# Maximizing Our Renewable Future

A Plan for Development of the Renewable Energy Industry in Newfoundland and Labrador

Newfoundland Labrador

## Acknowledgments

The Department of Industry, Energy and Technology would like to acknowledge and thank the public, Indigenous Governments and Organizations, industry and stakeholder participants that submitted their input into the development of a renewable energy plan for Newfoundland and Labrador.
The notable volume and depth of input received through questionnaires and written submissions illustrates the value our residents, industry and stakeholders place on an informed, long-term sustainable plan for our province's renewable energy resources.

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# Executive Summary

The world is transitioning to a green economy. Through increasing the global use of clean, renewable energy, we can collectively work toward mitigating climate change. Newfoundland and Labrador has an abundance of developed and undeveloped renewable energy resources, as well as experience and expertise in our technology and energy sectors. This presents opportunities to use the province's hydro, wind, biomass, solar, and wave/tidal resources within the province, for the reduction of provincial greenhouse gas emissions, and will assist in achieving its net-zero commitments. It also presents opportunities to export energy that is surplus to provincial needs, to our Atlantic neighbors, and beyond. As such, Newfoundland and Labrador is well positioned to advance our renewable energy leadership and supplier status, providing opportunities for its residents to participate in, and grow, the province's renewable energy industry.

In order to leverage the global opportunity, the Government of Newfoundland and Labrador has prepared the Renewable Energy Plan, through consultation with the public, Indigenous governments and organizations, industry and stakeholders. The Renewable Energy Plan has a vision of reducing the province's fossil fuel use, and delivering affordable and reliable renewable energy to the people of the province and beyond, while developing and using its renewable energy resources in a manner that ensures environmental protection, meaningful Indigenous engagement, job creation and industry growth.

Newfoundland and Labrador is well positioned to advance our renewable energy leadership and supplier status.

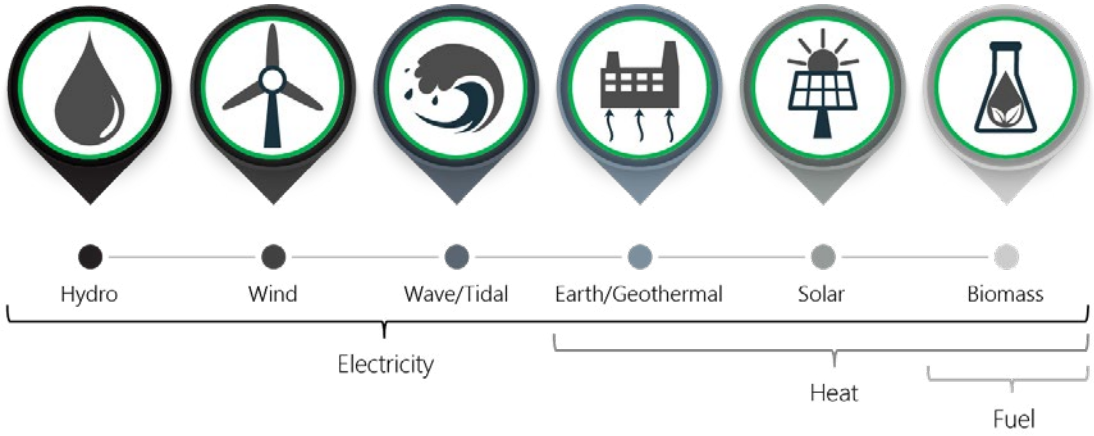
Moving forward, actions under the plan will be guided by the principles of: ongoing consultation and collaboration, maximizing the long-term benefits for the people of Newfoundland and Labrador, demonstrating environmental leadership, and fostering innovation.

Together, with the ongoing support and participation of industry and stakeholders, this plan will support Newfoundland and Labrador's transition to a low-carbon economy, create employment opportunities for province's residents, and further position Newfoundland and Labrador as a Clean Energy Centre of Excellence.

# Renewable Energy Overview

## Definition and Sources

Renewable energy is produced from natural processes that are replenished equal to or faster than the rate at which they are consumed. With appropriate technology (e.g. turbines, photovoltaic panels), renewable energy can be used for electricity, heat and transportation fuels. These renewable resources can also transform into other energy sources such as hydrogen and biofuel (e.g. renewable diesel).




## Climate Change Mitigation

Renewable energy is produced from natural processes that are replenished equal to or faster than the rate at which they are consumed.

While climate change is one of the most challenging issues to face the world, there are solutions. To give effect to the 2015 Paris Agreement on climate change and the 2021 Glasgow Climate Pact, governments are taking the lead to transition to a low-carbon economy which is creating new economic opportunities. Further, energy generating, heavy industrial and energy intensive sectors are changing how they generate and consume energy in response to the priority investors and customers place on climate change mitigation. Jurisdictions that pursue low carbon economies will generate a competitive advantage as a result of these initiatives.

## Net-Zero

Achieving net-zero emissions means an economy either releases no greenhouse gas emissions or offsets its emissions. This could be accomplished by employing technologies that capture carbon before it is released into the air or by capturing carbon emissions after it has been released.

At a national level, the federal government has committed to achieving net-zero greenhouse gas emissions by 2050.

Newfoundland and Labrador's commitment to achieving net-zero by 2050 will be supported by: infrastructure developments to increase renewable hydroelectricity, legislative actions, and program actions to electrify government buildings and private sector facilities, to increase electric vehicle penetration and to encourage residential fuel switching from fuel oil to electricity.

Renewable energy has an important role in addressing climate change and achieving net-zero, as it offers the opportunity to rethink how we produce and use energy. Switching from fossil fuel consumption to renewable energy consumption reduces greenhouse gas emissions and pollutants that can lead to health issues.

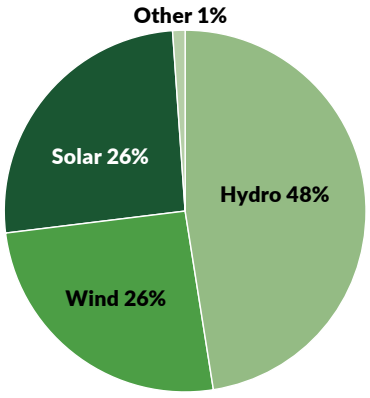
## Global Development

By the end of 2020, there were 2,799 gigawatts (GW) of renewable energy capacity worldwide, equaling approximately 13 per cent of the global energy supply. Nearly half of this installed capacity consisted of hydropower, followed by wind, solar, bioenergy, mixed plants, and geothermal[1].

Globally, renewable energy resources are leading energy investment and growth.[2] In 2020, renewable energy resources experienced the highest annual level of growth in over 20 years, accounting for approximately 80 per cent of new global electricity capacity. This growth is expected to continue, accounting for 90 per cent of new electricity capacity in the next two years. This growth is forecasted to continue to increase globally due to a number of factors including: countries establishing renewable energy targets; increasing policies and programs aimed at lowering greenhouse gas emissions; and the decreasing price of renewable technology.

> Renewable energy has an important role in addressing climate change and achieving net-zero.

### Global Renewable Energy Mix - 2020




Source: International Renewable Energy Agency
Renewable Capacity Statistics 2021

[1] International Renewable Energy Agency, Renewable Capacity Statistics 2021
[2] International Renewable Energy Agency, Renewable Energy Market Update Outlook for 2020 and 2021

Countries leading the amount of installed renewable energy capacity worldwide, in order of rank, include: China (895 GW), the United States (292 GW), Brazil (150 GW), Germany (132 GW), India (134 GW), Japan (101 GW), and Canada (101 GW).[3]

Electricity generated from renewable energy can also produce secondary energy products such as green hydrogen, green ammonia, and biofuel. Countries and industries globally are seeking opportunities to use these products to assist in reducing their carbon emissions in sectors where it is technically challenging or expensive to electrify directly in industrial processing and in large transport. Newfoundland and Labrador is well positioned from a green hydrogen perspective due to its abundant developed and undeveloped hydro resources; surplus energy; strong wind resources; available crown land; available fresh water; deep marine ports; and proximity to US and European markets. Over the longer term, hydrogen offers a technology development opportunity in the offshore area that can assist the oil and gas sector in reaching net-zero emissions.

