MANITOBA'S ENERGY SUPPLY:

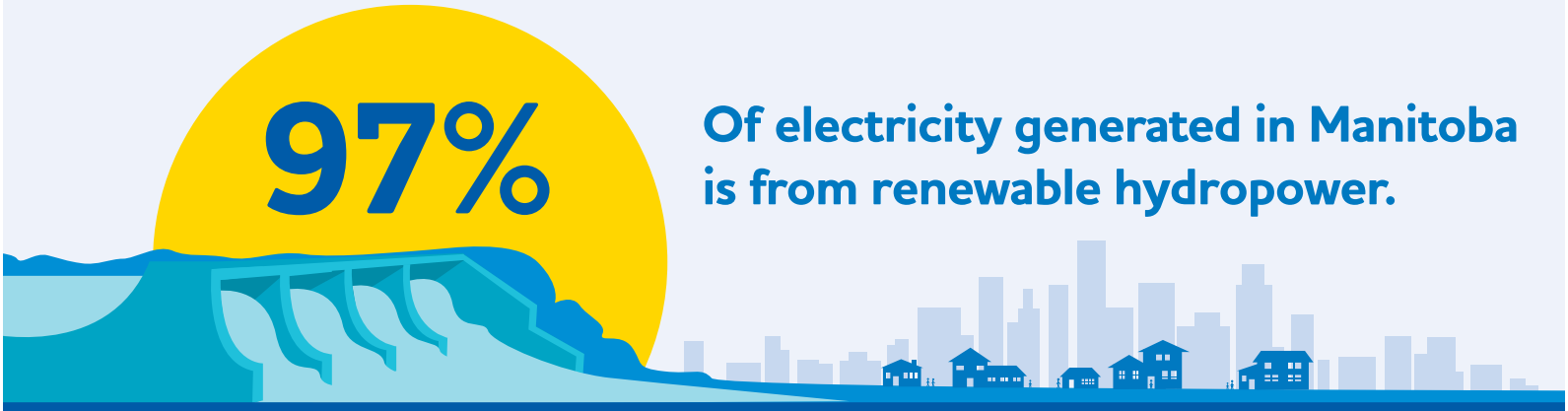
Good for Manitobans, good for our environment

Manitoba Hydro
energy for life

Manitoba's energy supply: good for Manitobans, good for our environment

DID YOU KNOW?

Manitoba has one of the cleanest and most reliable electricity systems in the world. Our electricity supply is renewable, efficient, cost-effective and environmentally responsible. That is because over 97% of the electricity generated in Manitoba is from renewable hydropower.



Of electricity generated in Manitoba is from renewable hydropower.

Hydropower's low cost, near-zero emissions, and ability to be delivered quickly to meet electricity demand have made it one of the most valuable renewable energy sources in the world.

HOW IS HYDROPOWER HELPING TO COMBAT CLIMATE CHANGE?

One of the best ways to reduce greenhouse gas emissions is to use less fossil fuel and more renewable energy. Visit **waterpowercanada.ca** to learn more about hydropower in Canada.

Hydropower is renewable

Hydropower turns the energy from flowing water into electricity, without losing water in the process. That means hydropower will be able to keep providing energy for generations to come.

Hydropower is virtually emission free

Hydropower burns no fuel and produces no air pollutants or waste like those associated with fossil fuel or nuclear power. As well, it produces close to zero greenhouse gases. In fact, greenhouse gas emissions from the construction and operation of a hydropower facility are as low as or lower than wind power, and many times less than fossil fuels.

Hydropower is reliable

Hydropower generation can also be turned on or off faster than any other energy source. This guarantees a quick response to changes in demand or in times of emergency.

Hydropower is efficient

Hydropower is the most efficient source of electrical energy. It turns up to 95% of available energy into electricity while the best fossil fuel power plants operate at approximately 60% efficiency.

Once constructed, hydroelectric power plants have a long lifespan and are relatively low maintenance. Some facilities in Manitoba are over 100 years old.

Hydropower is cost-effective and cost-competitive

While hydropower generating stations can be costly to construct, once built they provide cost-competitive electricity as they do not rely on fuels with prices that can change rapidly. And because hydropower is renewable, it offers price stability. The Canadian provinces with the most hydropower generation (British Columbia, Manitoba, Quebec, and Newfoundland) have some of the lowest electricity prices in North America.

Hydropower makes other renewable energies possible

Like hydropower, wind and solar are good renewable sources of energy. However, unlike water that can be stored behind dams, wind and solar energies are only available when the sun shines and the wind blows. The use of wind and solar energy is only possible if there is a stable backup of flexible energy, like hydropower, which can adapt quickly to the ever-changing, moment-to-moment availability of wind and solar generation.

Hydropower converts 95% of available energy into electricity.

The best fossil fuel operates at 60% efficiency.

Wind and solar energy is only possible if there is a stable backup of flexible energy like hydropower.

ACTIVITY 1: Unscramble these words to reveal the benefits of hydropower.

1. **AENLC**

   ___ ___ ___ ___ ___

2. **SOCT-VICTEEFFE**

   ___ ___ ___ ___–

   ___ ___ ___ ___ ___ ___ ___ ___ ___

3. **BLANEWEER**

   ___ ___ ___ ___ ___ ___ ___ ___ ___

4. **FEFITINEC**

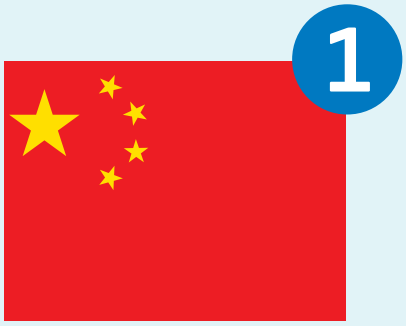
   ___ ___ ___ ___ ___ ___ ___ ___ ___

5. **BLAREEIL**

   ___ ___ ___ ___ ___ ___ ___ ___

6. **LSATBE**

   ___ ___ ___ ___ ___ ___



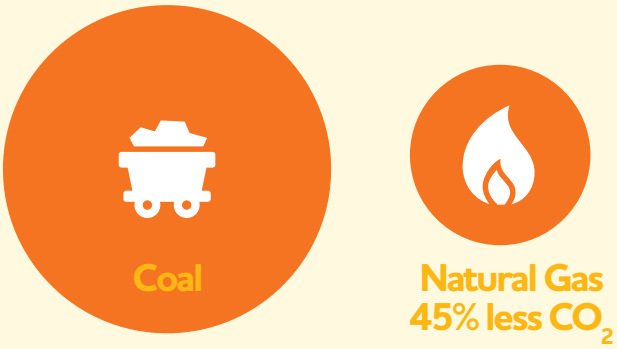
Canada is the world's third largest generator of hydroelectricity, after China and Brazil.

