PREVAILING WINDS: REGULATORY FRAMEWORKS AND COMMERCIAL REALITIES FOR DEVELOPING WIND AND GREEN HYDROGEN PROJECTS IN NOVA SCOTIA AND NEWFOUNDLAND AND LABRADOR

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Government and industry in Nova Scotia and Newfoundland and Labrador are displaying increasing enthusiasm for onshore and offshore wind projects as well as associated development of green hydrogen resources. There are possible gaps between the commercial realities of wind-related development and both existing and proposed regulatory regimes in comparison with select international offshore regimes. The regulatory context and the make-up of the electrical grid in Nova Scotia and Newfoundland and Labrador have both parallels and distinctions, providing for differing trajectories when it comes to the development of onshore wind, offshore wind, and green hydrogen. More mature wind and hydrogen regulatory regimes within the European Union provide indicators of challenges that may be faced by both provinces as each try to rapidly pursue wind and green hydrogen development.

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I. INTRODUCTION

In recent years, there has been ever-growing enthusiasm on the part of both governments and industry for the development of onshore wind, offshore wind, and associated development of green hydrogen resources in Atlantic Canada. This is not surprising, given that many tout the proliferation of a hydrogen industry as a new frontier in energy development in Canada. A 2021 study prepared for the Offshore Energy Research Association estimates that if exports from Atlantic Canada were able to address just 5 percent of the total European demand for hydrogen, it could generate $9 billion annually.[1] Current annual revenues from the oil and gas sector were approximately $8.2 billion in 2019.[2]

The potential of new wind-related energy development has attracted world leaders to the region, with a visit to Newfoundland and Labrador by Prime Minister Trudeau and German Chancellor Scholz in 2022. In February 2023, the Belgian ambassador to Canada led a delegation to Halifax for discussions surrounding green hydrogen partnerships, including exports from Nova Scotia.[3] In Nova Scotia, the provincial government has set a target of 5 gigawatts of energy to be supplied by offshore wind by 2030 and has amended a number of laws to support green hydrogen development.[4] In Newfoundland and Labrador, the provincial government has removed a statutory onshore wind development restriction which has revitalized industry interest in the region.[5] The federal government, in partnership with Nova Scotia and Newfoundland and Labrador, has begun environmental impact assessments of certain Nova Scotia and Newfoundland and Labrador offshore areas in anticipation of offshore wind development.[6] Additionally, the federal government, Nova Scotia, and Newfoundland and Labrador have begun the process of reforming the joint federal-provincial offshore petroleum boards to provide for broader mandates to act as regulators for offshore wind development.[7]

Announcements and commentary from provincial and federal leaders point to imminent development of onshore, offshore, and green hydrogen resources. Further, the decision to

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1 Zen and the Art of Clean Energy Solutions et al, "A Feasibility Study of Hydrogen Production, Storage, Distribution and Use in Newfoundland and Labrador" (March 2021) at vi, online (pdf): *Nova Scotia Offshore Energy Research Association* [perma.cc/5EZ6-YAME] [OERA 2021].

2 *Ibid*.

3 Jesse Thomas, "Belgium Looks to Nova Scotia to Help Deliver Green Hydrogen to Europe," *CTV News Atlantic* (9 February 2023), online: [perma.cc/B6ZU-4637].

4 Nova Scotia Department of Natural Resources and Renewables, News Release, "Province Sets Offshore Wind Target" (20 September 2022), online: [perma.cc/8EPC-KMA6] [*September 2022 Announcement*].

5 Newfoundland and Labrador Department of Industry, Energy and Technology, News Release, "Ministerial Statement: Minister Parsons Announces End of Moratorium on Wind Development" (5 April 2022), online: [perma.cc/SQ5Q-TB2R] ["End of Moratorium on Wind"].

6 Impact Assessment Agency of Canada, News Release, "Governments of Canada and Newfoundland and Labrador Launch Regional Assessment to Support Future Decisions on Offshore Wind Projects in the Province" (23 March 2023), online: [perma.cc/EAX8-4NL6]; Impact Assessment Agency of Canada, News Release, "Governments of Canada and Nova Scotia Launch Regional Assessment to Support Future Decisions on Offshore Wind Projects in the Province" (23 March 2023), online: [perma.cc/4DBN-Q89B].

7 Impact Assessment Agency of Canada, News Release, "Canada and Nova Scotia Announce Intent to Expand the Mandate of Offshore Energy Regime to Support the Transition to a Clean Economy and Create Sustainable Jobs" (11 April 2022), online: [perma.cc/TPH6-5QCG] ["Canada and NS Announce Offshore Expansion"]; Impact Assessment Agency of Canada, News Release, "Canada and Newfoundland and Labrador Announce Intent to Expand the Mandate of Offshore Energy Regime to Support the Transition to a Clean Economy and Create Sustainable Jobs" (5 April 2022), online: [perma.cc/7Y36-R54Y] ["Canada and NL Announce Offshore Expansion"].

amend the mandate of existing offshore petroleum boards to regulate new wind-related development reflects governments' desires to rapidly develop new regulatory regimes to facilitate these industries. Focusing on Nova Scotia and Newfoundland and Labrador, this article will examine existing and proposed regulatory frameworks associated with wind-related development, highlighting legislative, regulatory, and commercial realities faced by lawmakers and industry in the rapidly shifting and competitive offshore and green hydrogen space.

This article will also examine possible disconnects and gaps between the commercial realities of wind-related development and both existing and proposed regulatory regimes in comparison with select international offshore regimes.

In its first section, this article will provide a high-level overview of energy generation and consumption in Nova Scotia and Newfoundland and Labrador. This section will examine specific legislative and regulatory instruments adopted in each province to promote renewable energy targets and associated development of new renewable energy sources. This overview will highlight the underlying motivations, opportunities, and challenges for Nova Scotia and Newfoundland and Labrador in the pursuit of onshore and offshore wind and green hydrogen development.

The second section of the article will review the experience of both Nova Scotia and Newfoundland and Labrador to date with onshore wind turbine deployment in order to examine their role in meeting renewable energy targets and providing renewable electricity for proposed green hydrogen developments. It will be shown that new large-scale onshore wind installations, which are expected to be completed before offshore installations, will be critical for supplying proposed green hydrogen facilities. Provincial and federal government initiatives to promote the development of offshore wind and green hydrogen will be examined. The regulatory regime for the burgeoning wind and hydrogen industries in Nova Scotia and Newfoundland and Labrador will be compared to the more mature regimes of select European countries and the European Union (EU), highlighting key similarities and differences against the Nova Scotia and Newfoundland and Labrador context. Drawing upon the preceding sections, this article will review significant challenges that could be faced by Newfoundland and Labrador and Nova Scotia as each tries to rapidly pursue wind and green hydrogen development.

II. ENERGY PRODUCTION AND REGULATION IN NOVA SCOTIA AND NEWFOUNDLAND AND LABRADOR

A. NEWFOUNDLAND AND LABRADOR

Without context, the resistance of Newfoundland and Labrador to exploit its world-leading wind resource is baffling. The main reasons for the province's hesitance to tap into this resource are its historical lack of reliability from a capacity perspective for domestic use (that is, it is an intermittent resource), and that it never made sense from an export perspective. The proliferation of a wind-to-hydrogen industry is a game-changer, but understanding the province's energy mix is critical to understanding the challenges that lay ahead.

Newfoundland and Labrador prioritized a combination of hydroelectric and oil-fired generation sources in order to service its domestic customers for decades. Wholesale domestic supply of energy is provided through a Crown corporation, Newfoundland and Labrador Hydro (NL Hydro). Energy generation was intended to come from 98 percent renewable sources by now given the recent development of the Muskrat Falls Project, an 824 MW hydroelectric generating facility with a new multi-billion-dollar transmission system.[8]

Energy produced at the Upper Churchill Falls generating station in Labrador has been exported to Quebec since 1969 when a contract was signed between Hydro Quebec and a subsidiary of NL Hydro, Churchill Falls (Labrador) Corporation Limited. Upper Churchill Falls is one of the largest hydroelectric production facilities in the world with an installed capacity of 5,428 MW. Save for a 300 MW recall block and 225 MW TwinCo block, virtually all of this power has been exported to Quebec at low rates. The contract will continue until 2041.[9]

Wind energy generation for domestic use has never been a serious priority.[10] Notwithstanding the potential synergies of wind and hydro resources (if the wind does not blow, NL Hydro can simply manipulate the flow of water reservoirs behind hydro dams), Newfoundland and Labrador's energy plan actually precluded the development of wind resources on the island of Newfoundland under the *Electrical Power Control Act*.[11] This was meant to eliminate any potential competition for Muskrat Falls as the domestic source of electricity in the province, thereby guaranteeing the revenue to NL Hydro necessary to support financing for the Muskrat Falls project. Until now, with the potential proliferation of a wind-to-hydrogen industry opening up new export markets, wind energy generation has not been a large factor in the energy mix.[12]

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8 First power at the Decision Gate 3 stage was expected to be achieved by July 2017 (Terry Roberts, "Nalcor's Appetite for Risk on Muskrat Falls Increased in 2010, Inquiry Told," *CBC News* (7 November 2018), online: [perma.cc/68N5-6549]). The project was considered to be "commissioned" on 14 April 2023 after critical testing of transmission infrastructure (Sarah Smellie, "In Newfoundland, 'Commissioning' of Troubled Hydro Dam Met with Skepticism, Inease," *CBC News* (14 April 2023), online: [perma.cc/9ERF-N29C]). The project was expected to cost $6.2 billion but will cost at least $13 billion ("$5.2B Deal Reached Between Feds, N.L. Government to Stave Off Skyrocketing Power Bills," *CBC News* (28 July 2021), online: [perma.cc/4M5C-97SH]). Delays in construction on the Muskrat Falls Project and its related transmission system, along with reliability concerns for the transmission system, have delayed the out-service of the Holyrood Generating Facility, which is Newfoundland and Labrador's major oil-fired generator (Newfoundland and Labrador, Board of Commissioners of Public Utilities, *Muskrat Falls: A Misguided Project Volume 1* (5 March 2020) at 6, online (pdf): [perma.cc/EJD2-VP8K]).

9 The Upper Churchill Falls Project and associated contract with Hydro-Quebec has long been a sore point for Newfoundland and Labrador, culminating in what is colloquially referred to as the "good faith case" wherein the Supreme Court of Canada concluded that Hydro Quebec's large windfall in relation to the project was "honestly earned": *Churchill Falls (Labrador) Corp v Hydro Quebec*, 2018 SCC 46 at 104.

