



Home Investigation

I'm reducing my electricity use





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Activity summary

This is a two-part activity. First, each student will identify about a dozen electrical devices or appliances in a room at home and calculate the monthly power consumption for each one, using the table below and the energy consumption calculator on Hydro Québec's website. After comparing the results in the classroom, the second part is to ask the students about strategies for saving energy. You will be provided with concrete solutions so you can make suggestions and encourage discussion. Your students will learn about the energy consumption of some of the devices and appliances they use every day at home.

Duration

2 x 50 minutes

Cycle-specific competencies

Cycle 2 – Financial Education

Financial issue – Consuming goods and services

1. Consumption

- a. Indicates factors that influence consumer choices (e.g., age, gender, income)
- b. Indicates some of the reasons why consumer habits may change (e.g., socioeconomic context, new technologies, peer pressure, personal values)

Objectives

- Make students more aware of the energy consumption of home devices and appliances as well as the associated cost
- Present simple, concrete solutions to reduce everyday consumption



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Preparation

Help students think about electricity and its costs by asking the following questions:

Have you ever paid attention to the number of electrical devices and appliances you have at home?

How many electrical devices and appliances do you think your family has at home?

Do you know how much energy each one uses and its cost? Do you know the breakdown of your household's energy costs? In which rooms does your family use the most electricity, and what can you do to save energy?

Materials

To print: Student's Guide

Introduction

Today, there are electrical devices and appliances everywhere we look. Some of them run continuously, like refrigerators, while others are used only from time to time, like a blow dryer. But do you know how much energy they use? They're such a part of our everyday lives that we usually don't ask ourselves the question. In this activity, you will learn how much energy these devices use and find ways to save energy.

Instructions

Homework

- Project the Student's Guide document showing the rooms of a typical house on a screen.
- Ask your students to choose a room.
- Explain that they should walk around the selected room and identify up to 12 devices or appliances that run on electricity.
- Present the evaluation table and ask them to enter the number of times the devices or appliances are normally used over a 30-day period.
- Show them the calculator on Hydro-Québec's website and ask them to calculate the electricity consumption of each device or appliance.
- Explain that you will then review the results together in class.



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Follow-up

Class discussion

Review the activity with your students and compare their results. To encourage learning assimilation, proceed as follows:

1. Ask a few questions:

- a. Are you surprised by how much energy certain rooms or devices use?
- b. Which devices or appliances use more or less electricity than you expected?
- c. What did you find most striking in the results we have just seen?

2. Encourage them to think about ways to save:

Now that you know how much energy each device or appliance uses, it's time to find solutions that you can easily implement at home to reduce your power consumption. Even if you think we can't do much as individuals to lower our energy consumption and costs, don't forget that when every student at a school or every resident in a city works together, we can have a real impact on our collective electricity consumption.

3. Find solutions

Review each electrical device and appliance listed and ask students what ways they can think of to save energy. Then present the solution provided.

4. Conclude the exercise by encouraging further reflection:

What device or appliance do you plan to focus on to lower your energy consumption?
How will you go about it? How do you intend to teach your family about the importance of using electricity efficiently?

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Answer sheet





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Since your students have to list at least 12 devices or appliances per room, we have grouped the rooms as follows:

- Living room
- Kitchen
- Laundry room, basement, bathroom and outdoors

Here is a list of devices and appliances that your students may mention for each room. If you see they're having trouble, you can encourage them by providing a few ideas from this list. Some of the devices mentioned by your students may be listed under another room than the one shown below.

The table has been partly filled in to help you assist your students. If the table indicates "N.A." (*not available*), the device's or appliance's power consumption is hard to calculate using the calculator. However, most still draw a phantom charge, which should not be overlooked.

Living room

APPLIANCE OR DEVICE	TOTAL USAGE TIME, PER DAY	NUMBER OF DAYS OF USAGE, PER MONTH	TOTAL (\$)
Electric heating system			
Lighting	4 h	30 days	
TV	10 h	30 days	
Game console	2 h	30 days	
Digital video recorder (PVR), standby mode	N.A.	30 days	
DVD/Blu-ray player			
Air conditioner	6 h	30 days	
Computer	10 h	30 days	
Cell phone charger	N.A.		
Printer	N.A.		
Laptop charger	N.A.		
Wireless phone	N.A.		



