



NOVA SCOTIA

OFFICE OF THE PREMIER

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Rt. Hon. Justin Trudeau
Office of the Prime Minister
80 Wellington Street
Ottawa, ON K1A 0A2

March 28, 2024

Dear Rt. Hon. Prime Minister,

Thank you for your correspondence inviting Premiers to submit plans to address our changing climate. There is no question that climate change is causing more frequent and severe storms, wildfires, floods and other emergencies that threaten the safety of Nova Scotians and our communities. And it is incumbent upon us all to do our part.

We simply disagree with your government on what is the best mechanism to address climate change in Nova Scotia. I fundamentally disagree that taxing Nova Scotians, who are largely unable to change their consumption behaviours, will improve our environmental outlook.

In fact, the last thing Nova Scotians need is another federal tax – especially when we have a better and more effective plan to reduce greenhouse gas emissions.

Minister Guillbeault was in Nova Scotia earlier this month and said that the carbon tax is the only way to reduce emissions. He challenged provinces that oppose the tax to tell him what we are doing to achieve the same results.

I'm happy to share the many things Nova Scotia is doing that are more effective than a carbon tax.

Nova Scotia is a proven leader in stepping up to protect the planet. We established the most aggressive climate targets in the country through the Environmental Goals and Climate Change Reduction Act.

We are a national leader in reducing emissions. We are exceeding our targets to move to renewable energy. We are helping more people every day move to solar panels and heat pumps. We are ramping up wind energy.

Nova Scotians were doing all of this, and more, without a punitive, ineffective carbon tax.

Effective climate action is clear in Nova Scotia, as such, I wanted to again share with you and your team our *Still Better than a Carbon Tax Plan* that will, collectively, do far more to address climate change than your federal carbon tax. This Nova Scotia plan includes:

- (1) Nova Scotia's Coastal Protection Action Plan - helps coastal residents and communities prepare and mitigate climate risk.
- (2) Nova Scotia's Climate Plan - our plan for clean growth to reduce greenhouse gas emissions and improve our ability to be responsive and prepared for climate change.
- (3) Nova Scotia's Clean Power Plan - demonstrates a path to reach at least 80 per cent renewable electricity by 2030 and then net zero by 2050 is better than a carbon tax.
- (4) Nova Scotia's Green Hydrogen Action Plan - establishes a roadmap to support the emergence of a sector that makes best use of the Province's natural resources to produce green hydrogen and hydrogen derivatives for export and for domestic use.

As a part of our overall climate plan, Nova Scotia holds large emitters – which represent over 50 per cent of Nova Scotia's carbon emissions – accountable to reduce their emissions.

Together, these policies will reduce electricity sector emissions by 85 to 90 per cent by 2030.

And once our Clean Power Plan is fully implemented, Nova Scotia will be a North American leader in emissions reductions from the electricity sector.

Climate change is the most pressing global emergency facing humanity. And Government has a responsibility to take steps to preserve our planet for future generations.

Nova Scotians are proud of our proven leadership in stepping up to protect the planet, our environment and all that we hold dear.

And we will continue to demonstrate what true climate leadership looks like as opposed to just taxing people.

I look forward to your consideration of our plan as mechanisms to replace the carbon tax in an effort to make life more affordable for Nova Scotians.

Yours truly,

A handwritten signature in blue ink that reads "Tim Houston". The signature is written in a cursive, flowing style.

Honourable Tim Houston,
Premier of Nova Scotia

Enclosures

STILL BETTER THAN A CARBON TAX

A Made in Nova Scotia Climate Solution

Still Better than a Carbon Tax

Nova Scotians have always been committed to preserving our planet for future generations. Preservation and protection are a way of life in our traditional industries of fishing, farming and forestry and every Nova Scotian understands the importance of planning for tomorrow.

Nova Scotians inherently know what to do to protect and preserve our environment. With respect to taking proactive steps to mitigate the impact of climate change, our Government has a plan that will be more effective in achieving our shared goals, but is much more affordable for Nova Scotians. Nova Scotia's Coastal Protection Action Plan, found at Schedule "A" helps coastal residents and communities prepare and mitigate climate risk.

This document will demonstrate why the federal government will achieve more to preserve the environment by working with us than by imposing its carbon tax on us. An imposed carbon tax may be the answer for some jurisdictions, but Nova Scotia has better alternatives and solutions, some of which are exclusive to Nova Scotia.

We are already on an established path toward 2030 goals and, as such, Nova Scotia makes this submission to ask for an acknowledgement that our plan will meet, and likely exceed, federal standards and seek your commitment to work with us. Provided the federal government supports our legislated goals, we ask that our plan be allowed to proceed, without any punitive tax.

Our plan is consistent with the policy intent of a carbon tax as well as the direction of your Ministerial Mandate Letter. The Prime Minister was also very clear in his COP26 remarks, "*Of course, what's even better than pricing emissions is ensuring that they don't happen in the first place.*" We will demonstrate that a made-in-Nova Scotia plan can achieve this goal.

As stated in your Mandate Letter, "*...Continue to put a rising price on pollution and protect Canadian jobs and competitiveness **through smart carbon pricing design.***"

You have an opportunity to put the future of the planet before all else and recognize Nova Scotia as a province with an evidence-based plan, focused on exceeding the federal targets, and have the courage to work with us on a plan that does not require you to impose a carbon tax. We can achieve much by working together.

Our Nova Scotia plan is built on the following facts:

(1) Nova Scotia has the most aggressive legislated targets.

The underlying purpose of your carbon tax is to increase renewable energy usage and decrease GHG emissions by 2030 and achieve net zero by 2050. We agree. In fact, Nova Scotia's *Environmental Goals and Climate Change Reduction Act*, legislated the following goals:

- (a) 80% of electricity in the Province supplied by renewable energy by 2030;

- (b) At least 53% below GHG levels that were emitted in 2005 by 2030;
- (c) Phase out coal-fired electricity generation in the Province by the year 2030; and
- (d) Net zero by balancing GHG emissions with GHG removals and other offsetting measures by 2050. Provided Nova Scotia is achieving its targets as set out in (a) and (b), we will be on track to meet the 2050 net zero goal.

These goals are further articulated in our Climate Plan, found at Schedule “B,” which shows our path to reduce greenhouse gas emissions and improve our ability to be responsive and prepared for climate change.

(2) Meet renewable targets through a *Progressive Nova Scotia-Born Approach*.

Nova Scotia is a leader in decarbonizing our electricity sector. Emissions from electricity are 43% below 2005 levels and renewable electricity has increased from 9% to 30% in the last ten years. Emissions are projected to dramatically decrease further in the next ten years, primarily with access to Muskrat Falls and the build out of additional domestic wind.

At present, Nova Scotia’s electricity mix is expected to be over 40% renewable energy and by the end of the year. By 2025-2026, Nova Scotia will reach an energy mix of 75% renewable. With more wind coming online, Nova Scotia will reach its 80% renewable target by 2030 through a combination of Maritime Link, wind, hydro, solar and biomass [See Appendix “A” for chart outlining transition to renewable]. This comes with the removal of coal entirely from our grid.

The evidence to achieve our collective 2030 goals for renewable energy is clear. In addition to the current projects that will lead us off coal and to more renewables, there is opportunity for the federal government and Nova Scotia to partner on initiatives that achieve our collective objectives to reduce GHG emissions, create good jobs and improve affordability.

Five of the eight remaining coal plants can be closed by the energy supply options described in Appendix “A,” combined with capacity from the new batteries, an expanded Nova Scotia-New Brunswick intertie and two coal-to-gas plant conversions. The remaining three coal units can be replaced by firm capacity which can flow from multiple sources: the Atlantic Loop, off-shore wind and hydrogen, new gas turbines, more Smart Demand Response and Green Button systems as well as longer-duration Batteries and Storage [See Appendix “B” for outline of prospective renewable projects].

Nova Scotia’s Green Hydrogen Action Plan, found at Schedule “D,” establishes a roadmap to support the emergence of a sector that makes best use of the Province’s natural resources to produce green hydrogen and hydrogen derivatives for export and for domestic use.

We continue to build on our renewable targets and intend to exceed them, but in order to establish more aggressive targets, we need the partnership and support of the federal government and its buy-in of an affordable approach to greening the grid. This includes:

- Clarity on federal support for the Atlantic Loop.
- Additional investment in domestic renewable energy and battery storage, similar to the \$250 million recently announced.
- Accelerated work to create a clear and transparent regulatory environment for offshore wind development- a significant and untapped resource.

- Invest in green hydrogen to put Canadian development on an even playing field with European programs and with the US, as their Inflation Reduction Act will immediately make green hydrogen a competitive source of energy compared to its fossil fuel alternatives.

Nova Scotia is well on its way to meeting the provincial renewable energy targets and federal clean energy objectives, satisfying the Prime Minister's preference for a carbon tax - severely limiting emissions, but together we can do it even more effectively.

Nova Scotia's renewable energy targets are laid out in our Clean Power Plan, found at Schedule "C," which demonstrates a path to reach at least 80% renewable electricity by 2030 and then net zero by 2050.

(3) Exceed GHG reduction targets through an Aggressive Nova Scotia-Born Approach.

Nova Scotia is a leader in GHG reductions. In 2020, the province's emissions were 36.4% below 2005 levels, making Nova Scotia one of the national leaders in GHG reductions (second largest reduction among all provinces) [See Appendix "C" for GHG levels across Canada in 1990, 2005, 2019 and 2020]. We know we can do more, that's why Nova Scotia has the most ambitious target in the country, with a target to reduce GHGs by 53% below 2005 levels, while the federal government's target is set at 40-45% below 2005 [See Appendix "D" outlining roadmap to achieve our goals by 2030].

The incredible reductions to date are a result of proactive policy development and investments by Nova Scotians in renewable energy and energy efficiency. That strong commitment to the environment continues with our government. **Nova Scotia's path to reduce GHG emissions not only meets *but exceeds the federal target.***

Nova Scotia's modeling shows that the federal carbon tax will result in 300,000 tonnes of additional GHG emission reductions in 2030 in the building and transportation sectors (the two sectors covered by a carbon price). Every reduction is important but it must be noted that this is only a 2% reduction from current total provincial emissions. Our own plan will see significantly higher reductions. Nova Scotia has legislated new policies that **will reduce GHG emissions in the province by an additional 17%**, ensuring that we achieve our 2030 target, instead of the **federal carbon tax GHG reduction of 2% over the same period.**

Our path is achievable. It includes constructing over 600MW of new wind energy (over \$1 billion investment), an investment of \$1.7 billion in the Maritime Link to access hydroelectricity from Newfoundland and between \$30-40 million annually in energy efficiency programs. The majority of our reductions come from our actions on electricity (our 80% renewable target, coal closures and energy efficiency programs). Nova Scotians are paying for these reductions already through their electricity rates [See Appendix "E" modeling of present and future GHG emission sources].

Nova Scotia is also ranked first in electricity energy efficiency programming in Canada. To date our efficiency programs have resulted in over \$1 billion in bill savings for Nova Scotians and

\$208 million in bill savings for low-income homeowners and tenants. At the same time, these programs have avoided over 1 million tonnes of GHGs annually.

There is an immediate opportunity for the federal government to support Nova Scotia in exceeding its targets by formalizing and accelerating the commitment to work with us on investments in energy efficiency for low-income Nova Scotians. This is a gap in current federal programming. It would reduce GHG emissions, make homes safer and more affordable, increase equity and create good paying skilled jobs.

Nova Scotia is already ahead of federal GHG emissions targets with an achievable plan to do even better. Exceeding the federal goals with our own plan, is another reason that a carbon tax is not necessary, and instead, an opportunity to assist you in fulfilling your mandate to work with provinces on 'smart carbon design.'

(4) Our Nova Scotia-Born Approach is Superior to a Carbon Tax.

Nova Scotia's aggressive approach to GHG reduction and considerable opportunities in the renewable energy sector, present a path that will achieve better results for the environment than possible under a carbon tax. Additionally, our plan does it while having the important distinction of being much more affordable for Nova Scotians.

Our plan is more affordable.

A carbon tax would see Nova Scotians paying over \$1 billion in new taxes in 2030. The environmental impact of these new taxes? A minimal reduction in GHGs, as compared to our approach. That's why the policy objective of a carbon price, to reduce emissions, is less effective in Nova Scotia where alternative plans can result in a much greater impact.

A carbon tax is projected to have a very small impact on consumer behaviour in Nova Scotia in the near term, particularly given the significant portion of the population residing in rural parts of the province, thus not having the ability to change their behaviours as there are no alternatives but driving to work, the hospital, to visit elderly relatives, etc. Compared to the national average of 17.8% living in rural, 41.1% of Nova Scotians reside in rural communities.

Not only is our approach more effective in terms of its reduction of GHGs, but will be more cost effective for Nova Scotia families than implementing a tax of over .14 cents per litre on fuel [See Appendix "F" for Nova Scotia's household impact of a carbon tax]. In 2025, financial impact models project an average increase per household expenses of \$2,036, of which \$658 are direct costs and \$1,378 are indirect costs.

While the Federal government has asserted that eight out of ten families will receive more than they spend on the tax. This payment is in the form of a reimbursement, which is not helpful for many Nova Scotians who cannot afford to pay up-front costs, such as to fuel their car to attend work or school. It is our understanding that only a portion of the direct costs associated with a

carbon tax are reimbursed, while indirect costs are not. The most significant impact of a carbon tax is indirect which is why we believe that there will be a large cost to households.

On the other hand, while our plan also has a cost, the result in average costs is much lower. We anticipate the cost to be approximately \$487 per year, made up of direct costs from higher energy prices (approximately \$399) plus indirect impacts (approximately \$148) offset by a savings for the decrease in energy consumption (approximate savings of \$60).

Our plan does more for the Environment

Our plan provides a significant investment in protecting the planet, over and above what is hoped for by a carbon tax. In the past year, Nova Scotia has invested over \$100 million in climate change-focused projects including low-income and small business energy efficiency programs, sustainable transportation options, support for communities and climate change adaptation. This is in addition to utility DSM/efficiency programs in which Nova Scotians will invest approximately \$170 million over the next three years.

Nova Scotia is leading the country on environmental policies and targets. Other established goals include:

- The closure of all coal plants by 2030.
- 30% zero-emissions vehicle standard (complimented by federal ZEV standard) by 2030.
- Conserve at least 20% of the total land and water mass of the Province by 2030.
- Review and update the Province's air emission targets and ambient air quality standards by 2025 and conduct reviews and updates every five years or sooner.
- 20% consumption of local food by 2030.

Nova Scotia plans to play a significant role in emerging clean energy technologies such as offshore wind, green hydrogen, battery storage and tidal energy. We have incredible potential in all of these areas and are hopeful that the federal government will be supportive of these initiatives, because each of these technologies would enable further reductions and potentially represent a pathway to a completely carbon-free electricity sector.

If protecting the planet is your government's true goal then it must be recognized that our Nova Scotia-born approach does more to protect the planet than this tax.

(5) Nova Scotia's Ask: Work with us as we move along a more effective, affordable and visionary path.

Nova Scotia is a proven leader in the environment. We are on track to exceed federal targets for GHG emissions. We are also rich with renewable energy opportunities that are the envy of the world. We ask that you work with us to realize this potential. The real path to preserving our planet is Nova Scotia continuing to be a leader and optimizing our plan to do our part to help Canada meet its targets.

We want to be held accountable both by Nova Scotians and the federal government. We have also built a plan to hold Nova Scotia accountable, we have outlined our 2025 benchmarks. We ask that the federal government consider those timelines and examine our progress leading up to and in 2025 to ensure we are meeting those targets. In the unlikely event that we are not successful, we would agree with your assessment that more needs to be done and would acknowledge the need to enter into a new agreement that would likely include a carbon tax.

Nova Scotia has the most ambitious 2030 GHG target in the country and a clear and credible pathway to achieve it. We are already paying for GHG reductions in the electricity sector, and it is unfair for the federal government not to recognize that because it is not an explicit “carbon price.” Nova Scotians already pay some of the highest energy costs in the country, and increasing those costs through the addition of a tax will have a minimal impact on emissions reductions, particularly as compared to our approach.

As a next step in advancing our plan, we ask that a meeting be scheduled between our officials to establish the technical path forward for this proposal.

Ultimately, we all want the same thing: To do right by our environment and protect and preserve it for future generations. This is why we have been so proactive in our approach. We have the plan. We have the targets. If we can demonstrate that we will continue to meet our well-defined targets, there is no need to implement a carbon tax in Nova Scotia. It would simply serve the purpose of being punitive.

Thank you for your attention to this important matter.

Yours truly,

Premier Tim Houston

Schedule "A"
Coastal Protection Action Plan

THE FUTURE OF NOVA SCOTIA'S COASTLINE

A plan to protect
people, homes and nature
from climate change



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MINISTER'S MESSAGE



Nova Scotia's coastline offers stunning views, reminding us every day of how lucky we are to live here. People have been drawn to the ocean since time began. It nurtures our bodies, our minds and our souls. In many ways, the ocean is the soul of our province.

We also know that nature shapes our coast. Our beaches, dunes, and other natural areas along the ocean are ever-changing. They are continuously being shaped by the ebb and flow of tides, waves, storms, wind and the earth's changing climate. And the facts are clear – parts of our coast will look very different 25, 50, 100 years from now. Climbing global temperatures mean rising sea levels and more frequent and intense storms. Sea level rise - when combined with storm surge at high time - will intensify flooding and erosion in coastal regions in every corner of the world.

The coast is an essential part of our shared identity as Nova Scotians. We have lived by our shores for generations. But we need to rethink how, and where, we live and build along our coast, especially as our province grows and as we face greater risks related to climate change.

If you live by the coast now, or plan to one day, the threats to people, homes and our environment can be concerning. However, it doesn't have to be. Each of us can – and must – embrace a new approach to coastal living, one that considers our changing climate. It starts with information and tools that help us identify hazards and risks, and understand how to reduce or eliminate them.

Building or renovating can be complicated. And building by the ocean in the face of climate change risks can be especially complex. Whether you are building your dream home or cottage, or are living in or renovating your existing property, knowing and understanding the hazards and risks of coastal living is the first step in safeguarding your investment.

Nova Scotia is a leader in climate change action – and now we have a strong plan to tackle the challenges. In 2021, our Government introduced the Environmental Goals and Climate Change Reduction Act which lays out

the legislative framework to help Nova Scotians respond to climate change. We followed that up with Our Climate, Our Future: Nova Scotia's Climate Change Plan, including actions to help Nova Scotians mitigate climate change and adapt to how it is changing our province, including along the coast.

Over the past two and a half years we have legislated the strongest greenhouse gas (GHG) reductions in the country. We are transforming how we produce and use energy and we are greening our grid. We are empowering community-led action through programs like the Sustainable Communities Challenge Fund. We have a Climate Plan, which lays out what we are doing to reduce GHG emissions and respond to climate change impacts.

We are taking action to protect 20 per cent of our land and water, including along the coast. Right now, about 13.1 per cent of Nova Scotia's coastline is protected from development inside provincial parks, wilderness areas, nature reserves, national parks, national wildlife areas and in land owned and managed by conservation land trusts, including Mi'kmaq organizations – and as we continue our work to achieve our goal of protecting 20 per cent of our land and water, this number will grow. In fact, the Parks and Protected Areas Plan contains additional coastal sites committed for protection and our recently released Collaborative Protected Areas strategy commits to expanding the network of protected and conserved areas, some of which will be identified along the coast.

To further our leadership and action on this critical issue, we now have our plan to protect our coasts – and our people, homes and nature – from climate change. It builds on the actions laid out in our legislation and in the Climate Plan. It will help our coastal property owners understand the possible risks of living on the coastline, and it will give Nova Scotians the tools and information they need to make informed decisions to protect property, people, and the natural areas along our coast.



Climate action is our shared responsibility. When you build a home or cottage, you need to understand and adapt to the impacts of climate change. If you are a coastal property owner, this Action Plan will help you understand and plan for the climate risks that come with living on the coast – whether your home was built 50 years ago or is still in the planning stages. At the same time, this plan will ensure that the human and financial resources the Province has dedicated to coastal protection are appropriately and equitably supporting Nova Scotians.

Municipal action is key. Municipalities know their communities best and can plan a response to their unique needs. This plan depends on strong municipal leadership to help us create climate-resilient communities. It provides guidance, information and support to municipalities as they carry out this important work.

Nova Scotians know the landscape and their own properties best. And no two properties are the same. That's why we are giving coastal property owners the information and tools they need to make informed decisions that are customized to their property. Property owners have made an investment in their futures, and it's crucial to take the right steps to protect it. We need to empower and trust them to do just that.

The Honourable Timothy Halman,
Minister, Nova Scotia Environment and Climate Change



A PLAN TO PROTECT PEOPLE HOMES AND NATURE FROM CLIMATE CHANGE

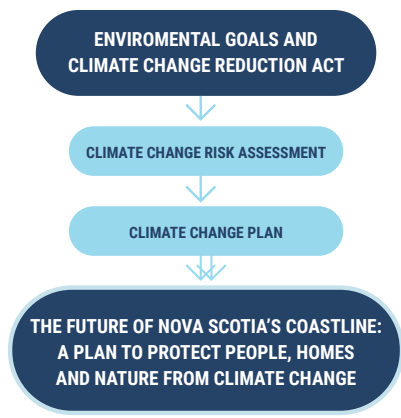


Nova Scotians know that the coast is a complex and constantly changing environment. We are familiar with its natural rhythms, like the tides, but also the kinds of damage that big storms and hurricanes can bring.

And we are feeling the impacts of climate change – stronger and more frequent storms, wildfires, flooding, warmer summers, historic snowfalls, less rain and more.

The 13,000 kilometres of our province’s coastline are the front lines of climate change. Communities, people and homes close to the coastline are at higher risk for erosion, flooding, storm surge and rising sea levels. While this is concerning, we can make good decisions and take action together.

A plan to protect people, homes and nature from climate impacts on our coast builds off our existing commitments to climate action.



In 2021, Government passed the Environmental Goals and Climate Change Reduction Act. It legislates six principles and 28 goals that are a map for sustainable prosperity and climate action in Nova Scotia.

Two of the goals under this legislation are to complete a province-wide climate change risk assessment and a climate change plan.

In 2022, Government released its climate change risk assessment, Weathering What's Ahead. This informed Nova Scotia's climate change plan Our Climate, Our Future.

Through Our Climate, Our Future, Government is committed to climate action, including coastal protection and adaptation. **The Future of Nova Scotia's Coastline: A plan to protect people, homes and nature from climate change** is a three-year plan that will:

- Support informed decision making and empower coastal property owners.
- Support municipal leadership and help municipalities manage their jurisdiction with consideration for coastal protection.
- Align resources with coastal protection to ensure the Province's human and financial resources appropriately and equitably support coastal protection and support Nova Scotians.

Taking action on climate change requires all hands on deck. That's why the actions in this plan are for everyone.