10 Some wind generation was considered as part of the isolated island option in comparison to the Muskrat Falls option (Government of Newfoundland and Labrador, Department of Natural Resources, *Focusing our Energy: Energy Plan Progress Report 2015*, (11 May 2015) online (pdf): [perma.cc/S4FR-UCWA].

11 1994, SNL 1994, c E-5.1 [*EPCA*].

12 There are exceptions. There are 27 MW wind farms in Fermeuse and St. Lawrence, Newfoundland and Labrador. There was also the development of wind turbines in Ramea, Newfoundland and Labrador: Newfoundland and Labrador Department of Environment and Climate Change, "St. Lawrence Wind Demonstration Project," online: [perma.cc/RR34-GD39]; Newfoundland and Labrador Department of Environment and Climate Change, "Fermeuse Wind Turbine Power Project," online: [perma.cc/RC5H-2J38].

B. NOVA SCOTIA

Unlike Newfoundland and Labrador, Nova Scotia does not have significant domestic hydroelectricity generation as a source of renewable energy. Nova Scotia has remained heavily reliant on burning coal and other fossil fuels for its energy needs throughout its history. Fuel oil was the predominant resource used for energy generation until the 1970s OPEC (Organization of the Petroleum Exporting Countries) crisis, when a transition was made to locally mined coal.[13] Since 1999, coal has been procured from international markets following the closure of coal mining operations in Cape Breton.[14]

In 2007, the provincial government passed the ambitious *Environmental Goals and Sustainable Prosperity Act*.[15] This legislation was premised upon the belief that Nova Scotia "was well positioned to prosper by embracing the 'environmental economy,' evidenced by its earlier success in waste management, the growing importance to its business sector of environmental sustainability, and the perceived strengths of its higher education sector in fields of study related to the environmental economy."[16] The *EGSPA* set out a number of long term objectives relating to emissions and electricity generation with specific targets for the reduction of nitrogen, mercury, and sulphur dioxide emissions and for an overall reduction of greenhouse gas emissions by 10 percent below 1990 levels.[17] The *EGSPA* also set the target of 18.5 percent of the electricity needs of Nova Scotia being obtained from renewable sources.[18]

The *EGSPA* was amended in 2012 to identify climate change adaptation as a specific goal and to update targets for electricity generated by renewable energy sources as follows:

1. 18.5 percent is obtained from renewable energy sources by 2013;

2. 25 percent is obtained from renewable energy sources by 2015; and

3. 40 percent is obtained from renewable energy sources by 2020.[19]

The *EGSPA* is a somewhat unique environmental and policy instrument as noted by Lahey and Doelle:

> *EGSPA* is different from typical green plans because it is law. That said, *EGSPA* does not do what environmental law typically does: it does not regulate, or create authority to regulate, non-governmental actors. At most, it sets the stage for regulation necessary for the achievement of its goals, primarily, but not exclusively under Nova Scotia's *Environment Act*.[20]

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13 "How We Make Electricity," online: *Nova Scotia Power* [perma.cc/LJ5H-YQ2M].
14 *Ibid*.
15 SNS 2007, c 7 [*EGSPA*].
16 William Lahey & Meinhard Doelle, "Negotiating the Interface of Environmental and Economic Governance: Nova Scotia's Environmental Goals and Sustainable Prosperity Act" (2012) 35:1 Dal LJ 1 at 2–3 [footnotes omitted].
17 *EGSPA*, *supra* note 15, s 4(2).
18 *Ibid*.
19 *Ibid*, s 4(2)(b).
20 Lahey & Doelle, *supra* note 16 at 8.

The *Renewable Electricity Regulations* made under section 5 of the *Electricity Act*, were first introduced in 2010 as a regulatory mechanism to regulate energy generation by "load-serving entities" including Nova Scotia Power Incorporated (NSPI).[21] The *RER* mandated that NSPI was to supply its customers with renewable electricity in an amount equal to or greater than 40 percent of the total amount of electricity supplied to its customers by 2020.[22] NSPI was to meet the 2020 renewable energy target by:

> [D]irectly or indirectly acquiring, to deliver to customers in the Province, 20% of the electricity generated by the Muskrat Falls Generating Station if the Muskrat Falls Generating Station and associated transmission infrastructure is completed and in normal operation and the [Nova Scotia Utilities and Review Board] has approved an assessment against NSPI under the *Maritime Link Act* and its regulations.[23]

The Maritime Link is a major infrastructure project undertaken by NSP Maritime Link Inc., a wholly-owned subsidiary of Emera Newfoundland & Labrador Holdings Inc., and an affiliate of NSPI.[24] Linking Labrador to Nova Scotia via the island of Newfoundland, the project consists of both over-land transmission lines and a 170-kilometre subsea transmission line to deliver electricity generated by the Muskrat Falls Generating Station to Nova Scotia.[25] The Maritime Link is set to deliver 900 GWh of electricity per year to Nova Scotia and the project will also make additional electricity available for purchase.[26] The Nova Scotia government estimates that the Maritime Link will supply between 8 and 20 percent of the province's electricity needs based on the delivery of 900 GWh and additional purchased electricity.[27] The Maritime Link was completed in 2018; however, delays in the delivery of electricity from Muskrat Falls contributed to Nova Scotia missing the target of having 40 percent of electricity supplied by renewable sources by 2020.[28]

Pursuant to the *RER*, renewable electricity must account for 80 percent of total electricity delivered to customers by "load serving entities," including NSPI from 2030 onward.[29] The *RER* sets parameters for how NSPI is to meet renewable electricity targets by mandating

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21 NS Reg 155/2010, ss 2, 6A(1), 6A(2) [*RER*]; *Electricity Act*, SNS 2004, c 25.
22 *Ibid*, s 6A(2).
23 *Ibid*, s 6A(2)(c).
24 "Project Overview: Maritime Link" (2023), online: *Emera* [perma.cc/537K-E3LF].
25 *Ibid*.
26 Nova Scotia, Department of Natural Resources and Renewables, "Maritime Link/Lower Churchill Hydroelectric Project" (2014), online: [perma.cc/7F79-UHYM].
27 *Ibid*.
28 Gianina Giacosa & Tony R Walker, "A Policy Perspective on Nova Scotia's Plans to Reduce Dependency on Fossil Fuels for Electricity Generation and Improve Air Quality" (2022) 100017 Cleaner Production Letters 3 at 7. Also note that the "Atlantic Loop" has been touted as a means to bring more renewable energy to Nova Scotia from Labrador and Quebec by upgrading the transmission lines through Labrador, Quebec, New Brunswick, and Nova Scotia ("The Maritime Link Project is Creating Benefits for Atlantic Canada and Beyond" (2023), online: *Emera* [perma.cc/7GSS-G6UH]). While the project is intended to be complete by 2030, Premier Tim Houston of Nova Scotia has recently voiced skepticism regarding the feasibility of the project (Michael Gorman, "Premier Claims Atlantic Loop Could Bankrupt Province, But Opposition is Skeptical," *CBC Nova Scotia* (29 June 2023), online [perma.cc/V2M3-E7TA]).
29 *RER*, *supra* note 21, s 6B(1).

NSPI to acquire renewable electricity from different sources. Notably, in connection with the 2030 target described above, NSPI must:

1. Continue to supply at least 5 percent of its total annual sales from independent power producers;[30]

2. Acquire at least 1100 GWh from independent power producers;[31] and

3. Directly or indirectly acquire, to deliver to customers in the Province, 20 percent of the electricity generated by the Muskrat Falls Generating Station if the Muskrat Falls Generating Station and associated transmission infrastructure is completed and in normal operation.[32]

Additionally, in order to meet the 80 percent target, the *RER* provides that NSPI may acquire renewable electricity from other sources outside of Nova Scotia.[33]

III. WIND-RELATED ENERGY IN NOVA SCOTIA AND NEWFOUNDLAND AND LABRADOR

A. ONSHORE WIND IN NOVA SCOTIA

As of 2019, 11 percent of electricity generation in Nova Scotia came from onshore wind turbines.[34] According to NSPI, there are currently 300 commercial wind turbines operational in Nova Scotia.[35] Most of the onshore wind turbines currently operating in Nova Scotia are owned by independent commercial power producers, while NSPI owns and operates facilities on Nuttby Mountain and Digby Neck, and has a minority stake in several projects.[36] Most commercial wind installations in Nova Scotia are small in scale with fewer than three turbines. However, there have been a number of larger scale projects that have come online in the last 15 years including the project below.[37]

TABLE 1:
LARGER-SCALE PROJECTS

Project Name	Number of Turbines	Capacity
Dalhousie Mountain	34	51 MW
Glen Dhu	27	62.1 MW
Sable	6	13.8 MW
South Canoe	34	102 MW

30 *Ibid*, s 6(2).
31 *Ibid*, s 6B(2)(b)
32 *Ibid*, s 6A(2)(c).
33 *Ibid*, s 6B(3)(b). Additionally, following the passage of the *Electricity Efficiency and Conservation Restructuring (2014) Act*, demand-side management programs were implemented. These programs are funded by rates collected by NSPI to reduce and shape electricity usage in a manner which would reduce electrical generation from high carbon generation facilities: *Electricity Efficiency and Conservation Restructuring (2014) Act*, SNS 2014, c 5.
34 "Provincial and Territorial Energy Profiles: Nova Scotia" (3 March 2023), online: *Canada Energy Regulator* [perma.cc/HT9Z-F8LN] [CER-NS].
35 "Clean Energy" (2023), online: *Nova Scotia Power* [perma.cc/9KFB-AE7T].
36 "Clean Energy Sources" (28 March 2023), online: *Nova Scotia Power* [perma.cc/RWZ6-3YUA].
37 *Ibid*.

In February 2022, through its independent procurement administrator, CustomerFirst Renewables, the Nova Scotia government issued a request for proposals for wind and solar energy projects that would supply 350 MW of electricity or 10 percent of the province's electricity.[38] This represents the largest procurement of renewable energy ever in Nova Scotia.[39] In August 2022, five contracts were awarded in response to the February request for proposals.[40] Each project is set to be complete in 2025 and are to be majority owned by Mi'kmaw communities.[41]

TABLE 2:
AWARDED CONTRACTS

Project Name	Developers	Location
Benjamin Mills Wind	Natural Forces Development and Wskijnu'k Mtmo'taqnuow Agency Ltd.	Hants County
Ellershouse 3 Wind	Potentia Renewables and Annapolis Valley First Nation.	Hants County
Higgins Mountain Wind Farm	Elemental Energy and Sipekne'katik First Nation	Colchester and Cumberland Counties
WEB Weavers Mountain	SWEB Development and Glooscap First Nation.	Pictou and Antigonish Counties
Wedgeport Wind Farm	Elemental Energy and Sipekne'katik First Nation	Yarmouth County

The five projects listed above have a total nameplate generating capacity of 372 MW and are projected to produce 1,373 GWh per year of electricity, representing approximately 12 percent of Nova Scotia's total annual energy consumption.[42] This exceeds the figures provided in the initial request for proposals. Accordingly, each of the five new projects will be among the largest ever constructed in the province.