## Canada's Development

Canada has joined over 120 countries in committing to net-zero by 2050, including all other G7 nations (United Kingdom, United States, Germany, Italy, France, and Japan). In addition, a number of Canadian provinces and cities have also made commitments to be net-zero by 2050.

Canada is a world leader in the production and use of renewable energy, ranking seventh globally in 2020 in terms of the amount of renewable energy capacity installed [4]. Natural Resources Canada notes that renewable energy sources currently provide about 16 per cent of Canada's energy supply used for electricity, heating, and transportation. This consists primarily of hydro (68 per cent), biomass (23 per cent), wind (five per cent), and other (four per cent).

Canada is also the third largest producer of hydroelectricity in the world, accounting for approximately nine per cent of global hydroelectricity generation. Further, wind and solar photovoltaic energy are the fastest growing sources of electricity in Canada.[5]

Throughout Canada, the demand for renewable energy is growing and federal, provincial, and territorial governments are working together to enhance the generation, transmission and use of clean power across the country. Given Newfoundland and Labrador's wealth of renewable resources, our province is positioned to assist the country and the world in these efforts.

[3] International Renewable Energy Agency, Renewable Capacity Statistics 2021
[4] International Renewable Energy Agency, Renewable Energy Market Update Outlook for 2020 and 2021
[5] Natural Resources Canada, Energy Fact Book 2020-2021

# Newfoundland and Labrador Opportunities

Newfoundland and Labrador possesses valuable and abundant developed and undeveloped renewable energy resources.

## Electricity System

Two utilities serve Newfoundland and Labrador's population of approximately 520,000 people. Crown-owned, Newfoundland and Labrador Hydro generates the majority of the province's electricity, transmitting it through high-voltage transmission lines, provides some distribution to Island areas not served by Newfoundland Power, and serves all electricity customers in Labrador. Privately-owned utility, Newfoundland Power, purchases the majority of its electricity from Newfoundland and Labrador Hydro, which is distributes to the majority of customers on the Island.

The province's electricity system is divided into two main systems: the Interconnected Electricity System, which includes approximately 98 per cent of electricity customers, and the Isolated Diesel Systems, which account for approximately two per cent of utilities' customers, who are located in remote coastal communities in the province. The province also has a number of industrial customers that generate their own electricity (typically through fossil fuel), due to the geographic distance of their operations, from a utility electricity system.

The province's Interconnected Electricity System is connected to the North American electricity system though transmission to Nova Scotia via the Maritime Link, and to Quebec through 735 kV transmission lines.

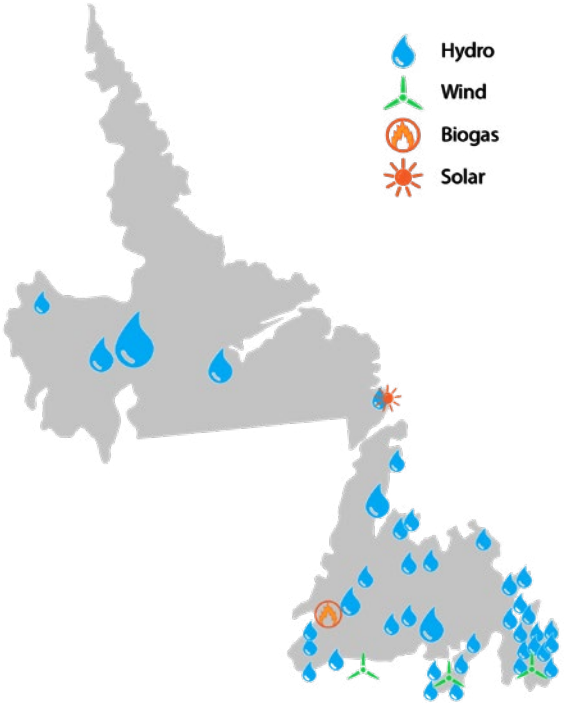
The province's electricity system must have enough electricity generation installed to serve its customers at its highest load, while ensuring that it also has access to a reserve of generation, in case of unplanned system conditions including equipment outages. Newfoundland and Labrador's electricity system experiences the greatest demands for power during its coldest days in winter, due to the increased use of electrically sourced space-heating on these days. As such, it is known as having a "winter peaking system".

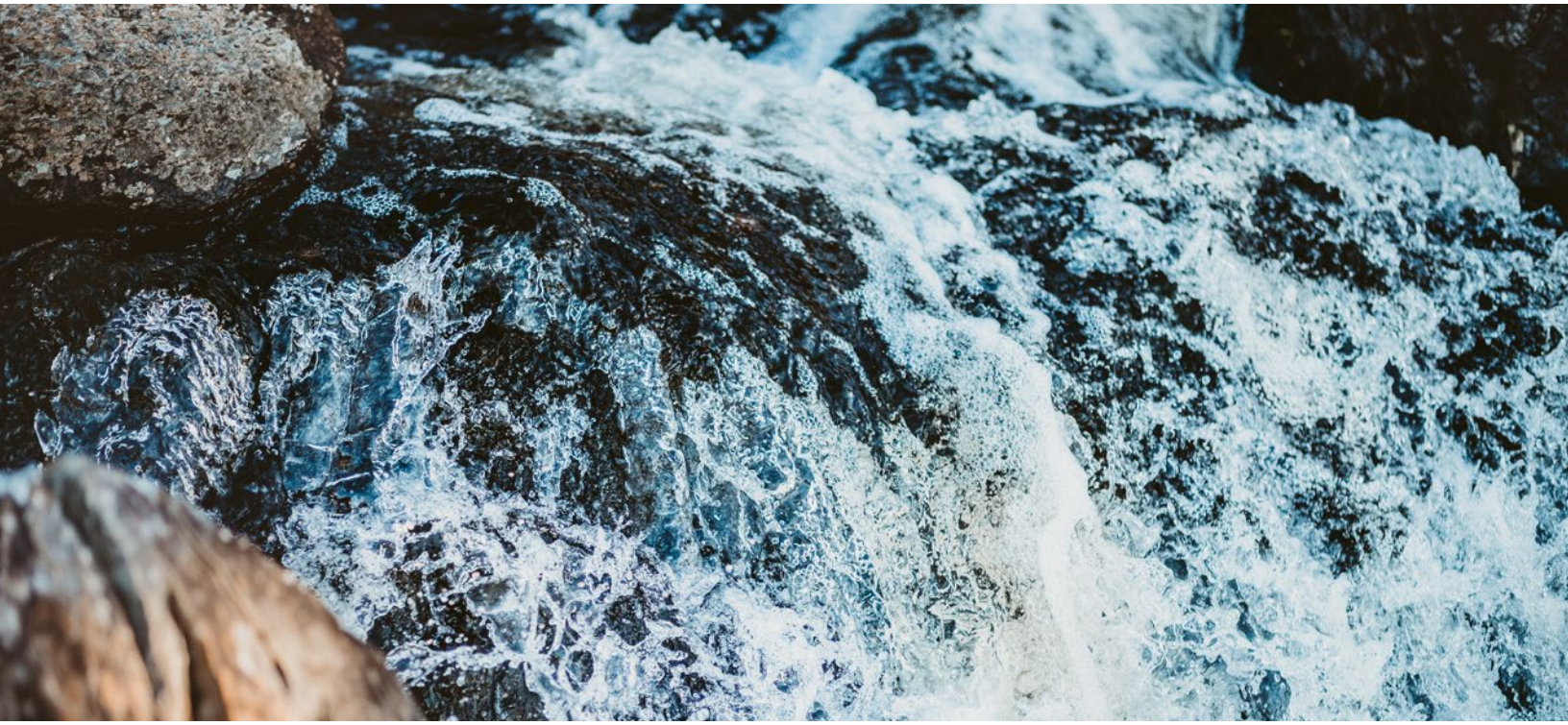
## Developed Renewable Energy Resources

Currently, over 80 per cent of the province's electricity is generated from renewable energy resources, which will increase to 98 per cent when the Muskrat Falls component of the Lower Churchill hydroelectric project is fully commissioned and the oil fired Holyrood Thermal generating Station is closed. This project will also result in approximately 3.2 terawatt hours of energy per year (two terawatt hours firm) that is surplus to Newfoundland and Labrador's current electricity needs, which will be available primarily during summer months due to the province needing more capacity in the winter to meet winter heating demands.

