



The Peace River Nuclear Power Project

Energy Alberta is proposing to build a nuclear power generating station in the Peace River area of Northern Alberta that would include two to four large-scale reactors. The facility could produce up to 4,800 MW of electricity for the grid, representing up to 25% of the province's existing electricity generation.

How We Evaluate a Site

Energy Alberta conducted an extensive regional and local site evaluation process to find potential options for the Project. From there, a closer review of the most promising sites is completed to ensure they meet key technical, environmental, social/cultural and safety requirements. The criteria come from a number of sources, including technical essentials in the Canadian Nuclear Safety Commission regulations outlining site suitability evaluation requirements.

Our goal when selecting a site is to:

- Reduce environmental impact by choosing a location that minimizes disruption to the environment.
- Ensure safe operations by selecting a site where environmental factors won't affect the facility's ability to function safely.
- Plan for risk management by identifying any potential security, health or environmental risks and putting strong mitigation strategies in place.

The Site Selection Process Happens in Three Key Phases:

Site Survey.

Exploring potential locations and ruling out any that didn't meet basic requirements.

Environmental, Community & Cultural Impact.

Shortlisting potential sites and carefully assessing and comparing them based on safety and suitability criteria to determine the best options.

Site Evaluation.

Taking a closer look at the chosen sites and analyzing factors that could impact safety and ensuring the location is a good fit for the facility.

What Makes a Good Site for a Nuclear Power Plant?

There are some fundamental considerations in assessing a potential site for a nuclear power plant:

Site Safety.

Assessing the location's natural and physical characteristics might impact the plant, such as earthquakes, surface water flooding risk and meteorological events, as well as addressing the risks associated with potential human-caused incidents.

Environmental, Community & Cultural Impact.

Assessing the potential impact of the plant on the surrounding area, population and environment including historic or culturally sensitive areas and sensitive wildlife or aquatic habitat.

Technical Needs.

Ensuring the site requirements are met such as the need for a supply of water for cooling, access to transportation and transmission infrastructure, reasonable access to skilled labour, equipment and supplies as well as the space required for safety such as Exclusion Zones

More Power, Less Land: The Efficiency of Nuclear Energy

Nuclear power delivers massive amounts of energy while using far less land than other sources, making it one of the most space-efficient ways to generate electricity. Nuclear is the most land-efficient means of clean electricity production, requiring only 103 acres per million-megawatt hours. Other low-carbon options, such as solar and wind, require far more land at 3200 acres and 17800 acres respectively.

Site Preparation and Construction: Key Steps in Nuclear Development

The site preparation phase would be the first step in getting everything ready for construction. This includes building access roads, clearing and leveling the land, as well as setting up essential utilities like power and water. Materials and equipment, including cranes and heavy machinery, are brought in and support facilities like warehouses, storage areas and offices are built to keep everything running smoothly during construction.

The construction phase involves building both the nuclear and non-nuclear infrastructure, including facilities for water intake, storage, treatment, and cooling, as well as waste storage, reactors, control rooms, and support buildings. Other key structures, like communications centers, laboratories, turbine buildings, and electrical stations, are also put in place to ensure everything runs efficiently and safely.

A Responsible Transition: How Nuclear Plants Are Safely Decommissioned

The Canadian Nuclear Safety Commission (CNSC) oversees every stage of a nuclear power plant's life, including its safe decommissioning. Their role is to make sure decommissioning follows strict regulations that protect workers, the public and the environment, while also meeting Canada's international commitments.

Before a nuclear power plant can receive its operating license, the operator must submit a decommissioning plan that details how the plant will eventually be dismantled safely. To ensure these plans are backed by proper funding, a financial guarantee is required, allowing CNSC staff to assess how decommissioning costs will be covered when the time comes.