All onshore wind projects with a production rating of at least 2 MW must obtain a Class 1 environmental assessment approval under the *Environmental Assessment Regulations* made under section 49 of the *Environment Act*.[43] A guide issued by the Environmental Assessment Branch of the Department of Environment and Climate Change, notes the following regarding the distinctions between Class 1 and Class 2 undertakings:

> Class 1 undertakings *are usually smaller in scale and may or may not cause significant environmental impacts or be of sufficient concern to the public*. A public review of a proponent's initial submission, called

38 Nova Scotia, Department of Natural Resources and Renewables, News Release, "Province's Largest Procurement for Renewable Energy Moves Forward" (11 February 2022), online: [perma.cc/D5KX-9JSP].
39 Simon Smith, "N.S. Selects Five Wind Projects to Produce Electricity from Renewable Sources," *CBC Nova Scotia* (17 August 2022), online: [perma.cc/E4U5-P7ZG].
40 *Ibid*.
41 *Ibid*.
42 *Ibid*.
43 NS Reg 26/1995, s 11, Schedule A [*EAR*].

> a registration document, is required, after which the Minister will decide if a more detailed review and/or public hearing is required. Examples of these types of developments include mines, certain highways and waste dangerous goods handling facilities.
>
> Class 2 undertakings *are typically larger in scale and are considered to have the potential to cause significant environmental impacts and concern to the public*. These undertakings require an EA report and *formal public review which may include public hearings*. Examples of these types of developments include solid waste incinerators, petrochemical facilities and pulp plants.[44]

The lower level of regulation and public consultation associated with Class 1 approvals may be attractive to potential developers but could lead to public opposition in of the light of the unprecedented large-scale onshore wind projects being contemplated in connection with future green hydrogen developments in the Canso Strait and Guysborough areas.

B. ONSHORE WIND IN NEWFOUNDLAND AND LABRADOR

On 5 April 2022, the Government of Newfoundland and Labrador announced the "End of [the] Moratorium on Wind Development."[45] The legal instrument underpinning the moratorium is found at section 14.1(2) of the *EPCA*, which states no one may "develop, own, operate, manage or control a facility for the generation and supply of electrical power or energy either for its own use or for supply directly or indirectly to or for the public or an entity on the island portion of the province."[46] As stated above, the policy rationale for this was to guarantee NL Hydro's monopoly on domestic supply of energy in the province.

There are exceptions to this general rule: section 14.1(7) of the *EPCA* allows the province to exempt a retailer or industrial customer from the section 14.1(2) prohibition.[47] Short of legislative change, wind-to-hydrogen proponents will need a section 14.1(7) exemption. To date, there has yet to be any clear policy framework through which government may provide these exemptions.

In addition to the *EPCA* barriers, a 2006 Order in Council (2006 OC) outright banned the issuance of Crown leases or grants for commercial wind generation projects that proposed to produce energy for sale.[48] The Government of Newfoundland and Labrador amended the 2006 OC on 5 April 2022, to "allow industrial customers seeking to self-generate wind energy for their own consumption, and industrial customers or retailers seeking to generate wind energy for export, to apply for Crown leases or grants, under the authority of the Lands Act, and Environmental Assessments, under the authority of the Environmental Protection Act."[49] By this point, the *EPCA* barrier remained but government had opened the window to obtaining Crown land and beginning the environmental assessment process. While the 2022 amendment to the 2006 OC was a welcome sign for industry, it would not be until the

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44 Nova Scotia, Environmental Assessment Branch, *A Proponent's Guide to Environmental Assessment*, (2017) at 7 [emphasis added] [*NS EA Guide*].
45 "End of Moratorium on Wind," *supra* note 5.
46 *EPCA*, *supra* note 11, s 14.1(2).
47 *Ibid*, s 14.1(7).
48 OC 2006-026, (2006), online: [perma.cc/62ZE-RP8P].
49 OC 2022-086, (2022), online: [perma.cc/23WV-2LVQ].

provincial government finalized its policy framework in respect of Crown land acquisition that proponents could begin to secure land.[50]

That policy announcement came on 27 July 2022 with the release of the Government of Newfoundland and Labrador's *Guidelines: Nominating Crown Lands for Wind Energy Projects*.[51] The *Guidelines* touted Newfoundland and Labrador's renewable energy resources as abundant, with opportunities to develop green hydrogen and ammonia resources in addition to wind generation.[52] Most striking in the *Guidelines* was the pace at which the government intended to move: a land nomination process was to begin immediately, moving in phases to an eventual bidding process.[53]

Phase 1, titled "Call for Land Nominations," began immediately with a deadline of 1 October 2022 and asked proponents to provide nominations for areas they wished to develop for wind energy projects.[54] Once proponents "nominated" lands, then the Government of Newfoundland and Labrador would proceed to identify the lands that they would put up for bidding.[55]

Phase 2, the "Call for Land Bids," was designed to be a competitive process.[56] The Government of Newfoundland and Labrador announced the specifics of this process along with the lands available for bidding in December 2022.[57] The deadline for competitive bids was 23 March 2023.[58] By this point, it was abundantly clear that lands were not going to be granted or leased on a first-come, first-served, or even highest bidder basis. Instead, the process had the trappings of a procurement process in which bidders were to be evaluated on the following factors:

1. project summary;
2. associated hydrogen/ammonia production;
3. water requirements;
4. project risk mitigation;
5. electricity considerations and grid impacts;
6. community and Indigenous engagement;

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50 In Newfoundland and Labrador, most of the prime land to be exploited for wind generation assets is held by the Crown.

51 Newfoundland Labrador, Department of Industry, Energy and Technology, *Guidelines: Nominating Crown Lands for Wind Energy Projects*, (26 July 2022), online: [perma.cc/LVZ5-JHS5] [*Guidelines*].

52 *Ibid* at 1.

53 *Ibid* at 2–3.

54 *Ibid*.

55 *Ibid*.

56 *Ibid* at 3–4.

57 *Ibid* at 2.

58 Newfoundland and Labrador, Department of Industry, Energy and Technology, News Release, "Government of Newfoundland and Labrador Releases Wind-Hydrogen Fiscal Framework" (23 February 2023), online: [perma.cc/P8Z4-XDWS] [*February 2023 Announcement*].

7. project schedule; and

8. financing.[59]

This "First Stage Review" evaluated whether submissions met a minimum threshold expected of a bidder to be able to deliver a wind energy project.[60] Those successful in the First Stage Review will automatically proceed to a "Second Stage Review."[61] This is expected to occur in the second or third quarter of 2023, at the earliest.[62] Rather than a threshold review, the Second Stage Review is more robust with a weighted evaluation system:[63]

1. bidder (15 percent);

2. project risk mitigation (5 percent);

3. electricity considerations and grid (15 percent);

4. community and Indigenous engagement (10 percent);

5. benefits (15 percent);

6. project schedule: (10 percent); and

7. financing: (10 percent).[64]

Once through this process, successful bidders are not awarded Crown land at the outset. Instead, the Government of Newfoundland and Labrador utilized existing mechanisms under the *Lands Act* to reserve certain lands for which successful proponents would have the exclusive right to formally apply.[65] After that, the Government of Newfoundland and Labrador will provide successful proponents a "wind application recommendation letter" from the Department of Industry, Energy and Technology.[66] This is intended to serve as the legal instrument that guarantees a proponent an exclusive opportunity to secure relevant Crown land, subject to various legislation including the *Public Utilities Act*, the *EPCA*, and the *Environmental Protection Act*.[67]

In an attempt to assist proponents to model their projects before submitting their Phase 1 submissions, on 23 February 2023 the Government of Newfoundland and Labrador

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59 Newfoundland and Labrador, Department of Industry, Energy and Technology, *Guidelines: Crown Lands Call for Bids for Wind Energy Projects*, (23 February 2023) at 9–14, online: [perma.cc/5YC3-Q59J] [*Call for Bids*].

60 *Ibid* at 14.

61 *Ibid*.

62 Newfoundland and Labrador, Department of Industry, Energy and Technology, News Release, "Update on Stage One of Crown Land Call for Bids for Wind-Hydrogen Development" (6 July 2023), online: [perma.cc/R5YN-A3NV].

63 *Ibid*.

64 *Call for Bids*, *supra* note 59 at 15.

65 *Ibid* at 1.

66 *Ibid*.

67 *Ibid* at 7.

announced its fiscal framework for wind-to-hydrogen projects in the province.[68] Predictability and transparency were the intended principles for the framework, while also attempting to balance the risk of investment with the use of provincial resources.[69]

For a singular project over a 30-year period, the Government of Newfoundland and Labrador projected a total of $3.5 billion in taxes, royalties, and fees.[70] The payments are broken down into three components: land, wind, and water.[71]

1. LAND

Crown Land Reserve Fee: Annual charge of 3.5 percent of the market value of reserved lands. Payments begin upon award of exclusive right to pursue projects on lands.

Crown Land Lease Fee: Annual charge of 7 percent of market value of land. Payments begin upon issuance of Crown Land lease.

2. WIND

Wind Electricity Tax: Annual charge of $4,000 per MW on installed capacity. Payments begin when the turbines are "in-service", and applicable to all wind-hydrogen projects (≥ 5 MW) producing electricity for the purposes of producing hydrogen.

3. WATER

Water Use Fee: Annual charge of $500 per 1,000m3 of water licensed and used, and $50 per 1,000m3 of water licensed but not used. Payments begin when permit is issued, and are applicable to all hydrogen facilities.

Water Royalty: Payable based on the calculated residual value of the water. Rates are tiered and linked to cost recovery. These terms can be modified via agreements with the Province.

1. Tier 1: Rate of 10 percent applied after 1x cost recovery.
2. Tier 2: Rate of 20 percent applied after 2x cost recovery.
3. Tier 3: Rate of 25 percent applied after 3x cost recovery.[72]

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68 *February 2023 Announcement*, *supra* note 58.
69 *Ibid*.
70 Using a base case of a 1,000 MW windfarm and a 500 MW hydrogen (ammonia) facility with capital costs of $3.5 billion with an annual production of 60,000 tonnes of hydrogen converted to 344,000 tonnes of ammonia.
71 *February 2023 Announcement*, *supra* note 58.
72 Dave Randell, G John Samms & Stuart Wallace, "The Winds of Change (Part 7): Paying the Piper: New Newfoundland and Labrador Fiscal Framework Expects Billions in Revenues from Wind to Hydrogen Projects" (24 February 2023), online: *Stewart McKelvey* [perma.cc/497J-4CFX].

