Environment, Energy,
and Climate Action

MINISTER'S REPORT ON CLIMATE CHANGE RISKS AND PROGRESS TOWARDS TARGETS

2022-2023

December, 2023

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MINISTER'S MESSAGE

As Prince Edward Island faces more extreme weather, the impacts of climate change are more prevalent than ever. From cold snaps to hurricanes to extreme heat and increased forest fire risk, our world is changing, and we need to continue to be vigilant in adapting to climate change and mitigating its impacts to our province.

Last year, we released our 2040 Net-Zero Framework which was a framework to achieve the goals and targets required to be Canada's first Net-Zero province. We also developed the province's first Climate Adaptation Plan to help our province become more resilient to the impacts of climate change.

With our goal of achieving Net-Zero by 2040 and becoming Canada's first Net-Zero province, and an even more ambitious goal to reach Net-Zero energy in 2030, we need to accelerate our efforts to reduce carbon emissions in our province.

We are installing free heat pumps, insulation and electric hot water heaters in the homes of eligible Islanders, helping them reduce their reliance on oil. These installations are coordinated by government which is taking service delivery to a new level, making it easier than ever for households to make the switch. In terms of transportation, we have one of the most generous electric vehicle incentives in Canada and we have the most affordable public transit system in the country. Going forward, we need to continue developing innovative and generous funding programs to get Islanders off oil, gas and reduce energy use.

We are developing a new energy strategy for the province, while also renewing our efforts to generate more local, sustainable clean energy. We need to invest heavily in renewables, and we have made regulatory amendments to get the ball rolling on some crucial energy infrastructure required to keep our grid stable. It is our responsibility as a provincial government to look out for all Islanders, so our whole province can benefit from producing more local power.

It's important to me that energy generation and sustainable changes be community based and to keep our grid resilient. We are starting community-based projects to build our sustainability at the local level. Georgetown will become the province's first Net-Zero community. Understanding how Georgetown uses energy will help the community address climate change, reduce carbon emissions, and enhance energy resilience through sustainable energy planning. It will be a roadmap for similar changes in other communities across the province.

The Georgetown Cleantech Park will be a living lab, developing the ideas and the innovations that will make PEI a world leader in sustainable technologies for decades to come. It will also house the Cleantech Academy which will offer a certificate and a master's degree in Cleantech Leadership. The PEI Energy Academy will extend applied training, research, and early-stage development in energy innovation.

We believe everyone has a role to play in adaptation and responding to climate impacts. Our partners in local and municipal governments, Indigenous governments and communities, businesses, non-governmental organizations, and academia have been crucial in our work and have an essential role to play to build resilience together. Thank you all for your efforts and continued support in helping our province tackle climate change.

Sincerely,

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

BACKGROUND

Mitigation and adaptation go hand in hand.

Climate change mitigation involves actions to reduce greenhouse gas sources and emissions and enhance greenhouse gas sinks. The goal of mitigation is to avoid, reduce, or delay the emission of greenhouse gases into the atmosphere.

Climate change adaptation refers to the strategies, policies and measures that are designed to reduce vulnerabilities and enhance the resilience of ecosystems and societies to the impacts of climate change. This includes changes in processes, practices, and structures to moderate the potential damages or to benefit from opportunities associated with climate change.

Low carbon resilience (LCR) is a lens used to coordinate and co- evaluate adaptation and mitigation strategies in policy, planning and implementation processes to reduce both emissions and vulnerability.

While climate change is a global issue,
it is felt on a local scale.

Energy consumption, particularly from fossil fuels, contributes significantly to greenhouse gas emissions. These gases trap heat in the Earth's atmosphere, leading to a rise in global temperatures, a phenomenon known as global warming. Switching to renewable energy sources like wind, solar, and hydroelectric power can help mitigate climate change. These sources produce electricity without emitting carbon dioxide. Additionally, energy efficiency measures can reduce the amount of energy needed, thereby decreasing greenhouse gas emissions. The way we produce and consume energy will play a crucial role in determining future climate change patterns. By transitioning to cleaner, renewable sources of energy and improving energy efficiency, we can help reduce the impact of climate change.

The Province has outlined a vision to achieve Net-Zero Energy by 2030. The PEI Energy Corporation[1] will have a role to play in achieving this target – by installing and managing new non-emitting generating sources like wind, solar, and emerging renewable energy systems.

Through ownership of wind farms at North Cape (10.56 MW), East Point (30 MW), Hermanville/Clearspring (30 MW) and the V-90 prototype (3 MW), the Corporation supplied approximately 155,000 MWh of renewable electricity to Islanders in the 2022-23 fiscal year which is equal to 20% of electricity used on Prince Edward Island.

[1] The PEI Energy Corp is a provincial crown corporation responsible for the development of energy systems and the generation, production, transmission and distribution of energy in all its forms on an economic and efficient basis, to provide financial assistance for the development, installation and use of energy systems, and to coordinate all government programs in the establishment and application of energy systems in the province.

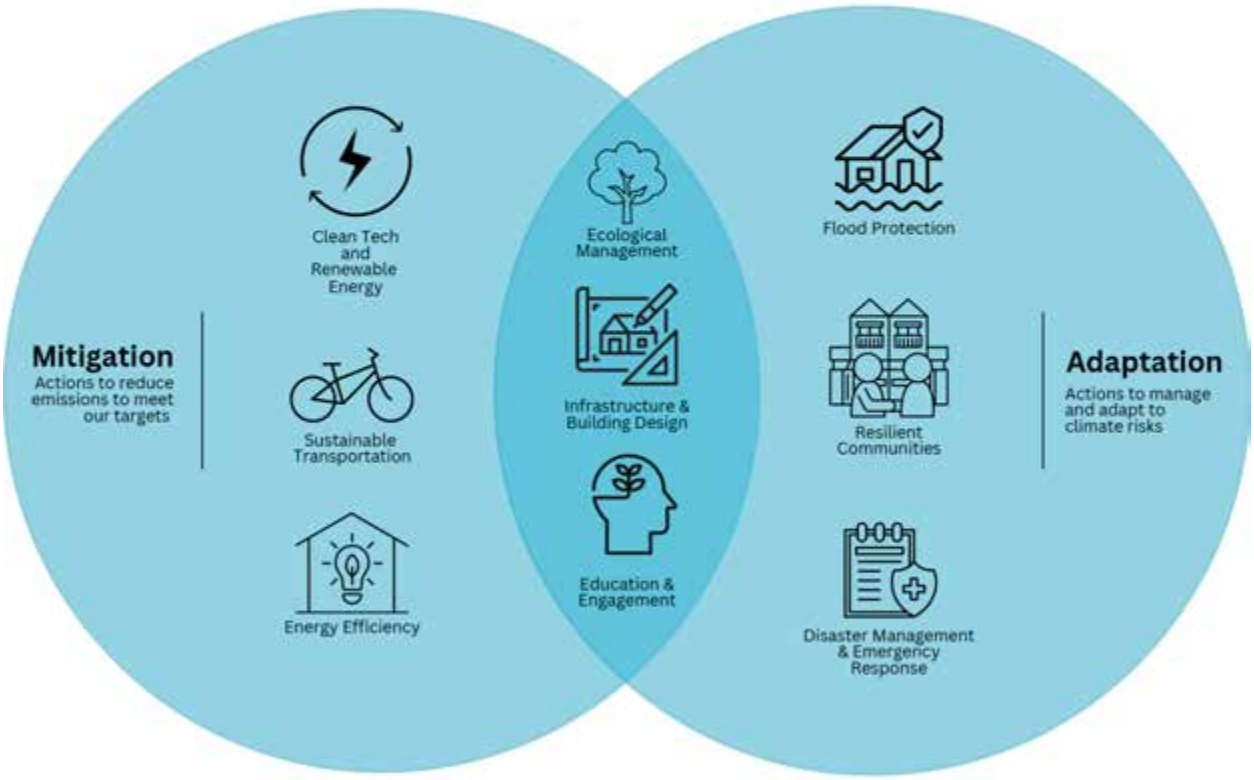
There are generally two types of actions that are taken to address climate impacts:

1 Mitigation

Mitigation refers to taking action to stop climate change from getting worse and includes reducing our greenhouse gas emissions (GHGs), switching to cleaner sources of fuel and power, and increasing carbon sequestration

2 Adaptation

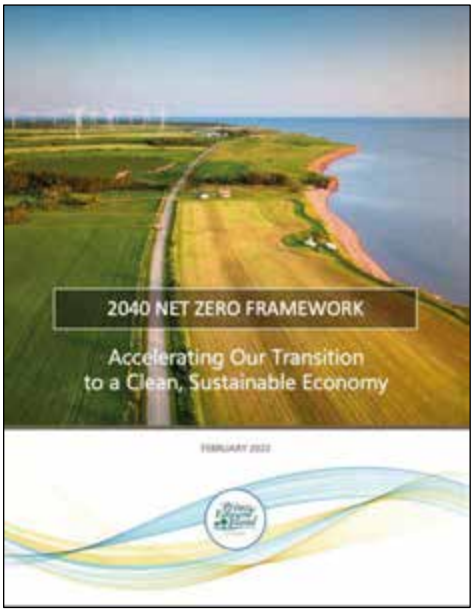
Adaptation refers to the adjustments we make to prepare for the impacts of climate change, some of which we are already experiencing today. This includes avoiding building in high-risk locations, designing infrastructure like bridges to accommodate rising sea levels, preserving natural spaces that can absorb heavy rainfall, and preparing for extreme weather events by having emergency kits and plans in place



Both adaptation and mitigation are equally important as even with ambitious targets preparing for the impacts of climate change cannot be avoided. Often referred to as **low carbon resilience**, by bringing together mitigation and adaptation strategies we can reduce both emissions and vulnerability simultaneously while still achieving environmental, economic, and social benefits.

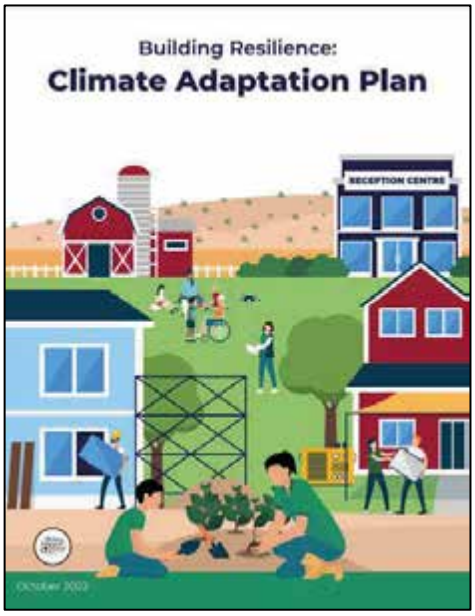
GUIDING DOCUMENTS & LEGISLATION

NET-ZERO FRAMEWORK



In February 2022, the Province of PEI released the 2040 Net-Zero Framework which sets the province on the path to achieve its vision to become Canada's first Net-Zero province by 2040. The Framework breaks down the overarching goals into sectoral goals and emissions reduction targets through six distinct Pillars. Pillar 1 relates to the Transportation Sector and Transforming the Way People and Goods Move, Pillar 2 relates to the Buildings Sector and Transitioning to Efficient and Cleaner Buildings, Pillar 3 focuses on Agriculture and Shaping Agriculture for PEI's Transition to Net Zero, Pillar 4 recognizes that we don't only need to reduce our carbon output but that we also have to increase carbon sequestration by Removing Carbon through Forestry, Technologies and Emerging Opportunities, Pillar 5 aims to Create a Clean Industry and Waste Advantage, and the goals in Pillar 6 demonstrate a recognition that the Province will need to Inspire Transformational Change through Leadership and Engagement efforts.

