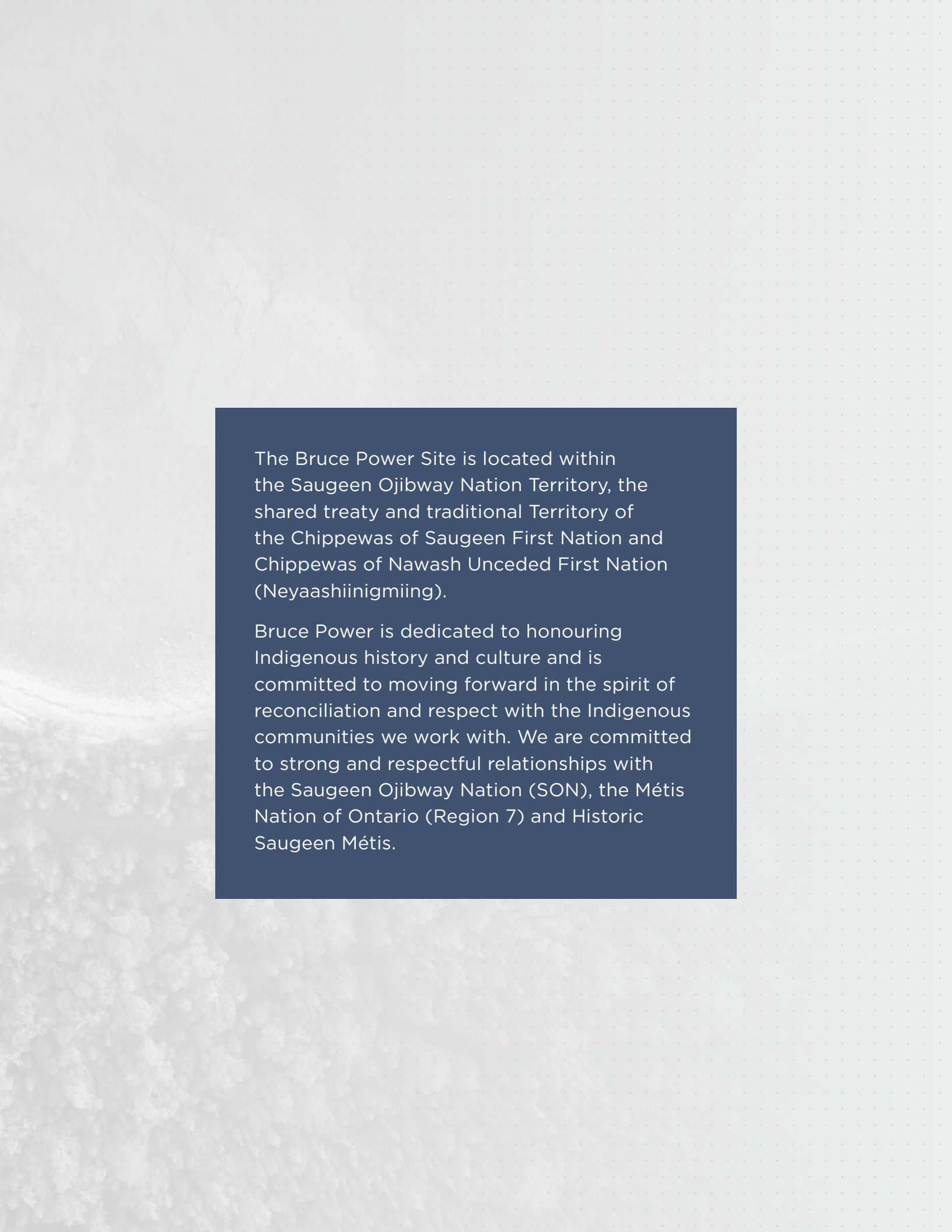




BrucePower™

**Bruce C Project.
Planning for the
Next Generation.**

An aerial photograph of a dense forest with a winding road or path cutting through it. The image is in grayscale and serves as the background for the text.

The Bruce Power Site is located within the Saugeen Ojibway Nation Territory, the shared treaty and traditional Territory of the Chippewas of Saugeen First Nation and Chippewas of Nawash Unceded First Nation (Neyaashiinigmiing).

