



ENERGYWISE GUIDEBOOK for Residents

ENERGYWISE GUIDEBOOK

for Residents

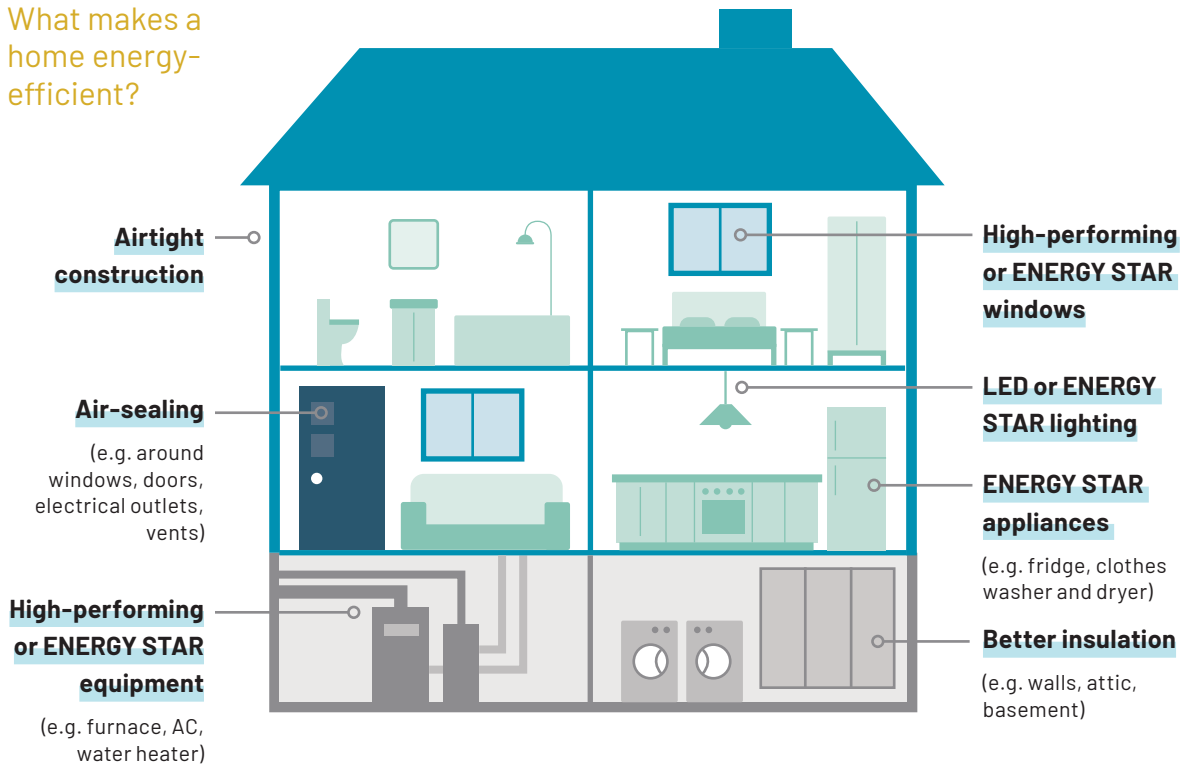
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WHAT IS ENERGY EFFICIENCY?

A HOUSE THAT USES ENERGY MORE EFFICIENTLY IS A HAPPY HOME.

What makes a home energy-efficient?



In Alberta, home energy comes from both heat and electricity. Heat is usually provided by natural gas and is often our source of space and water heating. Electricity is provided by a mix of natural gas and coal, with a smaller portion being supplied by renewables (wind, solar, biomass). Electricity is used for turning on our lights, charging our phones, running appliances, and powering other electrical devices.

Being energy efficient means living our lives the way we are used to, only using less energy to do so. It means that less energy is needed for the same effect. For example, an LED light bulb uses much less electricity than a traditional, incandescent bulb to produce the same light.

Energy efficiency also contributes towards:

1. Comfort: your home stays warm in the winter, cool in the summer and is free of cold spots and air leaks. In times of extreme weather conditions or a power outage, your home is at less of a risk of temperature changes.

