Taking Action: Personal Choices About Energy Use

Energy Revealed Backgrounder

Every day we make many choices and decisions about the use of energy. We often make the same decisions over and over as we become comfortable in our routines. We wake up at the same time, eat the same breakfast, put our clothes on in the same order, and get to school in the same way and by the same route. When we learn new information, however, we need to rethink some of our choices. This backgrounder helps you do just that. It describes many of the choices that people can make if they want to use energy more wisely.

> *"Things do not change; we change."*
> — Henry David Thoreau

A better energy choice usually takes one of these three approaches:

- **Energy Conservation**. Using less energy, by turning off lights, taps, and appliances when we don't need them, for example.
- **Energy Efficiency**. Using technology to reduce the energy needed to operate something, by choosing energy efficient appliances and compact fluorescent light bulbs, for example.
- **Renewable Energy**. Using renewable energy sources to meet more of our energy needs, by installing a solar water heating system on the roof, for example.

Most of the choices described here involve energy conservation or energy efficiency. Renewable energy choices are an excellent option, but an involved one.

What About Transportation?

In Canada, around 29% energy we use is for transportation. In 2018, 53% of energy use within the transportation sector was from passenger transportation (i.e., cars, light trucks, motorcycles, school busses, urban transit, inter-city buses, air, and rail). Since so much of our energy use is for transportation, it is an important area to target if you want to reduce your energy use overall.

- **Walk or ride a bike**. When you travel on your own energy (from food), you don't rely on non-renewable energy sources and create harmful emissions from the use of gasoline. A bicycle is the most efficient mode of transportation on the planet.
- **Live close to where you work or go to school**. The less distance you need to travel the better.
- **Choose an energy efficient vehicle**. When purchasing a vehicle, you can make a big difference by choosing an energy efficient model. Newer cars are often more efficient than older cars, and smaller cars are often more efficient than larger ones or SUVs. New technology is now being used for hybrid vehicles and electric cars. A hybrid engine runs on a combination of rechargeable batteries and gasoline (a hybrid is something with mixed or unlike parts). While in the city, a hybrid car usually runs on electricity, and while on the highway, it runs on gasoline. Because an electric car uses only electricity, it will pollute even less than a hybrid car.

- **Don't own more vehicles than you need**. Many families own at least one car and some own more than two. Reducing the number of vehicles, you own reduces the amount of energy used for transportation.
- **Use public transportation**. Next to walking or bike-riding, public transportation is the most energy efficient method for getting around in cities. Because buses and trains can carry so many people, more public transportation means fewer cars on the road.
- **Travel by bus or train instead of airplane**. The carbon dioxide emissions from air travel are much higher than travel by bus or train. You can greatly reduce energy use by taking vacations by bus or train rather than airplane. Likewise, businesses can reduce their energy use by teleconferencing rather than by flying people from different locations into one city to meet in person.
- **Buy offsets**. At a cost of about $22.00 per tonne of greenhouse gas emissions, Canadians can offset the negative impact of their transportation and other energy use. Offsets support clean energy projects, the kinds of projects that environmental organizations recommend. If your family is taking a flight and wants to ease the impact on the environment, you could purchase offsets in support of a clean energy project such as tree-planting.

What Can We Do at Home?

The residential sector also uses a lot of energy. In 2018, 17% of the country's energy use went to heating and cooling our homes, heating our water, running appliances and lighting. We can make choices in these four main areas to save energy at home: heat and air conditioning, water heating and water use, appliances (which include electronics), and lighting.

Many of the choices listed here apply to the commercial/institutional sector as well. Buildings such as businesses, schools, universities, and hospitals can benefit from the same kind of energy conservation, energy efficiency and renewable energy choices as homes.

> *"When people think of global warming, many of them probably think of factory smokestacks and cars. People don't realize that buildings contribute 30 percent of greenhouse gases."*
>
> — Nancy Searchfield,
> Canada Green Building Council

1. Heat and air conditioning

In a cold climate like Canada's, it is not surprising that most of the energy used for our homes goes to heating. Probably the best time to make an energy reduction in this area is when a home is first being designed and built, but there are choices you can make to reduce the energy used for heating and cooling anytime (as long as the people you live with agree!).

See which of these heating and cooling ideas could apply to your home. Are there some things your family is doing already?

