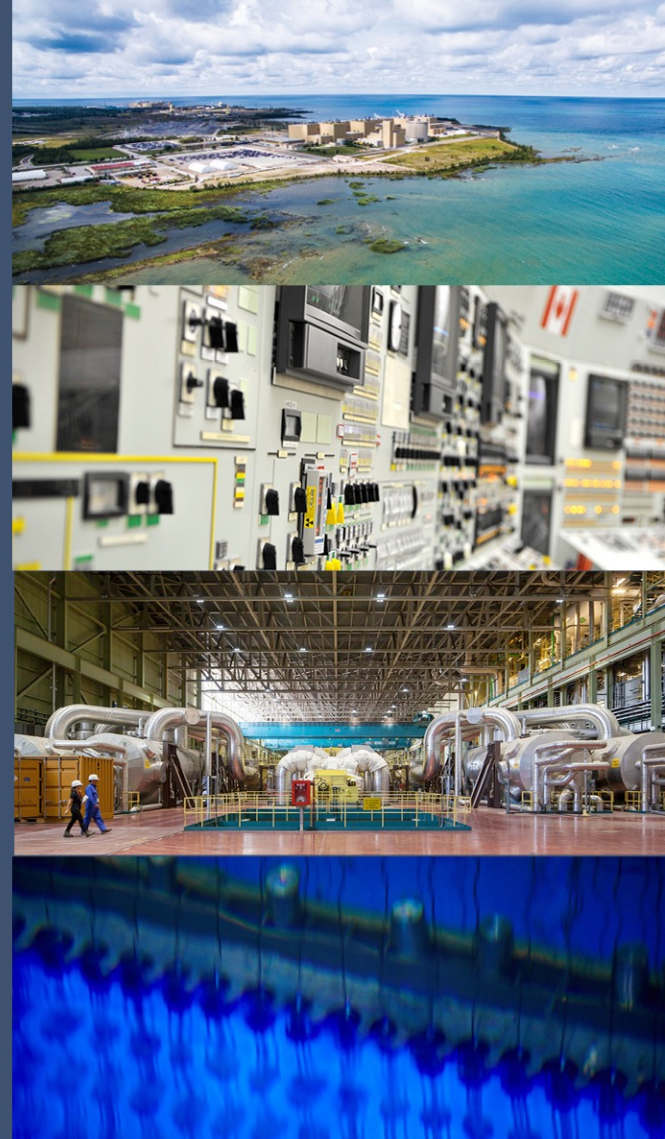


Council for Clean and Reliable Energy

# Nuclear: The Core of a Low-Carbon Future

June 16, 2022



# Video: Welcome to Bruce Power





# Net Zero Needs Nuclear

- **Nuclear provides carbon-free, reliable energy** and is an essential part of a clean energy supply mix
- **Provides environmental, economic and health benefits** – reduced GHG emissions with a strong baseload of stable nuclear power, economic development and job creation, investment and innovation opportunities from existing assets, production of life-saving medical isotopes
- **At the heart of achieving Net Zero given challenges ahead with supply gaps and increased gas** – but regulatory reform is needed, including with respect to waste and DGR certainty