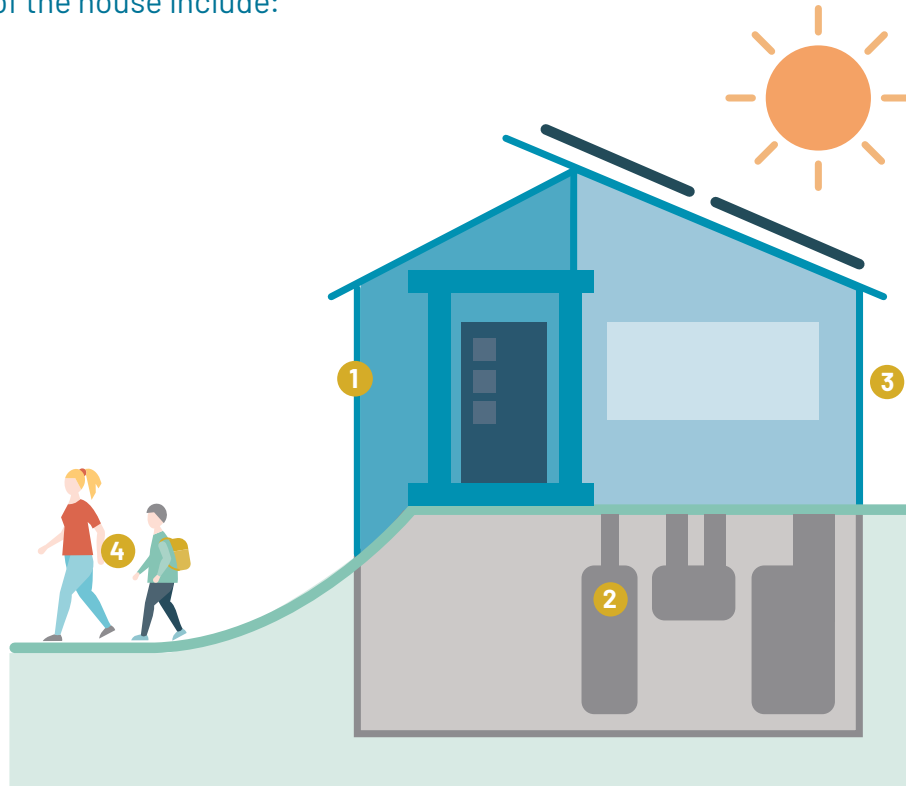
2. Health and safety: Proper air circulation helps:

- Control humidity and prevent moisture from building up (moisture can cause mould to grow).
- Protect against health risks, including breathing problems caused by indoor air quality problems.

3. Environmental stewardship: using less energy helps improve air quality and reduce greenhouse gas emissions, which contribute towards climate change. Energy efficiency supports [The Environmental Master Plan](#), which includes community energy use, air quality and greenhouse gas emissions targets.

YOUR HOME AS A SYSTEM

Your home operates as a system where all parts work together.
Parts of the house include:



1. Building envelope

(walls, roof, floor and windows).

2. Mechanical systems

(furnace, hot water tank, ventilation, air conditioning, lighting and appliances).

3. Indoor and outdoor environment

(moisture, temperature and air).

4. Those who live in the home.

Each of these parts affects one another. Changes to a home can affect the balance and you should be aware of possible unintended impacts. An example of your home as a system is when you make your home more air tight by sealing up air leaks: this increases your comfort and reduces energy loss. At the same time, sealing up leaks may increase the humidity levels; ventilation (air circulation) is needed in order to maintain healthy indoor air quality and prevent moisture buildup.

A comfortable and healthy home is in balance and can reduce energy use and maintenance costs. Homes that are out of balance may show signs including moisture on the windows, odours, and mould. In this guidebook you will learn about ways to address some of these challenges.

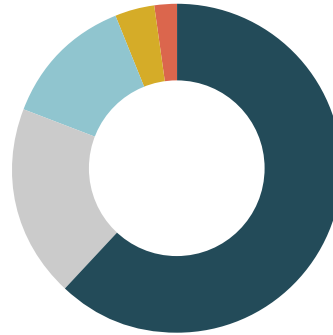
A COMFORTABLE AND HEALTHY HOME IS IN BALANCE AND CAN REDUCE ENERGY USE AND MAINTENANCE COSTS.

HOME ENERGY USE

There are many factors that can affect how much energy your home uses, including the size, type, age of your home, and how many people live in your home.

According to [Natural Resources Canada](#), the average home's energy use can be broken down as seen on the pie chart to the right.

For appliances, clothes dryers, refrigerators, stovetops/ovens and freezers are the largest energy users. Dishwashers and clothes washers use lower amounts of energy.



Distribution of residential energy use by subsector, 2015

62% Space Heating
19% Water Heating
13% Appliances
4% Lighting
2% Space Cooling

HOW MUCH HEAT AM I LOSING IN MY HOME?

There are different ways in which you can learn more about energy losses in your home.

MYHEAT

MyHeat lets you see the amount and location of heat escaping from your home. Not all homes are included on MyHeat.