The majority of Newfoundland and Labrador's electricity is produced by large and small-scale hydro projects. In addition, the province also has a number of other renewable projects including three utility-scale wind projects (two on the interconnected system[6], and one in the isolated diesel system[7] of Ramea), as well as a hydro, solar, and battery storage project in Mary's Harbour. Further, through the province's net metering program, there are currently 13 electricity customer-owned, small-scale renewable energy projects through Newfoundland and Labrador, including 11 solar and two wind. Also, through the province's Biogas Electricity Generation Pilot Project, there is a biogas project on the Island's west coast that is generating electricity from farm residue.

**Newfoundland and Labrador's developed renewable energy resource projects**

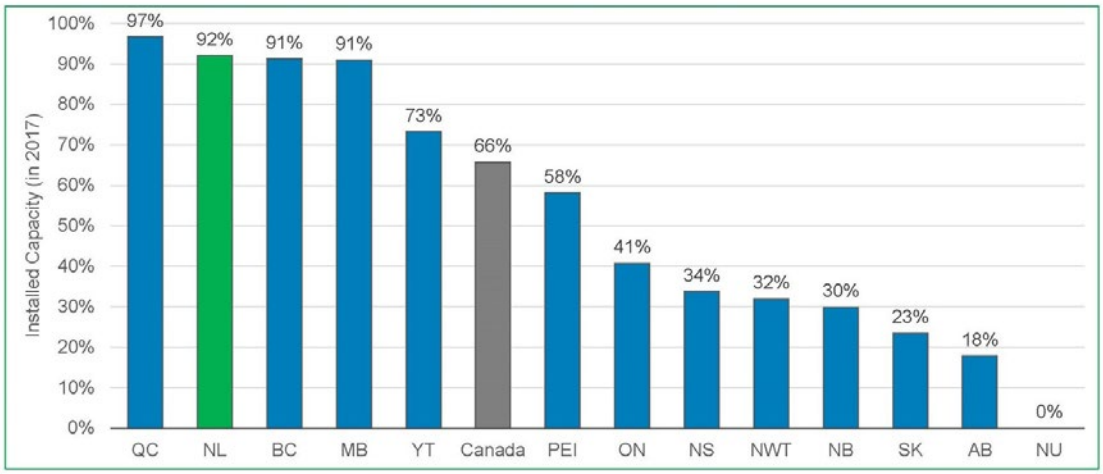


[6] Each of these two wind projects are privately-owned 27 megawatt wind farms, that were the successful respondents to requests for proposals to, and have a power purchase agreement with, Newfoundland and Labrador Hydro.

[7] This is a privately-owned 390 kilowatt wind project that has been in operation since 2004, through a power purchase agreement with Newfoundland and Labrador Hydro.

**Installed Capacity Electricity from Renewable Energy Resources**




Sources:
1. Statistics Canada. Table 25-10-0022-01 Installed plants, annual generating capacity by type of electricity generation
2. Department of Finance; https://www.stats.gov.nl.ca/Statistics/Statistics.aspx?Topic=population

## Undeveloped Renewable Energy Resources

Newfoundland and Labrador's undeveloped renewable energy resources present opportunities to expand the market for our renewable energy resources within the province, and to export surplus energy to our Atlantic neighbors, eastern seaboard, Europe and beyond. Together, this will support the transition to a more sustainable low-carbon economy, create employment opportunities for the people of our province, and further position Newfoundland and Labrador as a Clean Energy Centre of Excellence.

We have the opportunity to develop the renewable energy industry in Newfoundland and Labrador, enabling us to diversify our industry base – becoming leaders in renewable energy.

We know there is opportunity to develop renewable energy sources that are in demand globally, as well as to create products from renewable energy resources, such as green hydrogen, ammonia, and renewable diesel. We must be strategic about the approach we are taking to ensure maximum long-term benefits for Newfoundlanders and Labradorians, including affordable and reliable electricity, increased jobs and economic development. Further, future engagement with key stakeholders will continue to help identify and maximize opportunities for this province associated with the development of our renewable energy assets.

## Fall 2021 Consultation

In fall 2021, the Department of Industry, Energy and Technology consulted with residents, Indigenous governments and organizations, the Premier's Youth Council, industry and stakeholders on the development of the provincial renewable energy plan.

Through the consultation process, the Department of Industry, Energy and Technology received 57 Industry and Stakeholder Questionnaires and 145 Public Questionnaires. It also received 39 written submissions. The input received illustrates the value residents and stakeholders place on an informed, long-term sustainable plan for Newfoundland and Labrador's renewable energy resources.

Detail on the province's consultation process to develop a renewable energy plan, and its findings, are outlined in the Renewable Energy Plan: What We Heard document.

## Premier's Economic Recovery Team

On May 6, 2021, the Premier's Economic Recovery Team released its report, The Big Reset, a plan of action to respond to the province's immediate fiscal challenges and plot a new course forward for strong economic growth. In the report, the Premier's Economic Recovery Team provided a number of recommendations on ways to support and develop the province's renewable energy resources, which informed the development of the Renewable Energy Plan.

## Indigenous Engagement and Participation

The Government of Newfoundland and Labrador recognizes that a principle-based relationship with Indigenous peoples, characterized by mutual respect, is the foundation for sound government policies and programs, as well as vibrant and prosperous Indigenous communities. As such, the province is committed to consulting Indigenous Governments and Organizations

Premier, Minister of Industry, Energy and Technology, and staff participate in renewable energy discussion with the Premier's Youth Council, fall 2021.

when it is contemplating land and resource development decisions that have the potential to impact settled or asserted Aboriginal or treaty rights. Further, the Government of Newfoundland and Labrador is committed to ensuring Indigenous people obtain the training and supports needed to participate in the province's large-scale development projects.

Government will continue to have early and meaningful consultation with Indigenous Governments and Organizations on future renewable energy projects, supporting Indigenous engagement and participation in renewable energy projects, and supporting community-led renewable energy projects. In support of these efforts:

- the Government of Newfoundland and Labrador announced in 2020 approximately $1.45 million to establish the Labrador Office for Indigenous and Northern Skilled Trades, which will work with Indigenous governments and organizations, and stakeholders to promote the skilled trades as a viable career, mentor individuals through the apprenticeship-journeyperson process, and assist individuals in finding employment opportunities.
- the Department of Industry, Energy and Technology is actively working with the Nunatsiavut Government on its Energy Security Plan, including but not limited to, jointly applying for federal funding to support wood heat, and participating in regularly scheduled calls to discuss and find opportunities to support Nunatsiavut Government's energy priorities, including its Nain wind-micro-grid project and community net metering solar projects.
- the Minister of Industry, Energy and Technology wrote a letter of support for the NunatuKavut Community Council's funding application to Natural Resources Canada's Indigenous Forestry Initiative for a community firewood social enterprise during 2020-21.

The Government of Newfoundland and Labrador is open to, and pursuing, additional opportunities to support the renewable energy priorities of Indigenous governments and organizations in Newfoundland and Labrador.

During fall 2021, feedback on a renewable energy plan for the province was received from a number of the province's Indigenous governments and organizations (see corresponding, "What We Heard" document for greater detail). They called upon Government to: support community-led renewable energy projects in the province's isolated diesel systems; support Indigenous participation in, and ownership of, renewable projects; work with Indigenous governments and organizations in funding submissions to the federal government; and ensure benefits accrue to Indigenous people, through training, jobs, and renewable energy power purchase agreements. The Department of Industry and Energy will continue to prioritize the development of collaborative working relationships with Indigenous governments and organizations throughout the province, to ensure a renewable energy future that is the right fit for all of the province's residents.

