Canada's Circular Carbon Economy Needs Nuclear Energy

by Jeff Parnell
President
Power Workers' Union

The goal of a circular economy is to "retain and recover as much value as possible from resources by reusing, repairing, refurbishing, remanufacturing, repurposing, or recycling products and materials." Governments around the world recognize it as a model for tackling the global challenges of climate change, biodiversity loss, waste, and pollution. Concurrently, nuclear energy is being seen as an essential solution for managing these issues while helping to create a circular carbon economy.

Canada has embraced the circular economy concept to help address environmental, social and governance issues. However, one key sector of the Canadian economy—nuclear energy—is not receiving the recognition and support it warrants as a valuable source of abundant, reliable, affordable, low-carbon energy.

In late 2021, the Organization for Economic Cooperation and Development (OECD) released a report, "Nuclear Energy in the Circular Carbon Economy: A Report to the G20."The report noted that increasing the role of nuclear was consistent with the decarbonization objectives of the Paris Agreement. It also highlighted the International Energy Agency's (IEA) Sustainable Development Scenario, which concluded that installed nuclear capacity will need to increase dramatically between 2020 and 2040 to meet the Paris goals. This requires both the extended operation of the existing reactor fleet and deploying new reactors.

To help meet these requirements, the OECD's report calls for electricity market reforms and government leadership. Policies that help attract low-cost financing, create a level playing field for low-carbon technologies, and support for nuclear innovation and international licensing frameworks are considered important enablers. Government backing is critical in: establishing a more forthright recognition of the value of nuclear energy for decarbonizing energy systems; and, including nuclear generation as strategic infrastructure in long-term energy plans. The latter requires government leadership and collaboration with stakeholders, including the public.

These findings are especially relevant for Ontario. In 2022, Ontario's Independent Electricity Operator released its "Pathways to Decarbonization Study" showing that the province will need 68,000 MW of new low-carbon supply by 2050 and that nuclear energy is the most cost-effective option for providing 17,800 MW of the total. That's equivalent to five new Darlington Nuclear Stations in less than 30 years! Ontario's ability to meet this challenge would benefit from creating a level playing field for all clean energy technologies - specifically the extension of Canada's Tax Credit for Clean Technologies to large-scale nuclear and large-scale hydroelectric technologies. Ontario's Green Ribbon Panel raised concerns about the ability of grid operators to meet future Clean Electricity Regulations and stay competitive with U.S. measures contained in the Inflation Reduction Act absent this provision.

Canada and Ontario would benefit from working more collaboratively with nuclear industry stakeholders to develop a strategic role for nuclear energy in a circular carbon economy. Over the last two decades, Canada's nuclear sector has grown the environmental, social, and economic benefits of a CANDU-based supply chain – $6B in annual revenues; 240+ supply chain companies; 76,000 direct and indirect Canadian jobs, including Saskatchewan sourced uranium. Unlike other low-carbon energy resources, the sector has established a highly regulated, monitored, and funded waste management program. Utilities in Ontario and New Brunswick have successfully managed multi-billion-dollar life-extension refurbishment programs for the current fleet and a new 300 MW small modular reactor project is underway at Darlington. Additionally, the sector has helped make the Canadian Nuclear Laboratories at Chalk River an international nuclear R&D hub; Canada's nuclear regulator, a leader in the development of an international regulatory framework; and Canada a major player in the $17B global medical isotope market.

Canada's nuclear industry continues to invest in one of our best clean energy resources for creating a national circular carbon economy. The opportunities to produce secure, 24/7 low-carbon electricity and "green" hydrogen for domestic use and export, medical isotopes, and technology-sharing are significant, but Canada is not without competitors. For our part, we remain committed to working with other nuclear sector stakeholders to develop a long-term nuclear energy strategy that helps Canada achieve Net Zero and economic prosperity. A prerequisite for success – strong leadership and immediate action from both levels of government.

Canada Needs New Large-Scale Nuclear Generation in Ontario

- Achieving Canada's Net Zero targets requires switching from carbon-emitting energy sources to carbon-free electricity as the primary energy source.
- Before 2050, Ontario needs to more than double its current low-carbon electricity production.
- Analyses show that new, low-carbon nuclear generation is Ontario's lowest-cost option to power us to this future.
- CANDU reactors have safely and affordably provided reliable low-carbon electricity for over sixty years in Ontario.
- There's a successful, Ontario-centric, multi-billion$ CANDU nuclear supply chain to build upon.
- It's time for Canada and Ontario to provide strong leadership and act on this critical, low-carbon opportunity.

FROM THE PEOPLE WHO HELP KEEP THE LIGHTS ON

POWER WORKERS' UNION