implementation of time-of-use (TOU) rates for our customers with SMART METERS installed. You will be notified in advance when you can start to take advantage of TOU rates.

Will I see lower electricity bills?
With time-of-use rates, you'll see the results of your conservation efforts – and you'll save money if you can shift your heaviest electricity use to off-peak hours. Equipment like air conditioners, electrical heating, space and water heating as well as ovens, dryers and even lighting for example, can use a great deal of energy.

How do I read this new SMART METER?
Your SMART METER displays the following pieces of information in sequence:

1) a segment test to ensure the system is functioning,
2) your accumulated kilowatt-hour (kWh) consumption in a five-digit format and
3) a network address number for utility use.

Is my usage information secure and will it remain confidential?
Yes. Ontario's electricity distribution companies are required, by law, to ensure that the SMART METERS and communication networks that are put into place are equipped with security features to prevent unauthorized access. We must also comply with federal laws regarding the privacy, protection and disclosure of personal information. Any data that is sent to the central data repository will be provided in such a way as to prevent identification of an individual customer.

For More Information
If you have questions about SMART METERS, please contact:

horizon UTILITIES Looking beyond...

Call: Hamilton - (905) 522-9200
St. Catharines - (905) 984-8961
Visit: www.horizonutilities.com
Email: SmartMeters@horizonutilities.com

Or visit: www.smartmetersontario.ca

For tips and advice on how to use energy wisely,
visit: www.powerWISE.ca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