



Environment, Energy and Climate Action

Minister's Report on Climate Change Risks and Progress Towards Targets

2021-22

September 22, 2022

Minister's Message

As an Island province, we must be more mindful than most of the potential impacts of climate change. Just over a year ago, PEI announced the most ambitious climate target in the country- to become Net Zero by 2040. Since then, we have been working on the roadmap to get there - our 2040 Net Zero Framework. This was developed with input from Islanders, experts, and staff from our Climate Action Secretariat and our new Office of Net Zero.

The Office of Net Zero will oversee the direction of PEI on behalf of and in collaboration with government and all stakeholders and will help support, encourage and inspire PEI residents to do their part. Also, our new Advisory Committee (established as part of the Net Zero Carbon Act) will provide advice on matters related to the net zero targets and climate risks.

While the framework will target emissions reductions, we must also take action to manage and prepare for the unavoidable impacts of a changing climate, including coastal hazards, post-tropical storms, heat waves, heavy precipitation and flooding. An Adaptation Plan is being developed to identify government action on how we will respond to these climate impacts. There will be opportunity for Islanders to share their ideas on how we can build a resilient and sustainable Prince Edward Island during upcoming consultation sessions.

We recognize that government has a role to play in making smart investments to help us reach our net zero goals. One 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 a catalyst for the scale-up, deployment and adoption of energy-efficient, clean processes and technologies that will optimize opportunities across sectors in PEI, create well-paying jobs, and assist in achieving our net zero targets.

As part of the *Net Zero Carbon Act*, I commit to annually tabling this report that outlines the progress that has been made towards achieving net zero targets and managing climate risks. Also, the priorities included within the 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.

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 Island residents

Sincerely,



Hon. Steven Myers
Minister of Environment, Energy and Climate Action



Executive Summary

Globally, through the Paris Agreement, 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. 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) with the contribution of all Canadians, provinces, and territories.

Recognizing that Prince Edward Island can do more to reduce emissions, the Government of PEI has set a more aggressive target. The [Net-zero Carbon Act](#), which came into effect on December 31st, 2021, establishes the following targets for the purpose of reducing PEI greenhouse gas emissions and identifying climate change risks:

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;

by 2040 and for each subsequent calendar year, PEI greenhouse gas emissions will be at a level where carbon neutrality is achieved;

In 2021, and in every fifth calendar year after that, the report shall include a determination of climate change risks.

Since 2018, efforts to reduce emissions and manage climate risk have been guided by [Taking Action: A Climate Change Action Plan for Prince Edward Island](#)—a five-year plan with 32 actions across five themes (adapting to climate change, reducing GHG emissions, carbon sequestration, education and capacity building, and research and knowledge building). Following the completion of a province-wide climate change risk assessment, our knowledge of climate risks and priorities has improved. As a result, the Government of Prince Edward Island has launched efforts to develop a new Adaptation Plan, focused on policies and actions to manage climate risks and improve PEI's resilience. These efforts are intended to complement efforts to achieve our net-zero goals and objectives, as well as align with the development of a National Adaptation Strategy (planned release in Fall 2022).

In order to realize the *Net Zero Carbon Act's* commitment, a guiding document was required. With the assistance of public input, contributions from all levels of government, and modeling experts, the initial draft of the Net-Zero Framework was developed in the Fall of 2021. In January 2022, the Office of Net Zero held targeted stakeholder consultation sessions with over 30 interest groups, many of whom provided letters of endorsement. The [2040 Net Zero Framework](#) was officially released in February 2022.

This framework identifies our goals and objectives, and much is already being done to reduce emissions and improve climate resilience. This report highlights over 150 million dollars that has been committed to emissions reduction programming. Some highlights from the following report are listed below:

- Many Island residents are installing renewable energy sources, with 568 solar PV rebate applications processed in 2021-22;
- Almost 19 million dollars was spent on efficiency programs in 2021-22;
- Progress is being made in the electrification of transportation with continued investment in the electric school bus fleet (12 busses purchased in 2021-22), electric vehicle incentives (335 Battery

EVs, 65 plug-in hybrid EV rebates processed in 2021-22), and investment in island-wide charging infrastructure;

- Investment continues in the new free heat pump program to assist income qualified island residents with 1122 approvals issued in 2021-22;
- 45 projects—including those focused on reducing and removing emissions, reducing climate risks, and expanding research and knowledge—have received support from the Climate Challenge Fund;
- A province-wide climate change risk assessment—the first ever in PEI —was completed and is being used to help better understand climate-related risks;
- Province-wide coastal flood maps are now available online and show the land areas at risk of coastal flooding from sea level rise, tides, and storm surge now (2020) and in the future (i.e., 2050 and 2100);
- A new Adaptation Plan is being developed that will identify key actions needed in the next 5 years to manage climate risks and build resilience.

Based upon feedback and changing technologies, the Province is identifying gaps and creating new programming, while updating existing programming with a climate change lens. This is especially true in the Department of Agriculture and Land with the new PEI Agriculture Climate Solutions Program and review of the long-standing Alternative Land Use Services Program (ALUS). We are also increasing investment in several efficiency programs that provide cost savings while reducing emissions as we recognize that the least expensive energy is that which is never used.

As part of the Net Zero Carbon Act, a annual report on climate change risks and progress toward targets must be tabled before the Legislative Assembly. The contents of this report are stipulated in the Act and follow below.

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2019-2023 GHG Emission data and estimates

Table 1: GHG Emissions.

2019 Greenhouse Gas (GHG) Emissions Data	
GHG emissions represented in tonnes of CO ₂ eq	
Year	2019
Mt of CO ₂ eq	1.661403
Justification / Requirement	9.(2)(a) – the 2019 data is released in calendar year 2021
Data type	Actual
Source of data	National Inventory Report (2022)

Table 2: GHG Emissions.

2020 Greenhouse Gas (GHG) Emissions Data	
GHG emissions represented in tonnes of CO ₂ eq	
Year	2020
Mt of CO ₂ eq	1.609972
Justification / Requirement	9.(2)(c) an estimate for each calendar year between the years referred to in clause (a) (2019) and subclause (b) (i) (2021)
Data type	Actual
Source of data	National Inventory Report (2022)

Table 3: GHG Emissions.

2021 Greenhouse Gas (GHG) Emissions Data	
GHG emissions represented in tonnes of CO ₂ eq	
Year	2021
Mt of CO ₂ eq	1.572061
Justification / Requirement	9.(2)(b)(i) an estimate for the calendar year in which the report is prepared.
Data type	Interpolation
Source of data	Interpolated from Navius gTech Summary Results (2021)

Tables 4 and 5: GHG Emissions.

