2040 NET ZERO FRAMEWORK

Accelerating Our Transition to a Clean, Sustainable Economy

FEBRUARY 2022

Prince Edward Island
CANADA

Contents

A Shared Commitment for a Sustainable Future

Prince Edward Island is a wonderful place to live, work, learn, innovate and raise a family. To sustain and grow opportunity in PEI for generations to come, a significant commitment is needed, by all Islanders, to transition to an economy that is both sustainable and prosperous.

Globally, through the Paris Agreement (a legally binding international treaty on climate change), there is a commitment by nations to limit global warming to below 2 degrees, preferably to 1.5 degrees Celsius, compared to pre-industrial levels.[1] The Intergovernmental Panel on Climate Change (IPCC) subsequently stated that to accomplish this goal, global emissions must be net zero by 2050. Canada can only achieve the 2050 net zero target (introduced in the *Canadian Net-Zero Emissions Accountability Act* in 2020) with the contribution of all Canadians, provinces, and territories.

Recognizing that Prince Edward Island can and must do more, the Government of PEI has set a more aggressive target—to achieve net zero greenhouse gas (GHG) emissions by 2040. "Net zero" is the difference between the amount of GHG emissions produced by human activity and the amount removed from the atmosphere through natural and technical methods and other measures.

Reaching net zero emissions will require incremental and significant changes to Islanders' daily lives and to the industries and sectors that contribute to the economic well-being of our province. **This direction requires a continued focus on energy conservation and efficiency that ensures Islanders and businesses have access to stable, affordable clean energy and technologies that contribute to economic growth.** The path ahead will also require innovation, collaboration, and leadership. Government has a key role to support and facilitate this transition to net zero, including through associated legislation and policies while taking important actions within government to contribute to the net zero target.

Now is the time to do way more than has ever been done before. There is much that can be done to reduce GHG emissions using today's solutions. However, in order to achieve our 2040 net zero target, there is a need to rapidly integrate early-stage and not-yet-developed next-generation systems, approaches and technologies. These efforts are important to make the necessary impact in the longer term.

[1] United Nations., United Nations., & Canada. (1992). United Nations Framework Convention on Climate Change. New York: United Nations, General Assembly.

To reach net zero, leadership is needed by Islanders, businesses, communities, First Nation communities, all levels of government, educational institutions, and research entities to adapt, change, and work together with the future in mind. **This is not new for Islanders. Islanders have demonstrated resiliency and leadership before.**

To navigate the path ahead, PEI must put a direction in place and allow for the flexibility to adjust this direction and efforts based on new developments, experience, and time. This document lays out the net zero vision for Prince Edward Island and provides a framework for the path to 2040. The Net Zero Framework will be reviewed frequently and will be supported by a series of five-year action plans that include interim emission reduction targets and reporting of progress made to date.

Our shared commitment to transition to a cleaner, prosperous economy in Prince Edward Island must be immediate and sustained over generations to come. All stakeholders have a critical role in creating a better future for all Islanders.

Now is the time for Islanders to do way more than has ever been done before.

A Vision For Prince Edward Island

Vision: To become Canada's first Net Zero Province.

Our path ahead is to be a model that Islanders are proud of and for others to follow.

To achieve this vision, ambitious targets have been set in PEI for 2030 and 2040.

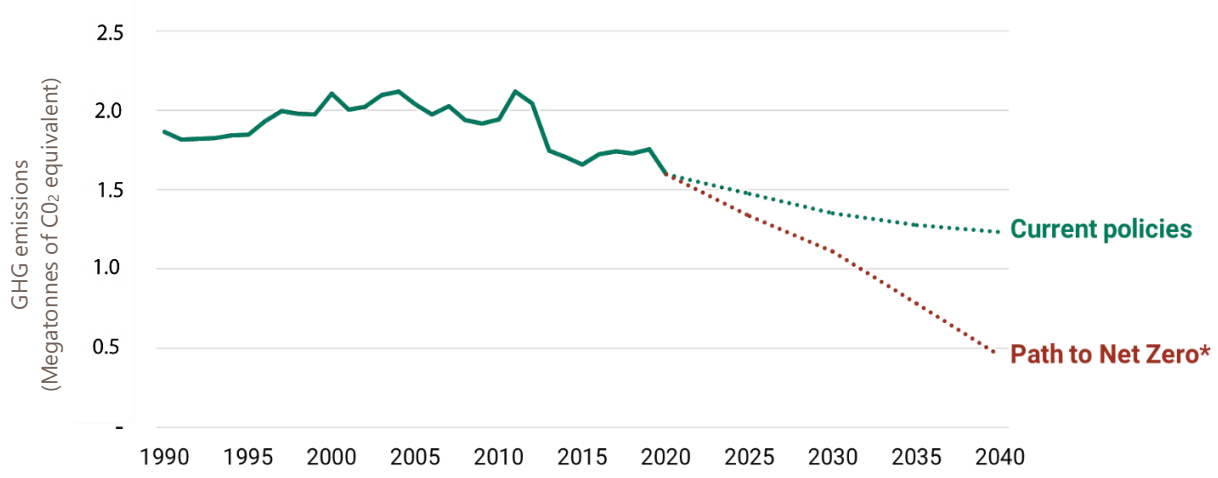
2030 target: Net Zero Energy

'Net zero energy' = producing no more GHGs from energy use than our land, ocean, and technologies can absorb. In order to achieve the 2030 target, PEI needs to reduce the amount of GHG emissions released into the atmosphere. This can be done through energy conservation, energy efficiency, renewable energy sources, and other alternative energy fuel sources and measures.

2040 target: Net Zero GHG Emissions

'Net zero GHG emissions' = producing no more GHGs from all sources than our land, ocean, and technologies can absorb. The 2040 target recognizes that emissions in PEI come from sources that include yet are beyond energy use (e.g., electrification, clean energy sources), such as the use of fertilizers, livestock, and waste. Achieving our 2040 target requires a balance between emission sources (GHGs produced that enter the atmosphere) and carbon sinks (anything that absorbs more carbon from the atmosphere than it releases).

Figure 1: Path to net zero with innovative policies, approaches and initiatives.



*The path to net zero was modelled with the assumption that sequestration levels would remain consistent with 2019

Source: Navius Research Inc., 2021 analysis using gTech energy-economy modeling tool.

The ***Net zero Carbon Act***[2] (2020) identifies targets to reduce PEI greenhouse gas emissions:

- **2030** by 2030 and for each subsequent calendar year, PEI greenhouse gas emissions will be less than 1.2 megatonnes of carbon dioxide equivalent per year; and
- **2040** by 2040 and for each subsequent year, PEI greenhouse gas emissions will be at a level where carbon neutrality is achieved.

[2] Prince Edward Island. 1st Session, 66th General Assembly (2020). *Net zero Carbon Act, Bill 127*. Retrieved from: www.ecolog.com/daily_images/1004644259-1004645088.pdf

A Sustainable Future

Islanders
Indigenous people and
First Nation Communities
Industry and Business
Communities
Municipalities
Provincial Government
Federal government
Training and Education
Research and Development

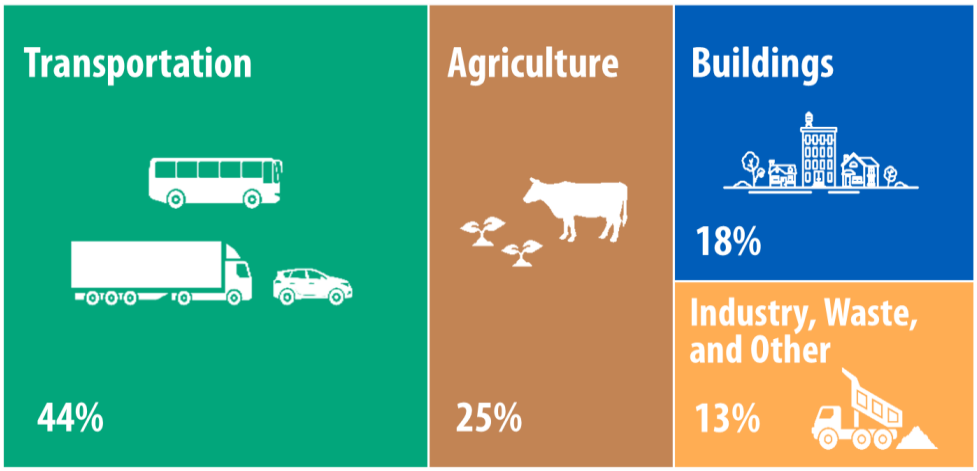
PEI's GHG Emissions

GHG Emission Sources

Greenhouse gas (GHG) emissions are added to the atmosphere through human and natural activities. The most significant sources of GHGs are from both household and industry emissions (Figure 2), including:

- Our cars, trucks, buses, boats, off-road vehicles, and other **transportation** (44%);
- **Agriculture** including fertilizer use, livestock, and manure management (25%);
- Our homes and **buildings**, with the use of fossil fuels for heating (18%); and
- **Industry, waste**, and other (13%).

Figure 2: Four sectors make up significant sources of GHG emissions in PEI (2019).

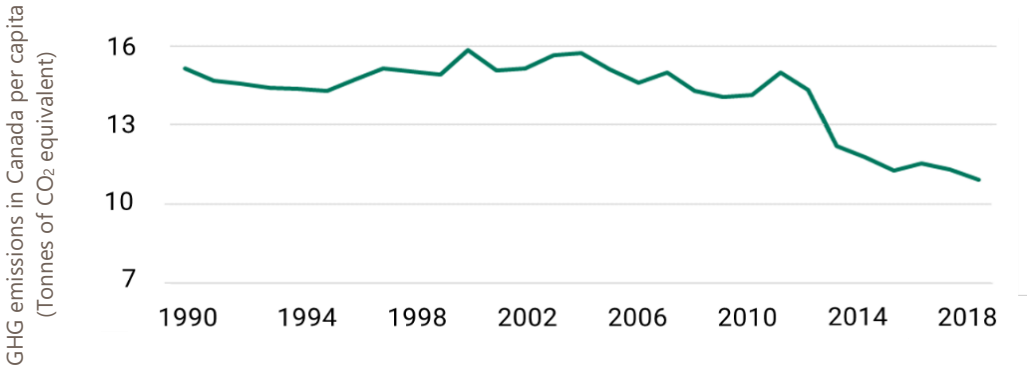


Source: 2019 GHG Emissions (from 2021 National Inventory Report: Greenhouse gas sources and sinks in Canada, Environment and Climate Change Canada).

GHG Emissions Trend

PEI is experiencing a decline in total GHG emissions (from all sources) on a per capita basis. Between 2005 and 2019, GHG emissions per capita were reduced by 3.6 tonnes (Figure 3).

Figure 3: PEI's total GHG emissions per capita is decreasing (1990 to 2019).

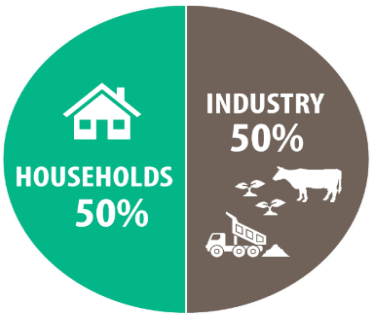


Source: National Inventory Report: Greenhouse gas sources and sinks in Canada, Environment and Climate Change Canada (2021).

Half of the total emissions in PEI come from household use (Figure 4). This is largely a result of the use of fuels as the primary source to heat homes and the reliance on personal vehicles that primarily use gasoline and diesel fuel.

