

January 18, 2021

Hon. Jeff Yurek
Minister of the Environment, Conservation and Parks
Ministry of the Environment
Conservation and Parks Climate Change Programs and Partnerships Branch
6th Floor, 135 St Clair Ave W Toronto, ON
M4V 1P5

Canadian Nuclear Association Response to Ontario's Low-Carbon Hydrogen Strategy Discussion Paper

Dear Minister Yurek,

On behalf of the Canadian Nuclear Association, I would like to thank you for the opportunity to provide our input into Ontario's low-carbon 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 Ontario (and, indeed, Canada) 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 Ontario achieve this. As you know, the nuclear industry has already played a prominent role by helping Ontario shut down its coal fired electricity generation. Through innovative technologies such as hydrogen production using both our existing nuclear fleet and small modular reactors, Canada's nuclear industry can enable further decarbonization in the transportation, resource, and industrial sectors as well as in remote communities.

Large volumes of hydrogen will be needed if it is to become a leading non-emitting source of energy. Ontario is blessed with an abundance of non-emitting electricity which can be used to generate the volume of hydrogen needed. This will require an integrated solution including hydrogen generation, storage, wires, and pipes. Nuclear generation already provides the backbone for Ontario to develop the innovation, technologies, and expertise to transition to the next generation of energy systems. Such an integrated system has the potential to deliver significant economic benefits to all regions of the province.



As the discussion paper correctly points out, other provinces and other nations are actively pursuing hydrogen development. At a time when energy policies risk dividing Canadians more than ever, hydrogen has the potential to provide valuable, constructive agreement among provinces by providing a low carbon energy source – one that can be produced in multiple ways allowing each province to exploit their strengths. Canada’s nuclear industry based here in Ontario can play a major role in that national approach.

The Discussion Paper outlines several key principles and objectives that will be central to Ontario’s hydrogen strategy. The CNA would like to offer the following comments:

Vision

CNA supports Ontario’s efforts to create a hydrogen strategy and believes that the nuclear industry can play a significant role in developing hydrogen through its ability to generate large volumes of non-emitting, reliable, low-cost heat and electricity and thereby creating a made at home solution to emissions in the transportation, industrial and resource sectors. Ontario’s nuclear industry is a highly innovative sector that can capitalize on our strong research and development sector, our strong supply chain, our innovative culture, and lead the world in demonstrating the benefits of coupling nuclear power and hydrogen.

Reducing Greenhouse Gas Emissions

Ontario has already taken significant strides towards attaining its GHG targets by moving to an almost emissions free electricity sector. Nuclear energy played a significant role in that achievement. However, if Ontario is to make its 2030 targets and indeed its 2050 targets, other sectors must be addressed with similar ambition. These would include most notably the transportation, heavy industrial and resource extraction sectors.

These sectors all have the opportunity to adopt a combination of high-temperature heat and electrification to significantly reduce their GHG emissions. That can only be achieved if the hydrogen, heat and electricity are generated from non-emitting sources. Ontario has been investing significant time, money, and resources over the past 20 years to create a largely non-emitting electricity sector. There is an opportunity to capitalize on that investment to generate low carbon hydrogen that can be applied to the transportation, industrial and resource sectors to further the energy transition and drive down emissions. The addition of SMRs will further enable hard-to-decarbonize industry to produce clean heat, electricity and hydrogen (i.e. “tri-generation”) and contribute to Ontario’s GHG-reduction targets.

However, this approach will require long-term planning and co-ordination throughout the government. Planning will need to consider how to implement these significant changes, while respecting the concerns of customers and consumers (notably about affordability) and avoiding the system challenges of the past. Clear long-term objectives need to be outlined to provide the certainty to allow industry to secure investment to develop viable strategies. Policies will need to focus on Ontario's existing clean energy technologies (including but not limited to nuclear) as well as developing technologies such as SMRs and storage.