PROVINCIAL CLIMATE ADAPTATION PLAN



Released in October 2022, the Building Resilience: Climate Adaptation Plan provides a roadmap for the Province to better prepare for the future while lessening the impact of climate change on Island residents. With six overarching themes, the plan has 28 actions and 99 sub-commitments that aim to support vulnerable populations, primary industries, and the natural habitat. The PCAP lays out a framework by which we can plan for disasters, create more resilient communities, shift our industries, support our health and mental well-being, protect and enhance our natural systems, and expand our knowledge and capacity to adapt to the climate change.

NET-ZERO CARBON ACT

The *Net-Zero Carbon Act* (2020) is based on principles of sustainable prosperity, including: Netukulimk[2], sustainable development, and a circular, inclusive economy. It states that the achievement of sustainable prosperity is a shared responsibility among all levels of government, non-government organizations and all residents of the province; that climate change is recognized as a global emergency requiring urgent action; and such other principles as may be prescribed by the regulations.

The preparation of the *Minister's Report on Climate Change Risks and Progress Toward Targets* is enshrined in the Act with a requirement that starting in 2021 and for each subsequent year after, this report will be tabled in the Fall sitting of the Legislative Assembly.

The legislation identifies targets to reduce PEI greenhouse gas emissions by 2030 and for each subsequent calendar year to less than 1.2 megatons of carbon dioxide equivalent; and by 2040 and for each subsequent year, PEI greenhouse gas emissions will be at a level where carbon neutrality is achieved. In the spirit of inclusivity and shared responsibility, *the Act* legislated the establishment of an Advisory Committee to provide advice to the Minister on matters respecting climate change.

The committee is mandated under the *Net-Zero Carbon Act* to consist of ten members, at least half of whom must be women. The members are appointed by the Minister to serve for a two or three-year term. Members come from various backgrounds and sectors and have expertise in diverse areas to ensure the committee can draw on different perspectives and experiences related to climate change.

ADVISORY COMMITTEE – SUMMARY OF 2022-23 PROGRESS AND PRIORITIES

The Net-Zero Advisory Committee, as mandated in the *Net-Zero Carbon Act*, intends to ensure that a diverse chorus of voices with a range of subject matter expertise and perspectives, are integrated into concise and relevant pieces of advice for the Minister of Environment, Energy, and Climate Action.

The committee's inaugural meeting was held in November 2022, where they came together to learn more about each other and about the status of operations within the Sustainability Division in the Government of PEI. Some of the themes of the first meeting included how Hurricane Fiona has accelerated the urgency with which we must act as a province to mitigate and adapt to climate change, and the importance of open sourcing climate change-related data so the province can gain access to new perspectives and solutions from the community.

In the coming months, the committee plans to create sub-committees on the following topics: Construction/Buildings, Climate Adaptation, and Forestry/Agriculture. In addition, they will actively engage in the process of developing the Net-Zero Action Plan.

This dynamic group will take a holistic approach to advising the Minister on how to reach the Net-Zero goal and in doing so, address some of the strategic challenges faced by our Province - such as need for energy security, dealing with damage to our forests, need for natural areas protection, depletion of soil organic matter, and the need for affordable housing.

[2] "Netukulimk" means, as defined by the Mi'kmaq, the use of the natural bounty provided by the Creator for the self-support and well-being of the individual and the community by achieving adequate standards of community nutrition and economic well-being without jeopardizing the integrity, diversity, or productivity of the environment.

MITIGATION

Emissions and Data Estimates

Integrating PEI's greenhouse gas emissions data[3] into decision making is necessary to make meaningful progress toward reduction targets. However, the publication of Environment and Climate Change Canada's National Inventory Report (NIR), PEI's official inventory data, takes a couple of years to finalize. This means that the most recent NIR data that is available (released in mid-2023) is for two years prior (2021). This poses challenges for meeting the *Net-Zero Carbon Act*'s greenhouse gas reporting requirements and for staff to understand the implications of current mitigation policies and programs on the province's greenhouse gas inventory.

The Office of Net-Zero in the Department of Environment, Energy and Climate Action contracted Navius Research to provide insight into provincial greenhouse gas trends and to comply with the *Net-Zero Carbon Act* reporting requirements. Navius used a customized version of its 'gTech' energy-economy modelling software to develop emissions estimates for PEI. This model covers all sources of emissions tracked by the NIR and models emissions in 2-year increments from 2015 to 2035. Emissions for non-modeled years are interpolated.

Table 1: Navius estimates of PEI's GHG emissions (kt CO_2e)

Type	NIR		Projected (Current Policy)			
	2005	2021	2022	2023	2024	2025
Energy-related	1,441	1,162	1136	1127	1086	1045
Non-energy related	440	465	430	432	437	442
Total	1,880	1,627	1,566	1,559	1,523	1,488

Sources: (1) Environment and Climate Change Canada's 2023 National Inventory Report. (2) Navius analysis using gTech. Please note that results for 2022 and 2024 are interpolated between simulated years.

[3] Greenhouse gas emissions data is accounted for in calendar year increments.

According to the Navius projections, GHG emissions in 2022 were 1.56Mt CO2e. This is a -3.74% decrease in total greenhouse gas emissions for PEI in 2022 over the previous year. This is despite an assumed 3.5% population and GDP growth rate over the same time period.

PROGRESS TOWARD TARGETS

1.56 Mt CO2e is:

- 80% of the way to the 1.2Mt CO2e 'Total Emissions' 2030 Target*
- 38% of the way to the 2030 'Net-Zero Energy' Target*.

* net zero energy target that states: 'net calculated using 2021 National Inventory Report LULUCF data

It is worth noting that the National Inventory Report uses an internationally accepted methodology that remains the most accurate resource available for federal, provincial, and territorial emissions data. Working with Navius has allowed climate policy staff within the Government of PEI to gain a better understanding of the potential greenhouse gas mitigation impact of existing policies, and to ensure the most up to date provincial economic and statistical data is incorporated into emissions projections.

Navius's energy-economy model, has demonstrated consistent alignment with the NIR's historical data which contributes to a high-level of confidence in the Navius projections. Provincial data sources, such as the Annual Statistical Review, were consulted and integrated into the model in cases where there was a high-level of confidence and understanding of the implications of the data on emissions.

ACTIONS TAKEN/PLANNED AND EXPENDITURES (2022-23/2023-24)

In 2022-23, Sustainability Division within the Department of Environment, Energy, and Climate Action (EECA) spent approximately $67,100,000 on activities dedicated to reducing greenhouse gas emissions on Prince Edward Island. EECA is not the only Department dedicating spending to greenhouse gas mitigation efforts and there is incredible work happening across all government Departments related to programs, infrastructure, and research that will be crucial in making progress toward our provincial greenhouse gas reduction. These efforts are itemized in the mitigation section of this report. In 2023-24, the Province intends to increase investments in efforts to mitigate climate change.

NET-ZERO FRAMEWORK AND PILLARS

The Net-Zero Framework has six pillars representing different sectors and mitigation related actions and focus areas that will be crucial to achieve the vision set forth in the document for PEI to become the first province in Canada to achieve Net Zero.

This year's *Minister's Report on Climate Change Risks and Progress Toward Targets* breaks down actions and expenditures across government departments that relate to the sectoral goals set forth in the Net-Zero Framework document.

PILLAR 1: TRANSFORM THE WAY PEOPLE AND GOODS MOVE

Transportation is the largest source of greenhouse gas emissions in PEI, accounting for 46% of total emissions in 2022. A majority (65%) 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.

Swing Vehicles

The Government of PEI has two electric vehicles for staff to use for corporate travel to meetings, events, and conferences. This initiative reduces passenger vehicle transportation related emissions by giving staff an electric alternative option to their own gas vehicles and the opportunity to familiarize themselves with electric vehicles. In the 2022-23FY there were approximately 325 bookings and over 77,078 kms travelled using the Swing Vehicles. In lieu of paying mileage, these vehicles pay for themselves in approximately 3 years!

Table 2: Transportation related Actions Taken and Planned that contribute to Progress Toward Targets

GOAL: REDUCE RELIANCE ON PASSENGER VEHICLES			
Action Taken & Planned	**Budget Forecast 2022-23 FY**	**Budget Estimate 2023-24 FY**	**Department(s) Involved**
Active Transportation Fund	$6,863,700	$5,000,000	DTI, EECA
Active Transportation	$4,521,400		DTI - HMD
Transit	$4,610,000	$3,156,000	EECA
E-Bike Rebate Program	$400,000	$300,000	EECA
Bicycle Rebate Program	$292,400	$200,000	EECA
GOAL: TRANSITION TO ZERO EMISSIONS VEHICLES			
Action Taken & Planned	**Budget Forecast 2022-23 FY**	**Budget Estimate 2023-24 FY**	**Department(s) Involved**
Universal Electric Vehicle Incentive Program	$1,140,100	$2,130,000	EECA
EV Charging Network	$671,800	$1,275,000	DTI, EECA
Electric school bus chargers	$1,280,000	$250,000	ELL
EV Fleet (light duty motor vehicles)	$489,100	$250,000	DTI – HMD
EV Fleet (Medium – heavy duty motor vehicles)	$7,920,000		ELL, DTI

In 2022, PEI gained national recognition for efforts to transition to a more sustainable transportation sector. PEI scored third, behind only British Columbia and Québec, in transportation energy efficiency policy in this year's Efficiency Canada Scorecard.

This is the result of recent incentives for new and used electric vehicles as well as e-bikes. Another factor is the large number of electric vehicles charging stations on both a per road kilometer and per capita basis – over 119 public electric vehicle charging stations were installed across the province by the end of the 2022-23 fiscal year.

PLANS TO CONTINUE PROGRESS

The Province intends to continue Sustainable Transportation related incentives to facilitate the reduction of emissions in the sector. There are plans to expand the public EV charging network and incorporate more Level 3 Fast Chargers. The Government of PEI has committed to a fully electric school bus fleet by 2030. By the end of the 2022-23FY the Department of Education and Lifelong Learning (now the Department of Education and Early Years) is well on the way to achieving that goal, having added 35 new electric school buses to the fleet this year alone. Currently 25% of the school bus fleet is electric.

PILLAR 2: TRANSITION TO EFFICIENT AND CLEANER BUILDINGS

Residential, commercial and government buildings account for 17% of total emissions in PEI. The Government of PEI 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. In the residential buildings sector, PEI became a national leader in fuel switching incentive programs by introducing the suite of free programs for income qualified residents. These programs include free heat pumps, electric hot water heaters, and insulation. By the end of the fiscal year over 3,800 installations were completed through the programs resulting in close to 95,000 GJ in energy savings and reduced over 8500 tonnes of GHG emissions[4].

PEI ranked fourth overall in Efficiency Canada's Canadian Energy Efficiency Scorecard

PEI ranked fourth overall in Efficiency Canada's Canadian Energy Efficiency Scorecard for the Provinces and Territories. PEI was second in the country for electricity programs and third for fossil fuel savings. PEI's energy efficiency programs surpass most other provinces in prioritizing fuel switching to clean electricity and on delivering programs dedicated to low-income households.

[4] Based on an estimate that each Heat Pump saves 23GJ of energy and 2.1 tonnes of C02e.