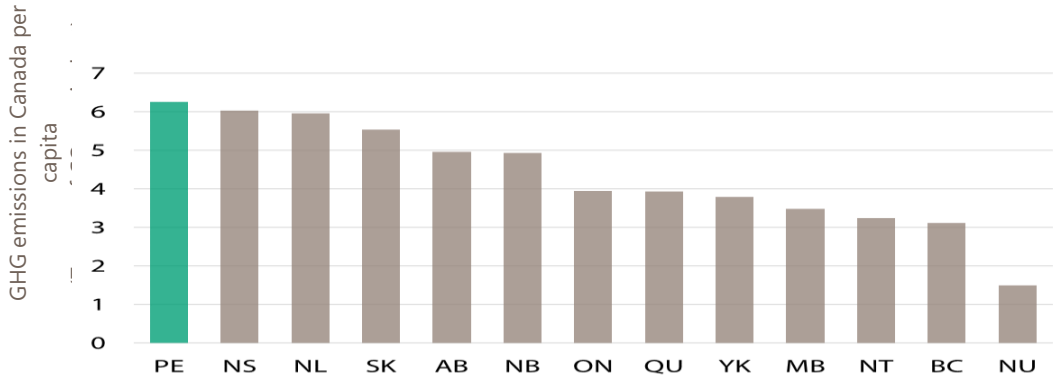
Compared to other Canadian jurisdictions, **PEI has the highest household emissions per capita** (Figure 5).
The use of conservation and efficiency measures has had a positive impact on reducing emissions from household use through home heating, and more recently, with transportation electrification initiatives.

Figure 4: 50% of PEI's emissions come from households



Source: Statistics Canada. Table 38-10-0097-01. Physical flow account for greenhouse gas emissions.

Figure 5: PEI has the highest household emissions in Canada per capita (2018).



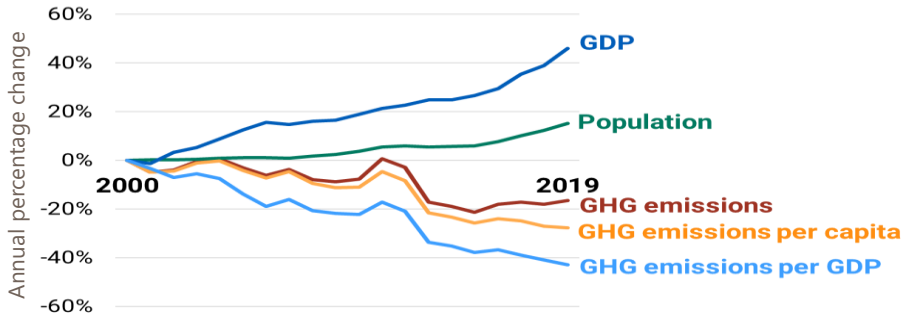
Source: Statistics Canada. Table 17-10-0005-01 Population estimates on July 1st, by age and sex.

More needs to be done if PEI is going to see transformational change and a more accelerated decline in GHG emissions to reach the net zero targets. For example, a transition to electrification for vehicles and homes that are affordable to all Islanders is key to the path ahead.

Since 2000, overall GHG emissions (as a result of all sources) have declined overall, even as PEI has experienced an upward growth trend in population and gross domestic product (GDP) (Figure 6).

This long-term trend demonstrates a positive contribution to a cleaner, more prosperous economy in PEI. The path ahead requires a continued and even greater commitment to reducing emissions per GDP and per capita.

Figure 6: PEI emissions have decreased since 2000 even with economic and population growth (2000 to 2019).



Source for GHG emissions: Environment and Climate Change Canada (2021). National inventory report: Table A12-3: GHG emissions for PEI by Canadian economic sector, 1990-2019.
Source for GDP expenditure-based, provincial and territorial, annual (x 1,000,000): Statistics Canada. Table 36-10-0222-01.
Source for Population estimates on July 1st, by age and sex: Statistics Canada. Table 17-10-0005-01.

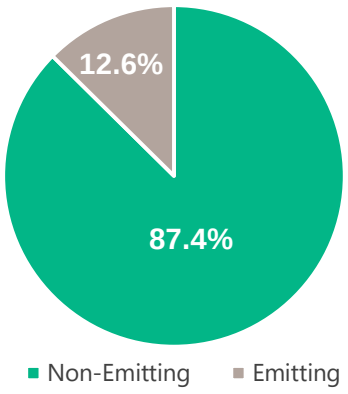
The Path Ahead

Building On Our Strengths

Prince Edward Island is well-positioned to successfully transition to a clean, sustainable economy that can contribute to economic growth through transformational change and a commitment that builds on key strengths. A few of those key strengths are identified below.

- PEI has a world-class wind regime with strong winds at both the northwest and eastern tips of the province. **Wind energy generation is an important part of PEI's sustainable energy portfolio.**
- Wind energy helps to keep electricity prices low for Islanders and reduces the need for PEI to import energy from outside of the province. On-Island wind accounts for 23% of PEI's electricity supply.[3] Continued investment in this industry will be integral to achieving our 2030 net zero energy target.
- **PEI is currently ranked number two of Canadian provinces for solar power system installations,** with various supports through rebate programs and system financing.[4]
- **PEI has a clean, reliable and affordable electrical system**. In 2019, non-emitting sources (e.g., wind, solar, nuclear) accounted for 87.4% of PEI's electricity supply (Figure 7). On a larger scale, Canada was considered to have one of the cleanest electricity grids in the world, with 80% of electricity coming from non-emitting sources (2020).[5]

Figure 7: Electricity Supply: Relatively Clean Electrical Grid (2019)



Sources: Prince Edward Island (2020). *47th annual statistical review, table 90*. Retrieved from: ww.princeedwardisland.ca/en/publication/annual-statistical-review

NB Power. *About us, Current generation mix*. Retrieved from: www.nbpower.com/en/about-us/our-energy

- **The Government of Canada is seeking to have 90% of Canada's electricity come from non-emitting sources by 2030.** The transition to clean electricity is much less significant in PEI than in other provinces that have traditionally relied on coal and other emitting sources. This will assist PEI in reaching our targets as we move towards the electrification of transportation and home heating.
- **PEI has a proven ability to work together to make positive change.** PEI has the advantage of being nimble and agile when making decisions and taking action. PEI's advantage is the ability to bring together industry, education/training and policy development to drive change while achieving high levels of collaboration to take action. For example, PEI has achieved some of the highest landfill diversion rates in North America through its provincial waste watch program run by the Island Waste Management Corporation. In addition, PEI was the first province to enact the *Plastic Bag Reduction Act*, which eliminates over 30 million plastic bags from circulation annually.
- **PEI's path to a clean, sustainable economy will require strong collaboration and commitment by all Islanders to lead in the path ahead to net zero.**

[3] Prince Edward Island (2020). *47th annual statistical review, table 90.* Retrieved from: www.princeedwardisland.ca/en/publication/annual-statistical-review

[4] Energy Hub.Org. *Complete guide for solar power Prince Edward Island 2021*. Retrieved from: www.energyhub.org/prince-edward-island/

[5] Canada. Environment and natural resources (2020). *Powering our future with clean electricity, key facts and figures*. Retrieved September 20, 2021, from: www.canada.ca/en/services/environment/weather/climatechange/climate-action/powering-future-clean-energy.html

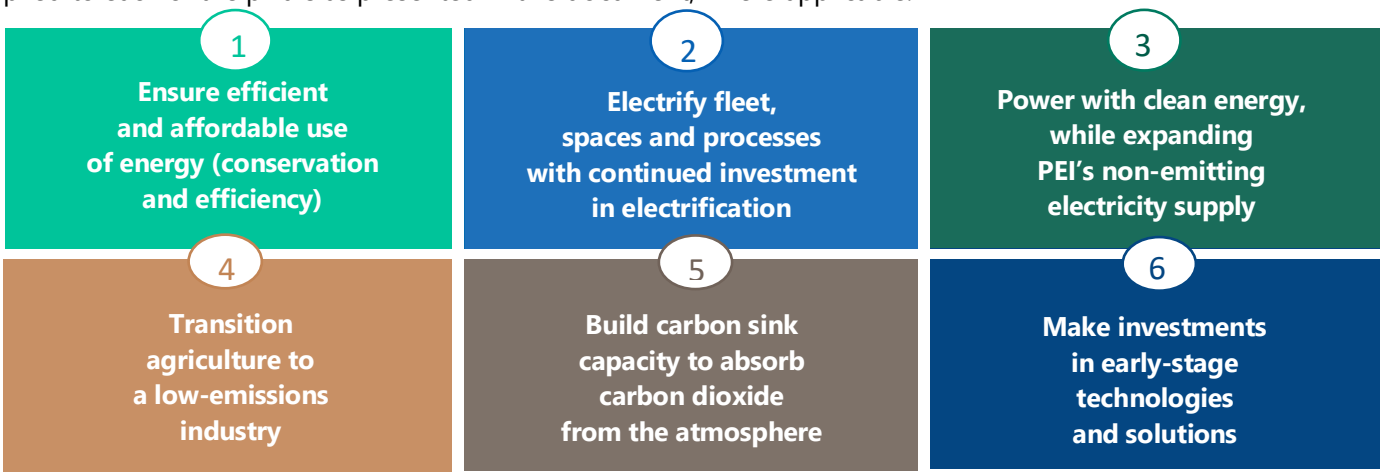
Defining PEI's Path to Net Zero

Clearly defined targets have been established for each sector—transportation, agriculture, buildings, industry and waste—to support the overall net zero 2040 target. For some sectors—transportation and buildings—there is a clear path ahead, and targets are more easily defined. In other cases, and in particular, agriculture, the exact path and defined sector-based targets are not as clear.

Leading modelling software and data collection have been used to make informed decisions and to define the environmental and economic impacts of proposed and future programs, policies, and other decisions specific to Prince Edward Island. These targets, as presented in this framework, use 2015 baseline data and have been identified based on net zero pathway data provided by Navius Research for all sectors in PEI, with the exception of agriculture and forestry. Targets for agriculture and forestry (Pillars 3 and 4 of this framework) were defined based on the national inventory report and a review of best practices across the country and beyond.[6]

Making rapid and significant progress will require a commitment to different approaches, initiatives, and priorities. This means incentives and legislative changes to support a cultural shift. It also means adapting, adopting, and developing best practices through pilots and special initiatives that can then be widely applied across the province and in other jurisdictions. Investments are required in the scale-up and adoption of technologies and solutions, as well as the development of a skilled workforce and the next generation of leaders. Job creation and economic development are among the important spin-offs that will benefit PEI's economy. These efforts will make sure that no Islander is left behind and that all Islanders, including marginalized populations, are part of the path ahead.

There are six key solutions that will be a clear focus over the duration of the Net Zero Framework. These solutions are applied to each of the pillars as presented in this document, where applicable.



These solutions include a combination of continuing to grow efforts in energy conservation and efficiency, achieving an even greater impact through electrification (home heating and transportation) in the near and medium-term, and making investments that have longer-term implications.

To contribute to this direction of increased usage and greater efficiencies, an investment in grid modernization and smart grid technology is critical. Partnerships with utilities and other key stakeholders are necessary to ensure the successful transformation and rapid transition to electrification. A key objective is to ensure the modernization of the grid is resilient, flexible, affordable, and reliable. In addition, along with jurisdictions around the world, the province will need to invest in research to test and pilot technologies that will have the optimal impact in PEI.

[6] Environment Canada. Greenhouse Gas Division (2021). National inventory report: Greenhouse gas sources and sinks in Canada, 2019 GHG emissions. Retrieved from: https://publications.gc.ca/site/eng/9.506002/publication.html

Guiding Decisions and Actions

Key to guiding decisions, investments and actions are to ensure the solutions are both economical and sustainable, resulting in a positive impact on our environment, Islanders and the PEI economy. The aim is to provide opportunity for all Islanders to contribute to PEI reaching net zero as a province, recognizing that it will take everyone working together to make the most significant impact. At the same time, Islanders will benefit from quality of life, resulting from a healthier environment (e.g., improved air quality) and more economical living (e.g., lower-cost heating solutions). Key to the path ahead is the alignment of climate change action (as defined in the Net Zero Framework) and priorities, measures, and initiatives to support climate change adaptation.

The guiding principles are as follows:

Measuring Our Collective Progress

The Government of PEI works closely with the federal government, through Environment and Climate Change Canada (ECCC), to receive data that can be used to accurately measure and evaluate progress related to both emission reduction and carbon sequestration ("a natural or artificial process by which carbon dioxide is removed from the atmosphere and held in solid or liquid form").[7] In addition, the Government of PEI continues to work with ECCC to strengthen the collection of data and the ability to fully capture efforts that have a positive impact on emissions in PEI.

