

# HALIFAX

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**Item No. 12.1.4**

**Environment and Sustainability Standing Committee**

**November 3, 2022**

**TO:** Chair and Members of the Environment and Sustainability Standing Committee

**SUBMITTED BY:** \_\_\_\_\_ **(Original Signed)**

Jacques Dubé, Chief Administrative Officer

**DATE:** October 27, 2022

**SUBJECT:** HalifACT 2021-22 Annual Progress Report

## **ORIGIN**

On June 23, 2020, the following motion of Regional Council was put and passed:

*"MOVED by Councillor Austin, seconded by Councillor Mason that Halifax Regional Council:*

1. *Authorize the direction contained in the HalifACT 2050: Acting on Climate Together plan, as contained in Attachment A of the staff report dated May 4, 2020;*
2. *Direct the Chief Administrative Officer to carry out the actions contained in the HalifACT 2050: Acting on Climate Together plan as part of the multi-year budgeting and business planning process, including establishing a target of net-zero municipal operations by the year 2030.*
3. *Direct the Chief Administrative Officer to prioritize efforts in the following critical core areas:*
  - a. *Create new retrofit, resilience, and renewable energy programming;*
  - b. *Develop a detailed and costed plan for retrofitting existing municipal buildings to be net-zero ready and climate resilient;*
  - c. *Develop an electric vehicle strategy, increase charging infrastructure and replace fleet vehicles with electric vehicles;*
  - d. *Explore opportunities to require net-zero standards for new buildings in the municipality;*
  - e. *Develop a framework for assessing and protecting critical infrastructure;*
  - f. *Support communities for climate adaptation and climate-related emergencies; and*
  - g. *Develop a financing strategy to operationalize the HalifACT 2050 plan over 30 years.*
4. *Accept in principle the need to resource the plan and direct the CAO to return to Council with a resource plan for consideration in the 2021/2022 budget; and*
5. *Request that the Chief Administrative Officer provide annual progress reports on the implementation of the HalifACT 2050: Acting on Climate Together plan, to Regional Council through the Environment and Sustainability Standing Committee."*

## **LEGISLATIVE AUTHORITY**

*Halifax Regional Municipality Charter*, Section 34(3): “The Council shall provide direction on the administration, plans, policies, and programs of the Municipality to the Chief Administrative Officer.”

## **RECOMMENDATION**

It is recommended that the Environment and Sustainability Standing Committee forward the HalifACT 2021-22 Annual Progress Report, dated November 3, 2022, to Regional Council for information.

## **EXECUTIVE SUMMARY**

- HalifACT’s second Annual Progress Report covers progress that was made by HRM during the 2021-22 fiscal year from April 1, 2021 to March 31, 2022.
- During this reporting period of the 2021-22 fiscal year, 35% of ongoing actions made sufficient progress to be considered “on track”. Though it is an improvement from the 20% “on track” in the first reporting period of 2020-21, HRM was still falling behind on climate action during the second year of HalifACT implementation.
- The 3-Year HalifACT Resource Plan outlines the funds and staff required to implement HalifACT actions under the Core and Enabling Areas approved by Council over the period of 2022 to 2025. These resources first became available this current fiscal year (2022-23) and the impact of this resourcing will be reported on in HalifACT’s next annual report.
- HRM introduced a new shared accountability framework at the end of 2021-22, which assigns singular lead Business Units and divisions to each of the HalifACT actions. This Annual Progress Report details progress updates according to this new shared accountability framework.
- HalifACT’s targets rely on collective action from HRM and community partners across the city. This report summarizes highlights from several partners including governments, utilities, academia, and non-profit organizations.

## **BACKGROUND**

The purpose of this report and its attachments is to provide both Council and the public with a summary of how HalifACT actions progressed in the **second year of implementation**. As noted in the Origin section of this report, Regional Council has directed the CAO to return to Council with annual HalifACT progress reports and any related resource requirements identified to increase the pace and scale of our progress.

The content in this report captures progress during the 2021-22 fiscal year from April 1, 2021 to March 31<sup>st</sup>, 2022. The report captures the progress that has been made, both internally and externally, and highlights gaps in the current state of implementation to support the collective goals of the HalifACT plan.