C. OFFSHORE WIND IN NOVA SCOTIA AND NEWFOUNDLAND AND LABRADOR

With thousands of kilometres of coastline, powerful offshore winds, and vast offshore areas, Newfoundland and Labrador and Nova Scotia are well positioned to become hubs of offshore wind development with potential for significant energy generation over the coming decades.[73] Despite this, it is only in recent years that Canadian governments have seriously turned their attention to the potential of offshore wind and the requirements for establishing a regulatory framework.[74] While governments became interested in the potential for offshore wind to help meet emissions reductions targets, it seems to have been the private sector looking to harness its potential for powering green hydrogen facilities for exports to the international market that has been the major catalyst for accelerated development. In Atlantic Canada, the push to develop regulatory schemes in a manner and within a timeframe that is workable for the private sector could present challenges.[75] In light of these challenges, the Newfoundland and Labrador, Nova Scotia, and federal governments have turned to the adaptation of existing regulatory models through incremental change and broadened mandates.

In April 2022 it was announced that the Canada-Nova Scotia Offshore Petroleum Board (C-NSOPB) and Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB) (collectively, the Boards) would each be modernized with expanded mandates to include the regulation of offshore wind and green hydrogen production.[76] Each board will be renamed to reflect their expanded mandates.[77] Oil and gas activities in the offshore areas of Nova Scotia and Newfoundland and Labrador have been regulated through the Boards for the past 30 years.[78] The Boards are jointly organized by the federal government and each of Nova Scotia and Newfoundland and Labrador pursuant to legislation passed at the federal and provincial levels to implement the goals of *The Atlantic Accord: Memorandum of Agreement Between the Government of Canada and the Government of Newfoundland and Labrador on Offshore Oil and Gas Resource Management and Revenue Sharing*[79] and the *Canada-Nova Scotia Offshore Petroleum Resources Accord* (*NS Accord*)[80] (collectively, the Accords). The Accords were struck between the federal government and each of Newfoundland and Labrador and Nova Scotia as a means to cooperatively enable offshore

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73 Cong Dong, Guohe (Gordon) Huang & Guanhui Cheng, "Offshore Wind Can Power Canada" (2021) 236 Energy 121422 at 15.

74 Natural Resources Canada, *Jurisdictional Scan of Suitable Area Definition for Offshore Wind Development* (Ottawa: CanmetENERGY-Ottawa, Buildings and Renewables Group, March 2020) at 1.

75 *Ibid* at 22–23.

76 "Canada and NS Announce Offshore Expansion," *supra* note 7; "Canada and NL Announce Offshore Expansion," *supra* note 7.

77 *Ibid*.

78 *Canada-Newfoundland and Labrador Atlantic Accord Implementation Newfoundland and Labrador Act,* RSNL 1990, c C-2 [*NL Implementation Act*]; *Canada–Newfoundland and Labrador Atlantic Accord Implementation Act*, SC 1987, c 3; *Memorandum of Agreement Between the Government of Canada and the Government of Newfoundland and Labrador on Offshore Oil and Gas*, 11 February 1985, online: *Digital Government and Service NL* [perma.cc/7ZPN-NF6R] [*NL Accord*]; *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation (Nova Scotia) Act*, SNS 1987, c 3 [*NS Implementation Act*]; *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act*, SC 1988, c 28; *Canada-Nova Scotia Offshore Petroleum Resources Accord*, 26 August 1986, online: *Canada-Nova Scotia Offshore Petroleum Board* [perma.cc/XNP9-UHVS] [*NS Accord*].

79 *NL Implementation Act*, *ibid*; *NL Accord*, *ibid*.

80 *NS Implementation Act*, *ibid*; *NS Accord*, *ibid*.

hydrocarbon development in light of concurrent or unsettled provincial and federal jurisdiction and responsibility over offshore areas.[81]

As currently constituted, the Boards have significant regulatory decision-making authority over all aspects of oil and gas projects in the offshore, including licensing, compliance, exploration, and decommissioning.[82] While authority over certain "Fundamental Decisions" such as calls for bids remain subject to ministerial approvals, most decisions are made by the respective Boards and are not reviewable.[83] The federal government has taken the first step towards the reformation of the Boards with the tabling of Bill C-49 by the Minister of Natural Resources on 30 May 2023.[84] As expected, Bill C-49 expands the mandates of the Boards to provide for the regulation of "offshore renewable energy projects," such as offshore wind projects.[85] Accordingly, each of the C-NSOPB and C-NLOPB will be renamed the "Canada-Nova Scotia Offshore Energy Regulator" and the "Canada-Newfoundland and Labrador Offshore Energy Regulator," respectively (the Reconstituted Boards).[86] Bill C-49 provides for a land tenure regime and a ministerial decision-making process regarding the issuance of submerged land licences to carry out offshore renewable energy projects.[87] It also provides for the introduction of regulations addressing access to offshore infrastructure and the prohibition of petroleum or renewable energy activities in areas that have been, or may be identified as, conservation or protection areas.[88] It is now expected that each of Newfoundland and Labrador and Nova Scotia will introduce corresponding legislation to provide for the Reconstituted Boards. Completing the implementation of these changes is critical as Nova Scotia is targeting the issuance of calls for bids for offshore wind development by 2025.[89]

In April 2022, on the advice of the federal Impact Assessment Agency, the federal Minister of Environment and Climate Change issued a decision to conduct regional impact assessments with respect to offshore wind development in the Newfoundland and Labrador and Nova Scotia offshore areas under the *Impact Assessment Act*.[90] Impact assessments under the *IAA* are undertaken in areas where future development is anticipated in order to among other things, coordinate the planning and management of future project-level impact assessments.[91] While there may be some question as to the record of success, regional impact assessments, once developed, are intended to inform and create efficiencies for future project-level assessments by setting:

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81 *Reference Re Offshore Mineral Rights of British Columbia*, [1967] SCR 792; *Reference re Mineral and Other Natural Resources of the Continental Shelf*, [1983] 145 DLR (3d) 9; *Reference Re Newfoundland Continental Shelf*, [1984] 1 SCR 86.

82 *NL Accord*, *supra* note 78, s 30; *NS Accord*, *supra* note 78, s 12.03.

83 *NL Accord*, *ibid*, s 25; *NS Accord*, *ibid*, art 13.

84 Bill C-49, *An Act to amend the Canada-Newfoundland and Labrador Atlantic Accord Implementation Act and the Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act and to make consequential amendments to other Acts*, 1st Sess, 44th Parl, 2023 (first reading to 30 May 2023).

85 *Ibid*.

86 *Ibid*.

87 *Ibid*.

88 *Ibid*.

89 *September 2022 Announcement*, *supra* note 4.

90 Canada, Minister of Environment and Climate Change, *Regional Assessment of Offshore Wind Development in Newfoundland and Labrador and Nova Scotia* (Ministerial Decision) (5 April 2022), online: *Canadian Impact Assessment Registry* [perma.cc/4MNA-FZ56]; *Impact Assessment Act*, SC 2019, c 28, s 1 [*IAA*].

91 *IAA*, *ibid*, s 93(2); Impact Assessment Agency of Canada, "Regional Assessment Under the *Impact Assessment Act*" (2022), online: [perma.cc/RPL6-4T5L].

1. a baseline against which to assess the incremental impact of a discrete project;

2. thresholds to support future project decisions; and

3. standard mitigation measures for future projects.[92]

The *IAA* provides that the federal government may enter into an agreement with a province to jointly establish a committee to conduct a regional assessment.[93] Terms of reference for a joint committee, including the timeframe for the completion of the regional impact assessment, must be developed before work can commence.[94] The terms of reference as well as agreements between each of Nova Scotia and Newfoundland and Labrador were expected to be in place by the end of 2022 following consultation and comment by the public and Indigenous groups.[95] Despite this desired timeline, the final agreements with Nova Scotia and Newfoundland and Labrador and terms of reference for the regional assessments were not finalized until late March 2023.[96]

The goal of the regional impact assessments, as represented in the final Nova Scotia and Newfoundland and Labrador agreements, is to inform future offshore wind planning, licencing, and assessments by studying the potential impacts of offshore wind development within the designated study areas in the Newfoundland and Labrador and Nova Scotia offshore areas.[97] Notably, the Bay of Fundy is excluded from the Nova Scotia study area as tidal energy testing and development is underway in this region.[98]

The committees established under each regional assessment have 18 months to complete their work and deliver a report to the Minister.[99] Based on the final agreements and terms of reference being issued on 23 March 2023, the timeline for completion is 24 September 2024.[100]

In light of the timeframe for the completion of the regional impact assessments, and in furtherance of targets set by the *Environmental Goals and Climate Change Reduction Act*[101] and *RER*, Nova Scotia has announced a target to offer leases for five gigawatts of offshore wind energy by 2030 to support development of the green hydrogen industry.[102] The first call

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92 Impact Assessment Agency of Canada, *ibid.*

93 *IAA*, *supra* note 90, s 93(1).

94 *Ibid*.

95 Impact Assessment Agency of Canada, "Regional Assessment of Offshore Wind Development in Newfoundland and Labrador and Nova Scotia: Regional Assessment Planning Workshop: July 2022," online (pdf): [perma.cc/MT6N-G89V].

96 Canada, Newfoundland and Labrador, Canadian Impact Assessment Registry, *Agreement to Conduct a Regional Assessment of Offshore Wind Development in Newfoundland and Labrador*, online: *Canadian Impact Assessment Registry*, online: [perma.cc/9HFK-WCAT] [*NL IAA*]; Canada, Nova Scotia, Impact Assessment Registry, *Agreement to Conduct a Regional Assessment of Offshore Wind Development in Nova Scotia*, online: *Canadian Impact Assessment Registry*, online: [perma.cc/YF63-ZTW7] [*NS IAA*].

97 *NL IAA*, *ibid*, ss 1.1, 1.2; *NS IAA*, *ibid*, ss 1.1, 1.2.

98 *NL IAA*, *ibid*, Appendix A, s A3; *NS IAA*, *ibid*, Appendix A, s A3.

99 *NL IAA*, *ibid*, s 1.5; *NS IAA*, *ibid*, s 1.5.

100 *Ibid*.