Efforts will be measured on an ongoing basis and reported annually based on the series of five-year action plans developed to align with and support the key directions identified in the 2040 Net Zero Framework. While the data gathered by the federal government is very valuable, there is a two-year lag from the timing of when the information is gathered and when the analysis is available for use. This will be an important consideration as part of the reporting process for this framework.

The Framework outlines key sector targets and goals, as well as key directions and measures of success to support each goal. The key directions incorporate the six solutions presented earlier through a sector lens. This framework will guide the path ahead to achieve net zero emissions by 2040.

[7] Oxford University Press. (2021). Carbon sequestration. In Lexico.com dictionary. Retrieved October 21, 2021, from: https://www.lexico.com/ definition/carbon_sequestration

The Path Ahead → 2030: Net Zero → 2040: Net Zero GHG

Pillar 1: Transform the Way People and Goods Move

Goals:
1. Reduce our reliance on passenger vehicles
2. Transition to zero-emission vehicles and non-emitting fuel sources

Target: Reduction in emissions from transportation

2030: 25-30% ↓ **2040:** 55-65% ↓

Pillar 2: Transition to Efficient and Cleaner Buildings

Goals:
1. Make existing homes and buildings more energy efficient
2. Construct more efficient homes and buildings

Target: Reduction in emissions from buildings

2030: 65-70% ↓ **2040:** 85-95% ↓

Pillar 3: Shape Agriculture for PEI's Transition to Net

Goals:
1. Reduce emissions from crops and livestock
2. Improve soil health and the ability to absorb carbon
3. Accelerate use of advanced agricultural clean technologies

Target: Reduction in agriculture-related emissions

2030: 10-15% ↓ **2040:** 35-40% ↓

Pillar 4: Remove Carbon through Forestry, Technologies, and Emerging Opportunities

Goals:
1. Maintain what we have
2. Grow what we need
3. Invest in early-stage technologies

Target: Increase in carbon sequestration

2030: 10-15% ↑ **2040:** 25-30% ↑

Pillar 5: Create a Clean Industry and Waste

Goals:
1. Enable cleaner PEI industries and businesses
2. Explore waste to energy opportunities
3. Invest in next generation technologies

Target: Reduction in emissions related to industry and waste

2030: 65-70% ↓ **2040:** 85-95% ↓

Pillar 6: Inspire Transformational Change through Leadership and

Goals:
1. Create the right environment to drive change
2. Empower Islanders to partner in path ahead
3. Lead through expertise and collaboration

Targets: **2030:** Net Zero Energy **2040:** Net Zero GHG Emissions

PILLAR 1 Transform the Way People and Goods Move

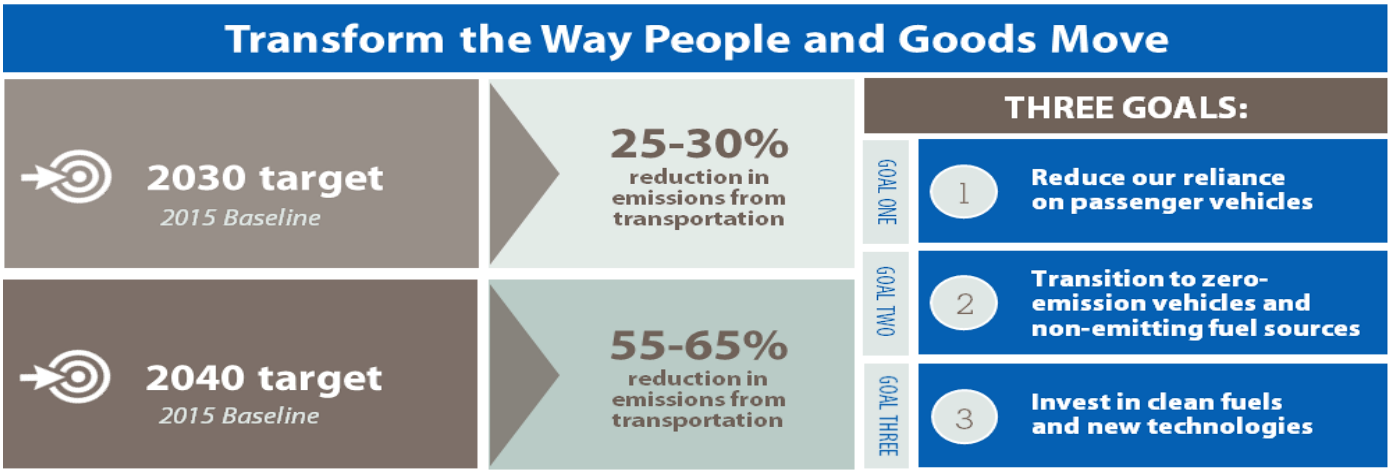
Transportation is the largest source of greenhouse gas emissions in PEI, accounting for 44% of total emissions in 2019. A majority (63%) of PEI's transportation emissions come from passenger vehicles (Figure 8).

The transportation sector has the greatest potential for significant emissions reduction in the short and medium term. Investments have been initiated to advance priorities in this sector and will need to continue into the future at a more significant level and with a greater commitment by Islanders. The primary objective is to reduce emissions from the use of passenger vehicles that rely on fossil fuels (e.g., gasoline and diesel fuel).

To truly impact change within the transportation sector—**the sector with the highest emissions in PEI** —it is important to create an environment that supports all Islanders, regardless of geography, income levels, backgrounds, and other factors, and that influences positive changes in behaviour so that everyone is contributing to making a difference.

Figure 8: Sixty-three (63%) of PEI's transportation emissions come from passenger cars and trucks (2019).

Source: Environment and Climate Change Canada. National Inventory Report (2021). Table A12-3: GHG Emissions for Prince Edward Island by Canadian Economic Sector, 1990-2019.



Goal 1.1: Reduce Our Reliance on Passenger Vehicles

Reducing the level of emissions generated from the use of passenger vehicles (and in particular those that rely on gasoline and diesel fuel) will significantly reduce total emissions from transportation. Well-planned communities and investment in active and public transportation infrastructure will contribute to this goal while providing benefits of reduced air pollution, preservation of natural areas, and healthier lifestyles for Islanders.

Key Directions

A. Create affordable and safe active transportation and public transit options for all Islanders.

Reducing the overall reliance on passenger vehicles can be done through the availability of more different types of transportation options that are affordable, dependable and sustainable for all Islanders. Working with communities and the federal government, the Government of PEI has been investing in transportation options. These efforts must continue and should include leading solutions in order to have the greatest impact on emission reduction in transportation.

Priorities include:

- Invest in active transportation routes (e.g., walking, using a wheelchair, running, cycling) across the province.
- Grow the use and availability of affordable and dependable public transit in rural and urban PEI.
- Develop and grow alternative transportation solutions, such as car-sharing programs.
- Ensure places and spaces are safe, welcoming, and accommodating to all Islanders.

Anticipated Outcome

Total decline in the number of vehicles per capita registered in PEI

Measures of Success

- Smart investment in active transportation routes and car-sharing options that engage broad and diverse participation.
- Increase in annual passenger use of public transit in both urban and rural areas.

B. Build smartly-designed communities.

Communities that are well-designed with sustainability in mind support the development of transportation options (e.g., public transit routes, active transportation pathways), attract more local services for residents, and encourage development where services are located. Smartly-designed communities also support more energy-efficient homes, buildings and municipal services (e.g., water treatment and distribution, wastewater management, waste management).

Priorities include:

- Adopt a provincial land-use planning framework that is developed, implemented and administered with the guidance of a team of registered professional planners.
- Develop provincial land-use policies that promote sustainable development, including a built environment that supports public transit and active transportation.
- Provide clear direction and support to communities to help them gain a stronger understanding of net zero and the potential for sustainable opportunities within their community.
- Pilot initiatives to create environmentally and economically sustainable neighbourhoods and communities in partnership with municipalities.

Critical to supporting smartly-designed communities is access to reliable broadband internet in rural and urban areas and the attraction of a variety of local services for residents.

Anticipated Outcome

Fully adopted provincial land use planning framework designed with a net zero lens

Measures of Success

- A provincial land-use planning framework and supporting policies to ensure successful implementation.
- 2 to 3 sustainable neighbourhood pilots that identify key findings related to improved community planning.

Goal 1.2 Transition to Zero-Emission Vehicles and other Non-emitting Fuel Sources

Another important way to reduce the amount of transportation-related GHG emissions is to replace gasoline and diesel engine cars and trucks with zero-emission vehicles (ZEVs). This shift will require government to invest in its own zero-emission fleet and to create the environment and supports that will result in a more rapid increase of ZEV purchases by Islanders. Further development and use of clean fuel sources are also important when reflecting on the transportation sector as a whole.

Key Directions

A. Proactively accelerate the adoption of zero-emission vehicles.

Government's role is to put in place effective zero-emission vehicle (ZEV) standards and appropriate infrastructure investment to facilitate ZEV growth. Creating the right environment to facilitate economic solutions and changes in consumer behaviour also requires education and incentives to support Islanders with their investment decisions.

Priorities include:

- Establish a zero-emission vehicle (ZEV) mandate with a target to convert all new light-duty vehicle sales to zero-emission vehicles by 2035; develop interim 2025 and 2030 targets that will accelerate the achievement of the 2035 target.
- Make the necessary levels of investment in public ZEV infrastructure to support a sustainable path to electrification, including for businesses and multi-unit residential buildings.
- Stimulate increased adoption of zero-emission vehicles through incentives and other mechanisms that make personal investments more affordable for Islanders.

Anticipated Outcome

ZEVs account for greater than 60% of PEI's registered passenger vehicles by 2040

Measures of Success

- Increase in public ZEV charging infrastructure throughout PEI.
- Zero-emission vehicles account for a growing percentage of total registered passenger vehicles in PEI.
- ZEVs account for 100% of light-duty (cars and passenger trucks) dealership sales by 2035.

B. Transition to a zero-emissions government fleet.

The Government of PEI will lead by example by investing in zero-emission vehicles for its government-owned fleet and school buses. Investments in zero-emission medium and heavy-duty vehicles will accelerate as technologies become available and responsible investments can be made. PEI is committed to aligning with the most ambitious targets related to the transition to a 100% zero-emission government-owned fleet in Canada.

Priorities include:

- Convert the existing government fleet to zero-emission vehicles.
- Mandate zero-emission for all new purchases of light, medium, and heavy-duty vehicles.
- Invest in ZEV charging infrastructure at government buildings.

Anticipated Outcome

100% zero-emission government-owned fleet (light, medium, heavy-duty) by 2040

Measures of Success

- 100% zero-emission light-duty vehicle fleet by 2035.
- Accelerated growth trend in the electrification of the government-owned medium and heavy-duty fleet to achieve a 100% zero-emissions fleet by 2040.

Goal 1.3: Invest in Clean Fuels and New Technologies

Further advancement is needed in clean fuels and new technologies to significantly reduce GHG emissions in the transportation sector. The technologies required to meet emissions reductions in the medium and heavy fleet are currently in an earlier stage of development and the timing of readiness for widespread adoption is uncertain. A mix of public and private investments is needed to bring these technologies to a stage where they can have the desired impact on net zero targets.

Key Directions

A. Proactively invest in new technologies.

To get to net zero, there is a need to significantly scale-up low-carbon generation and to focus on electrification; this includes investments in clean fuels such as hydrogen. Making the necessary and appropriate investments in technologies can ensure the path to net zero is realized.

Priorities include:

- Bridge the transition of medium and heavy-duty vehicle fleets to electrification through investment in clean fuels that are not yet commercially available (e.g., biofuels, hydrogen).
- Explore the full potential and opportunities for green hydrogen to support the path to net zero.
- Invest in pilots and essential infrastructure to support the deployment of clean technology including advancements in electrification, autonomous vehicles, and artificial intelligence technologies.

