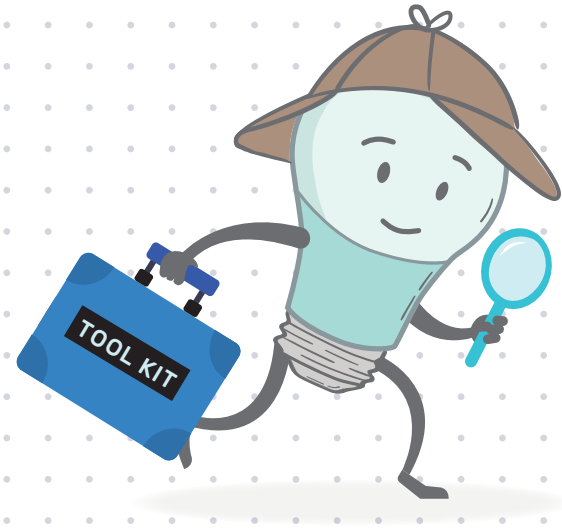


HOME ENERGY TOOL KIT

ACTIVITY BOOK



This book belongs to: _____

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Need Help?

If at any point you
require help while using
the Home Energy Tool
Kit, please contact the
County of Wellington:
emans@wellington.ca
519.832.2600 x2068

Let's Get Started

Thank you for borrowing the **Home Energy Tool Kit**. It provides tools, tests, and information to help you better understand your household energy use. The Home Energy Tool Kit, together with this activity book, will also help you identify ways to save energy and money, reduce your carbon footprint, and have a healthier, more comfortable home. By taking simple, affordable steps to understanding energy use and greening your home, you're helping to reduce the County of Wellington's impact on the environment.



Hi!

I'm Welly, the Energy Detective. I'm so glad you have joined me to reflect on the energy use in your home. Join me as we complete daily activities to learn more about your home. First, let's explore the Tool Kit!

TAKE NOTE

This activity book is not a certified home energy evaluation. The Home Energy Tool Kit is for personal use and the results are for personal understanding only. While it may lead you to take further action by having a certified home energy evaluation, the intention of this workbook is to learn more about your home's energy use and discover opportunities to conserve energy.



Inside the Tool Kit

The Home Energy Tool Kit is full of tools to help you understand your household energy use and identify ways to save energy, money, and to have a more comfortable and healthy home.



Infrared Thermometer

A temperature sensing device providing quick, contactless surface temperature readings.



Energy Metre

Measures the energy demand of a small electrical appliance.



Air Quality Detector

Measures the concentration of certain gases as well as temperature and humidity in your home.



Stopwatch

Used to keep track and measure time when performing certain tasks.



LED Lightbulb

LEDs use at least 75% less energy than incandescent lighting, and last up to 25 years based on average household use.



Light Metre

Measures the intensity of light.



Appliance Thermometer

Used to measure temperatures in your fridge or freezer.

Other items you may need:

- ☐ Bucket
- ☐ Flashlight
- ☐ Measuring cup
- ☐ Dust mask
- ☐ Gloves
- ☐ Measuring tape/ruler



CAUTION: Please consult the accompanying **User Manual** before using any of these tools. Use caution when the **Infrared Thermometer** laser pointer is on. Do not point the beam toward anyone's eye or allow the beam to strike the eye from a reflective surface. Do not connect an appliance with a load over 360W into the **Energy Metre**.

PERSONAL HOME REFLECTION

Health and Comfort

An energy efficient home can lead to a more comfortable, durable, and healthy home.

Inefficiencies in your home can show up in a lot of different ways. Let's begin by reflecting on **how you feel** in your home day to day. Check all the boxes below that apply to you. Keep these answers in mind as you work through the activities.



Do you notice:

- | | | |
|--|---|---|
| ☐ Some rooms are very cold, while others are toasty warm. | ☐ Cooking smells take a long time to go away. | ☐ Your refrigerator sometimes freezes your vegetables. |
| ☐ Your basement is cold and uncomfortable. | ☐ You tend to cover up smells with air fresheners and scented candles. | ☐ You regularly need to turn lights on during the day. |
| ☐ You smell mould or mildew as you walk in certain rooms. | ☐ You have scale build up on your faucets and appliances. | |
| ☐ Your skin and throat are dry in the winter. | ☐ Your hot water smells like sulfur or rotten eggs. | |
| ☐ Your clothes are staticky. | ☐ Your hot water is too hot to touch or not hot enough. | |
| ☐ In the summer, your towels take a long time to air dry. | ☐ There isn't enough hot water for a shower. | |

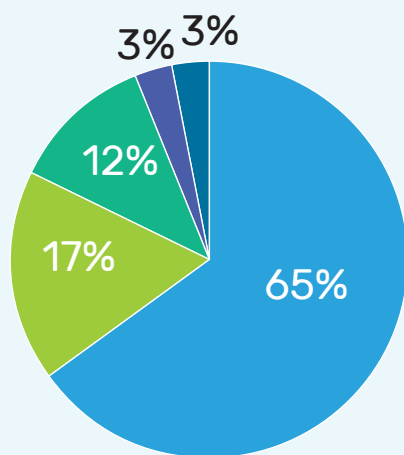
What are you waiting for?! **Grab the tool kit and let's go!**



House as a System

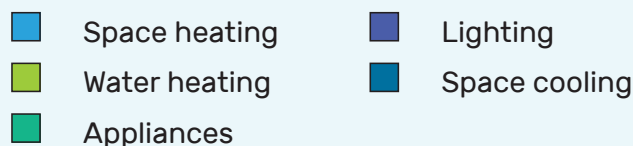
Your house operates as a multi-component system – sometimes energy retrofits to one component of your home can affect other components of your home in unintended ways.

You may choose to decrease drafts and reduce moisture damage by sealing cracks or installing new windows in your home. However, reducing air leakage could increase humidity if water vapor can't escape through proper vents. This can result in more condensation, mould growth, and moisture damage. Having the tools and knowledge to understand your house as a system will help guide your home energy retrofit process.

