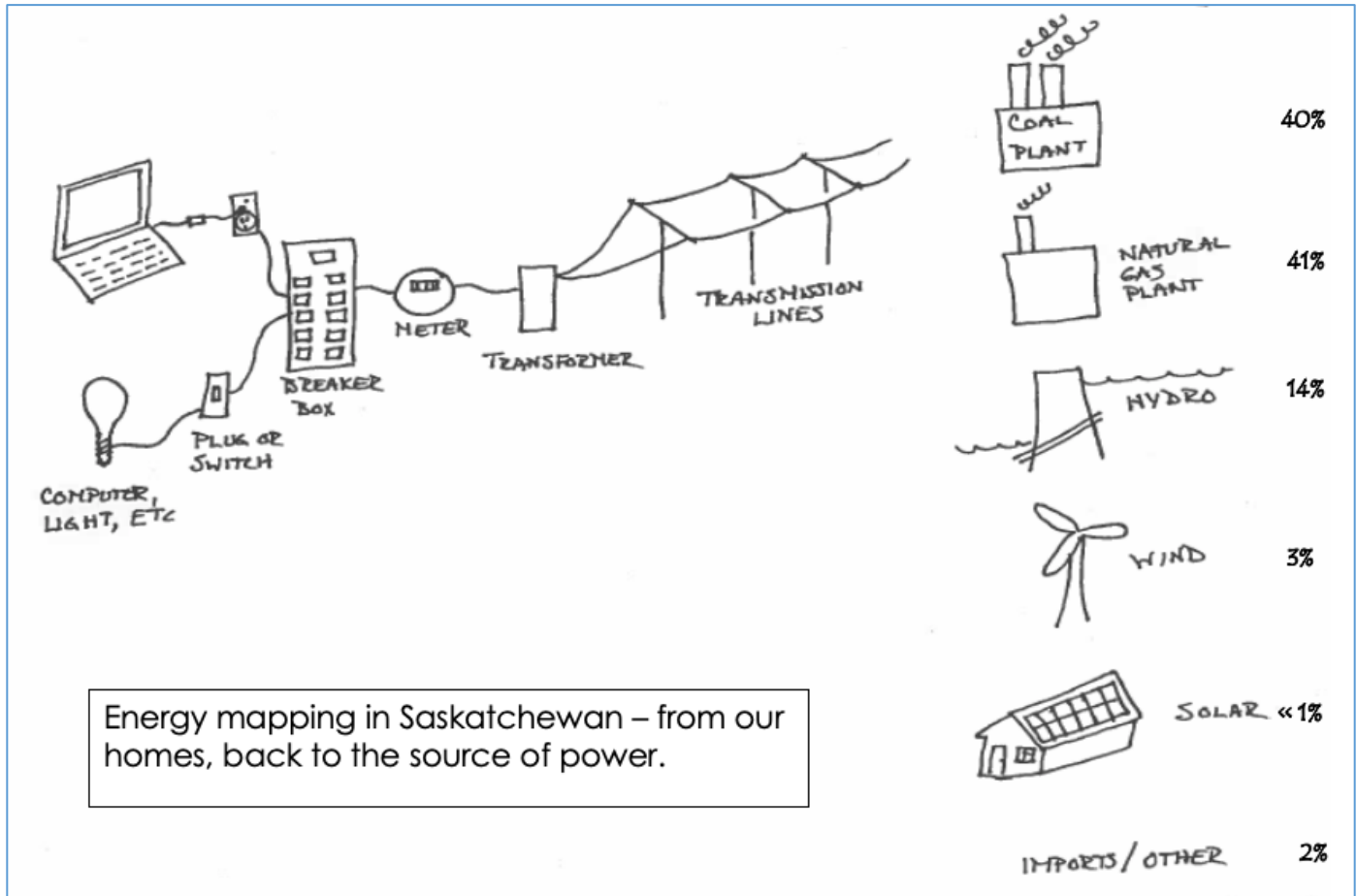




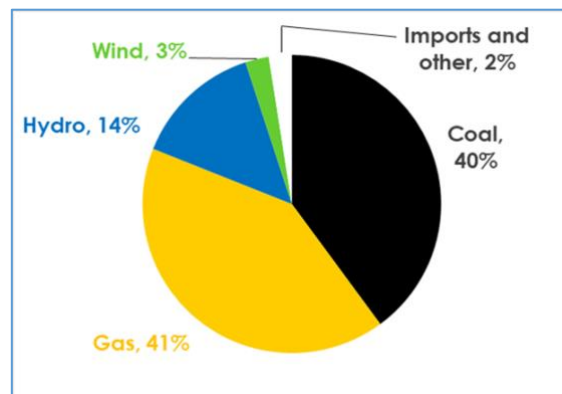
How SaskPower generates electricity for Saskatchewan (2018) – Case Study