Anticipated Outcome

40% (or more) of registered medium and heavy-duty vehicles are zero-emission by 2040

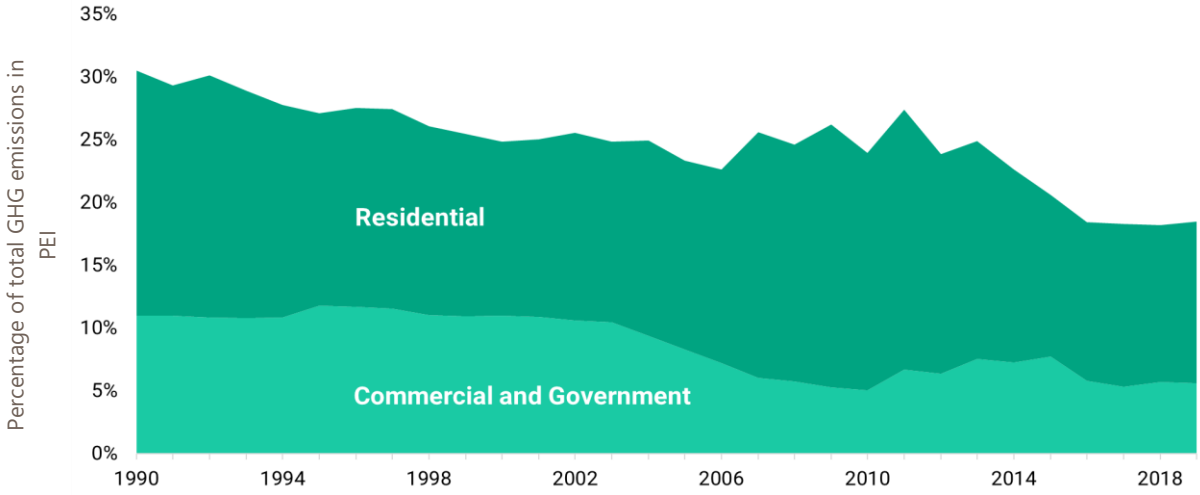
Measures of Success

- Level of investment in new emerging technologies and measured impact of these technologies.
- Accelerated growth trend in the electrification of medium and heavy-duty vehicles.

PILLAR 2 Transition to Efficient and Cleaner Buildings

Residential, commercial and government buildings account for 18% of total emissions in PEI (Figure 9). While there is a rapid move toward electrification, 78% of existing homes in PEI still use heating oil. Government is assisting with the transition away from fossil fuels through programs that promote awareness, facilitate fuel switching, and provide financial incentives and expertise for efficiency upgrades. Government will continue to invest in these highly subscribed programs that assist in reducing GHG emissions and provide economic benefit to homeowners. A focus will also be on developing programs for commercial and industrial buildings that will be key to reaching PEI's 2040 target.

Figure 9: Building emissions decreased to 18% of total GHG emissions in 2018.

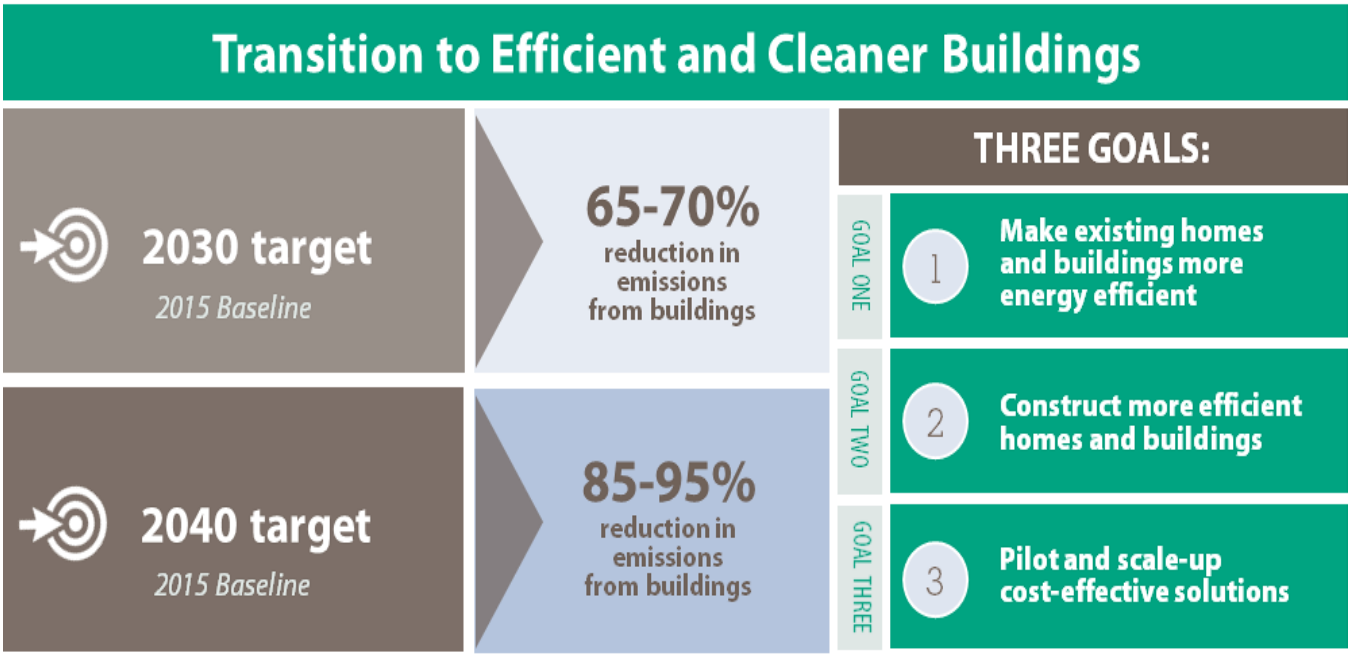


Source: Environment and Climate Change Canada (2021). *National inventory report, 2019 GHG emissions.*

The Government of Canada facilitates an environment that makes new buildings more energy efficient. Working with the provinces and territories, the federal government will develop a building code that, when adopted by provinces/territories and used by builders, could enable all new buildings to be built 'net zero energy ready' by 2030.

A 'net zero energy' (NZE) building is one that can produce as much energy using renewable energy as it consumes. These buildings are expected to be a significant percentage more energy efficient than a new building constructed to the building code minimum. A building that is 'net zero energy ready' is designed, modelled and constructed the same as a NZE building but does not have on- or off-site renewable energy generation. Examples of what makes the building more energy efficient are improved air sealing, increased insulation levels, high-performance windows and doors, appropriate water heating equipment, and so forth.

It is anticipated that Canada's built environment can reach net zero targets by relying on technologies and measures available today. The key is to address any hurdles to adoption while progress is being made to turn these technologies into more cost-effective solutions. Government plays an important role in supporting Islanders in accessing efficient and affordable solutions.



Goal 2.1: Make Existing Homes and Buildings More Energy Efficient

Transitioning homes and buildings to become more energy-efficient through the use of smarter fuels in a cost-effective manner can be done with existing technologies and will require leadership, commitment, government incentives, and involvement by the construction industry, Islanders and businesses.

Key Directions

A. Facilitate the switch to cleaner energy sources in Island homes, businesses, and government buildings.

Cost-effective solutions are needed to support Islanders and businesses in switching away from heating oil to other energy sources (e.g., electricity, biomass). Local utilities are key partners in ensuring an affordable and sustainable supply of electricity.

Priorities include:

- Provide incentives to support Islanders and businesses in accessing affordable solutions.
- Develop policies to ensure lower-income households are able to invest in high-efficiency technologies and benefit from energy-cost savings.

Anticipated Outcome

90% of all types of homes and buildings use a non-emitting heat source as the primary heating system by 2040

Measures of Success

- Growing trend in the number of households and the number of businesses switching fuels for primary heating systems, resulting in 90% of homes and commercial buildings switching fuels by 2040.
- 100% use of non-fossil fuel sources in primary heating systems in new government-owned buildings and all government-owned building retrofits by 2030.

B. Significantly accelerate the adoption of energy-efficient measures in Island homes, businesses, and government buildings.

Innovative policies and an appropriate level of investment by government are needed to accelerate the adoption of energy-efficiency measures. Also needed are strategies and supports that will help Islanders make informed decisions (e.g., energy audits, easy access to affordable solutions, investment incentives). Insights on consumer behaviour will provide the foundation for policy and program design to encourage efficiency choices.

Key to supporting this change is building capacity in the construction sector to support the growing demand for energy-efficient homes and buildings. These efforts will require education of net zero-ready guidelines (based on the national codes and stretch codes adopted in PEI) and innovative, timely and flexible approaches to training and workforce development in partnership with post-secondary institutions.

Priorities include:

- Make appropriate investments (similar to the level for fuel switching) to encourage and promote the adoption of energy-efficient measures.
- Establish the necessary environment and supports to facilitate the transition to adopt net zero-ready guidelines, including national codes and stretch codes specific to PEI.
- Provide programming that specifically addresses the needs of low-income Islanders and growth in the use of energy-efficient measures.
- Support the development and successful implementation of energy performance labelling initiatives for residential and commercial buildings.

Anticipated Outcome

75% of new PEI buildings have energy performance better than or equivalent to 2015 code requirements by 2040

Measures of Success

- Rapid upward trend in the adoption of net zero-ready builds.
- Declining trend in energy use per square foot of all buildings.
- Growing decline in energy consumption for residential and commercial buildings (measured through incentive programs and audit) as well as government buildings.
- Growing trend in the number of homes and buildings sold that have high-performing results through energy performance labelling initiatives.

Goal 2.2: Construct More Efficient Homes and Buildings

Transitioning to highly energy-efficient homes and buildings requires leadership, commitment, and incentives by government and industry to ensure new construction meets standards that are essential to achieving net zero ready.

Key Directions

A. Be at the forefront of national building codes and the adoption of stretch codes for PEI.

The Government of PEI will bring leadership for the timely adoption and compliance of changes to the National Building Code and National Energy Code and the development of stretch codes (including those that anticipate and prepare for the future direction nationally). Government investments and capacity building in the local construction sector are needed to lead the transition to more economically feasible net zero-ready construction for all Islanders.

Priorities include:

- Establish the necessary environment and supports to facilitate the adoption of the National Building Code and National Energy Code.
- Develop and support the adoption of stretch (or advanced) code provisions for PEI that exceed the national building codes (stretch codes are locally mandated or an alternative compliance path that is more aggressive than the national building codes).
- Lead by example through investments in 'net zero ready' new construction of government buildings in partnership with the federal government.
- Provide incentives to support the growth in building affordable energy-efficient homes and commercial buildings, including programs specific to the needs of low-income Islanders.

Anticipated Outcomes

100% adoption of National Building and Energy Codes
Mandatory energy performance labelling on any building sold in PEI as of 2030

Measures of Success

- Net zero-ready for all newly constructed government-owned buildings starting in 2025.
- Net zero-ready for all new residential construction as of 2030.
- Leading among Canadian jurisdictions in the progress towards net zero-ready for all new commercial construction.
- 100% use of non-fossil fuel sources in primary heating systems in new construction for residential homes by 2025 and for commercial buildings by 2030.
- Growing annual number of homes and buildings sold with high-performing results (as identified through new energy performance labelling initiatives).

Goal 2.3: Pilot and Scale-up Cost-Effective Solutions

Given a long history of collaboration, PEI is uniquely positioned for strong leadership among the construction industry, government, and talent from around the world to engage in the testing and deployment of new solutions, many of which may be piloted in government-owned buildings.

Key Directions

A. Become a demonstration site to pilot and scale-up early-stage and innovative systems and technologies.

These efforts will support the testing and development of cost-effective solutions that will work to eliminate emissions in the buildings sector. The aim is to achieve widespread adoption of affordable solutions that lead to greater energy efficiency in all types of buildings. Making investments within the next decade will provide greater benefits to contribute in the longer term to the 2040 target.

Priorities include:

- Work with industry, research entities, and educational institutions to identify and develop innovative opportunities.
- Support and provide incentives for pilot projects that may be well-suited to PEI and have the potential to make a positive impact and contribution to net zero in an economical manner.

Anticipated Outcome

Investment in innovative projects that result in affordable, energy-efficient building solutions by 2030

Measures of Success

- 2 to 3 pilot projects completed, including with the involvement of government-owned buildings (e.g., pilot project demonstration).
- Levels of investment and adoption of new solutions that involve Island companies in the development and/or testing.