2022 Greenhouse Gas (GHG) Emissions Data	
GHG emissions represented in tonnes of CO ₂ eq	
Year	2022
Mt of CO₂ eq	1.547197
Justification / Requirement	9.(2)(b)(ii) an estimate, for the subsequent 2 years
Data type	Interpolation
Source of data	Interpolated from Navius gTech Summary Results (2021)

2023 Greenhouse Gas (GHG) Emissions Data	
GHG emissions represented in tonnes of CO ₂ eq	
Year	2023
Mt of CO₂ eq	1.522333
Justification / Requirement	9.(2)(b)(ii) an estimate, for the subsequent 2 years
Data type	Interpolation
Source of data	Interpolated from Navius gTech Summary Results (2021)

Description of actions taken, including expenditures to : Reduce PEI GHG Emissions

In 2021-22, the Office of Net Zero developed the foundational document- the Path to Net Zero 2040 Framework, which, along with the Net-Zero Carbon Act, lays out the targets and principles for achieving our net zero goals. The most significant initiatives, along with their forecasted expenditures during 2021-22 and planned expenditures in 2022-23, are listed in Table 6 followed by a brief description of each.

Table 6: List of programs to reduce PEI's GHG emissions including budget forecast for 2021 and estimated for 2022 fiscal years.

Action Taken		2021-2022 Budget Forecast	2022-23 Budget Estimate
1.	Active Transportation Fund	\$7,356,000	\$5,000,000
2.	Agriculture Stewardship Program	\$224,110	\$235,000
3.	Business Energy Rebates	\$362,600	\$200,000
4.	Carbon Tax Rebates	\$0	\$8,204,000
5.	Climate Challenge Fund Total	\$700,000	\$1,000,000
6.	Community Energy Solutions	\$100,000	\$250,000
7.	Custom Energy Solutions	\$0	\$25,000
8.	Department of Agriculture and Land Administration	\$115,000	\$160,000
9.	Efficiencypei Programming Administration, Salaries, Professional Services, Travel, Training, and Materials.	\$2,455,400	\$3,292,300
10.	Electric School Bus Fleet Investment	\$11,500,000	\$7,920,000
11.	Electric Vehicle Charging Infrastructure Program	\$0	\$1,275,000
12.	Electricity Efficiency and conservation	\$1,200,000	\$3,870,000
13.	Energy Efficiency Improvements for Farmers	\$0	\$225,000
14.	Energy Efficient Equipment Rebates	\$6,464,300	\$4,140,000
15.	Energy Rebate Program	\$9,787,600	\$9,848,200
16.	EV Incentive Program	\$2,536,000	\$2,630,000
17.	Free Heat Pump for Income Qualified Islander Program	\$3,500,000	\$5,600,000
18.	GHG Buyback Program	\$0	\$2,000,000
19.	Government Energy Programs	\$300,000	\$400,000
20.	Home Comfort Program	\$3,554,100	\$3,334,000
21.	Home Energy Assessments	\$1,050,000	\$2,500,000
22.	Home Insulation Rebates	\$1,200,000	\$823,000
23.	Instant Savings Rebates	\$400,000	\$231,000
24.	Land Use Planning Including Administration, Travel and Training, Equipment, Materials, Professional Services and Salaries	\$166,800	\$480,800
25.	New Home Construction Rebates	\$451,500	\$150,000
26.	Office of Net Zero Admin, materials, professional services,salaries, travel and training.	\$916,500	\$1,011,000
27.	PEI Agriculture Climate Solutions Program	\$90,776	\$216,550
28.	PEI Clean Tech Academy and Clean Tech Challenge Fund	\$1,156,000	\$350,000
29.	Perennial Crop Development Program	\$141,551	\$150,000
30.	Provincial Forest Nursery Production Development of Trees and Shrubs For Private and Public Forest Lands.	\$1,229,000	\$1,496,800
31.	Renewables in Agriculture	\$500,000	\$500,000
32.	Rural Transit Pilot Projects and Transit Subsidies	\$465,700	\$1,912,000
33.	Solar Electric Rebate Program	\$4,474,900	\$2,000,000
34.	Stratford Community Campus Solar Field Project	\$1,441,079	\$0
35.	Summerside Solar and Storage Integration Project	\$122,859	\$11,489,988
36.	Winter Warming Program	\$133,300	\$107,400
37.	Carbon Levy (revenue, not included in total)	(\$19,400,000)	(\$31,600,000)
Total		\$64,095,075	\$83,027,038

1. Active Transportation

The Active Transportation (AT) Fund is part of the Sustainable Transportation Action Plan to reduce transportation emissions while encouraging more walking, cycling and community transit through investment in infrastructure such as new bike paths, paved shoulders, increased connectivity, and other programming identified in the PEI Active Transportation Strategy. In FY 2021-22, a total of 39 projects totaling 10.1 million were approved.

2. Agriculture Stewardship Program

The *Agriculture Stewardship Program* is a suite of initiatives designed to increase environmental sustainability, climate change mitigation and adaptation by providing technical and financial support to encourage producers to voluntarily implement Beneficial Management Practices. These include: winter cover cropping following commercial harvest to protect soil and sequester carbon, full-season soil-building cover crops to sequester carbon, nutrient management planning to reduce nitrous oxide emissions, and spring tillage of forages to incentivize leaving perennial cover over winter thereby reducing soil carbon loss. Initiatives such as these are funded through the Canadian Agricultural Partnership (CAP) agreement.

3. Business Energy Rebates

Incentives for energy efficient products to the commercial/agricultural sector. There were 244 applications processed through this program in 2021-22.

4. Carbon Rebates

The Province will distribute rebates to income qualified households as part of the Province's portfolio of programs funded by the provincial carbon tax.

5. Climate Challenge Fund

In 2020, a new provincial fund was established to support creative and community-led solutions to address climate change. The Climate Challenge Fund (CCF) is a \$1-million annual fund that provides up to \$100,000 to support projects that either reduce greenhouse gas emissions or help communities and the economy adapt to a changing climate.

In the first year of funding (2020-21), 8 mitigation-related projects were approved for \$572,401 in support from the CCF. These projects focused on: exploring sustainable agricultural practices to mitigate climate change (phase I); an outreach program on the climate and ownership benefits of electric vehicles; a program to address inequities and discrimination that are generated or augmented by climate change; an electric converted remanufactured vehicle project; design of a new zero emissions hydrogen-fueled power system; development of a hydroponic fodder system; measurement of carbon offsets in PEI mussel and oyster aquaculture; and the creation of a carbon-accounting platform for small businesses. Six of these projects were completed in 2021-22, while the remaining two projects will finish in 2022-23.

In 2021-22, 4 mitigation-related projects were approved for \$631,000 in support from the CCF. These projects focused on: community-based learning programs; a zero-waste store; evaluation of green hydrogen technologies; and community-based engagement through demonstration projects.

In 2022-23, 8 mitigation-related projects were approved for \$553,000 in support from the CCF. These projects focused on: an energy-efficient boot camp for homeowners; kelp as a feed supplement for ruminants; willows for bioenergy; alternative amendments for soil productivity; energy system modeling; assessing carbon credits through biochar; wastewater optimization to reduce energy use; and agricultural practices to mitigate climate change (phase II).

6. Community Energy Solutions

Incentives for communities to become more sustainable by covering a portion of energy efficiency upgrade costs.

7. Custom Energy Solutions

Incentives for qualifying business, non-profit and institutional clients to reduce electrical energy and demand consumption.

8. Department of Agriculture and Land Administration

Funds for staff including an Agriculture Climate Action Specialist, and an Ecological Goods and Services Analyst for the renewal of the ALUS program using a climate lens. Also, staff to assist with the administration of climate change mitigation programs including Agriculture Stewardship Beneficial Management practices.