Bruce Power is dedicated to honouring Indigenous history and culture and is committed to moving forward in the spirit of reconciliation and respect with the Indigenous communities we work with. We are committed to strong and respectful relationships with the Saugeen Ojibway Nation (SON), the Métis Nation of Ontario (Region 7) and Historic Saugeen Métis.

Capacity

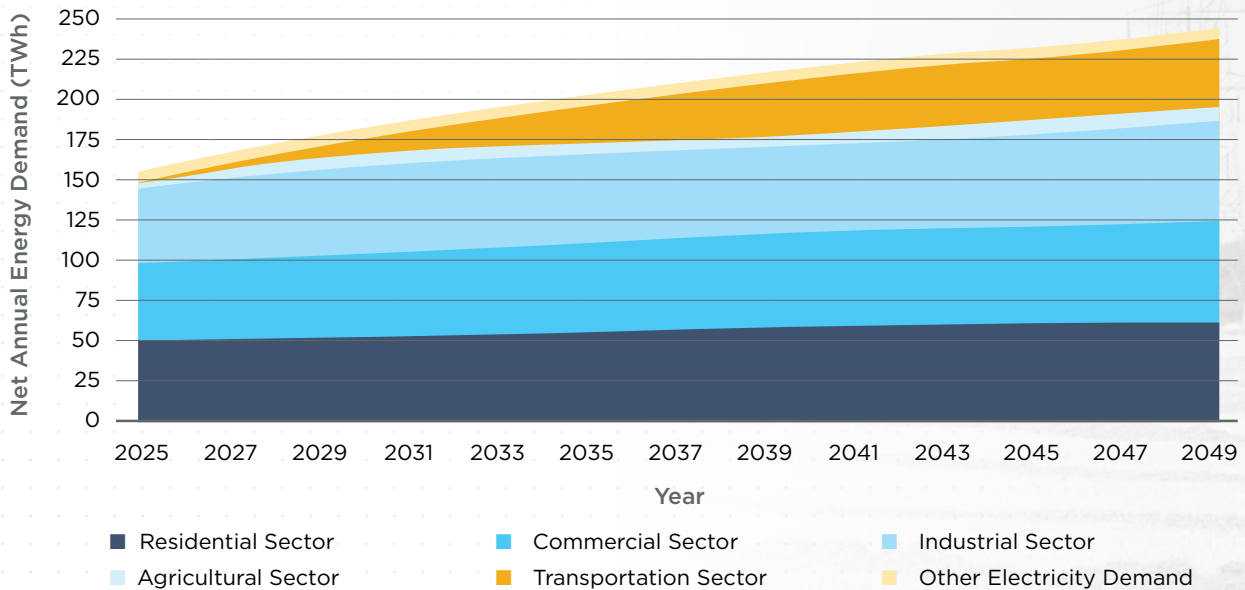
ONTARIO'S CLEAN ENERGY NEEDS

Ontario benefits from a deeply decarbonized electricity grid, which is 90 per cent emissions free with a clean baseload supply of nuclear and hydroelectricity.

As Ontario grows, and brings new homes, manufacturing and data centres to the province, economic expansion and electrification of the manufacturing and transportation sectors will continue to increase energy demand over the next three decades. The Independent Electricity System Operator (IESO) 2024 Annual Planning Outlook forecast continues to show steady demand growth year over year, with total demand increasing 60 per cent over the next 25 years.

To maintain Ontario's clean energy advantage, long-term planning is required to ensure the province can meet rising energy demand in the most cost-effective way possible.

Figure 1 | Annual Energy Demand



IESO 2024 Annual Planning Outlook



As Ontario's largest electricity generating facility, Bruce Power's Life-Extension Program and Major Component Replacement projects will play a key role in supporting growing electricity needs by extending the operation of its eight units to continue to produce clean energy and cancer-fighting isotopes through 2064 and beyond. Additionally, Bruce Power is investing in increasing the output from its existing reactors to upwards of 7,000 megawatts — equivalent to adding a large-scale reactor to its site with current infrastructure.