## **HalifACT: Acting on Climate Together**

HalifACT: Acting on Climate Together is the Municipality’s long-term climate action plan to reduce emissions and enhance resiliency to a changing climate, while also promoting social equity and economic development. It was approved unanimously by Council on June 23<sup>rd</sup>, 2020 and is one of Canada’s most

ambitious climate action plans.

HalifACT contains three themes of action; Decarbonized and Resilient Infrastructure, Prepared and Connected Communities, and Governance and Leadership. Within these theme areas, there are 17 subareas and 46 actions that are necessary to meet the targets established in the plan. HalifACT addresses the Municipality's climate emergency declaration put forward by Council in January 2019 and aligns with the 1.5°C pathway recommended by the Intergovernmental Panel on Climate Change (IPCC).

Acting quickly and effectively to address the climate emergency is complex and cannot be accomplished in isolation. **HalifACT is a community plan**, requiring not only Halifax Regional Municipality, but all major stakeholders and residents of Halifax to collaborate and take collective action to achieve our climate goals. While the climate targets established in HalifACT are community-wide targets that we must work together to achieve, the 46 HalifACT Actions provide a roadmap for the leadership on climate initiatives that are the responsibility of the Municipality. A summary of initiatives stemming from community partners and major stakeholders is included starting on page 10 of this report.

## HalifACT Targets

The HalifACT targets, which rely on collective action by HRM and community partners, are summarized in Table 1 below. Full target language can be found in the [HalifACT Plan](#).

*Table 1: HalifACT Targets*

HalifACT Theme	Targets
Decarbonized and Resilient Infrastructure	<ul style="list-style-type: none"><li>• Net-zero new construction by 2030</li><li>• Retrofit all existing buildings by 2040</li><li>• Improve industrial process efficiency by 75% by 2040</li><li>• Install 1,300 MW of rooftop solar with storage by 2030</li><li>• Significantly expand local community-scale renewable energy generation</li><li>• Achieve the 2030 mode share targets in the Integrated Mobility Plan</li><li>• All new vehicle sales are electric by 2030</li><li>• Achieve net-zero municipal operations by 2030</li><li>• Achieve net-zero water and wastewater operations by 2030</li><li>• Future proof water systems and supply</li><li>• Reduce risk to critical infrastructure</li><li>• Protect, restore, maintain and expand natural areas and green infrastructure assets</li><li>• Plan and build a low carbon resilient region</li><li>• Better prepare for climate related coastal changes and impacts</li></ul>
Prepared and Connected Communities	<ul style="list-style-type: none"><li>• Better prepare for increased climate-related emergencies</li><li>• Enhance the capacity of neighbourhoods to prepare for and recover from climate events</li><li>• Improve food security and food systems resilience</li></ul>
Governance and Leadership	<ul style="list-style-type: none"><li>• Prepare and leverage business for the transition</li><li>• Integrate climate thinking into municipal decision-making and governance</li></ul>

## **Where HalifACT Fits**

HalifACT is a priority plan under the current Regional Municipal Planning Strategy (Regional Plan). It contains 46 actions, all set to begin within the first 6 years of the plan.

While HalifACT is a distinct plan, action on climate change is not an isolated endeavor. HalifACT and other HRM action plans contain linkages and reinforce one another. Achieving the outcomes of HalifACT is contingent on the successful implementation of the Integrated Mobility Plan, the Green Network Plan, the Urban Forest Master Plan and the JustFOOD Action Plan, amongst others.

HalifACT is more than the sum of its 46 actions; it is a roadmap for transforming how the Municipality embeds climate change thinking and capacity into municipal decision-making and operations. Mainstreaming of climate action and effective action on climate change requires that climate be considered in municipal planning processes. These considerations will need to be embedded into the Halifax Regional Plan Review and include issues such as enabling electric vehicle infrastructure and ensuring that development regulations in important ecological areas are appropriate and provide guidance for environment and climate considerations.

## **HalifACT Shared Accountability Framework**

The scale and pace required to meet the ambitious goals of HalifACT requires a whole-of-government approach and cannot be implemented in isolation. Many actions in HalifACT are cross-cutting and affect other municipal plans as well as programs, by-laws and operations. Mainstreaming of HalifACT actions and climate thinking must be embedded into municipal budgeting, work planning and reporting processes.

