



Ontario Ministry of Energy and Electrification  
Attention: Ms. Emma Schwab-Pflug

By email: [emma.schwab-pflug@ontario.ca](mailto:emma.schwab-pflug@ontario.ca)

December 13, 2024

**Re: Consultation on Renewing Ontario' Low-Carbon Hydrogen Strategy Discussion  
Paper: Ontario Low-Carbon Hydrogen Strategy ERO. No. 019-9324**

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Dear Ms. Schwab-Pflug:

In response to the call for additional comments on renewing the “Ontario Low-Carbon Hydrogen Strategy,” (“Hydrogen Strategy”) the Canadian Environmental Law Association writes to reiterate the following comments, which were originally submitted along with other co-signatories respectively to the MEP in 2021<sup>1</sup>, as well as similar comments that were submitted to the federal Minister of Natural Resources in 2020<sup>2</sup> as these are relevant to your current consultation.

We recognize the potential of renewable hydrogen to play a critical role in decarbonizing some of the more hard-to-abate sectors. Strategic deployment of renewable hydrogen technology will help Canada meet its climate commitments under the Paris Agreement, setting us on a pathway to net-zero emissions as soon as possible before 2050. There is a real opportunity for Canada to become a world leader in this new green energy industry. However, based on your draft executive summary this risks being undermined by a focus on fossil fuel derived hydrogen.

Only renewable hydrogen is truly emissions-free, and as such, renewable hydrogen aligns with the deep decarbonization required to tackle climate change. A focus on enabling renewable hydrogen is the only way to have an emission-free hydrogen strategy that aligns with the profound transformation required to move Canada’s energy system from one largely based on fossil fuels to renewable energy systems.

This means that the oil and gas sector not an appropriate source for a hydrogen strategy for Ontario. It is essential that a hydrogen strategy must rely on renewable hydrogen (including sources by which the co-benefits of mitigating hazard and pathogen risk are realized such as extraction from domestic landfill and utilization of anaerobic digestors for biosolids, restaurant waste, and animal farm waste).

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<sup>1</sup> <https://cela.ca/cela-and-northwatch-comments-on-ontarios-hydrogen-strategy/>

<sup>2</sup> <https://cela.ca/hydrogen-strategy-for-canada-should-focus-on-renewable-hydrogen/>

There is little scientific or economic evidence that investing in fossil hydrogen production can make a meaningful and cost-effective contribution to achieving a zero emissions economy.<sup>3</sup> Its abatement potential relies on carbon capture and storage (CCS) technology, an unproven technology which falls short of a zero emissions objective and is still prohibitively expensive. In addition, CCS does not address methane leakage from the production or transportation of natural gas - and as we know, methane emissions are consistently underreported.<sup>4</sup> Nor does it address the other impacts associated with exploring and developing fossil gas deposits, including Indigenous rights violations, biodiversity, water, air quality, and the industry's failures to remediate wells. Renewable hydrogen is projected to be more cost-effective than even unabated fossil hydrogen by 2030.<sup>5</sup> Fossil-fuel based technologies are expected to have limited cost reduction potential relative to the expected cost reductions for electrolysis.<sup>6</sup> While most of the technologies used for blue hydrogen are already mature technologies, there is still a lot of potential for innovation and cost reduction in the green hydrogen process, as large scale electrolysis is a novel field of application.<sup>7</sup>

All new government investments must be focused on rapid transition to carbon-free energy systems. To the extent that any public resources are available for hydrogen development, they should be reserved for renewable hydrogen for the hardest-to-decarbonize sectors that do not have viable decarbonization alternatives. Canada should not be providing any form of financial support for the development of fossil-fuel derived hydrogen. Support for research and development of natural gas for the production of hydrogen, as well as for infrastructure, falls under the international definitions for fossil fuel subsidies. Any funding for fossil hydrogen is a fossil fuel subsidy and goes against Canada's G7 and G20 commitments to eliminate inefficient subsidies.

