Home Energy Audit Guide

Energy Revealed

Learning Outcomes

By the end of this activity, learners will:

- Understand energy conservation and how we consume energy in our households
- Carry out a home energy inspection to find out opportunities of energy savings in their homes
- Develop a plan to take action to save energy in their homes and report the results

Introduction

Electricity is great as it powers our devices, heats up our food and lights our homes when the sun goes down. We can't live without energy.

Did you know that the average Canadian home uses 11,135 kilowatt hours of electricity a year? When we use electricity for all these great things, there are two important things to keep in mind:

1. Greenhouse gases (GHGs) are produced when electricity is generated from fossil fuels (coal and natural gas) and this contributes to climate change.
2. It costs your family money to use all this great electricity.

Families often waste electricity without even realizing it. However, with just a little effort we can be just as comfortable while being more environmentally friendly at home by using electricity a little more wisely. Making small retrofits and small behavioural changes can make a big difference over time.

In this Home Energy Audit, you can start an investigation of where your family is using its energy. Complete a Home Energy Audit Report to record where your home's energy is being consumed and take action to save energy.

Things You Need

- Start by reading through this **Home Energy Audit Guide** to familiarize yourself with all the steps for completing this activity.
- Download the **Home Energy Audit Report**. Use it as you read through this Audit Guide to record your findings.
- Download the **Home Energy Audit Action Plan and Tracker** to write down the plan for improving your home's energy consumption and the impacts of your actions. In order to calculate the impact of your actions, you will need to use an energy calculator.
- Use **GreenLearning's Energy Calculator** to calculate greenhouse gas emissions you have saved as a result of your investigation work https://programs.greenlearning.ca/electrical-energy-calculators

It's Time to Start Your Home Inspection!

1. Lighting

First of all, let's take a look at the type of lightbulbs found in your home. The newest types, most long lasting and energy efficient are called LED's or "Light Emitting Diodes". Another energy efficient light is called a CFL or "Compact Fluorescent Lightbulb" and then there is the more familiar "Incandescent lightbulb" that often uses the most electricity.

Did you know that incandescent light bulbs convert 90% of their energy into heat and only 10% into light? LED's convert 90% of their energy into light, with only 10% being lost as heat. CFL's are very efficient as well but do not have as long of a lifespan as LED's.
https://www.energy.gov/energysaver/lighting-choices-save-you-money
Inspect all of your home's light bulbs and tally what kind of light bulbs you find using the chart below:

LED	CFL	Incandescent
Tally:	Tally:	Tally:

Record your findings in your **Home Energy Audit Report.** If you found a lot of incandescent bulbs it can be expensive to replace them all. Make a plan to replace a few at a time and explain how and why in your **Home Energy Action Plan & Tracker Report.**

2. Phantom Load

Even when your devices are not in use, if they are plugged-in, they can be stealing a little bit of electricity. By unplugging devices when we are not using them, we can easily save energy! Look for devices that are plugged in and are already fully charged like the ones below, if you find other devices not listed, add them below! Take note of what you find for your Home Energy Report. Some examples you might see in your home may include:

- Tablet
- Smart phone
- Bluetooth speaker
- Laptop

Just like the devices above, we use appliances that don't need their batteries charged but are stealing energy by having phantom load! Are there appliances or tools in your home that you can unplug in between uses? Try to add more to the list and take note of what you find for your Home Energy Audit Report.

- Toaster
- Fan
- Vacuum cleaner
- Blow dryer
- Tools in the shed or garage
- Space heater

Phantom loads waste energy (small amounts over a long period of time). Other devices or appliances that are left on when they aren't being used are stealing way more electricity! Are there devices that sometimes get left on when you leave the room? There are probably lots of things that get left on when you're out of the room for more than 5 minutes. Here are some ideas to get you started but try to find more and take note of what you find for your Home Energy Audit Report.

- Laptop
- TV
- Stereo
- Video game console
- Lights / Lamps

3. Cooling

In the summer months some of us use air conditioners or Heat Pumps to keep our homes cool. Although these appliances make our lives very comfortable, they use a lot of electricity! Let's investigate how to use them to their best potential! Did you know that keeping the blinds shut on hot days can keep the hot air out? This means your family's heat pump or air conditioner does not need to work as hard. Check if your blinds are open or closed when the sun is shining and explain to your family members why it is important to use them to conserve energy.

