



Protecting Water Resources

Energy Alberta cares deeply about environmental stewardship and promoting sustainable water management practices to minimize the impact of its proposed operations on local water resources and protect the Peace River watershed.

Energy Alberta's Commitment to Water Management

Energy Alberta is proposing to build a nuclear power generating station on the shoreline of the Peace River, one of the largest rivers in Alberta. The Project would involve withdrawing water from the Peace River to use for cooling and other processes required for safe operations. Advanced technology will be utilized to recycle the cooling water and reduce the amount of water needed. The water management process in nuclear power plants is highly regulated, including permits and mitigation requirements put in place by local, provincial and federal governing bodies to ensure effective conservation and stewardship. Significant efforts are undertaken to protect the habitat of the local watershed, including rigorous environmental programs that monitor, track and analyze surrounding ecosystems to safeguard the health of people and the environment.

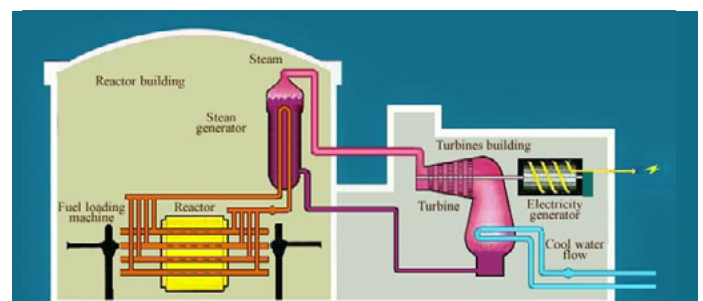
Water Act Licence: A licence under the Water Act is required to divert and use surface or groundwater in Alberta for a specified purpose such as irrigation, a municipal water system or energy production. A licence identifies the water source as well as the location of the diversion site, quantity, rate, and timing of withdrawal as well as the conditions of the licence. Energy Alberta is currently studying the area of the Peace River that would require the withdrawal of water for the Project as the initial step in the process to apply to the Government of Alberta for a water licence.

Understanding the Water Cooling System

A consistent supply of water from the Peace River, primarily used for cooling, will be an integral part of the Peace River Nuclear Power project. The volume of water required will be determined as technical and project details are refined.

There are three separate circuits that make up the main features of how water is used when generating electricity in a CANDU® nuclear reactor. First, the heat transfer system in a CANDU® nuclear reactor works by circulating heavy water (known as D2O) through the reactor core to transfer the heat generated by the fission process to the steam generator. A separate water circuit is used in the steam generator where the heat from the reactor causes the circulating water to turn into steam. This steam is then transferred to a series of turbines that convert the energy from the steam into electricity.

Once the steam has been used to create electricity, the left over heat must be removed and the steam converted back to water that can be heated up again to produce more electricity. This is done by a third water system called the cooling water circuit. This third water circuit is where the majority of the water needed by the power plant is used. The water in all three of these systems is kept separate and no mixing occurs. The movement of heat energy is across the walls of the pipes that contain the water in each circuit.

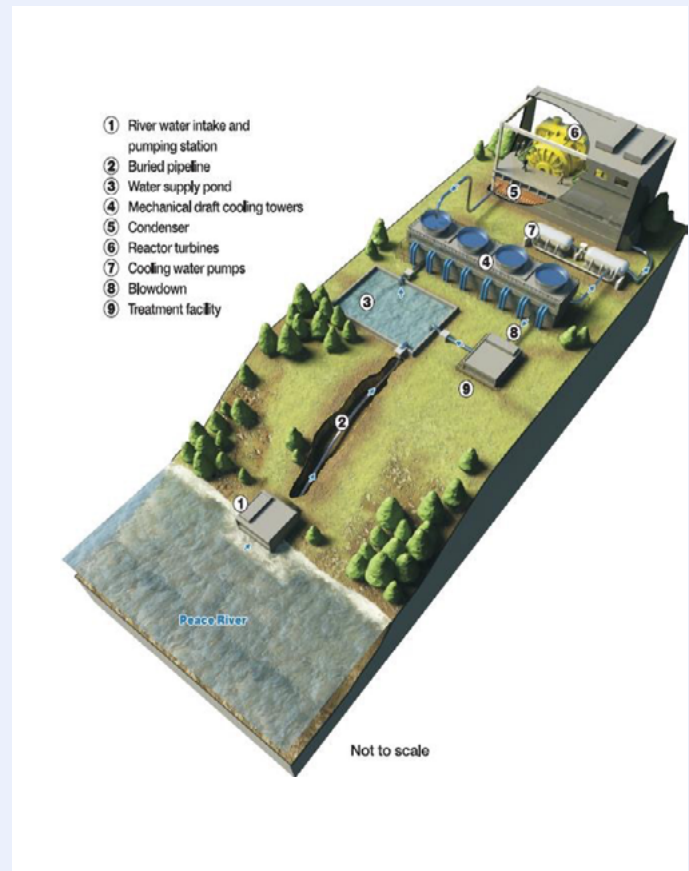


Cooling Water Infrastructure

The proposed project plans to utilize a mechanical draft cooling system to remove the left over heat from the steam circulating through the turbine system after the electricity is generated. This method allows less water to be pumped from the river and prevents heated water being released back into the Peace River. Instead, the water is evaporated, or consumed, in the heat removal process.

Key components of the plant's cooling water infrastructure include:

- Water intake, pipeline and access road to the river.
- Water storage ponds to hold a reserve of water for power production if the amount of water coming from the river is reduced because of ice conditions or low water levels.
- Mechanical draft cooling towers which use fans to move all the air required to transfer heat from the steam driving the turbines to the air. Water is consumed and evaporated as a result of the warm circulating water interacting with relatively dry and cool air.



A Safe and Sustainable Future

Nuclear power is one of Canada's safest and cleanest energy sources and offers one of the best ways to meet Alberta's constant and growing electricity demands.

Reliable & Consistent.

Nuclear power plants can operate 24/7, 365 days a year, providing a constant, stable and affordable source of electricity that is readily scalable.

Zero Emissions.

Nuclear energy produces virtually zero greenhouse gas emissions during operation, making it a critical tool in combating climate change.

Energy Security.

In an increasingly volatile global energy market, nuclear power offers a path to energy independence by reducing reliance on imported fossil fuels.