9. efficiencyPEI Programming

efficiencyPEI continues to provide programs, rebates and information for Islanders who are interested in reducing energy consumption with funding through the Federal Low Carbon Economy Leadership Fund. 2021-22 saw an increase in demand across programming, especially for heating equipment rebates (4,766 rebates processed), solar photovoltaics installation (568 applications processed) and home energy assessments (2501 assessments completed).

10. Electric School Bus Fleet Investment

The province has committed to the purchase of an electric school bus fleet and has made significant investment that will see half of the province's school buses running on electricity by 2027. Twelve electric school buses were purchased in 2021-22.

11. Electric Vehicle Charging Infrastructure Program

This program involves the installation of electric vehicle charging infrastructure in public places such as streets, multi-unit residential buildings, workplaces, and government offices throughout PEI. Federal funding is provided through Natural Resources Canada's Zero-Emission Vehicle Infrastructure Program, which is supporting the federal government's ambitious target to have all new passenger vehicles sold in Canada be ZEV by 2035 (20% by 2026, 60% by 2030 and 100% by 2035).

12. Electricity Efficiency and Conservation

This program includes an amount (to be determined by the Island Regulatory and Appeals Commission) from Maritime Electric and Summerside Electric for Electricity Efficiency and Conservation Planning (Demand-Side Management (DSM) Planning) to reduce peak demand on the electricity system. The implementation of the plan is delegated to efficiencyPEI.

13. Energy Efficiency Improvements for Farmers

New programming developed to assist the agricultural community in auditing and reducing GHG emissions. This will involve on-farm GHG accounting and efficiency upgrades and will include contractor training on efficiency audits in agriculture systems, on-farm audit pilot projects (15 farms), and energy rebates specific to the agriculture industry.

14. Energy Efficient Equipment Rebates

There were 4766 applications processed for incentives for energy efficient equipment in 2021-22.

15. Energy Rebate Program

Since 2018, the Province has provided residents with a 10% rebate for the first block of residential electricity (2,000 kWh per month), as well as on lower-emitting heat sources, including firewood, pellets, and propane.

16. EV Rebate Program

In FY 2021-22, the Province launched the Electric Vehicle (EV) rebate program in an effort to increase uptake of electric vehicles and reduce greenhouse gas (GHG) emissions from the transportation sector, which represents nearly half of overall emissions provincially. There were 335 battery electric vehicle and 65 plug-in hybrid electric vehicle rebates approved and 550 level II chargers were purchased to be included with each vehicle. The program budget has been increased for 2022-23 and will include a new rebate for electric bicycles.

17. Free Heat Pump Program

The new free heat pump program, which is an emissions-reducing measure to help income-qualified Island residents become less reliant on home heating oil, became effective on Dec 1st, 2021. From Dec 1st, 2021- March 31, 2022, there were 1122 approved applications and 350 installations.

18. GHG Buyback Program

In order to facilitate large-scale commercial projects that could have a significant impact on GHG reductions, the province is examining the potential of a new, separate fund for large projects. The GHG buyback program will provide a suitable financial incentive to large island businesses with the intention that it be funded through the proceeds collected through the Output-Based Pricing System implemented by the federal government for large emitters.

19. Government Energy Programs

Program to facilitate upgrading of Provincial government operated facilities to reduce energy consumption and greenhouse gas emissions.

20. Home Comfort Program

Free energy efficient upgrades including home insulation and equipment for income qualified households. There were 261 approvals under this program in 2021-22.

21. Home Energy Assessment

Subsidy to support the cost of home energy efficiency performance audits with 2501 assessments completed in 2021-22.

22. Home Insulation Rebates

There were 388 grants to homeowners for energy efficient building envelope improvements (insulation, windows, doors) in 2021-22.

23. Instant Savings Rebates

In 2021-22 there were 30,422 rebates applied to various easy-to-install energy efficient products (LED lighting, low flow showerheads, Energy Star appliances).

24. Land Use Planning

Planning addresses the use of land, resources, facilities, and services in ways that secure the physical, economic, and social efficiency, health and well-being of urban and rural communities. The Department of Agriculture and Land and the Department of Fisheries and Communities, Municipal Affairs Division, are engaged in land use planning, along with implementing and enforcing the Planning Act, the Lands Protection Act, and the Municipal Government Act. The Department of Agriculture and Land have committed to the development of a provincial land use plan.

25. New Home Construction Rebates

New Home Construction rebates are provided for new homes that exceed current energy efficiency standards and codes.

26. Office of Net Zero

Greater funding has been allocated to the Office of Net Zero to meet the increasing needs of staffing, administration, materials, professional services, travel and training as well as costs to develop the Net Zero Framework including GHG modelling.

27. PEI Agriculture Climate Solutions Program

This program is designed to encourage and provide assistance to the Prince Edward Island agriculture industry to implement beneficial management practices (BMPs) that mitigate the production of GHGs during or from various agricultural activities or by promoting carbon storage in soils. Funding for this program is provided by Environment and Climate Change Canada's (ECCC) Low Carbon Economy Fund and the Province of Prince Edward Island. The Low Carbon Economy Fund supports projects and programs that generate clean growth, reduce greenhouse gas emissions and help meet or exceed Canada's Paris Agreement commitments.

28. PEI Clean Tech Academy and Clean Tech Challenge Fund

Part of government's strategy to build PEI's clean tech sector involves supporting PEI-based companies to develop and deploy competitive, clean technology solutions. The new Clean Tech Challenge Fund is earmarked for research and development projects in the Clean Tech Sector. Seed funding has also been provided to establish the PEI Clean Tech Academy, Eco-Innovation Park, and the development of a certificate program and master's degree in Cleantech leadership in partnership with Holland College and UPEI's Canadian Centre for Climate Change and Adaptation.

29. Perennial Crop Development Program

The Perennial Crop Development Program is designed to increase environmental sustainability in PEI's agriculture sector. The program supports the establishment of new high value perennial cropping systems and improvements in existing systems using technological advances and improvements in storage and production practices.

30. Provincial forest nursery production development

The Frank J. Gaudet Provincial Tree Nursery produced over 1.1 million seedlings in 2021 for: private and public land under forest management, Carbon Capture Tree Planting program (funded through the Low Carbon Economy Fund), watershed groups, Christmas tree growers, hedgerow program, tree improvement program, Greening Spaces Program, retail nurseries, and landscape companies. The budget covers seedling production as well as property and building expenses and maintenance.

31. Renewables in Agriculture

Renewables in Agriculture is a new program developed to assist the agricultural industry in installing on-farm renewable energy generation equipment.

32. Rural Transit Pilot Projects and Transit Subsidies

The Province has been working toward the objective of having sustainable, convenient, affordable and reliable transportation options available to Islanders to help reduce the number of private vehicles on the road. The 2022-23 budget includes increased investment in the rural transit pilot project that commenced on October 12, 2021 and further investment in new routes as well as the subsidization of fares based on recommendations from the Sustainable Transportation Action Plan (STAP).

33. Solar Electric Rebate Program

This program provides financial incentives to assist in the purchase and installation of solar photovoltaic panels. There were 568 applications approved in 2021-22 with the average rebate amount of \$9,095.