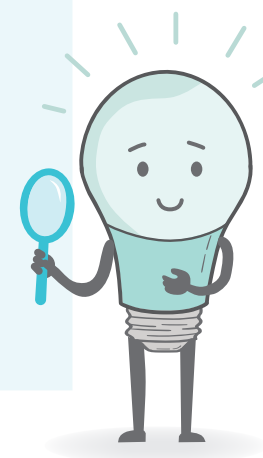


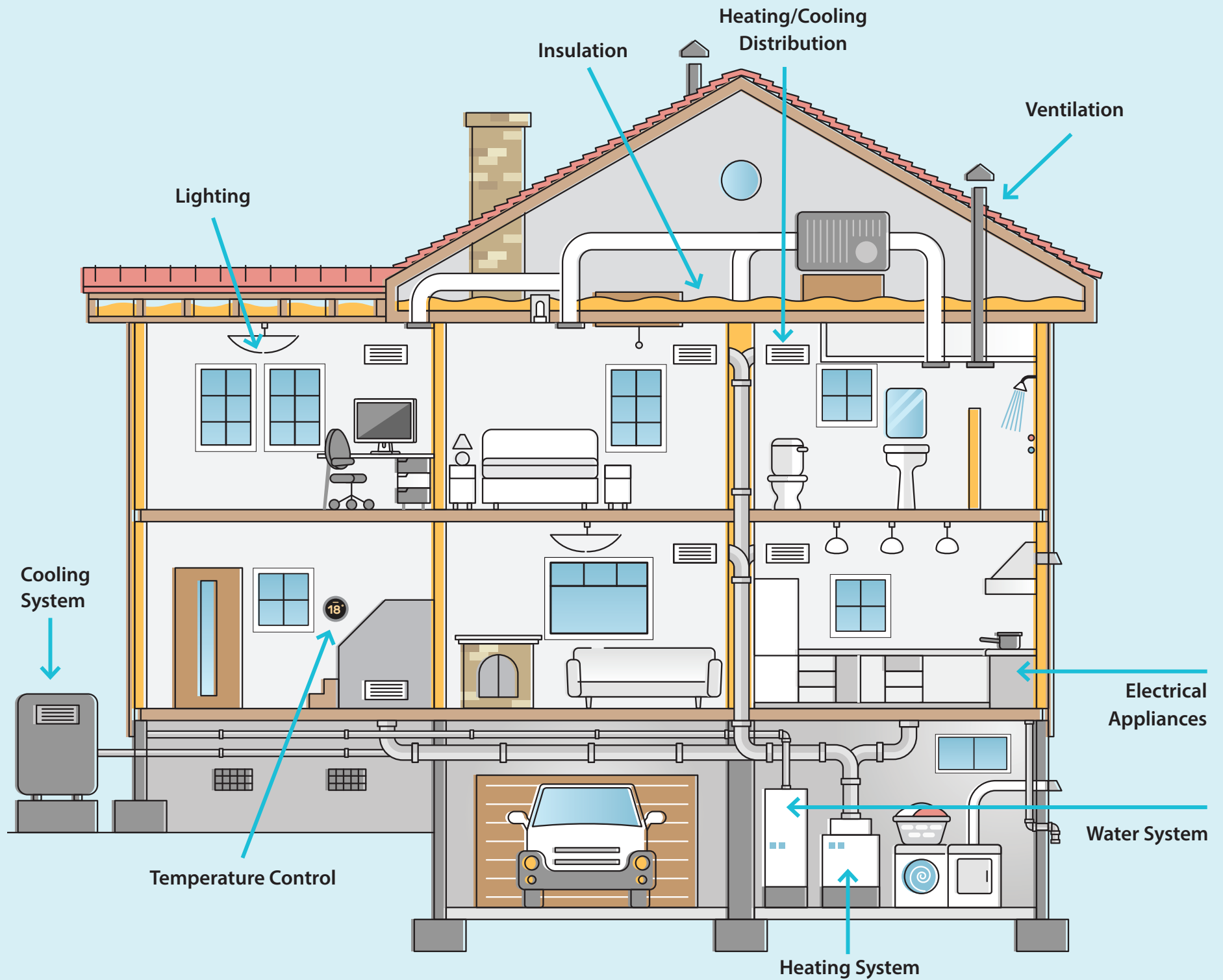
Do you know where your energy goes?

We use energy in our homes to moderate its temperature, warm our water, and run appliances and lighting. In Ontario, most of the energy we use in our homes goes to keeping us warm in the winter.



Source: NRCan Office of Energy Efficiency Comprehensive Energy Use Database. Tables Residential Sector, Ontario 2019





DAY ONE

Mechanical System

Your home's mechanical equipment works to provide a healthy and comfortable environment for you and your family.

Mechanical systems include all equipment used for heating, cooling, ventilation, and water heating. These systems add or remove heat, moisture and air from your home as needed. Most mechanical systems have a lifespan of 15-20 years, with newer models being more energy efficient, and can more effectively maintain temperature and humidity in your home.



Activity #1: System Inventory

 **Time:** 10 - 15 minutes

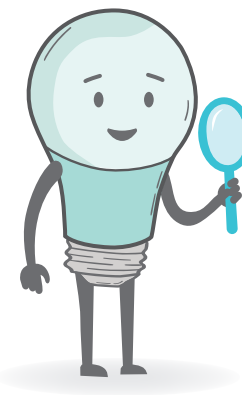
 **Equipment:** None

Goal: To create an inventory of your mechanical system and see how energy efficient your equipment is.

Instructions:

1. Locate the tags, labels, or user manuals for your equipment listed in the inventory table.
2. Check off the source of energy and age of each piece of equipment in the table provided.

Let's get more familiar with your **mechanical system!**



Type of Equipment		Type of Energy					Age of Equipment		
		Natural Gas	Propane	Electric	Oil	Other (specify)	0-10 years	10-15 years	15+ years
HEATING	Ductless mini-split								
	Central heat pump								
	Hybrid heating								
	Forced air furnace								
	Baseboard heaters								
	Boiler/radiators								
	Radiant heating								
COOLING	Fans								
	Window air conditioner								
	Central air conditioner/Heat pump								
	Ductless mini-split								
	Radiant cooling								
VENTILATION	Exhaust fans and direct vent (bathroom, kitchen, furnace, hot water)								
	Supply system-air intake								
	Heat Recovery Ventilator (HRV)								
	Energy Recovery Ventilator (ERV)								
WATER HEATING	Storage tank water heater								
	Solar water heater								
	Heat pump water heater								
	Tankless								
	Condensing								
WATER SOFTENER	Salt-based								
	Salt-free								
	Dual-tank								
	Reverse osmosis								



Let's take a look at your results.