- **Set the daytime temperature to 18–20 degrees Celsius**. You can save energy in the winter by turning the temperature down at night and when no one is at home to as low as 16–18 degrees Celsius. In the summer, you can turn the temperature up at night and when no one is at home to about 22 or 23 degrees Celsius.
- **Use a programmable thermostat** to automatically adjust the temperature at night and when no one is at home. You can program a thermostat to heat or cool the space for the morning as well as for the end of the day when people return home from school and work. Surprisingly, nearly one in five homes that has a programmable thermostat has not yet programmed it to help save energy! Taking just a few minutes to review the instructions and set up the panel can save a lot of money over a year.
- **Fill door and windows seams**. Many hardware stores sell a variety of foam insulation materials that can reduce drafts from windows and doors. These materials offer a more affordable and less time-consuming approach to those who are not renovating their home or replacing doors or windows.

- **Install energy efficient windows**. Standard windows are not very good at keeping the heat inside during the winter and outside during the summer, but energy efficient windows will help.
- **Increase insulation**. The best time to add insulation is when a home is being built, but it can also be added during renovations. You can put up insulation on the outside of a home and then put new siding over it. Since a lot of heat can be lost through the roof and basement of a home, the attic and basement need to be well-insulated too. Look for safety- approved insulation materials that feature recycled cotton and low-formaldehyde content to further support a healthy environment.

2. Water Heating and Water Use

We use energy every day to heat water for bathing, washing dishes, washing clothes and cleaning. There are a number of ways to reduce energy use for water heating:

- **Use only what you need**. While you shower, put in the drain plug so that you can see how much water you use. If the tub is quite full, next time you could put less water in the tub and have a bath instead. If you prefer showering, try timing what feels like a usual shower. The next time, challenge yourself to shower in the shortest amount of time possible. Then try to find a reasonable middle ground somewhere in between. By keeping your showers short, to between 5 and 10 minutes, you can likely reduce the amount of hot water you use.
- **Install low-flow shower heads** to reduce the amount of water you use. There are many good ones on the market. You may have already used one and not even know it. Some municipalities provide incentive packages at great prices to encourage reduced water use.
- **Use an energy efficient hot water heater**. It might cost a little more than a standard water heater, but it will quickly pay for itself in energy savings. Renewable energy can also be used to heat water. With a solar hot water heating system, for example, the sun's energy heats the water for you.
- **On clothes washers, select the warm/cold or cold/cold wash settings**. You can use a lot less hot water by choosing to wash with warm or cold, and to rinse with cold, it's really all you need.
- **Run the dishwasher only when it is full**. If you always fill the dishwasher before you run it, you will reduce the number of washes, saving both energy and water. When you do run the dishwasher, select the setting that uses the least water.
- **Use less water of any temperature**. Even cold water requires energy. Energy is needed to clean the water and to pump it to our homes. To conserve water, don't let the tap run when you are brushing your teeth, and turn off the water when you are shampooing your hair. When you make yourself a cup of tea or hot chocolate, don't fill the kettle with more water than you need. Whenever you see water going down the drain, ask yourself if there is a better way, one that uses less water.
- **Install ultra-low flush or dual flush toilets**. 32% of our daily household water use goes to flushing toilets. That's a lot of water down the drain! An energy efficient toilet uses much less water. Dual flush toilets usually rely on the power of gravity to make 3 or 6 litre flushes, while more traditional toilets use 20 litres or more! Some cities offer residents cash incentives for upgrading their household toilets. Toronto, for example, pays between $60 and $150.
- **Water outdoor plants only as needed** and during a cooler part of the day. If you water when the day is at its hottest, some of the water will simply evaporate. To reduce the amount of watering needed, some people landscape their yards so that they have very little lawn. They also choose plants that are native to the area, plants that don't need a lot of extra water to thrive in the climate you live in. Some people use rain-barrels to capture rainwater from the eaves troughs of the house and then use it to water gardens, plants and lawns. The rainwater would otherwise be lost down drains and sewers.

3. Appliances

Over the last 20 years, appliances have become much more energy efficient. The problem now is that we are using so many more appliances than we did 20 years ago, we are still using lots of energy for appliances! Not that long ago, most homes had only one television and stereo and very few other electrical appliances. Now many homes have two or more televisions and computers as well as printers, gaming consoles and a great variety of kitchen appliances. The size of appliances has also changed in recent years. For example, families that may have owned a 19-inch television that uses 55–90 Watts may now own a large plasma screen television that uses 200–300 Watts.

- **Know how much energy your electrical appliances use**. You can calculate the amount of energy an electrical item uses by multiplying the wattage that it needs to operate by the number of hours in use. Energy is measured in *kilowatt-hours* (in thousands of watts per hour).