# The Vision

Newfoundland and Labrador is reducing its fossil fuel use, and delivering affordable and reliable renewable energy to the people of the province and beyond, while developing and using its renewable energy resources in a manner that ensures environmental protection, meaningful Indigenous engagement, job creation and industry growth, thus advancing its status as a Clean Energy Centre of Excellence.

**By 2026, we envision:**

- Reduced emissions from diesel-generated electricity in our isolated diesel systems
- Increased electrification displacing emissions of fossil fuel uses
- Enhanced training and supports available for residents to participate in the renewable energy industry
- Enhanced collaboration and relationships throughout the province, which includes Indigenous governments and organizations, industry and stakeholders, to maximize the development and use of the province's renewable energy resources
- Increased support for renewable energy and clean technology research and development

# Principles

The Government of Newfoundland and Labrador will be guided by overarching principles as it moves forward in implementing the province's Renewable Energy Plan.

**We will consult and collaborate:**

- With Indigenous Governments and Organizations, industry, and stakeholders to support Indigenous involvement/participation/ownership of renewable energy projects
- With industry, stakeholders to build the province's understanding of its renewable energy resources, and available markets
- With Indigenous governments and organizations wherever land or resource management or development decisions have the potential to adversely affect settled or asserted Aboriginal or treaty rights
- To ensure the views of residents inform next steps regarding the use and development of the province's renewable energy resources

**We will maximize long-term benefits for residents:**

- To ensure reliable, affordable electricity
- To increase renewable energy training, jobs and industry development
- To ensure a diversified workforce including representation from women and members of under-represented groups (e.g. Indigenous persons, persons with disabilities, transgender and non-binary individuals and visible minorities)

**We will demonstrate environmental leadership:**

- Assisting the province in achieving its net-zero commitments
- Ensuring the environmental protection and the sustainable development of the province's renewable energy resources

**We will foster innovation:**

- Supporting renewable energy innovation, research and development

# Focus Areas

**The following focus areas will form the basis to pursue renewable energy opportunities for Newfoundland and Labrador:**

1. Energy Uses and Markets
2. Regulatory Framework
3. Partnership, Innovation and Industry Support
4. Training and Jobs

## 1. Energy Uses and Markets

Markets for the province's developed and undeveloped renewable energy resources exist within and outside of Newfoundland and Labrador, providing an opportunity to further position the province as a Clean Energy Centre of Excellence.

## 1.1 Unlocking our Potential

Newfoundland and Labrador has significant undeveloped renewable energy resources. As opportunities to develop these resources are examined, it is important to consider community involvement and the environment (e.g. proximity to hunting and fishing activities).

The province has an abundance of wind. It is typically considered an intermittent form of energy, meaning that it is not always consistent in presence and strength. However, the province's wind data, demonstrates a consistently strong resource that few jurisdictions can match. This offers potential opportunities to provide grid energy, power offshore oil and gas, and power the production of green hydrogen/ammonia) for export. Opportunities also include small-scale community-based solar in certain areas of the province, particularly the coastal areas of central and northern Labrador, and the southwest inland of Labrador. Further, as the province has vast ocean access, some participants raised the future potential of offshore wind, as well as wave/tidal generation as technology becomes more commercially available and economic.

Renewable energy opportunities related to the province's forestry resources include using sustainably harvested wood to heat people's homes in high-efficiency woodstoves, and using existing saw mill by-products (i.e. steam, hot water, biomass) to displace fossil fuel heating in buildings. Ensuring sustainable forest

management will be important, as the province moves forward in supporting community-led wood-heat initiatives. These initiatives are parallel and complementary to the objectives in the renewable energy plan, and can contribute toward improved energy use and potentially reduced fossil fuel based space heating.

Newfoundland and Labrador consumed approximately 2.3 billion litres of refined petroleum products in 2020 including motor gasoline, diesel, aviation fuels, light fuel oil, and heavy fuel oil[8]. As such, market opportunities to use our renewable energy resources to reduce fossil fuel use within the province include: isolated diesel-powered electricity systems, transportation, residential and commercial building space-heating, and industrial processes. Pursuing these opportunities will also assist in reducing the province's greenhouse gas emissions and in achieving our 2030 greenhouse gas reduction target and net-zero by 2050 commitments.

Markets outside of our province include assisting our Atlantic neighbors, north eastern US, Europe and beyond, in reducing their greenhouse gas emissions through exporting our surplus electricity to them, and through creating and exporting green products such as green hydrogen, green ammonia, biofuels and more.

[8] Statistics Canada, Report on Energy Supply and Demand in Canada, 2020

# Actions:

## Short-term (within one year)

1.1.1 Enhance the province's inventory of its renewable energy resources, including hydro, wind, biomass, and solar, and gather data on size, type, location, and viability.

1.1.2 Seek opportunities to work with Newfoundland and Labrador Hydro and others, to enhance the public's education on, and awareness of, renewable electricity resources (e.g. type, size, cost, etc.).

1.1.3 Consult with, and seek opportunities to support the renewable energy priorities of Indigenous Governments and Organizations.

1.1.4 Identify the province's direct and in-direct supporting attributes (e.g. availability of crown land and port access).

1.1.5 Support the utilities in identifying opportunities to increase the efficiency of the province's electricity system, to maximize the use and benefit of developed renewable energy.

## Medium-term (within two years)

1.1.6 Enhance our understanding of the market opportunities associated with the development of our renewable energy resources, inside and outside of the province.

1.1.7 Update the Department of Industry, Energy and Technology's inventory of the province's undeveloped renewable energy resources to reflect considerations related to technology, the environment and Indigenous priorities.

1.1.8 Continue to consult with, and seek opportunities to support the renewable energy priorities of Indigenous Governments and Organizations.

## Long-term (two to five years)

1.1.9 Continue to update the Department of Industry, Energy and Technology's inventory of the province's undeveloped renewable energy resources, with a broader focus on technology, the environment and Indigenous priorities.

1.1.10 Continue to consult with, and seek opportunities to support, the renewable energy priorities of Indigenous Governments and Organizations.

# Opportunities

## 1.2 Diesel-Generated Electricity Systems

There are currently 20 electricity-isolated diesel-powered systems that are not connected to each other or to the interconnected electricity systems.[9]

Utility-scale renewable energy is reducing the use of diesel-generated electricity in three of these systems, which includes hydro, wind, solar and battery store. Additionally, small-scale solar is being used under the province's net metering program. Efforts are also being pursued to further reduce diesel use in the province's electrically-isolated systems, including increasing the prevalence of wind-generated electricity, and the use of wood and high-efficiency woodstoves. A recent study[10] has confirmed that the best options for long-term sustainability and fuel displacement involve the integration of renewable energy solutions.


Wind turbines generating electricity in Ramea

[9] This includes the following 19 regulated diesel systems: Francois, Norman Bay, Hopedale, Grey River, Mary's Harbour, Makkovik, McCallum, Port Hope Simpson, Nain, Ramea, St. Lewis, Postville, St. Brendan's, Black Tickle, Rigolet, Charlottetown, Cartwright, L'Anse au Loup, Paradise River. It also includes one unregulated diesel system in the First Nations Federal Reserve at Natuashish

[10] Labrador Interconnection Options Study: Final Report, Completed by external consultant, Hatch, on behalf of Newfoundland and Labrador Hydro.

# Actions:

## Short-term (within one year)

1.2.1 Complete a feasibility study on increasing the use of high-efficiency woodstoves in isolated diesel systems, consulting with relevant municipalities, and Indigenous Governments and Organizations as appropriate.

## Medium-term (within two years)

1.2.2 Pursue renewable energy development in the province's regulated electricity-isolated diesel-powered systems, including supporting Indigenous involvement/participation/ ownership of renewable projects, and community-led projects.

1.2.3 Work with Newfoundland and Labrador Hydro to create an Independent Power Producer Policy for diesel-generated electricity systems in remote communities.

1.2.4 Support the work of Newfoundland and Labrador Hydro, in pursuing opportunities to address challenges related to 'minimum load variation' challenges in isolated diesel-systems, in order to encourage renewable energy integration in these systems.

