#### BRUCE POWER FACTS

## Cancer-fighting isotopes

Bruce Power has been a global leader in the production of medical isotopes for more than 35 years, beginning with production of cobalt-60 in the four Bruce B units.

Cobalt-60 is an isotope used worldwide to keep hospitals clean and safe through the sterilization of medical devices, while also fighting brain and breast cancers through specialized treatments.

In 2022, Bruce Power took another leap forward in its isotope program, expanding capabilities to supply cancer-fighting isotopes to the world market through the installation of a first-of-a-kind Isotope Production System (IPS), which produces lutetium-177, a short-lived medical isotope used in innovative prostate cancer treatments.

As we look to the future, the unique design of the IPS offers flexibility in function, opening the door to a wide range of research and development opportunities in the Canadian isotope landscape.

Bruce Power is crucial to the world isotope supply, helping make Canada a global leader in the production of medical isotopes at a time when demand is rapidly growing.

# - And A

Bruce Power is crucial to the world isotope supply, helping make Canada a global leader in the production of medical isotopes.

40%

of the world's single-use medical equipment is sterilized with cobalt-60 from Bruce Power.

24/7

The IPS will leverage Bruce Power's continuous operation to provide a consistent and scalable supply of cancer-fighting isotopes.

#### A HISTORY OF ISOTOPES AT BRUCE POWER

1986 2	2019	2020	2021	2022
<ul> <li>First harvest of cobalt-60 at Bruce Power.</li> </ul>	<ul> <li>Bruce Power completes first successful harvest of High Specific Activity (HSA) cobalt-60.</li> <li>Bruce Power announces partnership with Kinectrics and Framatome to develop Isotope Production System on Bruce Power's Unit 7.</li> </ul>	<ul> <li>Formal supply arrangement signed with Kinectrics, Framatome and ITM.</li> <li>Saugeen Ojibway Nation and Bruce Power announce Gamzook'aamin aakoziwin project to jointly market medical isotopes.</li> </ul>	<ul> <li>CNSC licence approval for commissioning of IPS at Bruce Power.</li> </ul>	<ul> <li>IPS installation complete in Unit 7.</li> <li>June 2022 - First medical isotope produced using IPS.</li> <li>September 2022 - CNSC gives regulatory approval.</li> <li>October 2022 - Commercial production of lutetium-177 begins.</li> </ul>

#### COBALT-60: NEARLY 40 YEARS OF RELIABLE PRODUCTION

Cobalt-60 is an isotope that emits gamma rays essential to the medical community for the sterilization of single-use medical devices and in the treatment of certain cancers.

Each harvest of cobalt-60 from Bruce Power sterilizes billions of single use medical devices. Cobalt-60 is used to sterilize more than 40 per cent of the world's single-use medical equipment through gamma irradiation, a process which sterilizes equipment more quickly and in larger volumes than other forms of sterilization. Demand for cobalt-60 continues to grow to meet demand from the world's healthcare sector for syringes, gloves, surgical gowns and masks.

#### LUTETIUM-177

Bruce Power is the first and only commercial nuclear power reactor in the world to produce lutetium-177, a short-lived medical isotope, in a first-of-a-kind Isotope Production System (IPS), which was installed in Unit 7.

Lutetium-177 produced at Bruce Power is used in precision oncology for targeted therapy of a growing number of cancers, including neuroendocrine tumours, and prostate and breast cancers. Lutetium-177-based treatments are designed to deploy precision nuclear medicine that precisely targets malignant cells while sparing surrounding healthy tissues.



Precision nuclear medicine using lutetium-177 is used to seek and destroy cancer cells, while sparing surrounding healthy tissues.

### ISOTOPE PRODUCTION SYSTEM: A GAME CHANGER IN ISOTOPE PRODUCTION

The installation of a groundbreaking Isotope Production System was completed at Bruce Power in 2022, and commercial production of lutetium-177 began later that year, making Unit 7 the first power reactor in the world with capability to produce short-lived medical isotopes.

The IPS is a game changer in the global medical isotope supply chain, providing unprecedented capacity for isotope production within existing Bruce Power nuclear infrastructure. Historically, most medical isotopes are produced in smaller scale research reactors with noncontinual operation. Bruce Power's continual operations – 24 hours a day, seven days a week – means a consistent supply of cancer-fighting isotopes, in a much larger production capacity than traditional research reactors are able to supply.



For more information on our mid-term review process, visit **brucepower.com/midtermupdate** 

**Questions?** Email info@brucepower.com

