

THE HOME ENERGY CHECK KIT

Small missions for grander comfort and efficiency



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WELCOME TO THE HOME ENERGY CHECK KIT



Think of this as a quick, hands-on checkup for your home—an easy way to see what's running smoothly, spot areas for improvement and uncover simple opportunities to boost comfort and save energy.

This kit isn't a professional energy audit; it's a guided self-assessment to help you make informed decisions about energy improvements in your home. If you encounter any safety issues—like strong gas smells, significant mould or persistent Carbon Monoxide alarms—pause immediately and contact a qualified professional.

Important Safety Disclaimer & Terms of Use

The City provides this kit for educational and informational purposes only. It does not constitute a professional energy audit (such as an EnerGuide Home Evaluation), a safety inspection or a code compliance check. By using this kit, you agree to do so at your own risk. The City assumes no liability for any personal injury, property damage or financial loss resulting from the use of these tools or the recommendations in this guide. Do not attempt any activity that you are not physically comfortable performing. Tools are provided "as-is" and are not calibrated to life-safety diagnostic standards. Kits are available only to borrowers 18 years of age or older. The borrower is responsible for the return of the kit and for the replacement cost of the missing or damaged items, as set out in the Borrower Agreement and its replacement cost schedule.

Emergency Contacts

If you encounter any immediate safety issues, stop immediately, evacuate the area if necessary and contact the appropriate authority:



Strong Gas Smells:

Evacuate and call your local gas utility provider immediately.



Carbon Monoxide (CO) Alarms:

Evacuate and call 911.



Heavy Mould:

Contact Health Link 811 or a licensed professional.



Major Electrical Concerns:

Contact a licensed electrician.

Do not attempt to remediate these issues yourself.

GLOSSARY



Carbon Monoxide (CO)

A dangerous colourless gas from burning fuels.



Heat Recovery Ventilators (HRVs) & Energy Recovery Ventilators (ERVs)

Ventilators that bring in fresh air while recovering heat from outgoing air.



Indoor Air Quality (IAQ)

How healthy and comfortable your air is (moisture, odours, particles, gases).



Infrared (IR)

Invisible heat energy. IR cameras "see" this heat to find hidden building issues like air leaks, moisture or missing insulation.



Phantom Load / Standby Power

Electricity used by devices when "off" but plugged in.



PM2.5

Airborne particles 2.5 um or smaller from cooking, smoke and pollution.



Relative Humidity (RH)

% of water vapour in the air vs. maximum at that temperature.



Rim Joist & Sill Plate

Floor or foundation framing edges; often leak air if unsealed.



Sash

The window's movable frame that holds the glass.



Thermal Bridge

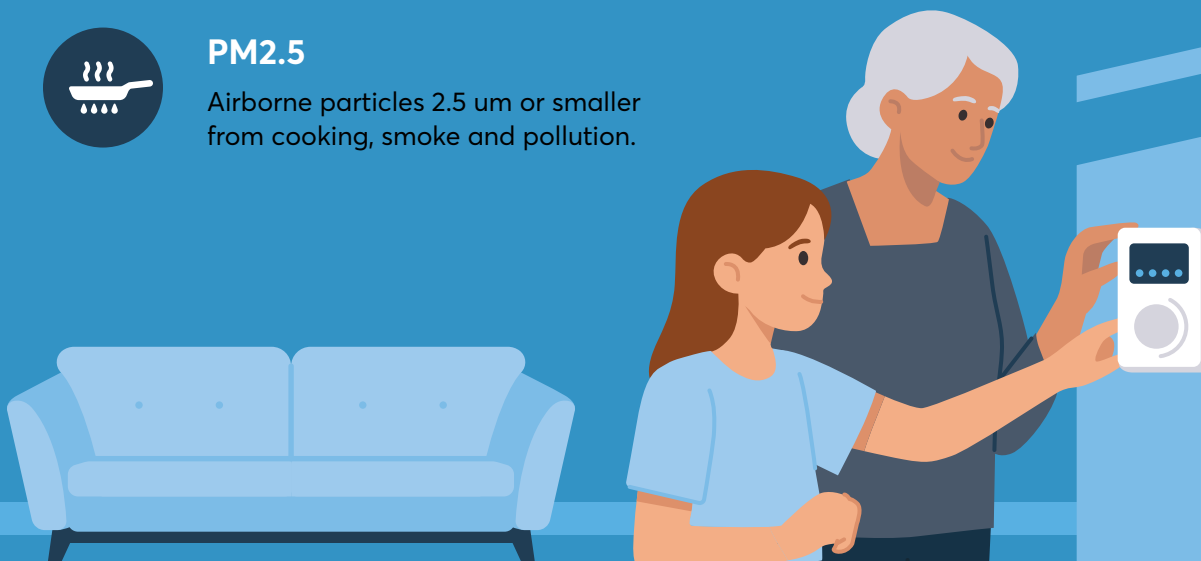
Paths where heat escapes easily through insulation in metal or wood framing.