A shared accountability framework was developed to assign each HalifACT action to a leading Business Unit, along with supporting and/or collaborating Business Units. The framework was first included in the [2020-21 HalifACT Progress Report Card](#) that was presented to Council in January 2022. The framework was updated in April 2022 to adjust for the following:

- The move of Environment & Climate Change from Planning & Development to Property, Fleet & Environment (Formerly Corporate & Customer Services) as a new division, effective April 1 2022;
- Further specifying Business Unit accountability by indicating which divisions hold responsibilities for actions;
- Further specifying level of accountability to include **leading** business unit and division, **actively supporting** business unit and division, and business units and divisions that may be contacted for **support on an as-needed basis**;
- Subdivision of Actions 8, 11, 13, 18, 19, and 20 for clarity.

## **HalifACT Core and Enabling Areas**

At the time that HalifACT was approved by Council in June 2020, about half of the 46 actions were strategically prioritized into seven Core Areas. This was done in recognition of the sheer magnitude of work and the need to prioritize actions and efforts over time. The actions in the Core Areas are foundational to steeply reducing GHG emissions and building up our community's resilience to climate change impacts. They have rapid ramp up timeframes set to begin in the first two years of plan implementation, meaning that actions were to begin by 2020 or by 2022.

HalifACT is an evergreen plan; it acts as a roadmap that guides HRM's work in achieving our community's collective climate targets. As HRM is now two years into implementation, some of the Core Areas have been strategically reorganized in this report to better reflect the current framing of the work at hand.

Adjustments to Core Areas in this Annual Progress Report includes the movement of *Core Area 7: Sustainable Financing Strategy* into an Enabling Action, and the subdivision of *Core Area 6: Support*

*communities for climate adaptation and climate-related emergencies* into two new Core Areas dedicated to natural solutions and approaches and community climate capacity, respectively.

The Core Areas in this Annual Progress Report are summarized as the following:

1. Create New Retrofit, Resilience and Renewable Energy Programming (Actions 2, 4)
2. Retrofit Existing Municipal Buildings to be Net-Zero Ready and Climate Resilient (Action 11)
3. Catalyze the Decarbonization of Transportation (Actions 8,9,10)
4. Require Net-Zero and Climate Resilient Standards for New Buildings in HRM (Actions 1,19)
5. Develop a Framework for Protecting Critical Infrastructure (Actions 15,16, 27)
6. Work with Nature to Increase Climate Resilience (Actions 14, 20, 21, 22, 25, 26)
7. Capacity for Climate Adaptation and Climate-Related Emergencies (Actions 29, 30, 31,32, 35)

In addition, a subset of actions around engagement, reporting, governance, staff capacity and financial resourcing are identified as “Enabling”. The Enabling actions are foundational to the advancement of the Core Areas and the full-scale implementation of HalifACT. Enabling actions were originally highlighted in the first annual progress report for 2020-21 and as a dedicated area in the 3-Year Resource Plan.

While the Core Areas and the Enabling Actions do not represent all 46 actions in HalifACT, they fully encompass all actions that were due to start by the end of the 2022-23 fiscal year.

### **HalifACT 3-Year Resource Plan (2022-25)**

The Core Areas and Enabling Areas are the basis of the [HalifACT 3-year Resource Plan](#), which was approved in 2021 and details the investment needed over the short term to achieve the HalifACT targets. It is intended to address the known gaps in resources and can be flexible over time as HRM continues to refine projects and mainstream HalifACT into municipal budgeting, work planning and reporting processes. Strategic, capital and operating expenses stemming from the 3-year Resource Plan will begin in the current fiscal year (2022-23).

## **DISCUSSION – PROGRESS SUMMARY**

HalifACT is a community-wide and multi-organizational commitment for ambitious, yet critical climate action. The sheer scale of action required to meet our targets means that action cannot only happen at the municipal level, but must also happen across businesses, other levels of government, non-profits, academia, the community and at the individual level. At its core, HalifACT truly is about Acting on Climate Together. This section captures our progress on corporate and community emissions, the state of our municipal progress on HalifACT actions over the 2021-2022 fiscal year, and highlights from key external partners and stakeholders that contribute to HalifACT’s community-wide targets.