## Long-term (two to five years)

1.2.5 Pursue renewable energy development in the province's regulated electricity-isolated diesel-powered systems, maximizing opportunities for Indigenous led and owned projects.

## 1.3 Attracting and Retaining Industry

Around the world, consumers are becoming more environmentally conscious of the effects of their purchases. As a result, consumers and investors are focusing more on environmental, social, and governance considerations, and are considering the environmental responsibility of businesses. Companies are responding in various ways, including the identification of opportunities to power their operations with renewable energy and seeking negative emission opportunities. As such, there is an opportunity to use the province's high renewably-generated electricity mix as a marketing and branding tool to attract and retain industry. Thus increasing the market for our renewable electricity and injecting further value into the province, through employment and economic development.

Opportunities also exist to assist industry in the province in transitioning their fossil fuel-powered operations to renewable energy, including fossil fuel-generated electricity and operations. This includes opportunities to offset fossil fuel use in the province's mining industry. It also provides opportunity to create value-added green (i.e., low embedded carbon) product lines, including green iron-briquettes, steel and aluminum, as well as use renewable energy to power future mineral exploration activities.

There is an opportunity to use the province's high renewably-generated electricity mix as a marketing and branding tool to attract and retain industry.

Opportunities also exist to use the province's renewable energy to power the province's offshore oil and gas industry. Newfoundland and Labrador's offshore oil and gas platforms are primarily powered by natural gas that is produced as a by-product of the offshore oil extraction process. Currently, the province's offshore oil and gas industry has one of the lowest carbon upstream and wells-to-wheels intensities globally. It is committed to enhancing its efforts, in the context of federal and provincial commitment to achieving net-zero by 2050 and the federal commitment for the oil and gas industry to be net-zero by 2050. To achieve its net-zero goal, a multi-faceted approach is envisioned, including electrification from onshore or offshore renewable energy projects.

## Actions:

### Short-term (within one year)

1.3.1 Develop an inventory of the province's features that enables renewable energy development (e.g. information on deep marine ports, surplus energy, available crown land; relevant legislation/policies; contacts; current schedule of rates; etc.).

1.3.2 Pursue opportunities to support industry in the province in transitioning their fossil fuel-powered operations to renewable energy, including fossil fuel-generated electricity and operations.

1.3.3 Review research from global leaders and experts on what is needed to leverage and develop our renewable energy industry.

1.3.4 Identify areas of focus for investment attraction as it relates to the renewable energy industry.

1.3.5 Develop value proposition and approach to support investment attraction in targeted focus areas.

1.3.6 Assist companies in identifying and navigating provincial processes regarding developing renewable energy projects in the province.

### Medium-term (within two years)

1.3.7 Help industry identify opportunities and provide supports including through the Department of Environment and Climate Change programming, to reduce greenhouse gas emissions by transitioning their fossil fuel powered operations to renewable energy.

1.3.8 Develop a marketing and branding package based on the areas of focus for investment of attraction.

1.3.9 Work with industry and research institutions to identify opportunities to support the analysis and development of renewable energy technology and clean technology.

### Long-term (two to five years)

1.3.10 Engage in activities to attract new industry to the province to use renewable electricity from the interconnected grid.

## 1.4 Electrify Transport and Space-Heating

In 2020, Newfoundland and Labrador's transportation sector accounted for over one-third of the province's greenhouse gas emissions. Once the Lower Churchill Project is commissioned, 98 per cent of the province's electricity will come from renewable energy and the province will have an average of 3.2 terawatt hours of surplus electricity annually (two terawatt hours firm). This presents an opportunity to use renewable electricity from the interconnected grid to electrify fossil fuel based transport and space heating.

The Government of Newfoundland and Labrador has already recognized this potential, and has invested $1 million toward a $2 million project to installing 14 Level 3 (fast charging) electric vehicle-charging stations across the province. This project was also supported by Newfoundland and Labrador Hydro (approximately $300,000) and the Government of Canada ($770,000). Building on this, Budget 2021 announced $500,000 for an Electric Vehicle Adoption Accelerator Program, providing a $2,500 rebate to residents who purchase or lease a new battery electric vehicle or purchase a used battery electric vehicle. More recently, the province's electricity regulator, the Board of Commissioners of Public Utilities, approved the electric utilities to install a further 19 Level 3 charging stations in more rural areas of the province, including three locations in Labrador. Further, Budget 2021 announced a $1 million Oil to Electric Rebate Program, to provide a $2,500 rebate towards retrofitting a home that consumed a minimum 1,000 litres of fuel oil in the previous year. Future opportunities continue for these options, as well as offer potential for other sources of fossil fuel switching, including electrifying new offshore oil platforms, marine vessels and ports (i.e. using electricity to power ships when idling at port), truck stops, public transit, and transport trucks, so long as peak demand impacts are mitigated.

In addition, the Low Carbon Economy Leadership Fund (LCELF) is a six-year, $89.4 million cost shared federal-provincial initiative for climate change mitigation and adaptation ending March 31, 2024. Approximately $48 million of this funding is allocated for public building upgrades, primarily fuel switching to electricity. Approximately $16 million is allocated to date, with more expected, for private, non-profit, commercial, industrial, and municipal, greenhouse gas emission reduction projects, many of which include fuel switching to electricity.

98 per cent of the province's electricity will come from renewable energy.

# Actions:

## Short-term (within one year)

1.4.1 Pursue opportunities to electrify government's on-road transportation and fossil fuel heated buildings.

## Medium-term (within two years)

1.4.2 Continue to pursue opportunities to electrify the Government of Newfoundland and Labrador's on-road fleet, where technology exists and where appropriate.

1.4.3 Continue to electrify the Government of Newfoundland and Labrador's public buildings via the federal government Low Carbon Economy Leadership Fund.

1.4.4 Work with Newfoundland and Labrador Hydro, and the Department of Environment and Climate Change, and the Department of Finance, to explore options to increase electrification of electric vehicles and oil fueled space heating.

1.4.5 Work with the Public Procurement Agency to ensure renewable energy options are considered in the procurement of goods.

1.4.6 In partnership with the Department of Environment and Climate Change and the electric utilities, expand the province's residential (Level 1) and commercially available Level 2 and 3 (fast charging) electric vehicle charging infrastructure.

## Long-term (two to five years)

1.4.7 Work with federal and provincial government departments, and the electric utilities to determine considerations and opportunities for port electrification (i.e. using electricity to power ships when idling at port).

1.4.8 Work with the Department of Transportation and Infrastructure, and the Department Environment and Climate Change to explore further electrification opportunities (e.g. new offshore oil and gas platforms, large industry, marine ports, ships, truck stops, public transit, and transport trucks).

## 1.5 Export

Newfoundland and Labrador currently exports approximately 1.3 terawatt hours of electricity from the province through two transmission connections with Quebec and Nova Scotia. With the upcoming in-service of the Muskrat Falls hydroelectric project, and the province's abundance of undeveloped renewable resources, it can assist Eastern Canadian provinces and New England states in meeting their renewable energy needs and greenhouse gas emission reduction targets. These opportunities involve human and financial resources, partnerships, and infrastructure (e.g. transmission). Since 2019, Newfoundland and Labrador has been collaborating with the other Atlantic Provinces and Quebec, as well as the federal government and electric utilities, to develop a Clean Power Roadmap for Atlantic Canada which will outline a collective, long-term vision for clean power within the region, including the Atlantic Regional Transmission Loop.

In addition to using transmission lines to export the province's renewable energy resources, another new export opportunity exists in using our renewable electricity grid to create other products, such as green hydrogen and ammonia, and export them via ship, to jurisdictions in Canada, the United States, and around the world.

Hydrogen is a versatile gas and energy carrier. Green hydrogen is hydrogen that was created through using renewable energy, through powering water electrolysis. The worldwide demand for hydrogen tripled within the last 40 years and continues to rise.[11] Concurrently, the International Energy Agency notes that the number of clean hydrogen policies and projects globally have increased dramatically in recent years, with leading countries including Japan, Scotland, and Germany. As such, there is opportunity for Newfoundland and Labrador to export clean hydrogen to replace current fossil fuel generated hydrogen (e.g. in oil refining and the production of fertilizers), as well in new/developing hydrogen markets including fuel for vehicles, low carbon heat and power applications, and energy storage.