DID YOU KNOW?

Our province has one of the most variable and weather-sensitive natural gas demands in North America. This is because Manitoba's climate fluctuates so much from day-to-day and season-to-season and we use natural gas mainly for space heating.

Natural gas: an important part of Manitoba's energy supply

Sixty per cent of homes in Manitoba use natural gas as their main heating source. Natural gas is the cleanest fossil fuel and a highly efficient form of energy. It is also an important energy source for business and industry in the province. Natural gas is pumped from wells drilled deep into the ground and is delivered to homes and businesses through underground pipelines.



Natural gas is the cleanest burning fossil fuel. It produces 45% less carbon dioxide (CO_2) than coal.

Natural gas use on a warm summer day in Manitoba is only about 5% of natural gas used on a very cold winter day.

EFFICIENT SOURCE OF HEAT

When heat is the goal, it is more efficient to use natural gas over electricity. A gas water heater heats the water more quickly at less than half the cost of electricity in Manitoba.

DID YOU KNOW?

While rare, leaks from gas pipelines can be a fire hazard. Because natural gas is colourless and odourless, a rotten egg smell (called mercaptan) is added to it so that leaks are easily detected. If you smell natural gas, do not use any electrical switches, appliances, telephones, vehicles or any other source of ignition including lighters or matches. Leave the area immediately and call Manitoba Hydro or 911.

Our energy future is changing and we are too, to provide **Energy for Life.**

Planning for a changing energy future

The world is constantly changing. Technology is growing. Our climate is changing. And people's behaviour is also changing at a rapid pace. Think of smartphones: as recently as 2005, smart devices and cell phones were rare. Now they are almost required to live in our world.

Energy suppliers like Manitoba Hydro have a big responsibility to customers and people who use their energy. The rapid pace of change affecting our world means those energy suppliers must also change how they work so they can keep up with changes happening now and prepare and plan for changes that will come.

Three forces are affecting the world, especially energy suppliers and how they operate. They all start with the letter D:

DECARBONIZATION

Recognizing our changing climate, many large organizations – including governments, energy providers, corporations, and other groups – seek to lower their carbon emissions and reduce their contributions to the greenhouse effect.

DIGITALIZATION

Growth in technology is changing the way consumers interact with organizations and other people. More than just smartphones, advances in technology are also leading to innovative and different ways for organizations and companies to operate as they incorporate technology into manufacturing, logistics, and other aspects.

DECENTRALIZATION

Parts of the economy and world have consolidated into a few major providers of goods and services, but in the energy world, there is a shift away from that. Many consumers and communities are seeing value in having their own sources of energy, like solar panels for their homes or wind farms for their communities, whereas before, providers like Manitoba Hydro were the sole supplier of energy. The growing popularity of electric vehicles also means energy infrastructure in homes and businesses must also expand.

What these changes mean for **Manitoba Hydro – and you**

These three forces affecting our world are also affecting Manitoba Hydro. As the sole energy provider in Manitoba for decades, we must change how we operate so we can continue to serve Manitoba for decades to come.

Manitoba Hydro will keep up with the changes affecting our world. Many changes continue to take place within Manitoba Hydro – like updating our infrastructure, enhancing our technology, changing the way we work, and much more – to ensure we can provide sufficient renewable, reliable energy for Manitobans now – and into the future.

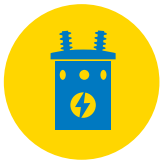
ACTIVITY 2: Can you think of an example of decarbonization? Decentralization? Digitalization? Brainstorm a list and consider how that might affect electricity and natural gas use.

ACTIVITY 3: Look at these two photos and list the six items that use more electricity today, than in the past.

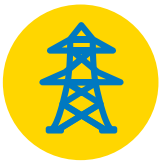
1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

How does electricity get to my house?

Most of the electricity in Manitoba is made by falling water flowing through generating stations.

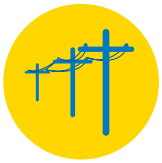


The electric current is sent through transformers. This increases the voltage to push the power long distances.



The electrical charge goes through high-voltage transmission lines that stretch across the province.

It reaches a substation, where the voltage is lowered so it can be sent on smaller power lines.



It travels through distribution lines to your neighborhood, where smaller pole-top or padmount transformers reduce the voltage again so it is safe to use in our homes.

It passes through a meter at your home that measures how much power your family uses.

The electricity goes to the service panel (often in your basement or garage), where breakers or fuses protect the wires inside your house from being overloaded.

The electricity travels through wires inside the walls to the outlets and switches in your home.

Our electrical system is constantly expanding to meet the growing needs of the people in Manitoba. It is also being repaired, replaced, and upgraded in order to provide safe and reliable energy. Operating an aging electrical system beyond its capacity will cause frequent power outages, reduced reliability and safety issues.

DID YOU KNOW?

There are approximately one million wooden hydro poles in Manitoba. Of those, 8000 are replaced each year and more than 85,000 are inspected and treated to extend their life. And hydro poles are just a small part of the complex electrical system. There are generating stations, substations, hundreds of kilometres of overhead and underground conductor cables, transformers, and transmission stations just to name a few examples.

Saving energy is enviromentally friendly

Energy efficiency programs provide education, incentives and expertise to help customers save energy. The reduction of greenhouse gas emissions resulting from these programs in one year is equivalent to removing 31,000 vehicles from the road.

1 year of energy savings is equivalent to taking
31,000 vehicles off the road.

Equivalent of 1,000 cars

MANITOBANS ARE REDUCING THEIR ENERGY USE.

Many customers including homeowners, schools, stores, personal care homes, and manufacturing industries are enjoying the benefits of reducing their energy use. For example, École Taché in Winnipeg built on an addition that is 45% more energy efficient than a typical school addition of its size.

How are customers becoming more energy efficient and environmentally friendly? They are doing things like adding insulation, installing low-flow water faucets, LED lighting, and replacing inefficient appliances with efficient ones.

