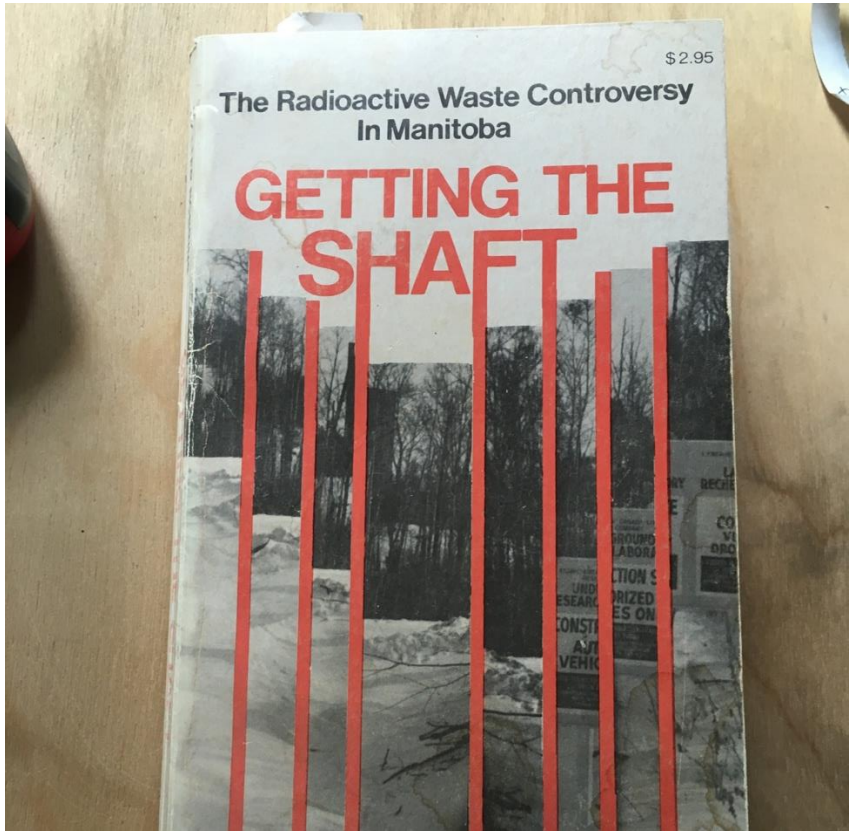
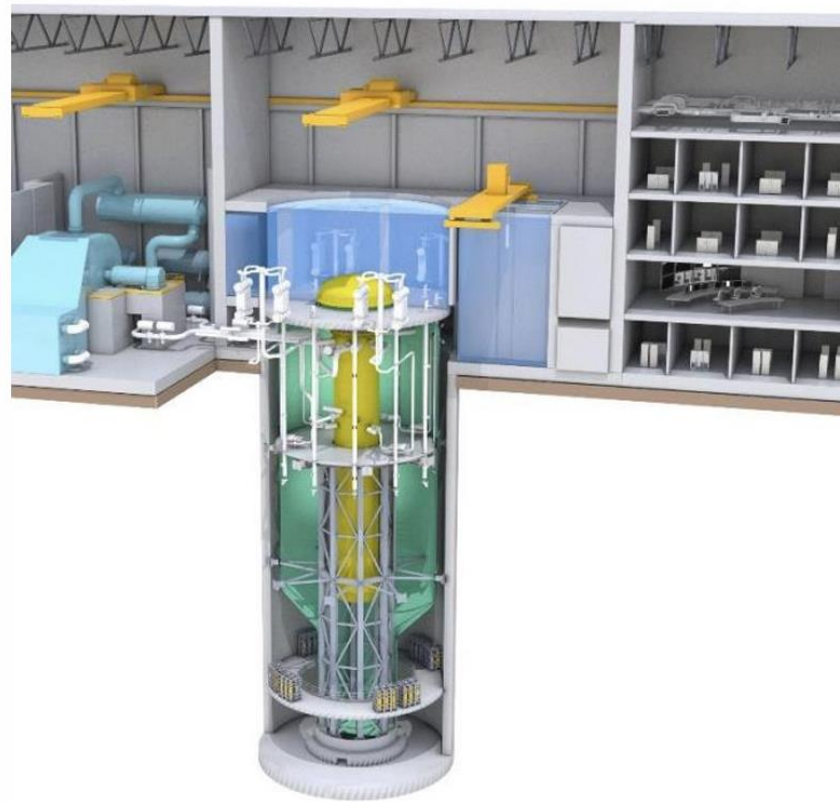
What’s nuclear in Manitoba?