SUPPORTING INFORMED DECISION MAKING (ACTIONS 1-7)

7

We know the landscape of our province and our properties best. And no two properties are the same. **Actions 1-7 support and empower Nova Scotians with information they need to make informed decisions about protecting and developing their property.**

INTERACTIVE ON-LINE MAPPING TOOL

1. Make the Coastal Hazard Map (and a user guide) available to all Nova Scotians. This online mapping tool will help property owners understand the impacts of coastal hazards.

- The Coastal Hazard Map shows the **worst-case scenario** of what sea level rise and storm surges could look like during a high tide in the year 2100. This information is shown for up to 100 metres inland along the province's coast, where impacts will be felt the most. Find it at novascotia.ca/coastal-climate-change
- This is Phase One. More data layers and information will be released over the coming months (for example, projections for the year 2050).

2. Enhance the Coastal Hazard Map with Coastal Hazard Assessment Reports that users can generate on-demand.

- These reports will provide further information to property owners, describing the flooding and erosion hazards facing their property under a range of future conditions.

SUPPORT USING THE COASTAL HAZARD MAP

3. Create a Navigator Service to help Nova Scotians use the Coastal Hazard Map, understand the information and navigate support materials.

- A team of Navigators will help Nova Scotians use the Coastal Hazard Map and understand their results. The Navigator Service will also point to additional resources on coastal hazards and potential options to address them, and support new information rolled out through the Coastal Hazard Map.

PUBLIC EDUCATION

4. Create a comprehensive resource guide for coastal property owners that helps people to understand the issues, alternatives, and actions they can take.

- **Safeguarding Your Coastal Property:** A guide to protecting your property and promoting healthy coastlines in the face of climate change shares important information about sea level rise, coastal hazards, and the actions property owners can take to help keep their properties safe from these risks. Find it at novascotia.ca/coastal-climate-change

5. Install signs indicating provincial government infrastructure that is susceptible to flooding.

- Warning signs on roads, bridges, and other provincial infrastructure that regularly experience coastal flooding will provide Nova Scotians with a better understanding of at-risk roads and bridges. This supports traveller safety and helps everyone consider safer routes to use in emergency situations.

6. Engage the Nova Scotia Real Estate Commission to increase awareness and encourage consideration of hazards for coastal real estate through education and potential changes to Property Disclosure Statements.

- Purchasing a home or property, or doing work to an existing home, is a big financial commitment. Increasing awareness and understanding of coastal hazards will help Nova Scotians make informed decisions about their property and home investments.

7. Leverage CLIMAtlantic's services and extend its reach to help more Nova Scotians. This includes increasing support for coastal adaption using the Coastal Adaptation Toolkit.

- CLIMAtlantic is the hub for climate services in Atlantic Canada. They provide climate change information and support for people when making decisions. Their Coastal Adaptation Toolkit can help Nova Scotians and communities identify appropriate engineering and land use planning strategies to reduce coastal flooding and erosion concerns at specific sites.





SUPPORTING MUNICIPAL LEADERSHIP (ACTIONS 8-12)

Municipalities know their communities – and their unique needs – best. Municipal leadership is key for helping communities manage and adapt to coastal hazards from climate change. Actions 8-12 support municipalities and their leadership on this important work.

GUIDANCE FOR INCORPORATING COASTAL PROTECTION INTO LAND USE BY-LAWS

8. Support municipalities with example land use by-law content they could use to regulate coastal protection in their communities.

- By providing example land use by-law text, we can offer municipalities the flexibility to take the best approach to coastal protection for their communities, with measures that reflect the concerns of their residents.

PROVINCE-WIDE EROSION RISK ASSESSMENT

9. Conduct a province-wide erosion risk assessment by capturing aerial video of coastal areas to assess geology and inventory coastal risks. Municipalities can use the information to inform zoning.

- We know different types of geology are found along our coastline and they erode differently. Conducting a province-wide erosion risk assessment creates a consistent assessment of erosion across the province's coast. Municipalities can use this information for developing zoning that recognizes erosion risks.

CREATING INFORMATION MUNICIPALITIES CAN USE

10. Continue to invest and leverage funds to support and enhance the Municipal Flood Line Mapping Program. This will provide information to residents and municipalities to help them better understand flood hazards.

- To manage the growing risk of flooding, the Province is developing flood maps throughout Nova Scotia. These maps provide high-resolution information that can help municipalities to zone land to reduce flood hazards both on the coast and inland.

MORE SUPPORTS FOR FLOOD PLANNING

11. Support practical municipal leadership by expanding the responsibilities of Environment and Climate Change's new Flood Management and Adaptation Lead and Stormwater Engineer positions.

- The responsibilities of these roles are being expanded to include:
 1. Outreach to municipalities to understand the supports needed.
 2. Supporting access to provincial data needed to assess risks and develop policies.
 3. Expand the joint efforts underway by the cross-departmental Flood Planning Working Group to provide coordinated information and related supports for flood management and adaptation planning.

SUPPORT COASTAL PROTECTION THROUGH THE SUSTAINABLE COMMUNITIES CHALLENGE FUND

12. Promote the power of community-led solutions to achieve coastal protection by sharing success stories funded through the Sustainable Communities Challenge Fund.

- The Sustainable Communities Challenge Fund is a provincial grant program that supports action on climate change. It will continue to fund coastal adaptation projects and the Province will promote the stories of the coastal adaptation projects that have been funded so far to inspire other communities to take action as well.





ALIGNING RESOURCES WITH COASTAL PROTECTION (ACTIONS 13-15)

Climate action is a shared responsibility. The Province has a responsibility to ensure the human and financial resources dedicated to coastal protection are appropriately and equitably supporting Nova Scotians. Actions 13 – 15 align government resources with coastal protection.

PROVINCE OF NOVA SCOTIA DEPARTMENTAL ADAPTATION STRATEGIES

13. Continue creating adaptation strategies for provincial departments that create a clear path for them – and the Nova Scotians they serve – to become more resilient to the impacts of climate change.

- Adaptation strategies help departments better understand, plan for, and take action on climate adaptation. This helps them carry out their mandate, sustain operations and continue to serve Nova Scotians in the face of the risks brought about by climate change.

EQUITABLE AND REASONABLE DISTRIBUTION OF DISASTER RELIEF FUNDING

14. Re-evaluate the cap on disaster relief funding to discourage rebuilding repeatedly in at-risk areas, while considering income, hardship, and equity.

- Re-evaluating the cap on disaster relief funding will encourage Nova Scotians to weigh their options from a financial perspective and take adaptation action to protect their properties.

CONSIDERATION OF COASTAL HAZARD INFORMATION AS QUALIFIER FOR FUNDING

15. Require municipalities to consider coastal hazard information as a condition for qualifying for provincial funding.

- In addition to sharing information through actions listed above, requiring municipalities to consider coastal hazard information as a condition for qualifying for provincial funding will help ensure that public infrastructure investments consider coastal climate risks. This helps to protect property, the safety and longevity of infrastructure and the safety of Nova Scotians.

10

OUR COAST, OUR FUTURE.

Our coastlines are an essential part of our shared identity as Nova Scotians, and we are all experiencing the impacts of climate change along our coast. As we adapt to these changes, we need to come together and rethink how and where we build and live by the coast.

We are proud of our province's leadership on climate change, and we will continue to lead by taking action to protect our coasts. With information, leadership from municipalities, and resources needed to support coastal adaptation, the actions in this plan will allow us to continue enjoying everything the coast offers us today, and for generations to come.



Schedule "B"
Climate Plan

Our Climate, **OUR FUTURE**

Nova Scotia's Climate Change Plan
for Clean Growth

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Our Climate, Our Future
Nova Scotia's Climate Change Plan for Clean Growth

Department of Environment and Climate Change
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Our Climate, OUR FUTURE

**Nova Scotia's Climate Change Plan
for Clean Growth**

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Minister's Message



The climate is changing and all Nova Scotians are feeling the effects of it. We need to act, and we need to act now.

We need to take a holistic view and recognize that climate change will affect us in many ways. Responding to climate change requires a coordinated and collective effort from all of us.

Reducing greenhouse gas emissions here in Nova Scotia is a critical part of the global effort to slow climate change. Collective worldwide efforts will determine the kind of climate we'll experience in the future and our province needs to do its part.

At the same time, we need to improve our ability to be responsive and prepared for changes in the climate that will impact us to avoid further damages and losses.

This climate change plan outlines our next steps to reach a sustainable future. This continues our work to meet the 28 ambitious goals in the *Environmental Goals and Climate Change Reduction Act*, which we introduced as one of our first actions as a government.

We are well on our way to meeting our 2030 greenhouse gas emissions reduction target – the strongest target in the country.

This plan represents our government's commitment to develop, coordinate, and lead actions that promote sustainable prosperity for all Nova Scotians.

Actions to protect more land, the air we breathe, and to increase access to energy efficient homes and active transportation will improve the health and well-being of Nova Scotians.

This plan is a starting point for a new focus on climate action. It will require collaboration and contributions from individuals and organizations across the province. It will create jobs, make lives more affordable, and strengthen our communities.

Together, we have an opportunity to make positive change and work together to protect each other and all that we value.

A handwritten signature in blue ink, appearing to read 'T. Halman', written in a cursive style.

Honourable Timothy Halman

Minister of Environment and Climate Change



Our Climate, Our Future

Nova Scotia's Climate Change Plan for Clean Growth

Nova Scotia is facing a climate emergency and there is an urgent need for action. Greenhouse gas emissions from human activity are building up in our atmosphere. This has led to the changes in our climate we are seeing today and will continue to see for decades to come. Our government is committed to developing, investing, and coordinating action on climate change. We have made that clear by setting ambitious goals to develop a sustainable future in the *Environmental Goals and Climate Change Reduction Act*.

Our Climate, Our Future

Nova Scotia's Climate Change Plan for Clean Growth

Guiding Principles

The *Environmental Goals and Climate Change Reduction Act* was passed in 2021. It has 28 goals that address the climate emergency by reducing greenhouse gas emissions, growing the green and circular economies, improving the health and sustainability of Nova Scotia's environment, and moving to clean, renewable energy.

One of these goals is to create a climate change plan that guides this work.

This is that plan.

This plan is based on the same principles that the *Environmental Goals and Climate Change Reduction Act* is based on:

- **Netukulimk:** defined by the Mi'kmaq as the use of the natural bounty provided by the Creator for the self-support and well-being of the individual and the community by achieving adequate standards of community, nutrition, and economic well-being without jeopardizing the integrity, diversity, or productivity of the environment.
- **Sustainable development:** development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs.
- **A circular economy:** an economy in which resources and products are kept in use for as long as possible, with the maximum value being extracted while they are in use and from which, at the end of their service life, other materials and products of value are recovered or regenerated.
- **Equity:** the recognition of people's differences and the attempt to counteract unequal opportunities by considering fairness and justice.

Climate change can have direct impacts on our physical and mental health through increased exposure to extreme weather events like flooding, heat waves, and illnesses carried by insects. High levels of greenhouse gas emissions can lower our air quality, leading to more cases of asthma or other breathing difficulties. More frequent storms and coastal flooding impacts our homes, communities, and threatens our livelihood. Extreme weather events like droughts, flooding, and ocean acidification can impact our agriculture and fisheries sectors and reduce access to locally grown or harvested healthy foods. The anxiety and stress that is attached to these impacts can harm our mental health. By responding to climate change, we can help protect the health of Nova Scotians. We can also reduce our vulnerability to the impacts of climate change by preparing our health-care system so we can better respond to the risks of climate change.



Nova Scotians want action on climate change to protect our environment, our economy, our well-being, and our quality of life. This climate change plan is our government's commitment to act. It will guide us to a sustainable and healthier future for Nova Scotians by

- identifying how Nova Scotians can partner with each other and their communities to prepare for and respond to the impacts of climate change
- outlining how we will meet our 2030 greenhouse gas emissions reduction target and put ourselves on a pathway to being net-zero by 2050
- positioning Nova Scotians to capitalize on opportunities in the clean economy

The climate change plan will build on the leadership of the government, individual Nova Scotians, businesses, and communities across the province. Our government is committed to supporting Nova Scotians to take action to reduce their greenhouse gas emissions and respond to the impacts of climate change. Actions to date include, but are not limited to the following:

Actions to Date in Responding to Climate Impacts

- Completing the latest provincial climate change risk assessment.
- Creating the Sustainable Communities Challenge Fund in partnership with the Nova Scotia Federation of Municipalities.
- Supporting flood line mapping in communities throughout Nova Scotia.
- Partnering to launch CLIMAtlantic, a regional climate change data services centre, with the federal government and other Atlantic provinces.
- Partnering to create the Climate Adaptation Leadership Program, a program to help develop and implement climate adaptation strategies for government and industry, with the federal government.
- Passing the *Coastal Protection Act* to protect the province's coastline.
- Designating Owls Head Provincial Park as a provincial park.
- Upgrading 60km of dykeland sites in the province to prevent flooding.

Actions to Date in Reducing Greenhouse Gas Emissions

- Legislating the phase out of coal-fired electricity generation and a requirement to have 80 per cent of electricity being generated from renewable sources by 2030.
- Procuring 372MW of new wind power, which means that 70 per cent of electricity will come from renewable sources by 2026.
- Setting a target of 5GW of offshore wind by 2030 to support green hydrogen projects.
- Passing legislation to enable the development of green hydrogen projects, expand solar energy, and to build on Nova Scotia's leadership in energy efficiency programming.
- Helping Nova Scotians save more than \$180 million on their electricity bills annually, with over \$1 billion in customer bill savings since 2011.
- Helping over 20,000 low-income families reduce their energy bills and greenhouse gas emissions through the HomeWarming program.
- Supporting 2,600 jobs in Nova Scotia's energy efficiency sector.
- Helping over 2,400 homes generate their own renewable energy through solar installations and net metering, which has also created over 400 jobs.
- Helping Nova Scotians purchase over 1,000 electric and plug-in hybrid vehicles, as well as over 3,500 e-bikes, through the Electrify Nova Scotia Rebate Program and creating a provincial electric charging infrastructure network.

The climate change plan actions were developed using feedback provided by Nova Scotians through a broad consultation process. The What We Heard Report can be accessed at cleanfuture.ca. In total, 1,478 individuals and organizations responded, 136 people attended workshops, and 1,342 submissions containing more than 5,600 individual ideas were shared through the consultation.

The climate change plan is our government's commitment to collaborate with Nova Scotians to develop a sustainable future for our province. The climate change plan's actions are grouped into the following areas:

1. Responding to climate impacts
2. Reducing our greenhouse gas emissions
3. Seizing opportunities for a cleaner sustainable economy
4. Reporting and evaluating progress

There are multiple benefits to taking action on climate change. While the actions in this climate change plan are presented in the four areas above, they do more than just reduce our emissions or help us prepare for the impacts of climate change. For example, energy efficiency upgrades to our homes reduce greenhouse gas emissions and lower our energy bills. But these upgrades, like insulating our homes or installing heat pumps, can also keep our homes cooler in response to more frequent and longer heat waves. This results in better health outcomes for Nova Scotians.

Facing the Climate Emergency Together

The climate change plan has **68 actions** that were informed by the climate change risk assessment, conversations with Nova Scotians, and local opportunities for action. The climate change plan builds on our past work by strengthening current programs and supporting new projects. This plan will help us reach our goals under the *Environmental Goals and Climate Change Reduction Act*.

The climate change plan will help more Nova Scotians reduce their greenhouse gas emissions, save on their energy bills, and prepare for the impacts of climate change. This is important for the health and well-being of every Nova Scotian and for the communities we call home. But we also know that not all Nova Scotians have the same ability to participate in reducing their greenhouse gas emissions due to barriers in accessing supports and concerns over affordability. We will need to support all Nova Scotians and build strong partnerships to reach our goals. That is why our climate change plan includes commitments to work with individual Nova Scotians, businesses, communities, and other jurisdictions. By building partnerships, we will make sure everyone has opportunities to reduce their greenhouse gas emissions and better prepare for the impacts of climate change.



SECTION 1:

Responding to Climate Impacts

Nova Scotians are already experiencing the effects of climate change. And these effects will continue to grow well into the next century. Nova Scotia's climate change risk assessment, *Weathering What's Ahead*, helps us to understand how our climate is changing, impacts and risks of concern, and the opportunities to take action.

As greenhouse gases continue to be emitted, Nova Scotians will be at even greater risk of impacts of climate change such as

- inland and coastal flooding
- illnesses carried by insects or other animals
- extreme temperatures and their potential to harm food production, roads and rails, human health, and ecosystems
- wildfires



Climate change adaptation is about understanding how the climate is changing and how these changes impact us. This helps us to act early to manage damages and risks. It is also about seeing new local and global opportunities for economic development, jobs, health care, research, education, and other social supports. To adapt to climate change, we need to communicate climate risks and opportunities widely, and we need to partner with individuals, businesses, and communities across Nova Scotia to prepare and respond. How we adapt to climate change will look different in every community, and it will change over time as new information becomes available and we begin to experience new changes and impacts.

Nova Scotia needs to prepare

If our greenhouse gas emissions continue to increase at current levels, Nova Scotia's climate will continue to change in the following ways:

It will get warmer

- 2.5 °C warmer by mid-century and up to 4.5 °C by the end of the century. Higher temperatures mean increased impacts from heat waves.

Precipitation patterns will continue to change

- An average of 10 per cent more precipitation per year by the end of the century, with more rainfall and less snow. Higher intensity rain means increased risk of flooding.

Our oceans will continue to change

- Increased ocean temperatures pose harm to habitats and species and ocean acidification can lower the productivity of ocean waters.

Storms will continue to become more intense and frequent

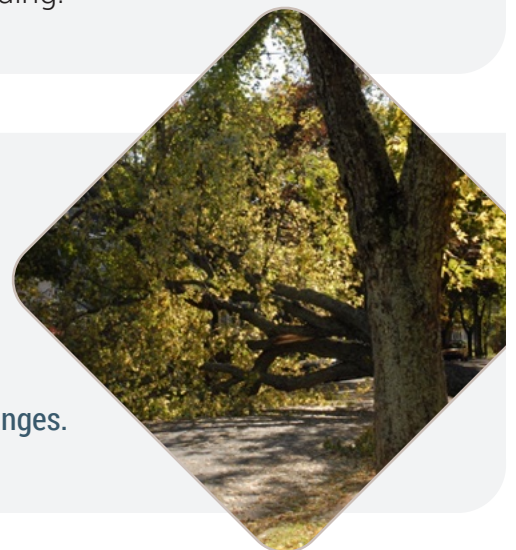
- A warming climate will mean more tropical storms for Atlantic Canada, with higher peak wind speeds and more powerful storm surges.

Sea levels will continue to rise

- Sea levels around Nova Scotia are expected to rise by up to one metre by 2100, increasing the risk of coastal flooding.

Hurricane Fiona

Hurricane Fiona in September 2022 provides an example of the types of storms that will become more frequent because of climate change. We must act now to prepare our communities for these changes.



Increasing access to climate data and information

More data and information is needed to better understand the impacts of climate change. The climate change risk assessment has identified opportunities to continue to research the impacts of climate change across societies and ecosystems. New tools and resources are needed to help people access and use this data, and stronger communication is needed to give more Nova Scotians information on how they can prepare for and respond to climate change.

To increase access to climate data and information, our government will take the following actions:

1. Build on the research findings of the climate change risk assessment to better understand the risks identified and research important data and information gaps.
2. Improve municipal stormwater infrastructure by updating planning requirements and helping develop stormwater management plans.
3. Improve the quality and availability of water-resource data for better water-resource management and flood line mapping by upgrading provincial water monitoring networks.
4. Create a new fisheries and aquaculture climate change information hub to improve the sharing of climate change adaptation and greenhouse gas emissions reduction data and information in the fisheries and aquaculture sector.
5. Help homeowners understand and respond to climate risks such as flooding.
6. Review the infrastructure that Build Nova Scotia manages to assess climate risks and develop adaptation plans to reduce future damages from climate change.

Building capacity for planning and implementation

We need to develop and implement plans to help prepare communities and businesses for the impacts of climate change. Communities and businesses are often the first to experience the impacts of climate change, and they are usually the first to respond to events such as flooding, heat waves, and wildfires. It is important that communities and businesses across the province have the capacity and support needed to enable them to prepare for climate change.

To help communities and businesses build capacity to prepare for climate change, our government will take the following actions:

7. Increase climate change adaptation capacity across government by developing and implementing climate change adaptation strategies for all government departments.
8. Increase climate change adaptation capacity in communities and business sectors by supporting them in hiring their own climate change coordinators to help develop and implement climate change adaptation strategies.
9. Support the fisheries and aquaculture sector to complete climate change vulnerability assessments on important infrastructure and develop sector-specific adaptation plans.
10. Bring key partners together to plan for responses to multiple climate risks facing our natural, built, human, social, and financial systems.
11. Raise awareness of climate risks and adaptation priorities across Nova Scotia through public education and engagement on the results of the climate change risk assessment and other important climate change data and information.

Climate Adaptation Leadership Program

The Climate Adaptation Leadership Program is supporting business sector groups and provincial government departments in developing climate change adaptation strategies. Departmental adaptation strategies are part of the *Environmental Goals and Climate Change Reduction Act*. The program will now support these partners as they implement their strategies to strengthen department and sector-specific responses to climate change in areas such as electricity, archaeology, agriculture, and coastal parks.

Minimizing climate impacts by restoring natural areas and ecosystems

Climate change is contributing to sea-level rise, flooding, and coastal erosion. It poses an immediate risk to homes, communities, infrastructure, and ecosystems. Conserving and restoring natural spaces, like forests and wetlands, can help minimize the impacts of these changes, promote greater biodiversity, and lead to healthier ecosystems.

Ecosystems and Biodiversity

Natural areas, like forests and wetlands, can increase or maintain carbon storage; reduce the effects of climate change, such as flooding and erosion; help keep our air and water clean; and enhance habitats for wildlife. Protecting natural areas, maintaining natural connections across the landscape, and restoring degraded ecosystems helps to conserve biodiversity and promote healthier ecosystems across Nova Scotia. Through a new protected areas strategy and regulations under the *Coastal Protection Act*, this climate change plan will help us protect sensitive coastal and inland ecosystems and support sustainable development across the province.

To restore natural areas and ecosystems so they can help minimize climate impacts, our government will take the following actions:

- 12.** Strengthen and coordinate responses to coastal and inland flood risk by investing in natural flood protection and implementing new regulations under the *Coastal Protection Act* in 2023.
- 13.** Research natural carbon sinks to help offset any remaining greenhouse gas emissions needed to reach net-zero greenhouse gas emissions by 2050.
- 14.** Protect at least 20 per cent of Nova Scotia's total land and water mass by 2030 through a new protected area strategy.
- 15.** Invest in infrastructure and natural systems to manage heat stress, such as tree planting in urban areas or heat pumps/cooling centres to lower exposure to high temperatures for vulnerable Nova Scotians, and invest in ecosystem-based responses like coastal wetland restoration to help manage flooding.
- 16.** Plant 21 million trees across Nova Scotia in partnership with the federal government's 2 Billion Trees Commitment.