Efficiency Manitoba offers programs designed to help Manitobans reduce their energy use. Visit **efficiencyMB.ca** to learn more.

Making a difference one change at a time.

ACTIVITY 4: What things can I do to help save energy?

1. **After space heating, water heating is the next largest energy expense in your home.**

   True or False?

2. **How can you save energy in the bathroom? Choose all correct answers.**

   a) Slow the flow. Install low-flow faucets and showerheads.

   b) Shorter showers. A five-minute shower, with an energy efficient showerhead, will use about half as much water as a bath.

   c) Turn off the water when brushing your teeth and while scrubbing your hands.

   d) Fix leaks. One drip per second can really add up.

3. **Which is the most energy efficient way to heat food?**

   a) Stove

   b) Oven

   c) Kettle

   d) Microwave

4. **What are other easy ways to save energy in your home? Choose all correct answers.**

   a) Keep your TV and video games turned on so they are warmed up and ready to use.

   b) Set your computer to auto-sleep after approximately 15 minutes of inactivity.

   c) Connect your computer, printer, scanner and other electronic devices to a power bar and turn off the bar when not using these devices.

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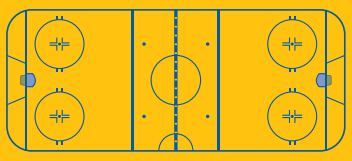
ice hockey rinks could be made with the water saved to date from Manitobans installing low-flow plumbing devices.

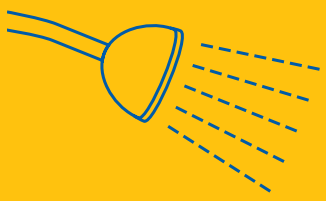


Up to **95%**

of the components used to build a fridge can be recycled in an environmentally friendly way.

Up to **$600**

savings per low-flow showerhead over 10 years of use.



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homes could be powered for one year if every home in Manitoba replaced one 60W bulb with one LED bulb.

5. **How can you save energy for lighting?** Choose all correct answers.

   a) Switch off lights when the room is not in use.

   b) Wear sunglasses inside.

   c) Replace burned out bulbs with energy efficient LED bulbs.

   d) Use free daylight to light up your room when possible.

6. **Do not leave the refrigerator door open. Every time you open the door, up to one-third of the cold air can escape.**

   True or False?

7. **Choose all correct answers. Replace a burned out light bulb with a new LED bulb because…**

   a) Simon says so.

   b) LED bulbs are the longest lasting bulb on the market.

   c) LED bulbs are ideal for hard-to-reach places and do not need to be replaced frequently.

   d) LED bulbs use up to 80% less energy than incandescent bulbs.

8. **Having trees or shrubs around your house will shade your windows in summer and help block cold winds in the winter.**

   True or False?

DID YOU KNOW?

Colour temperature is measured in degrees Kelvin (K). For warm light, look for bulbs in the 2700 K to 3000 K range. For tasks that need more light like sewing or woodworking, use cooler lights in the range of 3500 K to 5000 K.

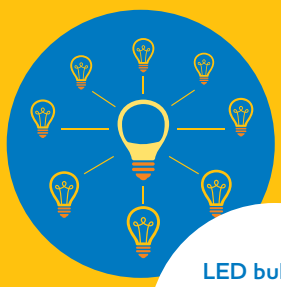
Improved insulation can help you save approximately

20%-30%

on heating and cooling bills

LED* bulbs use 80% less electricity than incandescent bulbs and come in a variety of shapes, sizes and colours.

** light emitting diode*



LED bulbs are **up to 80%** more efficient than incandescent bulbs.

DID YOU KNOW?

LED bulbs achieve full brightness immediately and work well in cold temperatures.

ACTIVITY 5: This week, take time to do the following two things that will improve our environment. Then write a paragraph about your experience and share it with your classmates.

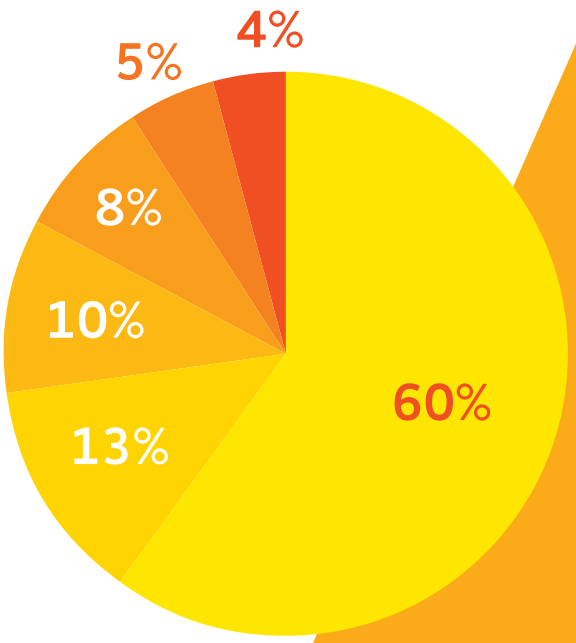
- Invite your family to walk or bike somewhere instead of taking the car, or organize a "walking bus" to get to school one day.
- Create awareness. Teach a friend or family member about saving energy.

DID YOU KNOW?

You can save more than $50 a year by using the sleep mode or power-saving feature on your computer.

ACTIVITY 6: Where do we use energy in our homes? Choose the correct percentage to match the following energy uses for the average house in Manitoba.

1. **Lighting** _____%
2. **Space heat** _____%
3. **Appliances** _____%
4. **Electronics** _____%
5. **Air conditioning** _____%
6. **Water heating** _____%



ACTIVITY 7: Energy Scavenger Hunt

Go on this scavenger hunt with your family. There are no wrong answers so be honest – your results will tell you where you can save energy and money.

1. **Thermostat:** Programmable thermostats can automatically lower the temperature when you are away or asleep, which reduces the energy used by your furnace. During winter, do you lower the temperature in your house when you are away or asleep?

   Almost never (1 pt.) Sometimes (2 pts.) Always (3 pts.)

2. **Lights:** How often do you turn off the lights when you leave the room?

   Almost never (1 pt.) Sometimes (2 pts.) Always (3 pts.)

3. **Cooking:** How often does your family keep the lids on pots and pans when cooking?

   Almost never (1 pt.) Sometimes (2 pts.) Always (3 pts.)

4. **Furnace filters:** Ask an adult at home how often your furnace filters were changed or cleaned last year.

