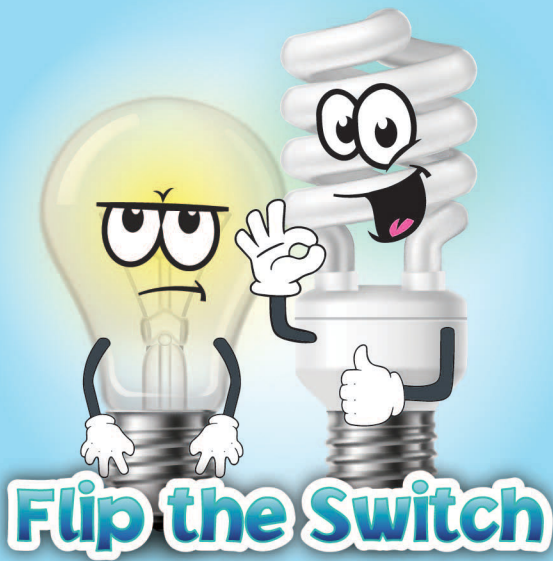


Climate change is one of the biggest threats facing our planet today, and one of the ways you can help fight against it is by cutting back on the amount of electricity you use.

Your Mission: Switch to energy-efficient light bulbs and help conserve electricity in your home!

Here's what you need to do to complete this Mission:

- ☐ Replace as many incandescent light bulbs with energy-efficient bulbs as you can.
- ☐ Take a picture of yourself with all the light bulbs you've replaced.
- ☐ When you're done, visit earthrangers.com/flip-the-switch to let us know how your Mission went and complete the Mission survey.



What is climate change and how does saving electricity help to slow it down?

Climate change refers to the changes in our planet's weather patterns over a long period of time. When we burn fossil fuels to make things like electricity, we impact how quickly our climate is changing. That's because many types of fuel release greenhouse gases when they're burned, which then build up in the Earth's atmosphere and cause the planet to warm faster than it has in the past.

On the other hand, some energy sources, like solar and wind power, don't release any greenhouse gases. A 15 megawatt solar farm in Brooks, which FortisAlberta played a big role in creating, will power as many as 3,000 homes with emission-free energy!

But not everyone can make the switch to greener sources. If you can't, do your part to reduce emissions by cutting back on the amount of energy you use!



Buying energy-efficient appliances, replacing old windows, and installing a programmable or smart thermostat are some great ways to save electricity at home, but they can be pretty big purchases. Instead, we're focusing on something that's a little smaller but will have a big impact: lights!

Be on light patrol

How many times have you forgotten to turn the lights off when you leave a room? Or maybe you turn on all the lights when just one would be enough? These bad habits are real energy-wasters, and it's time for you to take charge! It's your duty to be on light patrol in your home and make sure everyone turns the lights off when they aren't using them.



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Are you ready to flip the switch?

It's easy to see how turning off lights can save electricity, but did you know that the type of light bulb you use can also help? When it comes to choosing a light bulb, many of us stick to the ones that are cheap: incandescent bulbs. But saving a dollar at the store is costing us a lot in electricity and hurting the environment too!

Incandescent bulbs work by using electricity to heat up wire until it glows and gives off light. About 95% of the electricity these bulbs use is released as heat. You can actually feel this wasted energy when you are close to a lit bulb (the bulb gets extremely hot). Unlike incandescent bulbs, energy-efficient bulbs like CFLs or LEDs lose a lot less energy to heat, which means they need less energy to get bright.



Here's some good news: The government of Canada has banned companies from importing or producing traditional incandescent bulbs. Although you might find them at some stores for the time being, it's a great step forward for energy-saving.

Step 1: Figure out which energy-efficient light bulb is right for you

Compact Fluorescent Light (CFL)

- Use about 75% less energy than an incandescent bulb
- Can last 8,000-10,000 hours
- More expensive than incandescent bulbs but less expensive than LEDs

I love shining for a long time.



I'm the super hero of all bulbs!