Investigate if there are gaps between your exterior doors and windows and their frames. Although replacing doors and windows is expensive, maybe all they need is some new weatherstripping or waterproof caulking. You can tell if there is an air leak if any light is shining through the frame, if light can get through, so can air! Sometimes it is hard to tell if light is sneaking through, especially when it is not bright out.

Try placing a piece of paper in an open window or door, then close the window or door onto the paper and see if you are able to pull the paper out. If it slides out, you've got an air leak! Report back to an older family member and see if there is anything you can do to close the case of the leaky door.

Programmable or smart thermostats can keep your home running much more efficiently. If your thermostat is set to just one temperature it is working hard, not smart. Help your house out by programming your thermostat to be cooler when your family typically sleeps or when no one is in the house.

4. Hot Water

Most home's hot water tanks use electricity or natural gas. Depending on where we live, this could mean every time we use hot water in the dishwasher, doing a hot load of laundry or taking a long hot shower that more GHGs are produced?

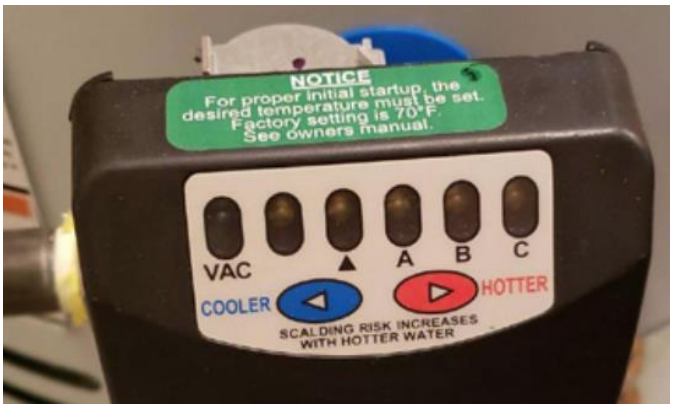
Did you know you do not need to take an ice-cold shower in order to save energy? Keep track of how long you typically have hot showers and see if you can shorten it a little bit.

With help from a parent, investigate whether your shower is equipped with a low flow shower head or

aerators on taps. Typical shower heads have different flow rates and you can buy one that has a flow rate of less than 2.5 gallons (or approximately 9.5 liters) per minute.

Aerators force air into the stream of water coming out of your tap, meaning you use less water. Water faucet aerators will constrict the flow of water coming out of your tap by forcing air into the stream of water. If you look at the water stream and see bubbles and it looks more white than clear, then you probably have an aerator.

If your family is going on vacation and depending on your hot water tank's capability, you can put your hot water tank on vacation mode so that it is not keeping your water hot when no one is home.



If you load a dishwasher to capacity, without pre rinsing dishes it will actually save a lot of energy! If you have the option, try using the dishwasher instead of hand washing or rinsing first and then putting into the dishwasher. Check with a parent or older sibling: do we do cold loads of laundry or hot? If you do need to do hot loads make sure you do a full load.

5. Old Appliances

Refrigerators, ovens and dishwashers are very expensive, but old appliances could be costing your family lots of money! Especially refrigerators that need to be plugged in, 24/7! Appliances and especially older ones are some of the biggest energy users in your home. Learning about appliances and their energy use is a good way to save energy and money. Explore Energy Star® (https://www.energystar.gov/products/appliances) rated appliances, especially if your family is thinking about replacing any appliances.

Some families have more than one refrigerator, and the secondary refrigerators are often older. Investigate with your family if upgrading or removing a refrigerator makes sense for your family to save money.

6. Energy Saving Habits

Remember how at the beginning we discovered you can still use all of your great devices at home, just more wisely. Here are a couple of tips for how we can reduce our individual impacts by doing things smarter:

• Ever just watch a movie or stream a show on your tablet or phone individually? Try to find TV shows to watch with the whole family!

• Similar to the last task, do you play a video game with friends online? By using two consoles to play one game you are using twice as much energy as necessary! See if you can visit a friend to play the same games but on the same console.

7. Saving Energy Saves Money

Check out your family's last few months of electricity bills. Has your family's energy use gone up or down in the last few months since returning to school? Explore reasons for what you discover and brainstorm ways you may be able to lower it!