34. Stratford Community Campus Solar Field Project

With funding from the federal Investing in Canada Infrastructure Program and the Provincial government, the Town of Stratford will be installing a 100-kilowatt solar array at their new community campus location.

35. Summerside Solar and Storage Integration Project

The project is expected to generate 33,000 MWh per year in solar PV energy and reduce the City of Summerside's reliance on New Brunswick's power grid from 58.2% to 37.4%.

36. Winter Warming Program

In 2021-22, 773 income-qualified households received support through this free weatherization program.

37. PEI Carbon Pricing System

PEI's carbon pricing plan will collect \$31,630,00 in revenue from the tax on fossil fuels and the output-based pricing system during the 2022-23 fiscal year. Revenue will go towards rebate cheques for income qualified households, to offset provincial tax on gasoline and diesel, and to fund several programs to reduce emissions.

Table 7: PEI carbon levy revenue allocations for 2022-23 fiscal year.

PEI Carbon Levy Revenue Allocations	2022-23 Amount
Household rebate program	\$8,204,000
Reduction in gas taxes	\$13,204,000
Net zero program funding	\$10,192,000
Total Revenue	\$31,600,000

Other programming:

The Canada Greener Homes Grant

The Government of Canada has recently announced the Canada Greener Homes Grant. This program provides Canadians with energy efficient incentives to upgrade their homes. Participants may be eligible for up to \$5,600 under the initiative to make energy efficient retrofits to their homes, such as better insulation and heating systems. Island residents can access both the Canada Greener Homes Grant and efficiencyPEI rebates.

Description of actions taken, including expenditures to: Manage Climate Change Risks

The Government of Prince Edward Island is working to increase our understanding of provincial climate risks, share information on these risks with local, regional, and national decision-makers, and avoid or minimize the impacts of climate change. The most significant initiatives, along with their expenditures during 2021-22 and planned expenditures in 2022-23, are listed in Table 8 and a brief description of each action is provided below.

In 2021-22, almost \$2,785,000 was spent on activities dedicated to managing PEI's climate change risks. In 2022-23, the Government of Prince Edward Island intends to increase investments in efforts to manage climate change risks, with over \$3,653,000 in planned expenditures.

Table 8: List of actions taken and planned to manage PEI's climate change risks.

Action Taken and Planned		2021-2022 Budget Forecast	2022-2023 Budget Estimate
1.	Adaptation Plan Development and Engagement		\$75,000
2.	Climate Action Secretariat - Administration Including Salaries.	\$437,000	\$816,000
3.	Climate Challenge Fund- Adaptation Projects	\$510,000	\$737,000
4.	Climate Change Risk Assessment	\$73,000	-
5.	Climate Hazard Assessment	-1	-2
6.	Climatesense	\$571,000	-
7.	Coastal Change Mapping		\$150,000
8.	Coastal Erosion Monitoring	\$50,000	\$50,000
9.	Coastal Flood Warning System	-2	-2
10.	Comprehensive Study On Crop Adaptation To Climate Change	\$101,000	\$102,000
11.	Critical Infrastructure Vulnerability Assessment	-2	\$60,000
12.	Flood Mapping	-2	\$598,000
13.	Infrastructure Resilience	\$956,000	\$994,000
14.	Regional Climate Services (Climatlantic)	\$87,000	\$132,000
Total		\$2,785,000	\$3,653,000

1. Adaptation Plan

Since 2018, efforts to manage climate risks have been guided by *Taking Action: A Climate Change Action Plan for Prince Edward Island*—a five-year plan with 32 actions across five themes (adapting to climate change, reducing GHG emissions, carbon sequestration, education and capacity building, and research and knowledge building). With the completion of a province-wide climate change risk assessment (see Action D), our knowledge of climate risks and priorities has improved. As a result, the Government of Prince Edward Island launched efforts to develop a new Adaptation Plan, focused on policies and actions to manage climate risks and improve PEI's resilience. These efforts are intended to complement efforts to achieve our net zero goals and objectives, as well as align with the development of a National Adaptation Strategy (planned release in Fall 2022).

Efforts to develop an Adaptation Plan began in Fall 2021. Beginning in early 2022, First Nations and Indigenous organizations were invited to participate in this process and identify their adaptation priorities, along with all provincial government departments, and external stakeholders.

Public engagement sessions are planned for 2022, inviting the public to identify their adaptation priorities. Information gathered during the engagement process will be used to develop the Adaptation Plan, with an intended release in Fall 2022. Implementation of the Adaptation Plan will begin immediately upon release.

2. Administration

A team of adaptation professionals working throughout government are tasked with developing, delivering and supporting initiatives listed in Table 8, along with coordinating climate adaptation action across provincial government departments and liaising with federal, provincial and territorial partners. Administration expenditures listed in Table 8 are only for those dedicated adaptation staff and students, along with the expenditures required to support these positions (e.g., administration; equipment; materials, supplies, and services; travel and training). It does not include an estimate of the time and resources committed by other government staff that are effectively incorporating climate change into their duties in efforts to mainstream climate change considerations throughout government.

In 2022-23, additional staff will be added to manage growing adaptation needs and projects.

3. Climate Challenge Fund

In 2020, a new provincial fund was established to support creative and community-led solutions to address climate change. The Climate Challenge Fund (CCF) is a \$1-million annual fund that provides up to \$100,000 to support projects that either reduce greenhouse gas emissions or help communities and the economy adapt to a changing climate.

In the first year of funding (2020-21), 7 adaptation-related projects were approved for \$390,000 in support from the CCF. These projects focused on building flood-resilient homes and parks; piloting a living shoreline; expanding urban forest cover; installing back-up generation for a wastewater system; installing a new climate monitoring facility; developing a tool to assess climate change anxiety; and modelling high-resolution regional climate scenarios for Prince Edward Island. Five of these projects were completed in 2021-22, while the remaining two projects will finish in 2022-23.

In 2021-22, 10 adaptation-related projects were approved for \$633,000 in support from the CCF. These projects focused on managing stormwater; launching a community-led Netukulimk education program; completing a climate risk assessment and adaptation plan for energy assets; researching sediment movement at small craft harbours; increasing food security; supporting climate-resilient ecosystems; developing a tool to assess the suitability of coastal nature-based solutions; conducting a risk assessment of the lobster fishery; completing a municipal natural asset inventory; and improving resilience of brook trout. These projects began in 2021-22 and will be completed in 2022-23.

In 2022-23, 6 adaptation-related projects will begin with \$564,000 in support from the CCF. These projects will focus on supporting municipal climate solutions; monitoring and managing invasive species; increasing climate risk knowledge and understanding; expanding emergency reception centres; mapping climate-related social and health factors to build resilience; and engaging youth in capacity building and innovation. Most of these projects will be completed in 2023-24. A call for new projects beginning in 2023-24 is planned for late 2022.

A full list of funded projects is listed in Appendix 1.

4. Climate Change Risk Assessment

On June 30, 2021, the Province received the final report on the province-wide Climate Change Risk Assessment (CCRA) to help better understand climate-related risks in PEI and develop appropriate measures to respond. This work was completed on time and on budget. This is one of the first provincial-scale climate change risk assessments to be completed in Canada. The project virtually engaged over 70 experts from various fields and Indigenous community leaders to collaboratively define various aspects of the framework development, risk estimation and prioritization.