Due to the technical challenges and cost with transporting hydrogen, companies are exploring opportunities to convert green hydrogen to ammonia (a compound of nitrogen and hydrogen), to enable transport via ship globally, and for direct use in the creation of fertilizers.

The Government of Canada has identified an opportunity to reduce emissions associated with hydrogen in the oil and gas industry, through retrofitting existing conversion technology with carbon capture and storage, or using hydrogen technology that does not produce carbon dioxide (e.g. water electrolysis).[12] As such, this provides further opportunity to decarbonize the province's oil and gas sector, and assist it in meeting net-zero commitments.

[11] International Energy Agency, The Future of Hydrogen, 2019

[12] Government of Canada, Hydrogen Strategy for Canada

## Actions:

### Short-term (within one year)

1.5.1 Continue to enhance the province's ability to determine hydrogen opportunities that provide the highest, long-term benefit for residents of the province.

1.5.2 Develop a Hydrogen Development Action Plan.

### Medium-term (within two years)

1.5.3 Continue to advance the development of a clean power roadmap for Atlantic Canada.

1.5.4 Pursue export opportunities.

1.5.5 Build our understanding of opportunities to generate new green products such as green hydrogen, green ammonia or biofuel, and to export the energy via ship.

### Long-term (two to five years)

1.5.6 Continue to work with export market stakeholders (e.g. Atlantic Provinces, Government of Canada) regarding opportunities to use the province's renewable energy resources to achieve emission reduction targets.

1.5.7 Continue to pursue export opportunities.

# 2. Regulatory Framework

Regulation of the province's electricity system falls under a number of pieces of legislation, including the **Electrical Power Control Act, 1994, Public Utilities Act, Hydro Corporation Act, 2007**, and **Energy Corporation Act, 2007**. The province's regulatory framework is designed to ensure the protection of electricity ratepayers, through the provision of reliable and least cost electricity. While the utilities provide the majority of electricity generation in the province, there are a number of options and programs which allow customers to generate their own electricity, including, self-generation, the Biogas Electricity Generation Pilot Program, and the province's Net Metering programs. From a greenhouse gas perspective, large electricity generating facilities are regulated to reduce their annual greenhouse gas emissions through the **Management of Greenhouse Gas Act**, and lower generating facilities are subject to a carbon tax under the **Revenue Administration Act**, unless exempted. Off-grid diesel generation is exempted from a carbon tax by both federal and provincial regulations.

The **Public Utilities Act** establishes the conditions for public utility operation and management. On November 18, 2021, the Department of Justice and Public Safety announced a review of the **Public Utilities Act**, to ensure it is up to date, reflects best practices and achieves its objectives in the best interests of the people of the province.

Where possible, the Department of Industry, Energy and Technology will review the province's legislation, regulations, and policies to enable renewable energy development and to use renewable energy development to facilitate progress toward the net-zero commitment by 2050.

# Actions:

## Short-term (within one year)

2.1 Review the current wind moratorium policy on the Island Interconnected Electricity System.

2.2 Review the provisions of the **Electrical Power Control Act, 1994** regarding the exclusive right to supply, transmit, distribute and sell electrical power or energy, to understand opportunities and implications of customer-owned generation.

## Medium-term (within two years)

2.3 Review the electricity and renewable energy regulatory framework of relevant and leading jurisdictions, and the province.

2.4 Review the province's biogas program for future applicability.

2.5 Review the province's net metering programs for future applicability.

2.6 Explore advancing a whole of government policy approach to renewable energy.

2.7 Continue to review the carbon pricing system with a view to incenting electrification and energy efficiency in line with planned national reviews.

2.8 Review our regulatory framework for considerations related to private sector investment in level 3 charging stations to increase electric vehicle penetration rates.

## Long-term (two to five years)

2.9 Explore regulatory framework options for foreseeable renewable energy development scenarios.

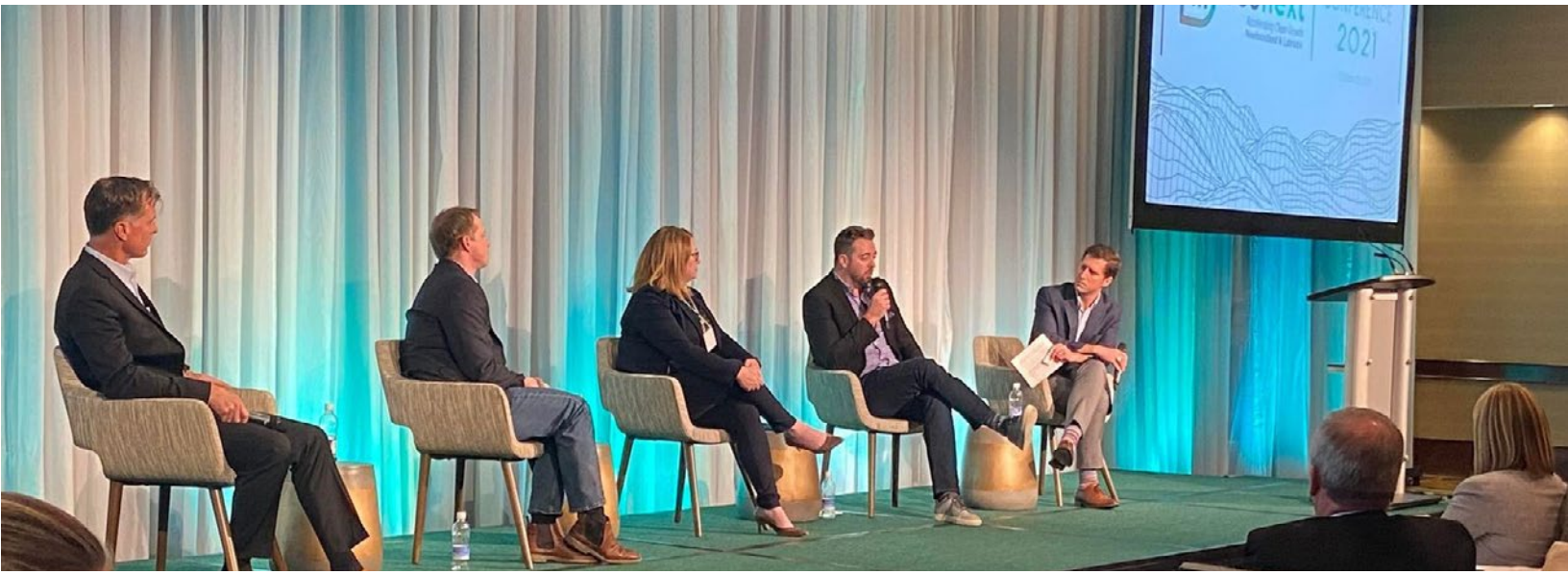
2.10 Continue to work with the Government of Canada regarding relevant regulation/policy (e.g. environmental assessment processes for offshore wind).

# 3. Partnership, Innovation and Industry Support

Supporting innovation, research and development in renewable energy technology can help stimulate economic growth, and that can assist in achieving our net-zero by 2050 commitment. Building research and development capacity in renewable energy development can provide industry and participants with the data, skills, and infrastructure needed to impact development of new opportunities for growth. The innovation ecosystem in Newfoundland and Labrador has gained considerable momentum, with incubation, development and demonstration being critical catalysts. Continued support for the innovation ecosystem will be important to support the development of the industry. In addition, research and innovation supports from the province and other partners will be critical to continue investment for research collaboration.

The Department of Industry, Energy and Technology recognizes the importance of offering creative spaces and testing environment to develop new innovations. Continuation of support for renewable energy and clean technology companies within current programming and services at Genesis and the Memorial Centre for Entrepreneurship will help support the province's transition to a low-carbon economy. It will further enable other industries to become cleaner, with improved environmental outcomes and competitiveness.