Table 3: Buildings related Actions Taken and Planned that Contribute to Progress Toward Targets

GOAL: MAKE EXISTING HOMES AND BUILDINGS MORE ENERGY EFFICIENT			
Action Taken & Planned	**Budget Forecast 2022-23 FY**	**Budget Estimate 2023-24 FY**	**Department(s) Involved**
Home Comfort Program	$1,007,900		EECA
Winter Warming Program	$127,400		EECA
Home Insulation Rebates	$1,606,600		EECA
Solar Electric Rebate Program	$9,220, 600		EECA
Energy Efficient Equipment Rebates	$9,846,100		EECA
Free Home Insulation Program	$301,700	$2,571,000	EECA
Free Hot Water Electrification Program	$718,500	$764,000	EECA
Free Heat Pump Program	$15,087,800	$22,386,000	EECA
Home Energy Assessments	$1,520,300		EECA
Instant Savings	$477,600		EECA
Community Revitalization Program	$2,646,300		DFC
Rental Property Incentives	$113,900	$4,500,000	EECA
Free Heat Pumps for Community Centers	$400,000	$800,000	DFC
Public Infrastructure Projects with Mitigation Aspect	$20,638,100	$13,733,000	VARIOUS
Energy Rebate Program	$11,286,900	$9,832,800	EECA
Government Energy Program	$100,000		EECA

Goal: Construct More Efficient Homes and Buildings			
Action Taken & Planned	**Budget Forecast 2022-23 FY**	**Budget Estimate 2023-34 FY**	
New Home Construction Rebates	$625,000		EECA
Public Infrastructure (New Construction) Built to New Zero Ready Standard	$39,053,000	$76,894,300	VARIOUS

20% of homes on Prince Edward Island have had an energy audit completed. This is the highest level of participation out of all Canadian provinces.

- 22,139 tonnes of CO2e were saved through efficiencyPEI's residential and commercial programs.
- 8,140 energy efficient equipment units were rebated through the Energy Efficient Equipment Program.

Cardigan Consolidated and Sherwood Elementary schools in Prince Edward Island are the first in the province to receive net-zero upgrades, including solar and geothermal technology.

Plans to Continue Progress

Delivery and expansion of existing energy efficiency and conservation programs is a priority for the Government of PEI as it serves the dual purpose of lowering the cost of living for Islanders and plays a crucial role in the achievement of the 2030 and 2040 Net-Zero targets. Significant efforts to improve access and increase participation in existing programs are being made, including plans to raise qualifying household income levels for the free heat-pump program to $100,000.00. The province will continue to make efforts to improve the efficiency of new and existing public infrastructure with a special focus on social housing and schools. Advancements in the building industry's energy efficiency measurements and standards can be expected soon as well.

PILLAR 3: SHAPE AGRICULTURE FOR PEI'S TRANSITION TO NET-ZERO

24% 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. 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.

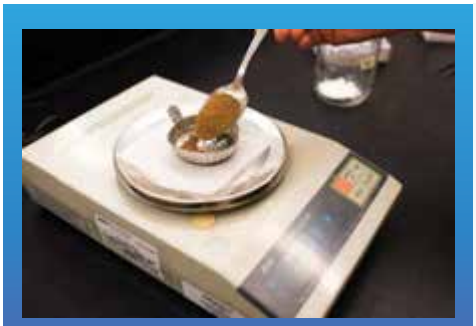
Nature Smart Climate Solutions Fund

REGENERATIVE PERENNIAL AGRICULTURE PROJECT

The Department of Agriculture and Land (now Department of Agriculture) entered into a contribution agreement with Environment and Climate Change Canada to support program development and delivery to increase carbon sequestration and biodiversity. Programs for review and development include the Alternative Land Use Service (ALUS), Perennial Crop Development, and Agriculture Stewardship programs under the Canadian Agricultural Partnership. The project will also feature research and extension initiatives supporting regenerative perennial agriculture strategies.

Table 4: Agriculture related Actions Taken and Planned that Contribute to Progress Toward Targets

GOAL: REDUCE EMISSIONS FROM CROP AND LIVESTOCK			
Action Taken & Planned	**Budget Forecast 2022-23 FY**	**Budget Estimate 2023-24 FY**	**Department(s) Involved**
Agriculture Stewardship Program[5]	$235,000	$235,000	DAL
Ruminant Feeding Trial evaluating impact of including kelp in livestock ration to reduce methane emissions[6]	$209,000	$10,000	DAL/ EECA/ EGTC
Updated Manure Management Guidelines	$77,600	$32,500 (EECA)	DAL/EECA
PEI Agriculture Climate Solutions Program, including the development of the Biological Nitrogen Availability Test[7]	$194,100		DAL



Soil Health Initiatives

Prince Edward Island's farmers have access to free soil health testing services through the PEI Analytical Laboratories, and a new Soil Health Improvement Plan (SHIP) advisory service. SHIP has been developed to help farmers assess their current soil health status and set an action plan to support improving soil health. Improving soil health increases the capacity of cropland to sequester carbon and increases the soil's productive capacity.

[5] Budget for Beneficial Management Practices that specifically relate to climate change mitigation.

[6] Funding from Low Carbon Economy Fund (Ag Climate Solutions), Canadian Agricultural Partnership, EECA Climate Challenge Fund, EGTC Development Fund.

[7] 2022-2023 is the last year of the PEI Agriculture Climate Solutions pilot program. Beneficial Management practices will be integrated into the Agriculture Stewardship Program.

GOAL: IMPROVE SOIL HEALTH AND ABILITY TO ABSORB CARBON			
Action Taken & Planned	**Budget Forecast 2022-23 FY**	**Budget Estimate 2023-24 FY**	**Department(s) Involved**
Alternative Land Use Service Program (ALUS)	$812,800	$1,540,000	DAL
Soil Health Testing and Soil Health Improvement Planning Services[8]	$93,100	$200,000	DAL
Perennial Crop Development Program	$147,200	$230,000	DAL
Regenerative Perennial Agriculture Project - NatureSmart Climate Solutions Fund	$97,400	$215,000	DAL
GOAL: ACCELERATE USE OF ADVANCED AGRICULTURAL CLEANTECHNOLOGIES			
Action Taken & Planned	**Budget Forecast 2022-23 FY**	**Budget Estimate 2023-24 FY**	**Department(s) Involved**
UAV Imagery Research	$33,000		
Agriculture Research and Innovation Program (ARIP)	$710,700	$800,000	DAL
Renewables in Agriculture	$35,000	$500,000	EECA

[8] 100% of costs covered for Soil Health Testing suite.

Plans to Continue Progress

Technical and financial support for the development, promotion, and implementation of climate change mitigating Beneficial Management Practices (BMPs) will continue through the delivery of the Sustainable Canadian Agricultural Partnership. In 2023, new BMPs with an explicit climate change mitigation focus will be incorporated into existing programs such as, Increasing Perennial Forages in Rotations, Strip Tillage, Transition to Zero Tillage, Incorporating Soil-building Crops in Rotations, Improved Liquid Manure Application, and Innovations in Agroforestry. The ALUS program will expand and include new eligible activities and support farmers to progressively produce more ecological goods and services from their marginal farmland. Perennial Crop Industry development activities continue to support expansion of perennial crop acres and value-chain development.

The Department of Agriculture is hiring an Agronomic Extension Specialist focusing on nutrient management. This specialist will work with farmers to interpret soil analyses and develop strategies to use inputs as effectively as possible; minimizing waste, improving profits, and decreasing nitrous oxide emissions.

In addition, opportunities to participate in renewable energy generation through the renewables in agriculture program will continue and possibly expand.

PILLAR 4: REMOVE CARBON THROUGH FORESTRY TECHNOLOGIES AND EMERGING OPPORTUNITIES

PEI's 2030 and 2040 mitigation targets cannot be achieved solely by the reduction of greenhouse gas emissions, another crucial element of achieving net-zero is the natural environment's ability to absorb and store carbon. Forests are a significant 'carbon sink' that also provide numerous protective climate adaptation functions for humans and many other species. Forested lands and trees are also of cultural and spiritual significance. In 2022, 714 hectares of land were purchased by the Government of PEI for conservation.

Climate change is impacting PEI's forests. In 2022, Hurricane Fiona resulted in 13% of woodlands losing 70% of their trees. The Government of PEI has made infrastructure investments to support a 30% increase in capacity at the Provincial Frank J. Gaudet Tree Nursery, equating to an increased production of 1.3 million trees per year.

Emergency Forestry Taskforce

The Minister of Environment, Energy, and Climate Action established an Emergency Forestry Taskforce in the wake of Hurricane Fiona to put forth recommendations to address the immediate needs of private woodlot owners, and the forest industry on PEI. The taskforce made 11 recommendations, some aligned with work already underway within the provincial government.

In January 2023, the Government appointed a Forestry Commission to review PEI's forest policy, programs and legislation in the wake of Fiona, and develop a Forest Recovery Plan for Prince Edward Island.

Table 5: Forestry related Actions Taken and Planned that Contribute to Progress Toward Targets

GOAL: Maintain What We Have			
Action Taken & Planned	**Budget Forecast 2022-23 FY**	**Budget Estimate 2023-24 FY**	**Department(s) Involved**
Forestry Field Services[9]	$3,921,800	$4,883,600	EECA
Resource Inventory and Modelling	$589,400	$694,700	EECA
Forest Fire Protection	$268,300	$783,300	EECA
Fish and Wildlife	$6,458,900	$6,147,700	EECA
Sustainable Forest Alliance	$50,000		EECA
Environmental Land Management	$1,181,800	$1,148,800	EECA
GOAL: Grow What We Need			
Action Taken & Planned	**Budget Forecast 2022-23 FY**	**Budget Estimate 2023-24 FY**	**Department(s) Involved**
Production Development	$1,491,000	$1,662,100	EECA
Provincial Nursery Expansion	$500,000		EECA

Plans to Continue Progress

Over the next year, the Forest Fish and Wildlife Division plans to focus on implementing recommendations from the Emergency Forestry Task Force and on working with the newly formed Forestry Commission to help them review and make recommendations for provincial forestry policy, programs and legislation.

The Field Services Section will continue work to manage 38,000 hectares of public land across Prince Edward Island and provide technical and financial support to private landowners wishing to implement sustainable forest management.

The Forest Enhancement Program continues to provide funding to help landowners develop sustainable forest management plans for their properties. Plans are developed based on owners' objectives, the capabilities and limitations of their forests, and in accordance with the Division's Forest Management Manual. In 2022-23, 112 new landowners enrolled in the Forest Enhancement Program.

[9] Appropriations for the sustainable management of public land and financial/technical assistance to private woodlot owners.

PILLAR 5: CLEAN INDUSTRY AND WASTE ADVANTAGE

Industry and Waste represent 13% of PEI's total GHG emissions. The Province of PEI aims to develop cleaner industries, businesses, processes, and technologies that will benefit and accelerate the path to net zero.

PEI's Waste Watch Program

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 because 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.

In 2022, Island Waste Management Corporation diverted 20,654 tonnes of organic waste because of PEI's Waste Watch Program. The Central Compost Facility produced 9,591 tonnes of compost, and the East Prince Waste Management Facility processed 44, 681 tonnes of waste.

The Georgetown Cleantech Park will be a 60-acre tax-free zone for Cleantech companies. The park will be a destination that attracts companies, entrepreneurs and talent, all focused on advances in Cleantechnology growth.

Table 6: Industry and Waste related Actions Taken and Planned that contribute to Progress Toward Targets

GOAL: Enable Cleaner PEI Businesses and Industries			
Action Taken & Planned	**Budget Forecast 2022-23 FY**	**Budget Estimate 2023-24 FY**	**Department(s) Involved**
Atlantic Fisheries Fund (AFF)	$1,600,000	$1,600,000	DFC
Carbon Reduction Strategy	$916,900	$916,900	DFC
Inshore Fishing Fleet Sustainability Strategy	$917,000	$917,000	DFC
Goodbye Plastic Feasibility Study	$230,000		DFC, EECA
Community Energy Solutions	$48,700		EECA
Business Energy Rebates Program	$393,200		EECA
PEI Cleantech Academy	$102,000	$100,000	EECA
Aquaculture Futures Program	$93,800	$93,800	DFC
Research, Innovation, and Growth Program	$215,000	$215,000	DFC
Waste Reduction, Recovery, and Recycling	$8,045,500	$7,761,300	EECA
Greenhouse Gas Buyback Program	$1,385,200	$2,000,000	EECA
Cleantech Research & Innovation Fund		$2,000,000	EECA
GOAL: Invest in Next Generation Technologies			
Action Taken & Planned	**Budget Forecast 2022-23 FY**	**Budget Estimate 2023-34 FY**	**Department(s) Involved**
PEI Fisheries and Aquaculture Cleantechnology Adoption Program (PEIFACTAP)	$50,800.00	$50,800.00	DFC

Capacity Building for the Quantification and Reporting of Organizational Level GHG Emissions and Removals

The Office of Net-Zero sponsored 9 Government of PEI employees and 6 external participants from academia, municipal government, and the business community to attend a live virtual training for Greenhouse Gas Inventories & Measuring Carbon Footprint to ISO 14064-1:2018 Standard. The live, instructor-led, virtual group training consisted of a full-day session that touched on the following topics: GHG inventories, GHG accounting and reporting principles, Preliminary planning and base year, Quantification of GHG emissions and removals, Tools for emissions calculation, GHG management handbook, and GHG information management systems. Participants who completed the course and subsequent quiz received Course Completion Certification.