Electricity in Saskatchewan is generated using a variety of sources of energy. Some of these sources produce a lot of greenhouse gases and other pollutants when they generate electricity. Some sources are better for the environment than others. The energy mapping sketch below maps the path of energy from electrical devices in our homes, back to the source of the power. The percentages represent the amount of electricity that was generated from that source in 2018.



Here is what that looks like in a graph.

Source: SaskPower 2018.19
Gross Electrical Energy Supplied





The pros and cons of each resource

Coal Plant

In the energy mapping sketch on page 1, the coal-fired power plant has two stacks to represent the large amount of emissions. Burning coal is a very dirty way to generate electricity because it produces a lot of carbon dioxide (CO₂), particulates, mercury (Hg), and other harmful greenhouse gases (GHG). In the past, coal has been an inexpensive way to create electricity in Saskatchewan because we have a lot of it, close to where the electricity is generated. Right now, Saskatchewan relies heavily on coal for power generation to provide base load supply, which means the electricity is available from this source every day.

Natural Gas Plant

In the sketch, this plant has only one stack. It still produces a lot of CO₂, but only about half as much as coal, and it doesn't produce the other gases and particulates. Natural gas is an ideal backup for wind power because it can quickly provide electricity for peak energy times.

Hydro

The environmental damage in hydro is all created when the dam is constructed, and the reservoir flooded. A waterway is dammed up to create a lake or reservoir. The trees, grasslands, and shoreline above the dam will be flooded and will create methane (CH₄), a potent greenhouse gas, when they rot. However, once that damage is done, the electricity from hydro is very clean.

Wind

Wind turbines are also a very clean energy source. They need to be placed outside of bird migration routes. (Buildings, power lines, and house cats kill far more birds than wind turbines do.) Turbines need to be placed a certain distance from people's homes, and the wind doesn't always blow. Right now, the power can't easily be stored for later use, so wind turbines can't be used as the only way to generate electricity.

Imports/Other

These are the amounts of power that are bought and sold from Manitoba and North Dakota, and what is generated by diesel generators in the far north. Imports are great for when the required amount of power exceeds what SaskPower can provide.



Solar

Many people and businesses have solar panels on their roofs or farms and generate power that way. Although SaskPower is planning for solar to be a source of electricity, it is not yet one of the ways SaskPower currently generates large amounts of electricity.

Nuclear

Although we mine uranium for other countries to generate electricity, we don't generate nuclear power here in Saskatchewan.

Note: SaskPower has committed to up to 50% renewable energy capacity by 2030. This will likely be a combination of solar, wind, or other renewable projects like biofuels. SaskPower compares power supply options here, including some that emit greenhouse gases:

[Balancing Supply Options](#)

SaskPower plans to add 60 megawatts of solar power to Saskatchewan's electricity grid by 2021. A ground-mounted solar installation of that size will have the generating capacity to power between 10,000 and 12,000 homes.

Think/Share:

- What is a non-renewable resource? Which of these sources of electricity is non-renewable?
- What is a renewable resource? Which of these sources of electricity is renewable?
- What percentage of Saskatchewan's electricity comes from fossil fuels? Why is that a problem?
- Name a renewable source of power that is not represented in the circle graph. Can you name more than one renewable source of power that isn't represented in the circle graph?
- In order to reduce our greenhouse gas emissions which sources of power will we need to move away from? Which sources of power will we need to increase the use of?
- Look at the energy map on page 1. It maps the path of energy from electrical devices in our homes, back to the generation source of the power. There are two important ways we can reduce energy use:
 - Behaviour – Change how we use electrical devices. E.g. Turn them off when not in use.
 - Technology – Replace inefficient technology with efficient electrical devices. E.g. Use LED light bulbs and ENERGY STAR® rated appliances.