101 SNS 2021, c 20.

102 *September 2022 Announcement*, *supra* note 4.

for bids is scheduled to be issued in 2025.[103] Once the five-gigawatt target is met, subsequent calls for bids will be based on market opportunities.[104]

D. GREEN HYDROGEN

The development of offshore wind is often closely associated with green hydrogen production.[105] Increasingly, Europe is looking at green hydrogen as a replacement fuel source for various applications given the disruption of Russian gas supplies since the invasion of Ukraine. Green hydrogen has significant potential as an energy source for industrial applications as well as a fuel source. When extracted from a source such as liquid water, hydrogen is flammable and can be used as a combustible source of energy in an engine or to produce electricity in a fuel cell.[106] To date, most of the hydrogen produced in Canada is "grey hydrogen" produced by using natural gas as an energy source.[107]

Green hydrogen is produced using electrolysis, being the process of separating liquid water into its component elements of hydrogen and oxygen through the use of renewable power sources such as wind, solar, or hydroelectricity.[108] The advantage of green hydrogen is its very low carbon footprint as compared to other hydrogen production methods.[109] One of the significant challenges associated with green hydrogen developments is the procurement of sufficient renewable or clean power and water to meet the significant energy demands of the electrolysis method.[110] This challenge is particularly acute in jurisdictions such as Nova Scotia that are still heavily reliant on fossil fuels for electricity generation.

In the last year, Nova Scotia has made, or committed to make, a number of legislative, regulatory, and policy changes to support the development of green hydrogen. Nova Scotia has committed to issuing a Green Hydrogen Action Plan in 2023.[111] On 9 November 2022, certain legislative amendments intended to support green hydrogen developments received royal assent. These amendments included changes to the *Gas Distribution Act*, *Pipeline Act*, and *Underground Hydrocarbons Storage Act* to: (1) enable pipelines for transporting hydrogen; (2) allow for hydrogen to be included in the province's regulated gas distribution system; and (3) to permit underground storage of hydrogen.[112] These amendments were minor in nature, but will be required when production commences and producers need to move product to terminals for export or to storage installations. The November 2022 amendments to the *Electricity Act* add hydrogen facilities as "wholesale customers" of

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103 *Ibid*.
104 *Ibid*.
105 "Green hydrogen" or "renewable hydrogen" appear to be commonly used terms for similar concepts depending on the circumstances. Unless the context requires otherwise, "green hydrogen" will be used throughout this article: Natural Resources Canada, *Hydrogen Strategy for Canada* (Ottawa, December 2020), online: [perma.cc/Y3AV-N4FF] [*Hydrogen Strategy*].
106 Maddy Ewing et al, "Hydrogen on the Path to Net-Zero Emissions: Costs and Climate Benefits" (July 2020) at 1, 5, online: *Pembina Institute* [perma.cc/W7RG-5HCF].
107 *Ibid*; *Hydrogen Strategy*, *supra* note 105.
108 *Hydrogen Strategy*, *ibid* at 20.
109 *Ibid*.
110 *Ibid*.
111 *September 2022 Announcement*, *supra* note 4.
112 Bill 206, *An Act to Amend Chapter 37 of the Acts of 2001, the Underground Hydrocarbons Storage Act*, 1st Sess, 64th General Assembly, Nova Scotia, 2022 (assented to 9 November 2022).

electricity along with NSPI and municipalities.[113] The November 2022 amendment to the *Electricity Act* also provides that the minster will create a Hydrogen Innovation Program.[114] The amendment to the *Electricity Act* is notable given the significant renewable electricity green hydrogen proponents are contemplating purchasing from the grid in advance of dedicated onshore and offshore wind facilities becoming operational in order to meet European standards for exports (discussed in further detail below).

Nova Scotia also amended certain regulations under the *Environment Act* by Order in Council on 19 December 2022 in support of green hydrogen projects.[115] These amendments were announced following the submission by EverWind Fuels Company (EverWind) of its application for environmental assessment (EA) approval to the provincial Minister of Environment and Climate Change on 9 December 2022 (discussed in further detail below) but before EA approval was issued on 7 February 2023 by the Minister of Environment and Climate Change.

The first regulation amended was the *Activities Designation Regulations* made under section 66 of the *Environment Act*.[116] The *ADR* designates certain activities for which industrial approvals are required from the Minister of Environment and Climate Change.[117] The industrial approvals contemplated by the *ADR* are distinct from EAs. EAs are issued under Part IV of the *Environment Act* and are viewed as a "tool through which the environmental effects of a proposed undertaking are predicted and evaluated, and a subsequent decision is made on the acceptability of the undertaking."[118] Industrial Approvals covered by the *ADR* are viewed as operational approvals and are issued under Part V of the *Environment Act*.[119] Industrial approvals typically set out the terms and conditions under which the approval holder may operate so that the environmental effects are maintained as predicted in the EA.[120]

The *Environmental Assessment Regulations* made under section 49 of the *Environment Act*, were amended to add a definition for "hydrogen facility" and to suggest that EAs in respect of hydrogen facilities would be considered a Class I undertaking, rather than a Class II undertaking under the *Environment Act*.[121] It is notable that the specific wording of the amendment is somewhat ambiguous and does not necessarily preclude a hydrogen facility from being considered a Class II undertaking:

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113 Bill 207, *An Act to Amend Chapter 25 of the Acts of 2004, the Electricity Act, Respecting the Hydrogen Innovation Program*, 1st Sess, 64th General Assembly, Nova Scotia, 2022 (assented to 9 November 2022).

114 *Ibid*.

115 OC 2022-330, (2022), online: [perma.cc/G3MR-6BBZ]; *EAR*, *supra* note 43; NS Reg 47/1995 [*ADR*].

116 *ADR*, *ibid*.

117 *Ibid*, s 3(1).

118 *NS EA Guide*, *supra*, note 44 at 1.

119 *Ibid* at 21; *ADR*, *supra* note 115.

120 *ADR*, *ibid*.

121 *EAR*, *supra* note 43, s 2(1), Schedule A-A(5A); It is also notable that, upon receipt of an application for a Class I EA, the Minister has the option of requesting an additional environmental assessment report, which may refer the report to a review panel.

The following are designated as Class I undertakings under the Act:

> A. Industrial facilities
>
> 5A. A hydrogen facility, *but only if the facility is otherwise designated as a Class I undertaking*.[122]

The requirement for a type of an undertaking to be "otherwise designated" as a Class I undertaking is not found elsewhere in the *Environmental Assessment Regulations*. The additional requirement that a hydrogen facility be "otherwise designated" as a Class I undertaking is not mentioned in the explanatory note published in Part II of the Royal Gazette, which notes only that the purpose of the amendment is to "designate hydrogen facilities as a Class I environmental assessment."[123] The news release issued by the Department of the Environment and Climate Change announcing the above amendments also does not address this ambiguity but provides that the amendments: "make it clear that … *large scale* projects that produce hydrogen or ammonia require a Class I environmental assessment."[124]

The same news release announcing the above described amendments also states that the amendments "make clear that … several operational approvals can be bundled under one clear, facility level approval for hydrogen facilities, thus reducing the administrative burden."[125]

It should be noted that the 19 December 2022 amendments to the *ADR* do not specifically provide for the bundling of operational approvals in a manner that is unique to hydrogen facilities, as many designated activities, including those related to chemicals, already provided that an approval could be issued in respect of construction, operation, and reclamation.[126]

Nova Scotia reached a significant milestone with the issuance of its first two EAs for green hydrogen projects. The first EA was issued to EverWind in respect of Phase 1 of a project to develop a green hydrogen and ammonia production facility on industrial lands located in Point Tupper on Cape Breton Island (the Phase I Project).[127] While the issuance of the EA is a key overarching approval required in respect of a Phase 1 undertaking, the commencement of specific construction activities remains contingent on the proponent obtaining all other necessary approvals, permits, or authorizations required by municipal, provincial, and federal acts, regulations, bylaws, guidelines, policies, or standards, or otherwise required by the EA.

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122 *Ibid* [emphasis added].

123 OC 2022-336, (2022), online: [perma.cc/9K3D-XLYT].

124 Nova Scotia, Ministry of Environment and Climate Change, News Release, "Province Modernizes Regulations to Support Environmental Protection, Transition to Green Energy" (19 December 2022), online: [perma.cc/7ZQX-GX4G] [emphasis added].

125 *Ibid*.

126 *ADR*, supra note 115, s 12.

127 Government of Nova Scotia, Minister of Environment and Climate Change, *Environmental Assessment: EverWind Fuels Company, Point Tupper Green Hydrogen/Ammonia Project – Phase I, Richmond County, Nova Scotia* (Ministerial Decision) (7 February 2023), online: [perma.cc/QF8E-RVCB] [*Environmental Assessment: EverWind*].

The Phase I Project is to be developed on lands acquired by EverWind that were formerly operated as a fuel storage terminal.[128] EverWind submitted its application for a Class I EA, in accordance with Part IV of the *Environment Act* on 9 December 2022.[129] The Minister of Environment and Climate Change approved the undertaking by granting an EA approval for the project on 7 February 2023 subject to a number of conditions discussed below.[130] According to EverWind's Environmental Assessment Registration Document (the EverWind RD) submitted in support of its EA application, the Phase I Project, which is anticipated to commence construction in 2023, will be comprised of the following:

1. 300 MW hydrogen electrolysis plant;

2. 600 metric tonne per day ammonia production plant;

3. 230 kV substation and power distribution system; and

4. a marine loading pipeline for liquid ammonia product distribution to shipping vessels.[131]

The Phase I Project contemplates obtaining all of its electricity needs from NSPI.[132] The electricity needs expected for the EverWind hydrogen plant are significant. According to the EverWind RD, it is estimated that the electrical power requirements from NSPI will be 4,500 to 5,000 MWh per day with an estimated peak capacity of 8,400 MWh per day.[133] For context, in 2019 the electricity generated in Nova Scotia per day was approximately 26,575 MWh.[134] In 2021, only approximately 30 percent of electricity generated in Nova Scotia came from renewable sources.[135] In order to qualify as renewable hydrogen under European Union standards, hydrogen produced from renewable sources must result in 70 percent greenhouse gas emissions reduction.[136] Given the significant renewable energy demands and current limitations for the grid to provide renewable electricity, meeting this criterion could be a challenge. The EverWind project is expected to involve the construction of a major onshore wind project to provide added renewable energy to support hydrogen development.[137]

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128 Strum Consulting, "Point Tupper Green Hydrogen/Ammonia Project Phase I Environmental Assessment Registration Document" (December 2022) at 1, online (pdf): *Nova Scotia* [perma.cc/38X3-9YQ6] [Strum Consulting, "Project Phrase I"].

129 Nova Scotia, Ministry of Environment and Climate Change, "EverWind Point Tupper Green Hydrogen/Ammonia Project - Phase 1" (2023) online: *Nova Scotia* [perma.cc/Y5NN-HM3B].

130 *Environmental Assessment: EverWind*, *supra* note 127.

131 Strum Consulting, "Project Phrase I," *supra* note 128 at 1.

132 *Ibid* at 4.