PLANS TO CONTINUE PROGRESS

There are exciting times ahead for Cleantech and industry on Prince Edward Island. The PEI Energy Corporation is leading the charge, through the development of the new PEI Energy Strategy and continued management and investments in renewable energy assets. The Cleantech Park and Innovation Hub's development will ensure long-term sustainability of these initial efforts, especially in concert with the ongoing success of the bio-sciences industry on PEI. Significant dedication of efforts and resources to innovation in the Fisheries, Aquaculture, and Agriculture sectors suggests a promising shift toward decarbonization in these industries as well. New federal funds for research into landfill methane monitoring and reduction will continue to spur advancements in the waste sector, and there is significant potential for cross-sectoral collaboration through planned expansions at the Energy from Waste plant.

PILLAR 6: INSPIRE TRANSFORMATIONAL CHANGE THROUGH LEADERSHIP AND ENGAGEMENT

Achieving the 2030 and 2040 targets will require active engagement and involvement of all sectors and residents on PEI. Dedicating time and resources to empowering and engaging everyone who lives and works on PEI to participate in climate action is key. Many of the aforementioned initiatives demonstrate PEI's dedication to leadership and engagement around climate action. Some additional examples are highlighted in the table below:

Table 7: Mitigation Related Actions Taken and Planned that Inspire Transformational Change

GOAL: Create the Right Environment to Drive Change
In February 2023, the Office of Net-Zero hosted two 'Energy Positive Island' events featuring Soren Hermansen, CEO of the Energy Academy in Samso Island, Denmark. Soren shared insights with industry professionals and community members on transitioning to an independent, non-emitting grid and facilitating discussion on related opportunities and challenges unique to PEI. Over 1000 residents were engaged on the topic of Net-Zero and energy independence through these in-person and live-streamed events. The Government of PEI's suite of free programs for income qualified residents facilitate fuel switching to electric heat-pumps, hot water heaters, and improved home insulation for overall home energy efficiency are making it simple and rewarding for residents to participate in climate action. Another element that sets this initiative apart is that the installation is also coordinated through the program – taking service delivery to a new level. 16 contractors entered into agreements with the province to install over 3,800 free energy efficient equipment units (electric heat pumps and hot water heaters) in the homes of Island residents who qualified.
GOAL: Empower Islanders to Partner in the Path Ahead
Over the last year, significant efforts have been made across Departments to improve access, awareness, and participation in the Government of PEI's mitigation programs: • The Net-Zero Navigator is a simple online tool that directs users to all programs they may be eligible for based on a few simple questions. • A new AccessPEI location opened in Royalty Crossing. Strategically located on a popular T3 transit route stop, this location was designed to give people more personalized one-to-one service. Also, through a partnership with Skip the Waiting Room, individuals can choose to receive live updates about their upcoming appointment for added flexibility. • A Lean Six Sigma (LSS) review of the point-of-sale incentive programs was completed in 2022. Lean 6 Sigma is a process improvement approach that eliminates inefficiencies and improves work processes. Island households are contributing over 16.3MW of solar energy to the grid through participating in PEI's Solar Electric Rebate Program. This number is projected to increase annually. The Climate Challenge Fund (CCF) is a $1-million annual fund that provides up to $100,000 to support projects that reduce greenhouse gas emissions and help communities and the economy adapt to climate change.

GOAL: Lead Through Expertise and Collaboration

PEI Energy Corporation's Slemon Park Microgrid project installed 10MW of solar paired with utility-scale and industrial batteries. It is expected that this project will be fully online by the end of 2023.

The Summerside Solar and Storage Integration project partially funded by the Province of PEI is a 21-MW capacity project which includes a 10-MW, 20-MWh power transfer battery system. This project will reduce 8,128 tonnes of GHGs annually.

The Stratford Community Campus Solar Field Project is a 100-kW solar array at the new community campus. This project is a partnership between the Town of Stratford, Government of Canada through the Canada Infrastructure Program, and the Government of PEI.

The PEI Cleantech Park and Innovation Centre will be a space where academia and government can come together to contribute to a clean growth future. The preliminary civil work for Phase 1 of the Cleantech Park is underway, while design and planning for the Cleantech Innovation Centre continues.

The Office of Net-Zero has contracted Navius Research to provide insight into annual greenhouse gas emissions trends in the province. Up until now, the Province of PEI has had to rely exclusively on the National Inventory Report's provincial GHG data for PEI which is released with a two-year lag (ie. 2021 GHG emissions data is released in 2023). Using Navius's proprietary g-tech energy economy modelling software, more accurate assumptions about emissions in the most recent calendar year can be made and the hope is that staff in the sustainability division will gain a better understanding of how our provincial data and policies impact PEI's emissions profile in the National Inventory Report.

City of Summerside, announced funding to build a solar energy farm and storage facility in Summerside. The project involves the construction of a new 21-megawatt solar farm and a battery storage facility.

EXPECTED OUTCOMES

Longer term expected outcomes include achievement of the *Net-Zero Carbon Act* legislated greenhouse gas reduction targets for both 2030, and 2040 as well as sectoral targets outlined in the Net-Zero Framework. In the nearer term, there are some significant plans, strategies, and funding opportunities that will continue to lead PEI on the Path to Net-Zero.

NET-ZERO ACTION PLAN

In 2022, a jurisdictional scan report was completed that captures the examples of leading practices across the globe (over 25 jurisdictions) that are in line with the priorities and key directions stated in PEI's Net-Zero Framework 2040. This report is an important first step in helping the Government of PEI to transition from framework to implementation.

The first in a series of 5-year action plans will include comprehensive consultation, outreach and research components that lead to the identification and description of specific mitigation actions that will span 2025-2030 and support the achievement of the 2030 and 2040 legislated emissions reduction targets. The plan will include a detailed implementation strategy with timelines, costing, and measurement and evaluation considerations built in. Social equity considerations including the assessment of potential co-benefits beyond emissions reduction, such as improved air quality, job creation, and enhanced resilience for communities that will minimize disproportionate impacts of climate change will be prioritized.

PEI ENERGY STRATEGY

The PEI Energy Corporation on behalf of the Department of Environment, Energy and Climate Action has been facilitating the development of the PEI Energy Blueprint, which will primarily unfold in the 2023-24 fiscal year.

Through internal analysis and extensive public and stakeholder engagement, the project will review the Island's energy policy, legislative and regulatory framework and propose changes where necessary to reflect present-day and future priorities. The Energy Blueprint will provide both a long-term vision and a short-term implementation plan that will replace the current Provincial Energy Strategy which was completed by the PEI Energy Corporation and released in 2016-17.

SUSTAINABLE COMMUNITIES INITIATIVE

The PEI Energy Corporation is currently developing programming to support community-based renewable energy projects. The Sustainable Communities Initiative encourages interested communities to explore opportunities for energy generation models that suit their unique needs. This could consist of micro-scale electricity generation, centralized heating and cooling, cogeneration, community energy efficiency, or energy from waste. The key goals of the PEI Energy Corporation are well aligned to assist with these opportunities.

CLEANTECH FUND

The Province of Prince Edward Island has committed to the further development of a Cleantech industry in the province. There are several businesses currently operating in this field. Many have expressed that the Research and Development stages of their projects are often very costly, and those costs can hinder their path to commercialization.

A $2,000,000/year Cleantech Research and Innovation Fund is currently being developed. This program will assist local island companies looking to pursue Cleantech projects through the research and development stages of their project's pathway to commercialization.

FREE PROGRAM EXPANSION

It is anticipated that the income threshold for the Free Heat Pump program will increase to $100,000 by end of 2023.

Over 3,800 energy efficient equipment units have been installed by the end of the 2022-23 fiscal year, through the free programs.

Carbon Abatement Cost of Program (Past and Future)

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.

Table 8: Carbon Abatement Costs of Programs

Program	Weighted Average Measure Life	Annual GHG Savings	Annual Program Costs	Updated Abatement Cost	Original Abatement Cost
Energy Efficient Equipment	18	18,005	$9,978,500	$31	$67
Home Insulation	23	2,594	$1,599,700	$27	$44
New Home Construction	30	308	$603,700	$65	$136
Winter Warming	8	317	$112,800	$44	$46
Instant Savings	7	407	$477,600	$101	
Business Energy Rebates	18	821	$418,000	$28	$234
Community Energy Solutions	15	113	$52,400	$31	
Solar	25	1,020	$9,245,000	$363	$160
Home Comfort	20	364	$1,203,000	$165	

ADAPTATION

ACTIONS TAKEN AND EXPENDITURES (2022-23)

In 2022-23, approximately $39,781,500 was spent on activities dedicated to reducing and managing PEI's climate change risk. The initiatives along with their expenditures during 2022-23 and planned expenditures in 2023-24 are listed in table 9. A brief description of each action is in the subsequent pages. In 2023-24, the Government of Prince Edward Island intends to continue investments in efforts to reduce and manage climate change risk, with over $35,302,600 in planned expenditures.

Table 9: List of actions taken and planned to manage PEI's climate change risks.

Actions Taken & Planned	2022-2023 Budget Forecast	2023-2024 Budget Estimate	Department(s) Involved
Capacity Building			
A. Climate Action Secretariat B. Climate Leadership C. Climate Sense D. CLIMAtlantic E. Teacher Professional Development & Curriculum Materials	A. $442,100 B. $227,300 C. $90,000 D. $131,900 E. $145,200	A. $805,700 B. $257,300 C. $0 D. $131,900 E. $46,000	A. EECA B. EECA, DTI, AGR, and FC C. EECA D. EECA E. ELL
Policy Development			
A. PCAP Engagement & Development B. UPEI Shoreline Policy Recommendations	A. $81,400 B. $100,000	A. N/A B. $100,000	A. EECA B. EECA

Community & Infrastructure Resilience			
A. Coastal Hazard Assessments	A. 10	A. 11	A. EECA
B. Coastal Flood Warning System	B. 11	B. N/A	B. EECA, EMO
C. Road Resilient Infrastructure	C. $31,198,000	C. $12,935,000	C. DTI
D. Community Food Security Program & Initiative	D. $337,100	D. $200,000	D. DAL
E. Growers Station Support	E. $200,000	E. TBD	E. DAL
F. Food Security Programs	F. $3,906,900	F. $4,908,000	F. SDH
G. Fortification of Marine Access Sites for Seafood Sector	G. $74,800	G. Funds not confirmed	G. FC
H. Riparian Buffer Retirement through ALUS	H. $147,000	H. $225,000	H. DAL
I. Soil Health & Conservation	I. $319,900	I. $280,000	I. DAL
Research & Knowledge Mobilization			
A. Coastal Hazard Initiatives	A. $581,700	A. $1,195,200	A. EECA
B. Post Tropical Storm Fiona High Water Mark Study	B. $12,000	B. N/A	B. EECA
C. Forest Fire Protection	C. $268,300	C. $783,300	C. EECA
D. Climate Challenge Fund (CCF)	D. 1,086,000	D. $1,192,000	D. EECA
E. PEI Seafood Sector Climate Change Assessment	E. $96,900	E. $96,900	E. FC
F. Aquaculture Genome Canada Project	F. $216,600	F. 232,000	F. FC
G. Comprehensive Adaptation to Climate Change	G. $93, 400	G. $97,900	G. DAL
H. Fed of Ag Climate Action Initiative	H. $250,000	H. N/A	H. DAL
I. Public Health and Awareness Bulletins	I. Funded by CCF	I. N/A	I. HW
ADAPTATION ACTIONS TOTAL	**$39,781,500**	**$23,368,200**	

*Budget forecasts and estimates were collected from the respective departments and represent the most up to date information at the time of writing this report.
** Identified actions are cost-shared with federal government and/or other organizations. The forecasts and estimates provided represent the total budget of those actions including GPEI costs.