Do you use gas for your furnace or water heater? Consider switching to electric. With increasing natural gas prices, electric equipment is cleaner for the environment, more efficient, and becoming more cost effective.

Is your unit more than 15 years old?

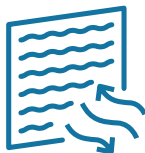
Consider replacing it with a newer, energy-efficient one.



Mechanical System Tips:



Inspect your heating and cooling equipment annually, or as recommended by the manufacturer.



If you have a forced-air furnace, set a reminder to **check your filters** monthly, and replace or clean as needed.



If you have a manual thermostat, consider getting a **Smart or Programmable thermostat**. You can programme it to turn your furnace or air conditioner up or down as needed.

ENERGY TYPES

Electricity in Ontario comes from clean sources and produces less emissions. It is the safest and cleanest source of energy.

Natural gas and propane produce the same amount of emissions.

Oil produces three times the emissions as natural gas and propane and almost one hundred times that of electricity.

NOTES:

[illegible]



DAY TWO

Windows and Doors

Properly installed, high performance windows and doors can prevent drafts in the winter and stop cooler air from escaping in the summer.

Windows and doors are part of your home's building envelope. A simple definition of a building envelope is the separation of the interior and exterior of a building. The envelope serves to protect the interior while facilitating climate control. A building envelope encompasses the entire exterior building system of your home, including external walls, windows and doors, attic, ceiling, as well as the foundation and basement.



Activity #1: Windows

 **Time:** 30-40 minutes

 **Equipment:** Infrared thermometer

Goal: Compare window temperature to the temperature of the room to find leaks or inefficiencies.

Instructions:

1. Stand two metres or closer from target. Point the **infrared thermometer** laser at target to read its temperature.
2. First take a reading of the middle of the windows glass, then the floor or an object in the middle of the room.
3. Record temperatures in the table.
4. Indicate how many layers of glass are in your windows.
5. Record any observations about the condition of the windows in the notes column.



Use caution when the Laser pointer is on. **Do not** point the beam toward anyone's eye or allow the beam to strike the eye from a reflective surface.

Room	Window Direction (north, south, east, west)	Window Panes			Temperature		Temperature difference between window and room			Notes
		Single	Double	Triple	At Window	Middle of Room	1-2°C	3-5°C	5°C+	
Example: Living Room Bay	south		✓		19°	21°	✓			Condensation in corners



Activity #2: External Doors

Time: 15-20 minutes

Equipment: Infrared thermometer

Goal: Compare the inside and outside temperature of your external doors to the temperature of the room to find leaks or inefficiencies.

Instructions:

1. Stand two metres or closer from target. Point the **infrared thermometer** laser at target to read its temperature.
2. Record the temperature in the center of the door from the **inside**, then the **outside** of the door, then the floor or an object in the middle of the room.
3. Record observations about the condition of the doors as you go.

External Door Location	Direction of Door (north, south, east, west)	Door Glass Panes (if any)			Temperature			Temperature difference between inside door and room			ENERGY STAR® certified
		Single	Double	Triple	Middle of Room	Door - Inside	Door - Outside	1-2°C	3-5°C	5°C+	
Example: Front Door	South		✓		21.5°	17°	5°		✓		✓



Let's take a look at your results.

Do you notice more than 5 degrees temperature difference between the window and middle of the room?

Your window may need insulating or replacing.

How many panes of glass do each of your windows and doors have? The fewer panes of glass, the less protection from the heat or cold causing condensation or ice buildup between panes or on the interior of your windows.

Do you have ENERGY STAR® certified windows?

Energy Star certified windows are 20% more energy efficient than standard windows and doors.

Do you notice mould or torn/brittle rubber around your window or door trim? They may need replacing.



Up to **13% of your home's total heating and cooling** could be escaping through the trim around your windows and doors.



Windows and Doors Tips:

Use curtains to your advantage:



Use **heavy fabrics** or layer curtains over windows to help keep out drafts in the Winter.



On **hot summer days**, keep window coverings closed to reduce the need for air conditioning.



On **sunny winter days**, open window coverings to let the sun warm up your space. Once the sun sets, close them to retain heat.

Inexpensive ways to insulate:



Draftproof or weatherstrip around window frames to prevent air loss.



Seal your windows with inexpensive plastic film.



Place fabric tubes or **“draft snakes”** under a windowsill or door to prevent cold air from sneaking in.

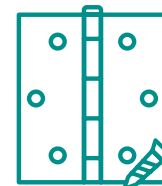
Basic maintenance:



Clean and polish **window and door rails** for smoother operation and to reduce wear.



Clean windows regularly to allow for more heat from the sun into your home.



Ensure all **hinges and latches** are working properly.

NOTES:

[illegible]



DAY THREE

Insulation

Insulation limits the heat transfer between inside and outside, which makes it key to increasing comfort in any home. Insulation acts like a cozy blanket in the winter keeping the warm air inside.

With proper ventilation and insulation, you can save money on energy bills and keep your home comfortable regardless of the weather. Your home has three main areas that need to be insulated: attic/roof, external walls including windows and doors, and basement.

While insulation is key, **air sealing**, is equally so. Here are some suggested areas to check for air leaks and consider sealing around your home:

- door and window frames
- around dryer and furnace vents
- around outdoor faucet
- the attic hatch
- around your plumbing stack vent
- recessed lights

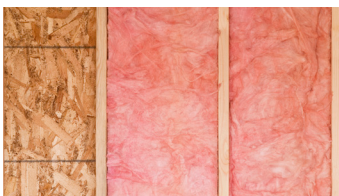
Where exterior walls meet the foundation can also be a significant source of air leaks. Use butyl rubber caulking or an acoustical sealant to fill the gaps and caulk around the joists.

SELF CHECK

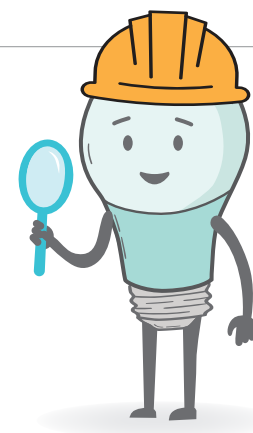
Do you have signs of poor insulation?