# Ontario's Energy Supply Mix

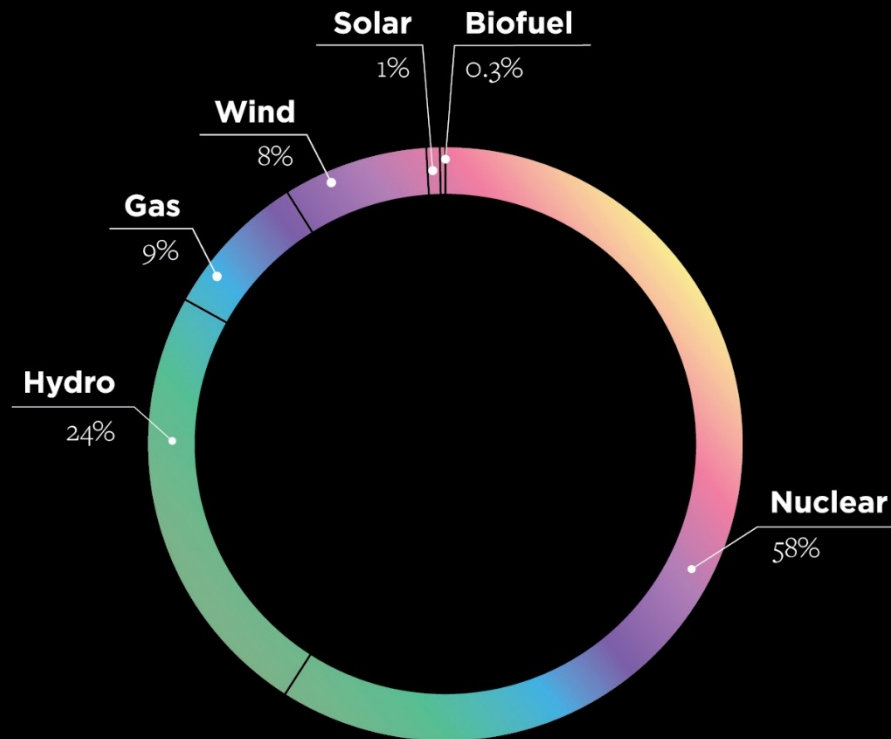


fig. 1 Electricity Output by Fuel Type (2021)

**“Bruce Power’s reliable, stable nuclear power helps to ensure Ontario always has the electricity it needs to keep the lights on and the air conditioning running when Ontario businesses, industries, hospitals and families need us most.”**

**Chris Mudrick**

Executive Vice-President and Chief Nuclear Officer,  
Bruce Power

# Ontario's Competitive Advantage

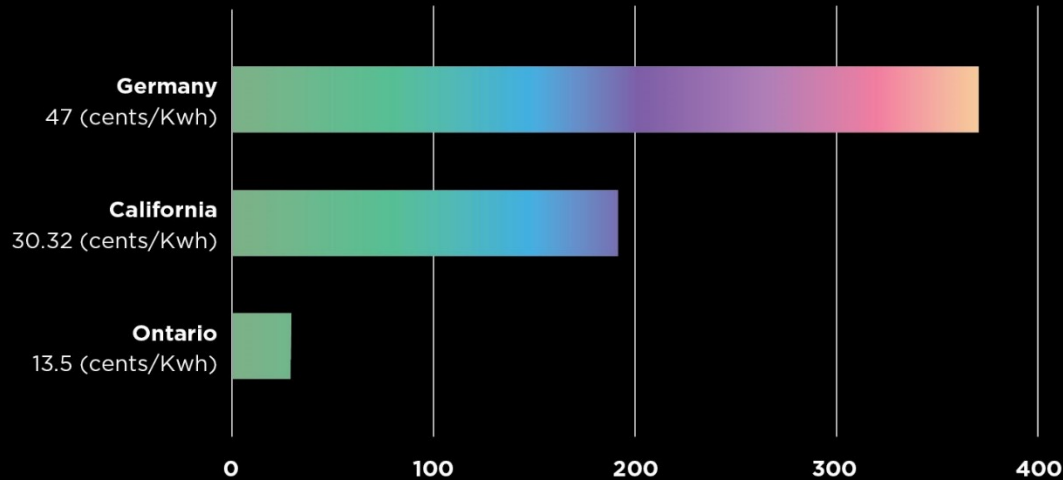


fig. 7 **Emission intensity from the electricity sector by jurisdiction**  
(gCO<sub>2</sub>e/kWh)

Source: U.S. Energy Information Administration (EIA), 2021, and Eurostat, 2021

---

**“Nuclear is a clean energy source that provides reliable, affordable electricity — 24/7 — without emitting any greenhouse gases in its operation. The world needs nuclear power to achieve Net Zero emissions.”**

**Mike Rencheck**

President and Chief Executive Officer, Bruce Power

# Clean Energy Frontier

- **Major Component Replacement** – extending the operational life of our units through 2064
- Commitment to **Net Zero 2027** – first nuclear operator in North America with such an ambitious target
- **Bruce Power Net Zero Inc.** – storage, carbon offsets, renewables, hydrogen, EVs
- **Exploring new opportunities** – carbon offsets, SMR strategy, hydrogen studies, Next Generation Nuclear
- **\$500 million issuance of Green Bonds** – a global first for the nuclear industry
- **Project 2030** – increased site generation to 6,550 MW by 2021 through innovation and investment in facilities; 7,000+ MW site by 2030