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Kitchen

APPLIANCE OR DEVICE	TOTAL USAGE TIME, PER DAY	NUMBER OF DAYS OF USAGE, PER MONTH	TOTAL (\$)
Refrigerator	24 h	30 days	
Dishwasher	1 h	10 days	
Stove	1 h	30 days	
Microwave	4 min	30 days	
Range hood	1 h	30 days	
Air conditioner	6 h	30 days	
Coffee maker	5 min	30 days	
Toaster	10 min	30 days	
Kettle	3 min	30 days	
Slow cooker	N.A.		
Food processor	N.A.		
Electric knife	N.A.		
Radio	N.A.		
Blender	N.A.		
Hand mixer	N.A.		
Coffee grinder	N.A.		
Water cooler	N.A.		



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Laundry room, basement, bathroom and outdoors

APPLIANCE OR DEVICE	TOTAL USAGE TIME, PER DAY	NUMBER OF DAYS OF USAGE, PER MONTH	TOTAL (\$)
Electric heating system			
Lighting			
Clothes washer	1 h	15 days	
Dryer	1 h	15 days	
Iron	N.A.		
Freezer	24 h	30 days	
Exercise machine	N.A.		
Central vacuum	1 h	10 days	
Pool	24 h	30 days	
Spa	24 h		
Water heater			
Exterior lighting			
Hot water faucet			
Electric toothbrush	N.A.		
Fan			
Blow dryer	10 min	5 days	
Curling iron	N.A.		
Bath	-		
Shower	8 min/pers.	30 days	



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Here are a few energy-saving tips that you can share with your students for each device and appliance listed.

Living room:

- **Electric heating system**

Did you know that home heating accounts for half of a family's annual electricity costs? Lowering the temperature by just 1°C can save you 5% to 7% on your electricity bill. That may not sound like much, but it can add up to big savings!

- **Lighting**

LED lightbulbs use 80% less energy than incandescent bulbs. They also last 25 times longer.

- **Television**

A television uses up to 20 times more energy than a radio. Turn off your TV when you're not watching. To save even more energy, unplug it when you're not planning on using it for an extended period.

- **Video game console**

Unplug your console when you've finished playing, or use a power bar with a timer.

- **Digital video recorder (PVR)**

A single digital video recorder can use about \$18 worth of electricity every year!

- **DVD/Blu-ray player**

If you don't use your DVD/Blu-ray player very much, unplug it! Even when it's turned off, it continues to draw a phantom charge when plugged in.

- **Air conditioner**

To cool your home more efficiently, experts recommend shutting the doors to unoccupied rooms when the air conditioner is running. You can also close the curtains so the sun doesn't heat your home during the day.



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Living room (cont.):

- **Computer**
To save energy and money, shut down any computers that aren't being used. Did you know that turning your computer on and off frequently has no impact on its lifespan?
- **Cell phone charger**
Slowly but surely, leaving your cell phone plugged in to continue charging when the battery is already full reduces its battery life.
- **Handheld video game charger**
Remember to unplug your charger when you're not using it! It may not take a lot of electricity, but every little bit helps!
- **Laptop charger**
Remember to unplug your charger when you're not using it! It may not take a lot of electricity, but every little bit helps!
- **Printer**
Remember to unplug your printer when you're not using it! It may not take a lot of electricity, but every little bit helps!
- **Wireless telephone**
This is a very small electrical load that's easy to overlook. Congratulations on spotting it! However, this is one device that's very convenient to keep plugged in.

Kitchen

- **Refrigerator**
The refrigerator is a household's most energy-hungry appliance. A refrigerator uses considerable energy to chill food, especially when the door is open. Think about what you want to eat before you open the fridge, and make sure you close it as soon as you have put something in or taken something out, even if you will have to open the door again a few seconds later, such as when you're putting away groceries.
- **Dishwasher**
It's best to start the dishwasher only when it's completely full and to use the shortest cycle possible.



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Kitchen (cont.):

- **Stove**

Don't open the door to see how your meal is coming along, since you can lose over 20% of the oven's heat in the process. Instead, turn on the light and use the window. You can also turn off the oven 15 minutes early; the residual heat will finish your cooking for you.