- ☐ High heating and cooling bills
- ☐ Poor heat distribution
- ☐ Cold interior walls and floor
- ☐ A roof that thaws quickly and the formation of icicles
- ☐ Snow melting around the exterior walls of the house.
- ☐ High humidity and mould
- ☐ Animal and insect infestations
- ☐ Interior pipes that freeze in the winter

Insulation Basics: First let's take a closer look at some common types of insulation.

Insulation Type	Description	Application
	Loose-fill Cellulose Made from wastepaper shredded into small, fibrous particles.	Great to fill in enclosed walls, attics, and under floors. These loose insulation types can easily conform around obstructions such as wires and ducts.
	Spray Foam Sprayed in place, this foam is made from an inert polymer.	
	Fiberglass Batts A pre-cut piece of insulation that is made of extremely fine fibres of glass.	Insulation Batts are designed to fit easily between unfinished wall studs and rafters and can be used in walls, floors, ceilings, attics, and crawl spaces.
	Stone Wool Batting Molten rock or steel slag is melted, processed, and then spun into wool.	

R-VALUE As you explore insulation options, you'll want to keep an eye on the R-value which tells you how effective the insulation is. R-value is measured by thickness and how effectively it reduces heat transfer. The higher the R-value, the less the heat loss (and better energy savings too).





Activity #1: Attic or Ceiling Insulation

Time: 10 - 15 minutes

Equipment: Infrared thermometer, dust mask, long sleeve and pants, gloves, measuring tape/ruler



Use caution when the Laser pointer is on. **Do not** point the beam toward anyone's eye or allow the beam to strike the eye from a reflective surface.

Goal: Compare the ceiling temperature to the room temperature to ensure you have proper insulation.

Instructions:

1. If you cannot access the attic, skip to **STEP 3**. Cover exposed skin to protect against insulation. Wear a dust mask to reduce exposure to allergens and other debris.
2. Using the ruler, measure the thickness of insulation in your attic or ceiling and record it in the table.
3. Using the **infrared thermometer**, take a reading of the attic ceiling or roof then the floor or an object in the middle of the room. Stand two metres or closer from target.
4. Record temperatures in the table.
5. Record any observations in the notes column below.

Attic/Ceiling	Insulation	Temperature		Temperature Difference		Notes
	Number of Inches	Ceiling	Room	<5°C	>5°C	
Example: Attic	13"	21.5°	17°		✓	



Activity #2: External Wall and Basement Insulation

 **Time:** 20 - 30 minutes

 **Equipment:** Infrared thermometer

Goal: Compare the inside temperature of your external walls (walls that face the outdoors, including basement) to the room temperature to ensure you have proper insulation.

Instructions:

1. Using the **infrared thermometer**, measure the temperature of the external and basement walls, then the floor or an object in the middle of the room. Point the laser at target standing two metres or closer.
2. Record the temperatures in the table.
3. If you know the thickness of the wall insulation record it in the table below.
4. Record any observation in the notes column.

Wall (Include which floor and room)	Insulation	Temperature		Temperature Difference		Notes
	Number of Inches	Wall	Room	< 5°C	> 5°C	
Example: Rec Room, basement	3.5"	16°	19°	✓		



Let's take a look at your results.

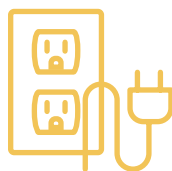
Do you notice more than 5 degrees difference between the external walls or ceilings and the middle of the room?
You likely need more or better quality insulation.

How thick is your insulation? See chart below for suggested insulation thicknesses by type:

Suggested Insulation Thickness:				
	Loose-fill Cellulose	Spray Foam	Fiberglass Batts	Stone Wool Batting
Roof	15 inches	12 inches	19 inches	13 inches
External wall above ground	7 inches	7 inches	9 inches	6 inches
Basement walls	6 inches	6 inches	8 inches	5 inches



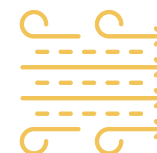
Insulation Tips:



Use **insulated** electrical outlet boxes with proper sealing to prevent air leaks.



Close your fireplace damper.
An open flue damper sucks warm air out of your home. If you no longer burn wood, consider sealing it.



When air sealing, ensure **proper venting** to allow for necessary air exchange and avoid trapping humidity.

Did you know basements can account for about **20% of a home's heat loss**? Using quality insulation can make all the difference to the comfort of your basement.

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DAY FOUR

Humidity

Feeling healthy and comfortable in your home can be dependent on your home's humidity levels.

Temperature and humidity outside of the ideal range can cause health concerns and reduce the durability of your home.

- **High humidity** is known to cause rust and mould but can also trigger health issue like head colds and asthma flare-ups.
- **Low humidity** may cause your home to feel dry and could aggravate allergies and create static electricity.



Activity #1: Temperature and Humidity

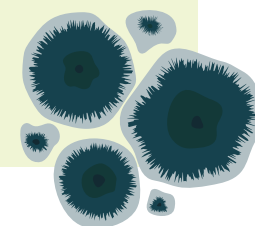
 **Time:** 45-60 minutes

 **Equipment:** Air quality detector, flashlight

Goal: To ensure your home's humidity levels and temperature are adequate.

Instructions:

1. Using the **air quality detector**, measure the temperature and humidity in each room. The detector should be placed in each room for a minimum of 15 minutes.
2. **Smell for mould:** Is there a damp, musty odour (that might smell like old books) coming from your floors or walls?
3. **Look for mould:** Using your flashlight, check the corners of your walls, windowsills, baseboards, mechanical room, and attic for signs of mould.
4. Record the findings in the table.



Room	Temperature (°C)		Humidity Level (RH)		Signs of Mould
					Does it smell musty? Can you see signs of mould?
Example	21°C		37% RH		I see bubbling paint in corner
Living Room					
Dining Room					
Bedroom 1					
Bedroom 2					
Bedroom 3					
Recreation Room					
	BEFORE Cooking	AFTER Cooking	BEFORE Cooking	AFTER Cooking	
Kitchen					
	BEFORE Shower	AFTER Shower	BEFORE Shower	AFTER Shower	
Bathroom 1					
Bathroom 2					
	IN USE	NOT IN USE	IN USE	NOT IN USE	
Laundry Room					



Let's take a look at your results.

How are the temperature and humidity levels in your home? The ideal temperature for living areas and bedrooms is 18°C or 20-21°C for households with babies and elders. The ideal humidity level is between 40% to 60% (RH).