VOCs

Gases from products like paints, furniture and cleaners.

These subjects are highlighted throughout the booklet for easy reference.



MISSIONS AT A GLANCE



Mission 1

Comfort & Health Scan

Walk-through to note chilly, stuffy, damp or drafty spots. Measure room temperature and **RH**. Do a quick surface-temperature check; optional lighting check for key tasks.



Mission 5

Moisture & Humidity Balance

Monitor **RH** during showers and cooking to see if bathrooms and the kitchen clear steam quickly. Look for condensation or musty areas. Aim to keep **RH** in a comfortable range.



Mission 2

Mechanical Systems Check

Heat, Cooling & Ventilation

Review thermostat schedules and filter condition and fit, and confirm that bathroom fans and the kitchen range hood are moving air.



Mission 6

Indoor Air Quality (IAQ)

See how cooking, cleaning or opening a window changes readings for **PM2.5** and **VOCs**. Prevent garage air and exhaust fumes from leaking into the house.



Mission 3

Windows, Doors & Drafts

Use a tissue test to find air leaks. Use the **IR** thermometer to spot cold frames and glass. Ensure locks and latches align and that **sashes** close tightly.



Mission 7

Water & Appliances

Measure shower and tap flow, check hot-water temperature for comfort and safety, spot **standby** electricity use with the plug-in meter and verify fridge and freezer temperatures.



