

Let's use wind wisely

A response to amendments
proposed in Bill 206 & 207

By Tynette Deveaux, representing Sierra Club Canada's Beyond Coal campaign
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Minister Tory Rushton says the amendments to the Electricity Act, Underground Hydrocarbon Storage Act, the Pipeline Act and the Gas Distribution Act are intended "to pave the way for producing green hydrogen." He and his colleagues say Nova Scotia is well-positioned to become the world leader in green hydrogen production and export.

It's clear to me from reading the [transcript](#) of the comments made in the House on Tuesday, when the amendments were introduced, that Mr Rushton and his colleagues actually know very little about green hydrogen. The information they've shared to date is what you'd find in a prospect sheet written by a hydrogen start-up company looking for investors.

So I'd like to share what the scientific community and renewable energy experts tell us about green hydrogen.

1. Green hydrogen only makes sense as a **bi-product** of renewable energy generated for electricity. This means that clean renewable energy should supply electricity first, and any excess supply of wind, for example, can be used to produce green hydrogen.

Why? Well, because you lose energy every step along the way as you turn renewable energy into hydrogen, and then ammonia so it can be transported.

The government is planning to offer leases for 5 GW of offshore wind. **If that wind energy were used to power Nova Scotia's electricity grid, the province could get off coal and other fossil fuels.** Our peak electricity load is +/- 2.2 GW, and our average load is about 0.8 GW to 1.6 GW. In province generation is currently about 2.45 GW.

Imagine: We could actually get off of expensive and dirty imported coal, as well as oil and gas if we were to develop offshore wind for domestic use rather than green hydrogen for export.

Excess offshore wind energy could then be harnessed for green hydrogen production.

What about helping Germany and other European countries that are struggling to power their grids and heat their homes right now?

There are a number of problems with that narrative, but I'll just highlight a few.

Using green hydrogen for heating is extremely inefficient. Green hydrogen—if it's used for heating—has an energy efficiency of 46 percent; that means that for every 100kWh of renewable energy used to produce green hydrogen, only 46kWh of heat is produced because of energy losses in production, storage, and transportation of the gas.¹

Heat pumps, on the other hand, produce an energy efficiency of 270 percent; i.e. for every 100kWh of renewable energy, 270kWh of heat is produced.²

If we genuinely want to help Germany and other countries get through the winter without Russian gas, we should build a heat pump factory and start shipping them to Europe.

Green hydrogen does not make sense for generating electricity either. Again, it's an inefficient use of clean renewable energy and would drive the cost of electricity through the roof.

There are some uses of green hydrogen that make sense: for heavy industry requiring high-temperature heat (steelmaking and cement production), and as fuel cells for aviation and long-distance transportation (particularly shipping).

¹ [Why using clean hydrogen for heating will be too difficult, expensive and inefficient: report | Recharge](#)

² Ibid

Green hydrogen production has an environmental impact

You need a lot of pure, freshwater to make green hydrogen; only [2.5%](#) of the Earth's water is freshwater; the rest is ocean water (salt water)

The green hydrogen production facility being built in Point Tupper would consume 757,000 litres a day of freshwater from a nearby lake.³ That's a lot of water, and the amount is only expected to increase.

Freshwater is not in abundance globally, nor in Canada. We need to take care of this precious resource. All life depends on it.

NS's green hydrogen production to begin with coal, not renewable energy

Regarding Minister Rushton's statement that "We're getting the industry started with onshore wind," there's no evidence of this. Rather, according to the company that intends to produce green hydrogen at the Point Tupper site, the facility will be powered by Nova Scotia Power's grid "in the immediate term and for quite a while."⁴

As we know, NSPI's electricity is mostly generated from coal and other fossil fuels.

It's time to burst the hydrogen bubble

The World Hydrogen Conference was held last week in Rotterdam. The keynote speaker was veteran renewable energy analyst Michael Liebreich, who said this:

"I've lived through, I think, five [economic] bubbles in my professional career, and I'm afraid to say I start to recognise the pattern,"⁵

He goes on to say that he sees this market bubble forming around green hydrogen production and he cautions that it's unwise, because it's not based on the scientific properties of hydrogen or sound economics.

³ [EXCLUSIVE: Nova Scotia Start-Up Touts 'Green' Hydrogen Plant Powered by Coal](#)

⁴ Ibid

⁵ [Liebreich: 'Hydrogen is starting to look like an economic bubble — and here's why'](#)

Economic benefits? Are you sure about that?

During the first reading of the bills, Mr Rushton said, “he looks forward to seeing the economic and environmental benefits of these efforts right here at home in Nova Scotia.”

There really are no environmental benefits to speak of with the government’s current green hydrogen production plans. But what about economic benefits? That depends on how much faith you have in Trickle Down economics. Nova Scotians are still being told to put their trust in private companies that operate in the interest of corporate shareholders. If there are real economic benefits let’s see some evidence of that. Better yet, the government could build the offshore wind infrastructure itself with low cost loans from the Canada Infrastructure Bank and use that wind energy to get the province off of coal. That would create jobs and benefits that stay in Nova Scotia.

We have an incredible offshore wind energy resource. Let’s use it wisely.

For more information, please contact me at tynotted@sierraclub.ca

See my conversation with Stanford Professor Mark Z. Jacobson, a global expert on pathways to 100 percent wind, water, and solar energy, in our recent webinar [What if the wind doesn’t blow?](#) Green hydrogen is among the topics we discussed.