Current status as of March 2025

For MEJC No Nukes MB strategy session, March 26, 2025





The Big Picture

The Climate Crisis – nuclear is being promoted as the answer

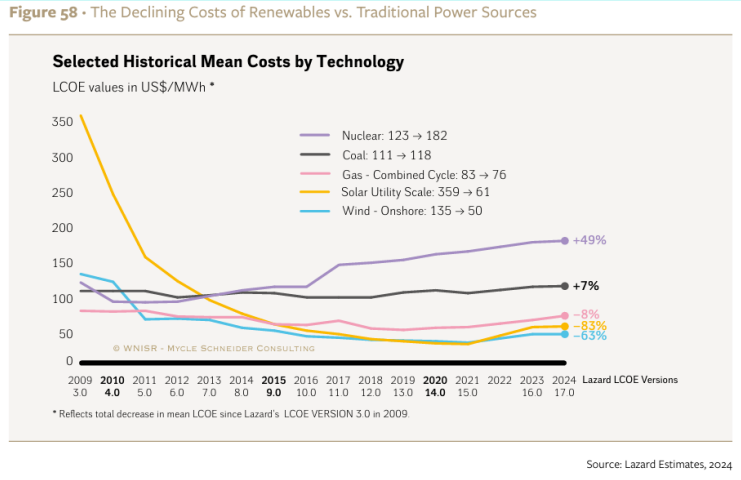
- Major hype and big $$$ for promotion by international nuclear companies
- This includes Canada – PM Mark Carney “no path to net zero without nuclear”
- Poilievre – “...unleash the power of our atoms...”
- This month alone - $ 491,615,056.00 (half a billion) - Wilkinson
- Public sentiment swinging in favour – polls

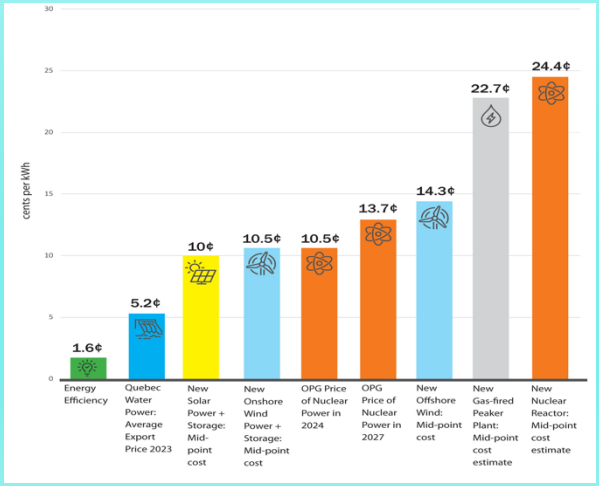
AI and data centres

Nuclear Armaments – the “new world order”