Mission 4

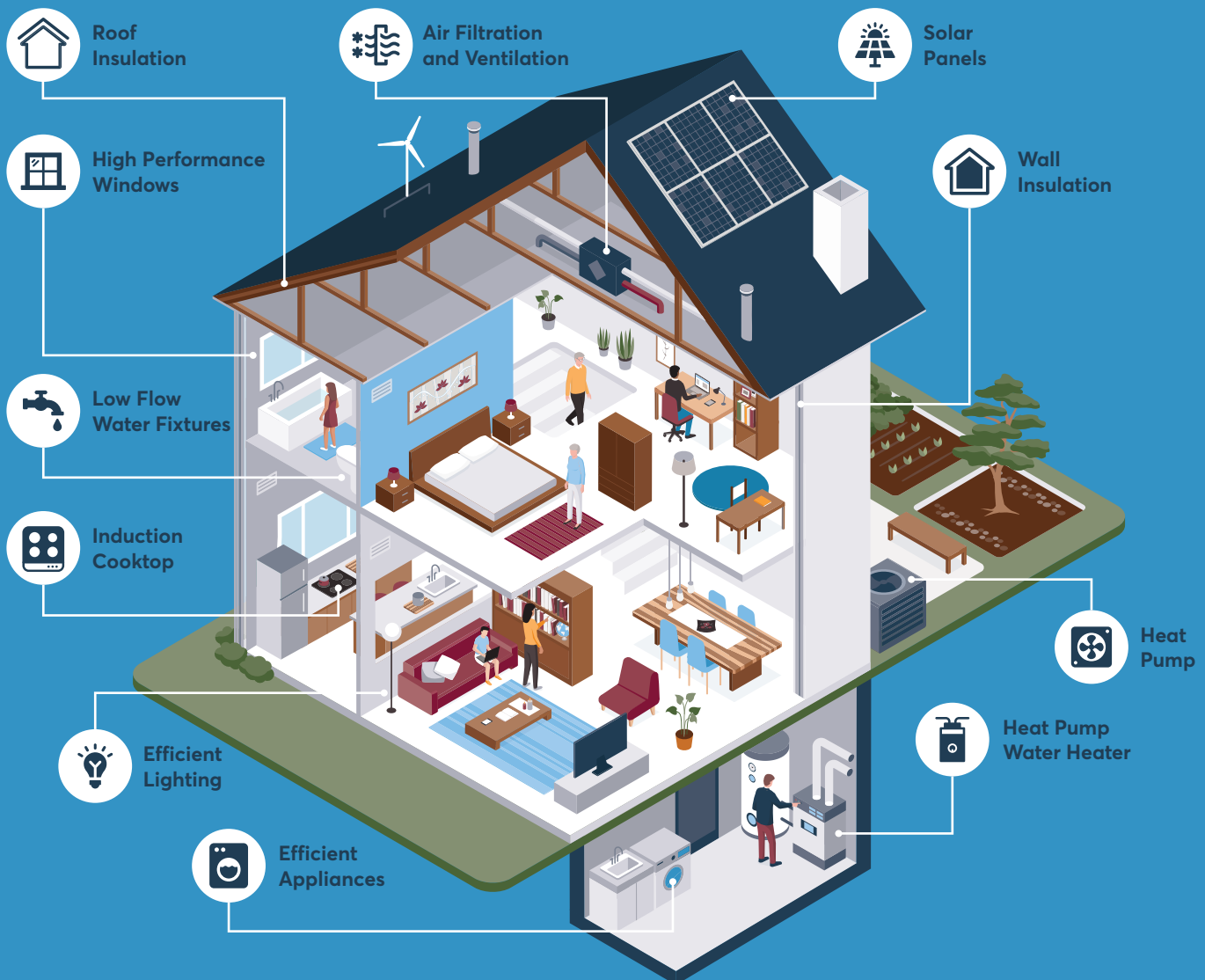
Insulation & Thermal Bridges

Use the **IR** thermometer to find cool corners and ceiling edges. Safely peek at attic insulation depth. Check basement **rim joists** for drafts.

YOUR HOME: ONE SYSTEM, MANY PARTS

Your home isn't just a collection of rooms and appliances. It is a system where heat, air and moisture all interact. A drafty door can make a room feel cold, but sealing it without thinking about ventilation can trap moisture and pollutants inside. Likewise, adjusting your thermostat, adding insulation or running fans affects comfort, energy use and indoor air quality throughout the house.

This toolkit is designed to help you see your home as a connected system: by measuring temperature, humidity, airflow, light and energy use in each mission, you'll uncover small adjustments and fixes that work together to make your home safer, healthier and more efficient. Start with the simple checks, note what you observe and build your action plan—remember, if anything feels unsafe or confusing, call a professional to help.



INSIDE THE TOOLKIT

The Home Energy Check 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.



Appliance Thermometer

Checks fridge, freezer and hot water temperatures.



Light Meter

Measures the intensity of light.



Air Quality Detector

Shows temperature, RH and pollutants like **PM2.5** and **VOCs**.



Plug-in Energy Meter

Measures power use of small plug-in devices.



Infrared Thermometer

Checks surface temperatures (e.g., walls, windows).



Stopwatch

Times quick tests (fans, water flow).

Helpful extras included:

- ☐ Bucket
- ☐ Flashlight
- ☐ Tape measure

Please return all items with your kit so that the next household can complete their missions.

SAFETY HIGHLIGHTS



Combustion & CO

If you suspect gas leaks, back drafting or CO alarm issues—stop and call a professional immediately.



Electricity

Only use the plug in energy meter on small plug loads (low power devices).



Infrared Thermometer

Never aim the laser at eyes or shiny reflective surfaces.



Ladders / Roofs / Attics

Avoid unsafe heights and un-floored attic areas.