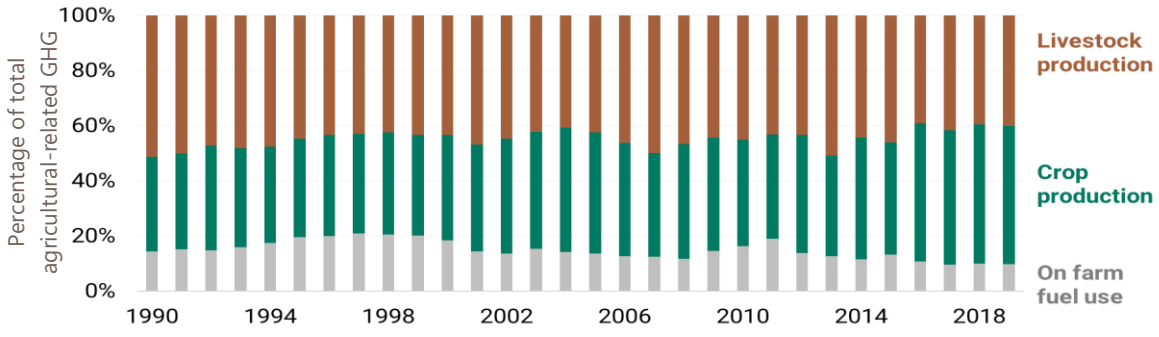
PILLAR 3 Shape Agriculture for PEI's Transition to Net Zero

Twenty-five percent (25%) of PEI's GHG emissions are from agriculture. There are three sources of emissions from agriculture including crop production, livestock production, and on-farm fuel use.

Agriculture activity is unique as the majority of greenhouse gases emitted from the sector are nitrous oxide, methane and carbon dioxide. Agriculture soils can help to reduce carbon dioxide in the atmosphere by storing carbon on agricultural lands in soil as organic matter, perennial vegetation, and trees. Nitrous oxide emissions originate from field-applied organic and inorganic fertilizers, crop residue decomposition, cultivation of organic soils, storage of manure, and indirectly through the movement of nitrogen (e.g., leaching and run-off). Methane emissions are released directly from animals, and when organic matter in livestock feed and stored manure decomposes under anaerobic conditions (a natural process in which microorganisms break down organic materials).[8]

A majority of the agriculture emissions come from crop and livestock production (Figure 10). On-farm fuel use is a less significant source of GHG emissions and has reduced as an overall percentage of agriculture emissions over the last two decades.

Figure 10: A majority of PEI's agricultural emissions come from crop and livestock production (2019).



Source: Environment and Climate Change Canada. (2021). *National inventory report: greenhouse gas sources and sinks in Canada*, Table A12-3: GHG Emissions for Prince Edward Island by Canadian Economic Sector, 1990-2019.

[8] Government of Canada. (2020). *Greenhouse gases and agriculture*. Agriculture and Agri-Food Canada. Retrieved from: https://agriculture.canada.ca/en/agriculture-and-environment/climate-change-and-air-quality/greenhouse-gases-and-agriculture

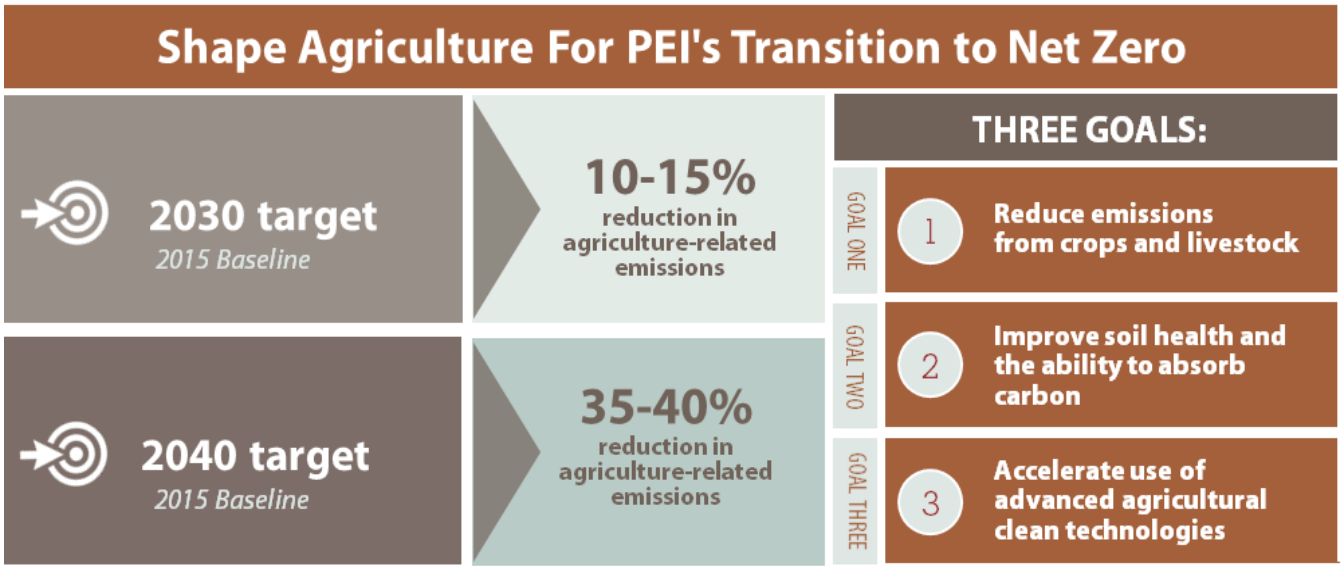
Management practices and efficiency gains that can be made on-farm will help reduce emissions while boosting productivity. There is strong evidence of the commitment to sustainable agriculture practices in PEI, which is demonstrated through the ongoing work of industry to implement proven practices. This is also demonstrated by the government's continued commitment to support these efforts through programming, funding and other investments that align with industry best management practices. While a focus on sustainable agriculture practices is not new to PEI, **our commitment going forward needs to be stronger and with a sense of urgency, where industry is driving change with support from government.**

The national fertilizer industry has prioritized climate-smart agriculture as a way to minimize the impact on the environment while focusing on record-keeping to verify emissions reductions. This type of leadership is needed and must continue throughout the sector.

Industry leadership and participation are critical if PEI is going to reduce emissions from agriculture, and without these efforts, emissions may continue to increase as the need for food continues to grow. To achieve the necessary level of overall impact, strong partnerships between industry and government are required, and environmental efforts must be balanced with sustainable economic growth. Agriculture is a vital economic and social contributor to Prince Edward Island's communities and economy—in the past, present, and future.

The path ahead is not a simple one. Decreasing levels of soil organic matter in croplands can result in the need for increased amounts of soil amendments such as nitrogen fertilizer. In addition, practices to increase carbon sequestration (the process of capturing and storing carbon dioxide from the atmosphere) in soils, such as conservation tillage, cover cropping, and extended crop rotations, can assist with building soil organic matter. However, these types of practices are often time-consuming and expensive for industry, and uptake can be limited. Technologies for carbon capture, utilization and storage are at different stages of development and in some cases, the ultimate prospects for economical solutions are not yet proven.

Industry, government and stakeholders must collaboratively navigate the path ahead to achieve an aggressive emissions reduction target and a focus on new developments in carbon removal in agriculture that are essential to PEI's path to net zero.



Goal 3.1: Reduce Emissions from Crops and Livestock

Reducing emissions related to crop and livestock production will require a collaborative commitment by industry, government and stakeholders to achieve a strong balance between environmental impact and cost efficiencies that will support a sustainable agriculture industry.

Key Directions

A. Lead among provinces in the national efforts to achieve emissions reduction from fertilizer.

Industry and government have made progress in emissions reduction from fertilizer (including with the involvement of various stakeholders). These efforts include the use of standards that are reflective of the available science, technology and regulatory requirements for PEI conditions.

There is much more that needs to be done. Together, industry and government must implement proven GHG-efficient farming technologies and practices as well as bold initiatives and approaches that will achieve a much greater reduction in GHG emissions while having minimal impact on the profitability, productivity, or the adaptive capacity of PEI's agriculture industry.

Priorities include:

- Continue to provide programs and supports that will help grow industry efforts to adopt leading best nutrient management practices.
- Work with industry to successfully implement national priorities identified to meet Canada's 2030 emissions reduction target (currently set at a 30% reduction below 2020 levels in emissions from fertilizer by 2030); incremental targets to be set for 2030 to 2040.
- Support investment in research and development, working with industry and researchers, that will lead to GHG-efficient farming technologies and approaches (e.g., precision agriculture, irrigation).

Anticipated Outcome

30% or greater reduction in emissions from fertilizer by 2030

Measure of Success

- Leading among provinces in the progress made towards national priorities (that are applicable to PEI) for Canada's 2030 target and anything beyond.
- 90% of agricultural land in PEI uses industry-leading best nutrient management practices by 2040.

B. Aggressively target methane emissions reduction from livestock.

Further adoption and development of low-risk solutions, including more sophisticated manure management systems, selective breeding and other on-farm mitigation practices, will support these efforts. To reach this target, there is a need for investment in leading research and development in areas such as food additives that will significantly reduce methane emissions. There is also a need to invest in economically feasible solutions and technologies, some of which have not been proven yet.

Priorities include:

- Support widespread adoption of industry-leading practices for manure management and other areas of livestock, working with industry and stakeholders.
- Invest in research and development partnerships (with researchers and leading industry expertise) and projects that will lead to the implementation of industry best practices.

Anticipated Outcome

25-35% reduction in methane emissions from livestock by 2030

Measure of Success

- Annual progress made towards the 2030 target.
- 90% of the livestock industry in PEI using industry-leading best practices for livestock management by 2040.

Goal 3.2: Improve Soil Health and the Ability to Absorb Carbon

Some emissions cannot be eliminated through the proven technologies and practices identified previously. This results in the need to capture and store carbon dioxide from the atmosphere to reduce any remaining emissions (a process called carbon sequestration). To be successful, it is critical to implement effective strategies that optimize the ability of PEI agricultural land to absorb carbon while supporting the sustainability of PEI's farming industry and ecosystem health. The priority is to grow the economy in a sustainable manner while reducing the impact of emissions.

Key Directions

A. Enhance the ability of PEI farmland to absorb carbon.

A strong commitment by industry and government is needed to implement strategies that will build PEI's cropland capacity to absorb carbon dioxide ('carbon') from the atmosphere. The aim is to contribute to efforts to balance the amount of carbon captured in agricultural land with the amount of GHG emissions that could not be eliminated through emission reduction measures in agriculture (discussed previously).

These efforts will involve working with farmers to implement best management practices (e.g., soil tillage, perennial production) and other key approaches to rapidly increase capacity by converting marginal arable farmland to carbon-sequestering landscapes, including natural uses (e.g., wetlands, forest) and other forms of production (permanent pasture and agroforestry systems). Afforestation of marginal lands and expansion of buffer zones are other approaches to enhance the land's ability to absorb carbon while also optimizing other environmental benefits for PEI. The ultimate outcome is to turn all of PEI's croplands into a carbon sink (a carbon sink is when more carbon from the atmosphere is absorbed than released).

Priorities include:

- Work with farmers to implement management practices to enhance the ability of croplands to absorb carbon.
- Work with farmers to convert land to natural use that will enhance the ability to absorb carbon.

Anticipated Outcome

100% of PEI farmland is a carbon sink by 2040

Measures of Success

- Growing number of acres that use soil tillage best management practices.
- Growing number of acres of perennial crops.
- Reduction in the number of acres of forest land converted to cropland.
- Growing number of acres of marginal farmland converted into thriving forests, pastures, agroforestry or perennial cropping systems.

Goal 3.3: Accelerate Use of Advanced Agricultural Clean Technologies

To aggressively advance the path to net zero through agriculture practices and use, there is a need for further investment and adoption of proven technologies as well as investment in the deployment of technologies that are not yet fully developed (or where the exact prospects are uncertain) and that may play a significant and important role.

Key Directions

A. Leverage investment funds to accelerate the scale-up and industry adoption of economically-feasible technologies.

The aim is to invest in the development and use of technologies that have the potential to make a significant impact on PEI's path to net zero.