133 *Ibid* at 58.

134 CER-NS, *supra* note 34. Note that this calculation is based on 9.7 TWh hours per year averaged over 365 days and divided by 1,000 to convert to MWh.

135 "60% Renewable Energy and Beyond" (5 May 2021), online: *Nova Scotia Power* [perma.cc/WS22-Q2C8].

136 EC, *Directive (EU) 2018/2001 of the European Parliament and of The Council of 11 December 2018 on the Promotion of the Use of Energy From Renewable Sources (Recast)*, [2018] OJ, L 328/82, art 25 [*EU Directive 2018*]; Strum Consulting, "Project Phrase I," *supra* note 128 at 3.

137 EverWind Fuels, News Release, "EverWind Fuels Announces Memorandum of Understanding for Crown Land Leases to Power its Green Hydrogen Hub in Nova Scotia" (22 December 2022), online: [perma.cc/NC92-7YDN].

In December 2022, EverWind announced that it had entered into a memorandum of understanding (MOU) with the Nova Scotia government.[138] The MOU provides for a "process for EverWind to exclusively apply for and obtain a lease of the Crown Land subject to the MOU … [and] such Crown Land is projected to support the development of approximately two gigawatts of onshore wind generation capacity."[139] Further, EverWind maintains that the "intended onshore wind farm will enable EverWind to reach 1 million tonnes of annual green ammonia production capacity by 2026."[140] According to EverWind, its proposed onshore wind project would be the "largest in the Western Hemisphere."[141] As the existing EA issued to EverWind only relates to the hydrogen facilities itself, a separate EA will be required for the wind project prior to construction. As noted above, the current regulatory framework will require a Class I rather than Class II EA. It is also expected that the EverWind project will be looking to obtain energy from offshore wind installations once operational as a means to provide more renewable energy and meet expansion goals.[142] EverWind expects to make its first commercial shipments of green hydrogen or ammonia in the fall of 2025, presumably relying on agreements with NSPI regarding the purchase of renewable electricity.[143]

An EA for a second hydrogen facility in the Point Tupper area was granted to Bear Head Energy Inc. (Bear Head) on 12 April 2023.[144] According to the registration document submitted as part of the Bear Head EA application:

> The Project involves the construction, operation and decommissioning of a green hydrogen and ammonia production, storage and loading facility. The Project will be constructed in multiple phases driven by the availability of renewable power. At full build-out, the Project will be capable of producing 2 million tonnes per annum (mtpa) of green ammonia (e.g., wind, hydro, tidal, solar) to run the facility.[145]

Like the EverWind Phase I Project, the Bear Head application considers drawing renewable electricity from the Nova Scotia grid, or from new onshore and offshore facilities.[146] Bear Head maintains that its energy needs will be as follows:

> Hydrogen production is based on an average of 2,860 megawatts (MW) power input with an average of 2,000 MW consumed by the electrolysers and an average of 860 MW consumed in the… ammonia synthesis unit and balance of the plant at full build-out.[147]

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138 *Ibid*.
139 *Ibid*.
140 *Ibid*.
141 "Our Project at Point Tupper," online: *EverWind Fuels* [perma.cc/5P49-XW7F].
142 Ashley Fitzpatrick, "EverWind Takes Early Lead in Atlantic Hydrogen Push," *Atlantic Business* (12 September 2022), online: [perma.cc/YPG3-J4SV]; Claudia Scholz, "Nova Scotia's EverWind Signs Green Ammonia Deal with Germany's Uniper," *The Globe and Mail* (23 August 2022), online: [perma.cc/6UBQ-ZQC7].
143 Strum Consulting, "Project Phrase I," *supra* note 128 at 145.
144 Nova Scotia, Minister of Environment and Climate Change, *Environmental Assessment: Bear Head Energy Inc.: Bear Head Energy Green Hydrogen and Ammonia Production, Storage and Loading Facility: Richmond County, Nova Scotia* (Ministerial Decision) (12 April 2023), online: [perma.cc/TT3T-ZXQU].
145 Stantec, "Bear Head Energy Green Hydrogen and Ammonia Production, Storage and Loading Facility Environmental Assessment Registration" (February 2023) at 1.4, online (pdf): *Nova Scotia* [perma.cc/P3K7-UVS7].
146 *Ibid* at i.
147 *Ibid* at 2.2.

In 2020, Nova Scotia amended the *Electricity Act* to provide for the creation of the "Green Choice" program to give large electricity customers the ability to purchase renewable electricity from new renewable energy projects.[148] The Green Choice program was initially promoted as a means to enable Nova Scotia to perform in its agreement with the federal government to procure 100 percent renewable electricity for all federally owned facilities in Nova Scotia.[149] The first expressions of interest to participate in the program were to be submitted on 12 May 2023.[150] While it is not clear that hydrogen facilities would fall under the Green Choice program, it is instructive as an example of Nova Scotia creating a regulatory mechanism whereby energy customers can purchase certified renewable electricity. The ability to certify the purchase of renewable electricity from the grid could be critical for hydrogen proponents seeking to comply with EU regulations for imported renewable hydrogen.

IV. OFFSHORE WIND IN EUROPE

European countries have traditionally relied heavily on imports of energy for heat and electricity from more resource abundant countries such as Russia.[151] While the heavy reliance on imported energy has likely led to European countries being early leaders in developing domestic renewable energy production, reliance on imported energy has remained strong into the 2020s.[152] In 2020, the EU as a whole produced 42 percent of its own energy, while 58 percent was imported.[153] In furtherance of the goals of the European Green New Deal, the EU is pursuing a target of 40 percent renewable energy sources for the EU's overall energy mix by 2030.[154]

Europe is regarded as the "first mover" for offshore wind.[155] The first offshore wind installation in Europe was installed near Vindeby, Denmark in 1991.[156] While countries such as Canada and the United States are now aggressively pursuing offshore wind, Europe has achieved "technical and commercial maturity" in offshore wind.[157] The EU has developed strong domestic industries and supply chains for offshore wind, with the capability to produce nearly all of the components required for offshore wind installations."[158] As of 2020, there was 12 GW of installed offshore wind capacity in Europe.[159] The scaling up of offshore

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148 Nova Scotia, Ministry of Energy and Mines, News Release, "Government Amends Electricity Act" (26 February 2020), online: [perma.cc/QA4U-G93B].

149 *Ibid*.

150 "Updates" (1 May 2023), online: *Nova Scotia Green Choice Program* [perma.cc/GNQ9-ECUB].

151 Julian Wettengel, "Germany, EU Remain Heavily Dependent on Imported Fossil Fuels," *Clean Energy Wire* (10 January 2023), online: [perma.cc/FJN6-TALW].

152 *Ibid*.

153 "Infographic: Where Does the EU's Energy Come From?" (27 September 2022), online: *European Council* [perma.cc/R5SB-HJGY].

154 "Renewable Energy Targets," online: *European Commission* [perma.cc/BQ4K-M9KX].

155 "Communication From the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: An EU Strategy to Harness the Potential of Offshore Renewable Energy for a Climate Neutral Future" (19 November 2020) at 1, online (pdf): *European Commission* [perma.cc/788N-D6N3] ["EU Strategy"].

156 "Offshore Renewable Energy," online: *European Commission* [perma.cc/T6VW-9QVR].

157 Maite deCastro et al, "Europe, China and the United States: Three different Approaches to the Development of Offshore Wind Energy" (2019) 109 Renewable and Sustainable Energy Reviews 55 at 55.

158 "EU Strategy," *supra* note 155 at 4–5.

159 *Ibid* at 1.

wind deployment has become a major policy objective of the European Commission which has set a goal of 60 GW of installed offshore wind capacity by 2030 and 300 GW by 2050.[160]

The regulatory regimes for offshore wind in Europe vary from country to country, however similar regulatory approaches have emerged. Most offshore wind projects to date have been constructed by private entities, with varying levels of government incentives, including:

1. feed-in-tariffs;

2. feed-in-premiums; and

3. tradeable green certificates.[161]

Significant players in the offshore wind industry include Ørsted, Vattenfall, General Electric, and ENbW.[162] Certain projects have been constructed as joint ventures or by a consortium of entities.[163] Offshore wind projects in Europe have attracted international investment.[164]

To promote the development of offshore wind sites, it has been standard practice for governments to approve or authorize development sites, and then open these sites up to a bidding or tendering process.[165] This has helped to reduce the regulatory burden on offshore wind developers, as governments can provide assurances that the areas open for tendering will meet all applicable permitting requirements, as well as comply with all international treaty obligations. Until recently, Denmark retained an "open-door" policy, which allowed private offshore wind developers to propose new sites.[166] This process is generally more cumbersome for developers as they frequently are required to undertake extensive inspections and site assessments themselves.

Europe is currently viewed as a major import market for green hydrogen produced in Atlantic Canada. This requires governments and green hydrogen proponents in Newfoundland and Labrador and Nova Scotia to be compliant with EU rules and regulations regarding the classification as "green" or "renewable" hydrogen. The 2018 *Renewable Energy Directive*, which entered into force in 2018 (RED II), applies to renewable hydrogen.[167] Under RED II, renewable hydrogen is considered a "renewable liquid and

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160 *Ibid* at 1–2.

161 "The Regulatory Framework for Wind Energy in EU Member States: Part 1 of the *Study on the Social and Economic Value of Wind Energy* – WindValue EU" (2015) at 7–9, online (pdf): *European Commission* [perma.cc/T24U-BCEY] ["Regulatory Framework for Wind Energy"].

162 "Offshore Wind: Leading the Global Green Energy Transition," online: *Ørsted* [perma.cc/7MJR-MRML]; "Wind Power: We are Accelerating Fossil Freedom with the Power of Renewables," online: *Vattenfall* [perma.cc/VJN8-5M2G]; "GE's Offshore Wind Farm Technology" (2023), online: *General Electric* [perma.cc/6RUS-QZ4T]; "Offshore Wind Farms" (2023), online: *EnBW* [perma.cc/5N4L-RD9Z].

163 deCastro et al, *supra* note 157 at 60.

164 "Offshore Wind in Asia: Recent Developments and Future Opportunities" (June 2020) at 2, 4, online (pdf): *Ashurst* [perma.cc/7Z3D-YMYH].

165 "Regulatory Framework for Wind Energy," *supra* note 161 at 39–44.

166 "Procedures and Permits for Offshore Wind Parks," online: *Danish Energy Agency* [perma.cc/GY6G-VSTT].