SECTION 2: Reducing Our Greenhouse Gas Emissions

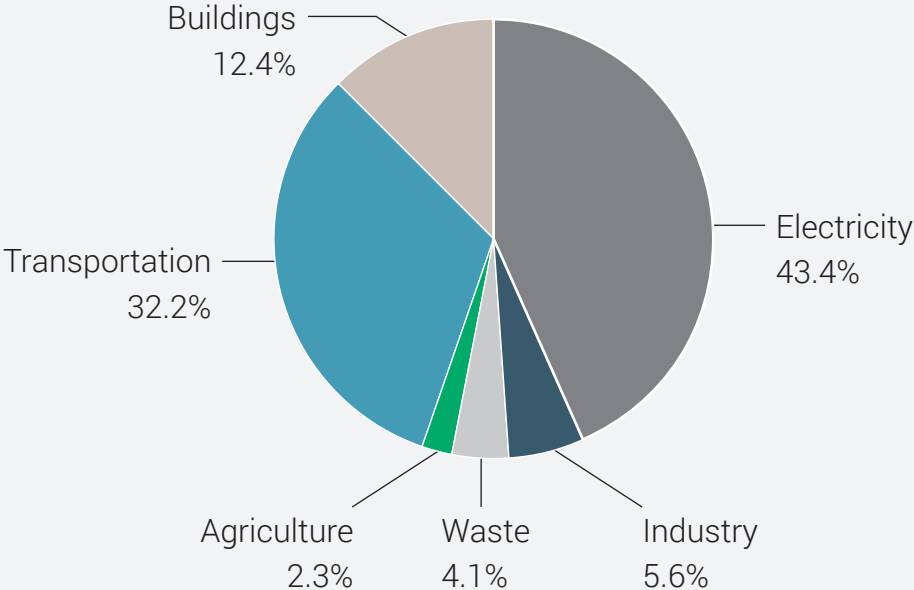
The science is clear – we need to reduce global greenhouse gas emissions if we want to avoid the most severe impacts of climate change. The 2022 [Intergovernmental Panel on Climate Change \(IPCC\) assessment](#) shows that the window to reduce global greenhouse gas emissions to avoid the greatest risks to societies and ecosystems is closing.

In the *Environmental Goals and Climate Change Reduction Act*, our government has created the most ambitious 2030 greenhouse gas emissions reduction target in the country. We are committed to reducing greenhouse gas emissions by at least 53 per cent below 2005 levels by 2030. The reductions cannot stop in 2030 though. This is why our government has also committed to being net-zero by 2050. The actions in the climate change plan will help us continue our success in reducing our greenhouse gas emissions and keep us on a path to a net-zero future.

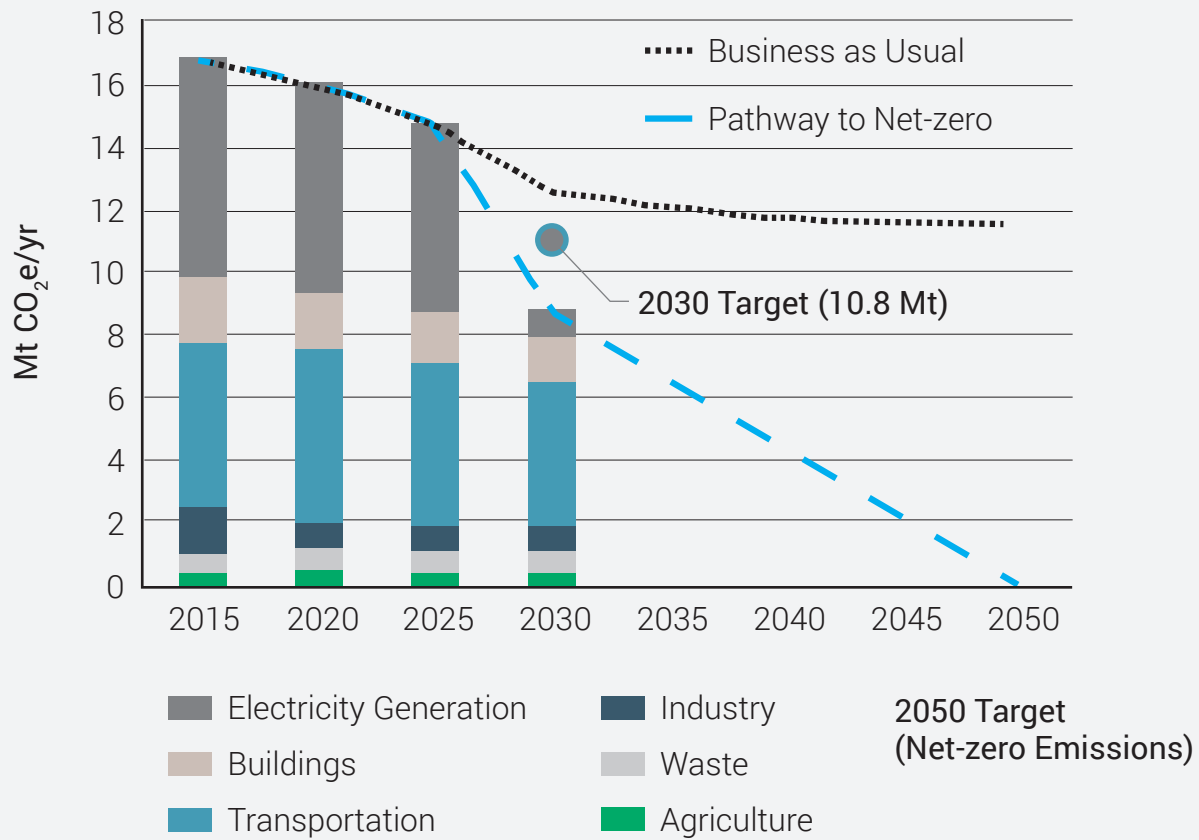
Nova Scotia's greenhouse gas emissions and targets

In 2020, nearly all (88 per cent) of greenhouse gas emissions came from the use of fossil fuels for electricity generation, transportation, and heating buildings.

Nova Scotia's Greenhouse Gas Emissions, 2020



Nova Scotia's Pathway to 2030 and Net-zero Greenhouse Gas Emissions



We have measured how the climate change plan will impact greenhouse gas emissions in Nova Scotia. This figure shows our projected pathway to 2030. It includes policies like phasing out coal-fired electricity generation, having 80 per cent of electricity come from renewable sources, reducing our reliance on oil for home heating by at least 20 per cent, and having 30 per cent of new vehicle sales be zero-emission vehicles by 2030.

These projections do not include potential greenhouse gas reductions from the new provincial output-based pricing system, which covers the electricity sector and large industry. It also does not include a federal fuel charge rate on fossil fuels. Modelling was completed before the output-based pricing system program was designed and the federal fuel charge rate was announced by the federal government. This modelling will be updated regularly to account for new and changing policies, programs, and other trends.

Electricity generation made up 43 per cent of Nova Scotia's greenhouse gas emissions in 2020. The *Environmental Goals and Climate Change Reduction Act* requires that we stop using coal to generate electricity and make sure that at least 80 per cent of our electricity comes from renewable sources by 2030. These two policies will have the greatest impact on our greenhouse gas emissions. To support these policies, we are investing in building new local, renewable energy and partnering with our neighbouring provinces to increase the flow of clean electricity across Atlantic Canada and Québec. Additional supports for more energy storage and the expansion of energy efficiency programs will help to reduce greenhouse gas emissions, improve reliability, and stabilize prices across our electricity system.

The rest of our greenhouse gas emissions, mainly from heating buildings and driving our vehicles, will be reduced through other actions outlined in this plan. These actions will reduce greenhouse gas emissions across the province and help homeowners, community organizations, and businesses lower their energy bills. In some cases, they will also improve the quality of the air Nova Scotians breathe and make our homes more comfortable.

Carbon pricing

In response to the federal government's new requirements for carbon pricing, we are bringing in a new system to hold large industry more accountable for reducing their greenhouse gas emissions. It is called the output-based pricing system and it will take effect on January 1, 2023. It sets greenhouse gas emissions reduction targets for the electricity sector and other large industrial emitters. The electricity sector and large industries make up nearly 50 per cent of Nova Scotia's greenhouse gas emissions. This program will require large emitters to reduce their greenhouse gas emissions in a way that is fair, cost-effective, and flexible to the needs and circumstances of our province.

Creating a clean electricity system

We are taking action to move to a clean electricity system. Renewable energy, such as wind, tidal, and solar, is our future. Moving away from coal and toward a clean, reliable, and efficient electricity system is essential if we are to meet our greenhouse gas emissions reduction targets. As we move away from fossil fuels for home heating and transportation, we need to know that the electricity that is being used instead has come from a renewable source and is not still contributing to climate change. A clean electricity system is also important to advance our standing in the clean economy. Having a reliable and clean source of electricity is important to help Nova Scotia respond to the demand for alternative sources of energy like green hydrogen.

To create a clean electricity system, our government will take the following actions:

- 17.** Create provincial regulations to phase out coal-fired electricity generation by 2030 with the goal of achieving at least a 90 per cent reduction in greenhouse gas emissions from the electricity sector by 2035.
- 18.** Increase the amount of renewable energy used for electricity generation by building at least 500 megawatts of new local, renewable energy by 2026 and an additional 50 megawatts of new community solar.
- 19.** Provide funding support for farms and other businesses to adopt more solar power.
- 20.** Research how we can use battery technologies or electric vehicles for electricity storage and backup power supplies to make our electricity system more reliable.
- 21.** Work with our neighbouring provinces to transfer more electricity across Atlantic Canada and Québec through projects like the Atlantic Loop, Muskrat Falls, and stronger connections with New Brunswick.

Reducing our demand for energy

To support a reliable electricity system, we need to manage our energy demand. By expanding current energy efficiency programs and developing new programs, we can help to make sure we can access the energy we require while reducing the amount of energy we use and how much we pay for it.

To reduce our demand for energy, our government will take the following actions:

- 22.** Help Nova Scotians reduce their demand for electricity by continuing and expanding programs delivered by Efficiency Nova Scotia and their partners.
- 23.** Support businesses and communities in reducing their energy demand by expanding access to on-site energy managers and continuing support for energy efficiency programming for businesses.
- 24.** Help new building developments install shared heating systems to make multi-building heating more efficient.
- 25.** Review energy efficiency programming in Nova Scotia to see where programming has gaps or can be made better.

Energy efficiency and affordability

Nova Scotia is a leader in energy efficiency. Efficiency Nova Scotia was created through legislation in 2009 and became Canada's first energy efficiency utility in 2014. Since then, we have helped 400,000 Nova Scotians complete energy efficiency projects, including supporting 20,000 low-income families through our HomeWarming program. This has helped Nova Scotians save \$180 million annually on their energy bills. It also helps avoid one million tonnes of greenhouse gas emissions annually.

Nova Scotia is recognized nationally for our work in energy efficiency programming. [Efficiency Canada's 2022 Canadian Energy Efficiency Scorecard](#) ranks Nova Scotia second in the country, one spot higher than we were in 2021.

Helping Nova Scotians get off home heating oil and reduce home heating costs

Our homes and buildings are also large sources of greenhouse gas emissions. Heating our homes and buildings also costs Nova Scotians a lot of money, especially those who depend on home heating oil. Now is the time to move away from home heating oil. Doing so will not only reduce greenhouse gas emissions, it will also save Nova Scotians money on their energy bills.

To help Nova Scotians get off home heating oil and reduce home heating costs, our government will take the following actions:

- 26.** Reduce heating oil use by at least 20 per cent by 2030 by helping retrofit 60,000 homes and piloting a new off-oil program for homeowners to completely replace oil heating equipment with electric ones.
- 27.** Provide energy efficiency upgrades to more low-income households by expanding on programs such as HomeWarming and the Affordable Multifamily Housing program.
- 28.** Continue with the Mi'kmaw Home Energy Efficiency Project and pilot a similar program for African Nova Scotian communities.



Fast-tracking the transition to net-zero and climate resilient buildings

The buildings we build today will still be around in 2050. To support our net-zero target, we will need to prepare the building sector for a net-zero future. This means more than just removing oil-fired heating equipment. It requires a full review of how we renovate old buildings and build new ones to make sure they are energy efficient and climate resilient.



To fast-track the transition to net-zero and climate resilient buildings, our government will take the following actions:

29. Ban installations of oil-fired heating equipment in new buildings by 2025.
30. Adopt the 2020 National Energy Code for Buildings and the 2020 National Building Code.
31. Support the construction and renovation of net-zero homes and multi-unit residential buildings, including net-zero affordable housing.
32. Help owners of commercial and institutional buildings better understand their energy performance and plan for energy efficiency upgrades through voluntary energy-use monitoring.
33. Require all new government buildings and major retrofits that enter planning after 2022 be net-zero energy ready and climate resilient, and prioritize leases on buildings that are committed to net-zero energy standards and climate resiliency starting in 2030.
34. Launch the Green Choice Program in 2023, which will allow government to purchase 100 per cent renewable electricity for our operations as it becomes available.

Buildings and energy efficiency

Investing in energy efficiency is one of the most cost-effective ways to reduce greenhouse gas emissions and help make lives more affordable for Nova Scotians. It also creates well-paying local jobs in communities across the province.

Creating cleaner transportation options

About 41 per cent of Nova Scotians live in rural communities and depend on their cars to get to work, school, medical appointments, and to stay connected to each other and their communities. Investing in cleaner and more sustainable modes of transportation in all communities across the province will reduce greenhouse gas emissions, and will also save Nova Scotians money by reducing how much gasoline and diesel they use.

To create cleaner transportation options, our government will take the following actions:

35. Build more electric vehicle charging stations across the province so Nova Scotians can access them when and where they need to.
36. Increase the number of zero-emissions vehicles and e-bikes to meet the 2030 30 per cent zero-emissions vehicle sales target by continuing to offer rebates and continuing to provide education and outreach programs.
37. Increase the number of zero-emissions medium- and heavy-duty, freight, and marine vehicles through new incentives.
38. Develop a greening fleets strategy for government vehicles.
39. Increase access to community transportation services for all communities outside of the Halifax Regional Municipality and Cape Breton Regional Municipality.
40. Electrify public transit across the province by partnering with municipalities and the federal government.
41. Explore opportunities for electric school buses through a strategic pilot project.
42. Make transportation easier by developing new transportation efficiency strategies and reducing single-person vehicle trips.
43. Create more active transportation options in Nova Scotia by developing a provincial active transportation strategy and continuing to work on the Blue Route.



SECTION 3:

Seizing Opportunities for a Cleaner Sustainable Economy

People across the world are moving toward more sustainable businesses and services. This change will bring new opportunities for economic growth and job creation to Nova Scotians. To make sure Nova Scotia is prepared for these new opportunities, we must build on our efforts to date and continue to support clean technology research and development, renewable energy projects, and the sustainable management of our natural resources. Individual Nova Scotians, industries, small businesses, researchers, and communities have already started to take interest in and invest in these opportunities. The climate change plan will expand on this early work and allow for even more action to take place.

Green hydrogen – alternative energy for a strong economy and clean environment

Hydrogen is a clean-burning fuel that industrial processes, heavy transportation, and the marine sector can use to get off fossil fuels faster. There is also a global demand for green hydrogen as countries shift to clean energy alternatives to coal, natural gas, and oil. Nova Scotia is well positioned to meet this demand and become a global producer and exporter of green hydrogen.

Compared to the rest of Canada, our natural gas system is well positioned to carry green hydrogen. We also have access to large amounts of offshore wind to help provide the electricity needed to produce green hydrogen.

Our government is already taking action in this area. We have passed legislation to pave the way for the production and use of green hydrogen as a clean energy source in Nova Scotia and across the world. We have also set a target for five gigawatts of offshore wind by 2030 to support the production of green hydrogen in Nova Scotia.

Building on and expanding partnerships with experts

It is important as we move toward a sustainable future that we do so in an inclusive way that provides opportunities for all Nova Scotians. That means listening to multiple perspectives, and making sure we are collecting knowledge, expertise, and experiences from across society to make sure our planning and actions are creating opportunities for all Nova Scotians.

To make sure we are partnering with experts, our government will take the following actions:

44. Work with subject matter experts and industry leaders to develop tools, programs, and supports for those looking to invest in the clean economy.
45. Support youth-centred climate actions and learn from youth through a new youth climate change advisory committee.
46. Make sure that diverse voices from across Nova Scotia and abroad are advising government on climate adaptation research, planning, outreach, and strategy.
47. Support and fund solutions that address systemic inequities and discrimination related to climate change.





Developing skills for the clean economy

A well-prepared workforce is essential to take advantage of the opportunities of the clean economy. Workers may need different skills than they do now. To make sure we are ready for this transition, we must act now to prepare Nova Scotians for the jobs of tomorrow.

To develop the skills we need for the clean economy, our government will take the following actions:

- 48.** Support the education of youth by updating school curriculums with the knowledge and teachings of *Netukulimk* and support youth professional development programs to develop new skills and experiences.
- 49.** Increase the representation of racialized and Indigenous workers in the energy efficiency and clean technologies sector.
- 50.** Make sure professionals across Nova Scotia understand how they can participate in the clean economy and grow their businesses through new specialized training programs.
- 51.** Develop new industry training for advanced building techniques for engineering and design professionals to make sure these professionals are ready to build to new national energy and building codes.
- 52.** Make sure we have the trade professionals needed and that they are prepared to meet the demands of the clean economy by modernizing the Nova Scotia apprenticeship program.

Helping our communities take action on climate change

The impacts of climate change will be felt most by local communities. Our communities are well positioned to act on opportunities for climate action and they can have a large impact on the well-being of Nova Scotians. But communities often cannot act alone and need strong partnerships and supports to build capacity for taking action on climate change. By helping communities take action on climate change, we can make sure all Nova Scotians experience the social and economic benefits of climate action.

To help our communities take action on climate change, our government will do the following:

53. Provide funding through programs like the Sustainable Communities Challenge Fund and support new community-based climate change coordinators to help municipalities, Mi'kmaq, and African Nova Scotian communities respond to their climate priorities.
54. Provide funding to help more communities across Nova Scotia complete clean energy projects in areas such as buildings, transportation, electricity, and capacity building through programs like the Low Carbon Communities program and the Halifax Climate Investment, Innovation, and Impact (HCi3) Fund.
55. Continue to support federal-provincial partnerships on large infrastructure projects throughout Nova Scotia through programs like the national Investing in Canada Infrastructure Program (ICIP).
56. Create a new funding navigator at the Department of Environment and Climate Change to connect Nova Scotians to climate change funding opportunities.



Supporting sustainable growth in innovative clean technologies and services

There is a need for new innovative technologies and services, like green hydrogen, if we are going to achieve net-zero greenhouse gas emissions by 2050. We know where the greatest opportunities are for greenhouse gas emissions reductions in the short-term, but more investment in innovative technologies and services is needed to support Nova Scotia in reaching net-zero greenhouse gas emissions. By creating a more supportive environment for clean investments, our government is positioning Nova Scotia to respond to the global demand for these technologies and services.

To build a more supportive environment for clean investments, our government will take the following actions:

- 57.** Develop a clean investment plan that takes deliberate and strategic actions to ensure the Nova Scotia economy is prepared to respond to the needs of a low carbon economy.
- 58.** Create a green hydrogen action plan by 2023 to support the development of the green hydrogen sector in Nova Scotia.
- 59.** Issue leases for five gigawatts of offshore wind energy by 2030, with a first call for bids by 2025.
- 60.** Create a clean fuels fund to support industries and businesses in adopting low-carbon and renewable fuels such as green hydrogen, renewable natural gas, biofuels, and sustainable biomass.
- 61.** Implement the Innovation Rebate Program and pilot a low carbon stream of the Early Stage Commercialization Fund through Invest Nova Scotia to create an environment that supports innovative businesses.
- 62.** Modernize the environmental assessment process to consider climate change impacts, cumulative effects, diversity, equity and inclusion, the role of independent review, and *Netukulimk* more fully.
- 63.** Invest in research needed for new clean technologies and practices to help us meet our net-zero by 2050 target.

- 64.** Launch the Green Choice Program in 2023, which will allow large industrial energy consumers to purchase 100 per cent renewable electricity as it becomes available.
- 65.** Extend the Clean Technology for Agriculture Program to allow more farmers to adopt clean technologies that support more sustainable farming.
- 66.** Create a new fisheries and aquaculture energy efficiency innovation fund and new fisheries and aquaculture climate change adaptation fund to help prepare the fisheries and aquaculture sector to reduce their energy use and better prepare for the impacts of climate change.



SECTION 4:

Reporting and Evaluating Progress

Our government will report annually on the progress made under the climate change plan so Nova Scotians can track our progress in moving toward a sustainable future. We will release an annual review of the climate change plan every July to align with existing progress reporting on the *Environmental Goals and Climate Change Reduction Act*.

Over the next year, our government will develop key performance indicators and establish clear baselines to make sure we are effectively monitoring and reporting on the climate change plan. We will also take the following actions:

67. Report annually on progress and impacts of the actions in the climate change plan.
68. Review and renew the climate change plan within five years of its release.

In response to our ongoing research into climate risks and monitoring of new opportunities in the clean economy, we will conduct regular reviews of the climate change plan and make adjustments when necessary. These reviews will make sure we remain ambitious in our response to climate change and that the actions in the plan still reflect the priorities of Nova Scotians.



The Path Ahead

This climate change plan represents our government's commitment to develop, coordinate, and lead actions that promote sustainable prosperity for all Nova Scotians. There is a lot of work ahead, but Nova Scotians have already demonstrated strength, resiliency, and innovation. With this plan, we are well positioned to be leaders in addressing the climate emergency.

The actions in this plan will help us transition to a sustainable future. They will make sure that we are

- responding to the impacts of climate change and building on our understanding of the risks identified in the climate change risk assessment
- investing in activities that reduce greenhouse gas emissions while helping Nova Scotians transition to more affordable sources of energy
- preparing Nova Scotians for the local and global opportunities that come with the shift to a clean economy and sustainable future

Our Climate, Our Future: Nova Scotia's Climate Change Plan for Clean Growth outlines our next steps to reach a sustainable future. There is a lot of work to do to meet the goals in the *Environmental Goals and Climate Change Reduction Act*. We are well underway. With so much global interest and investment in climate change, there are always new challenges and opportunities presenting themselves. As we have always done, we will continue to look for new partners and opportunities to advance the work under this plan and respond to the current-day priorities of Nova Scotians.

Appendices



Appendix A:

Full list of actions in *Our Climate, Our Future:*

Nova Scotia's Climate Change Plan for Clean Growth

Summary of action areas, sub-areas, and individual actions

Responding to Climate Impacts

Increasing access to climate data and information

1. Build on the research findings of the climate change risk assessment to better understand the risks identified and research important data and information gaps.
2. Improve municipal stormwater infrastructure by updating planning requirements and helping develop stormwater management plans.
3. Improve the quality and availability of water-resource data for better water-resource management and flood line mapping by upgrading provincial water monitoring networks.
4. Create a new fisheries and aquaculture climate change information hub to improve the sharing of climate change adaptation and greenhouse gas emissions reduction data and information in the fisheries and aquaculture sector.
5. Help homeowners understand and respond to climate risks such as flooding.
6. Review the infrastructure that Build Nova Scotia manages to assess climate risks and develop adaptation plans to reduce future damages from climate change.