The CCRA considered seven climate hazard scenarios and their consequences on health, social stability, environment, infrastructure and economic sectors. Coastal erosion was identified as the highest risk, followed by post-tropical storms, heat waves, heavy precipitation and flooding, severe ice storms, earlier and warmer springs, and seasonal drought. The CCRA also included information on the unique climate risks to Indigenous communities on PEI based on interviews with elders and reviews of existing studies.

Priorities identified as important for adapting to these climate change risks include:

- improving the resiliency of critical energy, transportation, communication/internet, and water/wastewater infrastructure;
- increasing capacity for emergency repair, response, and supplies;
- diversifying PEI's economy and crop production, particularly for agriculture, fisheries, and aquaculture practices and products; and
- increasing risk awareness in decision making across all levels of government.

Since the report's release, the results have been shared by virtual presentation and updates to the provincial website².

5. Climate Hazard Assessment

Coastal Hazard Assessment (CHA)³ is a free service that provides property-level information to current and prospective property owners on present-day and future erosion and flood hazards. Anyone can request this information on any property. The Department of Agriculture and Land (Provincial Planning Branch) and the Department of Environment, Energy and Climate Action requests CHAs to inform coastal subdivision and development decisions (e.g., development approvals and watercourse alterations).

In 2021-22, 664 CHAs were completed, more than doubling the number of assessments completed in the previous year. Half of these requests came from the Department of Agriculture and Land and the Department of Environment, Energy, and Climate Action. Thirty percent (30%) of CHA requests were received through the Government website.

This service will continue to be available to the public and internal partners in 2022-23.¹

² <http://www.princeedwardisland.ca/en/publication/pei-climate-change-risk-assessment-2021>

³ <http://www.princeedwardisland.ca/en/service/coastal-hazard-assessment>

6. ClimateSense

ClimateSense⁴ is a 4-year (2018-2022), \$2-Million training and development program that helped recent graduates and local professionals develop climate change-related skills and complete projects that increased the resilience of Island organizations. This program supported 17 climate internships and trained over 300 professionals representing over 100 organizations. Interns were hosted by the following organizations:²

- Abegweit First Nation;
- Actions Femmes IPE;
- Canadian Centre for Climate Change and Adaptation;
- City of Charlottetown;
- Creative PEI;
- Island Nature Trust;
- Municipality of Victoria;
- PEI Department of Agriculture and Land;
- PEI Department of Education and Lifelong Learning;
- PEI Department of Environment, Energy and Climate Action;
- PEI Department of Health and Wellness;
- PEI Department of Social Development and Housing;
- PEI Energy Corporation;
- PEI Watershed Alliance;
- Town of Stratford;
- University of Prince Edward Island; and
- Wind Energy Institute of Canada.

This program also provided climate change related learning opportunities to new and experienced professionals working in planning, engineering, fine arts, health, education, watershed management, landscape architecture, local government, and emergency management. Learning opportunities included topics such as:

- Canadian Standards Association Risk Assessment;
- Environmental Law Toolkit;
- PIEVC Protocol;
- Green Shores Level 1 and Level 2;
- Adaptation Fundamentals;
- Asset Management and Climate Resiliency;
- Climate Modelling;
- Introduction to Climate Adaptation Policy;
- Drone Training; and
- Protecting PEI Homes from Flooding and Erosion.

Federal funding for this program ended on March 31, 2022

⁴ <http://www.climatesense.ca>

7. Coastal Change Mapping

Rates of coastal change (i.e., erosion and accretion) are used to help protect coastal development from the threat of erosion. The *Planning Act* has established a minimum horizontal setback of 60 feet or 60 times the annual erosion rate, whichever is greater. The erosion rate used to determine this setback is based on changes observed over the last 50 years according to aerial images. These images are acquired every 10 years as part of efforts to update the Corporate Land Use Inventory.

The Province has recently acquired full coverage, aerial and LiDAR datasets for 2020 that can be used to delineate a new coastline and to update rates of coastal change. New coastal change rates will be developed, beginning in 2022-23. Updated rates will be available as a Provincial dataset and made available to various stakeholders including academia, government, municipalities, planners, engineers, and watershed organizations.

8. Coastal Erosion Monitoring

The Government of Prince Edward Island provides on-going support to UPEI's coastal erosion monitoring program, led by the Climate Research Lab. Rates of change are measured using two approaches: manual peg-line measurements and remotely using drone technology. More than 100 monitoring sites along the coastline have been established.

In 2021, the average annual erosion rate at monitored sites was 27 cm/year. This was the second lowest erosion rate observed since monitoring began in 2015 and is consistent with the long-term (1968-2010) erosion rate of 28 cm/year, as measured by comparing aerial images in 1968 and 2010. Twenty-seven new monitoring sites were added in collaboration with local watershed groups.

Annual erosion monitoring will continue in 2022-23.

9. Coastal Flood Warning System

Environment and Climate Change Canada issues storm surge warnings as part of their public weather alert system. These warnings are issued for abnormally high-water levels and high waves (storm surge or storm tide) caused by storms, which have the potential to cause coastal flooding.

ECCC and the Government of Prince Edward Island are working together to improve the storm surge warnings for Prince Edward Island by using information from the recently developed coastal flood maps (see Action L) and new digital elevation data, both obtained in 2021. This work will result in information that is more locally relevant and based on minimum elevations of coastal infrastructure on or adjacent to the shorelines that may be impacted by the elevated water levels. These improved warnings will provide more accurate information that can be used to better prepare for storm surge events, improving public safety and minimizing damage to infrastructure.

10. Comprehensive Study on Crop Adaptation

A comprehensive study of crop opportunities and challenges under changing climate conditions is underway. Led by the Department of Agriculture and Land, this research program is comprised of four major components including:

- development of high-resolution climate prediction/projection system,
- crop adaptation to climate change,
- pest stresses responding to climate change, and
- climate change effects on the competitive landscape of major crops.

In 2021-2022, four projects were undertaken, including the development of seasonal and long-term climate predictions / projections, a greenhouse study on existing potato varieties responding to projected climate change, the development of web-based Integrated Pest Management (IPM) system, and the establishment of a major insect pests field monitoring system.

11. Critical Infrastructure Vulnerability Assessment

Critical Infrastructure Vulnerability Assessments (CIVA) have been conducted for properties with key public and private infrastructure in Prince Edward Island. For the purposes of these assessments, critical infrastructure is broadly defined as processes, systems, facilities, technologies, networks, assets and services essential to the health, safety, security or economic well-being of Islanders and the effective functioning of government. These assessments are intended to encourage asset managers and decision-makers to further explore identified vulnerabilities and take the next steps to develop adaptation strategies for at-risk assets.