### **Corporate and Community Emissions in 2021**

HalifACT establishes a corporate target of net-zero emissions by 2030 and a community-wide target of a 75% emission reduction from the baseline year of 2016 by 2030, and net-zero emissions by 2050. Figures 1 and 2 summarize the progress to date for corporate and community targets, respectively.

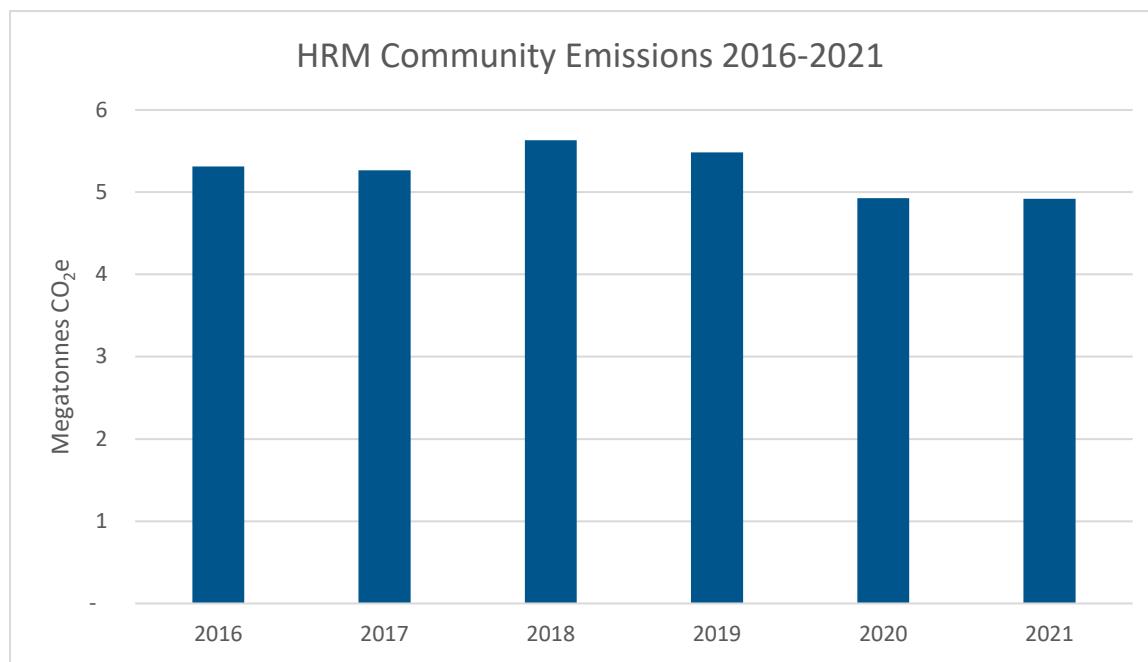


*Figure 1 - Corporate Emissions in kilotonnes of CO<sub>2</sub> equivalent*

Corporate emissions are a direct result of energy use related to buildings, street lighting, and vehicles (public works, fleet, rentals), owned and operated by the Municipality (excluding Transit and Solid Waste Resources operations). Since the baseline year of 2016, emissions have decreased approximately 20.4%. The significant decrease between 2019 and 2021 is partly due to reduced municipal office operating hours during the COVID-19 pandemic. However, part of the decrease can be attributed to replacing almost all streetlights with LEDs, adding solar to municipal buildings, and performing efficiency retrofits in partnership with Efficiency Nova Scotia.

Between 2020 and 2021, there was a 6.5% overall decrease in building energy use (electricity, natural gas and fuel oil use decreased, while propane usage increased slightly). These reductions come as a result of performing energy retrofits in municipal buildings in partnership with Efficiency Nova Scotia. In addition, with a large portion of buildings emissions coming from electricity, grid emissions intensity decreased from 630 to 603 grams of carbon dioxide equivalent per kilowatt-hour of electricity generated (gCO<sub>2</sub>e/kWh) for 2020 and 2021, respectively. This also played a role in reducing the total GHG emissions associated with municipal buildings.

Streetlighting fixture count and kWh hours usage have slightly increased, but the grid emissions intensity based on emissions from generation in Nova Scotia and electricity imports has decreased. This has resulted in a slight decrease in overall lighting emissions. Fleet fuel usage increased slightly, resulting in an increase in emissions. Overall, total corporate GHG emissions decreased 4.5% from 2020 to 2021.”