Government must consider appropriate support mechanisms for any new renewable energy project. Securing and leveraging private investment and federal financial support is crucial to unlocking the province's untapped renewable energy supply. Given the capital costs involved in switching from fossil fuel to electricity for transportation and space heating, residents, businesses, and municipal governments will also likely need funding to support this transition.




Minister of Industry, Energy and Technology participating with industry and stakeholders on a panel at econext's 2021 conference.

# Actions:

## Short-term (within one year)

3.1 Establish renewable energy working group(s), to meet quarterly, for each interested Indigenous Government and Organization that does not currently have one with the Department of Industry, Energy and Technology, and also include participation from Newfoundland and Labrador Hydro, and relevant others.

3.2 Conduct a review of current federal government programming, to ensure maximum benefits are leveraged for the people of the province, as it relates to renewable energy.

3.3 Leverage local expertise and partnerships.

## Medium-term (within two years)

3.4 Focus on emerging technology-related research, development and deployment opportunities, such as in the oil and gas and mining sectors, to facilitate fuel switching to electricity while reducing greenhouse gas emissions.

3.5 Use industrial benefit arrangements for applicable renewable energy projects, to build supply chain capacities and capabilities to supply the industry locally and globally.

3.6 Work with Newfoundland and Labrador Hydro, to examine financial models for any new renewable energy project, to ensure maximum value for, and protection of, electricity ratepayers and taxpayers.

3.7 Work with Newfoundland and Labrador Hydro, to explore opportunities to leverage federal investment to enhance the province's transmission system, and use tools to build a more flexible and modern electrical grid, in order to maximize the efficient use of, and value from, the province's developed renewable energy resources.

3.8 Monitor current funding programs and services to ensure support for renewable energy, and for businesses diversifying from oil and gas.

3.9 Identify opportunities to support the analysis and development of renewable energy technology and clean technology in the province, which will also contribute to the achievement of net-zero greenhouse gas emissions.

## Long-term (two to five years)

3.10 Work with, and support, Indigenous governments and organizations throughout Newfoundland and Labrador, to maximize federal funding for renewable energy projects within their communities.

3.11 Examine options to support potential new renewable energy projects (e.g. federal funding, private sector funding, government royalty, equity investment, venture capital).

3.12 Continue to explore opportunities to leverage local expertise and partnerships.

3.13 Continue to assess and monitor federal programming to ensure maximum benefits are leveraged for Newfoundland and Labrador.

3.14 Explore opportunities to grow research capacity within the province on ways to maximize the use of the province's developed and undeveloped renewable energy resources (e.g. examine opportunities related to the production and use of hydrogen generated from the renewable energy grid).

# 4. Training and Jobs

As Canadian and US jurisdictions transition to a low-carbon economy, there is an opportunity to create new green jobs to supply the renewable energy resources, products and services needed, and to further position Newfoundland and Labrador as a Clean Energy Centre of Excellence. As such, it is important that the province conduct a long-term labour market assessment to anticipate skilled labour requirements for the province's renewable energy sector, as well as available supply. There is also an opportunity to examine curriculum considerations, career exploration, and experiential/ work-integrated learning opportunities, under the both the K-12 and post-secondary education systems. Post-secondary institutions are already taking steps in this direction, such as the new electric vehicle maintenance and repair course announced by the College of the North Atlantic in fall 2021. To ensure the province's residents have the training needed for its growing renewable energy sector, government will need to work with academia, industry and other stakeholders, to develop appropriate training for renewable energy jobs and jobs in the complementary industries that renewable energy resources will feed and support. Further, a focus will be provided to leverage the province's highly experienced and knowledgeable oil and gas workers' energy expertise to grow our province's renewable energy sector.

As renewable energy projects develop, attention will be given to maximizing the benefits to the people of Newfoundland and Labrador, which include ensuring local workers participate in new renewable energy projects. In these efforts, there will be a need to engage stakeholders, including: unions, Indigenous governments and organizations, public and private post-secondary institutions, and industry associations in planning for labour force needs, training, apprenticeships, and community benefits.

There is an opportunity to create new green jobs to supply the renewable energy resources, products and services needed, and to further position Newfoundland and Labrador as a Clean Energy Centre of Excellence.

# Actions:

## Short-term (within one year)

4.1 Develop training to fill-in gaps in knowledge for jobs related to the service and maintenance of electric vehicles.

## Medium-term (within two years)

4.2 Leverage the expertise and facilities of Memorial University, College of the North Atlantic and private training institutions to support renewable energy initiatives.

4.3 Engage with industry stakeholders to understand the types of jobs and skills anticipated in order to help plan for future labour demands.

4.4 Work with the Departments of Immigration, Population Growth and Skills, Education, and post-secondary institutions, to further identify training and supports to enable the province's residents to participate in the renewable energy sector.

4.5 Engage Indigenous governments and organizations to identify education and training needs of their members.

4.6 Use industrial benefit arrangements, where appropriate, to ensure local worker participation in new renewable energy projects.

4.7 Engage unions and other stakeholders (e.g. Newfoundland and Labrador Federation of Labour) in planning for labour force needs, training, apprenticeships, and community benefits.

## Long-term (two to five years)

4.8 In consultation with the Department of Education and IPGS, determine the current strengths of our workforce and opportunities to further develop skills in renewable energy and clean technology.

# Moving Forward

The Government of Newfoundland and Labrador has committed to achieve net-zero emissions by 2050. It recognizes that the use and development of our abundant renewable energy resources can assist in reducing greenhouse gas emissions, stimulating clean innovation and growth. As such, departments and agencies will lead actions within this plan across the Provincial Government, in collaboration with partners. To ensure transparency and accountability a progress report will be provided after the first year, half way through the five-year plan, and again at the end of the plan's duration. While the majority of the actions outlined are to be completed within the timeframe of this plan, some items are longer-term initiatives that will continue beyond the five-year period.

# Annex A:

## List of all Actions Contained in Plan

# 1. Energy Uses and Markets

## 1.1 Unlocking our Potential

### Short-term (within one year)

1.1.1 Enhance the province's inventory of its renewable energy resources, including hydro, wind, biomass, and solar, and gather data on size, type, location, and viability.

1.1.2 Seek opportunities to work with Newfoundland and Labrador Hydro and others, to enhance the public's education on, and awareness of, renewable electricity resources (e.g. type, size, cost, etc.).

1.1.3 Consult with, and seek opportunities to support the renewable energy priorities of Indigenous Governments and Organizations.

1.1.4 Identify the province's direct and in-direct supporting attributes (e.g. availability of crown land and port access).

1.1.5 Support the utilities in identifying opportunities to increase the efficiency of the province's electricity system, to maximize the use and benefit of developed renewable energy.

### Medium-term (within two years)

1.1.6 Enhance our understanding of the market opportunities associated with the development of our renewable energy resources, inside and outside of the province.

1.1.7 Update the Department of Industry, Energy and Technology's inventory of the province's undeveloped renewable energy resources to reflect considerations related to technology, the environment and Indigenous priorities.

1.1.8 Continue to consult with, and seek opportunities to support the renewable energy priorities of Indigenous Governments and Organizations.

### Long-term (two to five years)

1.1.9 Continue to update the Department of Industry, Energy and Technology's inventory of the province's undeveloped renewable energy resources, with a broader focus on technology, the environment and Indigenous priorities.

1.1.10 Continue to consult with, and seek opportunities to support, the renewable energy priorities of Indigenous Governments and Organizations.

## 1.2 Diesel-Generated Electricity Systems

### Short-term (within one year)

1.2.1 Complete a feasibility study on increasing the use of high-efficiency woodstoves in isolated diesel systems, consulting with relevant municipalities, and Indigenous Governments and Organizations as appropriate.

### Medium-term (within two years)

1.2.2 Pursue renewable energy development in the province's regulated electricity-isolated diesel-powered systems, including supporting Indigenous involvement/participation/ ownership of renewable projects, and community-led projects.

1.2.3 Work with Newfoundland and Labrador Hydro to create an Independent Power Producer Policy for diesel-generated electricity systems in remote communities.

1.2.4 Support the work of Newfoundland and Labrador Hydro, in pursuing opportunities to address challenges related to 'minimum load variation' challenges in isolated diesel-systems, in order to encourage renewable energy integration in these systems.