[10] Budget for Coastal Hazard Assessments is included in Climate Action Secretariate.

[11] Budget for Coastal Flood Warning System is funded by federal programing.

DISASTER PREPAREDNESS & RESILIENCE

Several programs and initiatives were launched and/or expanded upon in response to the devastating impacts of Post Tropical Storm Fiona to help Islanders recover during 2022-23.

Post Tropical Storm Fiona Statistics

- Post Tropical Storm with category-2 hurricane strength winds.
- It made landfall in PEI on September 24, 2022
- Barometric pressure of 932.7millibars (lowest recorded in Canadian history)
- Peak wind gusts of 149km/hr in PEI
- Rainfall amounts ranged from 60 to 90 mm across the Island.
- High Water Mark (>1 - <6m)
- 13% of the Islands forests saw significant tree loss
- 95% of Islanders lost power
- $220 million estimated in insured damages.

Table 10: List of actions taken to assist Islanders post Fiona.

Actions Taken & Planned	2022-2023 Investment	2023-2024 Budget Estimate	Department(s) Involved
Extreme Weather Preparedness			
A. Fiona Response Review	A. $58,900	A. N/A	A. EMO
B. Fiona Agriculture Support Program	B. $2,270,300	B. $12,000,00	B. DAL
C. Fiona Support for Food Banks	C. $500,000	C. N/A	C. SDH
D. Fiona Support for SDH Clients	D. $1,533,400	D. N/A	D. SDH
E. Fiona Support for all Islanders	E. $21,000,000	E. N/A	E. SDH
F. Fiona Support to Island Seniors	F. $1,880,000	F. N/A	F. SDH
G. Fiona Supports for NGOs	G. $440,000	G. N/A	G. SDH
H. Investment in Backup Power	H. $1,146,400	H. $250,000	H. EECA, DAL
I. Farmers Assistance Program	I. $51,500	I. $31,500	I. DAL
J. Post-Fiona Assessment of Conway Narrows Sandhills	J. $37,300	J. $12,400	J. FC
K. Finance Emergency Payment System	K. $50,000	K. $1,752,000	K. FIN

FIONA RESPONSE REVIEW

- The Emergency Measures Organization with external consultants worked to engage with stakeholders to conduct a comprehensive review of the provincial response to Post-Tropical Storm Fiona and make recommendations to improve future storm preparedness, response, and recovery. The review will be made available in 2023-24.

FIONA AGRICULTURAL SUPPORT PROGRAM[12]

- With funding support from the Disaster Financial Assistance Arrangements (DFAA), DAL provided financial support to the agricultural industry where extraordinary costs were incurred associated with agricultural infrastructure, crops, and livestock due to Fiona that were not covered by existing Business Risk Management (BRM) programs and other federal or provincial programs. Approximately 700 applications were submitted to the department.

FIONA SUPPORT FOR FOOD BANKS

- The Department of Social Development and Housing (SDH) provided funding to the Island Food Bank Association to ensure key food banks have emergency backup generation. SDH also provided additional emergency funding to the Association in times of needs (i.e., extreme weather events) to ensure all Islanders in need of food will have the ability to receive supplies.

FIONA SUPPORT FOR SDH CLIENTS

- One-time Fiona support was issued for clients of Social Assistance and Assured Income and PEI Housing Service buildings to cover the cost of replacing food lost to prolonged power outages caused as a result of Hurricane Fiona.

FIONA SUPPORT FOR ISLANDERS

- One-time Fiona support of $250 per eligible Island households who experienced financial hardship as a result of the impacts of Fiona and applied for assistance to cover the costs of those impacts.

FIONA SUPPORT FOR ISLANDER SENIORS

- One-time Fiona support of $100 grocery card per eligible Island senior to help with the cost of lost food as a result of the impacts of Fiona and applied for assistance to cover the costs of those impacts.

FINANCE EMERGENCY PAYMENT SYSTEM

- In 2022-23, PEI government established a system, including hiring a Project Manager, to issue funds and payments to Islanders quickly after a natural/manmade disaster.

[12] Fiona Agriculture Support Program www.princeedwardisland.ca/en/information/agriculture/fiona-agriculture-support-program

INVESTMENT IN BACKUP POWER

- A significant investment in backup power, specifically generators, was made by multiple departments for critical and public infrastructure including rural seniors housing, children in care settings, food banks, and agricultural facilities.

- With an increase in use of backup power during prolonged power outages, outreach and education focused on generator safety including maintenance and use guidelines were provided and are shared regularly on Government of PEI social media accounts.

- It is anticipated that departments will continue to invest in backup power in 2023-24 with a focus on child and family groups homes, agricultural facilities, urban seniors housing, and the Community Outreach Centre.

FARMERS ASSISTANCE PROGRAM

- The Farmers Assistance Program / FarmersTalk.ca service has provided confidential, professional counselling services to farmers, farm employees and their families since 2004. The program received an increased investment to secure an extra staff member and ensure producers have the mental health assistance that may be needed post Fiona.

POST-FIONA ASSESSMENT OF CONWAY NARROWS SANDHILLS

- DHI, an environmental assessing firm, is currently evaluating the modified sandhill structures at Conway Narrows in the aftermath of Post Tropical Storm Fiona. The purpose of this assessment is to understand the potential effects on aquaculture leases in the surrounding area. The assessment will analyze the vulnerability and viability of existing seabed, bottom, and off-bottom aquaculture leases, along with the protective sandhills that serve as a barrier to the leases in the Conway Narrows.

Public Health and Awareness Bulletins

Scout Environmental received $99,000 from the Climate Challenge Fund to develop extreme heat education and awareness guidelines for PEI.

Food and water safety bulletins were created for distribution to reception centres and on social media to inform the public about food and water safety risks following prolonged power outages.

In 2023-24, messaging about health impacts of air quality impacted by wildlife smoke will be generated along with mitigation strategies and messages for those who are at highest risk.

CAPACITY BUILDING

CLIMATE ACTION SECRETARIAT

Department of Environment, Energy and Climate Action

In 2022-23, the Climate Action Secretariat undertook the development and release of the Provincial Climate Adaptation Plan while also delivering, supporting, and coordinating various climate adaptation actions across provincial government departments. The Secretariat also continued its collaborative work with federal, provincial, territorial, and municipal partners. Administrative expenditures listed in Table 9 are only for those dedicated adaptation staff and students, along with expenditures required to support those positions. It does not include the estimate of the time and resources committed by other government staff that participated in the development of the Provincial Climate Adaptation Plan and those that are effectively incorporating climate change into their duties in effort to mainstream climate change considerations throughout government. Adaptation expenditures contributed by other government departments are also listed in Table 9 and are described in the subsequent pages.

In 2023-24, it is expected that additional staff will be added to manage growing adaptation demands and projects.

CLIMATE LEADERSHIP

All government departments are involved in leading climate action. Since 2019, Ministers have been directed in their mandate letters that they must think about how climate change affects their departments. Currently, at least one staff member in each department acts as the Climate Change Coordinator in addition to their regular work. To keep up with the pace of climate change, in 2022-23, several departments made their Climate Change Coordinators full-time positions. Across government, these staff respond to climate change impacts and will make sure the responses also help reduce greenhouse gas emissions and address other public priorities. The Department of Environment, Energy and Climate Action supports Climate Change Coordinators and other staff working on climate adaptation by providing training, guidance, and opportunities to work on policy together. Across all departments staff have participated in over 900 hours of climate change professional development in the 2022-23 fiscal year.

CLIMATESENSE

Department of Environment, Energy and Climate Action

Under the Building Resilient and Adaptation Capacity and Expertise (BRACE) fund the Department of Environment, Energy and Climate Action partnered with UPEI and Natural Resources Canada to deliver ClimateSense—a 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. Since 2019, twenty-nine (29) intern placements were completed with 15 organizations. In 2022-23, the Province provided bridge funding to UPEI to continue the training and development aspects of the program when the BRACE agreement came to an end.

CLIMATLANTIC

Department of Environment, Energy and Climate Action

The Department of Environment, Energy and Climate Action is supporting CLIMAtlantic – in partnership with the Governments of Canada, New Brunswick, Nova Scotia and Newfoundland and Labrador. This regional climate services organization helps individuals and organizations to find and use locally relevant climate information. Climate data and information can support adaptation efforts by providing various sectors with the evidence-base to make sound decisions.

ECOLOGICAL LAND MANAGEMENT

Department of Environment, Energy and Climate Action

In addition to programs incentivizing sustainable land management by landowners on PEI, the forestry division also provides education, resources, and training opportunities to support ecological land use and forestry.

- The Forest Enhancement Program participants were provided with free enrollment in MacPhail Woods' School of Woodland Ecology courses, including plant identification, sustainable trail design, and forest restoration. Approximately two-thirds of all attendees of the MacPhail Wood's courses were Forest Enhancement Program Participants.

- A two-day training event for Provincial Forest, Fish and Wildlife staff and Private contractors/consultants was held in March 2023 to enhance the skills of private and provincial forestry practitioners related to biodiversity and species at risk conservation. Over 30 people attended.

- The Province supported Island Nature Trust to encourage landowners to voluntarily protect, provide and improve wildlife habitat, and restore Island forests through private stewardship through a series of 11 peer-learning workshops, 2 Natural Area Protection information and awareness information sessions, developing print and online information resources, and through direct communication and support with landowners.

The Province also developed tools for Municipalities and Watersheds to promote ecological land use and management practices. Such as:

- A web-based guide highlighting how the *Planning Act* enables and supports the protection, conservation and management of natural features and supports ecosystem services.

- An on-line mapping application by provincial staff to be made available on the provincial website to highlight habitat for species at risk, current forest cover, existing protected areas, etc.

- Creation of a training module for municipal counsellors and staff relating to current threats to natural habitat, to ecosystem services and land use planning options.

- Availability to use a newly developed Depth to Water Table tool to locate, assess, and better conserve forested wetlands.

TEACHER PROFESSIONAL DEVELOPMENT & CURRICULUM MATERIALS

Department of Education and Lifelong Learning

In 2022-23, elementary and intermediate schoolteachers in both the English and French School Boards participated in professional development related to climate change and associated projects. Examples of topics include adaptation, mitigation, net zero, heat transfer, and renewable energies. In addition to professional development, classroom resources, materials and software were made available for teachers to facilitate learning opportunities.

POLICY DEVELOPMENT

PROVINCIAL CLIMATE ADAPTATION PLAN

Expanding on its predecessor Taking Action: A Climate Change Action Plan for Prince Edward Island – a five-year plan, that provided a framework for both adapting to a change climate as well as reducing GHGs, the Building Resilience:

Climate Adaptation Plan is a five-year plan released in October 2022 that is oriented exclusively towards adaptation efforts. The plan was developed and released after a culmination of engagement efforts that took place through winter and spring, a summary of which can be found in the Climate Adaptation: What we Heard report.