   Not at all (1 pt.) 1-3 times (2 pts.) 4+ times (3 pts.)

5. **Weatherstripping:** Open your front door and check the condition of the weatherstripping between the door and the doorframe.

   None (1 pt.) Worn out (2 pts.) Good condition (3 pts.)

6. **Laundry:** What temperature is the water your family uses to wash clothes?

   Hot (1 pt.) Warm (2 pts.) Cold (3 pts.)

7. **Shower:** Set a timer. How long is your shower?

   15 mins (1 pt.) 10 mins (2 pts.) 5 mins or less (3 pts.)

8. **Dress for the weather:** Do you try to use less heat in your home in the winter by wearing warmer clothes?

   Almost never (1 pt.) Sometimes (2 pts.) Always (3 pts.)

9. **Cooling down:** During hot summer days, do you close the shades when you are away to keep the sun out?

   Almost never (1 pt.) Sometimes (2 pts.) Always (3 pts.)

   Give yourself 3 extra points if you use fans to cool off to cut down on air conditioning.

10. **Light bulbs:** How many LED bulbs have replaced other light bulbs in your house?

    0-4 (1 pt.) 5-9 (2 pts.) 10+ (3 pts.)

11. **Dishwasher:** Rinsing dishes before loading your dishwasher uses a lot of water and energy. Do you scrape dishes instead of rinsing them before loading the dishwasher?

    Almost never (1 pt.) Sometimes (2 pts.) Always (3 pts.)

12. Do you also save energy by running the dishwasher only when it's full and by using the air-dry option if available?

    Almost never (1 pt.) Sometimes (2 pts.) Always (3 pts.)

HOW DID YOU SCORE?

28-39: Awesome! You are doing a great job saving energy. Keep up the good work!

19-27: Almost! You are on your way to saving energy. See what you can do to boost your score!

12-18: Oh no! Now you know what you can do differently to save energy and save money.

It can cost about $2 per minute to have the kitchen or bathroom faucet turned on. Tip: Turn the water off in between tasks like rinsing or brushing and use cold water when you can.

DID YOU KNOW?

In many homes, insulation is the most practical and cost-effective way to make a house more energy efficient. Insulation is like a blanket for your home. It keeps the heat in during the winter and the heat out during the summer.

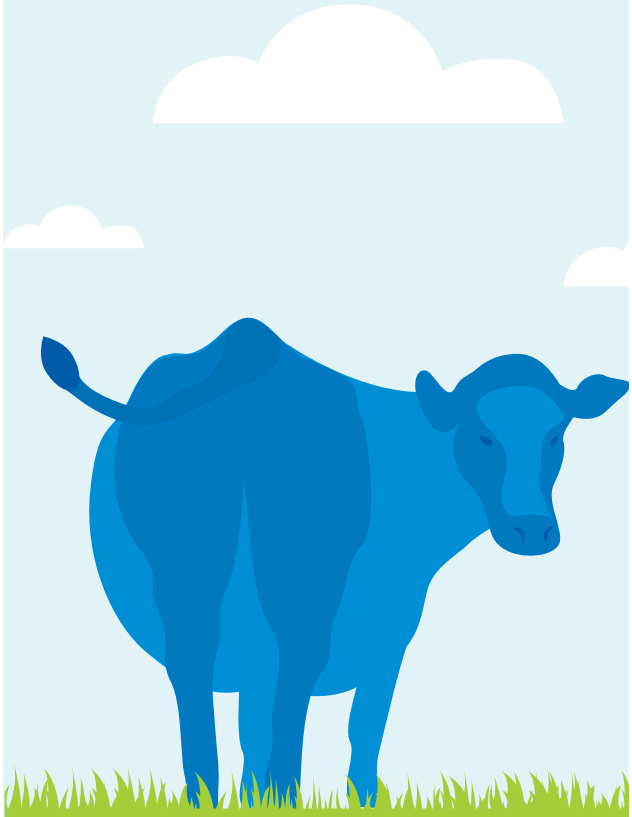
Helping to advance green energy technologies

Energy efficiency programs are helping to advance and promote green technologies like geothermal, bioenergy and solar heating in Manitoba.

1. **Bioenergy** uses plant or animal material (often waste material like manure or straw) as a fuel source to create energy.

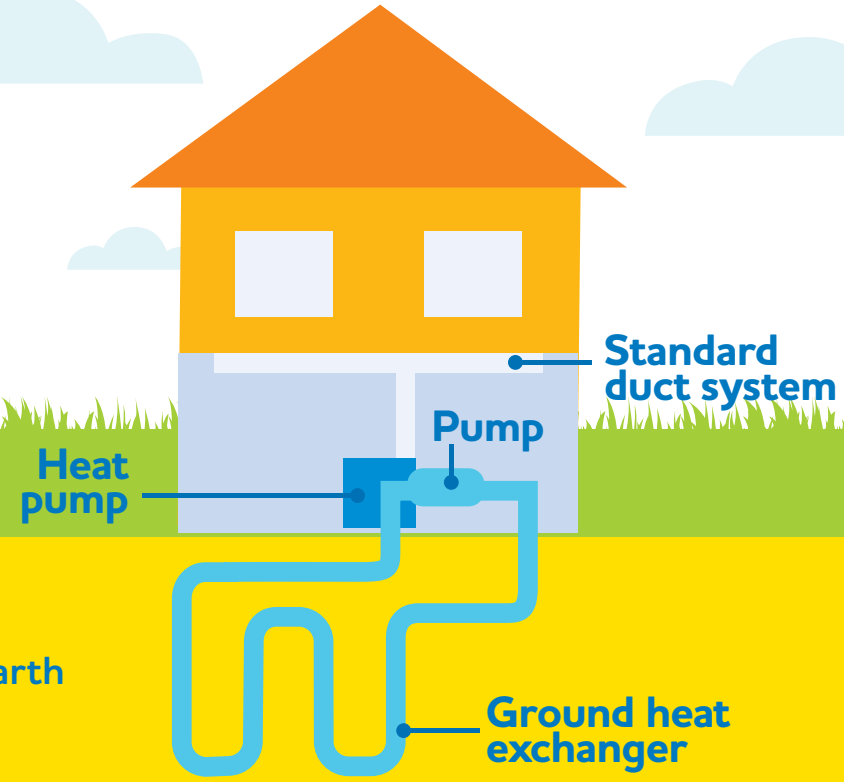
2. **Geothermal** is renewable thermal (heat) energy. It is generated naturally and stored in the earth. Hot lava from a volcano or hot steam from a geyser comes from this underground heat. We can use that same type of heat in our homes.

