

Nuclear Reactors in Saskatchewan?



Diefenbaker Lake and the Estevan area are potential sites for a fleet of GE-Hitachi BWRX-300 Small Modular Nuclear Reactors (SMRs).

What's the problem?

Nuclear is not a climate solution. Nuclear reactors are extremely expensive and take many years to get approved and built. Relying on SMRs for future energy will cause dangerous delay to climate action.

Nuclear would be "locked in". Grids designed for nuclear power cannot easily be adapted to distribute renewable electricity sources. Money spent on SMRs cannot be used for energy conservation and renewable energy infrastructure.

Climate change will affect safety. If the lake water used for cooling gets too warm, or weather is too hot, reactors cannot run safely. Drought and evaporation could cause a dangerous shortage of water for cooling.

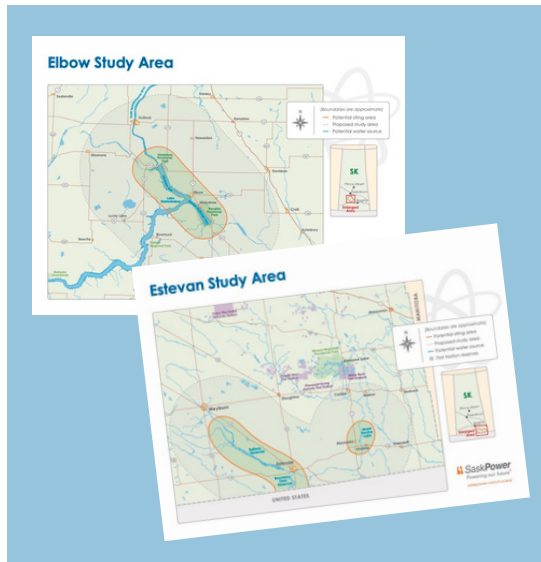
SMRs will fundamentally change the local community. SMRs' industrial, security and infrastructure requirements will undermine local agriculture, tourism and recreation.

Huge costs would lead to tax increases and service cuts. SMRs cost around \$5 billion each and would need big public subsidies to build, making it harder to support healthcare, education, highways, police, and public infrastructure.

SMRs need huge amounts of water. Nuclear reactors and stored nuclear waste must be cooled to prevent meltdowns. Lake Diefenbaker and/or the Rafferty Reservoir would have to absorb the heat, resulting in negative impacts on fishing, recreation, water quality, irrigation and biodiversity.

Facts:

- **The GE Hitachi BWRX 300-SMR has never been built.** It's a new design still in the "conceptual" phase, not approved by any nuclear regulator.
- **SaskPower proposes a fleet of SMRs.** It is looking for a Lake Diefenbaker or Estevan area site big enough for **at least two** reactors, and envisions **four SMRs** in the province by 2042.
- Inter-Provincial strategy calls for **licensing regulation short-cuts for SMRs** to fast-track approvals, jeopardizing health and safety.
- **Insurance policies do not cover** nuclear accidents.
- **Nuclear is the most expensive energy option.** Average nuclear operations now cost more than building and running new modern renewables. Nuclear operating costs will be hard to cut, but renewable prices are rapidly going down.
- **The nuclear industry is in financial trouble.** For example, Westinghouse Electric went bankrupt in 2017 trying to build modular reactors.
- **SMRs create very few jobs per dollar spent.** Just 75 permanent jobs are needed to run each \$5 billion BWRX-300. This money could create thousands of energy conservation and renewable energy jobs.
- **SMRs are not carbon neutral - they create massive lifecycle GHG emissions.** Mining, construction, transportation, and manufacturing all produce GHG emissions.
- **Each BWRX-300 needs 77.76 tonnes of Enriched Uranium fuel annually,** resulting in about 5,000 tonnes of high level nuclear waste over the reactor's claimed operational lifetime.



SMR implications for Lake Diefenbaker and/or the Rafferty Reservoir

Lake Diefenbaker supplies drinking water for 70% of Saskatchewan's population. A radioactive contamination event would have disastrous impacts on peoples' health and make our agriculture exports unsellable for decades, as we know from the aftermath of Chernobyl and Fukushima.

The Rafferty Reservoir and Grant Devine Lake are on the Souris River, which flows into the USA and Manitoba. Any issues with water quality, contamination or quantity related to SMRs would be national and international matters of concern.

The Souris River Basin is fed by run-off and has extreme variations in seasonal water flow, from zero during some drought years, and flooding in wet years. The reservoirs do not always fill, but once operating, the SMRs will require cooling water constantly.

Water for cooling is essential for reactor safety. If water shortages occur, the SMRs would have top priority over irrigation, recreation, wildlife and even drinking water.

Waste heat would degrade lake water quality, reduce fish habitat, increase algae growth, make winter ice less safe.

Rocky Mountain glaciers that feed Lake Diefenbaker are disappearing, with rapid losses predicted within 30 years. Climate change will cause higher temperatures, more evaporation, serious drought. Adequate cooling could become impossible during the lifespan of the SMRs.

Concerned?

For more info or to donate by e-transfer
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Radioactive hazards

The BWRX-300 uses **Enriched Uranium fuel**, which is not produced in Canada, and would be transported from the GE nuclear fuel plant in South Carolina, USA, risking spills along the route.

Each BWRX-300 will emit **33 trillion bequerels (Bq) of radioactive gases** into the atmosphere every year.

Each SMR will emit **732 million Bq of radioactive hydrogen (Tritium)** annually. When swallowed or breathed in, Tritium can cause cancer and birth defects.

The **high-level nuclear waste produced and stored on site would contain plutonium**, the deadliest element known.

There is **no permanent nuclear waste storage available** to contain waste fuel produced in Canada.

In an uncertain political climate, **SMRs could become a target for terrorists**. Plutonium stored on site would require military-level security 24-7.

Spent fuel is more radioactive than new fuel bundles. Radioactivity is not "used up" by nuclear reactors - nuclear fission creates new, even more deadly radioactive chemicals within the spent fuel bundles.

Spent fuel containing deadly plutonium would be stored on site. Leaks or spills would emit harmful radiation for thousands of years.

The **highly irradiated buildings and equipment would be left behind** when SMRs are decommissioned. This waste would emit radiation for thousands of years, and harm future generations who had no say in, or benefit from the electricity produced.

Dirty, dangerous, expensive and unnecessary

The proposed fleet of BWRX-300 nuclear reactors are unproven technology. They would take a decade or more to build, create security issues, and cost over \$5 billion each. Reactors that might produce electricity for a few decades would leave waste that will be dangerous for over 10,000 years. Time and money would be better spent employing Saskatchewan people to build safer, more sustainable and cheaper electricity generation systems based on renewable production, proven storage technology and energy conservation.



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