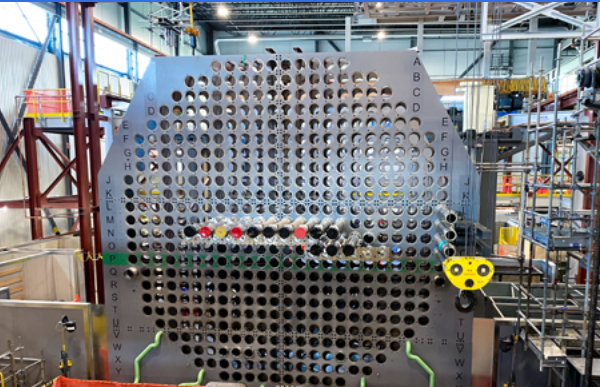




Nuclear Energy: A Clean and Reliable Power Source

Energy Alberta is proposing to build a nuclear power generating station in the Peace River area of Northern Alberta that would include two to four large-scale reactors. The facility could produce up to 4,800 MW of electricity for the grid, representing up to 25% of the province's existing electricity generation.

The Advantages of Nuclear

Greening the Power Supply.

Nuclear power is the only readily scalable, zero-emission energy source capable of delivering reliable and affordable electricity around the clock.

Efficient Footprint.

Unlike some renewable energy sources that require large land areas (like wind farms or solar fields), nuclear power plants have a small **physical footprint** for the energy they produce.

Economic Growth and Job Creation.

Canada's nuclear industry is an economic engine, offering high-paying jobs to skilled workers, and significant revenue for provincial and federal governments.

Abundant Supply.

Canada is one of the largest producers of uranium in the world, the fuel used in the production of nuclear energy.

Healthcare Benefits.

Nuclear reactors can produce medical isotopes, which are used for diagnostic imaging, cancer treatment and sterilizing medical supplies.

Power Points: Key Facts about Nuclear Energy

Reliable & Consistent.

Nuclear power plants can operate 24/7 providing a reliable, constant and stable supply of electricity to the grid. Their ability to operate continuously for extended periods makes them a dependable source of baseload power that helps ensure grid stability.

Zero Emissions.

Nuclear energy produces **virtually zero greenhouse gas emissions** during operation, making it one of the cleanest sources of energy. It plays a critical role in reducing carbon footprints and combating climate change.

Energy Security.

In an increasingly volatile global energy market, Canadian nuclear power generation offers a path to energy independence. Nuclear energy provides a stable, secure supply of electricity - essential for the growth and development of communities.

High Energy Density.

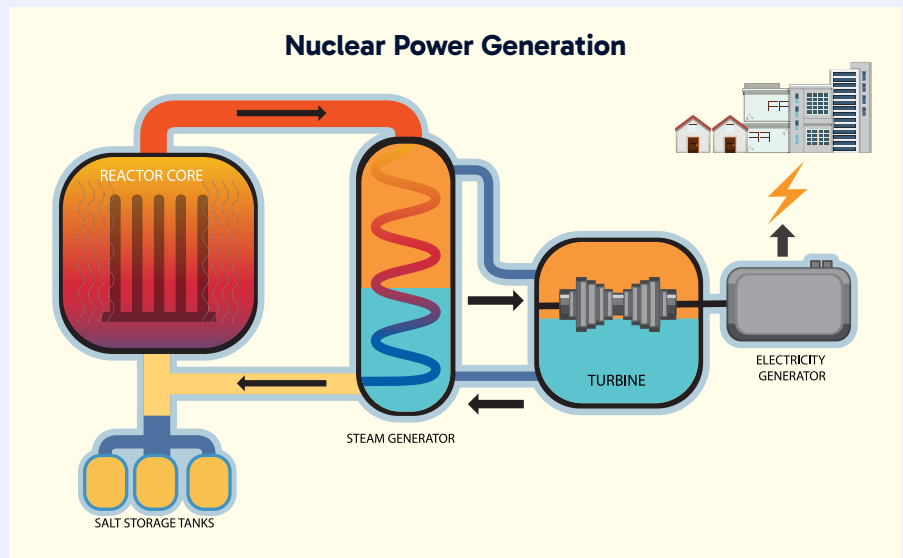
A small amount of nuclear fuel can generate a tremendous amount of energy. For example, a single uranium fuel pellet is about the size of a sugar cube and can produce the same energy as 907 kg of coal, 564 litres of oil, or 480 cubic metres of natural gas.

Robust Safety Systems.

Modern nuclear reactors are equipped with advanced safety systems that make them incredibly safe. The industry is one of the most regulated in the world and facilities are inspected regularly to ensure they meet or exceed strict safety standards established by the Canadian Nuclear Safety Commission and adhere to global safety recommendations set by the International Atomic Energy Agency (IAEA).

The Science of Nuclear Power

Nuclear energy is the energy released from the nucleus (core) of atoms, primarily through a process known as **nuclear fission**. Fission is a reaction that occurs when atoms of uranium are split into two or more smaller nuclei. The process releases large amounts of energy in the form of heat, which is converted into electricity by creating steam in a nuclear power plant.



How Does a Nuclear Power Plant Work?

Nuclear Fission.

The process begins in the reactor, where uranium atoms are split by neutrons. This releases a significant amount of heat.

Steam Generation.

The heat produced by fission is transferred to a separate system where it is used to turn water into steam.

Turbine Rotation.

The steam spins a turbine connected to a generator, which produces electricity.

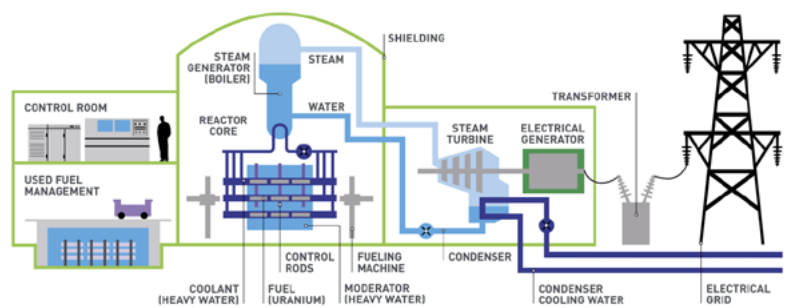
Cooling.

After passing through the turbine, the steam is cooled and returned to water, which is then heated again to repeat the cycle. The cooling water used in this process is kept separate from the steam cycle and does not come into contact with the reactor core.

Waste Management.

All of Canada's used nuclear fuel is safely managed at licensed storage facilities.

CANDU REACTOR SCHEMATIC



Graphic Source: Canadian Nuclear Association

Fueling the Future

Canada has been producing nuclear energy since the 1960s. A reactor needs 10 uranium pellets to power a house for a year. Each pellet weighs about 20g, less than a AA battery.

Generating the same amount of electricity as one uranium pellet would require 410 litres of oil. A typical generator supplying power for one million people will produce about three cubic metres of waste per year.