Over 700 properties with critical infrastructure assets (both public and privately owned) were assessed in 2021-22 with respect to coastal flooding and coastal erosion hazards. These included health-care (e.g., hospitals, manors, community care facilities), education (e.g., schools), emergency services (e.g., ambulance services, emergency reception centres, fire departments), energy (propane storage facilities), social housing, telecommunications (e.g., radio facilities), cultural (museum and heritage buildings), and economic (e.g., tourism buildings, fish and seafood processing facilities) assets. Forty-six properties (<7%) are in current (24) or future coastal flood zones (22). A quarter of the properties and the associated infrastructure are fishing and seafood industry-related and their proximity to the coast is desirable. Further assessment is needed to evaluate the risk to these assets (if any) and, where appropriate, implement measures to avoid or minimize damage. In 2022-23, vulnerability assessments will continue, with a focus on municipal assets.

12. Flood Mapping

The Government of Prince Edward Island launched new coastal flood maps in 2021-22. The PEI Coastal Hazards Information Platform (CHIP)⁵ is an interactive map that users can browse to visualize areas at risk of coastal flooding caused by combinations of sea level rise, tides, and storm surge now (2020) and in the future (i.e., 2050 and 2100). Since its release in late 2021, CHIP has received over 6,000 pageviews. This work was in part supported through Public Safety Canada's National Disaster Mitigation Program (NDMP).

In 2022-23, the Province intends to add water depth information to the new coastal flood maps. This will better inform users on the extent of potential water damage in flood hazard zones. As well, the Province intends to begin development of province-wide pluvial flood maps (i.e., floods caused by heavy rainfall). Recent floods in British Columbia, China, US, and Europe highlight the need for better information that avoids impacts whenever possible and influences disaster preparedness³ and recovery activities.

⁵ <http://www.princeedwardisland.ca/en/information/environment-energy-and-climate-action/coastal-hazards-information-platform-chip>

13. Infrastructure Resilience

PEI's coastal areas are very vulnerable to the impacts of climate change, such as erosion and flooding. At the same time, our coastal areas include valuable infrastructure from roadways and buildings, to golf courses and communities. The Department of Transportation and Infrastructure (DTI) leads coastal adaptation projects throughout the Province to protect and maintain shore areas and infrastructure. These projects are innovative, using specialized coastal engineering approaches, and include structures such as inter-tidal reefs, groins, and buried stone revetments (placed inside dune systems).

In 2021-22, an ongoing initiative at Cedar Dunes - West Point resulted in the installation of offshore reef structures that will protect and maintain the beach and sand dune system. At the same time, these structures will protect the local infrastructure including the Cedar Dunes campground, the historic lighthouse, a museum, as well as roads and a parking lot. A similar project was successfully completed in Souris several years ago. Shoreline protection work was also completed at Basin Head (groyne installation), Brudenell Park, and North Cape.

Coastal adaptation projects are planned for Crowbush Golf Course (offshore reef(s) and sand fence installations) and Basin Head (channel re-alignment) in 2022-23.

14. Regional Climate Services

CLIMAtlantic is a non-profit organization that delivers climate services locally in partnership with the Canadian Centre for Climate Services (CCCS). This new entity is helping organizations across Atlantic Canada access and use climate information and build resilience to climate change. CLIMAtlantic receives support from Environment and Climate Change Canada (ECCC) and the four Atlantic Provinces.

In 2021-21, CLIMAtlantic was established and PEI Climate Services Specialist was hired. This position is hosted by UPEI's Centre for Climate Change and Adaptation. In the first year of operation, CLIMAtlantic has started to evaluate needs, build relationships with users, develop strategies for knowledge-mobilization, gather and share data and information, and support research activities. These activities will continue in 2022-23, along with support for the development and delivery of training.

In addition to the initiatives listed in Table 8, many other projects and programs contribute to adaptation goals and objectives. While the initiatives may not be initiated to manage climate risks, adaptation co-benefits are clear and vital to efforts to increase resiliency. These include efforts focused on:

- greenhouse gas emissions (e.g., Energy Efficient Equipment Rebates – Heat Pumps);
- carbon sequestration (e.g., Carbon Capture Tree Planting Program);
- environmental protection (e.g., Watershed Management Funding, Agri-Watershed Partnership);
- agricultural stewardship (e.g., Agricultural Stewardship Program, Alternative Land Use Services, Perennial Crop Development Program, Soil First Farming);
- emergency management planning; and
- infrastructure (e.g., Investing in Canada Program). Examples of provincial infrastructure that considered climate change principles during design and construction are included in Appendix 2.

Potential Outcomes

Climate action is one of 17 Sustainable Development Goals (SDGs) adopted by the United Nations as part of the 2030 Agenda for Sustainable Development to which Canada, and all UN member states, are signatory. The Climate Action goal (#13) includes the following three targets or outcomes that are relevant to managing provincial-level climate change risks:

1. strengthen resilience and adaptive capacity to climate-related hazards and natural disasters (13.1),
2. integrate climate change measures in policies, strategies and planning (13.2),
3. improve education, awareness-raising and human and institutional capacity on climate change adaptation, impact reduction and early warning (13.3), focusing on women, youth and local and marginalized communities (13.b).

Action on the other 16 SDGs⁶ are also needed to ensure a resilient Prince Edward Island for all.

All the initiatives mentioned in Table 8 have or will deliver outcomes related to one or more of the targets listed above, as well as other co-benefits. For example, efforts to protect coastal infrastructure (Action J) will strengthen resilience by minimizing damage and disruption to critical assets. These projects also employ local companies and protect assets that contribute to the economy.

The Climate Change Risk Assessment (Action D) has identified key risks and priorities that are informing future policy, strategies and planning, primarily through the upcoming Adaptation Plan (Action A). Through these efforts, linkages have been identified that will help address other goals and objectives beyond climate change, including those related to improving health and social wellbeing, reducing poverty, and fighting injustice.

The ClimateSense Program (Action F) focused on improving education (training and development initiatives) and human and institutional capacity (internships). As well, the internship program targeted recent graduates, included organizations that serve vulnerable communities, and provided internship opportunities to predominantly women (>75% of interns).

Mitigation also brings about more general benefits including improved health and reduced resource use with these co-benefits often serving to offset costs, accelerate emissions reductions, and encourage action.

An obvious outcome of reduced emissions is an improvement in air quality which could prevent millions of premature deaths due to air pollution over the next century⁷. The Organization for Economic Co-operation and Development (OECD) have shown that the economic cost of deaths from air pollution in Canada is equivalent to 1.7% of GDP⁸. PEI uses the Air Quality Health Index as a public information tool with data from three monitoring stations across the province accessible in real time on the Government of Canada website. This will provide valuable long-term monitoring data on air quality changes in PEI to go along with our emissions reduction targets.

The increase in electrification of transportation and heating, partially through the continued uptake in fuel switching and electric vehicle rebate programs, is predicted to result in a doubling of electricity usage by 2040. We will need to continue to work cooperatively with electric utilities to ensure we have a reliable

6 no poverty (1); zero hunger (2); good health and well-being (3); quality education (4); gender equality (5); clean water and sanitation (6); affordable and clean energy (7); decent work and economic growth (8); industry, innovation and infrastructure (9); reduced inequalities (10); sustainable cities and communities (11); responsible consumption and production (12); life below water (14); life on land (15); peace, justice and strong institutions (16); and partnerships for the goals (17).