*Figure 2 - Community Emissions in megatonnes of CO<sub>2</sub> equivalent*

Community emissions are a direct result of all energy use within the boundaries of the Halifax Regional Municipality. This includes corporate emissions, in addition to public transportation, private commuter vehicles, heavy transport, energy generation and buildings. Like corporate emissions, community emissions are trending downward, primarily from the continued decarbonization of the provincial electricity grid, improved fuel efficiency in vehicles, marginal electrification of transportation, and decreased energy demand for space heating due to a warming climate. Since the baseline year of 2016, emissions have decreased approximately 7.4%.

### **Corporate Progress on HalifACT – Overview**

At the end of the reporting period of 2021-22, HalifACT was just shy of two years old. In the time since HalifACT was passed in June 2020, 30 out of 46 actions in the plan had been initiated; the number of staff dedicated to HalifACT had more than doubled; a first annual progress report was presented to Council in December 2021; and a 3-year resource plan was developed and approved for the period of 2022-25, all in the midst of a prolonged COVID-19 pandemic and a housing and affordability crisis.

While HRM has made strides in HalifACT implementation, the plan's ambitious targets that reflect the reality of the climate emergency call on the Municipality and its partners to do much more, much faster.

The context in which implementation took place in 2021-22 is an important backdrop. The 2021-22 fiscal was the first full business year in which HalifACT was an official plan of Council. However, resourcing for the plan had not yet come to full fruition, with the resources approved in the 3-year resource plan only beginning to flow in the 2022-23 fiscal year. In addition, changes were made over the course of the year to the shared accountability framework of HalifACT, resulting in new responsibilities for Business Units as singular leads for HalifACT actions.

In the first annual progress report that was presented to Council in December 2021, progress was summarized by whether actions had started; whether they were on track; and whether they were adequately resourced. Most actions, while started, are still considered to be in their early stages and thus difficult to determine with certainty whether they are on track. Therefore, for this second Annual Progress Report, action progress is being assessed only on progress made during the period of April 1, 2021 to March 31,

2022, similar to a school report card that provides marks based on performance over the course of the year. It does not reflect the progress that has been made since this period. It is anticipated that the reporting will become more robust over time as actions progress and additional metrics and KPIs are developed and tracked.

This report measures progress on actions as **progressing; some progress; minimal or no progress; and contingent on other levels of government**. These are summarized according to the following table:

Table 2: 2021-22 Progress Rating Description and Summary

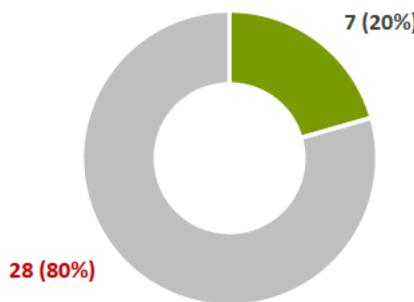
Rating	Description	Rating	2021-22 Total
Progressing	Progress was made on this action in 2021-22 and the work is tracking towards associated HalifACT target(s).	Green	11 out of 53* actions
Some progress	Little to some progress was made on this action in 2021-22, and the action is at risk of falling behind in its associated HalifACT target(s).	Yellow	18 out of 53 actions
Minimal / no progress	Minimal to no progress was made on this action in 2021-22 and the action is falling behind in its associated HalifACT target(s).	Red	6 out of 53 actions
Contingent on others	Progress in 2021-22 was contingent on/awaiting policy development from the Government of Canada or from the Government of Nova Scotia.	Blue	2 out of 53 actions
Future Action	Implementation of action is slated for a later date and has not yet begun.	Future Action	16 out of 53 actions

\* Though HalifACT has 46 actions, 7 of these were subdivided for clarity as part of the changes to shared accountability that took place in the 2021-22 year, resulting in 53 total actions.

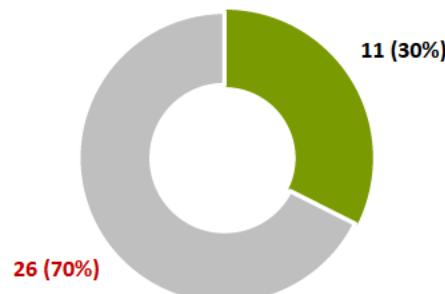
A comparison of action progress between the first and second annual reporting period is shown in the figure below. To draw the comparison with the 2020-21 report, actions rated as “progressing” in 2021-22 are considered on track, and all others are considered off-track (rated some progress, minimal progress, and contingent on others). In the first annual report, only 7 of the actions that had been initiated, or 20%, were on track. This number increased only slightly in 2021-22 to 11 actions, or 30%, that were on track.