BORROW A THERMAL CAMERA FROM RED DEER PUBLIC LIBRARY



A [thermal imaging camera](#) is available for free from the Red Deer Public Library. These cameras use infrared technology to help you see what is happening behind the walls of your home. They take pictures of your home and show where the heat and air are escaping so you can see which areas can be improved.

For most images, the camera should be set to "thermal mode," "matte," and "auto cold spot."

The thermal imaging camera at the Red Deer Public Library includes an instructions manual. Visit www.rdpl.org and search "thermal camera."

SOUND AND TOUCH INSPECTION

Large air leaks can be detected by listening for whistling noises on windy days, or where you can feel air is escaping. For example, on a cold day, touch different parts of your windows and doors to find out where air may be leaking.

VISUAL INSPECTION

A visual inspection will help you identify areas where heat and cold air are escaping. Check the following areas for cracks and gaps:

- Electric outlets
- Door and window frames
- Baseboards
- Vents and fans (including behind furniture and appliances)
- Around pipes and wires

INCENSE SMOKE TEST

(appropriate if you live in a house. If renting, you must have permission from your landlord)

A smoke test that tests for leaks in houses can be done using a stick of incense or candle. Close your doors and windows, turn off your furnace and water heater, and turn on your bathroom fans. Move the incense or candle around windows, doors, light switches, electrical outlets, and potlights. If the smoke moves away from these objects, there may be an air leak.



THE THERMAL IMAGING CAMERAS TAKE PICTURES OF YOUR HOME AND SHOW WHERE THE HEAT AND WARM AIR ARE ESCAPING SO YOU CAN SEE WHICH AREAS CAN BE IMPROVED.

CARBON MONOXIDE AND AIR SEALING

Many homes that have furnaces and hot water tanks take air from inside the home to use for combustion (burning gas to produce heat). During combustion, fumes that contain carbon monoxide are produced. While carbon monoxide is a very poisonous gas, normally the fumes are pushed outside and there are no safety risks to you. However, if a pressure change happens, there is a risk that the fumes can come back into the home.

Pressure changes can happen when a home is sealed up better to improve energy efficiency and the natural pathways for air are no longer available. When fans or dryers are turned on the circulation of the air can reverse, pulling fumes, including carbon monoxide, into the home. To prevent carbon monoxide from entering your home, you can air seal along the garage wall and the house wall, including the door. Carbon monoxide can also be produced when a vehicle is turned on inside a garage with the doors closed. In order to reduce the risk of carbon monoxide poisoning, carbon monoxide alarms should be installed in your home.

Carbon monoxide alarms are required by law to be installed in all homes built after 2014 that contain a fuel-burning appliance and/or an attached storage garage. Examples of fuel-burning appliances include furnaces, water heaters, wood or gas fireplaces, and gas appliances. Carbon monoxide alarms can be purchased at hardware, department and electronics stores. The alarms should be tested every month. The alarms and backup batteries should be replaced according to the package instructions.

SAFETY PRECAUTIONS

Use proper safety precautions when completing projects. Use items like gloves, safety glasses and other safety equipment.

Step stools or ladders may help you reach higher locations in your home, such as light bulbs. Tips on working safely with a ladder can be found at <https://www.ccohs.ca/topics/hazards/safety/ladders/>.

Some older homes have vermiculite insulation in the attic. Vermiculite can contain asbestos and should not be disturbed as it can be inhaled

and cause health issues. To reduce the risk of exposure in homes suspected of containing this material, do not go into the attic or store items in the attic. Seal cracks around the attic access or along the ceiling including in pot lights. Contact a professional (if renting, contact your landlord) if you think the attic may contain vermiculite. More information on vermiculite can be found at <https://www.ccohs.ca/oshanswers/diseases/vermiculite.html>

IN ORDER TO REDUCE THE RISK OF CARBON MONOXIDE POISONING, CARBON MONOXIDE ALARMS SHOULD BE INSTALLED IN YOUR HOME. CARBON MONOXIDE ALARMS ARE REQUIRED BY LAW TO BE INSTALLED IN ALL HOMES BUILT AFTER 2014 THAT CONTAIN A FUEL-BURNING APPLIANCE AND/OR AN ATTACHED STORAGE GARAGE.