7 West, J., Smith, S., Silva, R. et al. Co-benefits of mitigating global greenhouse gas emissions for future air quality and human health. *Nature Clim Change* 3, 885–889 (2013). <https://doi.org/10.1038/nclimate2009>

8 Yin, Hao, et al. "Global Economic Cost of Deaths Attributable to Ambient Air Pollution: Disproportionate Burden on the Ageing Population." *medRxiv* (2020)

grid that is prepared for this increase in usage while also investing in grid modernization technologies.

The increased use of energy from wood biomass may contribute to reducing GHG emissions but can also have a negative impact on forest cover and associated biodiversity. To address this potential outcome, the province is supporting the development of a Sustainable Forest Alliance, an industry-led forestry cooperative that promotes sustainable forestry practices. Also, continued investment in our provincial tree nursery will not only help PEI reach net zero through carbon sequestration, but also provide numerous co-benefits in terms of ecosystem function. Carbon sequestration via forest and wetland preservation can be a viable climate change mitigation strategy. This will be addressed through continued investment in land conservation initiatives and through the development of a provincial land use plan.

Carbon Abatement Cost of Programs

To calculate the carbon abatement cost (\$/tonne CO₂e), the annual GHG emissions savings for each program was multiplied by its effective useful life (real values or averages for multi-component programs) to give an estimate of total lifetime GHG emissions savings. The annual program cost was then divided by the associated lifetime savings to provide a cost estimate of abatement per tonne of CO₂e.

Data for calculations were from 2019-20, 2020-21 or 2021-22 fiscal years, depending on availability.

Table 9: Program abatement cost

Program	Abatement Cost (\$/tonneCO ₂ e)
Energy Efficient Equipment	\$35
Home Insulation	\$31
New Home Construction	\$122
Winter Warming	\$107
Instant Savings	\$223
Business Energy Rebates	\$44
Custom Energy Solutions	\$344
Solar	\$162
Home Comfort	\$162

Advisory Committee

A draft list of advisory committee members has gone through the Engage PEI process and will be finalized in the coming weeks. The committee will meet on a quarterly basis going forward and contain up to ten members and ensure gender parity.

Plans to continue progress toward emission reduction targets.

For PEI to reach net zero energy and net zero greenhouse gas emissions, a framework document has been developed with specific sector-specific targets for 2030 and 2040. The Net Zero Framework will be reviewed and supported by a series of five-year action plans that include interim emission reduction targets and reporting of progress made to date. The framework consists of six pillars with associated targets and goals for each.

Pillar 1: Transform the Way People and Goods Move

Transportation is the largest source of greenhouse gas emissions in PEI, accounting for 41% of total emissions in 2020. A majority (63%) of PEI's transportation emissions come from passenger vehicles. 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). The 2040 target represents a 55-65% reduction in emissions from transportation (2015 baseline) and will rely on: 1. Reducing our reliance on passenger vehicles, 2. Transitioning to zero-emission vehicles and non-emitting fuel sources, and 3. Investing in clean fuels and new technologies.

Pillar 2: Transition to Efficient and Cleaner Buildings

Residential, commercial and government buildings account for 19% of total emissions in PEI (2020). 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. The 2040 target represents an 85-95% reduction in emissions from buildings (2015 baseline) and will rely on: 1. Making existing homes and buildings more energy efficient, 2. Constructing more efficient homes and buildings, and 3. Piloting and scaling-up cost-effective solutions.

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

Twenty-three percent (23%) of PEI's GHG emissions are sourced from agriculture. The majority of the agriculture emissions come from crop and livestock production. 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. 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 beneficial 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 2040 target represents a 35-40% reduction in agriculture-related emissions (2015 baseline) that will rely on: 1. Reducing emissions from crops and livestock, 2. Improving soil health and the ability to absorb carbon, and 3. Accelerating the use of advanced agricultural clean technologies.

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

PEI's 2040 goal cannot be achieved solely by the reduction of greenhouse gas emissions, we also need to look at opportunities for 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 well as technologies.

Forested land is one of the most significant carbon sinks. 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. There is also a need to protect and increase the number of wetlands across the province. 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. The 2040 target represents a 25-30% increase in carbon sequestration (2015 baseline) and will rely on 1. Maintaining what we have, 2. Growing what we need, and 3. Investing in early-stage technologies.

Pillar 5: Create a Clean Industry and Waste Advantage

Manufacturing represents 8% of PEI's total GHG emissions while waste represents 5% of PEI's total GHG emissions (2020). Per person, PEI keeps more waste out of landfills than anywhere else in Canada. A clear path ahead is to continue 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. The 2040 target is an 89-95% reduction in emissions related to manufacturing and will rely on: 1. Enabling cleaner PEI industries and businesses, 2. Exploring waste to energy opportunities, and 3. Investing in next generation technologies.

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. The 2040 target is net zero greenhouse gas emissions and will rely on: 1. Creating the right environment to drive change, 2. Empowering Islanders to partner in the path ahead, and 3. Leading through expertise and collaboration.

The majority of the programs listed in table 6 are new or long-term programs that have been developed through provincial inter-departmental and federal partnerships. We recognize the need to evaluate these programs from a climate change mitigation perspective and address inefficiencies via a change management process. This will be an on-going process and will be documented through future net zero reports.

Plans to continue progress toward emission reduction targets

Several adaptation actions mentioned in this report are ongoing actions that require a sustained effort. These initiatives are part of the baseline activities needed to ensure decision-makers are informed of hazards and risks, projects are properly managed, intergovernmental relations are maintained, and public infrastructure remains safe and accessible. These on-going actions include administration, climate hazard assessments, coastal erosion monitoring, and coastal infrastructure protection.

Implementation of other adaptation actions mentioned in this report will extend beyond 2022-23. The Climate Challenge Fund will continue to support projects in 2023-24 and beyond. Coastal change and inland flood mapping initiatives will continue into 2023-24, as well as support for CLIMAtlantic—Atlantic Canada's regional climate services organization. Finally, the Province committed to completing a climate change risk assessment every five years, beginning in 2021 (*Net-Zero Carbon Act*, Section, subsection 9(3)). This means that work on the next assessment will likely begin in 2024, with an anticipated release date of 2026.

A Provincial Adaptation Plan will be released in Fall 2022 and will include a series of actions to be completed over the next 5 years.

Any other prescribed matters

There are no prescribed matters at this time.