Do you fall outside the recommended humidity range? Typically, air conditioners will remove humidity in the summer and furnaces will dry the air in the winter, but you may need a separate humidifier unit in the winter or dehumidifier in the summer.



MOULD SPECIMENS

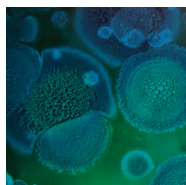


Fig. 1

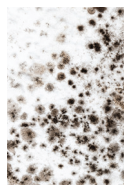
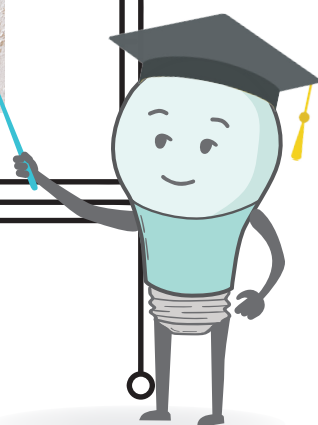


Fig. 2



Fig. 3



Typically, **mould** will appear as black spots growing in damp areas, but it can also be green, brown, or purple. It can also show up as bubbling or distorted paint or wallpaper.

Tips for Managing Humidity:



Turn on your exhaust fan while cooking and showering.



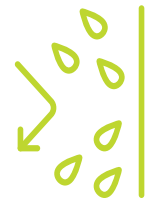
Look into different types of **house plants**. Depending on your needs, some plants can boost humidity levels while others may absorb moisture in the air.



Take cooler showers. Even a few degrees lower can reduce how much steam your shower emits which lowers humidity levels.



Check that your dryer is **properly vented**.



You may need to install a **vapour barrier** if moisture is a concern. Vapour barriers are sheets of plastic or other material placed on one side of insulation. This barrier is meant to keep moisture from getting to the insulation.

NOTES:



DAY FIVE

Air Quality

We spend an average of 90% of our time indoors, and our homes may contain indoor air pollutants that could be hazardous to our family's health.

Indoor air pollutants range from minor irritants such as dust and animal dander, to major irritants such as mould and chemical vapours from building materials and furnishings. These pollutants can increase with inadequate ventilation, high temperature and humidity levels. As a result, asthma, allergies, and other respiratory illnesses can be caused by hazardous substances in the air.

These are the three most common indoor gases:

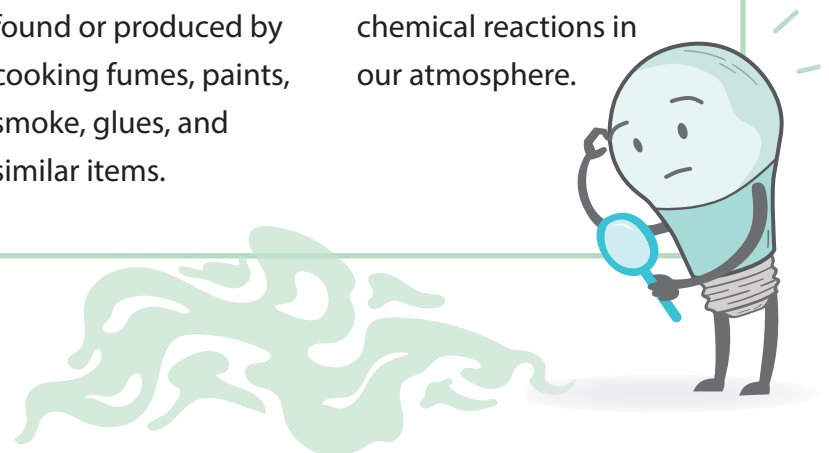
HCHO (or Formaldehyde)

comes from fuel-burning appliances, furniture, some paints, and cigarette smoke.

Total Volatile Organic Compounds (or TVOCs)

are dangerous gases found or produced by cooking fumes, paints, smoke, glues, and similar items.

Pm2.5 are tiny particles produced mainly by factories, cars, and chemical reactions in our atmosphere.





Activity #1: Indoor Air Quality

 **Time:** 45-60 minutes

 **Equipment:** Air quality detector

Goal: To ensure your air quality is within a safe range.

Instructions:

1. Use the **air quality detector** to measure the levels of HCHO, Pm2.5 and TVOC in each room.
2. Turn detector on and place in the centre of each room (it may take a few minutes to activate).
3. Leave the detector in each room for a minimum of 15 minutes.
4. Record your findings in the table below and compare results to the charts on the following page.

Room	HCHO	Pm2.5	TVOC
Example: Living room	0.038	0	0.048



Let's take a look at your results.

Does your home fall within the safe range of indoor gases?

Filtering the air can reduce some indoor air pollutants, but it is rarely effective on its own. Improving ventilation and reducing contaminants at the source should be top priority.

Air quality detector results:

HCHO (mg/m ³)	
Less than 49 mg/m ³	low
50 to 59 mg/m ³	normal
exceeding 60 mg/m ³	bad
above 123 mg/m ³	serious

Pm2.5 (µg/m ³)	
< 35	excellent
35-115	good
115-150	normal
> 150	bad

TVOC (mg/m ³)	
< 0.3	low
0.3 to 0.5	acceptable
0.5 to 1	marginal
1 to 3	high



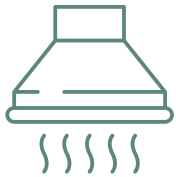
For more information visit: www.canada.ca/health-canada

Check out the tips on the next page for some things you can do to mitigate these gases in your home.

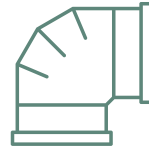
NOTES:



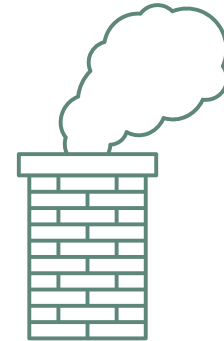
Air Quality Tips:



Use your **range hood** to reduce your exposure to pollutants from your gas stove.

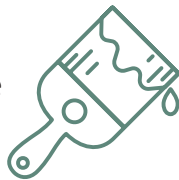


Make sure your furnace vent outside is **unobstructed**.

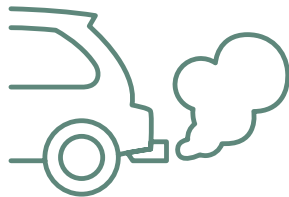


Make sure your **chimney is not blocked** and is cleaned once a year.