Nukes are not the answer to climate change

Most expensive

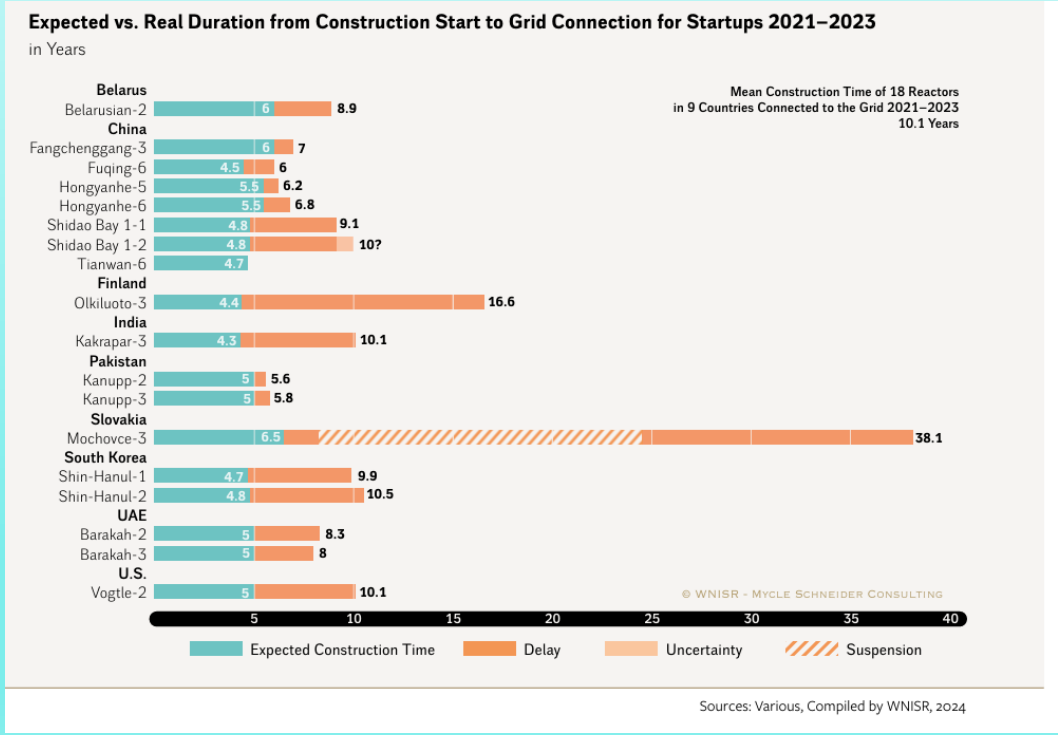




Ontario Clean Air Alliance

Too slow

- **Mean time from construction start to grid connection – 10 years**



World Nuclear Industry Status Report 2024

Nuclear is not the answer to climate change

- High Cost = Foregone opportunities for renewables

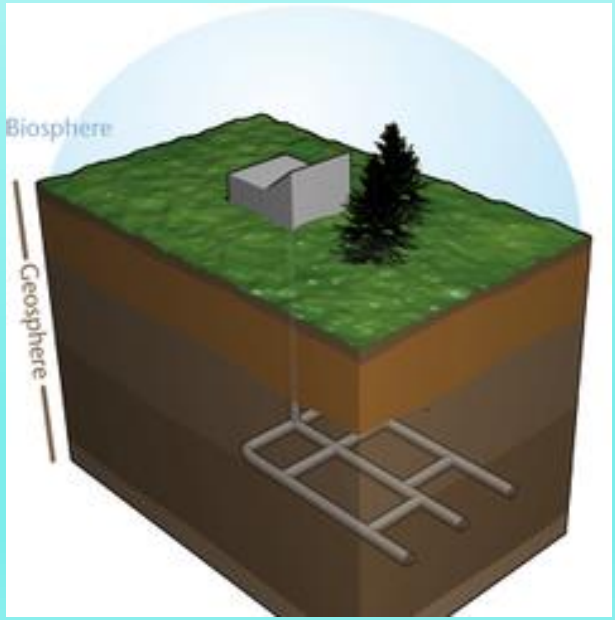
- Long timelines = cannot meet GHG reductions necessary in a timely manner

New Nuclear Reactors are a “dirty, dangerous distraction” from tackling climate change