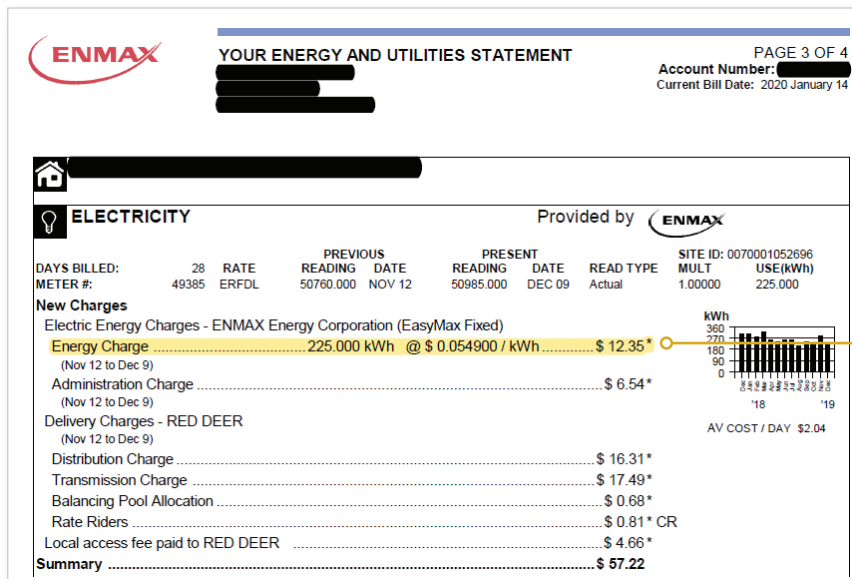
WHAT DOES MY ENERGY BILL MEAN?

There are two main charges on your bill:

1. **Delivery costs** – the cost of installing, operating, and maintaining what is needed to deliver energy. This cost does not change from month to month.
2. **Energy consumed** – this cost is based on how much energy you used, and can change from month to month.

Details of these charges are below (charges highlighted in yellow are most impacted by how much energy you use):

ELECTRICITY



Energy charge:
Based on your actual electricity use and will change depending on your energy use.

Administration charge: cost of billing and customer services.

DELIVERY CHARGES:

Distribution charge – cost of moving electricity to your home. The cost depends on the location of your home.

Transmission charge – cost of moving electricity from the facilities where it is produced. The cost is based on your energy use.

The Energy charge and the Distribution and Transmission charges are all based on predicted costs. The actual cost at the time of billing is not known.

Balancing Pool Allocation and Rate Riders are charges regulated by the government of Alberta. They cover the difference between the predicted costs at the time of billing and the actual costs once calculated. They can each be either a credit or a charge.

LOCAL ACCESS FEE PAID TO RED DEER:

Cost of fees charged by The City of Red Deer for allowing for electricity to be distributed on City land.

NATURAL GAS

NATURAL GAS		Provided by		ENMAX	
DAYS BILLED:	28	RATE		PREVIOUS READING	DATE
METER #:	T00057-655250	GRIPL		34.000	NOV 23
				PRESENT READING	DATE
				43.000	DEC 20
				READ TYPE	
				Estimate	
				SITE ID: 0001017219814	
				CONV	USE(GJ)
				1.02333	9.210
New Charges					
Natural Gas Energy Charges - ENMAX Energy Corporation (EasyMax Floating)					
Energy Charge	6.760 GJ	@ \$ 2.333960 / GJ		\$ 15.78*	
(Dec 1 to Dec 20)					
Energy Charge	2.450 GJ	@ \$ 2.675460 / GJ		\$ 6.55*	
(Nov 23 to Nov 30)					
Administration Charge				\$ 6.54*	
(Nov 23 to Dec 20)					
Transaction Fee	9.210 GJ	@ \$ 0.990000 / GJ		\$ 9.12*	
Delivery Charges - ATCO Gas					
(Nov 23 to Dec 20)					
ATCO Fixed Charge				\$ 26.04*	
ATCO Variable Charge				\$ 7.79*	
Rate Riders				\$ 11.35*	
Municipal franchise fee paid to CITY OF RED DEER				\$ 15.34*	
Summary				\$ 98.51	

Energy charge: Based on your natural gas use and will change depending on your energy use.

Transaction Fee: Cost of purchasing energy and is based on your energy use.

Administration charge: cost of billing and customer services.

DELIVERY CHARGES:

ATCO Fixed Charge – cost of building, operating, and maintaining the distribution system.

ATCO Variable Charge – cost of maintenance.

Rate Riders – covers the difference between the predicted costs at the time of billing and the actual costs once calculated. It can be either a credit or a charge.

MUNICIPAL FRANCHISE FEE PAID TO CITY OF RED DEER:

Cost of fees charged by The City of Red Deer for allowing for natural gas to be distributed on City land.

