canadian nuclear association cna anc association nucléaire canadienne

June 30, 2021

The Honourable Catherine McKenna
Minister of Infrastructure and Communities
180 Kent Street
Suite 1100
Ottawa, Ontario, K1P 0B6

Re: CNA Feedback on National Infrastructure Assessment Plan

Dear Minister McKenna,

On behalf of the Canadian Nuclear Association (CNA), I would like to thank you for the opportunity to provide our feedback on the *National Infrastructure Assessment*.

The CNA is the voice of the Canadian nuclear industry. We have over 120 members representing the entire spectrum of the nuclear industry, from uranium mining and nuclear power utilities to engineering, service and manufacturing companies. Our members include some of the most innovative companies in the nation and our industry is committed to helping Canada reach its climate change targets.

We are pleased to see the Government of Canada's efforts to meet our 2030 climate targets and net-zero emissions by 2050 through infrastructure planning and investment initiatives. Nuclear energy infrastructure projects meet the core objectives listed in the Engagement Paper on the National Infrastructure Assessment - economic growth, job creation; addressing climate change; and improving social inclusion and quality of life.

There is no doubt that to achieve Net-Zero by 2050 new infrastructure is needed for all clean energy sources including nuclear. In its 2019 report, the International Energy Agency found that achieving our climate goals without nuclear energy would not only take longer but would also result in higher electricity prices for consumers. Most recently, G7 nations pledged to phase out coal by replacing it with a low-carbon, affordable and accessible energy source – nuclear was identified as the most suitable energy source to achieve this.

Canada now has a unique opportunity, by utilizing our world class nuclear industry and other clean energy sources, to power our economy for a clean energy transition, improve access to clean transportation, create clean jobs, and ultimately fight climate change.

I am writing to you today to emphasize the importance of including nuclear in infrastructure initiatives and planning. Nuclear power delivers carbon-free, reliable energy 24 hours a day, and has historically been one of the largest contributors of carbon-free electricity both globally and here in Canada.

Every year, nuclear energy saves 2.5 billion tonnes of carbon emissions, including 80 million tonnes of carbon dioxide emissions in Canada. Nuclear reactors in Ontario and New Brunswick generate about 15% percent of all electricity in Canada, without generating greenhouse gas emissions. Nuclear energy was responsible for 89% of the generation needed that enabled Ontario to 'power past coal' which remains Canada's single largest source of emission reductions. This action successfully reduced smog days from 53 in 2005 to zero in 2015 and generated significant health benefits to citizens.

Canada's nuclear industry also provides significant economic benefits including investments and jobs. For instance, OPG's refurbishment of Darlington Nuclear Power Generating Station and Bruce Power's Major Component Replacement program at the Bruce Power site, represent over $26 billion dollars in infrastructure investments and 36,200 high-quality, long-term direct and indirect jobs through continued operation.

Canada's inclusion of nuclear in Canada's Infrastructure Plan, Climate Change Plan, Hydrogen Plan, and SMR Action Plan will also enable nuclear to support the production of other clean energy technologies such as hydrogen and renewables to meet the net zero-emissions targets.

Investing in Nuclear Infrastructure Development, Indigenous Participation & the Economy

The Government of Canada should make every effort to continue to support the nuclear industry, alongside other sources of clean energy, in its infrastructure plan.

Clean electrification from multiple clean sources including nuclear is an imperative that requires action at the earliest opportunity, if Canada is to realize the ambitious objective of net carbon zero by 2050.

The CNA believes that electricity generation from carbon-free sources is going to have to increase dramatically. Therefore, there may be a need for large and small nuclear technologies that would compliment the existing Canadian nuclear fleet.

A critical step forward is to support SMR development in a timely and efficient manner. Between 2035-2050, SMRs could reduce GHG emissions by 216 megatonnes (Mt)* in the heavy industrial sector—the equivalent of removing all current emissions from the oil and gas sector for a one-year period. Beyond their value in cutting GHG emissions in the Heavy Industrial Sector by 18 per cent by 2050, SMRs could lower the country's cost of reaching net zero by more than five per cent and contribute $5 billion to GDP per year by 2050, versus a scenario where SMRs are not available.

SMRs are also seen as a vital part in supporting electrification and hydrogen initiatives across Canada. Transportation electrification offers a key opportunity to introduce a major new electricity use, boosting electricity demand in the long-term and economic development, as well as creating new jobs. Canada's transport sector accounts for over 20 per cent of our GHG emissions and the investment in new nuclear would allow for a greater focus on decarbonizing the transportation sector with clean, reliable energy.