Light-Emitting Diode (LED)

- Use about 80% less energy than an incandescent bulb
- Can last more than 25,000 hours, which could be 22 years (based on average household use)
- More expensive than CFLs, but their energy-savings are worth it

Step 2: Figure out how bright you need your new bulbs to be

The amount of energy a light bulb needs to light up is measured in **watts**, and that's the number many of us use to figure out which bulb should go where. However, since CFLs and LEDs use less energy than incandescent bulbs, they won't have the same wattage, and that can make shopping for new bulbs confusing! **Make sure you pay attention to the number of lumens** – they tell you how bright the bulb will be.

...I wish I was more efficient.



Use this chart to help you choose the right bulbs.

Brightness	Could be used for...	Incandescent	CFL	LED
450 lumens	A bedside or desk lamp	40 watts	9-13 watts	4-5 watts
800 lumens	An overhead or floor lamp	60 watts	13-15 watts	6-8 watts
1100 lumens	An overhead lamp or an outdoor porch light	75 watts	18-25 watts	9-13 watts
1600 lumens	An outdoor porch light or garage light	100 watts	23-30 watts	16-20 watts

Coupon

TIP: Before you go to the store, check out Energy Efficiency Alberta or your city's or your local energy provider's websites to see what coupons or rebates they have to help you save on light bulbs.

Step 3: Replace your incandescent light bulbs with your new energy-efficient bulbs

Make sure the light is turned off and the bulb has cooled down before you start (wait 15 - 20 minutes just to be safe). With an adult to supervise, start replacing your bulbs. Have an adult change any bulbs that are hard to reach. If you are using CFLs, make sure you hold the bulb by the ballast (the bottom part) and not the glass.



Step 4: Take a picture with all the bulbs you've replaced before you dispose of them safely

Snap a pic as you pose beside all the bulbs you've replaced. Just think of all the energy you just saved! Once you're happy with your picture, it's time to dispose of your light bulbs. Although incandescent bulbs are glass, they can't be recycled in most places. Carefully wrap them in newspaper and place them in the garbage so they don't break and hurt anyone.



Keep track of how many incandescent light bulbs you've replaced by colouring them in!

How many incandescent light bulbs did you replace? _____
What type of energy-efficient light bulbs did you replace them with?
☐ CFL ☐ LED ☐ Other _____



Head over to earthrangers.com/flip-the-switch to let us know how your Mission went, and don't forget to fill out the Mission survey!

Looking for other ways to save electricity at home? Try these illuminating ideas!

- ⚡ Choose light-coloured paints when redoing a room and curtains that reflect more light.
- ⚡ Plug each part of your entertainment system and computer into a "smart" power bar.
- ⚡ Place floor lamps or table lamps in a corner instead of in the middle of a wall.
- ⚡ Unplug your home electronics and their chargers when they're not in use.
- ⚡ Dust your lamps, shades, light fixtures and bulbs regularly.
- ⚡ Use reading lamps or other forms of task lighting.
- ⚡ Try using natural light during the day.



Save Energy, Save the Planet

A lot of the electricity we use comes from sources that also produce greenhouse gases, like coal, which releases carbon dioxide (CO₂) when it's burned. But how do greenhouse gases impact the planet?

CO₂ and other greenhouse gases are naturally found in our atmosphere. It's their job to trap some of the energy (like heat) from the sun, keeping our planet the right temperature for plants and animals, including humans, to survive. This is called the greenhouse effect.

The problem is that human actions are producing greenhouse gases so quickly that they're piling up in our atmosphere and trapping too much of the sun's energy. This is causing our climate to change faster than it has in the past. The Earth's temperature is rising, changing ecosystems around the world and making it harder for animals to adapt and survive.



If we don't do something now to slow down climate change, we could see:

- More major weather events, like storms, blizzards, heat waves and forest fires
- Droughts that will make it harder to grow food
- Flooding due to more rainfall and rising ocean levels
- Warmer oceans causing coral reefs to die off
- Disease-carrying insects like mosquitoes, ticks and black flies moving north
- More invasive species outcompeting native species for food and habitat
- The extinction of many animal species



What's Alberta doing to help slow down climate change?

FortisAlberta is helping many communities in the province make the switch to LED streetlights. They own and operate over 100,000 streetlights and are working with these cities and towns to convert more than 80,000 existing and new streetlights to LED fixtures to reduce energy consumption and greenhouse gas emissions.

Alberta is also working to slow down climate change through the **Climate Leadership Plan**, where lots of amazing work is being done to cut emissions and create a healthy environment for people and wildlife.