In addition, Bruce Power will undergo a federal Impact Assessment (IA) for up to 4,800 MW of new nuclear capacity on the Bruce Power site — a project referred to as Bruce C. This work is an essential part of Ontario's growth development plans and was outlined as a 'no regret' action by the IESO to create a valuable option for the Province in future electricity planning and allow faster implementation if a decision is made to advance a new build.



Charting a Path

THE BRUCE C PROJECT

As Ontario prepares for the future through its Powering Ontario's Growth plan, Bruce Power is completing the federal IA to create the option to build up to 4,800 megawatts of nuclear capacity at the Bruce Power site, located within the Territory of the Saugeen Ojibway Nation, in the Municipality of Kincardine, Ontario.

The proposed Bruce C Project, would complement the existing Bruce A and Bruce B generating stations which provide clean, reliable nuclear energy for 30 percent of the province's current electricity needs and cancer-fighting medical isotopes across the globe.





Why Bruce Power?

As an operating site with space available on its 932-hectare site and connections to existing transmission corridors, Bruce Power is uniquely positioned for potential nuclear expansion in Ontario:



PEOPLE

As we complete our refurbishments, Bruce Power will be well-positioned with a skilled workforce and robust supply chain that support Bruce Power's values of safety first, performance excellence and social responsibility. The Clean Energy Frontier region of Bruce, Grey, and Huron counties in SON Territory has the expertise and strong local leadership needed to advance major infrastructure projects in the nuclear sector. Bruce Power sees strong community support and is committed to building and maintaining strong relationships and partnerships with local Indigenous Nations and Communities.



PLACE

From its early days in the 1960s to today and beyond, the Bruce Power site is well-studied with verified and known environmental impacts, supported by decades of environmental analysis, studies and regulatory approvals. As an existing licenced site with an experienced operator, nuclear management systems are in place that meet Canadian and international standards. The availability of information compared to greenfield sites creates a significant advantage in the licensing process.



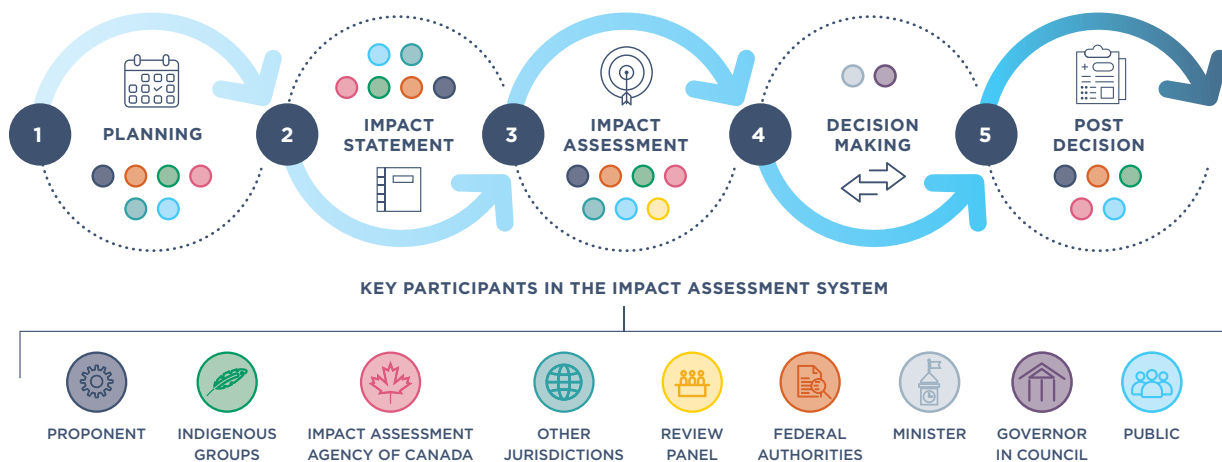
ENVIRONMENTAL PROTECTION AND PROGRAMS

As an operational site, the Bruce Power site is highly characterized with on-going monitoring, data collection, analyses, and risk assessments which are reviewed, approved and regulated by multiple federal and provincial ministries and on an iterative basis to maintain approvals, authorizations and permits for existing operations. Additionally, the Canadian Nuclear Safety Commission (CNSC) provides ongoing oversight to Bruce Power as its life-cycle regulator. Since Bruce Power took over operations of the Bruce site in 2001, environmental studies and ongoing environmental protection programs have been conducted at key licensing and operational milestones.

