ENERGY Alberta

Technology Options for the Peace River Nuclear Power Project

A rendering of the CANDU® MONARK™ reactor design

A rendering of the AP1000® reactor design

Two Reactor Options. One Reliable Outcome.

As planning advances for the proposed Peace River Nuclear Power Project, Energy Alberta is considering two Canadian-owned nuclear reactor technologies: Atkins Réalis' CANDU® MONARK™, a new evolution of CANDU® technology, and Westinghouse's AP1000®, a modern design based on widely used pressurized water reactor technology.

Both options are based on proven technologies designed to meet rigorous Canadian and international safety standards, and both can deliver the same end result: steady, around-the-clock electricity for Western Canada's homes, businesses and industry.

Proven Designs, Modernized for Today

The CANDU® MONARK™ and AP1000® technologies combine proven features from existing plants alongside modern design updates that enhance safety, performance and efficiency, including:

- **Updated safety features.**
- **Advanced digital controls.**
- **Enhanced monitoring systems.**
- **Improved operational efficiency.**

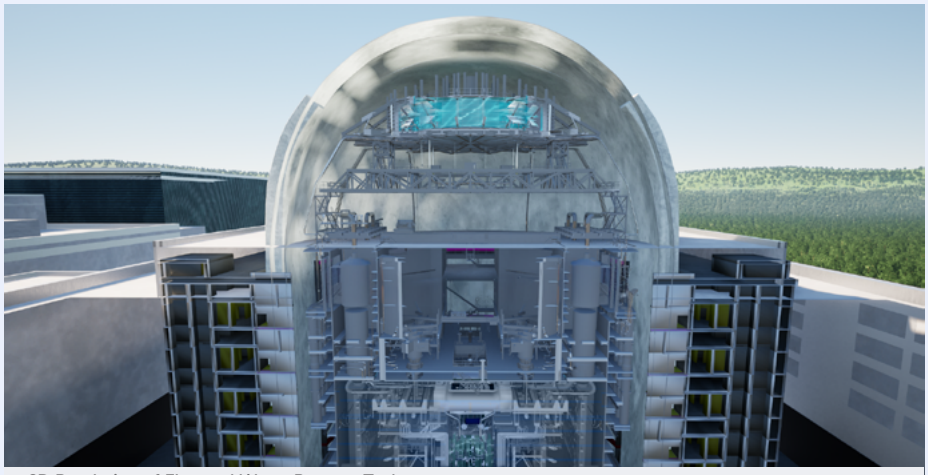
Delivering Large-Scale Clean Power

The Project is being designed at a scale consistent with other major nuclear facilities in Canada, with flexibility to incorporate efficiency improvements over time.

Regardless of the technology selected, the Project would:

- **Include four reactors in the 1,000-megawatt range.**
- **Supply roughly 15% of Alberta's current electricity capacity.**
- **Generate approximately up to 4,800 megawatts of clean power.**
- **Meet up to 30% of Alberta's projected future power needs.**

Electricity would be sold through long-term contracts to Alberta consumers and industry.



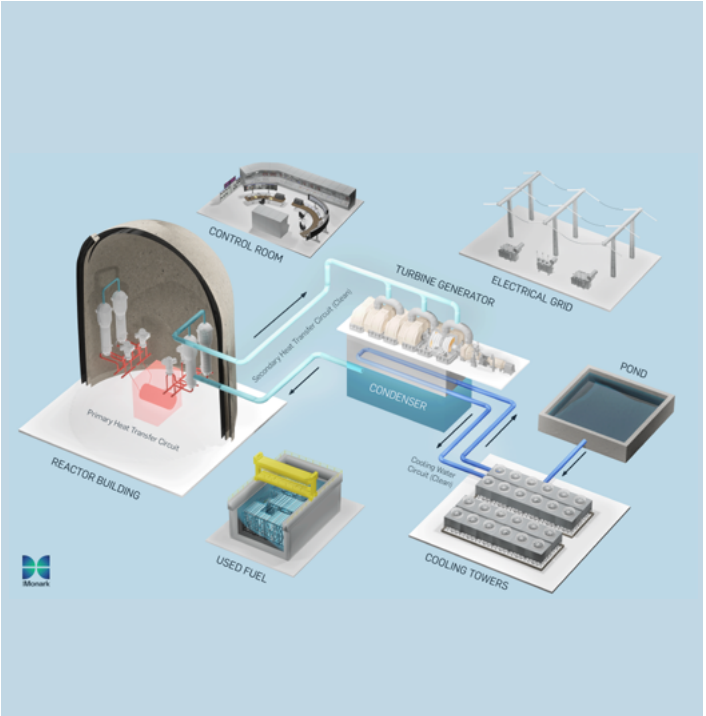
3D Rendering of Elevated Water Reserve Tank

Responsible Water Management

A consistent supply of water from the Peace River, primarily used for the steam cycle power generation cooling, will be an integral part of the Project. No heated water will be discharged directly back into the river.

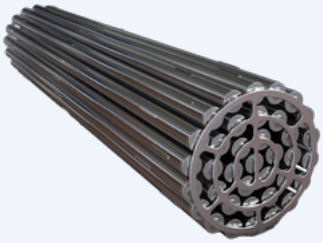
Both reactor options would use responsible cooling technology that minimizes water use and protects the Peace River. This means:

- Water will be withdrawn from the river and stored in a water reservoir on-site. With all four units operating, the facility would use approximately 0.2% of the river's medium annual flow to make up for water that evaporates as part of the power generation cooling system.
- Heat is transferred through sealed systems to create steam, which is cooled and reused. At no point does the water from the reactor mix with the water system used to create electricity. This closed-loop design is a cornerstone of nuclear safety and environmental protection.



3D Rendering of Water Cooling System

Fuel Assembly Designs



CANDU® MONARK™ fuel assembly design: Flexible fuel design - no enrichment required

AP1000® fuel assembly design: Higher fuel efficiency - requires enrichment

How Both Technologies Will be Assessed

The Plant Parameter Envelope (PPE) Approach

The federal impact assessment will use a Plant Parameter Envelope (PPE) approach. In simple terms, a PPE is a bounding "envelope" of parameters that define the site and plant characteristics.

This approach allows potential environmental, safety and socio-economic effects to be assessed now, rather than waiting for a final reactor selection.

The assessment will consider a range of factors including water use, site requirements, safety factors and environmental effects. It ensures that potential impacts do not exceed what is defined within the PPE. This method has been used in previous nuclear project reviews in Canada and the United States.

Final Technology Selection

The final technology selection will be informed by Project-specific requirements, lifecycle cost assessments and long-term economic value. No matter which technology is selected, the Project is being assessed and designed around shared priorities:

- **Strong safety performance.**
- **Scientific and technical evidence.**
- **Strong safety performance.**
- **Reliable, low-emissions electricity.**
- **Input from local residents and Indigenous Nations and Communities.**