The Provincial Climate Adaptation Plan (PCAP) represents a whole-of-government approach to tackling climate risk on PEI with a focus on resilience and equity. With a goal of addressing key hazards identified in the Climate Change Risk Assessment (CCRA) completed in 2021 the adaptation plan outlines six overarching themes with 28 actions and 99 sub-commitments that aim to help Islanders prepare for the future and lessen the impacts of climate change while supporting vulnerable populations, primary industries, and the natural habitat. The six themes in the Adaptation plan are:

- Disaster Resilience & Response
- Resilient Communities
- Climate Ready Industries
- Health & Mental Well-being
- Natural Habitat and Biodiversity
- Knowledge & Capacity

Implementation of the Adaptation Plan began immediately upon its release with efforts intended to complement Net-Zero goals and objectives, as well as align with the development and draft release of the National Adaptation Strategy. The NAS remained under development through 2022-23, and a draft strategy was released in November 2022.

As per the *Net-Zero Carbon Act* the Provincial Adaptation Plan will be reported on annually.

UPEI SHORELINE POLICY RECOMMENDATIONS

The University of Prince Edward Island was contracted to prepare a State of the Coast report that includes a summary of the natural and built environment along with recommendations for an interim shoreline policy.

It is expected the report will be available in 2023-24.

COMMUNITY & INFRASTRUCTURE RESILIENCE

COASTAL HAZARD ASSESSMENTS

Department of Environment, Energy and Climate Action

In 2022-23, 685 Coastal Hazard Assessments (CHAs) were completed, which is equal to the number of assessments completed in the previous year. Approximately 60% of the requests came from within government reflecting the continued integration of climate considerations into provincial policy and decision making. The remaining includes requests from property owners, prospective buyers, and professionals such as land surveyors, and real estate organizations.

Since the department began offering the CHA service approximately 2100 have been completed with a noticeable increase in requests after Hurricane Dorian in September 2020.

This service will continue to be available to the public and internal partners in 2023-24.

COASTAL FLOOD WARNING SYSTEM

Department of Environment, Energy and Climate Action & Emergency Measures Organization with Environment and Climate Change Canada

Environment and Climate Change Canada (ECCC) 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 of storm tide) caused by storms, which have the potential to cause coastal flooding.

In 2022-23, ECCC and the Government of Prince Edward Island worked together to improve the storm surge warnings for Prince Edward Island by using information from the recently developed coastal flood maps and new digital elevation data obtained in 2021. Once active 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.

Initial results of this project were tested and disseminated the day before Post Tropical Storm Fiona. It is expected the improved storm surge warning system will be publicly released in spring of 2024.

ROAD RESILIENT INFRASTRUCTURE

Department of Transportation and Infrastructure

The Department of Transportation and Infrastructure (DTI) leads coastal adaptation projects throughout the province to protect and maintain shorelines and infrastructure such as roadways and buildings, provincial parks, golf courses, and communities. These projects are innovative, using specialized coastal engineering approaches including inter-tidal reefs, groins, buried revetments (placed inside dune systems).

In 2021-22, five offshore reef structures and a terminal groin were installed at Cedar Dunes – West Point. A year later in 2022-23 the sand and sediment that had deposited at the terminal groin was collected and placed along the shoreline to nourish the beach and protect the inland infrastructure including the West Point lighthouse and museum, the parking lot, and Cedar Dunes provincial park campground.

In 2022-23, in effort to improve road infrastructure resilience 5400 meters of culvert and pipe were replaced and of that approximately 30% were upsized to be better adapted to current and future impacts of climate change. Replacing and upsizing culverts and pipes increases capacity for stormwater management to reduce runoff and flooding from rainwater and melting snow.

Coastal erosion caused by storm surge and wave action during Hurricane Fiona resulted in damage to coastal properties and infrastructure. The main route of the Confederation Trail in the St. Peter's Bay is within the Coastal Hazard Zone. To allow the Confederation Trail infrastructure to better adapt to current and future impacts of climate change, specifically coastal erosion, rip rap was installed to strengthen the bank along the St. Peter's trail section after Hurricane Fiona.

Coastal adaptation projects are planned for West Point (additional offshore reef installation) and Panmure Island Causeway (rock protection) in 2023-24.

A full list of public infrastructure resilience projects can be found in the Appendix II.

COMMUNITY FOOD SECURITY PROGRAMS

Department of Agriculture and Land and Social Development and Housing

The Island Community Food Security Initiative and the Community Food Security Program[13] (*Canadian Agricultural Partnership*) are designed to support the expansion of local markets while supporting goals related to community food security, particularly increasing access to affordable local food and improving health, food safety and food education. In response to Fiona, this program received increased funding to expand the list of eligible applicants. This funding enabled community fridges and gardens to remain stay stocked in times of need and increased the existing cap for those already receiving funding. In total 41 projects were supported across the Island.

Growers Station[14] is a local food distribution hub that markets and distributes local organic produce. The Department of Agriculture provided financial support to help Growers Station increase their capacity for local food distribution between small scale farmers and consumers, specifically fresh produce to the food insecure (through community fridges, food banks, and charities).

Food Security Programs provided by Social Development and Housing provide affordable meals to populations facing food insecurity in Prince Edward Island. There are three food security programs, the School Food Program which provides daily meals using a pay what you can model in Island schools during the school year, the Summer Food Program which provides meals to school age children during the summer months and the Seniors Food Pilot, which ran in Cardigan, Georgetown, Murray River and Murray Harbour between March and July of 2023 and provided five meals per week to seniors who applied to join the pilot.

FORTIFICATION OF MARINE ACCESS SITES FOR SEAFOOD SECTOR

Department of Fisheries and Communities

The Department of Fisheries and Communities is responsible for managing over 100 marine access sites for harvesters and aquaculturists to access across PEI. In recent years, there has been a noticeable increase in maintenance due to climate-related impacts such as heavy precipitation that require climate change-related fortifications to maintain access.

ALTERNATIVE LAND USE SERVICES PROGRAM (ALUS)

Department of Agriculture and Land

The Alternative Land Use Services (ALUS) program aims to support and empower farmers and farmland owners to increase landscape resilience through converting marginal or high-risk acres from annual crop production to perennial landscapes producing ecosystem services. Over 9852 acres of marginal annual cropland have been enrolled in the program.

[13] Island Community Food Security Program www.princeedwardisland.ca/en/information/agriculture/fiona-agriculture-support-program

[14] Growers Station https://growersstation.ca/

SOIL HEALTH & CONSERVATION

Department of Agriculture and Land

Agriculture Stewardship Program

The Agriculture Stewardship Program (ASP) provides financial and technical support for the implementation of on-farm beneficial management practices. Under the program engineering services and financial support were provided to design and install soil conservation structures that reduce the risk of soil erosion during rainfall events. The ASP in combination with the Soil Health Improvement Planning Service assists farmers to conserve and enhance soil while increasing resilience to drought and erosion from extreme precipitation events.

RESEARCH & KNOWLEDGE MOBILIZATION

COASTAL HAZARD INITIATIVES

Department of Environment, Energy and Climate Action

NRCAN Flood Hazard Identification Mapping Program & INFC Research and Knowledge Initiative

The Development of Province-Wide Flood Hazard Maps and Products is funded in part by Natural Resource Canada's Flood Hazard Identification and Mapping Program (FHIMP). In 2022-23 initial work was done to help advance flood mapping by improving the existing coastal flood hazard maps released in 2021 through the addition of flood depth information. Climate modeling was also initiated to generate province-wide pluvial flood hazard maps with higher resolution maps for larger urban centers. In 2023-24, a suite of dissemination materials will be developed to provide the public and other stakeholders with education and training on how to access and interpret flood hazard mapping materials.

The Developing New Climate Hazard Data and Knowledge Mobilization Tools on Coastal Infrastructure for Professionals and Communities in Prince Edward Island project is funded in part by Infrastructure Canada's Research and Knowledge Initiative (RKI). The project complements FHIMP and supports infrastructure adaptation, reduce community vulnerability, and increase resilience by making province-wide coastal hazard information and coastal floodplain maps broadly available to decision-makers, stakeholders, and the public. In 2022-23, the new coastal change rate was developed using updated full coverage, aerial and LiDAR dataset for 2020 by delineating the new coastline. The updated rates are available as a provincial dataset and were shared with stakeholders including academia, government, municipalities, planners, engineers, and watershed organizations.

In addition to the updated coastal change rate EECA has partnered with the University of Prince Edward Island to carry out annual coastal erosion monitoring using the peg-line method as well as acquisition and analysis of Remotely Piloted Aircraft System (RPAS) imagery. Results for 2022 can be found online.[15]

This project is expected to continue in 2023-24.

[15] Coastal Erosion Monitoring www.princeedwardisland.ca/en/information/environment-energy-and-climate-action/coastal-erosion-monitoring

POST TROPICAL STORM FIONA HIGH WATER MARK STUDY

Department of Environment, Energy and Climate Action

DE Jardine Consulting

Following Post Tropical Storm Fiona, 55 sites were visited to document the storms impacts specifically related to storm surge and coastal erosion. High water marks at each site were recorded and photographed to identify the geographical extent of the storm including storm surge, wave height and wave runup. This information can be used to help identify areas of risk, flood prediction, document coastal vulnerability and create flood inundations maps.

Results of the study[16] showed that erosion and flooding was worse on north facing coastal areas due to the north – northwest winds. High water marks of the sites visited ranged from less than 1 metre to over 6 metres with inland erosion and flooding occurring for distances over 10 metres in several areas including Ebbsfleet which saw distances of 25 metres.

FOREST FIRE PROTECTION

Department of Environment, Energy and Climate Action

Following Post-Tropical Storm Fiona, work quickly began to assess and prioritize clean-up of downed trees across the Island with a focus on improving public safety and reducing fire risk. The Forest Enhancement Program was amended to make hurricane damaged forests eligible for support to help offset the increased cost of recovering hurricane-downed wood on private lands. The program had approximately 1000 hectares enrolled. Forest, Fish and Wildlife also acquired satellite imagery to analyze blowdown and the extent of Fiona's impacts on Island forests. Assessment of the change to PEI forests is expected to be available in 2023.

In 2022-23, a FireSmart Ambassador was hired and information about how landowners can reduce the risk of forest fires on their properties was rolled out to the public. FireSmart techniques were implemented to mitigate fire risk of public and private infrastructure. This program is expected to continue in 2023-24.

In addition to FireSmart programming training opportunities related to forest management were offered to the public and woodlot owners:

- Fire Suppression training – 20 contractors participated
- Chainsaw Safety Courses – 89 woodlot owners participated

[16] Post Tropical Storm Fiona Highwater Mark and Shoreline Erosion Field Notes www.princeedwardisland.ca/en/publication/post-tropical-storm-fiona-highwater-mark-and-shoreline-erosion-field-notes

CLIMATE CHALLENGE FUND (CCF)

Department of Environment, Energy and Climate Action

The Climate Challenge Fund (CCF)[17] is a $1-million annual fund that provides up to $100,000 to support projects that reduce greenhouse gas emissions and help communities and the economy adapt to climate change.

In 2022-23 CCF five adaptation projects were approved for $595,896, six mitigation related projects were approved for $465,797 and three low carbon resilience projects were approved for $298,482.

A full list of funded projects is listed in the Appendix I.

Since 2020 the CCF has supported 63 projects

In 2020-21, seven adaptation projects were approved for $390,000 and eight mitigation projects were approved for $572,400.

In 2021-22, 10 adaptation projects were approved for $633,000 and four mitigation projects were funded for $631,000.

In 2022-23, CCF five adaptation projects were approved for $595,900, six mitigation related projects were approved for $465,800 and three low carbon resilience projects were approved for $298,500.