Building capacity for planning and implementation

7. Increase climate change adaptation capacity across government by developing and implementing climate change adaptation strategies for all government departments.
8. Increase climate change adaptation capacity in communities and business sectors by supporting them in hiring their own climate change coordinators to help develop and implement climate change adaptation strategies.
9. Support the fisheries and aquaculture sector to complete climate change vulnerability assessments on important infrastructure and develop sector-specific adaptation plans.

10. Bring key partners together to plan for responses to multiple climate risks facing our natural, built, human, social, and financial systems.
11. Raise awareness of climate risks and adaptation priorities across Nova Scotia through public education and engagement on the results of the climate change risk assessment and other important climate change data and information.

Minimizing climate impacts by restoring natural areas and ecosystems

12. Strengthen and coordinate responses to coastal and inland flood risk by investing in natural flood protection and implementing new regulations under the *Coastal Protection Act* in 2023.
13. Research natural carbon sinks to help offset any remaining greenhouse gas emissions needed to reach net-zero greenhouse gas emissions by 2050.
14. Protect at least 20 per cent of Nova Scotia's total land and water mass by 2030 through a new protected area strategy.
15. Invest in infrastructure and natural systems to manage heat stress, such as tree planting in urban areas or heat pumps/cooling centres to lower exposure to high temperatures for vulnerable Nova Scotians, and invest in ecosystem-based responses like coastal wetland restoration to help manage flooding.
16. Plant 21 million trees across Nova Scotia in partnership with the federal government's 2 Billion Trees Commitment.

Reducing Our Greenhouse Gas Emissions

Creating a clean electricity system

17. Create provincial regulations to phase out coal-fired electricity generation by 2030 with the goal of achieving at least a 90 per cent reduction in greenhouse gas emissions from the electricity sector by 2035.
18. Increase the amount of renewable energy used for electricity generation by building at least 500 megawatts of new local, renewable energy by 2026 and an additional 50 megawatts of new community solar.
19. Provide funding support for farms and other businesses to adopt more solar power.

20. Research how we can use battery technologies or electric vehicles for electricity storage and backup power supplies to make our electricity system more reliable.
21. Work with our neighbouring provinces to transfer more electricity across Atlantic Canada and Québec through projects like the Atlantic Loop, Muskrat Falls, and stronger connections with New Brunswick.

Reducing our demand for energy

22. Help Nova Scotians reduce their demand for electricity by continuing and expanding programs delivered by Efficiency Nova Scotia and their partners.
23. Support businesses and communities in reducing their energy demand by expanding access to on-site energy managers and continuing support for energy efficiency programming for businesses.
24. Help new building developments install shared heating systems to make multi-building heating more efficient.
25. Review energy efficiency programming in Nova Scotia to see where programming has gaps or can be made better.

Helping Nova Scotians get off home heating oil and reduce home heating costs

26. Reduce heating oil use by at least 20 per cent by 2030 by helping retrofit 60,000 homes and piloting a new off-oil program for homeowners to completely replace oil heating equipment with electric ones.
27. Provide energy efficiency upgrades to more low-income households by expanding on programs such as HomeWarming and the Affordable Multifamily Housing program.
28. Continue with the Mi'kmaw Home Energy Efficiency Project and pilot a similar program for African Nova Scotian communities.

Fast-tracking the transition to net-zero and climate resilient buildings

29. Ban installations of oil-fired heating equipment in new buildings by 2025.
30. Adopt the 2020 National Energy Code for Buildings and the 2020 National Building Code.

31. Support the construction and renovation of net-zero homes and multi-unit residential buildings, including net-zero affordable housing.
32. Help owners of commercial and institutional buildings better understand their energy performance and plan for energy efficiency upgrades through voluntary energy-use monitoring.
33. Require all new government buildings and major retrofits that enter planning after 2022 be net-zero energy ready and climate resilient, and prioritize leases on buildings that are committed to net-zero energy standards and climate resiliency starting in 2030.
34. Launch the Green Choice Program in 2023, which will allow government to purchase 100 per cent renewable electricity for our operations as it becomes available.

Creating cleaner transportation options

35. Build more electric vehicle charging stations across the province so Nova Scotians can access them when and where they need to.
36. Increase the number of zero-emissions vehicles and e-bikes to meet the 2030 30 per cent zero-emissions vehicle sales target by continuing to offer rebates and continuing to provide education and outreach programs.
37. Increase the number of zero-emissions medium- and heavy-duty, freight, and marine vehicles through new incentives.
38. Develop a greening fleets strategy for government vehicles.
39. Increase access to community transportation services for all communities outside of the Halifax Regional Municipality and Cape Breton Regional Municipality.
40. Electrify public transit across the province by partnering with municipalities and the federal government.
41. Explore opportunities for electric school buses through a strategic pilot project.
42. Make transportation easier by developing new transportation efficiency strategies and reducing single-person vehicle trips.
43. Create more active transportation options in Nova Scotia by developing a provincial active transportation strategy and continuing to work on the Blue Route.

Seizing Opportunities for a Cleaner Sustainable Economy

Building on and expanding partnerships with experts

44. Work with subject matter experts and industry leaders to develop tools, programs, and supports for those looking to invest in the clean economy.
45. Support youth-centred climate actions and learn from youth through a new youth climate change advisory committee.
46. Make sure that diverse voices from across Nova Scotia and abroad are advising government on climate adaptation research, planning, outreach, and strategy.
47. Support and fund solutions that address systemic inequities and discrimination related to climate change.

Developing skills for the clean economy

48. Support the education of youth by updating school curriculums with the knowledge and teachings of *Netukulimk* and support youth professional development programs to develop new skills and experiences.
49. Increase the representation of racialized and Indigenous workers in the energy efficiency and clean technologies sector.
50. Make sure professionals across Nova Scotia understand how they can participate in the clean economy and grow their businesses through new specialized training programs.
51. Develop new industry training for advanced building techniques for engineering and design professionals to make sure these professionals are ready to build to new national energy and building codes.
52. Make sure we have the trade professionals needed and that they are prepared to meet the demands of the clean economy by modernizing the Nova Scotia apprenticeship program.

Helping our communities take action on climate change

53. Provide funding through programs like the Sustainable Communities Challenge Fund and support new community-based climate change coordinators to help municipalities, Mi'kmaq, and African Nova Scotian communities respond to their climate priorities.
54. Provide funding to help more communities across Nova Scotia complete clean energy projects in areas such as buildings, transportation, electricity, and capacity building through programs like the Low Carbon Communities program and the Halifax Climate Investment, Innovation, and Impact (HCi3) Fund.
55. Continue to support federal-provincial partnerships on large infrastructure projects throughout Nova Scotia through programs like the national Investing in Canada Infrastructure Program (ICIP).
56. Create a new funding navigator at the Department of Environment and Climate Change to connect Nova Scotians to climate change funding opportunities.

Supporting sustainable growth in innovative clean technologies and services

57. Develop a clean investment plan that takes deliberate and strategic actions to ensure the Nova Scotia economy is prepared to respond to the needs of a low carbon economy.
58. Create a green hydrogen action plan by 2023 to support the development of the green hydrogen sector in Nova Scotia.
59. Issue leases for five gigawatts of offshore wind energy by 2030, with a first call for bids by 2025.
60. Create a clean fuels fund to support industries and businesses in adopting low-carbon and renewable fuels such as green hydrogen, renewable natural gas, biofuels, and sustainable biomass.
61. Implement the Innovation Rebate Program and pilot a low carbon stream of the Early Stage Commercialization Fund through Invest Nova Scotia to create an environment that supports innovative businesses.

62. Modernize the environmental assessment process to consider climate change impacts, cumulative effects, diversity, equity and inclusion, the role of independent review, and *Netukulimk* more fully.
63. Invest in research needed for new clean technologies and practices to help us meet our net-zero by 2050 target.
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Reporting and Evaluating Progress

67. Report annually on progress and impacts of the actions in the climate change plan.
68. Review and renew the climate change plan within five years of its release.

Appendix B:

Links to Resources and Programs

The following is a list of resources and programs referenced within the *Our Climate, Our Future: Nova Scotia's Climate Change Plan for Clean Growth*, as well as some links to helpful organizations.

This is not meant to be an all-inclusive list of resources available to Nova Scotians.

Government of Nova Scotia Links

[The Environmental Goals and Climate Change Reduction Act](#)

[The Environment Act \(PDF\)](#)

[Climate Change Nova Scotia](#)

[Clean Future - Public Consultations Report](#)

[Nova Scotia Climate Risk Assessment](#)

[Nova Scotia Coastal Protection Act](#)

[Nova Scotia Parks and Protected Areas](#)

[News Release on Green Hydrogen Development](#)

[Nova Scotia Environmental Assessment Process](#)

Programs and Resources for Individuals and Homeowners

[FloodSmart Canada – Flood Plain Maps](#)

[Energy Assist](#)

[HomeWarming](#)

[Affordable Multifamily Housing Program](#)

[Home Energy Assessment Program](#)

[Mi'kmaw Home Energy Efficiency Project](#)

[SolarAssist](#)

[Solar Power Rebate Programs](#)

[EVAssist- Electric Vehicle Rebate Programs](#)

[Next Ride](#)

[Clean Foundation Workforce Development Programs](#)

[NSCC Solar Photovoltaic Panel Installation Training program](#)

Programs and Resources for Businesses, Municipalities, and Organizations

[Presentation to the Canadian Institute of Planners \(November 25, 2020\) on the Flood line Mapping Project \(PDF\)](#)

[FloodSmart Canada – Flood Plain Maps](#)

[Maritime Coastal Flood Risk Map](#)

[SolarAssist](#)

[Solar Power Programs](#)

[Nova Scotia Power Self-generation Options](#)

[Nova Scotia Rate Base Procurement \(372 MW of new wind\)](#)

[Green Choice Program](#)

[EVAssist](#)

[Next Ride](#)

[Sustainable Communities Challenge Fund](#)

[Low Carbon Communities Funding Program](#)

[Halifax Climate Investment, Innovation, and Impact Fund \(HCi3\)](#)

[Innovation Rebate Program](#)

[Nova Scotia Clean Technology for Agriculture Program](#)

For More Information

[Canada's National Adaptation Strategy: Building Resilient Communities and a Strong Economy](#)

[Canadian Climate Institute](#)

[CLIMAtlantic](#)

[A Healthy Environment and a Health Economy – Canada's Strengthened Climate Plan](#)

[2030 National Emissions Reduction Plan: Clean Air, Strong Economy](#)
[Canadian Energy Regulator – Nova Scotia Energy Profile](#)
[Efficiency Canada & the Canadian Energy Scorecard](#)
[Nova Scotia Power – How We Produce Electricity](#)
[Solar Nova Scotia](#)
[Bicycle Nova Scotia](#)
[Nova Scotia Blue Route](#)
[Efficiency Nova Scotia](#)
[Clean Foundation](#)
[Passive House Canada](#)
[Canada Green Buildings Council](#)
[ReCover Initiative](#)
[Dalhousie Energy Leaders in Sustainability program](#)
[Verschuren Centre for Sustainability in Energy and Environment](#)

Referenced Reports and Data Sources

[Climate Data Canada](#)
[2022 Environmental Goals and Climate Change Reduction Act – Progress Report](#)
[2020/21 Annual Green Fund Report \(PDF\)](#)
[2021/22 Annual Green Fund Report \(PDF\)](#)
[Clean Power Road Map for Atlantic Canada](#)
[Efficiency One Demand Side Management Plan](#)
[2020 National Energy Code for Buildings](#)
[Canadian Centre for Climate Services](#)

Schedule "C"
Clean Power Plan

Nova Scotia's 2030 Clean Power Plan

Nova Scotia Department of Natural
Resources and Renewables

2030 Clean Power Plan

- ▶ **Flexible.** Implementation of this Plan ensures that NS avoids decades of financial and technological lock-in. This creates flexibility for NS both on the path to coal closure by 2030; while also opening room for future investments in growth sectors like Offshore Wind, Hydrogen, Batteries etc.
- ▶ **Doable. On Time.** All the major electricity legislation or investments required to trigger the core actions of the Plan, and to close coal on time, have already been made by the NS Government, or will be set in motion in the coming months. And all can be delivered in time for 2030.
- ▶ **Affordable.** This Plan centres around Affordability – and ensures that the path to 2030 protects NS ratepayers (who already face high power bills) from being burdened with additional excessive risks or uncontrolled costs.

Nova Scotia's Electricity Context

Nova Scotia has commitments to:

- ▶ Phase out coal & reach 80% renewables by 2030.
- ▶ Reduce GHGs from electricity by more than 90% (from 10.7 MT in 2005).

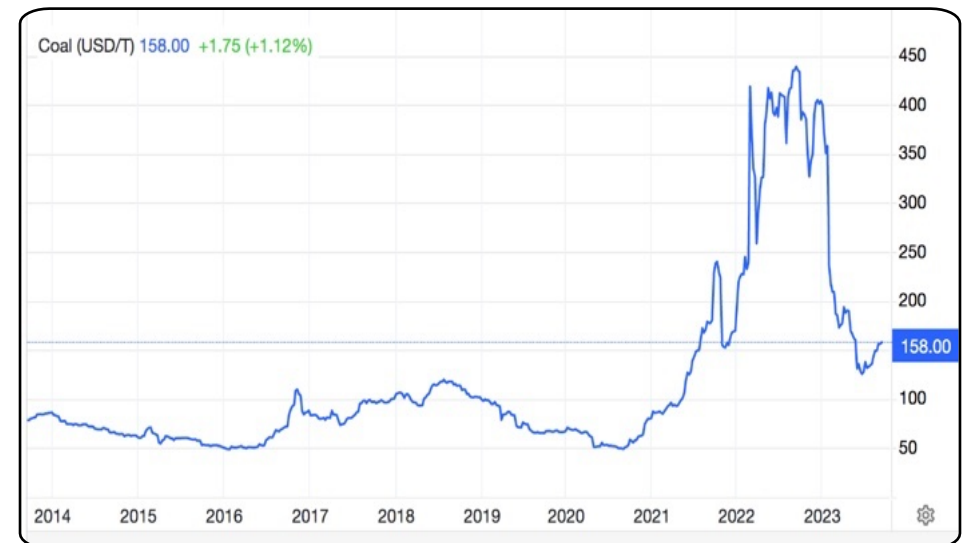
These commitments:

- ▶ Are driven by the Federal requirements for coal closure and new Clean Electricity Regulations.
- ▶ These create significant costs for NS ratepayers.

Unplanned, additional burdens must be managed:

- ▶ Significant fuel cost pressures have arisen from the delayed and under-delivering Maritime Link, which forces increased purchases of expensive coal.
- ▶ More and stronger storms are impacting reliability.

Historic Coal Prices (USD)





- ▶ Nova Scotia's electricity system is highly vulnerable to climate change linked events.

- ▶ The past 12 months alone have seen:
 - ▶ Historic Hurricane Fiona, September 2022
 - ▶ Historic Polar Vortex, February 2023
 - ▶ Historic Forest Fires, May 2023
 - ▶ Historic Rain & Flooding, July 2023

- ▶ These types of events will continue to increase in frequency and intensity.

Maritime Link Update

- ▶ The Maritime Link, Labrador Island Link, and Muskrat Falls facilities have been commissioned, but there remain significant ongoing challenges in receiving the full value of Nova Scotians' investments.
- ▶ Nova Scotian ratepayers have been carrying the double cost burden of not only paying the annual costs of the Link itself, but then also being required to pay – and at soaring global prices – for replacement coal and gas. This fuel was required for some years because of delays in commissioning, now compounded by ongoing under-delivery issues.
- ▶ The future is more promising, but in the meantime, this has created severe fuel cost pressures on NS ratepayers, and an ongoing bill.

Atlantic Loop: Update

1. Capital costs have increased by 300%, from \$2.95 Billion in 2020 to more than \$9 Billion today. Burdening everyday Nova Scotian ratepayers with this level of new cost, plus the risk of even more cost escalation, is unacceptable.
2. Quebec has confirmed it does not have the product Nova Scotia required to close coal – firm energy available for sale to meet our winter peak needs.
3. Global supply chain challenges (HVDC equipment, cables); plus the need for all three provinces to complete approvals and negotiations; plus a tight construction industry mean the Atlantic Loop cannot be ready for 2030.
4. Investing in our own energy resources avoids Nova Scotian's having to spend billions on infrastructure in Quebec and New Brunswick.

This option is no longer viable for 2030.



2027
The year in which we will need new energy supplies

2026-2027
The winter in which we will need new capacity supplies

Calls for tenders have already been launched to meet these needs, and others will follow.

- Hydro Quebec Strategic Plan 2022-26

Comparative Energy Sources: Costs (\$/MWh)

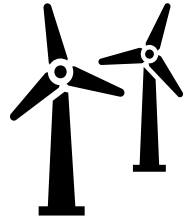
Atlantic Loop Energy	\$200-\$250	
NS Wind		\$45-\$65
Battery + NS Wind		\$70-\$100
Offshore NS Wind		\$70-\$140
Solar		\$80-\$130
Natural Gas*		\$100-\$170
Imports (from NL, NB, NE)		\$150-\$200
Smart Grid/Efficiency		\$0-\$50

*Natural Gas may incur carbon costs. However, revenues would be recycled back to mitigate ratepayer impacts through investments in further GHG investments.

Nova Scotia's Historic Opportunity

- ▶ NS has some of the most exceptional winds in the world, with capacity factors that can exceed 50% in the onshore.
- ▶ Our offshore has even more wind potential, providing Nova Scotia a significant advantage in offshore wind and hydrogen.
- ▶ Nova Scotia is also home to world-class expertise in batteries, and rapidly growing new firms.
- ▶ Harnessing these local resources reduces Nova Scotia's dependency on imported coal or natural gas, and enormously strengthens our energy security.
- ▶ Wider electrification will enable NS to replace \$5 Billion spent on bills for imported fuel, by tapping into much cheaper local, renewable power.

Nova Scotia's 2030 Clean Power Plan



New Energy Resources

1. Wind
2. Solar



Smart Grid Management Tools

3. Batteries and Renewables Integration
4. Electrification and Load Management

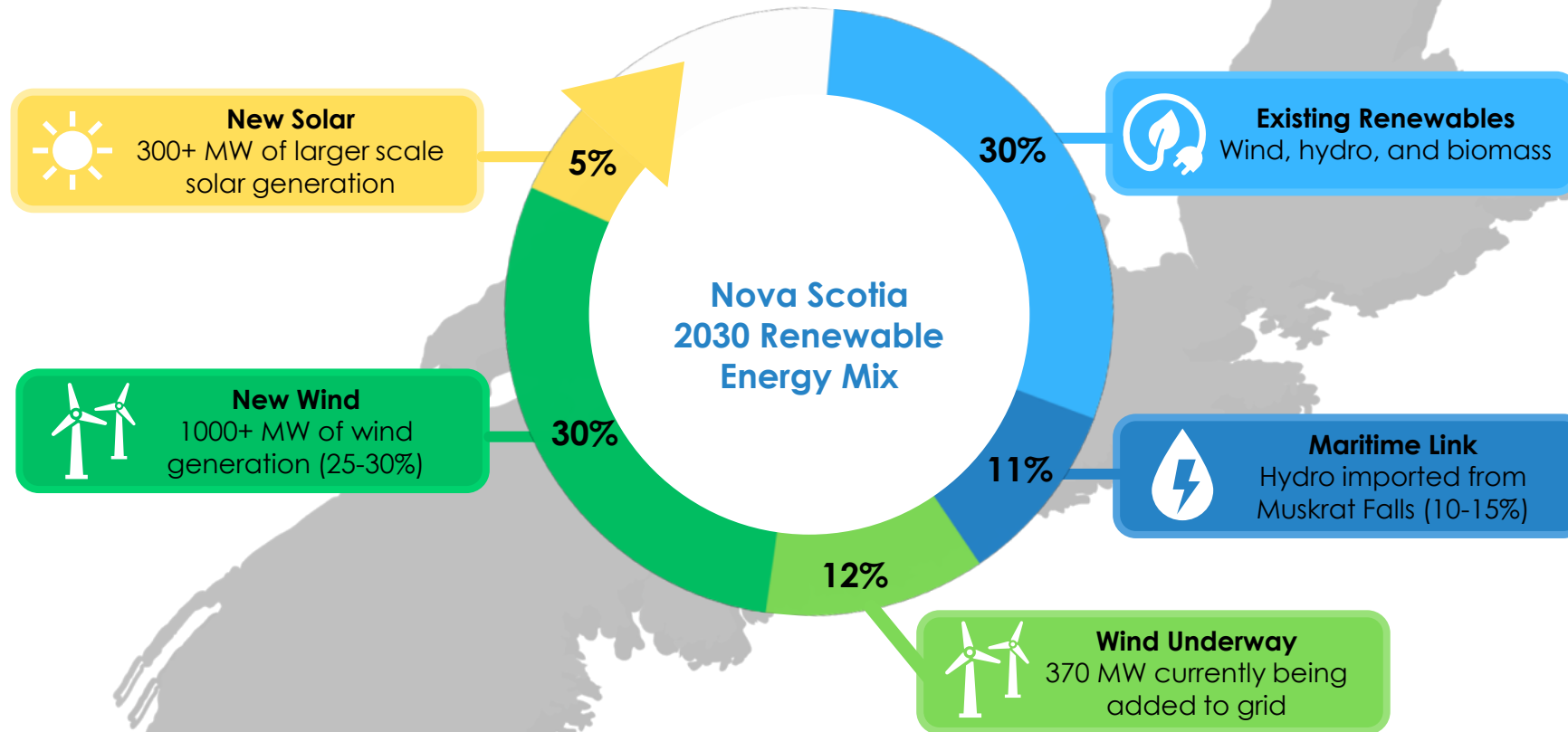


Resilience and Reliability






5. Transmission
6. Fast-Acting Generation
7. Emergency and Reliability

Nova Scotia's 2030 Clean Power Plan

Achieve 80% renewables • Close coal • Cut electricity GHGs by 90% • Improve grid resiliency



Supporting Resiliency and Reliability of the Grid

- **Batteries: 300 MW**
Innovative battery deployment underway
- **Fast Acting Generators: 300 MW**
New, dispatchable generators
- **NS-NB Tie: 500+ MW**
New 345kV reliability line to NB to help manage renewables
- **Reliability/Emergency Plants: 450 MW**
Retain 4 oil/gas units for emergency use
- **Load Management: 150 MW**
Peak management, demand response, and efficiency

1. Wind

- ▶ Increase onshore wind generation from 20% to 50%+ of electricity.
 - ▶ Add ~1,000 MW of new wind by 2030 to reduce GHGs and stabilize costs through fixed price contracts.
 - ▶ Plus 370 MW is already underway from the recent RFP.
 - ▶ Confirmed in all scenarios from NSP's Integrated Resource Plan.
- ▶ Wind is widely-agreed to be the lowest cost electricity resource available to Nova Scotia, with the latest RFP costing just 5.3 cents/kwh for 370 MW.
- ▶ **Fall 2023:** Nova Scotia launches the Green Choice Program procurement for the next 350 MW of wind.
- ▶ Additional procurements will follow (est. 2025 and 2027) alongside work to encourage responsible development and mitigate supply chain issues.