Impact Assessment Process

The Impact Assessment Agency of Canada (IAAC) leads federal Impact Assessments for all designated projects under the Impact Assessment Act. The IAAC works in collaboration with the Canadian Nuclear Safety Commission (CNSC) to review projects that are also subject to regulation under the Nuclear Safety and Control Act.

An IA is a phased planning process spanning over multiple years, which involves Indigenous, municipal and public engagement, environmental and socioeconomic studies. If the Government of Canada determines that the project is of public interest, then a licence to prepare site will be issued as part of the integrated assessment process. Should the province of Ontario and Bruce Power choose to proceed with a new build on Bruce Power's existing site, additional permitting and licensing activities would be required.



The goal of an IA is to help identify and assess the possible impacts of the project prior to any decision to build new nuclear and considers a wide range of factors including protecting the environment, ensuring respect for the rights of Indigenous Peoples and proposing measures to mitigate a project's anticipated adverse effects.

For more information, visit the [Impact Assessment Agency of Canada website](#).





Community

BRUCE POWER'S COMMITMENT TO ENGAGEMENT

Bruce Power owes much of its success to the support and commitment from its surrounding communities.

The company firmly believes in the importance of proactive, open and transparent engagement as it continues through every step of the Bruce C Project. The company has a long history of engaging and supporting local communities and will engage with all interested parties, including the Saugeen Ojibway Nation, Historic Saugeen Métis, Métis Nation of Ontario, workers, partners, municipalities, governments, and the public throughout the IA process.

Bruce Power has a history of engagement with SON, HSM and MNO and is committed to engagement and collaboration with local Indigenous Nations and Communities in shaping the future of the Bruce Power site. Indigenous Knowledge related to the Project is an important component of the IA, and Bruce Power looks forward to continuing to discuss and collaborate on Project specific engagement plans with each Indigenous Nation and Community that is part of this process.

Bruce Power will keep interested parties informed and engaged throughout the IA process and will provide regular updates about the project through its website, news releases, newsletters, social media and videos.



GET INVOLVED

Sign up for updates on the process and learn more on how you can participate at brucepower.com/BruceC

What We're Hearing

Through our early engagement efforts, some general themes have emerged in key interests and issues raised:



PROJECT DETAILS

Includes siting, technology, nuclear waste considerations and timelines.

- **Siting:** The Project will be sited entirely within the existing fenced and secured 932-hectare Bruce Power site, along with new intake and discharge structures in Lake Huron. Bruce Power commenced a siting process to support a thorough understanding of potential constraints and opportunities at the Bruce Power site.
- **Technology:** Bruce Power has not selected a reactor technology and the Impact Assessment will use a technology neutral approach. This involves the consideration of multiple technologies by forming a bounding case for the impact of new nuclear, known as a Plant Parameter Envelope (PPE). None of the individual reactor designs would have a greater impact than what is included in the PPE.
- **Nuclear Waste:** In accordance with the Canada's Nuclear Fuel Waste Act, all costs for the permanent disposal of used nuclear fuel are fully funded by waste generators/owners, ensuring no financial burden is left to future generations. Waste considerations for the Bruce C Project will be assessed as part of the IA process.
- **Timelines:** Currently, there is no decision to advance a new build and our focus remains on Life-Extension and Project 2030 investments. An IA is a phased planning process spanning over multiple years, and completing the IA creates a valuable option for future electricity planning and enables faster implementation to meet growing demand.



CUMULATIVE EFFECTS

Considers the effects of the Project and activities combined with the effects of other past, current or reasonably foreseeable projects and activities.

- As part of the IA, Bruce Power will complete a cumulative effects assessment, considering any projects and activities whose effects may act cumulatively with the effects of the potential expansion of nuclear generation on the Bruce Power site. The findings of this assessment will be included in the Impact Statement.