Mould / Asbestos / Lead

If you encounter suspicious materials, do not disturb; consult a qualified professional.



MISSION 1:

Comfort and Health Scan



Goal:

Understand how your home feels by checking for drafts, noticing how warm or cool it is, seeing how dry or damp the air feels (humidity) and making sure the lighting is right for what you're doing.

Tools:

- Air Quality Detector
- Infrared Thermometer
- Light Meter
- Notebook (not provided)

Time:

40–50 minutes

Why this matters:

If a room feels chilly, stale or damp—even when the thermostat looks fine—you won't be comfortable and you may spend more than you need on energy. Proper lighting supports our physical and mental health and helps us concentrate. Small adjustments to your existing systems properly paired with natural light can help support energy savings.

What to aim for:

Rooms are within 2–3 °C of each other. **RH** around 20–40% (in very cold weather, slightly lower **RH** helps prevent window condensation). Interior surfaces aren't much colder than the room air. A good rule is to lower your indoor **RH** as outdoor temperatures drop.

Realistic & Safe RH Targets for Northern AB

Outdoor Temperature	Recommended Indoor RH
0°C to –5°C	35–40%
–5°C to –15°C	30–35%
–15°C to –25°C	25–30%
–25°C to –35°C	20–25%
Below –35°C	20% max

Steps:

Walk and notice:

Where do you feel drafts? Which floors feel cold? Are there any musty smells or signs of window condensation?

Measure room air:

Write down temperature and **RH** for living room, bedrooms, kitchen and basement.

Check surfaces (IR):

In any problem room, check surface temps on a wall and on a window / frame. Big drops vs. room air suggest sealing or insulation needs.

Worksheet – Comfort Log

Room / Area	Air Temp (°C)	RH (%)	Surface Temp (°C)	Drafts? (Y / N)
Example: Living Room	21	26	19	N
Living Room				
Bedroom 1				
Bedroom 2				
Kitchen				
Basement				



Tips:

- HRVs and ERVs can help manage moisture balance.
- Window icing is often a warning sign that indoor RH is too high.
- Newer, tighter homes may need humidity control such as a dehumidifier.

Lighting & Light Quality

What to aim for:

The light in each space should make tasks easy and comfortable without causing glare or shadows. Lux is a way to measure how bright a room is, so that you can make sure there's enough light for your tasks without wasting energy. In the kitchen or at a desk, you should be able to see details clearly and colours naturally. For reading, laundry or general tasks, lighting should let you work without squinting. Hallways and casual seating areas should feel soft and safe.

Some new LED lights have built-in controls that let you adjust brightness (light output). Lux is the measurement of how much light reaches a surface. These lights don't use the traditional ballasts that fluorescent lights need.

Lux should be measured at the task space, as different lux readings will be seen if your closer or farther from the source.

Measure room lighting:

Write down lux levels for each area.

Area / Activity	Rec. Light Level	What is my Light Level?
Kitchen Counter (Food Prep)	300–800 lux	
Desk / Office Work	300–800 lux	
Reading, Laundry, General Tasks	200–500 lux	
Hallways / Casual Seating	100–200 lux	



Tips:

If Lux Is Too Low:

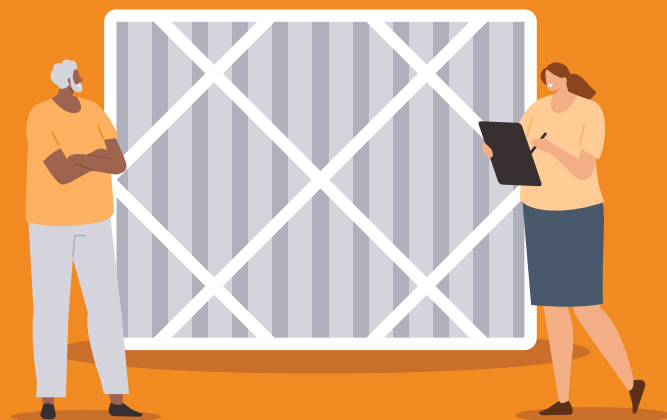
- Add targeted task lighting instead of brightening the whole room. Examples: under-cabinet lights in the kitchen, desk lamps for work or clip-on reading lights.
- Use higher-efficiency bulbs (LEDs) in lamps or fixtures to increase light without increasing energy use.
- Reposition lights to eliminate shadows where you need them most.
- Maximize natural daylight—keep windows clean, use light-coloured surfaces and open blinds during the day.