Calculating energy use in kilowatt-hours:
Consider a 150-watt computer that is left on for 20 hours: 150 watts = 0.15 kilowatts (150/1000)
0.15 kilowatts x 20 hours = **3 kilowatt-hours**

- **Buy energy efficient appliances**. EnerGuide and EnergyStar labels help consumers choose appliances that are more energy efficient. Thanks to advances in technology, most major appliances such as refrigerators, freezers, stoves, dishwashers, clothes washers, and dryers use half of the energy they did just 10 years ago. New front load clothes washers and dryers and some of the newer dishwashers also use less water, double savings.
- **In the spring and summer, use a clothesline**. Save energy (and money) by hanging your clothes outside to dry rather than using the dryer.
- **Turn off appliances when they are not in use**.
- **Run your appliances with renewable energy**. You can buy small solar panels at hardware stores to help power or charge appliances. You can also purchase wind power for your computer (or your whole home). Each year, the City of Calgary purchases enough wind power to operate its C-train in a program it calls Ride the Wind™. A number of businesses such as Mountain Equipment Coop and Good Earth Cafes have purchased wind power for their stores.
- **Do not own more appliances than you need**. When you replace the old fridge with a new, more energy-efficient one, for example, don't keep the old one as a second fridge in the basement. If you do, your energy-efficient purchase will actually increase your overall energy use rather than decrease it!

4. Lighting

Making changes to lighting is one of the easiest ways to reduce your energy use at home:

- **Turn off the lights!** When no one is in a room, turn off the lights.
- **Choose compact fluorescent bulbs**. Incandescent light bulbs have been the most common type of lighting in homes, but compact fluorescent bulbs are quickly replacing them. Compact fluorescent bulbs are more energy-efficient, allowing people to replace a 40 to the 100-watt bulb with a 15-watt bulb. Compact fluorescent bulbs also last longer.
- **Choose Light Emitting Diodes (LED) lights**. These lights are now commonly used in Christmas lighting. An incandescent string of 70 lights can use up to 350 watts: 70 lights x 5 watts per light. An LED string of 70 lights uses only 3.5 watts: 70 lights x .05 watts per light. Because they are so energy-efficient, LEDs are also replacing other home lighting.
- **Choose halogen lights**. Halogen lights are a specialized type of incandescent lighting, but modern halogen bulbs do provide some energy savings.
- **Install motion and light sensors**. Rather than leave your outdoor lights on all night, install outdoor lighting that has motion and light. The sensors help you save energy because they detect when you need light, and then they turn off automatically after a set amount of time (after one minute, for example).

What About Waste Disposal and The Products We Buy?

All the garbage we throw away has to go somewhere, and it takes energy to transport it there. There are also energy costs in constructing and operating landfills. As you might expect, landfills also have many harmful effects on the environment, especially on surface water, groundwater, the soil, and air.

Many cities are finding it harder to find places to build landfills. We all generate garbage, but no one wants a landfill site in the backyard

Keep the three Rs in mind when dealing with garbage:

- **Reduce**. Reduce the amount that you throw away. To do so, you can choose to buy the products with the least amount of packaging. You can take a knapsack to the store so that you won't need plastic bags. To reduce, also think about what you really do and don't need so that you won't purchase something and then let it go to waste, such as extra groceries, for example, or a toy you don't really care that much about.
- **Reuse**. Use items again for other purposes. For example, you can give clothes you no longer use to a used clothing store. You can buy used books and toys from garage sales. You can reuse grocery containers for food storage and use food scraps to make compost.
- **Recycle**. Recycling has come a long way in the last 20 years. Rather than go to landfills, many products can now be set aside to go through a cycle of being processed into something new. Aluminum pop cans are recycled and made into new aluminum cans; plastic containers are recycled and made into other plastic products. Paper and glass products are recycled too.

Of course, the best way to handle waste is to buy less stuff in the first place, but that can be hard to do. In Canada, we place a lot of value on the things we own, clothes, iPods, televisions, computers, other appliances, furniture, cars, and homes. Much of our society is oriented around material goods. Of course, not all societies care as much about stuff as we do.

All that stuff means a lot of energy use. Any product that we purchase takes energy to produce and then to transport to our local store. Once you buy the product, it may also take energy to cook, use or operate, as in the case of a frozen dinner, computer, or car. Then when you are finished with the product, it takes energy to dispose of.

You can make a difference when you shop:

- Choose the products that take the least amount of energy to produce and transport.
  - **Choose locally grown or locally made products or grow and make your own**. The average North American dinner travels about 2,400 km (1,500 miles) from where it was grown before it arrives on your table! Like homemade items, locally made or locally grown items take less energy because they do not travel nearly as far to get to you. By buying locally, you will not only use less energy but also help your town or city by supporting local farmers and businesses.
- Choose the products that take the least amount of energy to use.
  - **Choose energy-efficient products** such as better light bulbs and appliances. When shopping for appliances, look for EnerGuide and EnergyStar labels. These products may cost more at the checkout, but they will pay for themselves in energy savings.
- Choose the products that take the least amount of energy to dispose of.
  - **Buy products with little packaging**. Sometimes there is more waste involved in the packaging of a product than in the product itself.
- Choose the products that are the least harmful to the environment.
  - **Look for organic food and clothing**. The fertilizers and pesticides that are used on non-organic food and cotton crops take energy to make and are harmful to the environment. Most grocery stores carry organic food, and many cities have specialized organic food stores. Organic clothing made from cotton or