Generating Economic Development and Jobs

Hydrogen is an abundant fuel that if it is created from non-emitting sources, can replace fuels in a variety of economic sectors including transportation, industry, and resource development. As noted in the discussion paper, Ontario has wide range of opportunities across all regions of the province -- not just for the generation of hydrogen but for concentrated large volumes of end use of energy. A recent study by the [Green Ribbon Panel](#) indicated that home grown innovations could enable almost 50,000 jobs across the province with as many as 23,000 high quality jobs linked directly to hydrogen.

By combining Ontario's existing industrial advantages, our low-cost, reliable non-emitting electricity, and our existing expertise in hydrogen, Ontario has the potential to be a first mover in the large-scale generation and application of hydrogen giving the province competitive advantages in research and development, technological innovation, and export markets. Done right, these advantages could easily spill over into other industries further strengthening our economy.

It is important to note, that taking advantage of this opportunity will require a significant investment in education in science, technology, engineering, and mathematics (STEM) and skilled workers. The government should work with leading companies and the skilled trades to develop the necessary education and training initiatives to ensure Ontario is able to capitalize on this opportunity.

Promoting Energy Resilience

There is the potential for low emitting heat, electricity and low carbon hydrogen to work in harmony to enable the transition to a low carbon economy. Ontario is ideally positioned to take advantage of this opportunity. With non-emitting nuclear power as the backbone of Ontario's existing electricity sector (supported by hydro and renewables) and SMRs as a developing source of distributed heat and power, Ontario can generate significant amounts of low carbon hydrogen.

Electricity and hydrogen can complement each other. Off peak electricity can be used to create hydrogen, and hydrogen can be used as a form of electricity storage. This can make a more efficient electricity system thereby lowering costs and providing resiliency. In addition, hydrogen has the potential to be deployed in fields where electricity may not be as effective.

In the past 15 years, Ontario has invested significantly in the creation of a low carbon electricity system. That has not been cheap but by capitalizing on that investment by seizing the opportunity hydrogen presents, Ontario can position itself as one of the leading low carbon economies at a time when the price on carbon is expected to rise rapidly.

Reducing Barriers and Enabling Action

The challenge for Ontario will be to implement its hydrogen policy without the spike in costs that accompanied aspects of the move to non-emitting electricity, in turn damaging political support. This will require careful planning (including full engagement of the formal policy planning mechanisms and organizations), long-term policy stability and an environment open to innovation, supportive of private investment and resists the temptation to pick winning and losing companies and technologies.

The government of Ontario needs to work with the federal government, potential hydrogen generators and potential end users to create regional hubs as a starting point for hydrogen development. Like all new technologies the initial costs of hydrogen production will be higher until economies of scale kick in. One way to manage this is to encourage supply and demand at the same time. The government can use its convening power to establish a working committee to ensure the appropriate players are in the room and use its fiscal capacity to provide certainty to investors.

CNA believes there is merit in ongoing reviews of regulatory policies with respect to both electricity and hydrogen. This is not to say regulation is not necessary, but it needs to be efficient and effective and not hinder innovation and development.

Using Hydrogen Where and When it Makes Sense

The CNA believes Ontario is well positioned to lead in the development of the production of low carbon hydrogen and the development of end use opportunities but capitalizing on this opportunity without driving up costs to consumers will require long-term policy stability and a coordinated approach across governments, producers, and end-users.

Hydrogen has the potential to replace emitting sources of energy in numerous sectors of our economy such as transportation, heavy industry and resource development as well as complement our emissions free electricity system. However moving to this system will need to be carefully aligned with the rising cost of carbon so that Ontario industry does not become uncompetitive and costs to consumers rise rapidly.

The CNA fully supports the government's development of unified provincial hydrogen strategy and would encourage the government to establish a provincial working committee involving government, potential generators, and potential end users. The CNA would be pleased to participate in such a committee.

Thank you for the opportunity to provide our input.

Sincerely,



John Gorman
President and Chief Executive Officer
Canadian Nuclear Association