Investing in hydrogen energy infrastructure is equally seen an essential part of the transition towards a clean energy future. Hydrogen is an abundant fuel that, if created from non-emitting sources, can replace fuels in a variety of economic sectors including transportation, industry, and resource development. Large volumes of hydrogen will be needed if Canada is to become a leading, non-emitting source of energy. This need matches well with the ability of the nuclear industry to provide large volumes of hydrogen on a sustained and reliable basis. Canada has a unique opportunity to leverage the existing nuclear supply chain to serve hydrogen power's engineering, manufacturing, and field service needs.

Outside of nuclear energy, Canadian workers and communities benefit every year from Canada's investments in nuclear technology. Nuclear reactors can be used to provide medical isotopes, process heat for industry, desalinate water, produce hydrogen, and to create synthetic low-carbon fuels as well as to generate power. There is further infrastructure investment opportunities Canada can pursue in Uranium mining; Candu technologies and their supply chain; and Isotopes.

For our mining sector, the use of uranium and fuel products from Cameco, one of the world's largest uranium mining companies, alone are responsible for 421 million tonnes of avoided carbon emissions in Canada and around the world. Further, Cameco is the largest employer of First Nations in northern Saskatchewan which enables those communities to grow and flourish. Investing in the uranium mining infrastructure would not only spur economic growth and exports, but would pave the way towards socio-economic equality within marginalized communities most impacted by the effects of climate change.

Innovation in the nuclear sector can help lead the way to a Net Zero by 2050 Future

It is an incredibly bright and exciting time for the nuclear industry, both in Canada and globally, because of the tremendous innovation that is underway. This is facilitated by the ambitious but entirely achievable objective of net zero by 2050 for Canada.

First, the Canadian nuclear industry including clients, key vendors and the entire supply chain are engaged in a dynamic period of operational excellence, directly related to the domestic refurbishments. The nuclear reactor life extension programs for the Canadian Candu fleet is spurring on tremendous innovation and dynamism. In addition, there is opportunity for the industry to expand upon the great transformative work underway at the Government of Canada's nuclear labs located at Chalk River and elsewhere in Ontario and across Canada.

Second, the Canadian nuclear industry is currently working together to develop a made in Canada waste management and decommissioning sector that is second to none. The CNA not only supports these efforts but would respectfully point out that a systemic approach will be necessary in order to sustain the future of the nuclear sector in Canada.

Third, the wave of innovation already in place in the nuclear industry includes efforts to expand the use of digital twins in this sector, as well as other efforts at digitalization. As well, efforts to apply artificial intelligence and robotics in some critical areas of services for the existing fleet represents one of the most exciting areas where innovative work is underway in the sector.

Finally, Canada has maintained a world class expertise in the development of nuclear-based medicines and applications (i.e. isotope creation). The road to a net zero by 2050 objective includes expanding upon this world class expertise and building leading edge capabilities on the cutting edge of such efforts.

Including Nuclear in Federal Green Funding Programs

There is a great sense of urgency to begin work immediately on announced programs that aim to lead us towards a net-zero future. Announced programs and funding needs to be expediated in order to meet the net zero – emissions targets by 2050 and to generate new jobs and investments that will assist in restarting the Canadian economy as part of the post Covid – 19 pandemic economic recovery efforts.

Leadership by the Canadian Government in explicitly including nuclear energy infrastructure projects will also enable the attraction of private sector investments and create new employment opportunities. We recommend keeping a consistent definition of clean energy by continuing to include nuclear in federal green funds. As mentioned in the National Infrastructure Assessment, there is a need to improve coordination, collaboration, and alignment among public and private sector infrastructure stakeholders. Maintaining a consistent definition of nuclear as a green energy source is key to enabling coordination at a federal level.

The clean energy sector will be influenced by federal government programs, and explicit policy decisions. The nuclear industry is committed to working alongside public and private stakeholders, including Indigenous communities, youth and labor groups, and the Canadian Government, to work towards implementation of clean energy infrastructure, including nuclear.

The CNA encourages the Ministry of Infrastructure and Communities' continued support for the nuclear industry in its clean infrastructure programs and looks forward to future opportunities to collaborate on infrastructure planning and development.

Sincerely,

John Gorman
President and CEO
Canadian Nuclear Association