Make sure you open windows and doors while **painting or varnishing**.



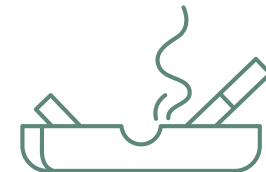
Keep fresh air circulated in your home by **opening windows** (when seasonally appropriate).



Avoid idling your car or any gas-powered equipment in the garage, even if the door is open.



Reduce the use of scented products like candles, air fresheners, fabric softener, dryer sheets, etc.



Prohibit smoking indoors.

Do not store gasoline and other chemicals in your attached garage. Use a shed instead.





DAY SIX

Water

We pay for water in many ways. We pay for the quantity consumed, we pay to heat it, and we pay for it environmentally by depleting our natural resources.

The average Canadian uses around 220 litres of water at home per day, making Canada one of the world's largest water consumers. Almost one third of Canada's domestic water use goes toward bathing. By being mindful and educated on how you consume water, you can reduce the amount of water and energy you use and save money.



Activity #1: Water Consumption

 **Time:** 10-15 minutes

 **Equipment:** Stopwatch, bucket, measuring cup

Goal: To calculate the amount of water you are using in a day while showering, washing dishes, etc.

Instructions:

1. Turn on the tap to full capacity.
2. Start the **stopwatch** as you put the bucket under the water. Collect all the water coming out of the shower head or sink for ten seconds.
3. Measure the amount of water in litres using the measuring cup.
4. Multiply the number of litres by 6 to give you a flow rate per minute. **Example:** If you collected two litres in ten seconds, the flow rate is $2 \text{ litres} \times 6 = 12 \text{ litres per minute}$.
5. Time your showers/activities and fill in the rest of the table based on your average family use.
6. Calculate your daily water use.

SHOWERS

Name of Family Member	Number of Showers per day	Shower Length (in minutes)	Shower Flow Rate	Daily Water Consumption (shower length x flow rate)
Example: Welly	1	7 min	7L / min	$7 \times 7 = 49$ L/day

SINKS

Activity (i.e. washing dishes, brushing teeth)	Number of times per day	Length (in minutes)	Sink Flow Rate	Daily Water Consumption (length of use x flow rate)
Total water consumption (add totals)				



Let's take a look at your results.

Is your shower flow rate higher than 15 litres per minute?

According to Hydro One, an energy-efficient, low-flow showerhead reduces the water flow 40 and 60%. That can save you more than 28,000 litres of heated water in a year.

Is your tap flow rate higher than 6 litres per minute?

Consider installing an aerator, which screws onto your faucet head, delivering a stream of both water and air. If you already have one, ensure it's clean.

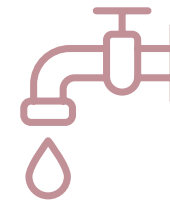


Tips to Consider:

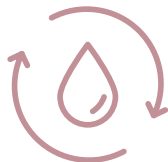
Check that your **water heater temperature** is set hot enough to kill bacteria, but not so hot that you could burn yourself. Ideally between 49°C and 54°C.



Wash clothes with **cold water**.



Be mindful of how long you run the shower by setting a timer each time.

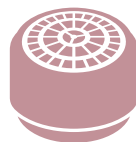


Only run the dishwasher when full. A half-empty dishwasher load uses the same amount of energy and hot water as a fully loaded one.

Turn off the tap while you are lathering with soap, shaving, brushing your teeth, or washing the dishes.



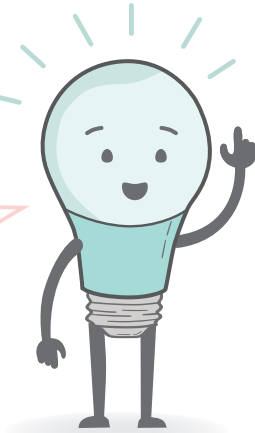
Turn the temperature down. Taking your shower a couple degrees cooler can make a big difference on your energy bill.



Install an **aerator** and **low-flow** showerhead.

A worksheet with 10 horizontal lines for writing. In the bottom right corner, there is a cartoon lightbulb character with a smiling face, arms, and legs. The lightbulb is yellow with a brown base. It has a speech bubble coming from it that says: "Did you know that **water heaters** use around **17%** of your whole home energy usage?"

Did you know that **water heaters** use around **17%** of your whole home energy usage?





DAY SEVEN

Appliances and Electronics

Household appliances and electronics make life easier, but the cost of operating them accounts for more than 12% of your electricity bill.

Some appliances run constantly and making small changes can help you save money. Energy-efficient appliances can save a household hundreds of dollars a year on utility bills.



Activity #1: Large Appliances

 **Time:** 5 - 10 minutes

 **Equipment:** None

Goal: To determine how much energy your large appliances use in your home.

Instructions:

1. Locate the **EnerGuide** labels on your major appliances such as fridge, stove, dishwasher, washer, dryer, etc. and record the yearly consumption in the table on page 37.



Can't find an EnerGuide label?

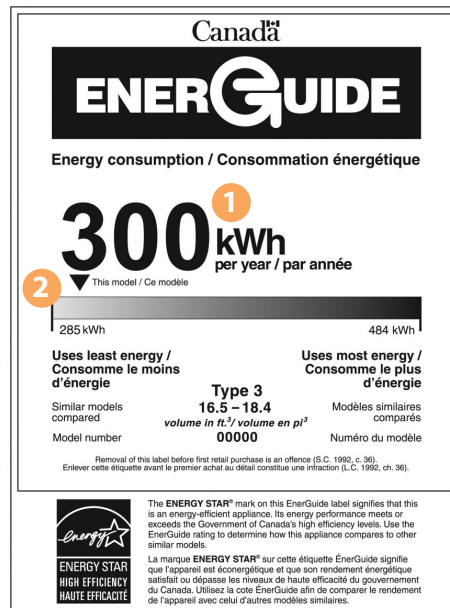
Consult your appliances manufacturers manual or website.

WARNING:

DO NOT use the energy metre on large appliances with a load over 360W.