120 Canadian Civil Society groups’ public statement - 2020

Nuclear's Unique Challenges - Waste

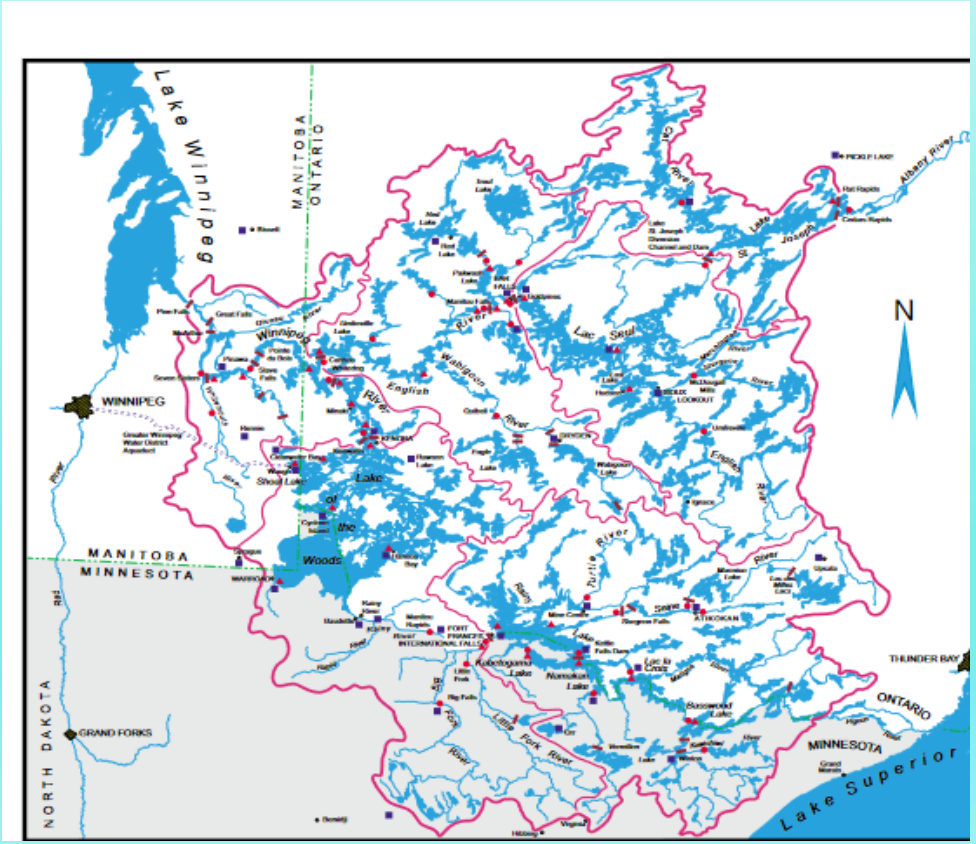
- Nuclear power creates deadly and extremely long-lived wastes
- Decades of waste currently in temporary storage – must be shielded and cooled before moving
- Continued nuclear power production will keep producing nuclear waste



Unique Challenges – Waste

- November 2024: Announcement of Revell area in NW Ontario for Deep Geological Repository

- Deficient consultation; payments to “host community”; opposition by 12 Treaty 3 FNs downstream; on the Lake Winnipeg watershed



Manitoba Government response:

“The Manitoba government is committed to closely monitoring this process to ensure that Manitoba’s water interests are represented and protected, especially given the interconnected nature of watersheds and the importance of Lake of the Woods, Shoal Lake and Lake Winnipeg to many Manitobans”


And nuclear
reactors themselves
become waste

Pinawa: “IN SITU” DECOMMISSIONING?