---

**Bruce Power commitments:**

---

**2027**

Bruce Power's commitment to become a Net Zero site

---

**2050**

Helping Ontario and Canada meet Net Zero goals

---

**\$500M**

Amount in Green Bonds Issued in 2021

# Recovery and Growth

- **Leading the way in nuclear medicine** – producing Cobalt-60 and Lutetium-177 through made-in-Ontario partnerships
- **Isotope Production System** installed during the Unit 7 outage in 2021 – first commercial power reactor in the world to produce Lutetium-177
- **Made-in-Ontario economic recovery plan** – investing \$3 billion through 2022 through Life-Extension Program, isotope development and asset optimization strategy
- **Securing highly skilled jobs** for Ontarians – 95 per cent of supply chain in Ontario, 480 companies and sub-companies engaged; recapitalized supply chain



# The Net Zero Challenge

- The Government of Canada has committed to achieving **Net Zero carbon emissions by 2050** – resulting in much higher electricity demand
- **Demand from electrification** – electric vehicles and electrifying heavy industry; all new passenger car sales to be zero-emissions models by 2035
- As Canada and Ontario move away from fossil fuels, **non-emitting energy sources must step up to meet demand** – Net Zero grid by 2035
- **Emerging supply gaps** – IESO has identified a gap in energy supply needed (capacity and reliability)
- Existing natural gas fleet will be used to **replace output from Pickering** when it is retired
- **Optimizing existing assets** – increased imports and some new builds will be needed in the coming decade
- **Bruce Power's Project 2030 will bring incremental power output to 7,000 MW by 2030**, helping to bridge the gap through further decarbonization

**No path to Net Zero without nuclear.**



# Reaching 2050 and Beyond

- Successfully reaching Net Zero 2050 and meeting our energy needs well into the future will require a **clean energy supply mix and will rely on a strong baseload of stable nuclear power** along with:
  - Large-scale nuclear
  - Large-scale storage
  - Small modular reactors
  - Micro reactors
  - Advanced nuclear
  - Complementary technologies such as hydrogen



# Regulatory Reform

- Regulatory reform is required to reach Canada's Net Zero goals, including the recognition of nuclear as **green infrastructure**
  - Extend Tax Rate Reduction for Zero-Emission Technology Manufacturers **to include nuclear applications**
  - Include nuclear in **federal tax initiatives**
  - **Policy certainty** to enable building of clean infrastructure and to attract investment through “Green Finance” initiatives
  - **Reduce roadblocks to building new** – must move quicker and if we want to take on large-scale clean energy projects/new builds, streamline and de-risk Impact Assessment process
  - **Incremental nuclear energy output should be considered eligible to register as GHG offsets** within the appropriate offset program and registry

**Enabling the innovation needed to reach Net Zero requires a fair playing field.**

# Safe Waste Management & the DGR

- **Minimize and reduce** the production of waste through innovation, management and new practices
- **Long-term disposal** through potential host community engagement, environmental studies and an open, transparent process to determine final disposal through a **deep geological repository** based on proven international practice and regulated by the CNSC – **need policy support to move the process forward**
- **Commercial benefit to rate payers** to have local solution
- We need a **path forward on a life-cycle solution** or the future of nuclear energy is at risk



**Bruce Power supports the DGR in South Bruce.**



# A Low-Carbon Future

- To summarize, Canada and Ontario **need nuclear as part of a clean energy supply mix** to reach Net Zero
- **Investments in Life-Extension** have enabled innovation and recapitalized the nuclear supply chain
- To leverage these investments and meet climate change goals, **we must streamline and de-risk the regulatory process and create siting options**
- The life-cycle story for nuclear is a positive one – **remove the politics and move forward with the process**
- **Now is the time to act on climate change** – we have a made-in-Canada solution that drives our economy, creates good jobs and saves lives through medical isotopes



**Nuclear is the foundation to achieving our climate change goals.**



# Questions?