SOCIOECONOMIC CONDITIONS

Includes local labour force, income, employment, education and childcare, health care, housing, population growth and development, training and business opportunities.

- Bruce Power has committed to funding a Socio-Economic Support Study that will be led by Bruce County with engagement from the Municipalities of Saugeen Shores and Kincardine. The Socio-Economic Support Study will aim to establish workforce and population projections based on the Bruce C Project, to support growth management work related to allocation of population and review of land supply needs for commercial and residential development. The Study will also support an understanding of delivery of services at a County and municipal level and assess infrastructure and service gaps that fall within County and municipal service delivery framework to meet growth associated with the Project. The Study will be integrated into the Impact Statement for the Project.
- Bruce Power will engage with SON, HSM and MNO, to develop scope characterizing health, social, economic conditions, and Indigenous Knowledge and/or other information to be defined by each Indigenous community.



Environmental Monitoring and Assessments

The initial studies at the Bruce Power site began in 1954. These were conducted by the University of Waterloo and University of Toronto to study large lake limnology (lake chemistry and currents; water temperatures; wind effects on currents and water temperatures). The University of Toronto established the Great Lakes Institute on the north shore of Baie du Doré and started studies in 1961, one objective being to establish a baseline against which to measure future changes to the fish community that might occur due to operation of Canada's first commercial nuclear generating station at Douglas Point.

A series of environmental monitoring studies (the Bruce A and Bruce B Effects Programs) were conducted by Ontario Hydro from 1973-1989 as a condition of the wastewater thermal discharge Certificate of Approval from the Ontario Ministry of the Environment (MOE) for new nuclear projects. These were designed to evaluate the operational effects on the atmospheric, terrestrial, and aquatic environments in three three-year stages (pre-operational, commissioning and post-operational) for Bruce A and Bruce B generating stations.

Since Bruce Power took over operations of the Bruce Power site in 2001, Environmental Assessments and ongoing environmental protection programs (e.g., Environmental Risk Assessment) have been conducted at key licensing and operational milestones.

Bruce Power's Environmental Protection Program is built upon an integrated monitoring approach that strives to understand environmental impact, verify environmental protection and continuously improve our performance. Environmental monitoring programs focus on the local area around the site, including neighbouring communities and Lake Huron. Together, the results build an overall understanding of the risk to human health and impact to the environment.

The Environmental Risk Assessment at the Bruce Power site is updated every five years and includes both a retrospective examination of environmental risk over the last five years and a prospective look at the potential environmental effects of proposed activities on site in the next five years.

Bruce Power's commitment to excellence has yielded strong environmental performance, and Environmental Risk Assessments continually show the operation of the facility has little-to-no impact on human and ecological health. This conclusion is supported by evidence independently collected by the federal and provincial governments which monitor and measure concentrations of contaminants in the environment near Bruce Power.

The Bruce Power site has been extensively studied and characterized over the past

70 YEARS



Indigenous-Led Assessments

The SON Coastal Waters Monitoring Program (CWMP) is implemented by SON members through the SON Environment Office. The results are shared annually with Bruce Power and are incorporated into the Environmental Risk Assessment, as well as other Environmental Monitoring Processes, and are a complementary measure in Bruce Power's Fisheries Act Authorization. The continuation of this program will improve baseline understanding of Lake Huron and Georgian Bay, including knowledge of the existing fish community, water temperature, water quality, wetland habitat and SON Ecological Knowledge.

SON Fisheries Programs have also undertaken large-scale Lake Huron research programs, including acoustic telemetry and use, occupancy and knowledge mapping with SON Fishers.

Though this work is not specific to or directly related to Bruce Power or its operations, this body of SON Knowledge will support our engagement on environmental items of interest and concern to SON, such as potential impacts to fish and fish habitat.

As we work through the IA process, Bruce Power will continue to engage with the Indigenous Nations and Communities to determine interest in carrying out Indigenous Led studies, the inclusion of Indigenous Knowledge throughout the IA, and land-use or other environmental studies that would support addressing concerns and interests related to the proposed Project.