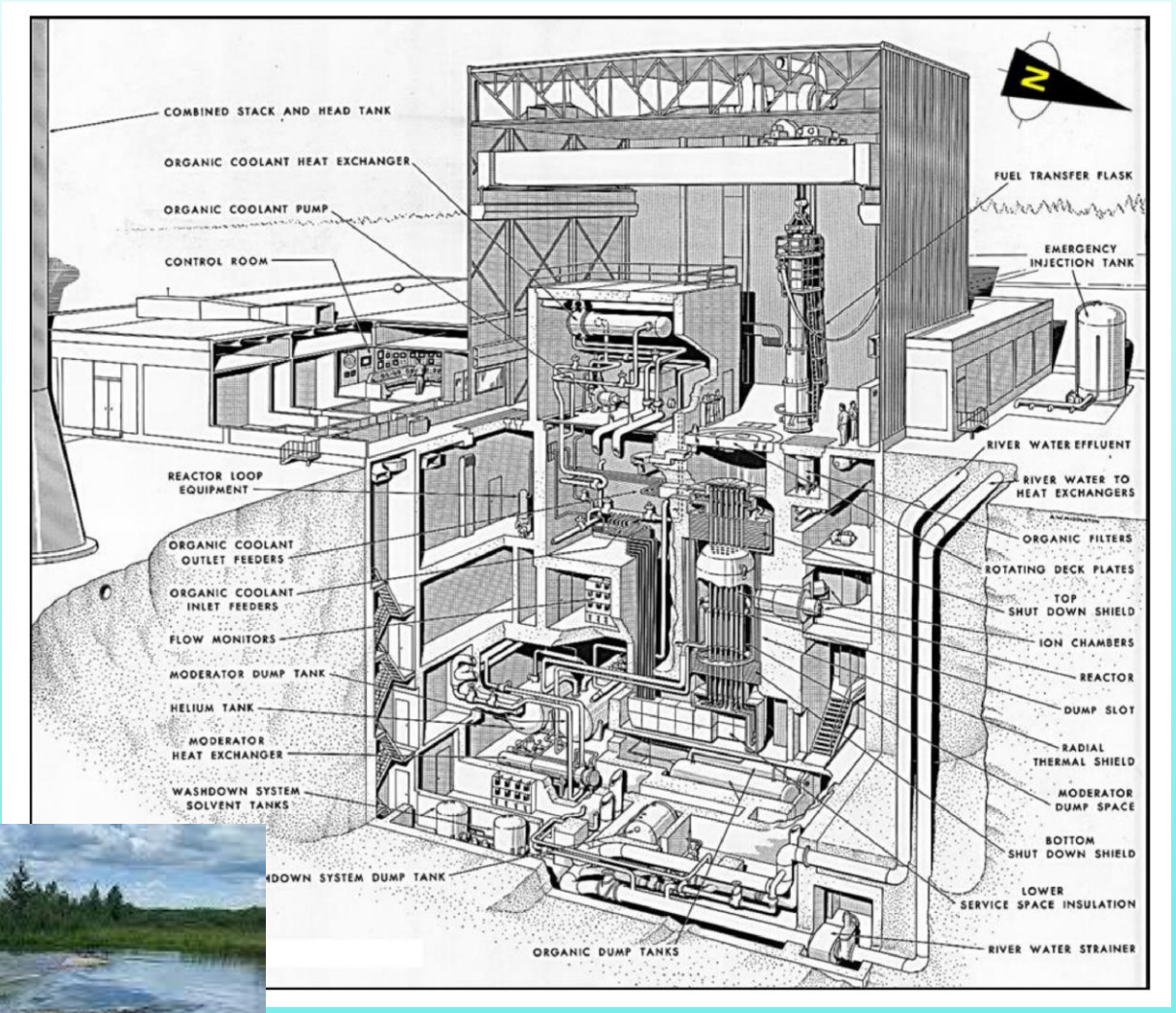
Previous agreement to move all fuel and radioactive components off site and restore to greenfield