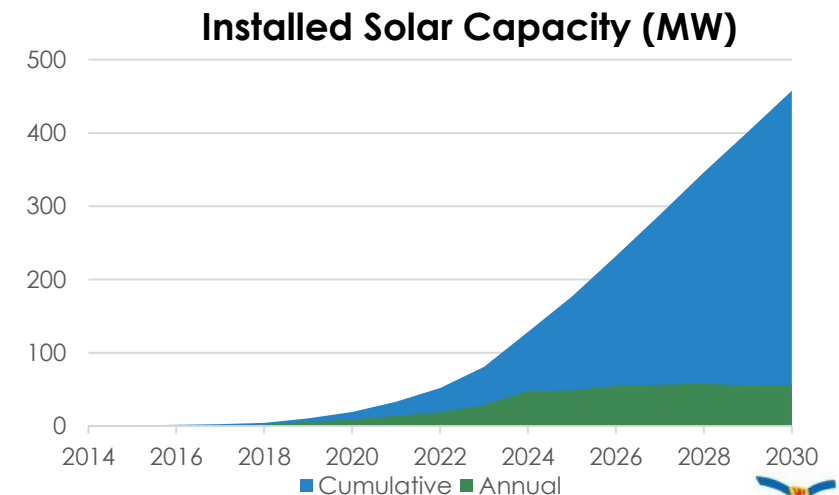
2. Solar

12



Berwick Community Solar Project

- ▶ Significantly expand the use of solar across NS.
 - ▶ Net metering was strengthened in legislation, and 7,000 Nova Scotians have now installed solar.
 - ▶ Demand is growing on farms, businesses, municipalities and First Nations – driven by economics, and a desire for more control over their energy.
 - ▶ The solar industry now employs 500 people today in NS and is on trend to hit 1,000 next year.
- ▶ **Fall 2023:** NS's Community Solar Program and Commercial Net Metering launch this Fall- with more than \$150M in solar investments expected across Nova Scotia's communities in 2024.
- ▶ By 2030, the Nova Scotia Plan expects at least 300MW+ of larger scale solar installed through existing programs.

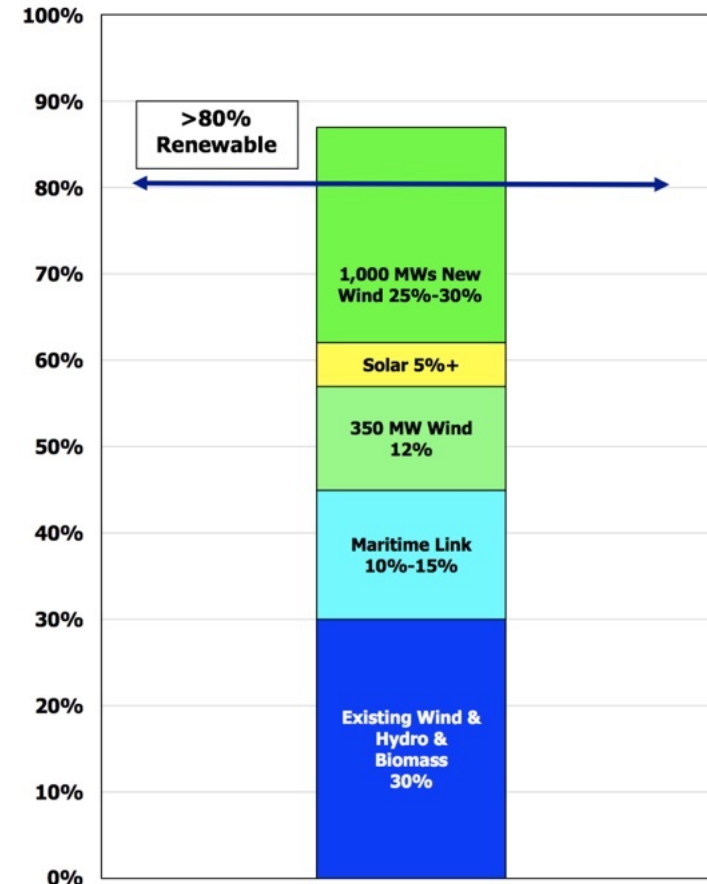


Achieving 80% Target & #1 in GHG Reductions

13

- ▶ More than 80% renewable power can be achieved by building out Nova Scotia's own local renewables.
- ▶ The 2030 Clean Power Plan will also reduce electricity GHGs by more than 90% (from 10.7MT in 2005 to <1MT in 2030 to 0.5 MT by 2035).
- ▶ Nova Scotia is already leading Canada in GHG reductions and by 2030 will be #1 in all of North America.
- ▶ Planning for the future also requires a greener, more flexible, and more reliable grid.

NS Renewables 2030

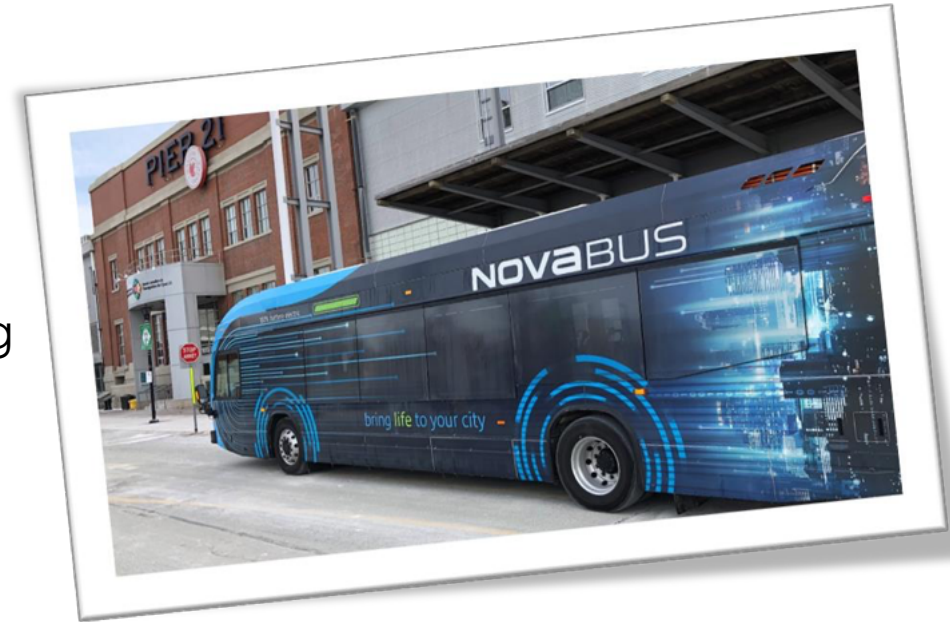


3. Batteries and Renewables Integration

- ▶ Battery technology is improving at world-changing rate:
 - ▶ Researchers like Nova Scotian Jeff Dahn and his team (at Dalhousie and with Tesla) have developed batteries that will last 1,000,000 miles in an EV.
 - ▶ These kinds of batteries are now also helping electricity systems, both to manage renewables but also to provide important grid services.
- ▶ Battery prices have fallen by 95% in recent decades. However, the speed of deployment in Nova Scotia will depend on significant Federal funding.
 - ▶ Other investments to strengthen the grid are also required to ensure safety and reliability.
- ▶ **Work underway:** NRR is presently reviewing applications for 300MW of innovative early battery deployment projects, across multiple Nova Scotian sites and communities.

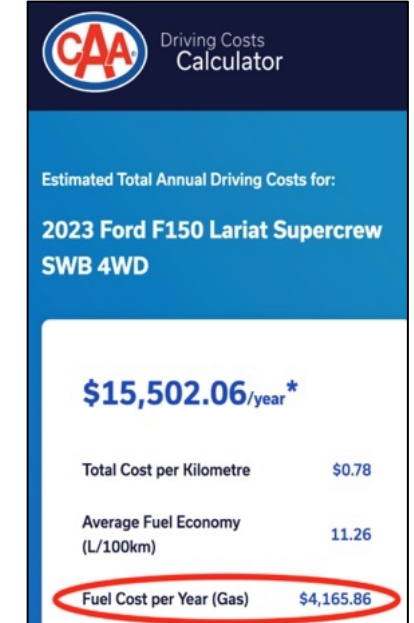
4. Electrification and Load Management

- ▶ Nova Scotians spend \$5 Billion every year for imported fossil fuels like coal, heating oil, gasoline and diesel.
- ▶ A key driver for building a clean electricity system in Nova Scotia is to produce energy savings by electrifying heating and transportation for households.
- ▶ Electrification will reduce energy bills and replace spending on imported fuels with clean local electricity.
- ▶ More Heat Pumps & EVs will also increase electricity needs and peak load on the Grid, especially after 2030.
- ▶ **Next Step:** Manage 150MW of load through Demand Response and low-cost actions like smart EV charging, building code updates, and standards on heat pumps.



Electrification

- ▶ The CAA estimates an average vehicle's gas bill is \$2,000-\$4,000. Instead, driving an EV saves you \$1,500 to \$3,000 in fuel costs each year.
- ▶ As the vehicle fleet converts over time, Nova Scotians will save \$1.5 to \$2 Billion/year on gasoline (>70% of which is the cost for the imported fuel).
- ▶ Using Made-in-NS electricity brings those dollars back home.
 - ▶ For instance, bringing that >70% (= \$1.4 Billion) in fuel bills coming back home to NS will create thousands of new jobs.



Owners of EVs in Nova Scotia today, recharge at the equivalent of

Pump Prices of 35 cents a liter

Load Management and Vehicle-to-Grid (V2G)

- ▶ Many EVs can power your home for days if the power goes out. And some Nova Scotians are already using their vehicles as generators during storms.
- ▶ This capability will also allow vehicle owners to support the grid with their cars.
- ▶ **Work underway:** NS is developing programs that will enable Nova Scotian drivers to unlock the full value of their vehicles and also reduce ratepayer costs by avoiding new investments.



5. NS-NB Regional Transmission



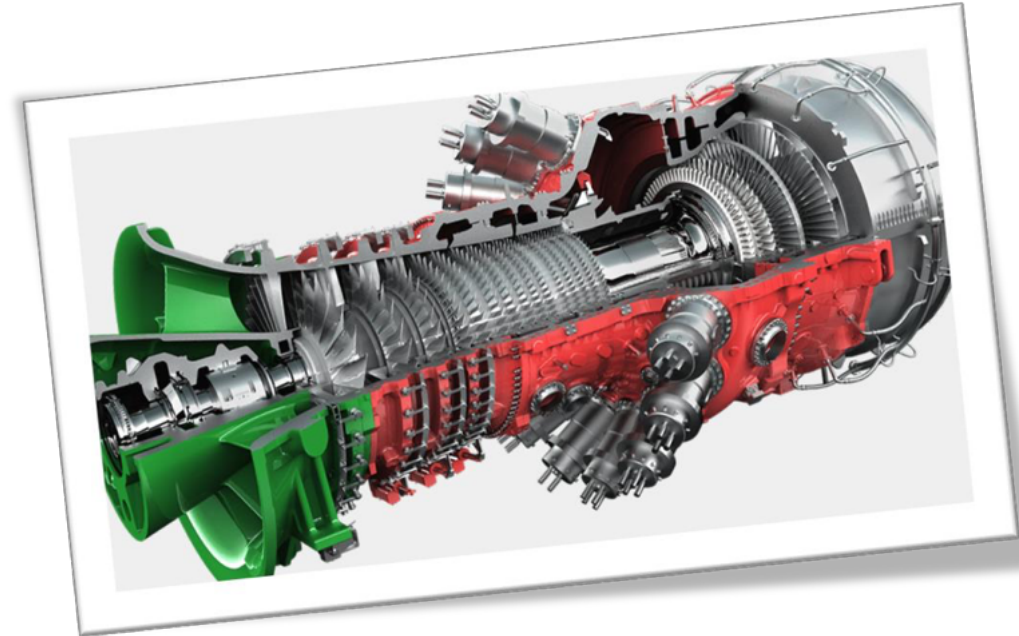
Nova Scotia's electricity system is only weakly connected to the North American grid, through New Brunswick.

- ▶ A new 345kV line to NB is needed to manage renewables, boost reliability and resiliency.
 - ▶ This NS-NB Reliability Tie will run from Onslow to Salisbury, enabling 500MW+ of imports/exports. This project is expected to be online in 2028.
 - ▶ Extending this line to Point Lepreau would enable greater access to NB, New England, and Quebec.
 - ▶ This new line and extension can be completed by 2029 at a total cost of ~\$1.4B, far less than the Atlantic Loop.
 - ▶ This supports regional population growth; enhances reliability; and enables more energy trading.

- ▶ **Work underway:** Interprovincial & Federal talks are underway to support these transmission investments.

6. Hydrogen-Capable/Flex-Fuel Generators

- ▶ By 2030, and with coal closed, the NS system will still need options that can run for a few days if it is not windy, to ensure power during winter peaks, or should storms/events impact transmission lines.
- ▶ This will require a certain, limited amount of new, fast-acting, dispatchable generation by 2027.
- ▶ Manufacturers are designing new units capable of burning green hydrogen or bio-fuels to reduce GHGs.
 - ▶ Before investments are made, options that could use a domestic clean fuel will be considered.
- ▶ **Next step:** Finalize technology choice, location, and timing for 300MW of fast acting generation.



7. Emergency and Reliability Back-Up

- ▶ Nova Scotia has relied for decades on coal-fired generators for storms or extended cold spells.
- ▶ Many of these units retained the dual-fuel ability to burn oil, to ensure greater reliability during emergencies and when back-up was needed.
- ▶ We will retain some of these units' capabilities to ensure sufficient emergency and back-up:
 - ▶ These will be used, as at present, very infrequently (<1% of the year), with similarly small GHGs of <0.05 MT (vs NS Electricity GHGs of 10.7 MT in 2005).
 - ▶ This saves ratepayer more than \$500 Million.
 - ▶ Every IRP scenario includes retaining at least 3 oil plants (450MW capacity) at 10% of the cost of alternatives.



Nova Scotia's 2030 Clean Power Plan

Wind

Add 1,000+MW new onshore wind by 2030 (offshore potential post-2030)
Green Choice procurement has begun, more every 18 months

Solar

Net Metering now well-established and growing each year
300MW+ large Solar by 2030 - Commercial begun, Community in Fall

Batteries + Renewables Integration

300-400MW Batteries by 2030
Additional renewable integration investments for reliability underway

Electrification/Load Management

Peak Management, Demand Response and Efficiency investments
to reduce 150 MWs of peak and peak growth

Transmission

A new NS-NB Reliability Tie transmission line in service pre-2030
Potential to extend new transmission to Point Lepreau, NB by 2030

Fast-Acting Generation

300MW Hydrogen Capable/Flex-Fuel generators by 2030
Potential for 300+ MWs additional in 2030 or later

Emergency & Reliability Back-Up

450+MW Emergency/Back-up oil generators (use of existing plants)
Potential 100+ MW Coal-to-Gas conversions 2030

Clean Electricity Solutions Task Force

- ▶ The Task Force will:
 - ▶ Examine electricity infrastructure needs for reliability, capacity and storage to meet climate change goals.
 - ▶ Examine connections to other essential services such as telecommunications.
 - ▶ Review the *Nova Scotia Utility and Review Board Act* in terms of electricity generation, transmission and rates.
 - ▶ Engage subject matter experts, the Mi'kmaq and other interested Nova Scotians.
- ▶ The report from the Task Force will be available early in 2024.

Flexibility – for 2030 and post-2030

- ▶ Nova Scotia must avoid taking on too-large new risks (especially post-Maritime Link) or long-term constraints that limit adoption of new, local renewable energy.
- ▶ Our decisions will always consider the current price, timing, volume, product, risk, and local content.
- ▶ The 2030 Plan retains flexibility to add new supply:
 - ▶ As population and load growth are expected.
 - ▶ By backing out even more fossil use (<1.0 MT in 2030), by limiting new fossil investments.
 - ▶ Procurement can then select the best technology available, whether on or offshore wind, solar, hydrogen, or something new, like geothermal.



Post-2030 Energy Options

- ▶ Global efforts to decarbonize electricity generation are accelerating, and new technologies are emerging one after the other into the mainstream.
- ▶ Given this, by 2030, Nova Scotia will possess far more options, and more knowledge, about workable, cost-effective solutions that fit our conditions.
 - ▶ There is enormous promise for the use of offshore wind in Nova Scotia after 2030, as well as hydrogen (potentially before 2030).
 - ▶ The rapid growth of EVs will bring new load but also bring entirely new grid management tools, with enormous potential to reduce system investments.
 - ▶ New long-duration batteries technology, geothermal energy, and bio-energy will also become increasingly cost-effective.
 - ▶ NB may have power available from its Small Modular Nuclear Reactors (SMRs).

Nova Scotia's 2030 Clean Power Plan



The elements of Nova Scotia's 2030 Plan are clear, implementable, and limit ratepayer risk and investment. The Plan:

- ▶ Closes coal by 2030.
- ▶ Achieves and exceeds the 80% Renewable Energy Standard.
- ▶ Cuts Nova Scotia's total GHGs by >53%, the best in Canada.
- ▶ Moves NS electricity onto long-term, stably-priced renewables.
- ▶ Creates jobs in every community through solar, heat pumps, and wind.
- ▶ Ensures the Greener Grid is also a More Reliable Grid.
- ▶ Expands Atlantic regional ties.
- ▶ Limits ratepayer risk by avoiding billions in locked in new capital costs to 2075.
- ▶ Expands personal choice.
- ▶ Puts competition at the heart of energy generation and grid management in NS.
- ▶ Enables household and business bill savings – across all energy bills.

Schedule "D"
Green Hydrogen Action Plan



GREEN HYDROGEN **ACTION PLAN**



EXECUTIVE SUMMARY

The world is undergoing a massive energy transition. Clean energy sources are in high demand amidst a global shift away from fossil fuels. Green hydrogen is an alternative clean energy source; when converted to heat or electricity it emits only water and heat, and no carbon dioxide.

Hydrogen has been used in various applications for many years. Traditional methods of producing hydrogen require fossil fuels and emit greenhouse gases. Green hydrogen, on the other hand, can be produced with no greenhouse gas emissions. To make green hydrogen, renewable electricity is used to split water into hydrogen and oxygen via a process called electrolysis.

Large-scale green hydrogen developments are still in early stages around the world. Nova Scotia is emerging as a region with ample opportunity for green hydrogen thanks to our world-class natural resources and export capability, clean economy leadership, responsive regulation, and alignment with the Government of Canada's vision for clean hydrogen.

Building on Nova Scotia's track record of leadership in sustainable prosperity, this Action Plan outlines a path for the Province to support the emergence of a sector that:

- makes best use of the province's natural resources to produce green hydrogen and hydrogen derivatives for export and domestic use;
- supports sustainable prosperity and the achievement of Nova Scotia's climate change goals; and
- produces local benefits that increase Nova Scotians' social and economic well-being.

The Province has been working diligently to lay the groundwork for sector development. The Green Hydrogen Action Plan lays out seven goals and 23 actions that consolidate and build upon these efforts.

GOAL 1

Create the conditions for a sustainable and prosperous green hydrogen sector that produces local benefits from both domestic and export opportunities.

GOAL 2

Support the development of competitive green hydrogen export opportunities.

GOAL 3

Ensure the green hydrogen sector is developed in alignment with Nova Scotia's environmental and climate change goals.

GOAL 4

Support engagement efforts to foster transparent communication and meaningful community participation in the green hydrogen sector.

GOAL 5

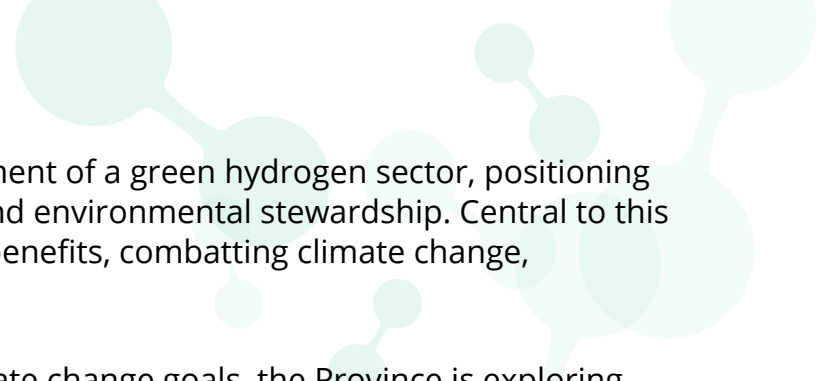
Ensure that safety is paramount along the entire green hydrogen supply chain.

GOAL 6

Invest in skills training and development to ensure a strong domestic workforce that supports the green hydrogen sector.

GOAL 7

Support green hydrogen sector development through research and innovation projects.



Nova Scotia is actively pursuing the development of a green hydrogen sector, positioning itself as a leader in clean economic growth and environmental stewardship. Central to this effort is the Province's commitment to local benefits, combatting climate change, and protecting the environment.

In alignment with its environmental and climate change goals, the Province is exploring the vast potential of offshore wind energy to produce green hydrogen, a move that could make renewable energy more viable and spur domestic green industries. Nova Scotia is dedicated to fostering transparent communication and public engagement in this sector, ensuring safety through stringent regulations, and investing in skills training to build a strong, inclusive domestic workforce. The Province's commitment extends to harnessing its robust network of research institutions for sector development and to demonstrate practical and responsible uses of hydrogen in Nova Scotia.

The green hydrogen landscape is changing quickly. To act in the best interests of Nova Scotians, the Province must remain flexible and responsive to new information and evolving circumstances. Following the release of this Action Plan, the Province will continue to engage project proponents, supply chain members, communities, and other interested parties to ensure that its approach to sector development appropriately balances agility, responsiveness, and diligence.

Altogether, the goals and actions laid out in this Action Plan will serve to foster a green hydrogen sector that will benefit Nova Scotians by delivering clean energy solutions, creating new clean economy jobs, strengthening rural communities, and driving economic growth.

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MESSAGE FROM THE PREMIER OF NOVA SCOTIA

Climate change is one of the most pressing challenges of our time and Nova Scotia has long been a leader in rising to that challenge.

Green hydrogen has the potential to help us reach our climate change goals and put us on the world stage as an exporter of clean energy.

This action plan will guide the government and all our partners in a united effort to develop this sector. It lays the groundwork for the best use of our natural resources, creating green jobs for Nova Scotians and contributing to our broader plans for a clean, sustainable future.

The plan considers domestic use of green hydrogen to help Nova Scotia move to clean fuels for transportation and industrial uses. It also takes advantage of tremendous export opportunities as places around the world seek green hydrogen to help them move to clean energy.

I thank all our partners for their commitment and their coordinated effort to build our emerging green hydrogen sector. By working together, we'll keep Nova Scotia in its position as a world leader in clean economic growth and environmental stewardship.