Large Appliance	Energy Consumption (kWh)	Ideal Energy Consumption (kWh)
Fridge		300 kWh per year
Electric range		452 KWh per year
Washing machine		190 kWh per year
Dryer		800 kWh per year
Freezer		660 kWh per year
Dishwasher		266 KWh per year

Source: Government of Canada, Appliances - EnerGuide



EnerGuide Explained

All new major appliances carry an EnerGuide label to show the appliance's energy consumption. It tells you how many kilowatt hours (kWh) of energy you can expect the model to use each year.

- 1 This number is the expected annual energy consumption of the appliance in kWh. The lower the number, the higher the savings.
- 2 The energy consumption indicator shows you how this model compares to others in its class. The bar below the indicator gives the energy-efficiency range for the class. The further to the left, the better.





Activity #2: Small Appliances and Electronics

Time: 10 - 20 minutes

Equipment: Energy metre

Goal: To determine how much energy your small appliances and devices use in your home.

1. Plug the **energy metre** into a standard wall outlet.
2. Plug any device into the **energy metre** and turn it on.
3. Press the **FUNCTION** button until the screen reads **0.000 KWh**.
4. Leave the appliance plugged in for 3 minutes to get an accurate reading.
5. Record the reading in the table below and compare with the ideal consumption.

NOTE: If you are testing a heating appliance like kettle, hair dryer, or iron wait until the appliance reaches the maximum heat.

Small Appliance	Energy Consumption (kWh)	Ideal Energy Consumption (kWh)
Coffee maker		1.4 kWh
Kettle		3 kWh
Phone charger		0.007 KWh
Computer monitor		0.03 kWh
Hair dryer		3 kWh
Iron		1.5 kWh
Two slice toaster		1 kWh
Air Fryer		1.5 kWh

WARNING: DO NOT use the energy metre on large appliances with a load over 360W.



For more information, try out the energy calculator at: www.energycalculator.ca



Activity #3: Fridge and Freezer

Time: 15-20 minutes

Equipment: Appliance thermometer

Goal: To ensure your fridge and freezer are operating at an ideal temperature.

Instructions:

1. Record the temperature that is set on your fridge's internal dial – if it comes with one – in the table below.
2. Put the **appliance thermometer** in a visible spot inside the fridge for 15 minutes.
3. After 15 minutes, record the temperature in the table.
4. Check the temperature in different places in the fridge (door, upper shelf, middle shelf, etc.)
5. Repeat steps 1 to 4 above for your freezer.

	Temperature Dial	Recorded Temperature	Ideal Temperature
Fridge			3°C
Freezer			-18°C



Fridge and Freezer Tips:

Check the seal. Is your fridge airtight? Check by closing a slip of paper in the door seal. If it falls out, the door should be adjusted, or the seal replaced.

Regular maintenance. Clean the condenser coil on your fridge regularly with a vacuum and gentle brush attachment. You may find the coil underneath or behind the fridge, possibly hidden behind an access panel.

Keep it cool. Place your fridge and freezer in a cool spot, away from direct sunlight, the stove, and the dishwasher.

Give them space. Leave 5-7 cm between the wall and fridge for air to circulate.

Don't crowd. An overcrowded fridge works harder, while freezers work best two-thirds full.



Let's take a look at your results.

Does your fridge or freezer's recorded temperature match the temperature dial inside the unit? If not, consider having someone service the appliance.

Does your recorded temperature meet the ideal temperature? If not, consider upgrading to a newer, energy efficient model.

Is your appliance at the end of its life? The average life cycle of an appliance is between **11 to 13 years**.



Tips to Consider:



Skip preheating the oven.

Unless you are baking pies or cookies, it's not necessary to preheat the oven.



Unplug

items when not in use.



Choose '**sensor dry**' on your dryer instead of timed cycles to avoid over-drying clothes and **save energy**.



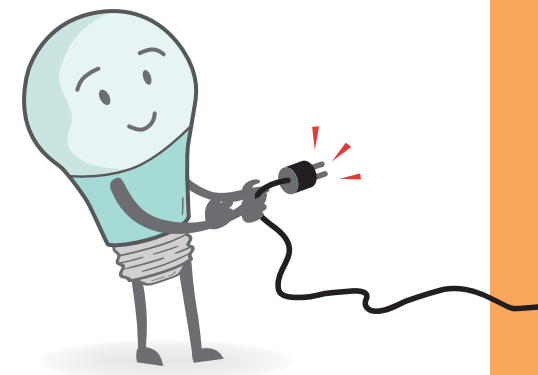
Consider a **Smart Home Energy Management System**. They help manage and optimize the energy usage in a home in real-time. They can do things like turn off devices when they're not in use, help conserve energy, even track the weather and adjust your thermostat accordingly.



Use the **air-dry** function on your dishwasher.

NOTES:

Did you know? Most electronic devices drain energy if they are plugged in, even when they're not on. This is called phantom power and can account for up to **10 percent** of a home's energy use. Unplugging your electronics can **save you up to \$150 a year!**



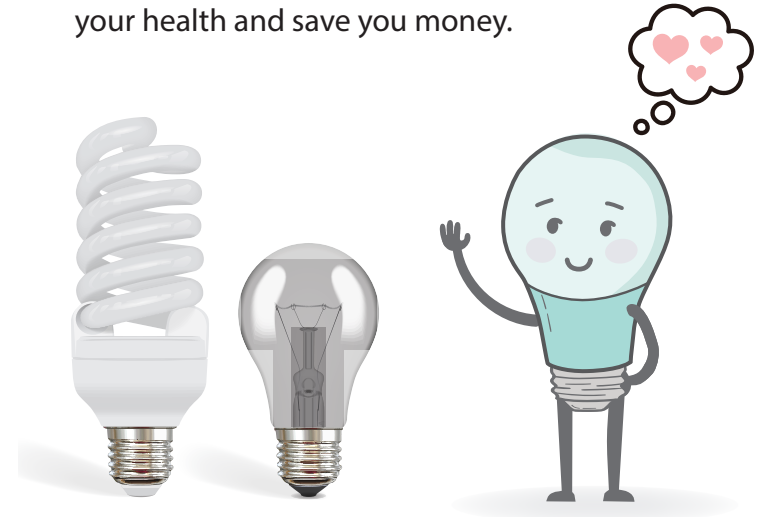


8 DAY EIGHT

Lighting

Lighting is important to both our mental and physical health; it can impact our mood, ability to concentrate, and even our sleep. Improving your home's lighting is one way you can improve your home comfort.