MORE ON WASTE

Bruce Power is committed to minimizing the generation of radioactive and non-radioactive waste and has developed robust management programs that reduce overall waste volume. Bruce Power manages and fully funds the management of its radioactive waste in partnership with Ontario Power Generation (OPG).

All energy-producing industries create waste. The nuclear industry is the only energy-producing technology that can account for and takes full responsibility for all of its byproducts, which are fully funded, stored and managed. In Canada, there are three nuclear waste classifications: low-level (lightly contaminated materials such as garments or small tools); intermediate-level (resins, filters or other items used in the reactors); and high-level (used nuclear fuel). 95 per cent of Canada's nuclear waste overall volume is classified as very-low or low-level.

Used nuclear fuel is a byproduct of nuclear power. The amount of used nuclear fuel is minimal when you consider the incredible amount of carbon-free energy generated by Canada's nuclear industry since the 1960s. In fact – 9 NHL-sized rinks (surface to the top of boards) could store all of Canada's existing inventory of spent fuel.

Radioactive waste management (e.g., handling, transport, and storage) is highly controlled and regulated by the Canadian Nuclear Safety Commission, one of the world's most well regarded nuclear regulatory authorities.

The Canadian Nuclear Safety Commission (CNSC) and the International Atomic Energy Agency (IAEA) monitor and inspect nuclear waste sites and waste management facilities to ensure compliance with national and international nuclear safety regulations.

The Nuclear Waste Management Organization (NWMO) is responsible for Canada's plan for the safe, long-term management of used nuclear fuel. Since 2010, the NWMO has been engaged in a multi-year, community-driven process to identify a site where Canada's used nuclear fuel can be safely contained and isolated in a deep geological repository (DGR) which will protect people and the environment for generations. The site selection process is designed to ensure that the site selected is safe, secure, and has informed and willing hosts.

Until a DGR is constructed and placed into operational service, used nuclear fuel will continue to be safely stored on the sites of Canada's nuclear generating stations, under tight safeguard controls imposed by the Canadian Nuclear Safety Commission and the International Atomic Energy Agency.

Consideration

SITING AND TECHNOLOGY SELECTION

Bruce Power conducted an initial siting assessment to understand potential constraints and opportunities on the Bruce Power site, support conceptual layout development, and evaluate suitable areas for potential development. The siting process allowed for an objective, transparent and rigorous understanding of the Bruce Power site relating to land footprint suitability and will provide foundational information that will assist with engagement with Indigenous Nations and Communities and local communities regarding siting.





The site suitability analysis evaluated key criteria such as:



ENVIRONMENTAL

Impact to fish and wildlife habitat, including wetlands, animal movement corridors and areas with potential to support species of conservation concern.



SOCIAL

Avoiding areas of significance.



TECHNICAL

Surficial geology, faults, terrain, groundwater aquifer, depth to water table, depth to groundwater, distance to drinking water sources, proximity to water.



■ AREAS THAT MAY BE UTILIZED TO SUPPORT THE PROJECT

■ THREE POSSIBLE SITING LAYOUTS



Technology-Neutral Approach for New Nuclear

Bruce Power has not selected a reactor technology at this time, and the Impact Assessment for the Bruce C Project will be technology neutral. This approach involves the consideration of multiple technologies to provide optionality to the province in long-term electricity system planning. This approach has been used previously in regulatory decision-making processes for new nuclear power projects in both Canada and in the U.S.

The Impact Assessment provides an assessment of the likely effects of the Project by using parameters for each reactor type and forming a bounding case for the impact of a new construction, known as a Plant Parameter Envelope (PPE). This means none of the individual reactor designs would have a greater impact on the environment, socioeconomic conditions or human health than what is defined in the Plant Parameter Envelope.

Bruce Power's evaluation of prospective nuclear technologies will focus on the value for ratepayers, opportunities for Indigenous Nations and Communities, socioeconomic benefits for the Clean Energy Frontier region of Bruce, Grey and Huron Counties, and factors including safety, environmental impact, reliability and cost.





brucepower.com/BruceC

P.O. Box 1540 Tiverton, Ontario, Canada N0G2T0 | 519-361-7777

©2024 Bruce Power L.P. Published work. All rights reserved.

CS240394A AUG2024 R000