Tim Houston
Premier of Nova Scotia



PURPOSE

The Green Hydrogen Action Plan will set the conditions for the emergence of a green hydrogen sector that will deliver clean energy solutions, create new clean economy jobs, strengthen rural communities, and drive economic growth.

Building on Nova Scotia's track record of leadership in sustainable prosperity, this Action Plan outlines a path for the Province to support the emergence of a sector that:

1. makes best use of the province's natural resources to produce green hydrogen and hydrogen derivatives for export and domestic use;
2. supports sustainable prosperity and the achievement of Nova Scotia's climate change goals; and
3. produces local benefits that increase Nova Scotians' social and economic well-being.

WHAT IS GREEN HYDROGEN?

Green hydrogen is a low- or zero-emission replacement for fossil fuels that is produced using water and renewable electricity.

Green hydrogen can be used directly as an energy source, or it can be chemically combined with other natural resources such as nitrogen or forestry residues to create low-carbon hydrogen-derived fuels, and other low-carbon products (often called 'derivatives').

Unlike fossil fuels, hydrogen can be combusted to produce energy without emitting carbon dioxide. Because of this property, the demand for hydrogen as an alternative to fossil fuels is growing. However, pure hydrogen is not readily available; it must be extracted from the compounds in which it naturally occurs, such as water or methane.

While all hydrogen combusts without emitting carbon dioxide, some methods of producing hydrogen generate greenhouse gases. The degree to which hydrogen production creates greenhouse gas emissions is measured in terms of carbon intensity.

Carbon Intensity

In simple terms, carbon intensity represents how much carbon is emitted during the production and consumption of a product. Carbon intensity is a common metric used to understand the climate change impact of products. Higher carbon intensity means more carbon is released per unit of a product, while lower carbon intensity means fewer emissions per unit.

Carbon intensity exists on a spectrum. Fossil fuels like coal are at the high end of the spectrum, while fuels produced from renewable energy are at the low end. Replacing higher carbon intensity fuels with lower carbon intensity fuels is a critical part of the transition to net zero. Green hydrogen is generally considered to have a low or zero carbon intensity, depending on the mix of electricity sources used to produce it.

Colours are used to differentiate the carbon intensity of hydrogen produced via different processes. The most common processes rely heavily on fossil fuels and create a lot of greenhouse gas emissions, including carbon dioxide. Hydrogen is referred to as 'brown' when it is made using coal, and 'grey' when made using natural gas. Newer methods of making hydrogen from natural gas employ technologies to capture and store some of the carbon dioxide that is emitted. This lower-emission form of hydrogen is called 'blue'.

'Green' hydrogen is the form that Nova Scotia is best positioned to produce. To make green hydrogen, an electric current generated from a renewable energy source is run through fresh water, splitting that water into hydrogen and oxygen. Unlike blue hydrogen, making green hydrogen does not emit carbon dioxide, so carbon capture technology is not required. Regardless of colour, all hydrogen is chemically identical, and has the same properties (**Figure 1**).

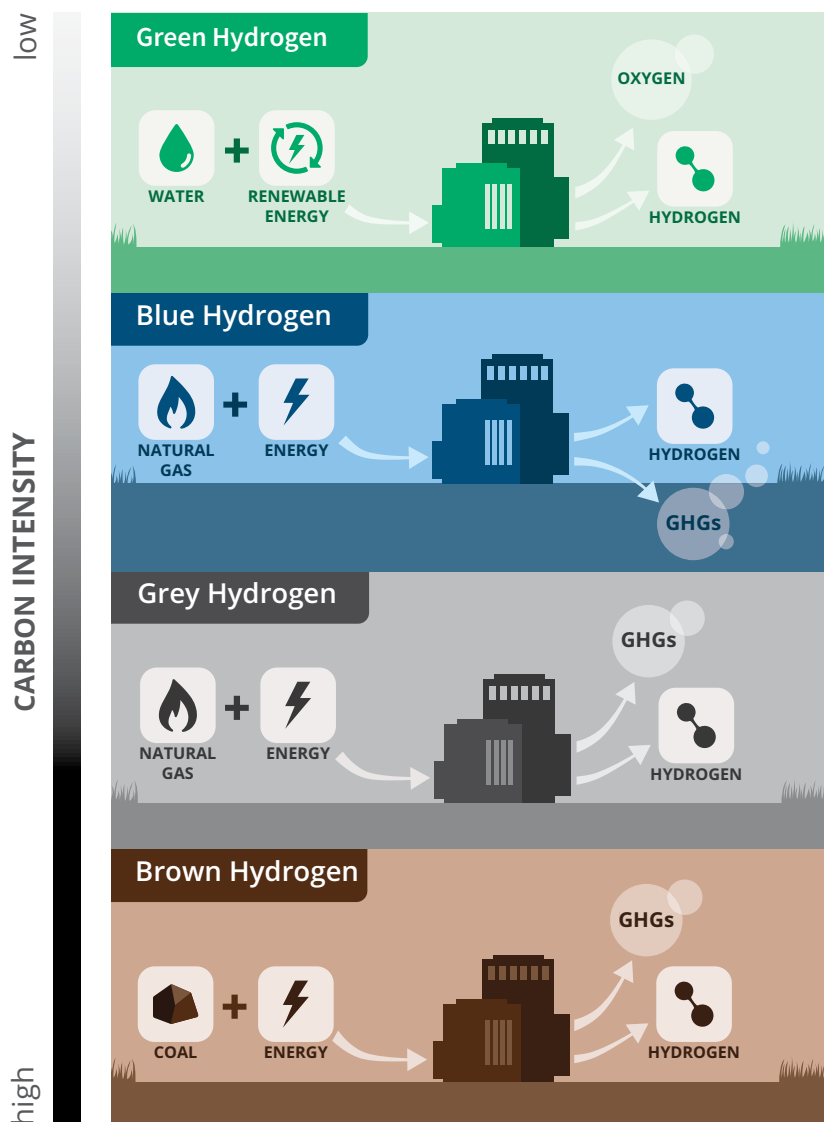


Figure 1

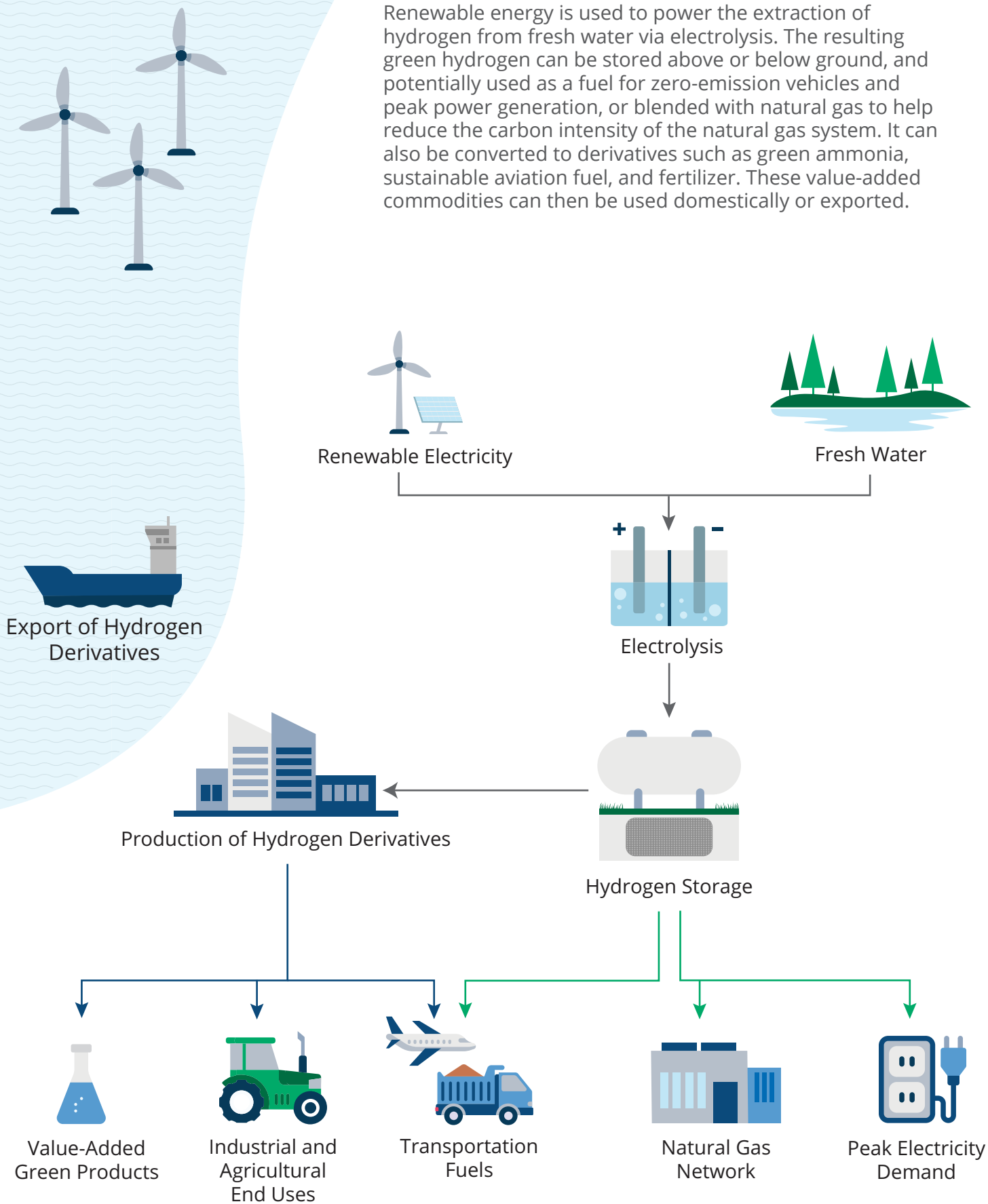
Illustration of some of the most common hydrogen 'colours', showing the fuel source and major outputs. The carbon intensity of each colour varies according to the specifics of how it is produced at each facility, but is on average higher for brown and grey, lower for blue, and lowest for green hydrogen.

Storing hydrogen for long periods is complex and expensive. For this reason, nitrogen is often added to green hydrogen to convert it into a new compound, or 'derivative', called green ammonia. Less energy is required to store ammonia than hydrogen, making it easier to transport over long distances (**Figure 2**).

Globally, hydrogen and ammonia have been used as fuels and industrial chemicals for well over a century. Their production, storage, transportation, and uses are governed by an extensive and well-developed safety framework.

Figure 2

Renewable energy is used to power the extraction of hydrogen from fresh water via electrolysis. The resulting green hydrogen can be stored above or below ground, and potentially used as a fuel for zero-emission vehicles and peak power generation, or blended with natural gas to help reduce the carbon intensity of the natural gas system. It can also be converted to derivatives such as green ammonia, sustainable aviation fuel, and fertilizer. These value-added commodities can then be used domestically or exported.



HOW MIGHT GREEN HYDROGEN BE USED IN NOVA SCOTIA?

Green hydrogen has potential to support carbon reductions across Nova Scotia's economy by reducing reliance on fossil fuels and serving as an ingredient for low-carbon, value-added products.

As envisioned by the [Nova Scotia's 2030 Clean Power Plan](#), most of Nova Scotia's greenhouse gas emission reductions through 2030 will come from adding more renewable energy and efficient electrification of the building and transportation sectors. The province's ample renewable energy resources can be developed to produce affordable clean electricity to meet most of the province's needs. Hydrogen is emerging as a complementary option to help strengthen the electricity system. Nova Scotia's 2030 Clean Power Plan forecasts a role for alternative fuels like green hydrogen as 'flex fuels' that can help meet peak or emergency demand in the electricity system.

Other potential applications for green hydrogen are attracting interest from industry. Some of the most common are discussed below.

Replacing Grey or Brown Hydrogen

Hydrogen is currently used in some Nova Scotian industries. Green hydrogen could replace the use of grey or brown hydrogen, resulting in direct greenhouse gas emissions reductions.

Replacing Fossil Fuels in Hard-to-Abate Applications

Green hydrogen is an option to help decarbonize processes or activities that are difficult to undertake without fossil fuels. These types of processes or activities are commonly referred to as 'hard-to-abate'. Common examples of hard-to-abate applications include cement production, petrochemical refinement, marine shipping, heavy-duty road transportation, and aviation.

Critical activities in these industries require sustained high-energy inputs that are difficult to achieve using electricity alone. Green hydrogen burns at a high temperature, making it suitable for applications that demand such conditions. In some cases, it may also be possible to generate electricity using the waste heat produced when green hydrogen is combusted. Such 'combined heat and power' systems can increase energy efficiency and save costs for industrial facilities.

While government is pursuing a path to decarbonize Nova Scotia's light-duty passenger and public transit vehicles through electrification, there are challenges to electrifying certain kinds of heavy-duty vehicles, such as long-haul, heavy-duty trucks and marine shipping vessels. Although the technology is still being developed, green hydrogen could be a viable option in helping to decarbonize these transportation modes.

Blending into the Natural Gas Network

Another potential use for green hydrogen is to blend it with natural gas to reduce the carbon intensity of Nova Scotia's natural gas system. Gas distribution companies across the world are exploring how to integrate progressively higher blends of hydrogen into their systems. Many of these companies rely on pipeline networks that can be up to a century old, which increases the complexity and risks associated with transporting hydrogen.

Eastward Energy, the utility that holds a franchise to distribute natural gas in some areas of the province, has one of the most modern pipeline networks in North America. Newer plastic pipes can carry hydrogen with less risk of leaks. This makes the province's natural gas distribution network technically well-suited for hydrogen blending.

Input for Producing Low-Carbon Value-Added Products

In addition to applications that use it directly for energy, green hydrogen can be used as an input to create low- or zero-carbon alternatives to common industrial chemicals and fuels. These value-added products represent an opportunity to develop additional economic activity in Nova Scotia along the green hydrogen value chain. One group of potential products are clean fuels, which can be made by combining green hydrogen with carbon extracted from natural materials like forestry residues. Green hydrogen can also be used in the creation of commodities such as fertilizers, textiles, low-carbon plastics, glues, and solvents.

WHAT ARE THE BENEFITS OF GREEN HYDROGEN FOR NOVA SCOTIA?

The development of a green hydrogen sector and allied supply chains will create social and economic benefits for Nova Scotia.



Delivering Clean Economy Jobs for Nova Scotians

Fostering the green hydrogen supply chain will open up a new clean economy workforce. These workers will be responsible for constructing, operating, and maintaining the infrastructure necessary for producing, storing, and transmitting green hydrogen and its derivatives, as well as for generating clean electricity. They will manage the transportation of green hydrogen within the province and overseas. Workers will also be required to install and service equipment that uses green hydrogen and its derivatives. Many of these jobs will be located in rural areas of Nova Scotia.

Beyond the jobs directly connected to green hydrogen, there will be indirect jobs created to support the sector in fields like business and financial services, technology and software support, education and training, and the service industry.



Sustainability for Nova Scotia's Industrial Sectors

Green hydrogen can serve as a low-carbon clean fuel option for industrial processes. By decarbonizing their operations, industries can become more sustainable, reduce cost volatility associated with fossil fuel use, and enhance competitiveness in response to ever-more stringent requirements to reduce emissions across their supply chains. The availability of green hydrogen for domestic use could also help to attract new companies and new industries to the province that would benefit from its use as a low-carbon fuel or manufacturing input.



Increased Tax Revenues

Expenditures associated with the construction and operation of green hydrogen production and export facilities, as well as the anticipated growth in supply chains, will generate tax revenues for all levels of government.



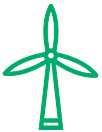
Launching Export Opportunities for Value-Added Nova Scotian Products

Green hydrogen and its derivatives can be combined with other Nova Scotian resources like wood wastes to create value-added products like sustainable aviation fuel. With increasing global demand for such products, Nova Scotian businesses could be well-placed to become producers and exporters.



Supporting Infrastructure Renewal

The green hydrogen sector will depend on critical infrastructure like ports, roads, and electricity transmission and distribution equipment. This same infrastructure is also needed for new and existing renewable electricity developments. The Province is analyzing the infrastructure investments required to further enable these developments and will encourage proponents to share the costs of strategic upgrades with shared benefits for both domestic and export-oriented renewable energy developments.



Unlocking Nova Scotia's Offshore Wind Resource

Green hydrogen represents a landmark opportunity for Nova Scotia. Its development is a key that can unlock not only social and economic benefits, but also the opportunity to develop Nova Scotia's vast offshore wind resource.

The recent surge in global demand for green hydrogen has sparked interest in Nova Scotia's offshore wind resource from green hydrogen proponents. Because the energy available in this resource is so much greater than the entire energy demand for the province, the domestic market alone is too small for private developers to justify the risk and cost of developing offshore wind.

Establishing supply chains and building offshore wind farms will take time. In a phased approach to development, the initial renewable energy required to produce green hydrogen will need to come from a source other than offshore wind. Green hydrogen proponents are exploring options to build onshore wind and solar farms. They are also working with Nova Scotia Power Inc. to explore the use of electricity from the grid as another near-term option to kickstart production. But to reach competitive scale, green hydrogen proponents will eventually require access to the substantial energy available from offshore wind.

WHY IS NOVA SCOTIA A GOOD PLACE TO PRODUCE GREEN HYDROGEN?

Nova Scotia's combination of world-class natural resources, strong export capability, clean economy leadership, responsive regulation, and alignment with the national vision for clean hydrogen make us well-suited for a green hydrogen industry.

Natural Resources and Export Capability

Nova Scotia is home to strong onshore and offshore winds, which have proven to be a valuable resource for generating renewable electricity. The province utilizes onshore winds to help supply the electricity grid and power industrial processes, and there are plans in place to expand the role of wind and other renewable energy sources in Nova Scotia's energy system. Simultaneously, the government is actively exploring pathways to develop offshore wind. The Province's ambitious renewable electricity targets, well-established onshore wind industry, and immense offshore wind potential place Nova Scotia in an excellent position to produce green hydrogen.

In addition to its renewable energy resources, Nova Scotia is also in a prime location for exporting green hydrogen and green hydrogen derivatives to Europe. The province boasts several large, deep-water harbours that are ice free and has geology that proponents could potentially use to store green hydrogen underground, which may be key to operating efficiently.

The province is also home to an experienced marine energy workforce, a vibrant network

of ocean and energy technology centres, and a wealth of universities and training institutions with expertise in renewable energy and clean fuel production, transmission, storage, and applications.

Established Clean Economy Leadership

Enacted in 2021, Nova Scotia's Environmental Goals and Climate Change Reduction Act builds on fifteen years' work across government to advance sustainable prosperity and chart a path for Nova Scotians to continue benefitting from the province's clean economy leadership. The Act sets a range of goals that inter-link environmental stewardship, economic growth, and well-being. In so doing, it signals the strength of Nova Scotia's commitment to supporting sustainable industries and creating a receptive climate for clean investments.

In December 2022, the Province published Nova Scotia's Climate Change Plan for Clean Growth, which outlines 68 actions to support the achievement of the goals legislated in the Environmental Goals and Climate Change Reduction Act. The Climate Change Plan for Clean Growth calls for the creation of this Action Plan, as part of a suite of actions intended to support sustainable growth in innovative clean technologies and services.

Another action calls on the Province to create a Nova Scotia Clean Fuels Fund to support industries and businesses in adopting low-carbon and renewable fuels like green hydrogen. This fund will help Nova Scotian businesses and communities find and adopt lower-carbon fuels to replace fossil fuels in heating, transportation, and industrial processes. More information about the Nova Scotia Clean Fuels Fund will be available in 2024.

In yet another action, the Province commits to investing in research on new clean technologies and practices via the **Emerging Concepts and Technologies Research Program**. This program seeks to identify gaps in carbon-reduction pathways for hard-to-abate emissions and to support made-in-Nova Scotia solutions to achieve net zero by 2050. Theme 7 under the Emerging Concepts and Technologies Research Program supports innovation around ‘Hydrogen as an Alternative Fuel’.

Beyond the actions laid out in the Climate Change Plan for Clean Growth, the Province is also working to enable early-stage green hydrogen production, distribution, and end uses in Nova Scotia through the **Hydrogen Innovation Program**. The forthcoming Program will enable smaller-scale project proponents to connect to utility electricity grids and access power to make green hydrogen for domestic use.

Finally, the provincial and federal governments have co-funded the groundwork for a scoping study to better characterize **potential pathways to market for offshore wind**, with green hydrogen being one of these potential

pathways. This study will identify the analyses required to understand the technical, economic, and environmental considerations for integrating offshore wind energy into the Atlantic Canadian electricity grid.

Responsive Regulation

The Province has been amending various Acts and pieces of legislation to clarify how they will apply to green hydrogen. These efforts are displayed throughout this Action Plan alongside their corresponding context.

This Action Plan describes actions supporting engagement efforts. Nova Scotia will respect the Aboriginal and treaty rights of the Mi’kmaq of Nova Scotia and meaningfully consult with the Mi’kmaq when contemplating decisions that may adversely impact their asserted or established rights.

The Province is also working to chart an efficient and responsible path for developing its offshore wind resource. In 2022, the Province announced a **target to offer licenses for five gigawatts of offshore wind energy by 2030**. It is anticipated that most of the renewable electricity produced by these projects will support the production of green hydrogen.

Nova Scotia and Canada have taken steps to expand the mandate of the Canada-Nova Scotia Offshore Petroleum Board into offshore renewable energy, including offshore wind. This builds off of decades of safe and responsible joint management of petroleum projects in the Canada-Nova Scotia Offshore Area. When

the legislative amendments come into force, the Board will become the Canada-Nova Scotia Offshore Energy Regulator.

In March 2023, Nova Scotia and Canada announced the launch of a **Regional Assessment of Offshore Wind Development in Nova Scotia**.

Overseen by an independent Committee, the Regional Assessment will provide recommendations to Governments that will help inform potential areas for development and future project specific federal impact assessments and decisions for wind projects.

In June 2023, the Province released the first module of its **Offshore Wind Roadmap** which outlines the legislative and regulatory regime for offshore wind. Subsequent modules of the Roadmap will consider supply chain and port opportunities and reflect input received from Nova Scotians regarding the development of offshore wind energy.

Shared Vision with the Government of Canada

In August 2022, Germany and Canada signed a **Joint Declaration of Intent** to establish the Canada-Germany Hydrogen Alliance, whereby both nations will invest in hydrogen and establish a transatlantic supply corridor. Capturing an opportunity of this scale will require close collaboration between the governments of the Atlantic Provinces and Canada. This Action Plan aims to further advance Nova Scotia's role in this collaboration.

The Hydrogen Strategy for Canada

(2020) creates a national framework to support the growth of low- and zero-emission hydrogen from coast to coast, making best use of each region's competitive advantages. To complement the Strategy, the federal government is developing measures such as the **Clean Fuels Fund**, the newly announced **Clean Hydrogen Investment Tax Credit** and the **Clean Technology Investment Tax Credit**.



GOALS AND ACTIONS

Against the backdrop of international competition to develop green hydrogen exports and the domestic demand for cleaner energy, Nova Scotia is committed to moving with the right balance of speed and diligence to enable the emergence of a green hydrogen sector.