Appendix 1: Climate Challenge Fund

Table 10:

List of projects supported through the Climate Challenge Fund

<i>PROPONENT</i>	<i>PROJECT</i>
Year 1: 2020-21	
AIIEV PEI	Which EV is Right for Me- PEI's electric vehicle awareness campaign
BIPOC USHR	Actively addressing inequities and discrimination that are generated or augmented by the negative impacts of climate change, mitigation initiatives, and adaptation initiatives
City of Charlottetown	Resilient Homes, Parks and People
Indigenous Art of North America	Carbon Weight Sales Tag
PEI Aquaculture Alliance	Measuring the Carbon Offsets of Prince Edward Island Mussel and Oyster Aquaculture
PEI Grass Fed Farms	Fodder Feed Solutions
Redrock Power Systems	Hydrogen-Fueled Power System - Approval in Principle (AiP) from a Marine Classification Society
Rural Municipality of Wellington	Installation of Lift Station power generator on Mont-Carmel Road
Stratford Area Watershed Improvement Group	Multi-tiered Living Shoreline Demo Site
Town of Stratford	Stratford Street Tree Planting Program
Upcycle Green Technology	Electric Converted Remanufactured Vehicles
UPEI - Department of Psychology	Development of a Tool to Assess Climate Change Anxiety
UPEI - Faculty of Sustainable Design Engineering	Sustainable Agriculture Practices to Improve Crop Productivity and Mitigate Climate Change
UPEI - School of Climate Change and Adaptation	Development of 1km x 1km high-resolution regional climate scenarios for Prince Edward Island
Wind Energy Institute of Canada	North Cape Climate Monitoring Facility

Year 2: 2021-22	
Bedeque Bay Environmental Management Association	Summerside Rainwater Harvesting Campaign
Island Nature Trust	Restoring and measuring resilience of carbon-rich Island Lands through nature-based strategies
Lennox Island First Nation	Netukulimk Education Program (Learning to take only what we need)
Maritime Electric Company, Ltd	Climate Change Risk Assessment and Adaptation Plan for Transmission and Distribution Assets
North Shore Fishermen's Association	Climate Change Impacts to Sediment Transport at Select Small Craft Harbours
PEI Federation of Agriculture	Charlottetown Food Recovery Network
PEI Watershed Alliance	Supporting Climate-Resilient Ecosystems in PEI
RE-FUEL Renewable Fuels Inc.	Green Hydrogen: Power to Gas with CO ² Direct Air Capture
Saint Mary's University	PEI Shoreline Assessment and Ecosystem Services Tool for Nature-Based Climate Change Adaptation
Smart Grocery Store Inc (Monsieur Vrac)	Monsieur Vrac Plastic Reduction
Southern Kings and Queens Fishermen's Association	Climate Change Risk Assessment of PEI Lobster Fishery
The River Clyde Pageant	River Clyde Pageant Sustainable Community Initiatives 2021-2022
Town of Stratford	Nature-based Climate Change Mitigation and Adaptation
Wheatley River Improvement Group Inc	Increasing climate change resilience for brook trout in the Wheatley River watershed
Year 3: 2022-23	
Canadian Home Builders' Association	Energy Efficient Boot Camp for Consumers
Clean Foundation	Island Climate Action – Advancing Municipalities' Solutions on Climate Change

Dalhousie University	Assessment of inclusion of Kelp (shore weed) as a feed supplement in dairy and beef cattle diet to mitigate methane and increase the resilience of livestock industries
Indigenous Energy Institute	Where there's a willow, there's a way: willows for bioenergy and coastline protection on Lennox Island
LP Consulting Ltd	Improving PEI Farmland Soil Productivity & Sustainability by Utilizing Alternative Affordable Amendments 2022- 2024
Net-Zero Atlantic	Supporting PEI's transition to net-zero emissions through energy system modelling
PEI Certified Organic Producers Cooperative	Farming Carbon: Accessing carbon credits through bio- char to finance soil-first organic farming
Prince Edward Island Invasive Species Council	Mitigating Ecosystem Impacts of Climate Change by Monitoring and Managing Invasive Species
Scout Environmental	Reducing our Risks – a digital climate change journey for Islanders
Sentry: Water Monitoring and Control Inc	Wastewater Optimization to Reduce Energy and Provide Environmental and Economic Benefits to the Community
Town of Three Rivers	Reception Centres for Three Rivers
UPEI, Centre for Health and Community Research	Engaging Islanders in mapping climate-related social and health factors to build resilience to climate change on PEI
UPEI, Sustainable Design Engineering (Ag)	Sustainable Agriculture Practices to Improve Crop Productivity and Mitigate Climate Change – Phase-II
UPEI, Sustainable Design Engineering (Turbines)	Life Cycle Assessment and Asset Integrity Management of Wind Turbines
Waterlution	Water Innovation Lab Atlantic 2022 (WIL Atlantic)
Wind Energy Institute of Canada	Climate Change Adaptation and Mitigation through Improved Climate and Renewable Energy Data and Sharing

Appendix 2: Examples of Public Infrastructure Climate Change Climate Change Projects

The Department of Transportation and Infrastructure builds provincial infrastructure that adapts to climate change based on emerging climate science. In consideration of increased stormwater flows, increased sea level rise, and storm surge events, the Department continue to implement necessary design changes to bridges, culverts, buildings, and other infrastructure. In recognition of sea-level rise, the 'vertical clearance envelope' is increased during the design of new bridges so that the existing vertical clearance is maintained into the future. To protect against structural damage and/or embankment damage, increased resilience is added at culvert and bridge locations including increased amounts of armor stone protection materials at the inlet and outlet of culvert structures and bridge abutments.

The DTI is responsible for designing, constructing, and maintaining government buildings and continuously incorporates sustainable practices in project developments and maintenance activities. The department completes numerous retrofit projects consisting of window and roof replacements, humidification upgrades, and boiler replacements for various government buildings, which increases energy efficiency and reduces greenhouse gas (GHG) emissions. This work is primarily mitigation-focused rather than adaptation-focused.

Table 11:

Examples of Road and Bridge related projects that incorporated climate change considerations.

Year	Location	Description
2021-22	Nielson Rd - Greenfield	resurfacing (283 m), drainage improvement
	New Road - Scotchfort	road construction (364 m)
	MacKinnon Dr Extension	road construction (782 m), storm sewer
	Marion Dr Connection	road construction (179 m), storm sewer
	Rtes 1 & 2	displaced left intersection
	Mercedes Dr - Cornwall	road construction (175 m)
	Rte 13 – Cavendish	resurfacing (900 m), storm sewer and trail
	Rte 2 - Kensington	storm sewer (725 m), resurfacing, storm sewer and sidewalk
	Hillsborough Bridge AT corridor	
	Whim Road Structure	structure replacement
	Iris Bridge	structure replacement
	St Peters Road Bridge	structure replacement
	Springvale Bridge	structure replacement
	Old Post Road Bridge	structure replacement
	Hunter River Bridge	structure replacement
	Kelly's Cross Structure	structure replacement
	Oyster Bed Bridge	structure replacement
	Gunn's Bridge	structure replacement
	Gunn's Bridge	structure replacement
	Gorman Lane Bridge	structure replacement
	Roxbury Structure	structure replacement
	Oyster Creek Bridge	structure replacement
	Kildare Capes Bridge	structure replacement
	St Roch Bridge	structure replacement
Ebbsfleet Structure	structure replacement	

2022-23	Barrett St – Kensington	storm sewer, sidewalk and resurfacing / mill level seal, storm sewer & sidewalk (310 m)
	Route 231 - Crapaud	storm sewer, curbing and resurfacing / mill level seal, storm sewer & curb (300 m)
	Route 1 - TCH Stratford Round- about	roundabout and new road construction (1420 m)
	Bayview Bridge	structure replacement
	North Enmore Bridge	structure replacement
	Launching Rd Bridge	structure replacement
	Glen William Route 324	structure replacement
	Vernon River Confederation Trail Bridge	structure replacement
	Sea View Route 20	structure replacement



Environment, Energy and Climate Action

Minister's Report on Climate Change Risks and Progress Towards Targets

2021-22