Energy used for lighting accounts for about 10% of your electric bill. Finding the best ways to utilize your home's lighting systems and natural light will be better for your health and save you money.





Activity #1: Lighting

 **Time:** 20-30 minutes

 **Equipment:** Light metre

Goal: To ensure you have sufficient light based on the tasks/activity per

Instructions:

1. Using the **light metre**, measure the lux (amount of light) in each room of your home.
2. Press the **Lux/FC** button.
3. Record your results in the table below and see how you compare.

Activity	My Lux	Insufficient light	Ideal Lux	Too much light
Entertaining and dining		<100	100 - 220	>220
Casual reading, laundry, general lighting, getting ready		<220	220 - 550	>550
Office work		<320	320 - 640	>640
Food preparation, prolonged reading or studying, workshop activities, daily tasks		<550	550 - 1,100	>1,100
Hobbies involving fine detail		<1,100	1,100 - 2,200	>2,200



Activity #2: Light Bulbs

Time: 15-20 minutes

Equipment: LED light bulb, energy metre

Goal: To compare the energy efficient LED light bulb's consumption to your home's bulbs.

NOTE: Don't forget to return the LED bulb to the Energy Kit when you are finished.

Instructions:

1. Plug the **energy metre** into your outlet.
2. Plug a lamp into the **energy metre** and turn it on.
3. Record the energy consumption in the table.
4. Turn the lamp off and replace your light bulb with the **LED bulb** in the energy kit. (Careful, incandescent bulbs can heat up quickly!)
5. Turn the lamp on again and record the energy consumption.
6. Repeat these steps with different types of light bulbs in your home to see which one uses the least amount of energy.

Lamp/Bulb	Bulb Type (e.g. LED, fluorescent, incandescent, compact fluorescent, halogen)	Home Bulb Consumption (KWh)	LED Consumption (KWh)
Example: Living room lamp	Halogen (300 W)		0.3 kWh per hour



Let's take a look at your results.

Do you have insufficient lux in certain rooms?

Adjust the warmth, wattage or number of lights in your home based on your results.

Do your home's current light bulbs consume a lot of energy?

Consider replacing them with LEDs (Light-Emitting Diodes).

An energy-efficient 12-watt LED bulb uses 75-80% less energy than a 60-watt traditional bulb, but provides the same level of light.

Although the upfront cost can be higher than incandescent bulbs, LEDs are more economical for your energy consumption and can last up to 25 years.



Consider Colour Temperature

The colour of your lighting can change the mood and feel of your home depending on the application. Most LED light bulbs are offered in a variety of colour temperatures measured in units of Kelvin (K).

Warm Light

(2200-2700K)

Best for areas with low-light such as bedrooms and living rooms – similar to an incandescent bulb.

Soft White

(3000-3500K)

Light that's crisper, similar to halogen lamps.

Bright White

(4000-4500K)

Ideal in kitchens, offices, workspaces, and vanities where detail-oriented tasks are performed.

Cool White

(5000K and up)

Mostly used in commercial and hospital settings.



Tips to Consider:



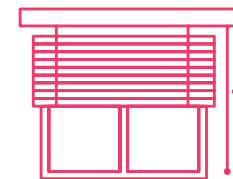
Dust and clean bulbs regularly.



Use **LED** light bulbs.



Use **task lighting** instead of ceiling lights

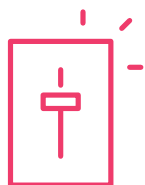


Use as much natural light as possible.

Horizontal blinds tend to block out more light than expected, open them wide for more natural light or replace with other window coverings.



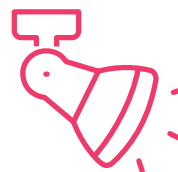
Turn off unnecessary lights.



Use **light dimmers** to conserve energy.



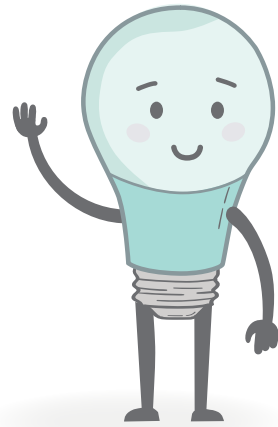
Use **timers** for holiday lights.



Use outdoor lights with **motion detectors**.

NOTES:

[illegible]



Bye for now! I'm
off to find more
energy savings!

That's a Wrap!

Thanks for taking the time to investigate your home's energy use with the Home Energy Tool Kit.

We hope you've learned more about your home along the way and identified ways to save energy and money while creating an overall healthier home environment. If you want more information, check out our website or get in touch with an energy auditor to take a deeper dive into your home's performance.

 www.wellington.ca/energykit



LOOKING FOR MORE?

Check out these energy efficiency resources for potential rebates:

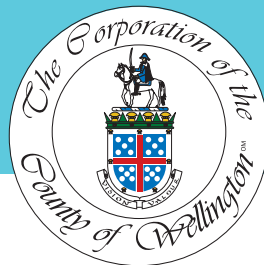
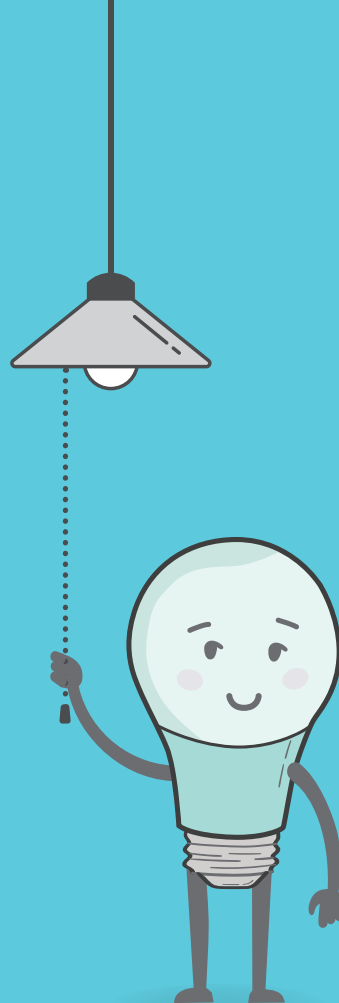
Canada Greener Homes Grant
www.nrcan.gc.ca

**Enbridge Home
Winterproofing Program**
www.enbridgegas.com

Energy Affordability Program
www.saveonenergy.ca

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Alternate formats available upon request.
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