The goals and actions laid out below will help drive momentum and support the realization of the opportunities and the mitigation of risks around green hydrogen.

GOAL 1

Create the conditions for a sustainable and prosperous green hydrogen sector that produces local benefits from both domestic and export opportunities.

Sustainable prosperity arises from the interconnection of economic growth, environmental stewardship, and social responsibility. In keeping with its commitment to sustainable prosperity, the Province aims to amplify local benefits from green hydrogen, such as the creation of skilled jobs in rural communities, opportunities for local businesses to participate in the green hydrogen supply chain, and options to help reduce Nova Scotia's greenhouse gas emissions.

Collaboration across the public and private sectors is essential to creating the conditions for sustainable prosperity. The Province's role in this collaboration will be an enabling one and it will lay the groundwork upon which the sector can grow. It will take a balanced approach to supporting this growth while safeguarding the interests of all Nova Scotians, now and into the future. This includes ensuring the sustainable use of natural resources and the health and well-being of the communities and businesses that depend on them.

ACTION 1

Foster collaboration across all levels of government to create a coordinated and effective policy and regulatory framework for the emergence of domestic and export green hydrogen opportunities.

Producing, storing, using, and exporting green hydrogen and its derivatives are new endeavours for Nova Scotia. Each of these processes will require supportive legislative, regulatory, and policy frameworks. In some cases, existing frameworks can be updated, while in other cases the Province may need to create new ones.

The complexity of this undertaking requires coordination across all levels of government to ensure a complete, coherent, and cohesive framework is in place. Existing processes and networks, such as the Province's Major Projects Coordination Initiative, can be drawn upon to support a harmonized policy approach to both domestic and export project development.



ACTION 2

Cultivate and maintain an active partnership with the federal government to optimize the coordination of existing financial support mechanisms.

Substantial early-stage capital investments will be required to build production, storage, transportation, and export capabilities and to create or update essential infrastructure like roads, ports, and the electricity grid. By continuing to align and coordinate their respective efforts, the provincial and federal governments can achieve maximum impact through the programs and initiatives each has made available to help support clean energy innovation and deployment.

As described on page 17, the Government of Canada has introduced the Clean Hydrogen Investment Tax Credit and the Clean Technology Investment Tax Credit to help attract private investment. The Clean Hydrogen Investment Tax Credit will provide a refundable tax credit of up to 40 per cent of project capital costs for proponents that produce hydrogen by any pathway that is at or below a threshold carbon intensity value (which is being determined as of 2023). The Clean Technology Investment Tax Credit aims to support investment in low-emitting energy generation and storage equipment. Eligible companies can receive a refundable tax credit of up to 30 per cent of capital costs for qualifying technologies, including zero-emission electricity generation technologies, electricity storage systems that do not rely on fossil fuels, and non-road zero-emission vehicles fully powered by electricity or hydrogen.

These measures are in addition to other supports for clean energy technologies like the Clean Fuels Fund, which provides \$1.5 billion over five years (2021-2026) to de-risk investment in building or expanding clean fuel production facilities. The \$15 billion **Canada Growth Fund**, announced in 2022 and administered by the Canada Development Investment Corporation, is designed to attract large-scale private sector investment in low-carbon products, technologies, businesses, and supply chains.

The Province has already committed to developing several new programs that will provide support for the green hydrogen sector, including the Nova Scotia Clean Fuels Fund and the Hydrogen Innovation Program (described on page 15). In addition, Invest Nova Scotia has implemented updates to the **Innovation Rebate Program** that will better support decarbonization initiatives by Nova Scotian businesses, and has piloted a Low-Carbon Technology Stream of the **Early Stage Commercialization Fund**.

ACTION 3

Make strategic investment decisions by continuing to aggregate and evaluate information from all relevant sources.

Strategic decision-making involves a systematic and thoughtful approach to allocating limited public resources, such as funding, staff, and Crown lands. Because these resources are constrained, investment decisions need to be evidence-based and made with the intention that they will return value to the people of Nova Scotia. Investment decisions can be informed by inputs like feasibility studies, economic analyses, and modelling to understand and quantify the economic, social, and environmental benefits that could result from an investment.

Adhering to existing government decision-making processes, and developing new processes when required, will help ensure that the Province balances opportunity with risk.

While the Province is responsible for properly allocating resources, the effort to collect data, model outcomes, and analyze the green hydrogen value chain is shared amongst many parties including the private sector, academia, communities, non-profits, and other levels of government. The Province will continue to aggregate and assess information from all relevant sources to support investment decisions.

ACTION 4

Position Nova Scotia as a compelling regional HUB candidate by continuing to align sector development efforts with the Hydrogen Strategy for Canada.

A key pillar in the Hydrogen Strategy for Canada is the creation of strategically concentrated hydrogen developments in regional HUBs. HUBs are sites for hydrogen developments that bring together regional supply chain members to make use of existing infrastructure and industrial sites to optimize competitive advantages. For example, locating a business that converts hydrogen to alternative fuels near a hydrogen producer reduces the economic and environmental costs associated with procuring the hydrogen.

At the national scale, the Hydrogen Strategy for Canada envisions a series of interconnected HUBs across the nation and highlights Atlantic Canada's potential as a gateway to international markets. Nova Scotia's renewable energy potential, robust ocean tech sector, and existing capabilities as a global export centre and offshore energy producer position it well to become a regional HUB.

ACTION 5

Continue to build relationships with other jurisdictions to support shared learnings and best practices along the whole green hydrogen supply chain.

In response to surging demand for green hydrogen, many jurisdictions are exploring their potential to develop green hydrogen production and export capability. Although the competitive pressures are significant, the Province can benefit from shared learnings by fostering strong relationships with other Canadian provinces and international states. These relationships enable information sharing that can help the Province avoid known pitfalls and better understand its assets and advantages relative to other jurisdictions.

Moreover, the coordination required to develop a green hydrogen sector means that Nova Scotia will have to partner with other jurisdictions to build and maintain robust supply chains. There are both overlaps and distinctions between the industrial supply chain capabilities of Nova Scotia, and those of neighbouring provinces and states. Understanding where Nova Scotia's capabilities align with broader supply chains will inform how government collaborates with supply chain members to build on strengths and address gaps.



NOVA SCOTIA'S EFFORTS TO DATE

1. Creating a cross-departmental Green Hydrogen Secretariat composed of Deputy Ministers and other senior government staff. The Secretariat provides strategic and cohesive leadership over the development of the green hydrogen sector.
2. Establishing a Renewable Energy Regulators forum to enhance coordination and information sharing across the various departments that regulate green hydrogen and renewable energy projects. The forum provides a 'one window' approach to streamline engagement with proponents seeking to establish projects in Nova Scotia.
3. Updating legislation and regulations to enable the development of the green hydrogen sector, including the Construction Projects Labour Relations Act, Electricity Act, Gas Distribution Act, Pipeline Act, and Subsurface Energy Storage Act.
4. Developing the Hydrogen Innovation Program to enable domestic green hydrogen proponents to access electricity to support small-scale production projects.
5. Developing the Nova Scotia Clean Fuels Fund to incent businesses and communities to adopt lower-carbon fuels like green hydrogen.
6. Piloting a Low-Carbon Technology Stream of the Early Stage Commercialization Fund and implementing updates to the Innovation Rebate Program that will better support decarbonization initiatives by Nova Scotian businesses.
7. Mapping the current regulatory pathways that green hydrogen proponents must follow to seek project approvals, as well as the changes to those pathways resulting from planned legislative and regulatory amendments.
8. Conducting a competitive process to award mineral exploration licenses related to the potential to store hydrogen in underground formations in the Port Richmond area.
9. Engaging in ongoing discussions with the Government of Canada to evaluate how the Clean Tech and Clean Hydrogen Investment Tax Credits could support the development of Nova Scotia's green hydrogen sector.
10. Coordinating and collaborating with the other Atlantic Provinces to jointly identify and advance areas of work that can accelerate the regional growth of cleaner energy sources, including renewable energy and green hydrogen, further to the [**Statement from The Council of Atlantic Premiers**](#) issued August 23, 2022.

GOAL 2

Support the development of competitive green hydrogen export opportunities.

A vibrant export sector will bring quality local jobs, attract investment to upgrade or build new infrastructure, and generate direct revenues for the province. The actions under this goal aim to better define these benefits and ensure they are realized where possible, while safeguarding Nova Scotia's natural resources and environment.

ACTION 6

Coordinate across government levels, departments, and agencies to map Nova Scotia's export infrastructure and supply chains.

Green hydrogen and offshore wind energy share many supply chain components, including key infrastructure assets like roads and ports. In collaboration with industry, the Province will build upon the supply chain mapping work under the Offshore Wind Roadmap to identify capabilities, gaps, and opportunities relating to green hydrogen development.

The Province will conduct a review of current and projected infrastructure needs in coordination with utilities, municipalities, green hydrogen proponents, and other interested parties. This multi-sectoral approach will support an informed and comprehensive needs inventory and allow for strategic prioritization of necessary work.



ACTION 7

Identify opportunities to leverage Nova Scotian resources to develop value-added export commodities.

Using green hydrogen as an input, manufacturers can produce a range of low-carbon, value-added products for domestic use and export. Some of these products could make use of natural resource wastes and byproducts available in Nova Scotia, thereby contributing to the growth of the circular economy.

For example, Nova Scotia could leverage its forestry and agricultural wastes as sources of carbon that can be combined with green hydrogen to make in-demand products like sustainable aviation fuel.

ACTION 8

Pursue the development of green hydrogen clusters to optimize the use of natural resources, existing trade infrastructure, and co-located industries that could enhance the development of value-added export products.

As explained in Action 4, the federal government will be pursuing a regional HUB strategy on the national level. At the provincial level, the government will work with municipalities, green hydrogen proponents, and other industry and supply chain members to pursue opportunities to cluster complementary businesses. Locating related industries near green hydrogen production and processing facilities can support the efficient use of Nova Scotian resources and infrastructure.

ACTION 9

Ensure that provincial investment decisions relating to the green hydrogen sector are made in the best interest of utility ratepayers.

As the green hydrogen sector is still in the early stages of development, the details of how proponents will source necessary fresh water and renewable energy are still being refined. Considering this uncertainty, the Province remains committed to the best interests of Nova Scotian utility ratepayers. Any potential costs to utility ratepayers remain subject to appropriate regulatory approvals to maximize ratepayer benefits. Where possible, the Province will encourage infrastructure investments by proponents that would result in the greatest possible benefits to ratepayers.

ACTION 10

Pursue a coordinated approach for granting rights to provincial Crown lands for green hydrogen development that safeguards these lands and ensures the best use of a limited resource.

Some of the lands that are being contemplated for green hydrogen project development are Crown lands. The Province will assess and grant licenses for the use of Crown lands in a coordinated manner that ensures effective land management and allocation. This assessment will consider community perspectives and will evaluate potential projects and their alignment with provincial objectives. In this way, the Province can ensure Crown lands allocation proceeds in a manner that safeguards the interests of Nova Scotians.

Legislated environmental goals, such as the Province's commitment to conserving at least 20 per cent of the total land and water mass of the Province by 2030, will be one of many considerations used to determine the allocation of Crown lands. The Province will also take account of the existing industries and natural resource areas within the footprint of proposed green hydrogen developments.

ACTION 11

Continue to promote Nova Scotia's green hydrogen business opportunities to a global audience.

Nova Scotia's competitive advantages make the Province an attractive destination for businesses looking to invest in the green hydrogen sector. By continuing to promote the province's assets on the international stage, the province can support the attraction of an increasingly diversified portfolio of businesses to the province.



NOVA SCOTIA'S EFFORTS TO DATE

1. Developing and implementing a request for application process to govern access to Crown lands by green hydrogen proponents seeking to develop renewable energy projects.
2. Hosting a cross-sectoral workshop to facilitate a collective approach between government and proponents to enable the development of a green hydrogen export sector.
3. Engaging in ongoing discussions with Natural Resources Canada regarding Nova Scotia's role in meeting Canada's export ambitions under the Canada-Germany Hydrogen Alliance.
4. Reviewing the environmental assessments for the EverWind Point Tupper Green Hydrogen/Ammonia Project – Phase 1 and the Bear Head Energy Green Hydrogen and Ammonia Production, Storage and Loading Facility projects. The approval of each project is contingent on each proponent fulfilling a series of terms and conditions to ensure the environment and human health remain protected.

GOAL 3

Ensure the green hydrogen sector is developed in alignment with Nova Scotia's environmental and climate change goals.

Nova Scotia is committed to protecting the environment, acting against climate change and growing the clean economy. The Environmental Goals and Climate Change Reduction Act and Nova Scotia's Climate Change Plan for Clean Growth provide protective measures for the environment and our natural resources, and outline pathways to mitigate and adapt to climate change.

The green hydrogen sector will draw on Nova Scotia's natural resources and interact with its environment and climate. To responsibly develop a sustainable and prosperous green hydrogen sector, the Province will work with industry and across government departments to ensure developments align with Nova Scotia's environmental and climate change commitments.

ACTION 12

Ensure the development of the green hydrogen sector aligns with Nova Scotia's climate change goals.

Establishing a large-scale green hydrogen sector would increase the province's overall energy demand, due to the electricity required for green hydrogen production. It is imperative that the green hydrogen sector does not operate in a manner that jeopardizes Nova Scotia's 2030 and 2050 climate change goals. Nova Scotia's Clean Power Plan outlines the path for the province to achieve its domestic clean electricity targets, and the green hydrogen sector will need to grow in alignment with this path.

At the same time, the availability of green hydrogen may present specific opportunities to reduce provincial greenhouse gas emissions. Green hydrogen represents a potential decarbonization pathway for applications that depend on fossil fuels. It is still too early to be certain of the best domestic uses for green hydrogen; however, the Province will work with proponents, local industries, and supply chain members to identify domestic applications for green hydrogen that could support near- or long-term carbon reductions in hard-to-abate applications.



ACTION 13

Require that the green hydrogen sector prioritizes the sustainability of Nova Scotia's natural resources, including fresh water.

The production of green hydrogen requires large amounts of fresh water. It is crucial to prioritize ecologically sustainable water usage and preserve this vital resource for current and future generations. The provincial government must ensure that water utility ratepayers continue to have access to sufficient fresh water.

Large-scale hydrogen production projects have a substantial physical footprint and often involve land use conversion. The sustainability of Nova Scotia's natural resources and the biodiversity of Nova Scotia's ecosystems will remain a priority as this sector is developed. The Province will continue to diligently apply and enforce its environmental regulations to protect Nova Scotia's natural resources.



NOVA SCOTIA'S EFFORTS TO DATE

- 1.** Partnering with other levels of government to grant funds for an engineering study to identify infrastructure upgrade requirements to the Landrie Lake Water Utility operated by the Town of Port Hawkesbury and the Municipality of the County of Richmond. This utility is anticipated to supply the fresh water required for the proposed green hydrogen projects at Point Tupper.
- 2.** Reviewing and updating legislation and regulations to develop clear regulatory triggers for green hydrogen development and to ensure potential environmental impacts of green hydrogen are mitigated through terms and conditions, should green hydrogen projects receive environmental approvals.
- 3.** Reviewing and updating existing industry guidance for the conduct of environmental assessments and, where necessary, developing new guidance specific to renewable energy and green hydrogen development projects.

GOAL 4

Support engagement efforts to foster transparent communication and meaningful community participation in the green hydrogen sector.

Building a green hydrogen sector will be complex, both technically and socially. An understanding of the sector and the developments associated with it will help enable Nova Scotians to meaningfully participate in discussions about its future. Significant projects such as the buildout of renewable electricity infrastructure and green hydrogen production and storage facilities are needed. An open, two-way dialogue between communities, proponents, the Mi'kmaq, and all levels of government will contribute to successful outcomes for both communities and the green hydrogen sector.



ACTION 14

Coordinate with other groups that are engaging the public on green hydrogen to deliver credible, accessible, and timely information to Nova Scotians.

As the green hydrogen landscape evolves, many parties are working to support engagement and education efforts. Collaboration and coordination helps avoid duplication, deepens reach, and ensures consistency in the information provided. It allows for the inclusion of many voices and perspectives, including members of Mi'kmaw, African Nova Scotian, and African Descent communities, as well as other underrepresented and underserved groups. A coordinated engagement approach can also drive benefits through information sharing, resource pooling, and avoiding 'engagement fatigue'.

ACTION 15

Build the capacity of communities directly involved in green hydrogen projects to participate in decision-making and realize local benefits.

The Province recognizes that building facilities to produce, store, use, transport, and export green hydrogen will create opportunities and risks for the communities whose lands, built infrastructure, and resources are needed to develop the sector. Residents in these communities, and the organizations and officials who represent them, should be equipped to make the most of these opportunities while minimizing risks.

The Province is sensitive to the challenges that communities may have in responding to the scale of these developments. The proposed export projects are large-scale and complex. The Province will work to empower communities, including Mi'kmaq communities, to capture local benefits by advocating for the interests of their residents and negotiating with proponents.

ACTION 16

Ensure the meaningful participation by Nova Scotian residents in the green hydrogen sector, including the Mi'kmaq of Nova Scotia and individuals from underrepresented and underserved communities.

Government is committed to advancing the principles of equity, diversity, inclusion, and accessibility, and to pursuing reconciliation with the Mi'kmaq of Nova Scotia. Nova Scotian communities, including Mi'kmaq communities, individuals and organizations that represent African Nova Scotians and Persons of African Descent, and members of other underrepresented and underserved communities, must be able to participate meaningfully in the development and life cycle of the green hydrogen sector. Meaningful participation means that communities are involved in decision-making phases for green hydrogen projects such as initial project assessments, construction, operation and maintenance, and end-of-life decommissioning.

Meaningful participation is about more than hosting engagement events and activities in communities, though these are vital ingredients. It is a process, not an event. It is a commitment to creating and holding a space where community members can ask questions, challenge proposals, and offer support around key decision-making. The Province will foster this by providing accurate and timely information, supporting the capacity of communities to understand and respond to new technologies, and making direct efforts to create welcoming places at the table for voices that have not always been included in major resource and economic decisions.



NOVA SCOTIA'S EFFORTS TO DATE

- 1.** Creating opportunities for meaningful dialogue with the Mi'kmaq of Nova Scotia as well as Indigenous organizations, interest groups, community groups, academia, nongovernmental organizations, developers, others in the public, and the Province about the development of the green hydrogen sector.
- 2.** Collaborating and communicating with organizations that are currently working in the engagement space for green hydrogen and its associated renewable energy sources. Several such organizations are anticipated to or are already funded to carry out public engagement and/or to develop and share science-based information relevant to green hydrogen.
- 3.** Partnering with other levels of government to grant funds to the Municipality of the District of Guysborough and the Municipality of Richmond County to support community impact studies relating to green hydrogen development in their regions. These studies will help identify opportunities to realize local economic benefits and provide guidance in conducting meaningful community engagement.
- 4.** With the federal government, the Province announced the launch of a Regional Assessment of Offshore Wind Development in Nova Scotia. Overseen by an independent Committee, the Regional Assessment is engaging with the Mi'kmaq, the public and with interested parties through 2023 and 2024 with respect to the potential for development of offshore wind in the Canada-Nova Scotia Offshore Area.

GOAL 5

Ensure that safety is paramount along the entire green hydrogen supply chain.

Ensuring safety along the entire green hydrogen supply chain is crucial. As with most industrial activities, producing, storing, transporting, and using green hydrogen requires complex processes with potential risks to human health and the environment. For example, hydrogen gas is flammable, and ammonia is toxic to humans in high concentrations. Additionally, research indicates that hydrogen gas can contribute to climate change if leaked to the atmosphere. Some of these risks are consistent with those related to fossil fuels like oil and natural gas, while others are specific to hydrogen and its derivatives.

Green hydrogen projects are subject to regulatory oversight by multiple departments, through which the Province can understand and mitigate risks. This oversight will ensure that projects are developed in a safe, responsible, and sustainable manner.

ACTION 17

Continue to review safety best practices along the green hydrogen supply chain and harmonize safety legislation, regulations, codes, and standards with other jurisdictions.

While interest in green hydrogen at this scale is a new phenomenon, hydrogen and derivatives like ammonia have been used in Canada and around the world for generations. The Province will strive to learn from the successes and challenges in these jurisdictions to inform the development of a safe and environmentally responsible framework for green hydrogen production, storage, transportation, and end uses.

The Province will look to harmonize its safety measures with those of other jurisdictions. Applying harmonized safety measures will benefit Nova Scotians and the sector by ensuring consistency and compliance with other regions' market requirements. The Province has begun this work by participating in the Canada-wide Hydrogen Codes and Standards Working Group.



This work will focus not only on human health and safety but also on environmental safety, to avoid risk of harm to natural resources such as groundwater, soil, and air.

ACTION 18

Work with industry, labour, and training organizations to support knowledge and skill building around the safe handling, storage, and use of green hydrogen.

It is critical to ensure that existing training programs are updated and that, where needed, new training programs are developed and implemented to enhance the knowledge and skills of workers involved in the green hydrogen supply chain. This will require collaboration with organizations like trade unions, industry associations, professional colleges, certification bodies and skills training institutions. These programs will focus on safety practices, emergency response, personal protective equipment, and the proper handling of hazardous materials.



NOVA SCOTIA'S EFFORTS TO DATE

- 1.** Collaborating across departments to update and, where necessary, develop new fuel safety regulations relating to the production and transportation of green hydrogen.
- 2.** Collaborating with other provinces and territories and the Government of Canada to establish the Hydrogen Codes and Standards Working Group, which supports the implementation of the Hydrogen Strategy for Canada and its alignment with regional clean hydrogen development efforts.

GOAL 6

Invest in skills training and development to ensure a strong domestic workforce that supports the green hydrogen sector.

Launching a green hydrogen sector will require Nova Scotia to build a skilled workforce. As with other clean technology and clean energy sectors, attracting or cultivating enough workers with the right skills will be a challenge, but one that Nova Scotia is well-suited to handle. The province has an existing skills base and training programs related to many different career paths that government and proponents can leverage, such as those relating to offshore and onshore energy production, fuel transportation and logistics, and construction and electrical trades. Many careers in green hydrogen and across the clean energy industry require similar skillsets. Developing employment pathways that emphasize these shared skills will streamline the transition for workers.

Due to high demand for skilled workers in sectors such as construction, not all the near-term requirements for skilled labour to establish the green hydrogen sector can be met from within Nova Scotia's existing workforce. The Province will work with industry members and training institutions to develop new skills training and retraining programs for green hydrogen occupations. However, to remain current in a rapidly developing global marketplace, in the near-term proponents will likely also need to recruit skilled workers from out of province to kickstart their operations.

ACTION 19

Coordinate with industry, skills training institutions, and workforce experts to map the skills needed to develop a green hydrogen sector.

The Province will coordinate a strategic assessment of core skills required to first establish, and then scale, the green hydrogen supply chain. The Province will conduct this assessment in partnership with proponents and supply chain members, industry experts, permitting and compliance bodies, skills training institutions, and labour organizations to



understand the job roles, technical competencies, and qualifications needed for various positions within the industry.