Priorities include:

- Promote industry-wide adoption of proven and emerging technology solutions, such as precision agriculture, working with researchers, government, and industry to support investment and promotion of use.
- Leverage investment funds to accelerate the scale-up and adoption of agri-technologies in the early stages of development. Examples include the research and development of new crop varieties and methods such as biochar amendment (biochar is a charcoal-like substance that is made by burning organic material from agriculture wastes and is also called biomass), that contribute to soil health, fertility and sequestration.

Anticipated Outcomes

Increase the carbon sequestration potential of PEI's agricultural land

Environmental and economic contributions to PEI's agriculture industry

Measures of Success

- Strategic investments made by industry, including the amount of leveraged federal and provincial government funds to support these investments.
- Industry use of technology-based solutions that contribute to efforts towards the 2040 net zero target.

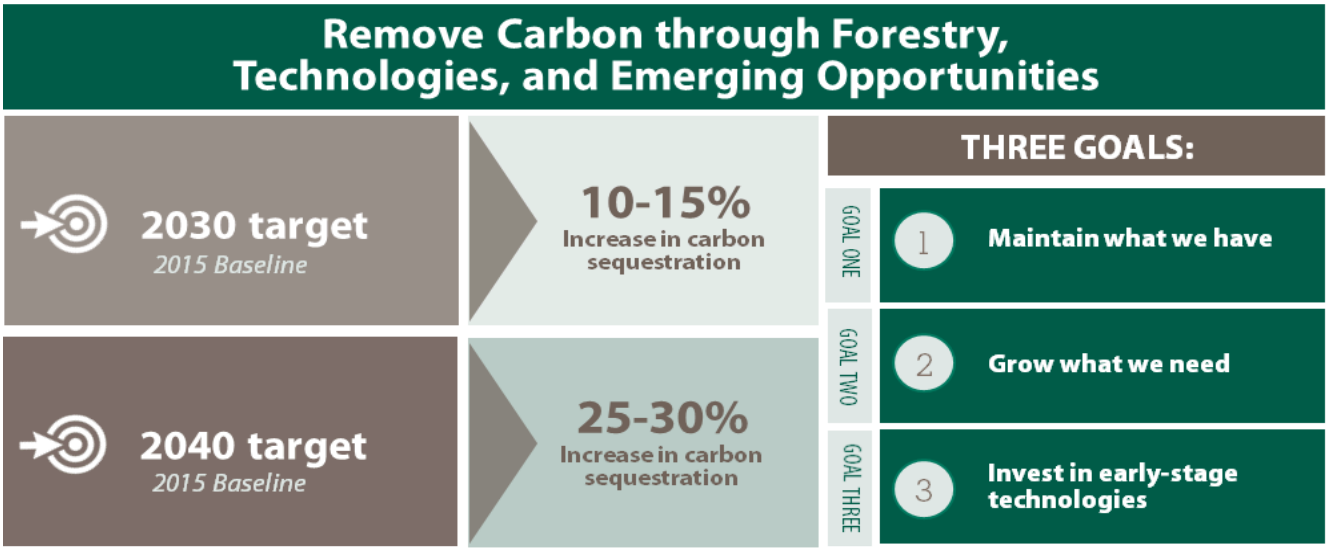
PILLAR 4 Remove Carbon through Forestry, Technologies and Emerging Opportunities

PEI's 2040 net zero GHG emissions cannot be achieved solely by the reduction of greenhouse gas emissions through the strategies and methods previously discussed. As discussed under Pillar 3 as it relates to the agriculture sector, another way is to reduce the remaining emissions through carbon removal. Removing carbon from the atmosphere is a process that can be accomplished through several approaches, including **biological** methods, which use forests, marine environments, and agricultural systems (as discussed previously), as well as **technologies**.

Forested land is one of the most significant carbon sinks (a carbon sink is when more carbon from the atmosphere is absorbed than released). To gain a better understanding of the current state of PEI forests, the government has commissioned a report to be released in 2022. In the meantime, the Government of PEI has made a commitment to rapidly increase the output of the provincial tree nursery. Investing in accelerated tree planting during the earlier years will provide greater benefits in the medium and longer term. Another important measure is land use planning, as discussed under Pillar 1.

Government must also work closely with private woodlot owners and landowners to aggressively protect forested land – particularly in areas with low forest cover. There is also a need to protect and increase the number of wetlands across the province. Continual work with the federal government is needed to determine accurate measurements of both emission reductions and removal of carbon from the atmosphere related to forestry and marine environments.

With a trend that shows a decrease in many carbon sinks, efforts will focus on development and investment in technologies that create more carbon removal opportunities in PEI. Many of these technologies are in the early stages of development, and their full impact is still to be determined. To add to this uncertainty is the need to ensure the carbon removal technologies are compatible with the geology and make-up of Prince Edward Island. While unknown at this time, these technological advancements are critical to achieving the accelerated 2040 target.



Goal 4.1: Maintain What We Have

There is much more that needs to be done to maintain PEI's forested land that will support carbon sequestration to offset GHG emissions while creating a healthier environment for all.

Key Directions

A. Keep forested land as forests.

Effective forest land management and protection will support a healthier natural environment while contributing to carbon sequestration and storage.

Priorities include:

- Work with land trusts to protect and conserve forested land, including to increase engagement of private landowners in the management and protection of their own property.
- Invest in programs that provide benefits to landowners to maintain and enhance PEI forests.
- Develop a land-use policy that designates resource land to be protected.

Anticipated Outcome

Maintain (at a minimum) the total number of acres of forested land over a ten-year period in 2030 and 2040 (based on a comparison of 2020, 2030 and 2040 corporate land use inventories)

Measures of Success

- A comparison of the total acres of forested land in PEI based on 2020, 2030 and 2040 inventories.
- The number of hectares purchased and protected in cooperation with the land trust organizations.
- A planning system that designates and protects resource areas, including forested land.

B. Collaborate with industry on the use of leading sustainable forest management practices.

Industry efforts have been supported by the provincial government through forest enhancement programming and supports for the development of forestry management plans. Supporting this goal also requires working with forestry groups to advance shared goals to maintain and grow forest coverage in the province. These efforts will support carbon sequestration while contributing to clean water, quality air, and other co-benefits of a healthy environment. Sustainable forest management practices also contribute to stable jobs and a cleaner, greener economy.

Accelerating sustainable practices in the earlier years will help build capacity for the future to enable sequestration and storage of carbon from the more mature trees. It is important that action is taken within the next decade and is well-planned for a sustainable future.

Priorities include:

- Work with industry to make PEI a leader in sustainable forest management practices, including through an industry-led organization established to promote cooperation and lead sustainable forest management practices.
- Support investments in the deployment and widespread adoption of cost-effective, low-emission equipment and approaches, such as selective harvest methods.

Anticipated Outcome

50% of woodlots employ sustainable forest management practices by 2030

Measures of Success

- 100% of targeted acres (as defined in partnership with industry) of forested land have adopted sustainable forest management practices.

Goal 4.2: Grow What We Need

Growing forested land in PEI will support the sequestering of carbon. This can be done by restocking existing forests and woodlands that have been depleted or introducing trees to areas that have not been previously forested. Re-establishing wetlands will also contribute to building the capacity of long-term carbon sinks that support carbon removal.

Key Directions

A. Grow PEI's forested land.

Accelerating the number of trees planted in the earlier years will help build future capacity to enable sequestration and storage of carbon from more mature trees. The reforestation of Acadian Forest and other species that optimize sequestration will be prioritized as a natural way of cleaning carbon pollution from the air.

Priorities include:

- Make strategic investments in the infrastructure at the provincial tree nursery.
- Work with watershed groups, land trusts, and other community groups to facilitate planting projects throughout the province with a focus on low-forest watersheds.

Anticipated Outcome

Increase forest cover in ecologically sensitive areas—a minimum of 30% forest cover in all watersheds by 2040

Measures of Success

- Increase capacity of PEI's provincial tree nursery.
- Annual number of trees planted by government and non-government groups that will supplement and support private landowner efforts.
- An increase in the acreage of forested area.

B. Commit to maintain and re-establish wetlands based on the best opportunities for carbon sequestration.

Dedicated conservation efforts are needed to ensure wetlands play an important role as long-term carbon sinks. If the ecosystem is degraded or damaged, its carbon sequestration capacity will be lost, resulting in emissions of carbon dioxide.

Marine and coastal ecosystems are considered to be 'blue carbon' sinks and generate co-benefits of a healthier environment. Blue carbon locally found in tidal marshes and seagrass meadows store more carbon per unit than terrestrial forests and, through protection and enhancement, may be an important source for offsetting remaining GHG emissions through carbon removal.

Priorities include:

- Identify the best opportunities for carbon sequestration through the protection, expansion and re-establishment of wetlands.
- Work with the federal government to develop a baseline of the amount of carbon stored in wetlands and an ongoing measurement as a result of restoration efforts.

Anticipated Outcome

Growth in the net acreage of wetlands

Measures of Success

- Annual number of wetland restoration projects.
- Amount of carbon sequestered by PEI wetlands.

Goal 4.3: Invest in Early-Stage Technologies

Enhancing nature-based solutions, including through the use of forests, wetland environments, and agriculture systems can provide low-risk strategies for improving the long-term removal of carbon from the atmosphere. While there is opportunity for carbon removal, the geology of our province provides fewer opportunities for carbon capture and storage when compared to other jurisdictions. For example, PEI's rock is too soft and is not a viable long-term carbon storage solution.

For this reason, it is even more important for PEI to look to new technology solutions for carbon capture and storage to offset GHG emissions. There are promising technologies (or technologies whose prospects are still unknown) that are in the early stage of development that may play a very important role in carbon removal. The potential for these technologies to benefit PEI is also unknown. Yet, these technological advancements are critical to reaching net zero emissions and even more so to achieve the 2040 accelerated target date.

Key Directions

A. Investigate the potential for research and new technologies that are applicable to PEI and leverage federal government and other funds to make technology investments.

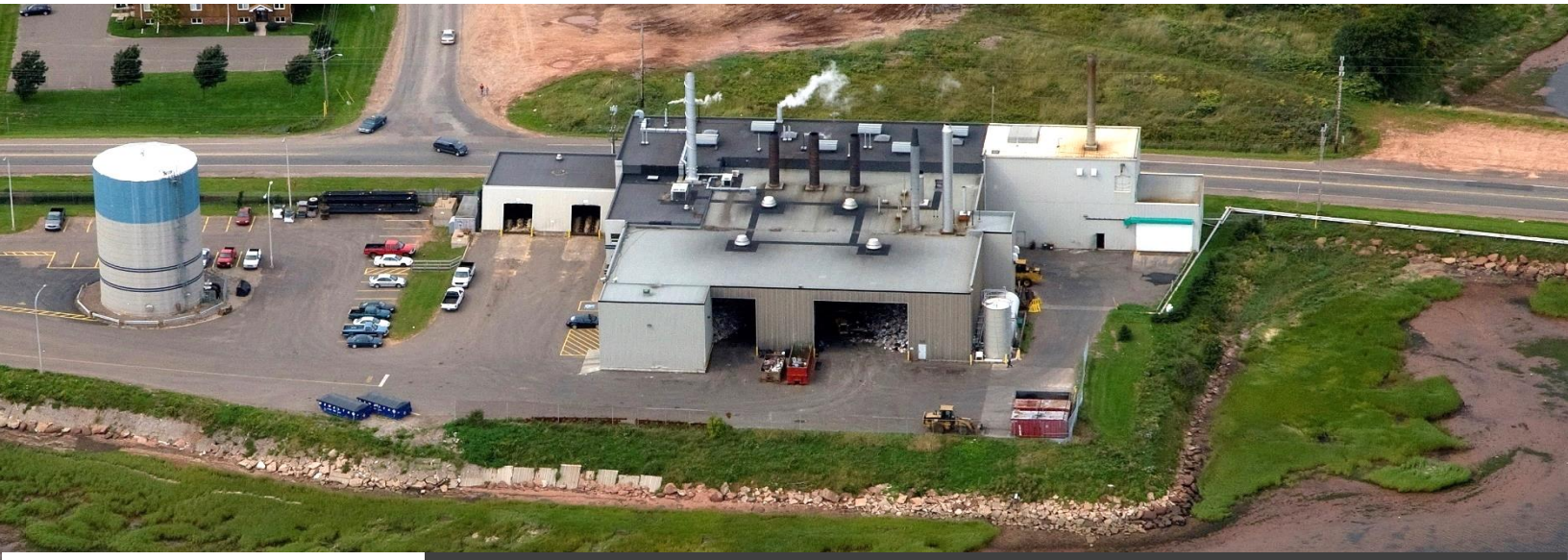
Technology developments include direct air capture, carbon capture and storage, and carbon capture and use that have the potential to be part of the solution for net zero in PEI. While these technologies are unknown at this time, it is expected that new developments will occur within the next ten years that will address gaps and provide new ways to meet targets. PEI will need to make appropriate investments in technologies that can positively impact net zero emissions in PEI. PEI's net zero emissions target cannot be reached without these types of investment.