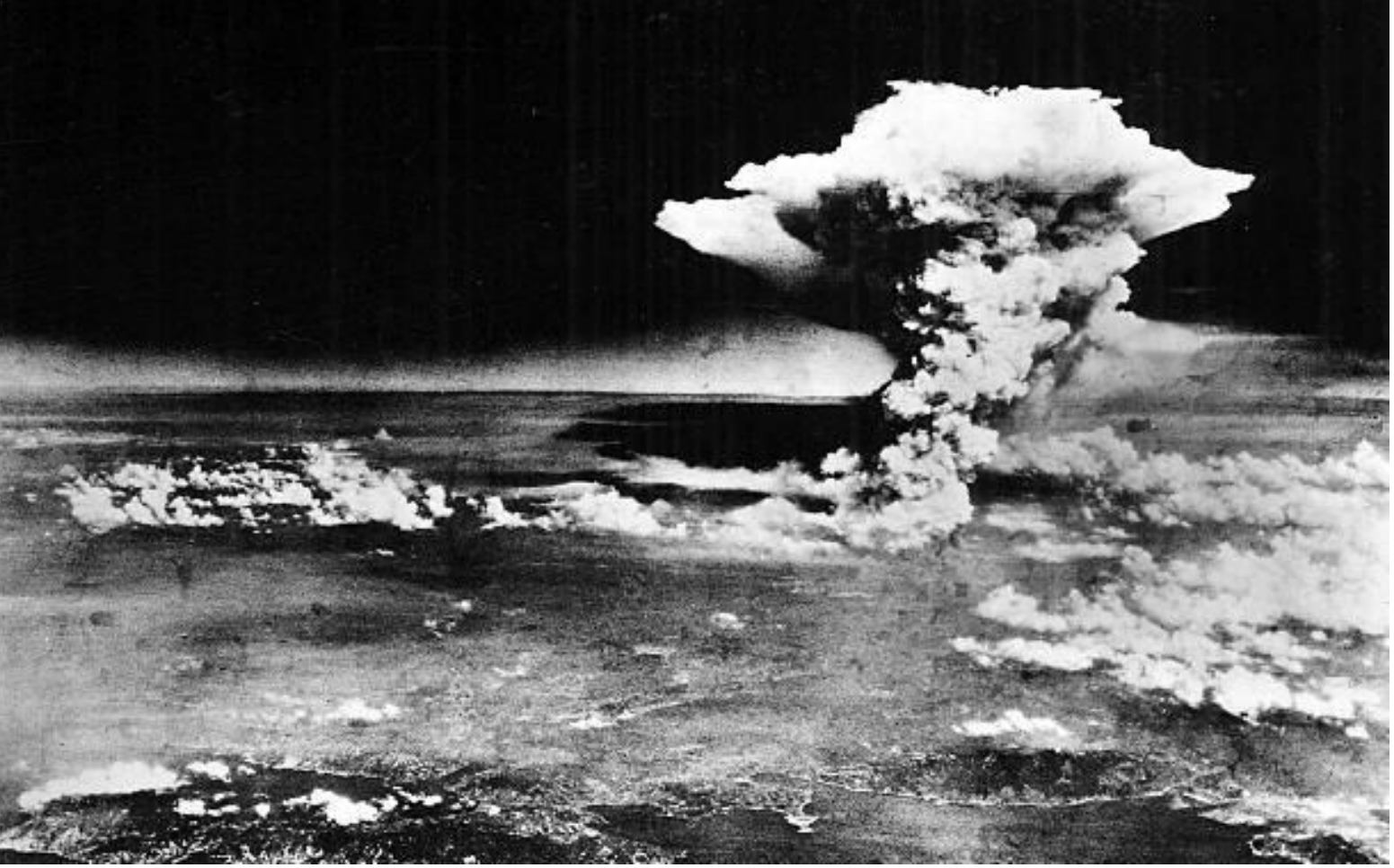
New proposal in 2017 to bury the WR-1 reactor in place

Fill the hole with grout, monitor short term, then abandon

No precedent in Canada

On the shore of the Winnipeg River





Unique Challenges – Nuclear Weapons Proliferation

“Small Modular Reactors”

aka

Spending Money Recklessly

Manitoba?

What is a "Small" Modular Nuclear Reactor?