Figure 3: Comparison of HalifACT Action Progress 2020-21 and 2021-22

In 2020-21, 20% of HalifACT Actions  
were ON TRACK



In 2021-22, 30% of HalifACT Actions  
were ON TRACK



## Corporate Progress on HalifACT – Core and Enabling Areas

Progress is framed and summarized in Table 3 in terms of the actions that sit underneath the HalifACT Core and Enabling Areas. These areas were prioritized at the outset of the plan to set a foundation towards meeting HalifACT targets. They also form the basis of the 3-Year Resource Plan for 2022-25, which is resourced through the Climate Action Tax.

Note that the state of progress reflects the status of the action as of March 31, 2022. For details on progress for all 46 HalifACT actions, please refer to Appendix A – HalifACT Report Card.

*Table 3: HalifACT Core and Enabling Areas Resourcing and Progress*

#	HalifACT Action	Progress 2021-22	3-Year Resource Plan (2022-25)
<b>Core Area 1: Create New Retrofit, Resilience and Renewable Energy Programming</b>			
2	Develop a retrofit program and toolkit to enable and fast-track energy and climate resilience retrofits in the residential and non-residential sector.		\$1 million (operating) 3 FTE
4	Scale up or revamp existing Solar City program to fast-track rooftop solar PV installations.		1 FTE
<b>Core Area 2: Retrofits of Existing Municipal Buildings to meet Net-Zero Ready and Climate Resilient Standards</b>			
11A	Retrofit all existing HRM owned and operated buildings so that they meet net-zero and climate resilient standards.		\$35.78 million (capital) 1 FTE
<b>Core Area 3: Catalyze the Decarbonization of Transportation</b>			
8A	Expand transit infrastructure		--
8B	Expand active transportation infrastructure		--
9	Work to significantly increase uptake of personal and commercial EVs in Halifax.		\$15.95 million (capital) 1 FTE
10	Prepare for and catalyze EV uptake through HRM planning and policy.		--
<b>Core Area 4: Require Net-Zero Standards for New Buildings in the Municipality</b>			
1	Apply a net-zero and climate resilient program for new construction that sets standards and requirements so that all new construction is net-zero and is designed to withstand future climate conditions.		\$200k (operating)
19	Develop and update code and design standards for new municipal and private infrastructure within the context of climate change.	Future Action (2022-23)	2 FTE
<b>Core Area 5: Develop a Framework for Assessing and Protecting Critical Infrastructure</b>			
15	Conduct a High Level Risk Assessment (HLRA) with internal and external stakeholders to assess the ability of critical infrastructure to withstand future climate and extreme weather.		\$100k (capital) 0.5 FTE
16	Conduct a detailed, spatially based risk and vulnerability assessment of critical infrastructure that is owned and operated by HRM.		\$20.2 million (capital) 3.5 FTE

27	Conduct a detailed spatially based risk and vulnerability analysis of Halifax's coastal, waterfront and shoreline areas.		\$300k (capital)
<b>Core Area 6: Work with Nature to Increase Climate Resilience</b>			
14	Develop a holistic and integrated stormwater management plan and program with climate as its core focus.		\$250k (operating)
20A	Fund and implement Green Network Plan		Resourcing TBD
20B	Fund and implement Urban Forest Master Plan		Resourcing TBD
21	Continue naturalization through pilot projects, public education and awareness to support the development of a region-wide naturalization program.		Resourcing TBD
22	Develop and implement a region-wide tree planting and re-greening program.		Resourcing TBD
25	Increase land protection and conservation on private lands through partnerships and municipal planning requirements.		Resourcing TBD
26	Prioritize the protection and expansion of green spaces through land use planning policies and mechanisms.		Resourcing TBD
<b>Core Area 7: Capacity for Climate Adaptation and Climate-Related Emergencies</b>			
29	Integrate climate into emergency management planning.		\$1.1 million (operating) 4 FTE
30	Improve emergency management communication and coordination.		\$150k (operating) 0.5 FTE
31	Create Disaster Support Hubs or Community Resilience Hubs for community self-sufficiency.		\$150k (operating) 0.5 FTE
32	Train local residents to plan for and respond to emergencies by making emergency management training widely available to residents and businesses.		Resourcing TBD
35	Fund and implement a Food Action Plan, including climate as a core component.		Resourcing TBD
<b>Enabling Actions: Engagement, Reporting, Governance, Financing</b>			
34	Work purposefully, meaningfully and collaboratively with Mi'kmaq and Indigenous community leaders, African Nova Scotian communities, and other marginalized communities in Halifax on the continued implementation of HalifACT.		\$150k (operating)
38	Integrate climate into financial decision-making		\$300k (operating)
39	Develop new mechanisms for financing climate action.		\$100k (operating)
40	Incorporate Environment, Social, Governance principles as they relate to climate into the management of HRM's municipal funds.		Resourcing TBD