Anticipated Outcome

Investment in carbon capture and storage technologies applicable to PEI

Measures of Success

- Investment in research and innovation projects, pilots and partnerships, including with federal government and other sources of funds.
- Promotion and deployment of effective carbon capture and storage technologies.

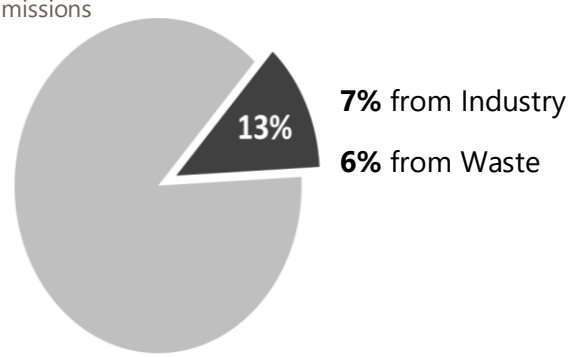


PILLAR 5 Create a Clean Industry and Waste Advantage

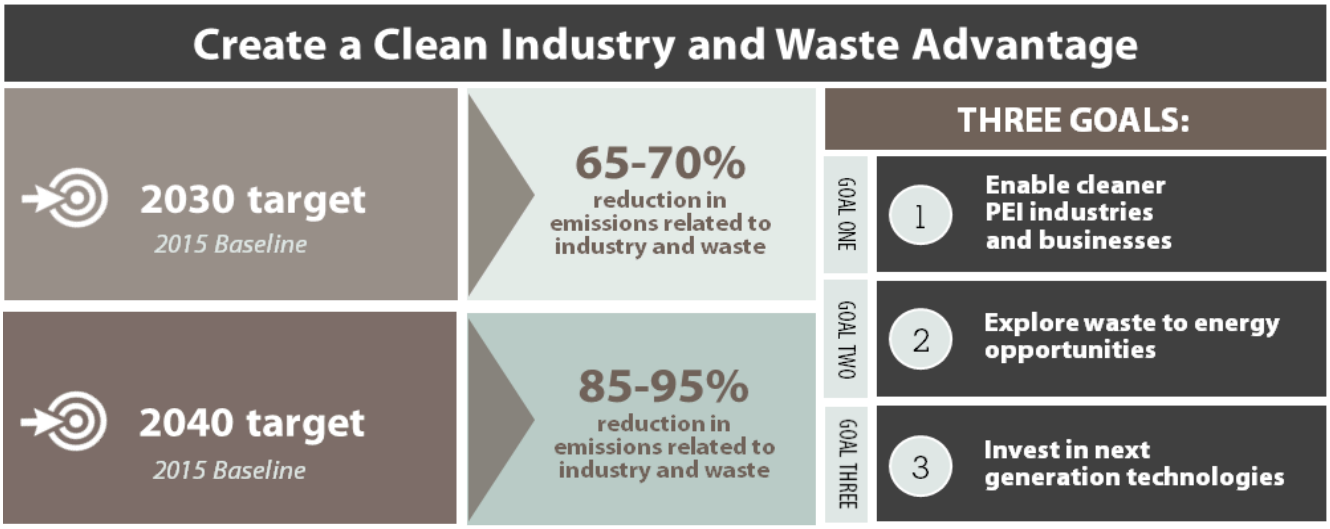
Industry represents 7% of PEI's total GHG emissions. The impact from these emissions is much smaller in PEI than in other jurisdictions. Much of the industrial impact is related to agriculture and the built environment, as identified in other pillars.

Waste represents 6% of PEI's total GHG emissions (Figure 11). Per person, PEI keeps more waste out of landfills than anywhere else in Canada.[9]

Figure 11: Industry and waste represents 13% of total GHG emissions



Source: Environment and Climate Change Canada (2021). National inventory report, 2019 GHG emissions.



[9] Government of Prince Edward Island. (2017, April 27). *Island leads Canada in recycling and composting*. Retrieved from: www.princeedwardisland.ca/en/news/island-leads-canada-recycling-and-composting.

Goal 5.1: Enable Cleaner PEI Industries and Businesses

A clear path ahead is to work together to develop cleaner industries, businesses, processes, and technologies that will benefit and accelerate the path to net zero. To support these efforts, stakeholders and government will support the growth and attraction of cleantech businesses that can provide expertise and solutions that will benefit industries in PEI.

Key Directions

A. Invest in more efficient and cleaner processes for PEI industries and businesses.

There is an opportunity and need to support industries and businesses in accessing cost-effective solutions to adopt more efficient and clean processes. Providing viable opportunities for fuel switching is an important direction. A key to success is building capacity to educate companies and industries of their options and to provide support for investment and transformational change. Working with the federal government, investments will be prioritized that provide an economic and environmental benefit to PEI.

Priorities include:

- Develop and promote comprehensive efficiency programs that assist companies with cost savings while reducing emissions.
- Assist companies and industries in accessing energy audits that will support investment decisions for cost-effective solutions that will result in emissions reduction.

Anticipated Outcome

40% reduction in industrial emissions by 2040

Measures of Success

- Annual increase in participation in energy efficiency and fuel switching programs by Island businesses.
- Increase investment in business and industry initiatives that contribute to cleaner processes and emission reduction.

Goal 5.2: Explore Waste to Energy Opportunities

In 2000, PEI became the first province in Canada to surpass the goal set by the federal government to divert waste going to landfill. This was a result of the leadership and commitment of residents and businesses to participate in PEI's Waste Watch Program.

PEI's Waste Watch Program was developed as a solution to reduce landfill waste by composting organics and marketing recyclable materials. Mandatory source separation by the user is one of the main reasons the program is a success and is the most cost-effective and precise way to separate different waste streams.

Over the years, more resources have been diverted from landfills as a result of enhanced practices and new programs introduced by the Island Waste Management Corporation. The separation allows for waste to be incinerated and converted to energy. There is more that PEI can do.

Key Directions

A. Convert waste into biofuels.

There is an opportunity to evaluate and invest in ways to convert waste into clean energy. Food waste has energy-generating potential via digesters to convert organics to biofuels. Diverting food waste to waste-to-energy systems has the potential to power vehicles and heat homes. In PEI, there are several options for organic feedstocks, including green cart and agricultural waste, all of which can be converted to usable biofuels. This is a viable option that could assist PEI in keeping pace with rising energy demands. In addition, a number of companies are turning non-recycled, non-food waste into usable produces and biofuels, such as Enerkem.

Priorities include:

- Conduct feasibility studies on the use of anaerobic digesters with organic waste and other materials.
- Work with various industries and businesses that have the potential to supply organics.

Anticipated Outcome

Increase the use of biofuels as a percentage of the overall energy mix

Measures of Success

- Number of tonnes of waste diverted to energy systems.

Goal 5.3: Invest in Next Generation Technologies

Continuing to evolve and advance with second-generation technologies are key to the future direction. This includes exploring opportunities to convert residual and waste products into next-generation biofuels and diverting construction and demolition waste into renewable sources.

Key Directions

A. Explore the potential for second-generation technologies.

These efforts include staying abreast of opportunities that are in the early stages of development and facilitating the necessary regulatory environment and infrastructure investments for rapid adoption.

Priorities include:

- Conduct feasibility studies and invest in demonstration projects that can be quantified and scaled up.
- Complete a jurisdictional scan on projects that convert non-recyclable waste to biofuels resulting in a feasibility study for PEI.

Anticipated Outcome

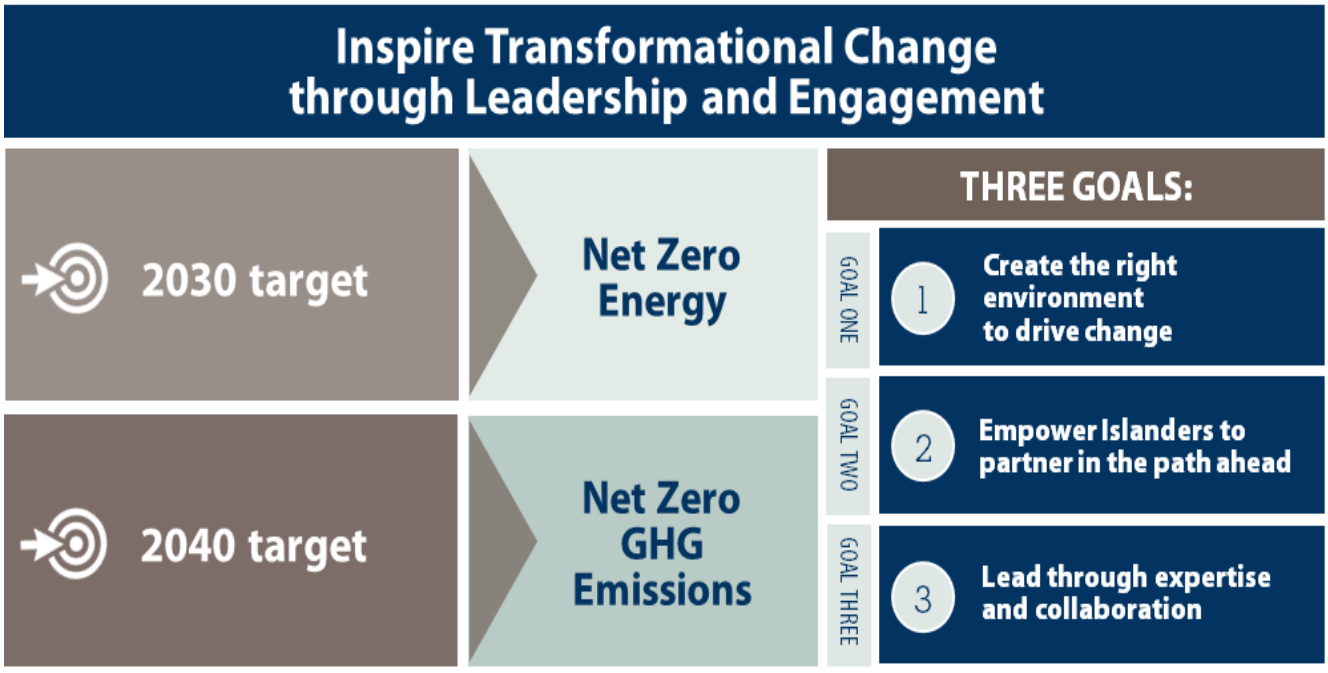
Industry investment in projects and estimated environmental impact of each project

Measures of Success

- Strategic investments made by industry, including leveraged federal and provincial government funds to support these investments.
- Industry use of technology-based solutions that contribute to efforts towards the 2040 net zero target.

PILLAR 6 Inspire Transformational Change through Leadership and Engagement

PEI's transition to a clean, sustainable and prosperous economy needs immediate and sustained efforts. Leadership and engagement by all stakeholders are needed to drive the transformational change required to achieve the 2030 target and then to ramp up and accelerate the overall path to achieve the 2040 target.



Goal 6.1: Create the Right Environment to Drive Change

Government's role is to create an environment where Islanders have options for healthy, affordable living and where businesses can thrive. A strong balance between societal, environmental, and economic priorities is needed to achieve a prosperous net zero emissions future for Prince Edward Island.