Contact your energy provider or visit Utilities Consumer Advocate for more details on how to understand your bill: <https://ucahelps.alberta.ca/understanding-your-bill.aspx>

ENERGY EFFICIENCY SOLUTIONS

This guide offers simple solutions and tips to make your home more energy efficient. If renting, please obtain permission from your landlord before making any changes to your home.

SPACE HEATING

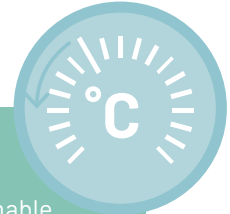
TEMPERATURE CONTROL

Space heating makes up over 60% of total energy use in homes. If you have access to your thermostat, think about your daily routine and how you can adjust the temperature at certain times of the day. For example, turn down your thermostat by a couple degrees before you leave the house or before you go to bed. Many people find that they sleep better if the temperature is lowered by a couple degrees at night.

If you have a programmable thermostat, controlling the temperature of your home is easy! You can adjust the temperature of your home according to a pre-set schedule. For example, if you work on weekdays from 9 am to 5 pm and no one is home, you can set the thermostat to turn down by 2-3 degrees during those hours. Once you come home from work, the thermostat will automatically raise the temperature back up. You can also do this when you go to bed or when you go on vacation.

TIPS AND TRICKS:

- Even if you don't have a programmable thermostat, you can still turn down the thermostat when you leave the house and before you go to bed. Set an alarm that reminds you before you go to bed. If you're feeling a little chilly, wear layers.
- If you do not have carpet, place a rug on your floor to add a layer of insulation.
- Move furniture away from heating vents to allow warm air to circulate.
- Keep the doors closed to rooms you are not using to help keep the rest of your home warmer.



WINDOWS



According to [Natural Resources Canada](#), windows, doors and skylights are responsible for 35% of energy loss in your homes. Fortunately, there are some actions you can take to improve your existing windows:

PLASTIC FILM



Plastic film covers help prevent air from leaking in and out of your windows, helping your home stay warmer in the winter months. They can also reduce moisture build up. Plastic film should only be installed on windows that you do not plan on opening regularly, like during the winter months. The film can be removed when the weather warms up.

Materials needed:

- Damp, soapy cloth
- Dry cloth
- Measuring tape
- Plastic window kit
- Scissors
- Hair dryer

Instructions:

1. Clean and dry the window frame using the soapy cloth and dry cloth.
2. Apply the tape that comes in the kit on the window frame. Do not apply the tape on drywall.
3. Cut the film to the size of the window frame.
4. Apply the film and use a hair dryer to seal.
5. Video: <https://www.youtube.com/watch?v=3PkFKG4b7ic>

TIPS AND TRICKS:

- In the summer, keep your home cooler by closing your blinds on the east side in the mornings, on the south side all day, and on the west side in the evenings. Closing your blinds can block up to 65% of the heat. In the evenings, open windows to allow air to flow through.
- In the winter, open your blinds during the day to allow the heat from the sun to warm your home. Close your blinds in the evening.
- In the winter, if you see moisture or frost on your windows, the humidity is too high inside your home. Reduce humidity by turning on fans when using the bathroom or kitchen.

ROPE CAULK



Rope caulk is a putty material that can be shaped to fit into cracks easily and with little mess. You can remove it at any time but it should only be used on windows and doors that you do not plan on opening regularly, like during the winter months. Apply caulk along any gaps or cracks in your window sill by pressing it firmly into the space, blocking out the air flow. It can also be used in any areas along your walls, baseboards and ceiling where drafts occur. Caulking in warmer weather or warming up the area makes installation easier.

Materials needed:

- Damp, soapy cloth
- Dry cloth
- Hair dryer
- Rope caulk
- Measuring tape
- Scissors

Instructions:

1. Clean and dry the surface using soapy cloth and dry cloth.
2. If necessary, heat the area with a hair dryer to help the caulk stick.
3. Cut the length of rope caulk you need.
4. Press it into the crack/gap.
5. Video: <https://www.youtube.com/watch?v=lof3c0e0RfM>

FOAM WEATHERSTRIPPING TAPE



Foam weatherstripping tape allows you to seal gaps around your windows and doors. It can be applied to windows and doors that are regularly opened and closed, compared to using plastic film or caulk.