3. **Solar energy** is light or heat provided by the sun. 'Active solar' makes use of mechanical and electrical devices to harness the sun's energy, while 'passive solar' uses sunlight to heat and cool without using mechanical systems. A good example of passive solar is when you get into your car on a sunny day – rays from the sun enter the car windows, are absorbed by the car seats, and this heat gets trapped in the car and warms the interior. Examples of passive solar design elements in a building include windows that open (to allow heat to escape in the summer), thermal mass (materials like concrete that can retain heat in the winter) and orienting a building towards the sun.

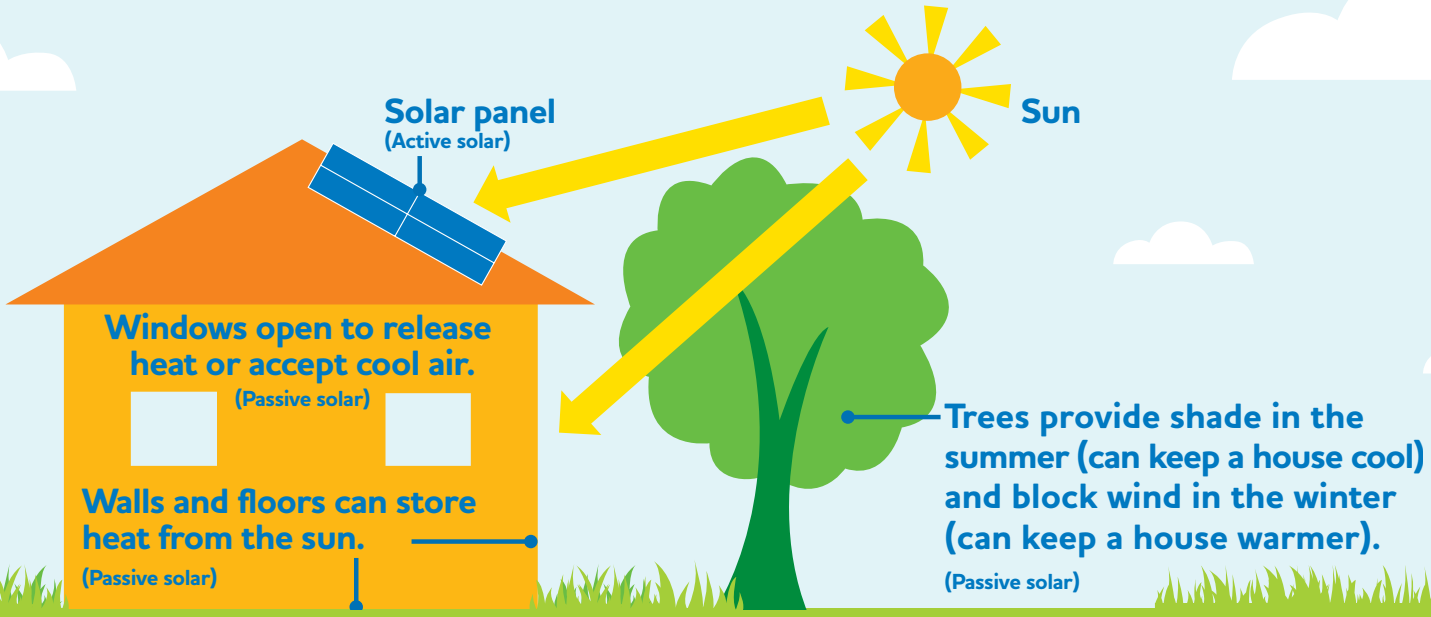


1 Bioenergy

2 Geothermal



3 Solar Energy



ACTIVITY 7: Find one example of a green technology in Manitoba.
Tell your class about it and explain how it saves energy.

Care, responsibility, and protection for the environment.

From the Winnipeg River in the south to the Nelson River in the north, our province is blessed with large rivers – and abundant hydroelectric potential – flowing north into Hudson Bay.

We recognize our responsibility to treat this vast renewable energy resource with utmost care and reduce the impacts of our operations on our environment and the world.

Dedicated environmental experts across our organization actively lead strategies and programs to ensure our environmental stewardship, biodiversity management, and innovation in planning for the future against the risks of climate change.

CLIMATE CHANGE

Our abundant green, clean, renewable hydropower positions Manitoba to lead the country in efforts to reduce greenhouse gas (GHG) emissions as part of the fight against climate change.

- The province contributes approximately 3% of Canada's national GHG emissions.
- GHG emissions from Manitoba Hydro's electricity and natural gas operations are less than 1% of total provincial GHG emissions.

ACTIVITY 8: Match the definition in column 1 to the words in column 2.
Use each answer only once.

A) Hydro, solar, thermal and wind energy are forms of ...	**1) Fossil fuel**
B) Oil, coal and natural gas are forms of non-renewable ...	**2) Reduce**
C) The first and most important of the three R's ...	**3) Climate change**
D) Natural gas is the cleanest burning ...	**4) Energy**
E) The gradual change in climate due to heat-trapping gasses in the atmosphere ...	**5) Renewable energy**

ACTIVITY 9: In groups *(either as a class or as a school)***, discuss what you can do, to live more sustainably. Perhaps you could have your own commuter challenge, start a compost program, or find out where your school's energy inefficiencies are.**

Manitoba Hydro recognizes that our operations affect, and are affected by, **our environment.**

Here are a few examples of how we take care in our work:

- **Protecting birds**: With guidance from our environmental specialists while performing our work in areas near or that support nesting birds.
- **Planting trees:** Our Forest Enhancement Program funds tree-planting projects, helping to improve and sustain Manitoba's forests. Projects that may address climate change are of particular interest.
- **Minimizing risks to human health and the environment:** We only use herbicides approved by Health Canada in our vegetatation management methods.
- **Proactively managing the impact of zebra mussels:** We monitor selected Manitoba waters and apply treatments to manage this aquatic invasive species (AIS) that clamp onto various materials and use them as colonization grounds.

Lake Sturgeon stewardship

Namao, Cree for Lake Sturgeon, has a social and historical significance in Manitoba and a cultural significance to Indigenous peoples in the province. Manitoba Hydro actively supports the recovery and maintenance of healthy lake sturgeon populations through ongoing studies and stewardship efforts. These include population-specific studies, broader studies on lake sturgeon ecology, and the effectiveness of conservation measures.