This assessment should consider the role of the green hydrogen workforce relative to other provincial priorities, such as the need for more affordable housing, to identify potential human resource synergies or challenges.

ACTION 20

Support the growth of the workforce needed to build a green hydrogen sector in Nova Scotia, with a focus on including members of underrepresented and underserved communities in skills training programs.

Building on the cross-sectoral effort to complete the green hydrogen skills assessment called for by Action 19, the Province will support the development of programs needed to train new workers and to upskill or reskill workers from other fields. This work will seek to identify and leverage existing training curricula where appropriate, and to optimize tools such as microcredentials and work-based learning.

To ensure that career development opportunities are inclusive of all Nova Scotians, this work will include initiatives to promote green hydrogen career paths and develop culturally appropriate training and barrier-reduction supports for members of underrepresented and underserved groups.

It is also important to consider the employer side of the equation. Small and medium enterprises are the backbone of many Nova Scotian supply chains and will be essential partners in building green hydrogen career pathways. They will require supports such as sector intelligence to enable the identification of emerging skillsets and training paths, and to develop on-the-job training capability. The Province may also have a role in supporting employers with additional training to make their workplace inclusive to underrepresented and underserved employees.

Finally, though it is beyond the scope of this Action Plan to address, it is vital to recognize that growing a new workforce will also require that these workers have access to necessities like affordable housing, quality health care, and safe schools: all priorities of the Province of Nova Scotia.

Explore opportunities to coordinate green hydrogen workforce development efforts with the Government of Canada's Sustainable Jobs Plan and other related federal and provincial programs and initiatives.

The Province will identify opportunities to coordinate its efforts with existing workforce development and training programs offered by the Government of Canada, such as the **Sustainable Jobs Plan**. This Plan lays out actions to advance economic prosperity and sustainable jobs in every region of the country, and aims to support workers in traditional, high-carbon industries to retrain for quality careers in clean energy sectors like green hydrogen.

Provincially, there is opportunity to build on **Nova Scotia's Microcredential Framework** to develop green hydrogen training programs. A microcredential is a "recognition of an assessed competency or skill earned through a short-duration or applied learning experience." The Microcredential Framework aligns the definition and accreditation of microcredentials with programs being offered by various universities and community colleges across Canada to support skills development in the transition to a clean economy.

**NOVA SCOTIA'S EFFORTS TO DATE**

1. Leading cross-departmental initiatives with the Nova Scotia Community College to conduct skills mapping and support the development of training for the green hydrogen sector.
2. Supporting research to understand the socio-economic impacts of large-scale green hydrogen production in Nova Scotia, including the potential for job creation, increased economic activity, and impacts and opportunities around housing and accommodation, health services, emergency services, and public and community services.

GOAL 7

Support green hydrogen sector development through research and innovation projects.

Nova Scotia can capitalize on its robust network of research institutions to propel hydrogen innovation forward. Research and innovation efforts will allow Nova Scotian businesses to optimize green hydrogen processes and technologies for deployment both in Nova Scotia and abroad. Supporting innovation projects conducted by academic, non-profit, and private sector partners will help provide real world feedback to the Province about the potential advantages and risks of green hydrogen technologies and their applications.



ACTION 22

Explore opportunities to support innovation projects that demonstrate domestic opportunities for green hydrogen.

Green hydrogen can play a role in advancing Nova Scotia's decarbonization efforts and in building allied export opportunities around value-added green products derived from hydrogen. Applied research initiatives like feasibility studies and demonstration projects will point to the best use cases for green hydrogen in Nova Scotia.

In addition to using green hydrogen as a direct energy source, it has potential to be used as an input for producing low- or zero-carbon industrial chemicals and fuels. One avenue for innovation is to develop pathways for synthesizing clean fuels from green hydrogen that can make use of the carbon derived from forestry residues that would otherwise go to waste. Producing these kinds of value-added products could generate additional economic activity as part of the green hydrogen value chain.

Support research to identify the safest, most environmentally sound, and economic options for long-term storage of green hydrogen.

Storage is a crucial infrastructure component for the development of a competitive green hydrogen sector. Hydrogen and ammonia must be stored in large quantities to be economically viable at-scale. This requires specialized conditions and a suitable above-ground container or underground reservoir.

Nova Scotia appears to have geology suitable for this purpose. Investigating the economic viability and environmental safety of potential storage options will enable evidence-based decision-making as the sector develops.



NOVA SCOTIA'S EFFORTS TO DATE

1. Providing three million dollars in funding for Net Zero Atlantic to deliver the **Emerging Concepts and Technologies (ECT) Research Program**, aiming to improve research on natural carbon sinks and new clean technologies, including green hydrogen.
2. Funding desktop research on Nova Scotia's natural gas distribution system to determine its suitability for transporting a blend of green hydrogen and natural gas.
3. Supporting academic research into green hydrogen production, utilization, and its potential socio-economic impacts.



IMPLEMENTATION

In this Action Plan, the Province outlines its role in developing a sustainable and prosperous green hydrogen sector.

Over the last year, the Province has worked diligently to lay the groundwork for sector development. The Green Hydrogen Action Plan provides a forum to consolidate and build upon these efforts and to map out the next steps.

The green hydrogen landscape is changing quickly. To act in the best interests of Nova Scotians, the Province must remain flexible and responsive to new information and evolving circumstances. The Province will continue its efforts to cultivate a better understanding of the sector's technical, economic, social, and environmental opportunities and risks. Additionally, the province is in the early stages of its ongoing efforts to collaborate and engage in genuine dialogue with interested parties and communities. This enhanced understanding of opportunities, risks, and community perspectives is a critical input for refining the Province's approach to sectoral development and setting realistic targets and timelines.

SUMMARY OF GOALS AND ACTIONS

GOAL 1

Create the conditions for a sustainable and prosperous green hydrogen sector that produces local benefits from both domestic and export opportunities.

1. Foster collaboration across all levels of government to create a coordinated and effective policy and regulatory framework for the emergence of domestic and export green hydrogen opportunities.
2. Cultivate and maintain an active partnership with the federal government to optimize the coordination of existing financial support mechanisms.
3. Make strategic investment decisions by continuing to aggregate and evaluate information from all relevant sources.
4. Position Nova Scotia as a compelling regional HUB candidate by continuing to align sector development efforts with the Hydrogen Strategy for Canada.
5. Continue to build relationships with other jurisdictions to support shared learnings and best practices along the whole green hydrogen supply chain.

GOAL 2

Support the development of competitive green hydrogen export opportunities.

6. Coordinate across government levels, departments, and agencies to map Nova Scotia's export infrastructure and supply chains.
7. Identify opportunities to leverage Nova Scotian resources to develop value-added export commodities.
8. Pursue the development of green hydrogen clusters to optimize the use of natural resources, existing trade infrastructure, and co-located industries that could enhance the development of value-added export products.
9. Ensure that provincial investment decisions relating to the green hydrogen sector are made in the best interest of utility ratepayers.
10. Pursue a coordinated approach for granting rights to provincial Crown lands for green hydrogen development that safeguards these lands and ensures the best use of a limited resource.
11. Continue to promote Nova Scotia's green hydrogen business opportunities to a global audience.

GOAL 3

Ensure the green hydrogen sector is developed in alignment with Nova Scotia's environmental and climate change goals.

12. Ensure the development of the green hydrogen sector aligns with Nova Scotia's climate change goals.
13. Require that the green hydrogen sector prioritizes the sustainability of Nova Scotia's natural resources, including fresh water.

GOAL 4

Support engagement efforts to foster transparent communication and meaningful community participation in the green hydrogen sector.

14. Coordinate with other groups that are engaging the public on green hydrogen to deliver credible, accessible, and timely information to Nova Scotians.
15. Build the capacity of communities directly involved in green hydrogen projects to participate in decision-making and realize local benefits.
16. Ensure the meaningful participation by Nova Scotian residents in the green hydrogen sector, including the Mi'kmaq of Nova Scotia and individuals from underrepresented and underserved communities.

GOAL 5

Ensure that safety is paramount along the entire green hydrogen supply chain.

17. Continue to review safety best practices along the green hydrogen supply chain and harmonize safety legislation, regulations, codes, and standards with other jurisdictions.
18. Work with industry, labour, and training organizations to support knowledge and skill building around the safe handling, storage, and use of green hydrogen.

GOAL 6

Invest in skills training and development to ensure a strong domestic workforce that supports the green hydrogen sector.

19. Coordinate with industry, skills training institutions, and workforce experts to map the skills needed to develop a green hydrogen sector.
20. Support the growth of the workforce needed to build a green hydrogen sector in Nova Scotia, with a focus on including members of underrepresented and underserved communities in skills training programs.
21. Explore opportunities to coordinate green hydrogen workforce development efforts with the Government of Canada's Sustainable Jobs Plan and other related federal and provincial programs and initiatives.

GOAL 7

Support green hydrogen sector development through research and innovation projects.

22. Explore opportunities to support innovation projects that demonstrate domestic opportunities for green hydrogen.
23. Support research to identify the safest, most environmentally sound, and economic options for long-term storage of green hydrogen.

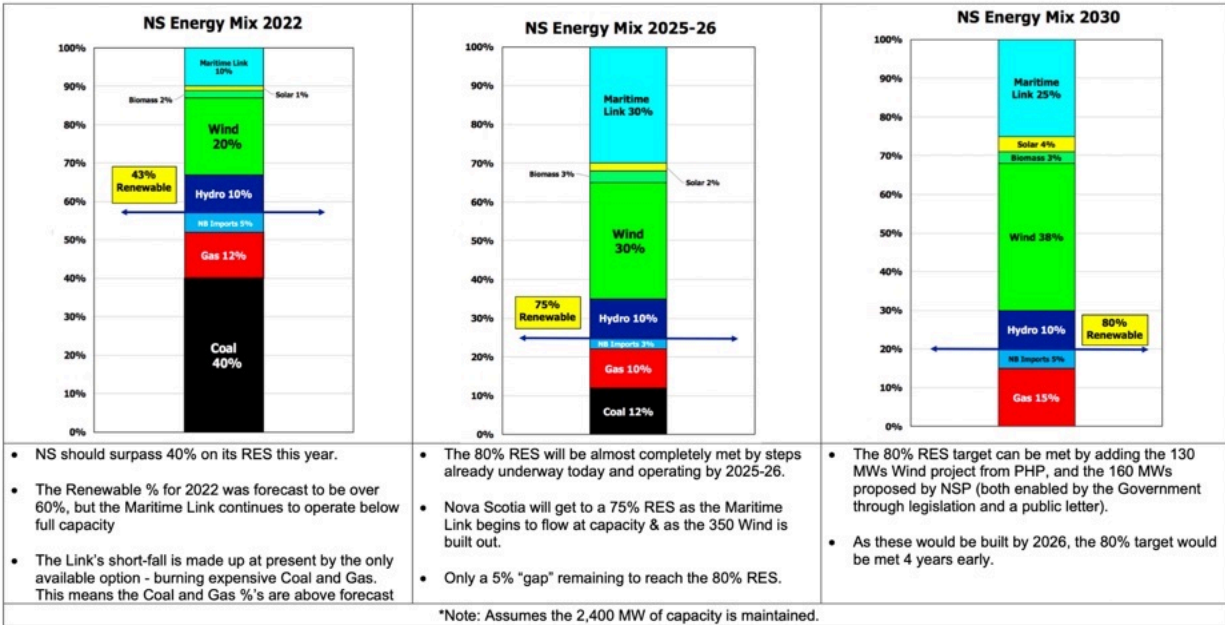


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Nova Scotia's Green Hydrogen Action Plan

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Appendix "A" Renewable Energy Forecast



**Appendix “B”
Wind and Solar Projects**

Based on the information obtained through our procurement process (at the Expression of Interest phase), we are already aware of **39 potential projects that would total 3,188MW** (3 = expansions of existing sites, 36 = new sites) were submitted to the EOI process. Approximately 200MW of the 3,187MW was solar, the remainder is wind. *This process is still underway and so specific details are not yet available but could be obtained within 7-10 days related to these projects.*

In addition, staff are aware of two other proposed projects totalling 290MW.

Several companies have already publicly expressed interest in developing green hydrogen projects. These projects are being developed primarily for export but could likely also support our domestic needs, including, ultimately in transportation in at least some capacity.

Green Hydrogen Projects

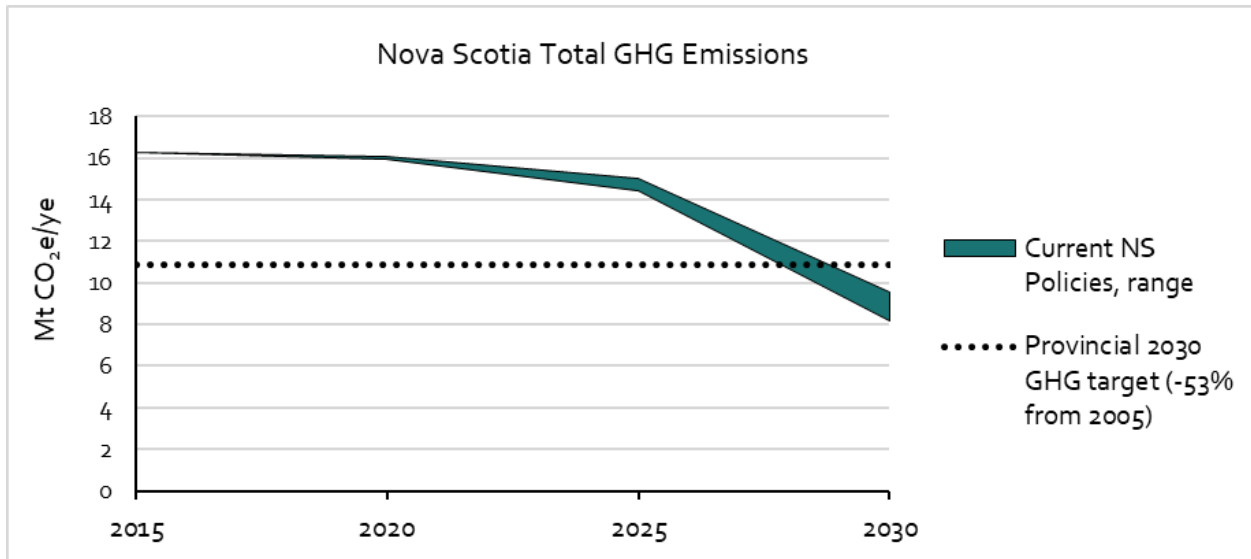
Company Name	Description	Location
Bear Head Energy	<ul style="list-style-type: none"> · Proposing to transition the former Bear Head LNG project into a green hydrogen and green ammonia export facility. · Interest in Crown lands for onshore wind development and offshore wind to reach desired scale 	Richmond County, Cape Breton
EverWind Fuels	<ul style="list-style-type: none"> · Proposing to convert the Point Tupper Fuel Storage facility into a green hydrogen production and green ammonia production and export facility. · Phase one using grid power with subsequent phases powered by onshore wind (crown lands application). · Recognizes potential in offshore wind but not in active discussions with NRR about pathway 	Richmond County, Cape Breton
Fortescue Future Industries (FFI)	<ul style="list-style-type: none"> · Proposing green hydrogen and ammonia production and export facility · Recognizes potential in offshore wind, but not in active discussions with NRR 	Richmond County, Cape Breton
Heritage Gas	<ul style="list-style-type: none"> · Proposing to produce green hydrogen from a local wind project. · Proposing to blend green hydrogen into the existing natural gas distribution system to heat industry and buildings and to add 1-2 fueling stations to offset heavy transportation applications. 	Dartmouth

Northland Power	<ul style="list-style-type: none">· Proposing green hydrogen production and export facility· Crown lands application for wind energy generation in Guysborough county.· Developing pathway for an offshore wind project	Guysborough County
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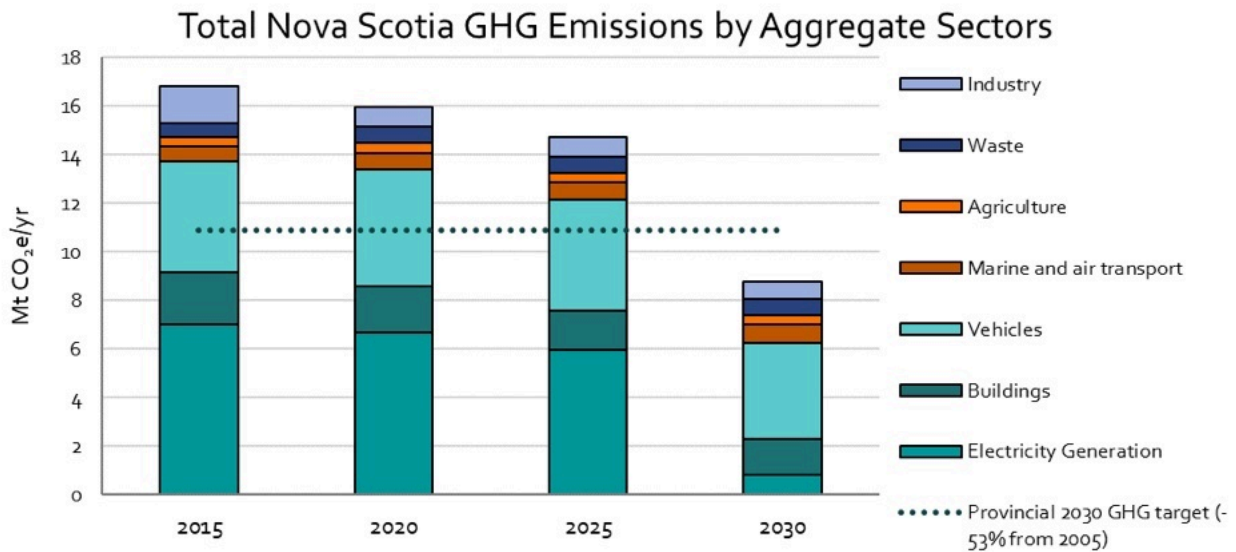
Appendix “C”
GHG Emissions Comparison with the rest of Canada (NS is #2)

NIR 2022	Million Tonnes of Carbon Dioxide Equivalent				% Above/Below		
	1990	2005	2019	2020	of 1990	of 2005	
CAN	594.7	741.2	738.3	672.4	13.1%	-9.3%	
NB	16.2	19.8	13.1	12.4	-23.3%	-37.1%	
NL	9.6	10.5	11.1	9.5	-1.0%	-9.1%	
PE	1.8	1.9	1.7	1.6	-10.1%	-15.2%	
NS	19.5	23.0	16.1	14.6	-25.3%	-36.4%	
QC	84.5	86.3	83.6	76.2	-9.8%	-11.7%	
ON	180.0	204.4	165.5	149.6	-16.9%	-26.8%	
MB	18.3	20.5	22.3	21.7	18.6%	5.6%	
SK	45.1	71.3	78.0	65.9	46.0%	-7.6%	
AB	165.6	237.1	278.8	256.5	54.8%	8.2%	
BC	51.7	63.6	65.0	61.7	19.5%	-2.9%	
YK	0.6	0.6	0.7	0.6	8.8%	5.6%	
NWT	1.3	1.7	1.6	1.4	11.1%	-18.8%	
NU	0.4	0.6	0.7	0.6	45.3%	3.2%	

Appendix "D" GHG Emission Reduction Forecast

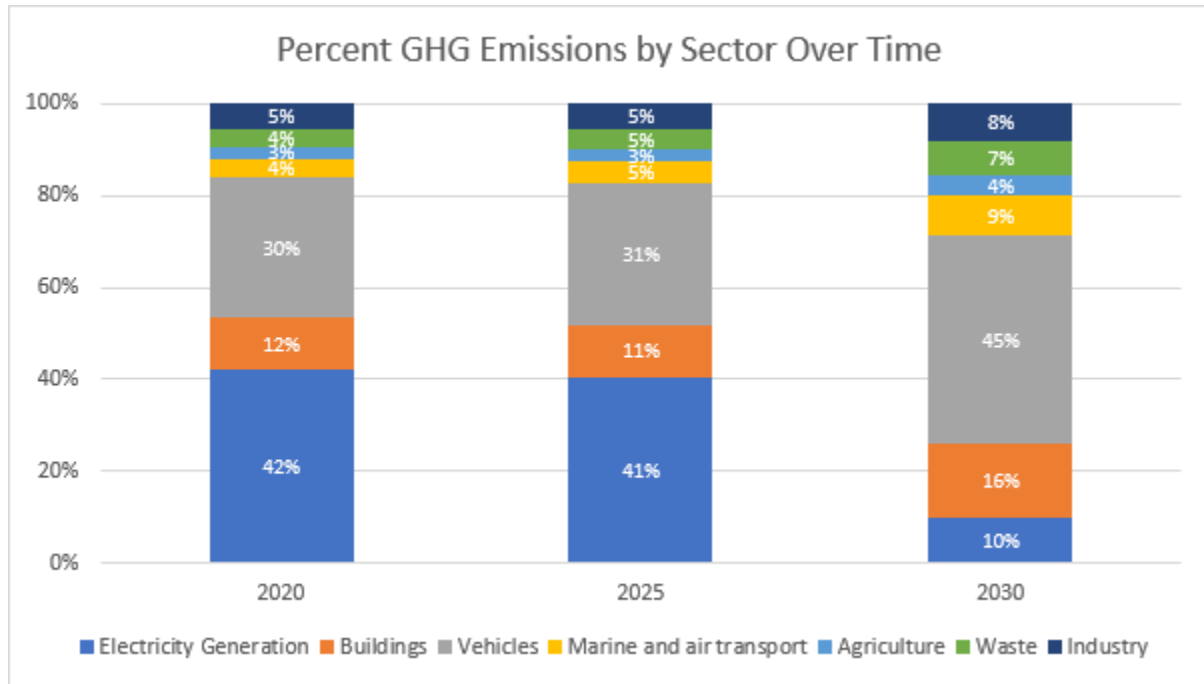


The above chart shows GHGs historically and projected out to 2030. GHGs are about 36% below 2005 levels in 2020, and decline to be well below our 2030 target of 53% (the bar represents a range based on assumptions).



This chart shows the same GHG decline but broken down by sector. As you can see, the majority of our reductions come from our actions on electricity.

Appendix "E" Proportion of GHGs in Nova Scotia



**Appendix “F”
Household Impact - Carbon Pricing**

	2025	2030
Average Household Consumption (2.3 people)	\$80,376	\$84,336
Price Impacts (Direct)		
Gasoline	\$420	\$613
Heating oil (and propane)	\$157	\$190
Electricity	\$280	\$416
	\$857	\$1,219
Consumption impacts		
Gasoline	-\$107	-\$211
Heating oil (and propane)	-\$18	-\$59
Electricity	-\$79	-\$116
Wood	\$5	\$8
	-\$199	-\$377
Indirect and economy size effects (i.e. higher non-energy goods and service prices)	\$1,378	\$2,265
Total Annual household cost (monthly)	\$2,036 (\$170)	\$3,107 (\$259)
Cost as % of household consumption	2.5%	3.7%