If Lux Is Too High:

- Use dimmers to adjust light to the right level for the task. This will save energy and allow you to be more comfortable in your space.
- Some new LED pot lights have integrated switches that allow you to adjust the lighting level to match your needs.
- Swap high-wattage bulbs for lower ones or switch to LEDs that provide the same brightness at lower energy use.
- Turn off or relocate lights that aren't needed in that space—especially overhead lights in hallways or casual seating areas.

MISSION 2:

Mechanical Systems Check



Goal:

Make sure your thermostat, filters and fans are doing their jobs, keeping your home comfortable, healthy and energy-efficient.

Tools:

- Air Quality Detector
- Stopwatch
- Tissue / Thin Paper (not provided)

Time:

40 minutes

Why this matters:

Well-tuned systems support steadier temperatures, cleaner air, lower bills and longer-lasting equipment. Poorly performing systems can cause higher energy costs, uneven airflow and wear on your HVAC equipment.

What to aim for:

Your thermostat should follow your daily routine — warmer when you're home and active, slightly cooler when you're asleep or away. Dropping the temperature 2°C at night and during work hours can improve comfort and save energy. HVAC filters should fit securely and be free of dust or debris. Bathroom fans, range hoods and other ventilation systems move air efficiently, removing moisture and odours without excessive noise.

Steps:

Thermostat check:

Is the schedule realistic? Avoid large temperature setbacks that cause condensation or discomfort. Confirm that the thermostat responds correctly when you adjust settings.

Filter check:

Hold your furnace filter up to light—if it's hard to see light through, or if it looks dusty or dark, replace it. Confirm all supply and return registers are open and not blocked.

Bathroom fan "tissue test":

Turn the fan on; hold a tissue to the grille. If it sticks firmly, airflow is good. If not, clean the grille and duct or plan a replacement.

Kitchen hood check:

Boil water or lightly pan-sear on medium; run the hood high. Steam and odours should drop quickly. If the hood is not functioning properly, clean the hood filter and check for blockages in the duct. If airflow is still weak, schedule service or replacement.

Worksheet – Mechanical & Ventilation

Check	Pass / Needs Work	Notes / Action	Target Date
Thermostat Time and Schedule			
Filter Condition and Fit			
Bathroom Fan Holds Tissue			
Range Hood Reduces Steam and Odour			

MISSION 3:

Windows, Doors and Drafts



Goal:

Find and fix common places where heat loss occurs to improve comfort and reduce energy use. Check doors, windows and seals for leaks that can leave rooms feeling chilly even when the thermostat is set to a comfortable temperature.

Tools:

- Infrared Thermometer
- Flashlight
- Tissue / Thin Paper (not provided)

Time:

45–60 minutes

Why this matters:

Sealing drafts and fixing poorly sealed windows and doors helps keep your home comfortable and energy efficient. Even small leaks can force your heating system to work harder, increasing your utility bills.

What to aim for:

Door locks and latches line up correctly and close firmly. Make sure that door bottoms don't let in daylight or allow you to feel drafts. Window **sashes** should close tightly against their seals with no gaps. Weatherstripping, door sweeps and caulking should be intact and in good condition.

Steps:

IR scan for cold spots:

On a cool day, compare temperatures at window glass center, frame edges and nearby wall.

Draft test:

Turn on bath and kitchen fans. Hold tissue near door bottoms, window locks and trim; if the tissue moves toward the gap it means that there is an air leak.

Seals and hardware:

Look for cracked weatherstripping, flattened door sweeps, loose latch plates and dried caulking around trim.