hemp is also available in most cities.
    - **Buy environmentally friendly products**. There are many environmentally friendly products on the market now, from non-toxic cleaning supplies and natural cosmetics to recycled paper products such as toilet paper and paper towels. Choosing to buy things made from recycled materials means we help "close the loop," or complete the cycle in recycling. A good choice for paper is 100% post-consumer recycled stock. Made from paper fibre that has been used by someone before, it costs the same as regular paper, takes less energy and saves us from using more trees unnecessarily.
- Choose to buy less.
    - **Don't buy more than you need**. Remember that the things you purchase always cost more than money. There are energy and environmental costs as products are produced, transported, used, and discarded.

"The best things in life aren't things."
— Art Buchwald

How Do I Take Action?

There are a number of ways to put together an action plan. Studies show that people who write down their goals are much more likely to meet them. When creating your plan, we recommend using S.M.A.R.T goals which are goals that are Specific, Measurable, Attainable, Realistic and Timely.

1. **Specific**

Goals such as *change the world* and *use less energy* are too general for an action plan. Instead, choose goals such as *bike to school three times each week, compost food waste after meals at home, and turn off the computer and television when not in use*. A specific goal is one that can be measured and met. To narrow down the many ways to reduce energy use to a few specific actions, it might help to take an inventory of all of the actions you could take. The ideas in these pages should help you with that. Once you have a list of all possible actions, you can narrow it down to the ones you want to take now.

2. **Measurable**

You need to be able to measure whether you are passing or failing with each action. Instead of *riding my bike to school*, state how many times per week, you will do so. Instead of *changing the lighting*, state how many of the incandescent lights in your home you want to change to compact fluorescent bulbs. Timelines also help. How long will you give yourself to start your own compost bin? How long will you give yourself to stop using plastic bags completely and always use a knapsack or cloth bag instead? If your action plan includes numbers and timelines, you will be able to measure your success along the way.

3. **Attainable**

You need to choose goals that you can reach. If you set a goal that your family buy an energy-efficient car, for example, and your family just bought a new car or cannot afford a new car or does not want an energy-efficient car, your goal is not attainable. Begin by choosing goals that you know you can achieve on your own, and then involve other people later. To make an action plan attainable, it is also a good idea to choose the approach that works best for you. For example, some people find it easier to take one step at a time, while others feel inspired to make many changes at once. If you plan around your own strengths and weaknesses, you will be more likely to create an action plan that works.

4. **Realistic**

Understand the limits of what you are trying to achieve. Getting every person in your neighbourhood to compost may not be very realistic as a starting goal. A realistic goal may be to start composting at home and then make a point of letting your neighbours see what you have set up in the hope that it will inspire them to do the same thing. Being realistic with your plan also means that you need to allow for mistakes. It doesn't help to beat yourself up or give up on the plan if you don't follow it exactly. What's important is to do the best you can, celebrate your successes, learn from your mistakes, and revise your plan when you need to.

5. **Timely**

The right timing can make all the difference. For example, if your family is doing renovations, this might be a good time to add better insulation and energy-efficient windows. If your stove is falling apart, now is a good time to start talking to your family about the value of energy-efficient appliances. Sometimes the season is important. If you decide as part of your action plan to start walking or riding your bike more often, it might be easier to get started in the spring than in the fall. Likewise, it wouldn't make sense to start a vegetable garden in the fall. If it's November or December, however, and you will be exchanging holiday gifts, now would be a good time to think up gifts that don't require shopping or to come up with ways to wrap presents that won't create waste.

Once you have created your plan, put it somewhere where you can see it, on your bulletin board or on the fridge, for example. Update it as you meet specific goals, when you change your goals, and as you add new ones. Remember to celebrate your successes along the way!

Some of the Benefits to Reducing Your Energy Use:

- **Environmental**. We rely on nature to provide us with a great deal: clean air and water, healthy plants, and a climate we can live in. When we make choices to preserve these "ecosystem services", we make it possible for the Earth's natural systems to keep providing us with the things we need to survive.
- **Energy**. Non-renewable energy sources take millions of years for the Earth to create. As we use less non-renewable energy and more renewable energy, we ensure that non-renewable sources will be available for future generations.
- **Personal**. Using less energy saves money over time. More importantly, it feels good to do what you believe is right. There is a sense of well-being that comes from living according to your own values and your ethics.