Key Directions

A. Leadership and alignment with federal government priorities.

This government-wide framework provides a roadmap to reach PEI's 2040 net zero targets while contributing to national targets and priorities. Decisions and investments are intended to facilitate an environment that supports private sector companies, research, education, training, and Islanders (representing diverse communities and populations in PEI) along the path to a prosperous net zero future. It is critical to achieving alignment between provincial and federal priorities while seeking the federal government's support to accelerate PEI's path ahead. PEI has the ability to effectively make positive changes given our small size and ability to more quickly maneuver change.

B. Lead by example as government and adopt best practices to advance net zero priorities.

The Government of PEI will take legislative and executive action to achieve net zero emissions and significantly improve efficiency in the government fleet and buildings. These efforts will continue to be monitored through the tracking and reporting on GHG emissions from government operations. Government will adopt and adapt leading practices and use a net zero lens to guide decisions (e.g., provincial fleet, new construction, building retrofits, use of public land, sustainable communities). Opportunities will be pursued to develop and pilot initiatives that are supported by the federal government and will result in lessons learned that can be applied elsewhere in Canada. The province is also committed to making government-owned and/or operated facilities available as demonstration sites for pilot projects.

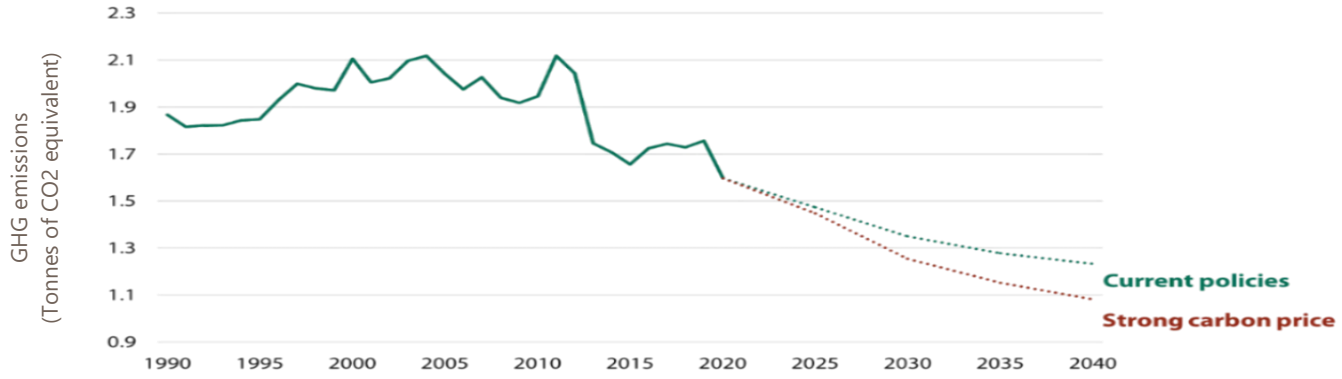
C. Create the right environment to facilitate behaviour changes that will reduce emissions while supporting the prosperity of Islanders, businesses, communities and the economy.

The Government of PEI will develop and implement leading policies, programs, and initiatives that align with the path to achieving 2030 and 2040 net zero targets. The environment created will play a key role in supporting affordable solutions and appropriate investment for technology developments and adoptions to occur. In many cases, creative and new approaches are required to yield results.

Carbon pricing is about recognizing the cost of pollution and accounting for those costs in daily decisions. Putting a price on carbon pollution is widely recognized as the most efficient means to reduce greenhouse gas emissions while also driving innovation. The Government of Canada introduced a price on carbon pollution across Canada in 2019 and has set carbon pricing targets until 2030 (Figure 12). Canada's approach is flexible: any province or territory can design its own pricing system tailored to local needs or can choose the federal pricing system. The federal government sets minimum national stringency standards (the federal 'benchmark'), that all systems must meet to ensure they are comparable and effective in reducing greenhouse gas emissions. The federal pricing system has two parts: a regulatory charge on fossil fuels like gasoline and natural gas, known as the fuel charge, and a performance-based system for

industries, known as the Output-Based Pricing System. In Prince Edward Island, the federal OBPS applies alongside the provincial fuel charge.

Figure 12: A stronger carbon price could further reduce emissions by 140,000 – 150,000 tonnes*



*Emissions reduction potential from standalone policies are not additive. Source: Navius Research Inc.,

In PEI, carbon pricing has emerged as a cost-effective mechanism to reduce greenhouse gas pollution and drive investments towards cleaner, more efficient alternatives. Carbon pricing means charging a minimum cost for fossil fuels like gasoline, diesel, and home heating fuels so that their prices come closer to the real environmental costs. A key direction is to effectively use the proceeds from federally mandated carbon pricing to meet ambitious emissions reduction targets in PEI while providing affordable solutions to households, low-income families, vulnerable populations, and businesses.

Going forward, the federal carbon price will continue to be revenue neutral, and the Government of Canada remains committed to ensuring that the federal price on pollution remains affordable, and to helping households to make investments to increase energy efficiency and further reduce emissions.

Priorities include:

- Continue to use the proceeds of carbon pricing for programs and incentives that make it easier and more affordable for households, including low-income families, and businesses to transition to cleaner and more efficient energy sources that lead to emissions reduction.
- Assess and define the appropriate level of carbon pricing required to achieve the net zero target for the ten-year period beyond 2030.
- Clearly communicate the direction of carbon pricing to the public to support decision-making that could be impacted by carbon pricing in the long term.

Anticipated Outcome

GHG emission reductions that are cost-effective and have a positive economic impact as a result of the investment of carbon pricing proceeds

Measures of Success

- Reduction in the consumption of fossil fuels related to program outcomes and evaluation.
- Annual amount of carbon pricing proceeds invested in programs and benefits to Islanders and businesses.

Goal 6.2: Empower Islanders to Partner in the Path Ahead

Changing the behaviour of Islanders (especially with PEI having the highest per capita household emissions in Canada) and businesses is an "urgent" action if PEI is to successfully accelerate the path to 2040 net zero. This requires a multi-pronged approach of reaching diverse stakeholders in meaningful ways that will engage them in being a part of, and in leading, change.

Key Directions

A. Issue a call to action for all Islanders.

It will take all Islanders—representing gender and cultural diversity—working together to achieve net zero. Islanders need to be empowered to partner in our path ahead. This means educating Islanders to help make informed decisions as consumers that will positively impact the environment in an affordable manner. This also includes putting in place programs and tools to inspire and influence changes in consumer behaviour. Communication is needed to recognize progress made by all stakeholders and to encourage a greater commitment to the path ahead.

B. Engage and consult with First Nations communities.

First Nation communities are leading in energy transition and environmental stewardship across the country. Partnering with First Nation communities and Indigenous people in PEI on the path to net zero is a priority. This means supporting First Nations communities with their priorities to build stronger and more resilient communities through the development of sustainable solutions and community-led initiatives.

C. Partner with industry to increase efforts and make necessary changes.

Industry plays a leading role in driving change. While many successful examples exist today, more needs to be done to achieve the targets ahead. Government will work directly with businesses and with sector, industry and business groups to educate, inform and share leading practices. This will involve gathering the best information to inform decisions. A better understanding of specific sources of GHG emissions, including through audits and other tools, is also important.

D. Engage youth in leading the way for the future.

Youth leadership is critical to realizing a net zero future. There is a need to educate and engage youth at a young age so they can contribute in the day-to-day and in innovative ways that will have positive impacts on the environment. This includes embedding net zero into the K-12 education curriculum, extracurricular activities, and community youth programming. To have the greatest impact, these efforts must continue into post-secondary education and involve partnering with institutions in PEI and Atlantic Canada.

Anticipated Outcome (Key Directions A, B, C)

Initiatives that demonstrate Islanders, industry and youth taking action on net zero

Measures of Success

- Annual growth in participation in net zero programs and initiatives by Islanders.
- Projects and initiatives led by Indigenous communities and supported by governments.
- Net zero and climate change action priorities identified by sector/industry associations Net zero and climate change action priorities identified by sector/industry associations and business groups.
- Net zero education, programs and initiatives for youth.

Goal 6.3: Lead through Expertise and Collaboration

Through strong collaboration, PEI has the potential to bring greater leadership and development in renewable energy and the adoption and scale-up of clean technologies that will drive net zero priorities. Establishing the next generation of leaders and a talented workforce are also critical to achieving desired results in Prince Edward Island.

Key Directions

A. Continue to grow PEI's leadership in renewable energy generation and storage.

PEI has established itself as a North American leader in wind energy and is positioned for leadership in other emerging renewable energy sources. PEI has the potential to be a testing bed for emerging renewable technologies, including on behalf of the federal government and jurisdictions across the country.

B. Build an innovative ecosystem for clean technologies and solutions.

A key to supporting a successful path ahead is the establishment and growth of a unique-to-PEI cleantech cluster led by industry, fueled by post-secondary institutions and facilitated by government. This sector will be the catalyst for scale-up, deployment and adoption of energy-efficient, clean processes and technologies that will optimize opportunities across sectors in PEI and assist in achieving net zero targets.

Through the clustering of a strong cleantech sector in PEI, there will be greater opportunity for collaboration and development of innovation, testing and deployment of new and emerging technologies. Partnerships with post-secondary institutions will provide opportunity for students to gain hands-on experience through work with industry to develop prototypes capable of deployment for testing in an industrial environment.

Government has a role to play in creating a policy framework that drives investment and supports scale-up and widespread deployment of promising technologies. The right policy environment and incentives are needed to facilitate the growth of local businesses and the attraction of high-growth national and international businesses.

The Government of PEI has committed to investing in the growth of the cleantech sector through a research and development (R&D) fund, the establishment of business attraction and development incentives (such as tax-free development zones), and via collaborations with the University of Prince Edward Island and Holland College on the establishment of an academy that will be a catalyst for cleantech leadership in PEI. These and other priority investments will be key to growing a strong cleantech cluster in PEI.

C. Develop and attract talent and a skilled workforce.

Talent and a skilled workforce are critical to achieving these results. This requires supporting post-secondary institutions to deliver programs that develop the next generation of leaders and the skilled workforce necessary to support the growth of cleantech and climate change action programs. Responding to the workforce needs also means providing opportunities for upskilling and reskilling, increasing workforce participation by underrepresented groups (including gender, ethnicity, race, culture), and attracting international talent. Realizing an equitable transition for Islanders as the province moves away from fossil fuels will require a shift in skill requirements and supports provided to individuals.

Anticipated Outcome (Key Directions A, B, C)

Strong collaboration and leadership – industry, government, research and post-secondary institutions – driving net zero priorities

Measures of Success

- National and international recognition for leadership in renewable energy generation.
- Growing number of local, national and international cleantech companies.
- Investment in research and development and number of applied research projects involving industry and post-secondary students.
- 2000 new jobs in the cleantech sector in PEI by 2030.

Framework Accountability

The Net Zero Framework presents an overarching direction from now until 2040. The priorities included within this framework will be supported by the development and implementation of consecutive five-year action plans that include specific actions and initiatives to achieve the aggressive targets. Progress will be monitored, and the Framework will be revisited periodically, including to reflect new directions, advancements, and opportunities.

Accountability for the Net Zero Framework will include:

- **One organization to be the catalyst and to oversee the path ahead.** The Office of Net Zero will be the catalyst and oversee the direction for PEI on behalf of and in collaboration with government and all stakeholders. Through these efforts, the Office will help support, encourage and inspire Islanders, businesses, and stakeholders to do their part. The Advisory Committee (established as part of the *Net Zero Carbon Act*) will provide advice on matters related to the net zero targets.
- **A shared responsibility to take action.** There is a recognition of the shared responsibility for the health and well-being of PEI's environment working with all levels of government, all areas within government and all other stakeholders—Islanders, First Nation communities, industry, not-for-profit organizations, communities and community groups, education/training, research entities, and so forth.
- **Transparency and accountability.** An accountability structure will be implemented that defines what needs to be measured and includes an analysis of progress with data and information collected nationally and provincially. Working with the federal government on defining data collection processes and tools will be required. The Office of Net Zero will lead the development of a framework for transparency and accountability. As part of the *Net Zero Carbon Act*, an annual report will be tabled before the Legislative assembly by the Minister that outlines the progress that has been made towards achieving the net zero targets.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