



October 28, 2016

Members of the House of Commons Standing Committee
on Industry, Science and Technology
c/o The Clerk of the Committee
INDU@parl.gc.ca

Members of the Committee:

Nuclear technology is a **strategy for clean growth**. It's **helping to decarbonize Canada today** by displacing GHGs from power generation. It's **attracting global talent** to its cross-Canada innovation ecosystem, preparing Canadians for the jobs of tomorrow. **It's inclusive innovation that builds STEM skills and links research institutions to business opportunities.**

It's currently seeing **one of the world's largest clean tech investments** – the refurbishment of ten of Ontario's clean, affordable, reliable generating units. Studies by the Conference board and others project well over a million person-years of clean, durable employment from this investment, generating 30 years of power below average costs.

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The Canadian Nuclear Association is a national association of approximately 100 members working together to do this for Canada today. We are utilities, a major mining company, manufacturing, engineering and construction firms, standards and testing organizations, laboratories, universities and organized labour.

While we were regrettably unable to accept the Clerk's invitation to appear before you earlier this month to discuss the health and future of Canadian manufacturing, we are pleased to submit our views on your study topic with you in this letter.

If Canadians have a picture of our industry at all, it's a picture of an energy source. To a new generation of Canadians who are conscious of both energy and technology, it's a very exciting energy source these days. This is because **a new generation of possible applications of nuclear technologies is coming into view** – driven in part by the desire for clean air around our cities, and for clean, low-GHG energy everywhere.

Environmentalists who have grown up with the overwhelming challenge of global warming are putting GHG reduction at the top of their priorities. Long-shot or emerging technologies might be helpful, and wind and solar energy can make a growing contribution as we find ways to integrate them into the system, and ways to store their output – challenges we are just beginning to undertake. But the coming transformation to reach our GHG goals really requires, not solutions that might work, but **proven, large-scale solutions that do work and that we can begin building today.**

Nuclear is one of the ways we are bridging from the high-carbon technologies we are all using right now, to the advanced, low-carbon society of the future

Decarbonizing our society is a profound undertaking, one that requires us to have all our tools at hand. It requires very powerful, proven and available, low-emission electricity. That electricity will need to be **scaled up to meet the needs of a rapidly developing world** that needs a lot of energy right now, and is not going to stop developing.

Nuclear is one of the ways **we can fill this huge gap between the high-carbon technologies we are all using right now, and the advanced, low-carbon society of the future.** No matter how we wish for that society to happen today, there is a gap. No matter how we wish for those technologies and systems to be ready to be built now on a global scale, they aren't.

What we do have now in Canada is a great strategic asset that the rest of the world would like to have. That's **an electricity system with a strong, reliable, affordable and ultra-low-carbon core: hydro and nuclear. This is a system that can cleanly support the mass adoption of electric vehicles.** It's a system that can support the electrification of buildings, and in time, district energy systems. It's a system that can support the integration of wind and solar into the grid without destabilizing it. And **it's a system that could foreseeably support a strategy for the widespread use of hydrogen for energy storage and transport.**

So nuclear is already on a visible, available path to a decarbonized society. How does this relate to your Committee's study of manufacturing?

We are a member of the Canadian Manufacturing Coalition because nuclear is intimately connected to the health of Canadian manufacturing. **Nuclear relies on precision components and advanced materials that are manufactured in Canada to extremely high standards of quality and safety. This allows us to export products to several foreign markets, including China, India and Korea.**

Canada's nuclear industry also provides at least four key services that **drive inclusive innovation**, and strength in Canadian clean tech and manufacturing:

- Nuclear provides **reliable, affordable, clean base-load electric power**. This helped Canada to attract many manufacturing and resource processing industries when we ran short of well-located large hydro sites in Ontario. Those industries are still located here in Canada. They are still **delivering quality of life and high living standards**.
- Nuclear **strategically recruits, trains and develops STEM (science, technology, engineering and mathematics) talent and skilled tradespeople** who then cross-fertilize and strengthen other sectors.
- Nuclear's **stringent standards and regulations drive quality and safety** throughout the organizations that work in our industry, and they transmit this quality and safety culture **through their supply chains** and other relationships.
- Nuclear laboratories perform much of the work on **developing and testing the advanced materials, such as metal alloys and composite materials, that are so crucial to advanced manufacturing** in areas like lightweight auto engines, turbine blades, pharmaceuticals and medical devices, and many other products.

Technology industries do not happen in a vacuum. They draw their strengths from other industries. The technology industries we admire today grew from activities that were serving the needs of government, defence and aerospace, energy, entertainment, and in no small part, manufacturing. This is still true.

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So nuclear is an integral part of Canada's manufacturing and engineering capacity, part of a **web that supports and nurtures the talent that becomes the economy of the future. This is why we care about Canadian manufacturing** and we participate in the Canadian Manufacturing Coalition.

Members of the Committee, we want to thank all of you for taking an interest in this topic, which is so critically important right now. Manufacturing remains the single largest business sector in Canada, and it remains vital to sustaining our living standards through durable, well-paid, productive, value-added jobs at a time of tremendous insecurity in labour markets.

We agree with the Coalition that Canada lacks a manufacturing strategy, that we need one, and that Canada does have great strengths and opportunities in the current very turbulent world environment. The Coalition has addressed that very well.

We would add that our nuclear industry is a **competitive export industry**, and particularly to the developing world.

Nuclear laboratories develop and test the advanced materials, such as metal alloys and composite materials, that are crucial to advanced manufacturing.

We are part of Canada's strategic manufacturing excellence, and we want that excellence to grow.

Cameco, based in Saskatoon, exports uranium around the world, helping to displace fossil fuels and clean up the atmosphere on a massive scale. We have exported nuclear power plant systems to China, India, Korea and other countries.


Another of our members, BWXT of Cambridge, Ontario, is currently manufacturing steam generators for export to China. **SNC-Lavalin Nuclear of Mississauga, Ontario is working with China on Advanced Fuel CANDU reactors that will be part of the Chinese nuclear fleet.**

Nuclear is here to stay, here to grow, here to export, here **to help the world get to sustainable energy systems**, here to help Canada influence our partners

around the world to meet the climate challenge. We are proud to be a part of Canada's strategic manufacturing excellence, and we want that excellence to grow.

We would be pleased to appear before you, should it be possible to schedule an appearance, now or for a future study.

Sincerely,



John Barrett, Ph.D.
President and CEO
Canadian Nuclear Association