Materials needed:

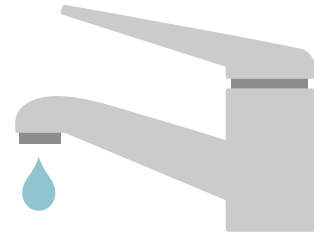
- Damp, soapy cloth
- Dry cloth
- Foam weatherstripping tape
- Measuring tape
- Scissors

Instructions:

1. The window or door frame should not cold to the touch (warmer than 5 °C).
2. Clean and dry the surface using soapy cloth and dry cloth.
3. Measure area that you want to weatherstrip.
4. Measure and cut the tape. Leave a few extra inches.
5. For windows: Apply tape to bottom and top of the window sash. If there is a large enough gap, apply tape to window jamb.
6. For doors: Apply tape on the frame. On hinged side, apply to the door jamb.
7. Video: <https://www.youtube.com/watch?v=j676MX-UjNY>

WATER USE

Water use and energy use go hand in hand. When you reduce how much hot water you use, you're using less energy.



SHOWERHEADS



High efficiency showerheads use less water than older showerheads, while still having good flow and pressure. Replacing your old showerhead with a new high efficiency one can save about 2 litres of water per minute. Assuming you take a 6-minute shower every day, this can save you over 4,000 litres every year – enough water to fill a bathtub 13 times!

Materials needed:

- New high-efficiency showerhead
- Teflon tape (depending on the style of the new showerhead)
- Towel
- Slip-Joint Pliers
- Adjustable Wrench
- Vinegar solution (50:50 ratio of vinegar and water)
- Old toothbrush



TIPS AND TRICKS:

- Use a 5-minute shower timer or set a timer on your phone to challenge yourself to shower in less than 5 minutes. When the timer goes off, this will remind you to turn off the water.
- Avoid taking baths, which use 3 times the amount of water as a 5-minute shower.

Instructions:

1. Make sure the shower floor is dry before you step onto it.
2. Hand tighten all the joints of the new showerhead to avoid water leaks.
3. Turn the old showerhead by hand, counter-clockwise.
4. If you are unable to remove the showerhead by hand, place the towel around the shower arm to protect it.
5. Use the pliers or wrench to unscrew the showerhead.
6. If there is tape over the shower arm threads, remove it. Depending on the style of the new showerhead, you may or may not need to replace the tape with new Teflon tape. Clean the shower arm threads using the vinegar solution and old toothbrush.
7. Turn on the water to wash out the pipe, then turn it off.
8. To install the new showerhead, screw the showerhead onto the shower arm in a clockwise direction and hand tighten. Do not overtighten.
9. Turn on the water and check for leaks.
10. If there are leaks, tighten the showerhead with the pliers or wrench
11. Don't throw away the old showerhead. Keep it and re-install it when you move out of your home so you can take your new showerhead to your new home.
12. Video: <https://www.youtube.com/watch?v=rzcAlb5JcXo>

KITCHEN

Whether it's storing food in the refrigerator and freezer, making a pot of soup, baking bread, or brewing a pot of coffee, kitchens use lots of energy. When you're looking to cut your energy use, the kitchen is a great place to focus on.

KITCHEN APPLIANCES



Refrigerators are one of the highest energy consumers in homes. A refrigerator/freezer thermometer is a useful tool that tells you what the temperatures of your refrigerator and freezers are, so that you can ensure that your refrigerator and freezers are set at the right temperature and not wasting energy: the recommended fridge temperature is 2°C to 4°C and the recommended freezer temperature is -15°C to -18°C.

Materials needed to check the refrigerator or freezer temperatures:

Refrigerator/freezer thermometer

Instructions:

1. Place the thermometer card inside the refrigerator or freezer, and close the door.
2. Wait 15 minutes.
3. Open the door and check the thermometer. If the reading is outside the recommended ranges, adjust the temperature dial and check again the next day.
4. Video: <https://youtu.be/0Cqx5NZ-b6w>

Being energy efficient when cooking doesn't have to be hard. Here are some things you can do that reduce how much energy you use:

1. Make sure that any frozen foods that you are defrosting are completely thawed before cooking, which can improve cooking time.
2. Match the size of the burner to the size of the pan or pot. Whenever possible, use a smaller pan, which takes less energy to heat up.
3. Instead of cooking in a pot with the lid off on the heat turned on high, place the lid on the pot and this will allow you to turn down the heat.
4. Don't heat up your entire oven if you don't need to; if you are baking something small, consider using a toaster oven instead.
5. Avoid opening the oven door while your dish is cooking. Every time you open the oven door, heat escapes and the oven has to work harder to bring the temperature back up.
6. Only run your dishwasher on a full load.

WHEN YOU'RE LOOKING TO CUT YOUR ENERGY USE, THE KITCHEN IS A GREAT PLACE TO FOCUS ON.