We also provide funding to — and are members of — the Nelson River Sturgeon Board, Kischi Sipi Namao Committee, and the Saskatchewan River Sturgeon Management Board. Through these groups, population studies and stewardship activities take place annually on the Saskatchewan River and Upper and Lower Nelson Rivers.

Our operation of the Grand Rapids Fish Hatchery supports conservation stocking programs run by the Nelson River Sturgeon Board (in the Upper Nelson River) and the Keeyask Hydropower Limited Partnership (in the Keeyask area). Through these programs, up to 10,000 fingerling sturgeon and 2,000 yearling sturgeon are stocked in the Nelson River each year.

Being kinder to our planet

Every use of energy has some effect on land, water and air. Using energy more efficiently softens the impact on our planet. Always consider what we can change about the way we use energy. **Each of our actions make a difference to our environment either, positive or negative.**

ACTIVITY 10: As a class, make a calendar with a tip to save energy each day of the month. Some ideas to get you started:

- Install motion activated lights or timers for outdoor lights.
- Regularly change your furnace air filter to help the furnace run as efficiently as possible.
- Think about what you want before opening the fridge.
- Light your home with sunshine.
- Turn off lights when they are not required.
- Shut down electronic equipment when it is not in use.
- Take shorter showers.
- Repair leaking taps.

A few things to know about electricity

Electricity flows easily through conductors but not through insulators.

- A **conductor** is a material that electricity can flow through easily: people, water or metal for example.
- An **insulator** is a material that electricity cannot flow through easily. Just as a pot holder insulates you from heat, electrical insulators slow down or resist the flow of electricity. Glass, plastic and rubber are example of insulators.

Electricity always takes the easiest path to the ground. Don't let that be through you!

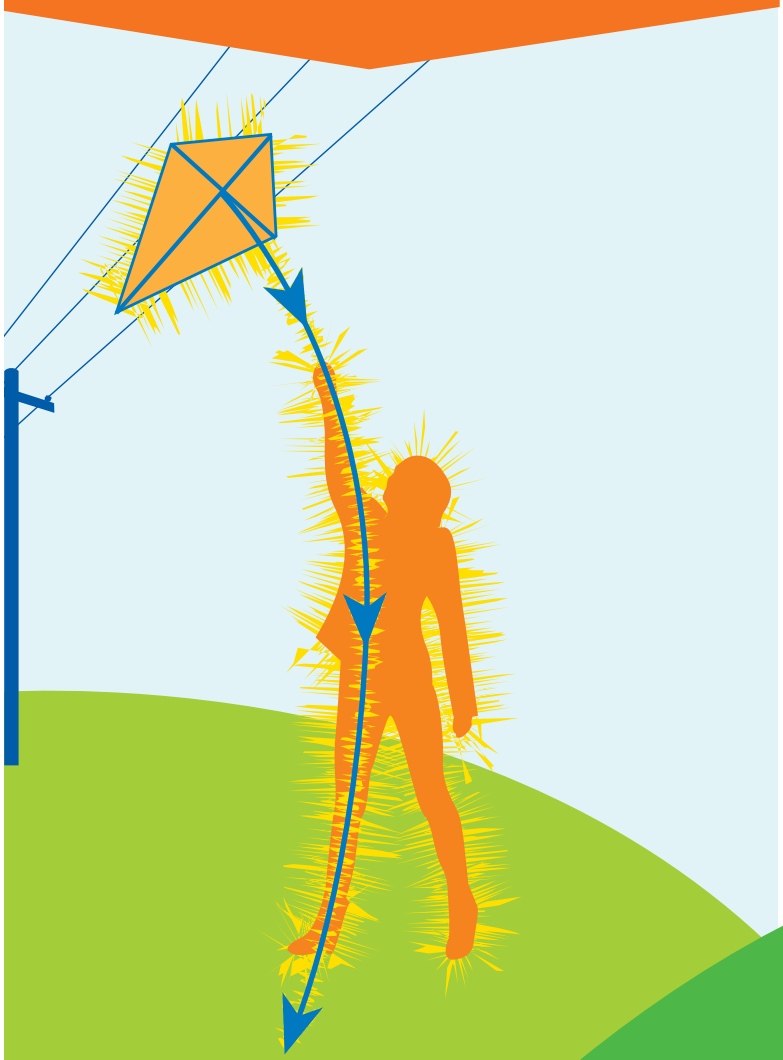
- Electricity travels in a path called a **circuit.** It will not leave the circuit unless it can find an easier path to the ground. If you touch a circuit and the ground at the same time, you become the easiest path.

Why electricity can be dangerous

Most of us have experienced a shock from static electricity – maybe when you've walked across carpet and touched a doorknob. But an electric current shock is a lot more painful – **and a lot more dangerous.**

DID YOU KNOW?

Electricity moves quickly through water and the human body is 70% water. But here's why you don't want electricity to enter and move through your body:



- Muscles tighten up, making it almost impossible to let go of the energized item.
- Lungs constrict, making it hard to breathe.
- Heartbeat is interrupted and blood vessels tighten.
- Electricity leaves burns where it enters and exits the body. Internal tissues will also be damaged.

It is scary and it can be deadly so it's important to follow safety rules to use electricity without getting hurt.

Accidents can happen quickly

You might think that you can pull your hand away quickly and not get hurt. But the effects of electricity are immediate so a person is not able to pull away fast enough.

Anyone who touches someone who is being electrocuted can become part of the circuit as well. That's why you should never touch anyone who's being shocked.