PEI SEAFOOD SECTOR CLIMATE CHANGE RISK ASSESSMENT

Department of Fisheries and Communities

Sector-specific climate change risk assessments help the Province better understand climate-related risk in PEI and how to prioritize the development of appropriate measures to respond. Following the release of the provincial Climate Change Risk Assessment in 2021 and the Provincial Climate Adaptation Plan in 2022 it was recommended that the agriculture, fishing, and tourism each conduct their own sector-specific climate change risk assessments.

The Department of Fisheries and Communities began their risk assessment in 2022-23 with a focus on aquaculture, seafood processing, and commercial fisheries to determine what next steps are required to ensure they are climate resilient industries. It is expected the first stage of the risk assessment will be complete in 2023-24.

This seafood sector work was supported by two CCF projects completed in 2021

The North Shore Fisherman's Association received $75,150 for climate change impacts to sediment transport at select small craft harbours in 2021.

Southern Kings and Queens Fisherman's Association received $55,319 to complete a climate change risk assessment of PEI lobster fishery.

AQUACULTURE GENOME CANADA PROJECT

Department of Fisheries and Communities

With funding provided by the PEI Marine Science Organization Inc, this four-year project involved developing a mussel breeding program and hatchery to produce mussels with traits capable of greater resilience to anticipated climate change impacts (e.g., temperature, pH, etc.). The first year of the project wrapped up and is expected to continue until 2025.

[17] Climate Challenge Fund www.princeedwardisland.ca/en/service/apply-to-the-pei-climate-challenge-fund

COMPREHENSIVE ADAPTATION TO CLIMATE CHANGE PROJECT

Department of Agriculture and Land

The Department of Agriculture and Land continued to work with the UPEI Climate Lab and Dalhousie University on a comprehensive project on supporting the creation of a resilient agriculture industry that can adapt to the impacts of climate change. With four areas of focus, the project aims to:

- develop a long-term climate change projection system with 1 km x 1km high-resolution climate scenarios, and a seasonal climate prediction model which will sit at the intersection of weather forecasts and long-term climate projections.
- use a greenhouse study to identify existing potato varieties resistant to climate change impacts (collaboration with Dalhousie University)
- establish a pest monitoring system which is used to monitor the incidence and population dynamic of current and potential introduced pest species with economic importance. A GIS- and web-based PEI Integrated Pest Management (IPM) has been developed.
- Development of Smart Supplemental Irrigation Decision Support System in the face of climate change

FEDERATION OF AGRICULTURE CLIMATE ACTION INITIATIVE

Department of Agriculture and Land

This two-year project for the development of an industry led Climate Adaptation Plan is planned for 2023-25. The initial financial contribution was made in 2022-23 as an advance for the project. The first phase of the project that includes planning sessions is set to begin in 2023-24.

The Department of Agriculture and Land collaborated with UPEI Climate Lab and Dalhousie University on a project to bolster a resilient agriculture industry amid climate change impacts.

RECENT INFORMATION ON CLIMATE CHANGE RISKS

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 work on the next assessment will likely begin in 2025, with an anticipated release date of 2026.

Plans to Continue Progress

Several adaptation actions within this report are ongoing and require a sustained effort. In addition to those actions mentioned above in Table 9, new actions are planned for the 2023-24 fiscal year that will help achieve goals within the Provincial Climate Adaptation Plan. Table 10 lists adaptation actions planned for 2023-24. Budget estimates are subject to change.

Table 11: List of adaptation actions planned for 2023-24.

Actions Planned	2023-2024 Budget Estimate	Department(s) Involved
Disaster Resilience & Response		
A. First Responder EMO B. Increased Backup Power for Critical Infrastructure	A. $150,000 B. $250,000	A. JPS B. HLC, AGR
Resilient Communities		
A. Strategic Land Use Plan B. Municipal Adaptation Program	A. Funds not confirmed B. Funds not confirmed	A. HLC B. HLC
Climate Ready Industries		
A. Aquaculture Adaptation Programs B. Environmental Impact Reduction Strategy Program C. Federation of Agriculture Climate Action Initiative D. Sustainable Canadian Agricultural Partnership	A. $359,600 B. $350,000 C. Pd in 22/23 D. $9,250,000	A. FTSC B. FTSC C. AGR D. AGR
Health & Mental Well-being		
A. Provincial Heat Risk guide B. Mental Health & Addictions Green Spaces	A. Funds not confirmed B. Funds not confirmed	A. HW B. HW
Natural Habitat & Biodiversity		
A. ALUS Expansion	A. $1,540,000	A. AGR

Knowledge & Capacity		
A. Study in Managing Catastrophic Events Affecting Atlantic Canada's Aquaculture Industry	A. Funds not confirmed	A. FTSC
B. Feasibility Study of Adopting National Building Codes	B. Funds not confirmed	B. HLC
C. Teacher Professional Learning & Curriculum Materials	C. $16,800	C. EEY
TOTAL	**$11,916,400**	
2023-24 PLANNED ADAPTATION ACTIONS TOTAL	**$35,302,600**	

APPENDIX

APPENDIX I CLIMATE CHALLENGE FUND RECIPIENT LIST

Table 12: List of projects supported through the Climate Challenge Fund in 2022-23.

PROPONENT	PROJECT
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 Islander
Sentry: Water Monitoring and Control Inc	Wastewater Optimization for 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

Table 13: List of projects supported through the Climate Challenge Fund in 2023-24.

PROPONENT	PROJECT
Year 3: 2023-24	
Abegweit First Nation	Best practices mission to explore a path to energy self-sufficiency for Abegweit First Nation to support generations to come.
Dr. Patrick Augustine, UPEI Faculty of Indigenous Knowledge, Education, Research, and Applied Studies	Siawa'tmnej L'ney Kjijitaqn Project
Dr. Nadja Bressan, UPEI Sustainable Design Engineering	Immersive Environment for Climate Change Adaptation
Farm Centre Association	Therapeutic Horticulture: an innovative solution to the threat of climate change
Green Learning Canada Foundation	Engaging PEI Youth in Local Climate Change Actions
Gulf Shore Community Health Cooperative	Children- and Youth-powered community and environmental resilience
Dr. Yulin Hu, UPEI Sustainable Design Engineering	Solar energy-driven hydrogen production from water splitting
Kensington North Watersheds Association Ltd.	Addressing Coastal Erosion in Kensington North using Nature-Based Climate Change Adaptation- Living Shoreline Demonstration
Maritime Electric Company, Limited	Climate Change Adaptation Strategy for Electrical Grid
Native Council of Prince Edward Island	Climate Hazards: Preparing for our Future
PEI Coalition for Women in Government	Empowering Women Advocates for Climate Resiliency
PEI Cultural Human Resources Sector Council Inc. (Creative PEI)	Climate Artist-in-Residence Program
PEI Sheep Breeders Association (PEISBA)	Parasite Resilient Sheep
Prince Edward Island Potato Board	Measuring impacts of seed sensing technology on meeting PEI's Net-Zero goals and agronomic performance in PEI potato production
Dr. Stephanie Shaw, UPEI Sustainable Design Engineering	Holistic exploration of the sustainable use of biomass as an alternative fossil fuel on Prince Edward Island
STEAM PEI	PEI Sustainable Energy Education for Grade 6 Youth and Teachers
Upcycle Green Tech	Electric Converted and Remanufactured Vehicles
UPEI School of Climate Change and Adaptation, Dr. Aitazaz Farooque	Monitoring and Modeling Greenhouse Gas Emissions in the Face of Climate Change for Sustainable Crop Production in Prince Edward Island

APPENDIX II EXAMPLES OF PUBLIC TRANSPORTATION INFRASTRUCTURE CLIMATE CHANGE PROJECTS

Table 14: Road Resilient Infrastructure Undertaken by Capital Projects during FY 2022-23.

Name of Project	Total Cost	Provincial Cost	Federal Cost
Route 231- Crapaud Storm Sewer	$510,000	$60,000	$450,000
Route 1 – Stratford Roundabout	$7,100,000	$4,080,000	$3,020,000
Bayview Bridge- Structure Replacement	$4,800,000	$2,760,000	$2,040,000
Morell Bridge- Structure Replacement	$1,500,000	$860,000	$640,000
Little Harbour Bridge- Structure Replacement	$2,100,000	$1,210,000	$890,000
Vernon Bridge- RTT Structure Replacement	$2,233,000	$1,283,000	$950,000
Launching Road Bridge- Structure Replacement	$850,000	$490,000	$360,000
Alliston/Glen Williams Bridge- Structure Replacement	$1,600,000	$920,000	$680,000
Sea View Bridge- Structure Replacement	$350,000	$200,000	$150,000
Warren Grove Bridge- Structure Replacement	$1,900,000	$1,095,000	$805,000
Skinners Pond – Arch Replacement	$450,000	$260,000	$190,000
North Enmore Bridge- Structure Replacement	$525,000	$300,000	$225,000
Mount Stewart Bridge- Structure Replacement	$1,100,000	$635,000	$465,000
Wilmont Valley Bridge- Structure Replacement	$850,000	$490,000	$360,000
Coleman Bridge- Structure Replacement	$1,100,000	$635,000	$465,000
Darnley Bridge- Causeway Repair	$1,430,000	$825,000	$605,000
French Village Bridge- Structure Replacement	$1,900,000	$1,095,000	$805,000
Souris West Bridge- Structure Replacement	$900,000	$520,000	$380,000
Total	$31,198,000	$17,718,000	$13,480,000

Table 15: List of Road Resilient Infrastructure Undertaken by Capital Projects during FY 2022-23.

Name of Project	Description
West Point Sand Relocation/Off-Shore Reefs	Sand relocation in front of offshore reefs
Route 231- Crapaud Storm Sewer	Storm sewer replacement/drainage improvement
Route 1 – Stratford Roundabout	Roundabout Construction/ drainage box replacement/ storm sewer improvements
Bayview Bridge- Structure Replacement	Structure Replacement
Morell Bridge- Structure Replacement	Structure Replacement
Little Harbour Bridge- Structure Replacement	Structure Replacement
Vernon Bridge- RTT Structure Replacement	Structure Replacement
Launching Road Bridge- Structure Replacement	Structure Replacement
Alliston/Glen Williams Bridge- Structure Replacement	Structure Replacement
Sea View Bridge- Structure Replacement	Structure Replacement
Warren Grove Bridge- Structure Replacement	Structure Replacement
Skinners Pond – Arch Replacement	Arch Replacement
North Enmore Bridge- Structure Replacement	Structure Replacement
Mount Stewart Bridge- Structure Replacement	Structure Replacement
Wilmont Valley Bridge- Structure Replacement	Structure Replacement
Coleman Bridge- Structure Replacement	Structure Replacement
Darnley Bridge- Causeway Repair	Causeway Repair
French Village Bridge- Structure Replacement	Structure Replacement
Souris West Bridge- Structure Replacement	Structure Replacement

Table 16: Public Electric Vehicle Chargers Installed through federal Electric Vehicle Charging Program in 22-23FY.

Location	Level2	Level 3
Mill River Resort	4	
Rural Municipality of Brackley	2	
Potentia Domus Inc.	4	
Hillside Motors (1973) Ltd.	6	1
Keltic Holdings Inc. (Centennial Mazda)	2	
River Resorts Ltd. o/a Rodd Crowbush	6	
River Resorts Ltd. o/a Rodd Brudenell	6	
Motel Charlottetown Inc.	4	
Rodd Investments Ltd.	4	
Provincial Credit Union	4	
Rural Municipality of West River	2	
Rural Municipality of West River	2	
Atlantic Beef Products Inc.	2	
KW Murphy Ltd.	4	
DP Murphy (Maypoint) Inc. Dba Hampton Inn & Suites	4	
Town of Kensington	8	
Arsenault Bros. Construction Ltd.	2	
University of Prince Edward Island	20	
TOTAL	86	1

Table 17: PEI Active Transportation Fund.
List of Projects for 2022-23FY and total funding approved.