Hydrogen is and will continue to be a scarce resource during the growth of this emerging energy sector. Scaling up its production and converting fuel systems to use it will take time, hence it should be prioritized for the sectors most difficult to decarbonize, where there aren't other viable options. Hydrogen use will need to be targeted at industrial processes that are not easily directly electrified, such as low carbon steel production. In the transport sector, renewable hydrogen should be used where cleaner alternatives do not exist, like aviation.

Hydrogen is not a suitable alternative fuel for space and water heating, because of energy conversion losses and existing infrastructure is not equipped to handle more than a very low percentage of hydrogen blended into fossil gas, due to the corrosive nature of pure hydrogen to steel. Household appliances, likewise, are not equipped to burn pure hydrogen. The draft strategy supports the injection of hydrogen into the gas grid for space and water heating, but in effect, this is merely an argument for extended use and reliance on fossil gas. Blending a negligible volume of hydrogen into carbon emitting fossil gas is a dangerous distraction from realistic measures to decarbonize space and water heating, specifically retrofits, energy efficiency and heat pumps.

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<sup>3</sup> <https://www.reuters.com/article/canada-hydrogen/canada-has-big-plans-to-use-hydrogen-to-cut-emissions-and-produce-more-oil-idUKL1N2FY17G>

<sup>4</sup> <https://www.bnnbloomberg.ca/methane-emissions-are-higher-than-thought-in-canadian-oil-patch-1.1522049>

<sup>5</sup> <https://ieefa.org/morgan-stanley-green-hydrogen-could-be-economically-competitive-by-2023/>

<sup>6</sup> <https://www.imperial.ac.uk/sustainable-gas-institute/research-themes/white-paper-series/white-paper-3-a-greener-gas-grid-what-are-the-options/>

<sup>7</sup> <https://www.e3g.org/news/a-global-green-hydrogen-market-made-in-germany/>

We are also concerned about linking hydrogen to the development of small modular reactors (SMR) and other nuclear technology, given significant concerns with the feasibility, costs, safety and timeliness of the technology. SMRs are an expensive distraction from more viable, cost-competitive decarbonization solutions. Developing new nuclear energy is too slow to address the climate crisis – as well as more expensive – compared to renewable energy and energy efficiency.<sup>8</sup> No SMRs have yet been built and the models being proposed will take a decade or more to develop. A Canadian study found that energy from small nuclear reactors would be up to ten times the cost of renewable energy.<sup>9</sup> Nuclear-powered hydrogen is not renewable hydrogen.

We welcome actions by the province to move forward with its climate priorities and support investment in the renewable energy economy. However, Ontario’s potential role as a leader in this new green energy industry, cannot be achieved if we rely upon non-renewable energy derived hydrogen, such as that from nuclear power. Accordingly, we submit that no public subsidies or public research support should be provided in aid of any projects aimed at using nuclear generation for hydrogen production. Nuclear generation brings with it a host of risks to public safety, cost, international security and hazardous wastes and the potential for realizing a sustainable economy through use of renewably generated hydrogen resources should not be marred by linking its production and or use to such a non-sustainable and hazardous sector as nuclear power generation. Any credible consideration of such a linkage must including assessment of nuclear non-proliferation and security risks, nuclear waste, transportation and accident risks, and full life-cycle emissions of all carbon and non-carbon pollutants.

Regarding the linking of hydrogen energy to the development of small modular reactors (“SMR”), we share concerns of feasibility, costs, safety and timeliness of the technology. We object to hydrogen generated from electrolysis powered by nuclear power and the Ministry’s characterization of small modular nuclear reactors (SMRs) as "green" hydrogen at a recent online briefing. We note that this characterization was made despite being contrary to the Ministry of Environment, Conservation and Parks staff’s advice during the stakeholders' briefing held earlier this month.<sup>10</sup>

Over the last five years, the cost of nuclear energy production has risen over 50%, while renewables have become the cheapest source of energy.<sup>11</sup> Some studies have found nuclear energy from SMRs could cost up to ten times as much as renewable energy.<sup>12</sup> Ontario should not be investing in non-renewable energy sources when renewable technologies are available and scalable now.