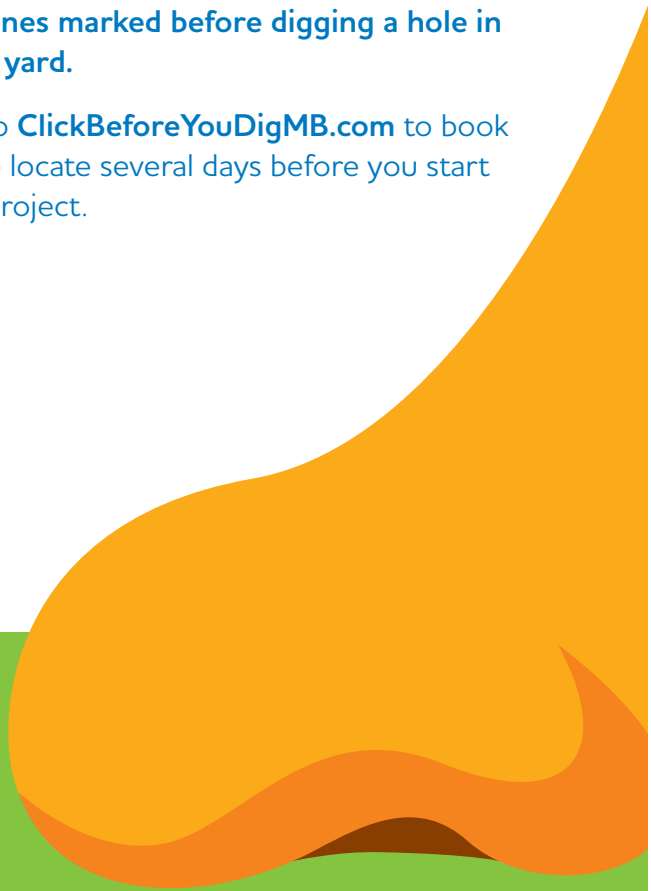
DID YOU KNOW?

Electricity is fast. It travels at 300,000 kilometres per second. If you traveled that fast, you could travel around the world almost eight times in the time it takes to turn on a light!

Safety around electricity and natural gas

- **Keep electrical devices far away from water.** For example, don't have a radio or phone charger near the sink. Most electrical accidents around the house happen when people use electricity near water since water is a good conductor of electricity. Never touch electrical cords, switches, or appliances when you are wet, standing in water or have wet hands.
- **Pull by the plug, never the cord when when you unplug an electrical device.** Pulling the cord could damage the plug, outlet or even cause a fire.
- **Never play near or climb the fence around an electrical substation.** Only people who have special protective gear and trained to work with high voltage equipment can enter a substation.
- **Look up and watch out for power lines before you climb a tree.** Electricity can go right through the tree branch - and right through you! Remind adults to watch out for power lines when they're using a ladder or other outdoor equipment.
- **Fly your kite in wide open areas away from power lines.** Electricity will always find the easiest path to the ground. If your kite or balloon tangles in a power line and you touch the string, electricity could travel down the string and through you on its way to the ground.
- **Stay away from downed power lines.** Sometimes storms can bring down power lines. Fallen lines on the ground can kill you if you touch them or get too close. Stay away and call ManitobaHydro or 911 to report the emergency.
- **Stay away from hydroelectric dams and generating stations.** Always be alert for danger and obey warning signs and safety barriers.
- **Smell gas? Act fast!** Natural gas smells like rotten eggs. If you suspect a gas leak, leave the house quickly. Leave the door open and call Manitoba Hydro or 911 once you're out of the house. Any source of ignition including a phone or light switch could create an explosion. Remember: Smell, Leave, Tell!
- **Have underground electrical and natural gas lines marked before digging a hole in your yard.**

  Go to **ClickBeforeYouDigMB.com** to book a line locate several days before you start the project.



You can tell if there is a natural gas leak by the **smell of rotten eggs.**

ACTIVITY 11: Select all answers that apply.

1. **If you smell natural gas you should …**

   a) Find where the smell is coming from.

   b) Turn off the lights.

   c) Leave the area immediately and tell an adult.

2. **If a ball goes over the fence of a substation**

   a) Climb the fence to retrieve it but don't touch anything.

   b) Call Manitoba Hydro for help.

   c) Ask your parent to climb the fence to get it.

3. **Electricity flows through water as easily.**

   True or False?

4. **If you are digging a hole in your yard to plant a tree…**

   a) Go to ClickBeforeYouDigMB.com to have underground natural gas and electric lines marked.

   b) Dig around the marked lines carefully.

   c) Look up and make sure you are not planting the tree beneath power lines.

5. **Your best natural gas detector is…**

   a) Your eyes

   b) Your tastebuds

   c) Your nose

   d) Your sense of touch

6. **If you are near a hydroelectric generating station or dam:**

   a) Obey all warning signs.

   b) Stay away from fenced-off areas.

   c) Listen for the sound of a siren that warns the spillway is about to open.

7. **If you see a tree that has knocked down a power line you should …**

   a) Stay away and call Manitoba Hydro.

   b) Check to see if the line is energized.

   c) Move the wire with a stick.

8. **What would you do if your little brother or sister was going to poke their finger into an electrical outlet?**

   a) Wait to see what happens but be ready to call your parent.

   b) Get out a fire extinguisher.

   c) Stop them and, call an adult. Find some outlet covers and explain that electricity can really hurt them.

   d) Let them get shocked and hurt so they learn a lesson.

9. **A shock from an appliance or power cord in your home will hurt but it can't kill you.**

   True or False?