LAUNDRY

Your clothes dryer uses the most energy of all appliances in your home. Luckily, there are some easy solutions that can help you save energy when doing laundry.

DRYING LAUNDRY



Instructions:

1. In Alberta the air is dry, which means that it's fairly quick to dry your laundry on a clothesline or drying rack. To reduce humidity inside your home, air dry your laundry outside or open a window. If you bring your laundry to the laundromat, this can save you money.
2. Only do laundry if you have a full load. If you must wash a small load, adjust the water level setting.
3. Clean the lint screen in the dryer after every load to improve air circulation and prevent fire hazards.
4. If using the dryer, dry towels and heavier items in a separate load from lighter-weight clothing. Use the cool-down cycle to allow the clothes to finish drying with residual heat.
5. Use dryer balls, which help separate your clothes and get more air to them to reduce drying time.
6. Wash your clothes in cold water and use cold water detergent.



LIGHTING

Using energy efficient lighting and adjusting your everyday habits can help you to conserve energy, one light bulb at a time.

Not all lights perform the same. **There are several types of light bulbs on the market to choose from.**



LED (Light Emitting Diodes): LED light bulbs are the most efficient bulbs on the market. LEDs last 30 times longer than traditional incandescent bulbs while using less energy to produce the same amount of light. They don't heat up and instead remain cool to the touch.



Incandescent: These are the traditional bulbs that most people recognize but are becoming less common in stores. Incandescent light bulbs only last about a year while using lots of energy to produce light.



CFL (Compact Fluorescent Lights): CFL light bulbs are energy-efficient but less efficient than LEDs. One concern about CFLs is that they contain mercury and cannot be disposed of in your Black Cart or garbage. They must be brought to the household hazardous waste building at the Waste Management Facility. If the bulbs break, care needs to be taken to clean up safely. The U.S. Environmental Protection Agency provides detailed instructions about how to clean up broken CFL bulbs: <https://www.epa.gov/cfl/cleaning-broken-cfl>



Fluorescent bulbs: These bulbs are the same as CFLs, except they are shaped as long tubes and can only be installed for certain types of light fixtures.



Halogen: These are more energy efficient than incandescent light bulbs, however, their lifespan is the same (one year).

UNDERSTANDING THE TERMS:

Lumens means the amount of light coming from the bulb. A higher number means brighter light; a lower number means dimmer light. Standard 100-watt incandescent bulbs produce 1600 lumens.

Watts means the amount of energy the bulb uses to produce light. A lower number means less energy is used. Do not exceed the maximum wattage recommended for your lamp, as doing this is a safety hazard.

Light colour (Kelvin). A lower number means more yellow light, and a higher number means more blue or white light.

TIPS AND TRICKS:

- If you're leaving the room, even for a short period of time, turn off the lights. Turning lights on and off does not use large amounts of energy, so it always makes sense to turn off the lights. Don't forget lamps and outdoor lights.
- Use natural light coming through your window.
- Use desk lamps instead of ceiling lights.



CHANGING A LIGHTBULB

If you have an incandescent light bulb, consider changing it with an energy-efficient one. Here's how:



From left to right:

Screw-style bulb

Bayonet bulb

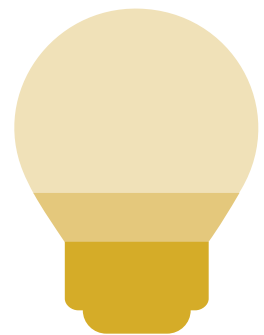
GU10 bulb

Materials needed:

