August 28, 2020

Aaron Hoskin
Senior Manager, Fuel Diversification Division
Natural Resources Canada
580 Booth Street
Ottawa, ON K1A 0E4

Re: **Canadian Nuclear Association's response to the "Hydrogen Strategy for Canada"**

Dear Mr. Hoskin:

I am writing on behalf of the Canadian Nuclear Association (CNA) to provide our input into Canada's proposed hydrogen strategy.

The CNA is the voice of the Canadian nuclear industry. We have nearly 100 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.

If Canada (and, indeed, the world) is to meet its goal of net-zero emissions by 2050, a clean energy transition is essential. The Canadian nuclear industry is central to helping Canada achieve this. The industry has already played a prominent role by helping Ontario shut down its coal fired electricity generation; innovative technologies in the form of small modular reactors (SMRs) will enable further decarbonization, not only in the on-grid electricity system but across the resource sector and in remote communities.

Response to the "Hydrogen Strategy for Canada"

The "Hydrogen Strategy for Canada" depicts the Canadian energy system as an integrated set of energy sources and technologies. It looks beyond a set of distinct fuels and industries towards a more holistic view of our energy future. The CNA strongly supports this view and believes that it will take an integrated and coordinated approach using all low-carbon energy sources to achieve our goals.

The CNA also welcomes the strategy's recognition that nuclear energy is low-carbon and that nuclear can contribute to an integrated clean energy system.

We note that Natural Resources Canada (NRCAN) is proposing an Implementation and Steering Committee as we move forward. The nuclear sector should be part of that committee to ensure a coordinated approach to federal policies and programs in Canada's clean energy transition.

As your department is aware, there is a global competition to developing a hydrogen strategy and market. The United States, Europe and other jurisdictions are increasingly looking at establishing their own hydrogen energy systems. As one of the leading producers of hydrogen, Canada is well placed to lead but we must act quickly and in a coordinated manner, which includes coordinating federal policies and programs to ensure they are complementary. Supporting SMR development and deployment in the nuclear sector as a step towards enabling the hydrogen economy is just one such example. Similar opportunities exist in other fields and it is important government and industry act in a coordinated manner.

On behalf of the nuclear industry, it is important we raise the challenges presented by the inaccurate coding of sources in the document. The colour-coding system use to classify sources of hydrogen is misleading. It makes the mistake of conflating "green" with "renewable" thus excluding nuclear, which generates zero emissions and, in fact, has lower lifecycle carbon emissions than even solar. CNA strongly objects to this classification system that only perpetuates misconceptions. We recommend that a new, science-based classification system be developed based on carbon intensity. CNA notes that similar biases exist in many government initiatives. Evidence-based policy making demands a consistent and evidence-based energy taxonomy and we strongly encourage your attention to this matter.

As the "Hydrogen Strategy for Canada" rightly points out, large volumes of hydrogen will be needed if it 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. There is an opportunity for Canada to lead in the necessary coupling of nuclear and hydrogen to produce those large volumes. Canada has a unique opportunity to do that by leveraging the existing nuclear supply chain to serve hydrogen power's engineering, manufacturing, and field service needs. But, to fully develop this opportunity, there is a need for infrastructure capital to be available to build demonstration projects.

The strategy document also identifies the need for policies and investments to drive demand and grow supply concurrently. As noted, one of the challenges for hydrogen is that clean hydrogen is not yet economically viable compared to other fuel options. Nuclear-generated hydrogen is likely to be competitive around the time SMRs enter the market, but the Government of Canada is central to making this a reality. The CNA supports the recommendation that government production incentives be used to encourage scale and that government de-risk industry investment through financial measures for end users to create a larger market. Of course, the nuclear industry also needs the government to implement its previously requested support for SMR development.

The CNA also endorses the recommendation that the government continue to support and strengthen research activities at Canadian Nuclear Laboratories, other research facilities and academic institutions to drive the innovation necessary to reduce costs and generate efficiencies. As with any new technology, pilot deployments are necessary and, given demonstration models are rarely cost-effective, government support will be needed.

Canada is a large, diverse country with equally diverse natural resources and energy systems. The "Hydrogen Strategy for Canada" rightly recognizes this. How hydrogen is generated most efficiently will vary by province in the short term. Ultimately, nuclear power will prove to be the best available source of large-scale, reliable , emissions-free hydrogen, but this will take time to emerge and government support both financially and through policy initiatives is essential to ensure this becomes a reality.

Recommendations in summary

1. The nuclear industry be represented on Canada's Hydrogen Strategy Steering Committee.
2. The government act quickly to implement a coordinated approach to policies and programs across the federal family to ensure a supportive environment for hydrogen development.
3. The government correct the colour-coded hydrogen classification system by moving to a science-based approach based on carbon intensity.
4. The government enact fiscal and policy incentives that work in parallel to stimulate demand and grow supply for hydrogen.
5. The government adopt fiscal and policy measures to support the development of SMRs, which have the potential to generate the vast amounts of emissions-free hydrogen needed for a successful hydrogen economy.

6. The government adopt fiscal and policy measures to strengthen research activities and support demonstration projects for hydrogen and nuclear.
7. The government implement its policies in such a way that it recognizes the regional diversity in Canada's energy systems and provides the opportunity for multiple, complementary approaches to hydrogen development.

Once again, thank you for the opportunity to provide input into the development of Canada's hydrogen economy and we look forward to continuing to work with you on this exciting initiative.

Sincerely

John Gorman
President and Chief Executive Officer
Canadian Nuclear Association