Worksheet – Draft & Seal Log

Location	Draft? (Y / N)	Issue (Seal / Latch / Caulk)	Priority Notes
Front Door			
Patio Door			
Bedroom Window			
Basement Window			



Tips:

- **Seal leaks promptly:** Even small gaps let warm air escape in winter. Sealing gaps keeps rooms warmer and lowers heating bills.
- **Replace cracked or damaged weatherstripping:** weatherstrips are inexpensive and block drafts at doors and windows.
- **Check caulking around trim:** Replace cracked or missing caulk to stop air infiltration around door and window frames.
- **Close windows tightly:** Make sure window **sashes** are fully down and locked; some older windows may need minor adjustments to close snugly.
- **Consider temporary fixes for the coldest months:** Removable draft stoppers, window insulation film or heavy curtains can reduce heat loss and improve comfort until permanent repairs are made.

Focus on the biggest leaks first—doors and basement windows often have the most impact on comfort and energy savings.

MISSION 4:

Insulation and Thermal Bridges



Goal:

Find places where heat loss occurs in your home, such as insulation gaps or areas where framing members made of metal or wood allow heat to move more easily than through insulated areas. These are called **thermal bridges**. Reducing heat loss helps keep rooms warmer, reduces drafts and saves energy.

Tools:

- Infrared Thermometer
- Flashlight

Time:

60–90 minutes

Why this matters:

Warmer interior surfaces mean fewer drafts, less condensation and greater comfort. Consistent, well-distributed insulation and minimal thermal bridging help your home stay warm while using less energy.

What to aim for:

Attic insulation is evenly distributed with no gaps or low spots. Few cold spots appear along ceiling edges or framing. Basement joists are well sealed and insulated.

Steps:

Attic visual check (only if safe):

Look for even insulation coverage, wind washing (cold air moving through attic insulation near the eaves), cold air leaks and gaps around pipes or wires.

Surface temperature scan:

Use **IR** thermometer along ceiling edges, corners, exterior outlets and switches and over cantilevers to find cold spots.

Rim joist check:

Look for bare wood, gaps or drafts around the **sill plate**.



Worksheet – Insulation & Thermal Bridge Notes

Area / Detail	Observation	Likely Cause	Suggested Fix	Inspection Notes
Example: Attic Eaves	Insulation thin	Wind washing	Add baffles; top up	
Example: Ceiling Perimeter	Cooler band on IR	Missing / low insulation	Air-seal & top up	
Example: Basement Rim Joist	Draft / cold surface	Uninsulated gaps	Air-seal & insulate	



Energy-Saving Tips:

- Seal and insulate **rim joists**—this often has the biggest winter comfort impact. This may require the assistance of a certified contractor.
- Add insulation to achieve recommended depth; avoid compressing or blocking ventilation pathways which can cause moisture issues.
- Ensure attic hatches and recessed lights are sealed to prevent heat loss.

MISSION 5:

Moisture & Humidity Balance



Goal:

Keep indoor **RH** in a safe, comfortable range and clear steam quickly in kitchens and bathrooms.

Tools:

- Air Quality Detector
- Flashlight
- Stopwatch

Time:

30–45 minutes

Why this matters:

Too much moisture can cause mould and damage, while too little makes the home uncomfortable. Balanced humidity improves comfort, indoor air quality and protects your building materials.

What to aim for:

- Indoor relative humidity between 20% and 40% most of the year, and lower during very cold weather.
- Vent bathroom and kitchen steam quickly.
- There should be no visible condensation or musty odours in corners, closets or along exterior walls.

Steps:

Baseline RH:

Measure morning and evening **RH** in living room, bedrooms and basement.

Shower test:

Record **RH** right before, right after, and 15 minutes after a hot shower with the fan on.

Cooking test:

Simmer water for 5–10 minutes with the range hood on high; note **RH** before and after.

Condensation & smell check:

Check windows, closets and exterior wall corners. Note musty odours /bubbling paint.