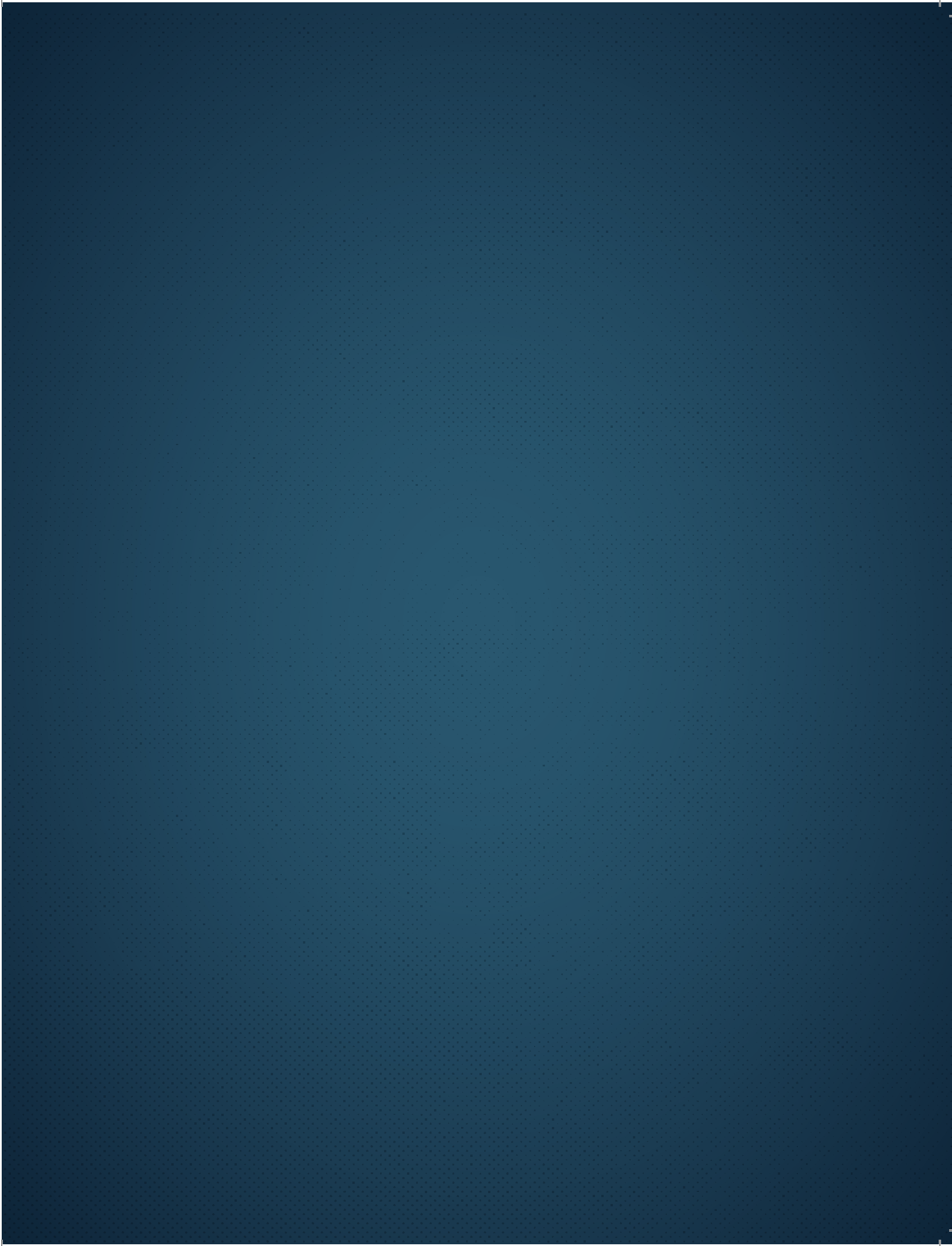
- Ladder or stool
- Towel
- New LED light bulb

Instructions:

1. Be cautious as you are working with electricity. If you are not comfortable with replacing a light bulb, please ask for assistance from someone who is familiar with replacing light bulbs.
2. Check the light fixture to ensure that it accepts a bulb with a minimum of 9.5 watts.
3. Turn off the light switch. If you are replacing a lamp light bulb, unplug the lamp.
4. Allow the bulb to cool. Incandescent light bulbs can get very hot.
5. Use a ladder or step stool to help you comfortably reach the light bulb. Use a towel to touch the bulb in case it is still warm.
6. The way to remove the old bulb depends on the style of the bulb. For screw styles, gently twist the bulb counter-clockwise until it comes out. For a bayonet or GU10 type, hold the bulb lightly but firmly, and gently push upwards while turning the bulb counter-clockwise until it comes out of the socket.
7. To insert the LED bulb, turn the bulb clockwise until you feel it lock into place.
8. Turn on the light switch.
9. Dispose of your old bulbs in your garbage/Black Cart, unless they are CFLs, which need to be brought to the household hazardous waste building at the Waste Management Facility for safe disposal.
10. Video: <https://www.youtube.com/watch?v=x2TVqB5deI0>
<https://www.youtube.com/watch?v=JW2Br1yiwZA>



IF YOU'RE LEAVING THE ROOM, EVEN FOR A SHORT PERIOD OF TIME, TURN OFF THE LIGHTS. TURNING LIGHTS ON AND OFF DOES NOT USE LARGE AMOUNTS OF ENERGY, SO IT ALWAYS MAKES SENSE TO TURN OFF THE LIGHTS. DON'T FORGET LAMPS AND OUTDOOR LIGHTS.





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For more information:

Environmental.initiatives@reddeer.ca