### Long-term (two to five years)

1.2.5 Pursue renewable energy development in the province's regulated electricity-isolated diesel-powered systems, maximizing opportunities for Indigenous led and owned projects.

## 1.3 Attracting and Retaining Industry

### Short-term (within one year)

1.3.1 Develop an inventory of the province's features that enables renewable energy development (e.g. information on deep marine ports, surplus energy, available crown land; relevant legislation/policies; contacts; current schedule of rates; etc.).

1.3.2 Pursue opportunities to support industry in the province in transitioning their fossil fuel-powered operations to renewable energy, including fossil fuel-generated electricity and operations.

1.3.3 Review research from global leaders and experts on what is needed to leverage and develop our renewable energy industry.

1.3.4 Identify areas of focus for investment attraction as it relates to the renewable energy industry.

1.3.5 Develop value proposition and approach to support investment attraction in targeted focus areas.

1.3.6 Assist companies in identifying and navigating provincial processes regarding developing renewable energy projects in the province.

### Medium-term (within two years)

1.3.7 Help industry identify opportunities and provide supports including through the Department of Environment and Climate Change programming, to reduce greenhouse gas emissions by transitioning their fossil fuel powered operations to renewable energy.

1.3.8 Develop a marketing and branding package based on the areas of focus for investment of attraction.

1.3.9 Work with industry and research institutions to identify opportunities to support the analysis and development of renewable energy technology and clean technology.

### Long-term (two to five years)

1.3.10 Engage in activities to attract new industry to the province to use renewable electricity from the interconnected grid.

## 1.4 Electrify Transport and Space-Heating

### Short-term (within one year)

1.4.1 Pursue opportunities to electrify government's on-road transportation and fossil fuel heated buildings.

### Medium-term (within two years)

1.4.2 Continue to pursue opportunities to electrify the Government of Newfoundland and Labrador's on-road fleet, where technology exists and where appropriate.

1.4.3 Continue to electrify the Government of Newfoundland and Labrador's public buildings via the federal government Low Carbon Economy Leadership Fund.

1.4.4 Work with Newfoundland and Labrador Hydro, and the Department of Environment and Climate Change, and the Department of Finance, to explore options to increase electrification of electric vehicles and oil fueled space heating.

1.4.5 Work with the Public Procurement Agency to ensure renewable energy options are considered in the procurement of goods.

1.4.6 In partnership with the Department of Environment and Climate Change and the electric utilities, expand the province's residential (Level 1) and commercially available Level 2 and 3 (fast charging) electric vehicle charging infrastructure.

### Long-term (two to five years)

1.4.7 Work with federal and provincial government departments, and the electric utilities to determine considerations and opportunities for port electrification (i.e. using electricity to power ships when idling at port).

1.4.8 Work with the Department of Transportation and Infrastructure, and the Department Environment and Climate Change to explore further electrification opportunities (e.g. new offshore oil and gas platforms, large industry, marine ports, ships, truck stops, public transit, and transport trucks).

## 1.5 Export

### Short-term (within one year)

1.5.1 Continue to enhance the province's ability to determine hydrogen opportunities that provide the highest, long-term benefit for residents of the province.

1.5.2 Develop a Hydrogen Development Action Plan.

### Medium-term (within two years)

1.5.3 Continue to advance the development of a clean power roadmap for Atlantic Canada.

1.5.4 Pursue export opportunities.

1.5.5 Build our understanding of opportunities to generate new green products such as green hydrogen, green ammonia or biofuel, and export the energy via ship.

### Long-term (two to five years)

1.5.6 Continue to work with export market stakeholders (e.g. Atlantic Provinces, Government of Canada) regarding opportunities to use the province's renewable energy resources to achieve emission reduction targets.

1.5.7 Continue to pursue export opportunities.

# 2. Regulatory Framework

## Short-term (within one year)

2.1 Review the current wind moratorium policy on the Island Interconnected Electricity System.

2.2 Review the provisions of the **Electrical Power Control Act, 1994** regarding the exclusive right to supply, transmit, distribute and sell electrical power or energy, to understand opportunities and implications of customer-owned generation.

## Medium-term (within two years)

2.3 Review the electricity and renewable energy regulatory framework of relevant and leading jurisdictions, and the province.

2.4 Review the province's biogas program for future applicability.

2.5 Review the province's net metering programs for future applicability.

2.6 Explore advancing a whole of government policy approach to renewable energy.

2.7 Continue to review the carbon pricing system with a view to incenting electrification and energy efficiency in line with planned national reviews.

2.8 Review our regulatory framework for considerations related to private sector investment in level 3 charging stations to increase electric vehicle penetration rates.

## Long-term (two to five years)

2.9 Explore regulatory framework options for foreseeable renewable energy development scenarios.

2.10 Continue to work with the Government of Canada regarding relevant regulation/policy (e.g. environmental assessment processes for offshore wind).

# 3. Partnership, Innovation and Industry Support

## Short-term (within one year)

3.1 Establish renewable energy working group(s), to meet quarterly, for each interested Indigenous Government and Organization that does not currently have one with the Department of Industry, Energy and Technology, and also include participation from Newfoundland and Labrador Hydro, and relevant others.

3.2 Conduct a review of current federal government programming, to ensure maximum benefits are leveraged for the people of the province, as it relates to renewable energy.

3.3 Leverage local expertise and partnerships.

## Medium-term (within two years)

3.4 Focus on emerging technology-related research, development and deployment opportunities, such as in the oil and gas and mining sectors, to facilitate fuel switching to electricity while reducing greenhouse gas emissions.

3.5 Use industrial benefit arrangements for applicable renewable energy projects, to build supply chain capacities and capabilities to supply the industry locally and globally.

3.6 Work with Newfoundland and Labrador Hydro, to examine financial models for any new renewable energy project, to ensure maximum value for, and protection of, electricity ratepayers and taxpayers.

3.7 Work with Newfoundland and Labrador Hydro, to explore opportunities to leverage federal investment to enhance the province's transmission system, and use tools to build a more flexible and modern electrical grid, in order to maximize the efficient use of, and value from, the province's developed renewable energy resources.

3.8 Monitor current funding programs and services to ensure support for renewable energy, and for businesses diversifying from oil and gas.

3.9 Identify opportunities to support the analysis and development of renewable energy technology and clean technology in the province, which will also contribute to the achievement of net-zero greenhouse gas emissions.

## Long-term (two to five years)

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3.11 Examine options to support potential new renewable energy projects (e.g. federal funding, private sector funding, government royalty, equity investment, venture capital).

3.12 Continue to explore opportunities to leverage local expertise and partnerships.

3.13 Continue to assess and monitor federal programming to ensure maximum benefits are leveraged for Newfoundland and Labrador.

3.14 Explore opportunities to grow research capacity within the province on ways to maximize the use of the province's developed and undeveloped renewable energy resources (e.g. examine opportunities related to the production and use of hydrogen generated from the renewable energy grid).

# 4. Training and Jobs

## Short-term (within one year)

4.1 Develop training to fill-in gaps in knowledge for jobs related to the service and maintenance of electric vehicles.

## Medium-term (within two years)

4.2 Leverage the expertise and facilities of Memorial University, College of the North Atlantic and private training institutions to support renewable energy initiatives.

4.3 Engage with industry stakeholders to understand the types of jobs and skills anticipated in order to help plan for future labour demands.

4.4 Work with the Departments of Immigration, Population Growth and Skills, Education, and post-secondary institutions, to further identify training and supports to enable the province's residents to participate in the renewable energy sector.

4.5 Engage Indigenous governments and organizations to identify education and training needs of their members.

4.6 Use industrial benefit arrangements, where appropriate, to ensure local worker participation in new renewable energy projects.

4.7 Engage unions and other stakeholders (e.g. Newfoundland and Labrador Federation of Labour) in planning for labour force needs, training, apprenticeships, and community benefits.

## Long-term (two to five years)

4.8 In consultation with the Department of Education and IPGS, determine the current strengths of our workforce and opportunities to further develop skills in renewable energy and clean technology.