167 *EU Directive 2018*, *supra* note 136.

gaseous transport fuels of non-biological origin" (RFNBO).[168] From 2018 until February 2023, there was ambiguity regarding when hydrogen would be considered "renewable" or "low-carbon." There was similar ambiguity regarding approved sourcing of renewable energy by hydrogen producers. On 13 February 2023, the European Commission introduced the Delegated Regulation on Union Methodology for RFNBOs, a delegated Commission regulation under RED II.[169] The *RFNBO Regulations* introduce a methodology to ensure that the electricity used to produce RFNBOs is considered renewable.[170] The *RFNBO Regulations* will apply to fuel producers in Europe as well as producers abroad looking to export to the EU.[171] Accordingly, these rules will be important for Canadian exporters of hydrogen.

Under the *RFNBO Regulations*, electricity is considered to be renewable when it is obtained through a direct line to a renewable energy generating facility, or if the renewable energy and fuel are produced at the same time or site.[172] In an effort to boost the amount of renewable energy available for the grid generally, the *RFNBO Regulations* provide that the renewable energy generating installation connected via direct line must have become operational fewer than three years in advance and not be connected to the grid.[173] The *RFNBO Regulations* also set out criteria for when electricity drawn from the grid is considered fully renewable. Electricity drawn from the grid is considered to be fully renewable in the following circumstances:[174]

1. if the fuel producer is located in a "bidding zone" where renewable electricity accounts for 90 percent or more of the proportion of electricity in that bidding zone;

2. if the fuel producer is located in a bidding zone where the emission intensity of electricity is lower than 18 gCO2e/MJ, and Power Purchase Agreements (PPAs) are entered into which meet temporal and geographical correlation requirements (discussed below); or

3. if the electricity is consumed during an imbalance settlement period during which the RFNBO producer can show that it reduced the need for downward redispatching of renewable electricity generation.

If electricity obtained from the grid is not captured by items 1 to 3 above, it can still be considered fully renewable if the producer can meet certain additionality, geographical correlation, and temporal correlation requirements.

1. Additionality: fuel producers must produce an amount of renewable electricity in their own facilities that is at least equivalent to the amount of electricity claimed as fully renewable, or have concluded directly, or via intermediaries, one or more

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168 *Ibid*, art 2.
169 EC, *Commission Delegated Regulation (EU) of 10.2.2023 Supplementing Directive (EU) 2018/2001 of the European Parliament and of the Council by establishing a Union Methodology Setting out Detailed Rules for the Production of Renewable Liquid and Gaseous Transport Fuels of Non-Biological Origin*, [2023] OJ, L 157/11 [*RFNBO Regulations*].
170 *Ibid*.
171 *Ibid*, art 1.
172 *Ibid*, art 3.
173 *Ibid*.
174 *Ibid*, art 4.

PPAs with producers of renewable electricity for an amount of renewable electricity that is at least equivalent to the amount of electricity that is claimed as fully renewable and the electricity claimed is effectively produced in this or these installations, provided: (i) the installation producing renewable electricity must not have been in operation for more than 36 months before fuel production; and (ii) it must not have received support in the form of operating aid or investment aid.[175]

2. Temporal Correlation: renewable electricity generation under the PPA and fuel production occur during the same calendar month.[176]

3. Geographic Correlation: At least one of the following is met regarding the location of the renewable electricity generator: (i) the renewable electricity generator must be in the same bidding zone as the electrolyser; (ii) in an interconnected bidding zone with electricity prices in the day-ahead market equal or higher than the bidding zone where the hydrogen is produced; and (iii) in an offshore zone interconnected with the electrolyser's bidding zone.[177]

The *RFNBO Regulations* provide for a transitional period with respect to the additionality requirements which will not apply to producers until 2038 so long as those producers become operational prior to 1 January 2028.[178]

V. CHALLENGES AND DISCONNECTS FOR NOVA SCOTIA AND NEWFOUNDLAND AND LABRADOR

A. NEWFOUNDLAND AND LABRADOR

The regulatory environment for wind development in Newfoundland and Labrador is immature and uncertain. The relative absence of onshore wind development to date in Newfoundland and Labrador is a significant challenge for governments and project proponents now seeking to expedite the proliferation of green hydrogen development and the associated development of wind resources. Newfoundland and Labrador largely rebuffed wind energy development for a number of reasons, as described above. Now that the wind-to-hydrogen industry offers the potential to produce export revenues rivalling those of oil and gas, the province is attempting to capitalize on its bountiful wind resources by attracting the industry to the province. While government has attempted to move with haste, there is corresponding waste. Functionally, there is little government could do to avoid this given the lack of wind development in Newfoundland and Labrador. Newfoundland and Labrador is faced with three major challenges: (1) timely site control for proponents; (2) fiscal modelling; and (3) grid capacity.

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175 *Ibid*, art 5.
176 *Ibid*, art 6.
177 *Ibid*, art 7.
178 *Ibid*, art 11.

1. TIMELY SITE CONTROL

In terms of site control, the process described above for securing land was under consideration by the Government of Newfoundland and Labrador for nearly a year before proponents were able to make the first overture with land bids being due as of 23 March 2023.[179] While there is some private land potentially available for sale or lease, projects of this nature require significant acreage for wind farms, and a site for an electrolyser facility, all with access to a sea port for export. In Newfoundland and Labrador, this will in most cases require the acquisition of Crown lands.

The two-phase land bid process basically entitles a proponent to an exclusive right to *apply for*, not obtain, a lease or grant in respect of the Crown land.[180] Therefore, once a bidder obtains the exclusive right, all they have won is the right to be at the first step of the default Crown land application process.

The Crown land process in Newfoundland and Labrador is infamous. It is a time-consuming process involving consultation with myriad provincial government departments. While some of the issues will have been addressed by virtue of the land nomination process, the provincial government has not warranted good legal title to the land that has been put up for bids. On this basis, once a proponent is successful in the bidding process, it will still have to undertake serious due diligence issues, including but not limited to:

1. assessing any previously granted titles on the property;
2. assessing whether the Crown has been adversely dispossessed of the property;
3. assessing land use restrictions;
4. assessing municipal zoning;
5. First Nations consultation, where applicable; and
6. environmental assessment.

The province's antiquated system for land titles presents a significant problem in ramping up this industry quickly. Unlike in other Canadian provinces, there is little in the way of a property identification system; instead, the system is rooted in adverse possession against the Crown. In order to assess title of real property in Newfoundland and Labrador, one must do a title search that is primarily name-based. However, the owner of real property is not always clear. Under Newfoundland and Labrador law, individuals can acquire squatters' rights over

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179 Newfoundland and Labrador, Department of Industry, Energy and Technology, News Release, "Update on Bids Received for Wind-Hydrogen Development" (24 March 2023), online: [perma.cc/2YLE-MBBS].

180 *Ibid*.

Crown Land, if they have been in open, notorious, and adverse possession since 1957.[181] No publicly searchable registration is required.[182] In remote areas, this can create challenges — not the least of which is finding affiants who can reliably testify to open and notorious possession over 65 years ago. Often aerial photography is used to assist proponents to determine whether there are any such unregistered private interests to be addressed, which then leads to a difficult assessment of how long those private interests have been in place and the extent to which they have properly dispossessed the Crown.[183]

The knock-on effect of this long-standing policy problem will mean delays in getting the green hydrogen industry off the ground. A recent report of the Canadian Bar Association report indicated that the Newfoundland and Labrador system is unsustainable and has become an obstacle to the proper functioning of real estate law in Newfoundland and Labrador, even on the most basic of land transactions.[184] Beyond the problems with the *Lands Act* system rooted in adverse possession, it routinely takes years to work through the bureaucratic channels, most particularly the Crown Lands division of the Department of Fisheries, Forestry and Agriculture, to obtain a certified interest in land from the Crown.

In order for the Government of Newfoundland and Labrador to grant actual title, whether by a grant or a lease, it will need to rule out any adverse possession. In order for proponents in Newfoundland and Labrador to be first-movers, the government will need to either consider more resources for analysis of these issues, prioritize wind-to-hydrogen proponents, or some combination of both measures.

In our view, in order to facilitate the wind-to-hydrogen industry, Newfoundland and Labrador should seriously consider expropriating the nominated Crown lands for projects to ameliorate any issues in respect of potential squatters on ostensible Crown land.[185] This would immediately provide certainty to proponents and government alike, thereby short-circuiting the due diligence exercise typically required. At worst, the Government of Newfoundland and Labrador would have to pay out the value of any squatter's rights, which would likely come at a minimum cost given the relative low value of most of these lands at present. At best, government and proponents alike would avoid needless delays associated with the due diligence required under the province's current antiquated system. Given the billions of dollars it expects in tax revenue, which is discussed in greater detail in the next section of this article, the potential benefits clearly outweigh the potential costs.

2. FISCAL MODELLING

Related to site control is uncertainty in relation to what the Government of Newfoundland and Labrador intends to charge for the Crown land. As was stated above, for a singular

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181 Newfoundland and Labrador, "Lands Act Review - Final Report" (August 2015) at 6–7, online (pdf): *Newfoundland and Labrador* [perma.cc/K9ZN-GZ2F]; "Reforming the Law on Adverse Possession" (11 May 2021) at 11–12, online (pdf): *Canadian Bar Association* [perma.cc/6ESG-UQ94] [*CBA Report*].

182 *CBA Report*, *ibid* at 8.

183 *Ibid* at 24.

184 *Ibid* at 3.

185 Care would of course need to be taken in respect of avoiding expropriation where other land tenure regimes apply, most notably pre-existing mineral land tenure rights.

project over a 30-year period, the Government of Newfoundland and Labrador projected a total of $3.5 billion in taxes, royalties and fees.[186]

In its fiscal framework discussed in further detail above, the Government of Newfoundland and Labrador announced two main fees: (1) a Crown Land Reserve Fee of 3.5 percent of the market value of reserved lands, with payments beginning upon award of "exclusive right to pursue projects on lands"; and (2) a Crown Land Lease Fee, which is an annual charge of 7 percent of the market value of land, with payment beginning upon issuance of a Crown Land lease.[187]

It is unclear how market value is to be determined. The most logical approach is the direct comparison approach to valuation; however, government has not publicly indicated what it considers to be appropriate comparators for these lands. Thus, while the rate of 3.5 percent is clear, it is unclear what value to which government will apply that rate.

More problematic is the market value at the Crown Land Lease Fee stage. At a 7 percent rate, by the 14 to 15 year mark on a project, a project proponent will have paid the Government of Newfoundland and Labrador the total estimated market value of the property with all payments beyond that point being an effective tax. Furthermore, the question remains, how is "market value" to be calculated? Presumably, it will be something more than the value of the land in a vacant state. However, if it is the market value of the land after a proponent has invested billions of dollars in fixtures to be affixed to the land, then the 7 percent fee will effectively be a 7 percent tax on a proponent's own investment. This is over and above the wind electricity tax ($4,000 per MW on installed capacity, which equates to $1 million for a 250 MW windfarm), the water use fees/royalties, and generally applicable taxes.

