

Potential nuclear power facility

Frequently asked questions

1. Why nuclear for Saskatchewan?

SaskPower, like much of the world, is in a clean energy transition. Changing customer expectations, a growing demand for power, and federal regulations are the key drivers that require new ways of powering the province.

We're evaluating a range of low- and non-emitting power sources, including nuclear power from small modular reactors (SMRs). Nuclear power produces reliable baseload power 24/7 without greenhouse gas (GHG) emissions.

Unlike traditional nuclear power plants, SMRs are the right size for our grid and can use high-grade Saskatchewan uranium.

We're working to understand all the social and economic benefits adding nuclear power to our supply mix could bring.

2. How many SMRs could be built?

Our early feasibility study considered the long-term possibility of building four SMRs. Right now, we're evaluating the Elbow and Estevan study areas to find a potential site that could host two SMRs. The construction decision in 2029 will only be for the first facility.

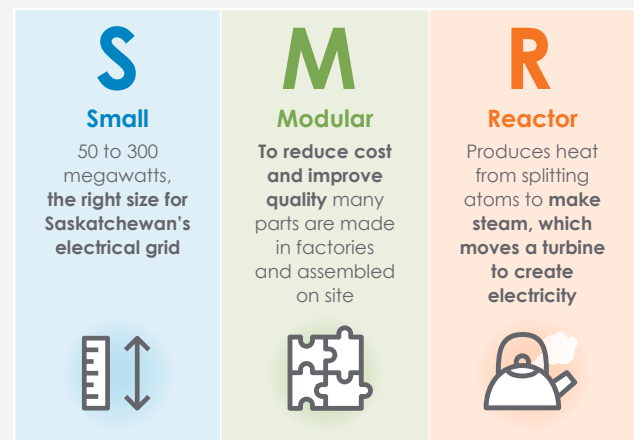
3. What's SMR technology?

SaskPower chose the GE Hitachi BWRX-300, which is the tenth generation of GE Hitachi's Boiling Water Reactor technology that has been in safe operation for years.

Several SMRs are currently operating for research purposes, and while SMRs aren't yet used for commercial power generation,

their development is underway in the USA, UK, Poland, Argentina, China, Russia and South Korea.

The technology we've selected is an advancement of a safe and proven process, featuring a smaller size and added safeguards.



4. Does water used in an SMR become contaminated?

No. Nuclear power is a thermal generation option, like coal or natural gas, that uses heat to boil water, which creates steam that spins a turbine. This steam needs to be cooled, and water from either a waterbody or cooling tower is circulated to cool the steam, returning slightly warmer water to the source. At no point is the cooling water exposed to the reactor or any radioactive material.

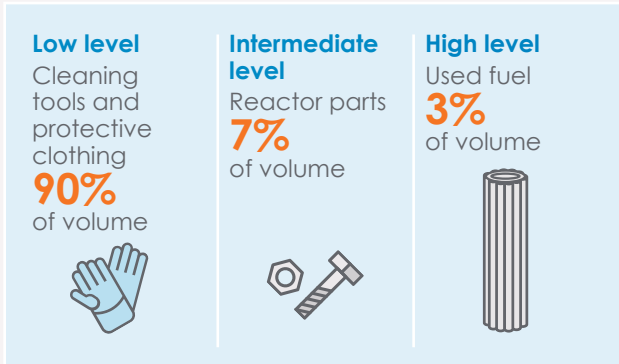
We are currently studying the potential impacts of returning warmer water to the waterbody, including changes to water levels and temperature.



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5. What are the different kinds of nuclear waste?

In Canada, all nuclear waste is safely managed, tracked and stored. There are three levels of waste:



We'll be responsible for a plan to manage all levels of waste throughout the facility's entire lifecycle (this is a licensing requirement).

6. What does nuclear waste look like?

Unlike what you may have seen on TV, nuclear waste isn't a glowing green liquid — it's a solid. Each uranium pellet inside a rod of used fuel is a solid that's about the size of a Canadian quarter. Fewer than 10 nuclear pellets are used to power one Canadian home each year.

7. How is used fuel stored?

For decades, nuclear waste has been safely managed and stored at the reactor site.

Used fuel is first placed in wet storage while it cools, then moved to dry storage casks. In the future, the national plan is to have all high- and intermediate-level waste sent to the Nuclear Waste Management

Organization (NWMO)'s Deep Geological Repository (DGR) for long-term storage. The site selection for the DGR is expected in 2024. Learn more at nwmo.ca.

8. How safe is a nuclear facility?

Nuclear power is one of the safest energy generation options available. Canada's nuclear industry is regarded as one of the safest and most tightly regulated on the planet, largely due to the regulator, the Canadian Nuclear Safety Commission (CNSC). The CNSC oversees every aspect of the Canadian nuclear industry to ensure the safety of communities, workers and the environment. In over 50 years of nuclear power, Canada hasn't had a single incident that resulted in any risk to the public.

The BWRX-300 features multiple layers of protection, including systems that protect the plant without human intervention. A chest x-ray would expose you to more radiation than living within a few kilometres of a nuclear power plant in Canada for 100 years.

9. Would the cost of an SMR impact electricity rates?

We're committed to providing sustainable, reliable and cost-effective power to our customers and the communities we serve. While projected costs are still being estimated, an SMR must be competitively priced against other baseload, non-emitting power generation options available to Saskatchewan in the 2030s.

Based on feasibility work so far, SMRs have the potential to be a good fit for Saskatchewan.

Want to get involved in SaskPower's Future Supply Planning process for 2030 and beyond? Curious how solar, wind, energy storage and emerging technologies might play a role too?

Scan the QR code to find out!