Worksheet – Humidity Tracking

Room / Event	RH Before	RH After	RH +15 min	Fan Used? (Y / N)	Notes
Bathroom (shower)					
Kitchen (cooking)					
Bedroom (evening)					
Basement (evening)					

If RH is too high:

- Run bathroom and kitchen fans during cooking or bathing and for a couple of minutes after to help lower **RH** in the room.
- Check for leaks or insufficient ventilation and repair.
- Use dehumidifiers to lower **RH** levels.

If RH is too low:

- Consider using a humidifier, especially in bedrooms or main living areas.

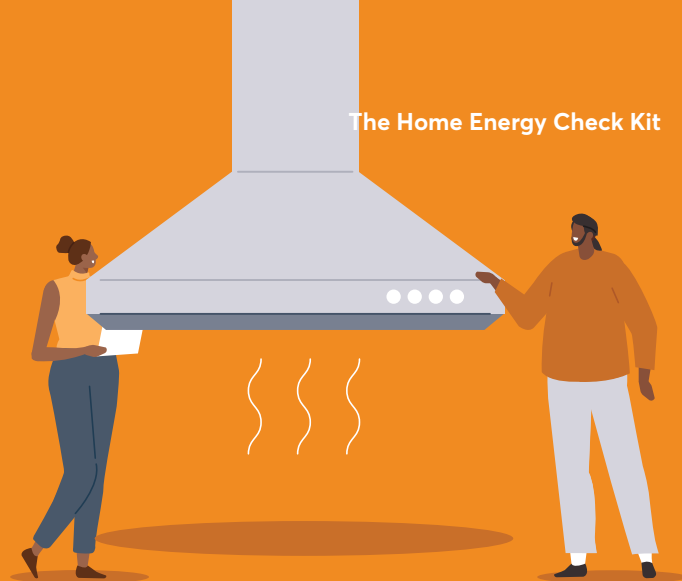


Energy-Saving Tips:

- Run fans only as long as needed to clear moisture, as overusing fans wastes energy. Fan timers can be added in place of a standard switch.
- Seal visible leaks and add insulation. Less air infiltration makes for easier **RH** control.
- Use lids when cooking to reduce steam. This reduces fan runtime and energy use.

MISSION 6:

Indoor Air Quality (IAQ)



Goal:

Identify everyday sources of indoor pollution and take simple steps to reduce them.

Tools:

- Air Quality Detector
- Notebook (not provided)

Time:

45–60 minutes

Why this matters:

Cleaner air supports comfort, sleep and health—especially for children, seniors and those with asthma.

What to aim for:

PM2.5 and **VOCs** remain low or drop quickly with ventilation. No lingering odours after cooking or cleaning.

Steps:

Baseline:

Measure in living area, bedrooms and kitchen with windows closed for 15+ minutes.

Activity Tests:

Kitchen:

Cook (fry or boil) with and without the range hood turned on; note **PM2.5** changes. Gas stoves and ovens will emit much higher VOC readings than electric. Crack a window 5–10 minutes—does the reading drop quickly?

Around the house:

Move the Air Quality Detector near scented products and new furniture—do **VOCs** spike?

Attached garage:

Check door seal for odours migrating into the home. Never idle vehicles inside your attached garage.



Worksheet – Indoor Air Quality (IAQ)

Source / Activity	Observed Change	Likely Pollutant	Action	Notes
Example: Pan Frying Hood Fan on vs. no Hood Fan		PM2.5	Use range hood every time	
Example: Near Scented Products vs. Centre of Room		VOCs	Ventilate; off-gas in spare space	



Energy & Health Tips:

- Ventilation saves energy when combined with proper heating or cooling schedules.
- Use fans and range hoods strategically—on only when needed.
- Seal leaks from garages or unvented spaces to avoid contaminant buildup.
- Remove unnecessary **VOC** emitting products from unventilated areas.

MISSION 7:

Water & Appliances



Goal:

The less water you use, the less energy you spend heating it. Determine ways to use less hot water and check appliances for **phantom loads** to lower overall energy consumption.

Tools:

- Appliance Thermometer
- Plug-in Energy Meter
- Measuring Cup / Bucket (not provided)
- Stopwatch

Time:

60–90 minutes

Why this matters:

It takes energy to heat water, and appliances can still use electricity even when turned off. Together, these can increase your energy use and costs over time.