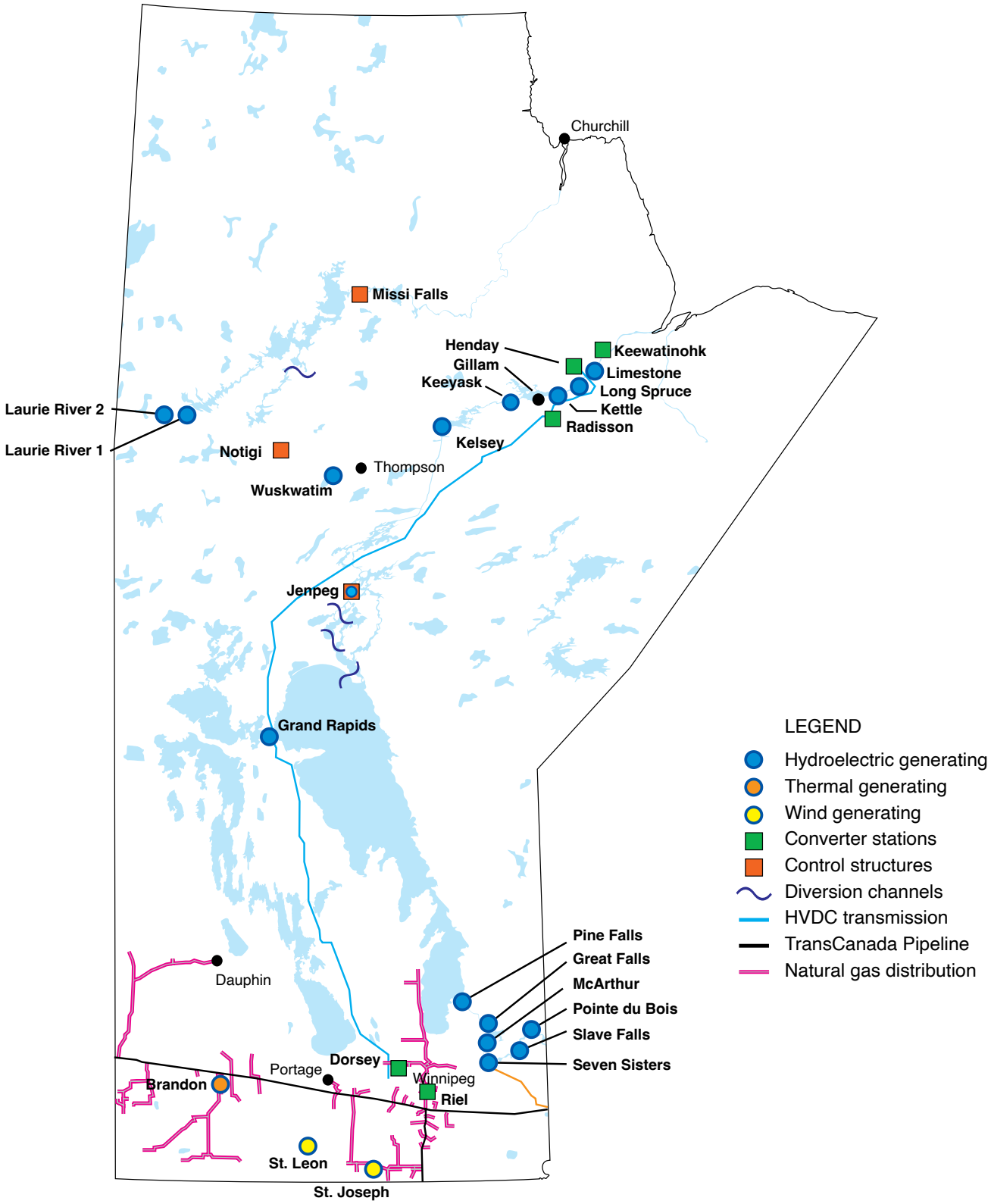
10. You're swimming in the backyard when your music stops because your phone battery dies. **Your friend jumps out of the pool to plug it into the charger…**

    a) This is dangerous because she is standing in a puddle of water.

    b) Water conducts electricity.

    c) Her hands are wet and she could get shocked.

Manitoba's major electrical and natural gas facilities



Answer key

ACTIVITY 1: Unscramble these words to reveal the benefits of hydropower.

1. Clean
2. Cost-effective
3. Renewable
4. Efficient
5. Reliable
6. Stable

ACTIVITY 3: Look at these two photos and list the six items that use more electricity today, than in the past.

1. iPad
2. Electric guitar
3. Sound system speakers
4. Television
5. iPhone
6. Laptop

ACTIVITY 4: What things can I do to help save energy?

1. True
2. a, b, c, d
3. d
4. b, c
5. a, c, d
6. True
7. b, c, d
8. True

ACTIVITY 6: Where do we use energy in our homes? Choose the correct percentage to match the following energy uses for the average house in Manitoba.

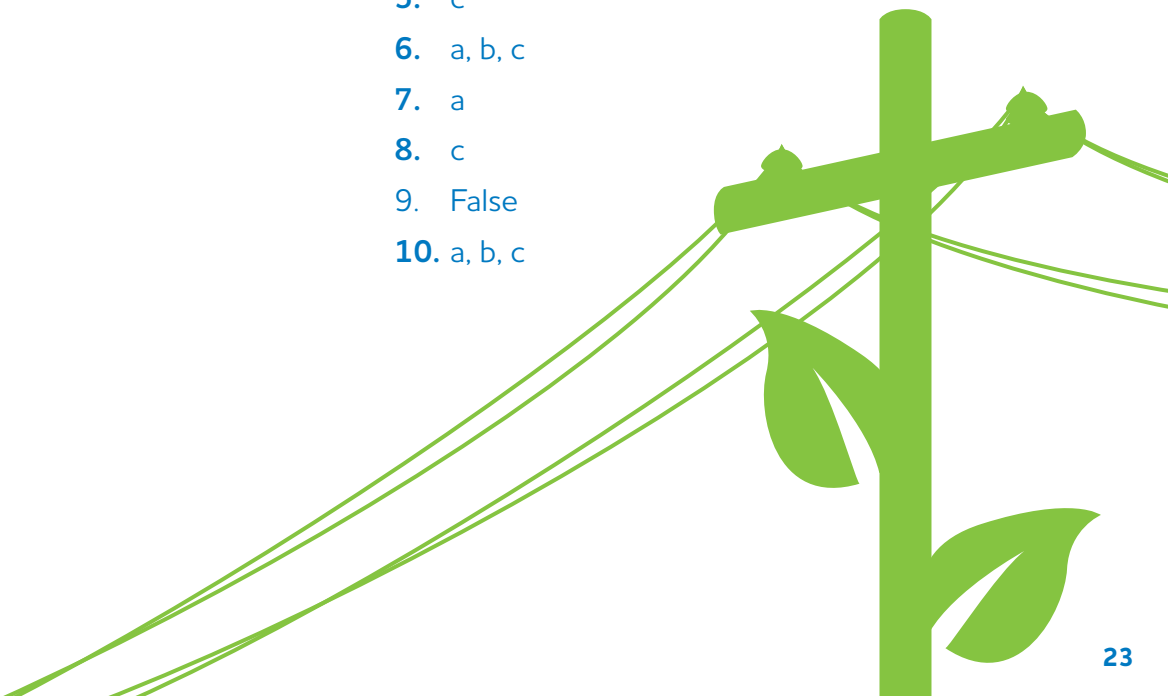
1. Lighting (4%)
2. Space heat (60%)
3. Appliances (8%)
4. Electronics (10%)
5. Air conditioning (5%)
6. Water heating (13%)

ACTIVITY 8: Match the definition in column 1 to the words in column 2.

Answer: A-5, B-4, C-2, D-1, E-3

ACTIVITY 11:

1. c
2. b
3. True
4. a, b, c
5. c
6. a, b, c
7. a
8. c
9. False
10. a, b, c



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