It is too early to determine whether these fees are prohibitive, and in fairness to the Government of Newfoundland and Labrador, there is no clear precedent available given the nascent nature of the industry in this region. These questions will need to be answered with more certainty for project proponents to make the significant investments required for these projects.

3. GRID CAPACITY

A green hydrogen industry requires that electricity used to power the electrolyser facilities be in fact "green."[188] While this requirement is met when a project's dedicated wind turbines are operating, a back up source of green power is necessary.

At the time of the announcement of the amended OC discussed above, Newfoundland and Labrador was citing that it had already received 8,000 MW of requests for energy, which is

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186 Jessica Singer, "N.L. Releases Wind-Hydrogen Fiscal Framework, Says Citizens Will Be 'Primary Beneficiaries' of Project," *CBC News* (23 February 2023), online: [perma.cc/P4UH-BVY6]; *February 2023 Announcement*, *supra* note 58.

187 *Ibid*.

188 Ewing et al, *supra* note 106 at 2.

four times the current capacity of the provincial system as a whole.[189] This, coupled with problems with the Labrador Island Link (the LIL, the transmission line bringing clean renewable power from Muskrat Falls to the island portion Newfoundland and Labrador), may mean that these projects will have to operate on a substantial dispatchable basis, rather than in reliance upon firm capacity. While the LIL has now been commissioned, there remains skepticism as to its reliability over time in regulatory proceedings. A recent report submitted to the province's Public Utilities Board provided a bleak outlook on both the commissioning and overall reliability of the LIL:

> Commissioning Progress
>
> History commends pessimism regarding GE's estimate that it can complete all the work required to ready the LIL for passing the overload test during the first quarter of this year. The failure also underscores the concern we have now expressed for some time about the LIL's longer-term ability to reach a state of reliable operation at full power with all of the capabilities of its design requirements.[190]

Even where the LIL performs well, it remains unclear the extent to which firm capacity will be available for a series of projects expecting 250 MW output or more in rural areas. It is also unclear whether the proposed wind-to-hydrogen projects may be economical without firm backup power — whether on a long-term basis or until further transmission and distribution networks are created. To the extent further transmission or distribution networks need to be created to reach areas where large amounts of electricity have not been historically required, NL Hydro will need to justify that expense in the context of the broader system which itself expects demand growth continued electrification and the expected proliferation of electric vehicles. In this regard, the importance of this detail is a matter of further study.

As the impacts to the grid represent 15 percent of the evaluation criteria under Phase 2 of the bid process (which is the same weight as applied to the qualities of the bidder themselves), proponents are well advised to understand NL Hydro's position on the feasibility of prospective projects and their power needs well in advance of the completion of the Phase 2 process.

B. NOVA SCOTIA

The main challenges facing Nova Scotia for future onshore, offshore and hydrogen development are primarily related to the scale of new wind installations and aggressive timelines. Specific challenges discussed below include: (1) the demand for renewable energy; (2) the suitability of existing regulatory frameworks; and (3) supply chain and procurement issues.

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189 John Samms & Matthew Craig, "Update: The Winds of Change (Part 1): Newfoundland and Labrador Government Signaling Major Shift in Energy Policy" (6 July 2022), online (blog): *Stewart McKelvey* [perma.cc/WA42-SWEY].

190 Newfoundland and Labrador, Board of Commissioners of Public Utilities, *Eighteenth Quarterly Monitoring Report on the Integration of Power Supply Facilities to the Island Interconnected System* (Liberty Consulting Group, 9 February 2023) at 6, online (pdf): [perma.cc/8N8D-H47N].

1. DEMAND FOR RENEWABLE ENERGY 2023–2030

Nova Scotia has committed in law to require that 80 percent of the electricity NSPI delivers to its customers be produced by renewable sources by 2030.[191] As discussed earlier under Part III of this article, Nova Scotia is aggressively promoting the rapid development of green hydrogen or ammonia exporting facilities with very significant renewable electricity requirements. The renewable energy requirements for green hydrogen facilities, at least in the short term, are expected to the met by renewable power purchased from the grid. As discussed above, under the *RER* the onus for meeting the renewable energy target falls almost exclusively to NSPI. Before any of the five new onshore wind projects come online, it may be a challenge to meet the renewable energy needs of the province as a whole, including renewable electricity to be delivered to hydrogen facilities under PPAs. To date, it is expected that the five new projects will provide electricity to the grid. Any delay in completing the five new onshore projects or proposed hydrogen dedicated onshore facilities could compound the potential problem. Related technical issues such as load balancing and energy storage will need to be addressed concurrently.

2. SUITABILITY OF EXISTING REGULATORY SCHEMES

The EA requirements for onshore wind installations, regardless of size, are consistent.[192] In other words, the same level of review, public outreach, and consultation would be required for a 3 MW onshore facility as would be the case for a 2,000 MW facility. The geographic scale and size of the turbines themselves could be very different for such large-scale projects. Public reaction to the unprecedented scale of new large onshore facilities remains to be seen. A tool similar to a regional impact assessment which would provide a baseline study and engage in consultation before project specific approvals are sought does not exist. For these new large onshore wind facilities intended to power hydrogen facilities, it would appear that the responsibility for filling gaps in consultation and public engagement arising from the less onerous Class I EA process will fall to the developers prior to submissions for EA approval. Public opposition will test the resolve of the Minister of Environment and Climate Change who retains the power to refer a Class I undertaking to a public review panel, in effect converting the Class I undertaking into a Class II undertaking.[193]

With public pressure comes the possibility of delays to approvals and construction. Any delays to the construction of these large onshore facilities will likely cause problems for hydrogen developers seeking to reach the desired scale for export. It is unclear if the Nova Scotia government's forthcoming Hydrogen Action Plan will specifically address any gaps or regulatory amendments being considered for onshore wind. Government has a further role to play in order to promote the development of the industry, appropriately manage the expectations of the public, and relieve the burden on developers.

The scale of investment for commercially viable green hydrogen or ammonia destined for the export market is significant as it entails an interconnected series of projects,

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191 *RER*, *supra* note 21.
192 *NS EA Guide*, *supra* note 44 at 2.
193 *Environment Act*, SNS 1994-95, c 1, ss 34(1)(c), 38(1)(c).

encompassing power facilities, on land and subsea transmission lines, an electrolyser facility, onshore pipelines, docking facilities, and purpose-built ships. Each component is dependent upon the others for viability and delays in any component will delay the whole enterprise.

3. SUPPLY CHAIN AND PROCUREMENT

The number of onshore projects being considered for Nova Scotia between 2023 and 2030, as well as future offshore developments, may present supply chain challenges which could make meeting deadlines difficult.[194] With Europe, the US, and China all looking to dramatically increase the number of wind turbines deployed, it could be challenging for developers in Nova Scotia to obtain components required for future developments within desired timelines. The US, China, India, Spain, and Germany are the only countries that can produce all of the major components required for the construction of a wind turbine.[195] The following are challenges for the US domestic supply chain for wind development which could be instructive when considering Canadian challenges.[196]

1. A lack of demand certainty in the wind energy project pipeline provides limited motivation for new supply chain investments; near-term domestic manufacturing capacity may even contract due to forecast reductions in annual installations in 2022 and 2023.

2. There is a lack of domestic supply chain capacity in a few components and materials (specifically semiconductors, rare earth elements, carbon fibre, metal castings, and specific nacelle components), especially for offshore wind.

3. Shortages of rare earth magnets and fundamental commodity price risks could disrupt supply chain activities, erode US competitiveness, and jeopardize deployment ambitions.

4. There is a need to scale up and commercialize wind turbine recycling, especially for blades (glass and carbon fibres).

5. Overseas competitors with low labour costs threaten US supplier competitiveness, especially for labour intensive operations such as blade manufacturing.

6. Expected new workforce demand to serve the Biden administration's goals is likely in the hundreds of thousands. Additional education and training programs are expected to be necessary; scenarios range from several hundred new programs to more than 1,000.

7. Retooling existing manufacturing facilities as turbine size increases will be required.

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194 US, Department of Energy, *Wind Energy: Supply Chain Deep Dive Assessment*, (2022) at 28, online (pdf): [perma.cc/3UT7-VXDF].

195 *Ibid* at 25.

196 *Ibid*.

8. Technology evolution, including increasingly larger wind turbine components, drives the need for facility upgrades and retooling and compounds difficult transportation hurdles.

While Nova Scotia is committed to massive onshore wind development before 2030 in order to meet renewable energy targets and provide energy for green hydrogen development, the commercial realities of wind supply chains seems destined to make meeting these targets challenging.

VI. CONCLUSIONS

Certain challenges related to future wind and green hydrogen development are shared by both Nova Scotia and Newfoundland and Labrador. The paths of each province for offshore wind appear to be on parallel tracks with mirror regional impact assessments under way in partnership with the federal government. Accordingly, we might expect a consistent regulatory approach under the authority of the Reconstituted Boards. It is a major asset for Newfoundland and Labrador and Nova Scotia that each, in partnership with the federal government, already has an offshore regulator with decades of experience regulating calls for bids licensing, compliance, exploration, and decommissioning areas offshore. With many countries around the world planning to dramatically accelerate offshore wind development before 2030, it is critical that the Boards be reconstituted and regulatory regimes for offshore wind be clarified in a timely manner. Nova Scotia and Newfoundland and Labrador will be competing with European nations with existing offshore installations governed by well-established and understood regulatory regimes.

The challenges faced by Newfoundland and Labrador and Nova Scotia are somewhat different for future onshore wind development. Nova Scotia has a much longer history of onshore wind development with pre-existing regulatory frameworks in place concerning Crown land tenure, requests for proposals, power purchasing, and grid interconnection. Newfoundland and Labrador is currently grappling with these issues with the moratorium on onshore wind project development only recently being lifted. As explained above, where Newfoundland and Labrador lands on some of these questions for onshore wind could have a significant impact on some aspect of offshore wind activities as well.

There are also divergent challenges regarding green hydrogen development and associated renewable electricity requirements for Newfoundland and Labrador and Nova Scotia given the differences in their underlying energy mix and pursuit of renewable energy targets. Nova Scotia must balance the significant renewable electricity needs of new green hydrogen facilities against its pre-existing renewable electricity commitment to existing customers. Before new onshore and offshore wind installations come online, it may be a challenge for green hydrogen facilities to obtain sufficient renewable electricity to produce green hydrogen on the scale desired. Subject to overall grid infrastructure constraints, this may be less of a problem in Newfoundland and Labrador where the energy mix is expected to be derived from 98 percent renewable sources before any new wind facilities are brought online.

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