What to aim for:

Showers should flow at $\leq 7\text{--}9$ L/min. Hot water settings should sit near 49°C / 120°F at the tank outlet (follow manufacturer guidance).

The optimal fridge temperature should be $3\text{--}4^\circ\text{C}$, with freezer temperature being approximately -18°C . You can reduce energy consumption by minimizing **phantom loads**.

Steps:

Shower flow:

Fill a container for 10 seconds at full flow. Measure and multiply by 6 to find L/min.

Hot water temperature:

Run a nearby tap 1 minute and measure the temperature with the appliance thermometer. If the hot water settings are too high, adjust your tank heat setpoint per manufacturer instructions and recheck.

Plug-In energy meter:

Record Watts your appliances are using while on and **phantom loads** by plugging them into the Energy Meter. You can estimate the annual energy each item consumes by calculating $(\text{kWh} = \text{Watts} \times \text{hours/day} \times 365 \div 1000)$.

Fridge / freezer:

Put the appliance thermometer inside for 15 minutes (doors closed) and check that the fridge is maintaining proper temperatures. Do a seal test: close a sheet of paper in the door—there should be slight resistance when you tug. If the fridge is at the right temperature and the door is sealing, you will be achieving maximum efficiency from your model. Repeat these steps on the freezer.

Worksheet – Water & Appliances

Fixture / Device	Flow (L/min) or Watts	Use (min/day or h/day)	kWh/Year (if applicable)	Action
Shower — Bath 1				
Shower — Bath 2				
Kitchen Tap				
TV / Console / Charger				
Fridge / Freezer Temperatures				

CREATE YOUR HOME EFFICIENCY PLAN



Based on the observations and measurements that you have collected on your missions, we recommend creating a personalized plan to make your home more comfortable, healthy and energy-efficient. Here are some great starting points to consider when making your home efficiency plan:

Prioritize Health & Safety

Any carbon monoxide concerns, suspected gas leaks, heavy mould, major condensation should be dealt with immediately. We recommend contacting a professional for advice on how to remediate any health and safety concerns.



Low or No Cost Wins

Tackle improvements one small item at a time. Simple upgrades like replacing filters, adding weatherstripping, using fans and timers, installing efficient showerheads and optimizing thermostat set points can deliver significant energy savings.



Mission	Action	Cost	Priority	Notes
Mission 1: Comfort & Health	Adjust lighting to increase / reduce Lux based on task needs			
	Move furniture or window coverings to improve daylight			
	Adjust thermostat schedule for comfort			
Mission 2: Mechanical Systems	Replace or clean furnace filter			
	Adjust fan settings or add timer			
	Check / adjust thermostat response			
Mission 3: Windows, Doors & Drafts	Seal drafts with weatherstripping or caulk			
	Adjust or repair latches to close doors / windows tightly			
	Add door sweeps or draft stoppers			

Mission	Action	Cost	Priority	Notes
	Add temporary window insulation film if required			
Mission 4: Insulation & Thermal Bridges	Add insulation in thin areas or attic low spots			
	Air-seal around rim joists and other leaks			
	Install baffles where wind-washing occurs			
Mission 5: Moisture & Humidity Balance	Replace failing exhaust fans to reduce RH during cooking / showering			
	Adjust or add humidifier or dehumidifier as needed			
	Seal leaks that cause condensation			
Mission 6: Indoor Air Quality (IAQ)	Use range hood consistently during cooking			
	Ventilate rooms with high VOCs or odours			

Mission	Action	Cost	Priority	Notes
	Seal doors / ducts from attached garage			
Mission 7: Water & Appliances	Replace shower or tub heads if flow rates are too high or leaks are present			
	Adjust hot water temperature if needed			
	Minimize standby electrical loads: unplug devices or use smart power bars			
	Check fridge / freezer temperature; adjust as needed			



If at any point you require help while using the Home Energy Check Kit,
please contact the City of Grande Prairie:



3-1-1 or 780-538-0300



info@cityofgp.com



access.cityofgp.com