New generation of nuclear reactors

Meant to be smaller than the conventional CANDU and other reactors

- However, not necessarily small! Designs vary greatly in size and output

Meant to be "modular" – in theory parts constructed in factories and transported to sites – idea is to reduce construction costs

No actual SMRs in operation except for 1 in China and 1 in Russia

Large number of different designs being proposed by many companies

In Canada – Feds support SMRs

- 2018: SMR Roadmap (industry + NRCan)
- 2019: MOU – ON, NB, SK, AB (2020)
- 2020: SMR Action Plan "Small Modular Reactors as a source of safe, clean, affordable energy, opening opportunities for a resilient, low carbon future and capturing benefits for Canada and Canadians".
- 2020 to 2023: Federal + some provincial funds for SMRs ~$1.2B (private $)
- 2023: Canada Energy Regulator models SMRs in almost every province by 2050,
- Parliamentary committee gives thumbs up to SMRs
- 2025: NRCan minister: first SMR will be connected to the grid by 2027/28

Active work around integrating SMRs underway in NB, Ontario, SK, AB

Consideration in NS, BC (Conservatives), Manitoba?

Many models in design stage

ARC – 100 (US) + Moltex (UK) – plutonium extraction unit – New Brunswick

e-Vinci (Westinghouse Canada/US); BWRX – 300 (US)

Saskatchewan

BWRX – 300 – GE Hitachi

"micro-modular reactor?" - Ontario

Starcore High Temp Gas Cooled mini reactor

BWRX - 300

Manitoba?

ARC – 100 – Alberta

All federal funding

Novel fueling models = novel wastes

No designs have regulatory approval

MANITOBA

- Nuclear SMR is “on the table” for new generation
- Is being considered in MB Hydro IRP process
- Mayor of Pinawa has been proposing a “Starcore” SMR for Pinawa – “Whiteshell Project” has support from municipalities and other organizations in Eastern MB
- **Manitoba Chambers of Commerce Green Advantage** project – suggests test case of a BWRX – 300, possibly under consideration for Whiteshell Project as well.

Two possibilities being floated

STARCORE

- High temperature gas cooled reactor
- 10 MWe
- 15% enriched uranium fuel (TRISO)
- Fuel costs higher than gas or coal
- Design stage, not yet considered by CNSC
- Not yet built anywhere
- Waste: on site entombment? DGR?

BWRX 300

- Scaled-down version of older Boiling Water Reactor models
- 300 MWe
- HALEU (low enriched uranium) fuel
- Design stage, currently under review by CNSC for Darlington
- Not yet built anywhere
- Waste?

What about the fuel?

- STARCORE AND BWRX-300 BOTH REQUIRE ENRICHED URANIUM FUEL

- PRIMARY SUPPLIERS: **UNITED STATES AND RUSSIA**

  (also some in China, France, Japan)

- **CANADA HAS NO ENRICHMENT CAPABILITY**
  - Would cost some $100B and take 20 years
  - Would require our exit from the Non-Proliferation Treaty

The large Tricastin enrichment plant in France (beyond cooling towers). The nuclear reactors in the foreground provide power for it.

What do we know?

STARCORE

- Not much!
- But poor performance of previous High Temp Gas Cooled reactors – early shutdown
- Wide variety of failures in operating components
- High capital costs
- No “commercial” versions have proven viable
- Meltdown not a concern, but defects in fuel coating is problematic

BWRX - 300

- American company (GE Hitachi) with links to weapons production
- NOT small – 10 storeys above ground, 11 below
- Safety features sacrificed to decrease size
- Costs??

$5B? - Sask Research Council

$25B? – Tennessee Valley Authority

What's Next?

- Advocacy?
- Regulatory Process?
- Education?
- Street theatre?
- Letter writing campaigns?
- Coalition building?

Nuclear gamble

Rob Wieser uses a giant die with a death's-head on one side to make his point at the legislature last night. He was one of about 40 Whiteshell residents who met Environment Minister Gerard Lecuyer to express