Did you know?

- The burning of coal is a big source of greenhouse gases, but it also creates a lot of air pollution, which not only hurts the environment but also our health. Alberta has a goal to end coal-generated electricity by 2030 and replace it with more renewable energy sources, like wind, water and solar.
- Like carbon dioxide, methane is a greenhouse gas that comes from fossil fuels. Alberta has committed to cutting methane emissions almost in half, just by improving energy technology and repairing leaky equipment.

You can learn more about the Climate Leadership Plan and the actions that Alberta is taking to help reduce emissions by visiting www.alberta.ca/climate-leadership-plan.aspx

Flip the Switch Word Search

J	R	U	Q	K	R	M	C	F	L	S	O	B	E	S	C	M	C
L	W	G	Z	I	R	C	A	L	I	G	H	T	B	U	L	B	T
E	E	V	T	C	P	B	H	I	H	C	O	G	A	N	I	C	P
C	A	T	E	A	U	V	N	P	K	H	G	C	C	J	M	K	J
N	T	W	T	R	E	K	I	T	U	N	W	Y	S	H	A	M	S
F	H	R	Y	B	D	J	M	H	G	S	G	X	A	F	T	A	S
Y	E	I	C	O	B	I	E	E	F	N	J	P	T	W	E	D	J
G	R	E	E	N	H	O	U	S	E	G	A	S	B	P	C	J	B
H	L	U	R	D	Q	O	D	W	M	I	U	V	N	J	H	V	F
Y	F	D	O	I	M	X	H	I	O	J	E	K	K	U	A	D	T
B	O	N	K	O	L	E	X	T	I	N	C	T	I	O	N	U	E
S	S	S	L	X	J	D	R	C	P	R	X	O	G	J	G	J	M
Y	S	W	M	I	W	X	U	H	Y	B	U	K	G	Q	E	G	P
T	I	J	D	D	O	G	A	V	W	I	G	S	W	S	C	V	E
F	L	O	R	E	L	E	C	T	R	I	C	I	T	Y	T	O	R
E	F	C	A	Y	A	P	I	A	E	U	P	X	C	B	F	N	A
M	U	P	O	U	P	O	L	L	U	T	I	O	N	R	B	M	T
G	E	W	Z	M	G	U	E	R	I	S	Z	Q	A	M	T	G	U
I	L	E	D	S	C	D	V	H	A	X	L	K	N	W	A	J	R
L	S	T	U	U	W	W	U	A	T	M	O	S	P	H	E	R	E

How many of these words can you find in the word search above?

They can go → and ↓. Good luck!

ATMOSPHERE
CARBON DIOXIDE
CFLS
CLIMATE CHANGE
ELECTRICITY

EXTINCTION
FLIP THE SWITCH
FOSSIL FUELS
GREENHOUSE GAS
LEDS

LIGHT BULB
POLLUTION
SUN
TEMPERATURE
WEATHER

Find the answers at www.earthrangers.com/wildwire/flip-the-switch-word-search-answers/

Sources

<https://www.alberta.ca/climate-leadership-plan.aspx>
<https://www.alberta.ca/climate-coal-electricity.aspx>
<https://energy.gov/energysaver/incandescent-lighting>
<http://www.nrcan.gc.ca/energy/products/reference/14664>
<http://www.nrcan.gc.ca/energy/products/reference/15476>
http://www.usalighting.com/stuff/contentmgr/files/1/92feb328de0f4878257999e7d46d6e4/misc/lighting_comparison_chart.pdf
<https://www.consumer.ftc.gov/articles/0164-shopping-light-bulbs>
<https://static1.squarespace.com/static/56cdde5262cd94f3e9cfd8e/t/58b99cdc579fb322ec8944d6/1488559328830/LightSavers.LEDResults.2017.pdf>
<https://www.fortisalberta.com/customer-service/save-energy>
<https://www.canada.ca/en/environment-climate-change/services/climate-change/impacts.html>
<https://oceanservice.noaa.gov/facts/coralreef-climate.html>
<https://scied.ucar.edu/longcontent/climate-change-and-vector-borne-disease>
<https://www.ec.gc.ca/eee-ias/>
<http://science.sciencemag.org/content/348/6234/571.full>

Let's reduce
emissions together!