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<sup>8</sup> Environmental Registry of Ontario, “Ontario Low-Carbon Hydrogen Strategy – Discussion Paper” (ERO. number 019-2709), online: <https://ero.ontario.ca/notice/019-2709> [Discussion Paper]

<sup>9</sup> Discussion Paper, p 12

<sup>10</sup> MECP, Webinar - Online Consultation regarding Ontario’s Low-Carbon Hydrogen Strategy Discussion Paper (12 January 2020)

<sup>11</sup> Canadian Environmental Law Association, Primer on Small Modular Reactors (17 Nov 2020) online: <https://cela.ca/primer-small-modular-nuclear-reactors/> [SMR Primer]

<sup>12</sup> Froese S. et al, “The energy costs associated with small modular reactors exceed those of diesel-based electricity. Policy- makers should focus on renewables” (26 Aug 2020), Policy Options, online: <https://policyoptions.irpp.org/magazines/august-2020/small-modular-reactors-arent-the-energy-answer-for-remote-communities-and-mines/>.

SMRs also carry with them the potential for severe accidents. Many SMR designs require the reprocessing of highly radioactive nuclear waste to make new fuel for reactors. The SMR currently furthest along review in Canada, the High Temperature Gas Cooled Reactor, could undergo severe accidents in the event that water or air get into its core, which would release radioactive materials into the environment. Adding insult to injury, unlike solar and wind farms, SMRs are exempt from federal and provincial environmental assessments.

Not only are SMRs expensive and dangerous, they distract from more viable, cost effective solutions. Additionally, nuclear energy development is too slow to effectively address the global climate crisis. Not only is nuclear powered hydrogen not renewable hydrogen, no SMRs have been built yet and will not be for at least 10 years. The United Nation's has warned that we only have ten years to get climate change under control. If Ontario invests in technology that will not have an infrastructure ready until the 2030s, our narrow window to decarbonize will have been missed.

For these reasons, we do not support any effort to link Ontario's hydrogen strategy to nuclear power which we believe is contradictory to the leadership necessary to shift our economy away from non-renewable derived sources of power. We urge the province to support a rapid transition to a carbon free energy system and in advancing Ontario's hydrogen strategy, prioritize a renewable energy system.

Finally, the debate around hydrogen has been defined by the use of a colour code "green/blue/grey/etc.". This only serves the fossil fuel industry as it masks the real environmental impacts of blue hydrogen. We therefore believe that no such coding should be used in official documents. The correct definitions should be renewable hydrogen (using only renewable electricity via electrolysis) and fossil hydrogen (all other types).

We also previously submitted that there should be independent analysis of the true sustainability potential of developing a hydrogen sector. It is also critical that going forward, Ontario's hydrogen strategy include credible analysis of greenhouses gas reduction potential alongside the relative costs of existing technologies, like nuclear or fossil fuels.

Only renewable hydrogen is emissions free and truly aligns with the necessary levels of decarbonization required to tackle climate change. As such, Ontario's hydrogen strategy should focus on enabling renewable hydrogen in order to have an emission-free hydrogen strategy.

Increasing hydrogen production and converting existing fuel systems will be take time, and as such, new investments should be focused on a rapid transition to a carbon free energy system and put towards renewable hydrogen projects. Furthermore, available public resources should be reserved for renewable hydrogen systems in sectors that are the most difficult to decarbonize. As an example, hydrogen should be targeted at industrial sectors that cannot be electrified easily such as low carbon steel production.

We're in the middle of a climate emergency and what's needed is strong leadership to move us away from dependence on the dirty oil, coal and gas fuels that are causing this crisis. The development of a hydrogen strategy must be truly green, building on Canada's renewable energy advantages, and not be a route to keep the fossil fuel industry limping on past its sell by date.

Yours very truly,

**CANADIAN ENVIRONMENTAL LAW ASSOCIATION**

A handwritten signature in black ink, appearing to read 'T. McClenaghan', with a stylized flourish at the end.

Per: Theresa McClenaghan  
Canadian Environmental Law Association