Applicant	Project	Total Funding Approved
non-government organization projects		
Bike Friendly Communities	Cycling without age	$12,200
Cycling PEI 1	Brudenell Trail Project	$42,000
Cycling PEI 2	Cardigan Trail Project	$116,000
Cycling PEI 3	O'Leary Trail Project	$2,200
Harvey and Dot Moore	Preservation/Restoration	$20,000
Island Trails	Trail Improvements	$23,700
New Glasgow Community Corp	Boardwalk Phase 2	$75,000
Recreation PEI	Bike Racks	$75,000
Harvey and Dot Moore	Boardwalk Project	$20,000
Municipal/First Nations projects		
Alberton	AT Plan	$33,000
Charlottetown 1	East Royalty Pathway	$150,000
Charlottetown 2	Spencer Dr – Design Phase	$50,000
Charlottetown 3	Raiders Road	$170,000
Cornwall 1	Main st – phase 3	$662,100
Cornwall 2	MacPhail's woods	$82,600
Lennox Island	Multi-use trail	$300,000
Miltonvale Park	AT plan	$11,000
Mount Stewart	South main street	$135,900
Resort Municipality	Boardwalk replacement	$75,000
Stratford	Kinlock road	$265,400
Summerside	Greenwood drive	$255,000
Three Rivers 1	AT Georgetown	$234,300
Three Rivers 2	AT Brudenell	$129,100

APPENDIX III EXAMPLES OF EFFICIENCY UPGRADES FOR GOVERNMENT OWNED BUILDINGS

Table 18: Itemized list of Efficiency Upgrades for Government Owned Buildings Undertaken by Capital Projects during FY 2022-23.

Department	Name of PRoject	Mitigation Aspect	2022-23 Forecast	2023-24 Budget
Health	KCMH – Roof Repair	Improved Insulation Value to Roof	$1,805,100	
Health	QEH – Roof Replacement	Improved Insulation Value to Roof	$3,178,600	$3,351,500
Health	QEH – Air Handling Unit #5 Replacement	Improved equipment operating efficient	$775,300	
Health	Beachgrove and Wedgewood Manor	Improved Insulation Value to Roof	$1,426,700	
Education	Elliot River – New addition and infrastructure improvements	Renovation and systems improved to meet or exceed National Energy Code Buildings (NECB)	$5,156,000	$2,541,000
Education	Montague consolidated – renovation and infrastructure improvements	Renovation and systems improved to meet or exceed (NECB)	$3,393,000	$5,213,000
Transportation and Infrastructure	Province House – Operational enhancements	Renovation and systems improved to meet or exceed (NECB)	$2,100,000	$1,650,000
Environment, Energy and Climate Action	Solar Installations – Schools Pilot – Cardigan Elementary	New building system and solar panels to approach Net-Zero standard	$300,000	$977,500
Health	KCMH – Heat exchange unit replacement	Improved equipment operating efficiency	$322,500	
Health	Western Hospital - Basement Ventilation System	Improved climate control	$200,000	
Health	KCMH - Roof Repair	Improved insulation value to roof	$915,700	
Education	Alberton Elementary - Boiler Replacement	Improved equipment operating efficiency	$260,000	
Education	M E Callaghan Intermediate - Boiler Replacement	Improved equipment operating efficiency	$245,200	

Education	Ellerslie Elementary - Boiler Replacement	Improved equipment operating efficiency	$125,000	
Education	St. Louis Elementary - Boiler Replacement	Improved equipment operating efficiency	$200,000	
Education	Southern Kings Consolidated - Boiler Replacement	Improved equipment operating efficiency	$120,000	
Education	Amherst Cove Consolidated - 2nd Boiler	Improved equipment operating efficiency	$115,000	

Table 19: Itemized list of New Construction Projects for Government Owned Buildings Undertaken by Capital Projects during FY 2022-23.

Department	Project Name	Mitigation Aspect	2022-23FY	2023-24FY
Health	CHC- Summerside	New construction built to Net-Zero ready standard	$775,000	$15,000,000
Health	CHC - Queens County	New construction built to Net-Zero ready standard	$250,000	$2,500,000
Education	New Sherwood School	New construction built to Net-Zero ready standard	$10,403,000	$13,404,000
Education	New Stratford High School - Grades 10 -12	New construction built to Net-Zero ready standard	$1,205,000	$15,955,000
Transportation and infrastructure	Kings County Highways Depot - Addition	New construction built to Net-Zero ready standard	$5,500,000	$8,840,000
Transportation and infrastructure/health	West Prince Community Health Center (CHC)	New construction built to Net-Zero ready standard	$5,500,000	$2,527,000
Housing	10 Unit - Apartment Complex - Morell	New construction built to Net-Zero ready standard	$3,007,000	$1,288,700
Housing	10 Unit - Apartment Complex - Georgetown	New construction built to Net-Zero ready standard	$3,528,700	$392,100
Housing	31 Unit - Apartment Complex , Summerside (Lefurgy Ave.) - Project #1	New construction built to Net-Zero ready standard	$160,000.000	$8,000,000

Housing	30 Unit Apartment Complex, Charlottetown (Beachgrove Rd.)	New construction built to Net-Zero ready standard	$375,800	$5,636,300
Housing	10 Unit Apartment Complex, Alberton	New construction built to Net-Zero ready standard	$525,000	$3,331,200
Justice and Public Safety	Provincial Corrections Center (PCC) - Women's Unit Addition (34 Bed)	New addition to meet or exceed NECB	$5,606,400	$1,582,000

APPENDIX IV GOVERNMENT ENERGY EFFICIENCY PROGRAM DATA

Table 20: Community Revitalization Program – Approved Projects 22-23FY.

APPLICANT	PROJECT DESCRIPTION	FUNDING
Eastern Kings Fitness Inc.	Equipment Upgrades	$16,800
Lower Montague Women's Institute	Hall Infrastructure Upgrades	$12,000
Montague Volunteer Fire Brigade Inc.	Fire Hall Modernization	$20,000
Montague Regional Athletic Complex Association	Heat Pump Initiative	$17,300
PEI Shellfish Association	Heat Pumps	$8,400
Prince Edward Island Street Rod Association (PEISRA)	Clubhouse Infrastructure Modernization	$2,600
Royal Canadian Legion Branch #17	Heat Pumps - AMENDED	$20,000
Rustico Bay Club Inc.	Heat Pump	$5,600
Rural Municipality of Miscouche	Heat Pump Initiative	$20,000.
Rural Municipality of St. Peters Bay	Heat Pump Initiative	$20,000
Stanley Bridge Memorial Society Inc.	Community Hall Upgrades	$10,800
The Tyne Valley Firemen's Club	New Roof and Heat Pumps	$8,400
West Point Lighthouse Craft Guild Inc.	Craft Shop Upgrades	$5,000
Wood Islands and Area Development Corporation	Wood Islands Village Upgrades & Lighthouse Printer	$13,400
Wheatley River Women's Institute	Heat Pumps Initiative	$20,000

Table 21: Energy Efficiency and Conservation Savings for Residential Programs

Residential Programs	Electrical Savings (GWh)	GHG Savings (Tonnes)
Energy Efficient Equipment	3.70	704
Home Insulation	1.31	248
New Home Construction	0.95	180
Winter Warming	0.36	68
Instant Savings	1.80	342
Total	**8.11**	**1,541**

Table 22: Energy Efficiency and Conservation Savings for Commercial Programs

Commercial Programs	Electrical Savings (GWh)	GHG Savings (Tonnes)
Business Energy Rebates	1.40	265
Custom Energy Solutions	0.02	3
Total	**1.41**	**268**

Table 23: Residential and Commercial Programs Non-Energy Efficiency and Conservation Savings

Non-EE&C Savings	Energy Savings (GJ)	GHG Savings (Tonnes)
Energy Efficient Equipment	88,058	17,301
Home Insulation	23,612	2,346
New Home Construction	647	128
Winter Warming	3,221	249
Instant Savings	4,847	65
Business Energy Rebates	941	556
Custom Energy Solutions	1,520	110
Home Comfort	4,671	364
Solar	11,271	1,020
Total	**138,788.08**	**22,139.00**

Table 24: Number of Units Rebates through Energy Efficient Equipment Program

Equipment	# of Units Rebated
Airsource Heat Pump	6,972
Heat/Energy Recovery Ventilator	181
Biomass Wood Stove	205
Oil Boiler	46
Indirect Hot Water Heater	30
Propane Boiler	186
Tankless Propane Hot Water Heater	178
Hybrid Hot Water Heater	165
Propane Furnace	8
Central Air Source Heat Pump	79
Geothermal Heat Pump	10
Oil Furnace	3
Biomass Pellet Stove	9
SE Thermal Storage Furnace	15
SE Thermal Storage Heater	21
SE Thermal Storage Hot Water Heater	24
Biomass Boiler	1
Biomass Furnace	7
Total	**8,140**

Table 24: Free Energy Efficient Program

Free Programs	Installations Completed	Energy Savings (GJ)	GHG Savings (Tonnes)
sFree Heat Pump	3724	85,652	7,820
Free Electric Hot Water Heater	405	8,505	693
Free Insulation	13	507	39
Total	4142	94,664	8,552

APPENDIX V PEI ELECTRICITY SECTOR GENERATION ASSETS

Table 25: On-Island electricity generation assets

Wind (203.6 MW)		
Location	**Owner**	**Generation Capacity**
WEST CAPE E	ENGIE	99MW
HERMANVILLE	PEIEC	30MW
EASTERN KINGS	PEIEC	30MW
SUMMERSIDE	SUMMERSIDE UTILITY	12MW
NORTH CAPE	PEIEC	10.6MW
WEICAN R&D	WEICAN	10MW
NORWAY	ENGIE	9MW
AEOLUS	PEIEC	3MW
SOLAr (31MW + 16.3MW)		
SUMMERSIDE SOLAR ENERGY FARM & BATTERY STORAGE FACILITY 'SUNBANK'	SUMMERSIDE UTILITY[18]	21MW
SLEMON PARK MICROGRID PROJECT (SLEMON)	PEIEC19	10MW
NET-METERING PROGRAM - ROOFTOP SOLAR	MARITIME ELECTRIC CORPORATION LTD.	16.3MW
THERMAL GENERATION (104MW)		
BORDEN GENERATING STATION (CT1 & CT2)	MARITIME- ELECTRIC CORPORATION LTD.	40MW
SUMMERSIDE GENERATING STATION	SUMMERSIDE UTILITY	15MW
CHARLOTTETOWN (CT3)	MARITIME ELECTRIC CORPORATION LTD.	49MW

[18] Online in 2024

[19] Online in 2024

APPENDIX VI NET-ZERO ADVISORY COMMITTEE

Table 26: Ministerial Appointments to Net-Zero Advisory Committee

Name	Role	Represent	Term Length	Term
Sharon Anderson	Vice - Chair	Education sector	Three-year term, to January 1st, 2026	1st
Stephanie Arnold	Member	Climatlantic, BIPOC USHUR	Two-year term, to January 1st,2025	1st
Drew Bernard	Member	Indigenous Community, Energy sector	Three-year term, to January 1st, 2026	1st
Dan Dupont	Member	Forestry	Two-year term, to January 1st,2025	1st
Shawn MacDougall	Member	Research	Two-year term, to March 1st,2024	1st
Bianca MacGregor	Member	Land conservation	Two-year term, to January 1st,2025	1st
Andrea MacKenna	Member	Agriculture	Two-year term, to January 1st,2025	1st
Christina MacLeod	Member	Business community	Three-year term, to January 1st, 2026	1st
Jan Matechek	Chair	Environmental law, Forestry	Three-year term, to January 1st, 2026	1st
Sam Sanderson	Member	Construction and Buildings	Three-year term, to January 1st, 2026	1st