- **Microwave**

A microwave uses five times less energy than a conventional oven. For optimal efficiency, make sure there's good clearance around your microwave.

- **Range hood**

Don't leave the range hood lights on needlessly, and remember to turn off the fan when you're done!

- **Air conditioner**

To cool your home more efficiently, experts recommend shutting the doors to unoccupied rooms when the air conditioner is running. You can also close the curtains so the sun doesn't heat your home during the day.

- **Coffee maker**

If your coffee maker displays the time, that's a phantom charge. When it's not in use, leave it unplugged!

- **Toaster**

If you're not in the mood for toast, there's no need to plug in the toaster! And if you are, why not ask the other members of your family if they want some too before you toast just one slice of bread?

- **Kettle**

When it comes to boiling water, a kettle is more efficient than a small pot. If you have to boil water on the stovetop, be sure to put a lid on the pot and use a burner that's the right size.

- **Slow cooker**

The smaller the device, the less energy it uses. A slow cooker uses less energy to cook a meal than a stove, even though it stays on for several hours.



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Kitchen (cont.):

- **Radio**
A radio or MP3 player uses up to 20 times less power than a TV.
- **Food processor**
It might look good on your counter, but when it's not in use, leave it unplugged!
- **Electric knife**
Do you really use it that often? When it's not in use, leave it unplugged!
- **Blender**
It might look good on your counter, but when you're not using it, leave it unplugged!
- **Hand mixer**
Do you bake a cake every day? When it's not in use, leave it unplugged!
- **Coffee grinder**
When it's not in use, leave it unplugged!
- **Water cooler**
A hot and cold water dispenser uses four times more electricity to keep water hot than to keep it cold. If you don't use the hot water dispenser often, turn off the heating element.

Laundry room, basement, bathroom and outdoors

- **Electric heating system**
Putting on some warmer clothes will help keep you comfortable!
- **Clothes washer**
Washing your clothes in cold water is more economical. Using hot water takes 18 times more energy!
- **Dryer**
Using a clothesline is the best way to save energy, weather permitting. To maximize your dryer's efficiency, don't forget to clean out the lint filter regularly.



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Laundry room, basement, bathroom and outdoor (cont.):

- **Freezer**
For optimal efficiency and to ensure your food is safe, set your freezer at -18°C (0°F), regardless of the make and model.
- **Exercise machine (treadmill, bike, elliptical trainer)**
When it's not in use, leave it unplugged!
- **Vacuum and central vacuum**
Vacuuming baseboard heaters and the dust that accumulates behind and beneath large appliances can boost their efficiency!
- **Pool**
Maintaining a pool (including heating the water) accounts for nearly 70% of your summer electricity bill. A pool cover can help retain the heat that accumulates during the day.
- **Spa**
To save money with a spa, set the thermostat to standby mode if you don't plan to use it for a while. And don't forget to put the top back on when you get out, to retain as much heat as possible.
- **Water heater**
When the time comes to replace your water heater, choose a model that is the right size for your family to avoid unnecessary costs.
- **Exterior lighting**
Leaving outdoor lights on all night can make a big difference on your electricity bill. For example, turning off three 60-watt bulbs that were previously left on all night can save you up to \$40 in just one year.
- **Faucet**
Using an aerator provides equivalent water pressure with less water.
- **Electric toothbrush**
It's handy, but is it really necessary to have an electric toothbrush instead of a regular one?



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Laundry room, basement, bathroom and outdoor (cont.):

- **Ceiling fan**

Did you know that fans have a direction? Fans aren't just used to cool rooms: since heat rises and the air near the ceiling is warmer, fans can also be used to push heat down in the winter.

- **Blow dryer**

Using a towel to dry your hair or waiting for it to dry on its own is a great way to save energy.

- **Curling iron/flat iron**

Remember to unplug your iron when you're done!

- **Iron**

Remember to unplug your iron when you're done!

- **Bath**

A half-filled 200-litre bathtub takes 33% more hot water than a 7-minute shower (with a flow of 9.5 litres per minute).

- **Shower**

Shortening your shower from 8 to 7 minutes can have a big impact on your electricity bill and the amount of water you use.

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Ce document est également diffusé en français.