41	Establish a central Climate Office that reports directly to the CAO with a distributed network of coordinated support.	Yellow	--
42	Significantly increase staff capacity for implementation.	Green	--
43	Develop an Annual Indicators Report and report annually.	Yellow	\$50k (operating)
--	Additional resources to support Core and Enabling Actions	-	\$6 million (capital) 8 FTE
<b>TOTAL 3-YEAR INVESTMENT IN CORE AND ENABLING AREAS:</b>			<b>\$78.33 million (capital) \$3.45 million (operating) 25 FTE</b>
<b>2022-23 portion - Approved Budget for Core and Enabling Areas</b>			<b>\$9.96 million (capital) \$1.55 million (operating) 8 FTE</b>

## Climate Action Progress in our Community

The Municipality has been working collaboratively with stakeholders to implement HalifACT with a sense of urgency and innovation. External partnerships and leveraged funding are crucial for success. With over 400 stakeholders, it is difficult to adequately capture all of the great work being done. This section showcases a selection of highlights from some of the external partners who are making huge strides in climate action and are instrumental in the work to reach our collective HalifACT targets.

### Government Agencies

#### *Government of Canada*

Carbon Pollution Pricing: In 2021, the federal government amended the schedule for Canada's federal carbon pricing benchmark, which sets the minimum requirements for all provincial and territorial carbon pricing systems. The schedule was updated to require an increase of \$15 per tonne, year over year, from 2023 through to 2030. This increase will lead to a price on carbon of \$170 per tonne by 2030.

Net-Zero Emissions Accountability Act: The federal government passed the Canadian Net-Zero Emissions Accountability Act in 2021, which enshrines net-zero by 2050 into law and sets intermediary targets every 5 years leading up to 2050.

National Adaptation Strategy: Over the course of 2021-22, the federal government began the process of developing Canada's first National Adaptation Strategy. Targeted engagements and expert advisory tables were convened in 2021, and the development of the full strategy is continuing into 2022-23 with more fulsome public engagement.

Canada Nature Fund: In January 2022, the Government of Canada [awarded over \\$1.5 million through the Canada Nature Fund](#) to be distributed to the Province of Nova Scotia and to various Indigenous organizations, non-profit organizations and land protection projects. This funding is dedicated to increasing protection of land and water in the Province towards a federal goal of 25% protection by 2025 and 30% protection by 2030, which has important impacts on ecosystems, biodiversity, carbon sequestration and resilience to climate impacts.

#### *Government of Nova Scotia*

Climate Change in Legislation: The *Environmental Goals and Climate Change Reduction Act* (EGCCRA) was passed in October 2021, setting 28 new environmental goals for Nova Scotia. These include new GHG

reduction targets of 53% below 2005 levels by 2030 and net-zero emissions by 2050. Also included are supplying 80% of Nova Scotia's energy by renewables by 2030; 30% rate of zero-emission vehicle sales by 2030; 20% protection of total land and water mass; development of a provincial food strategy and a reduction of solid waste disposal rates to 300 kilograms per person per year by 2030.

Amendments were made to the Electricity Act in 2021 for the creation of a new Shared Solar Program, which would enable municipalities, First Nations and other entities in Nova Scotia to establish solar gardens or virtual net-metering for solar PV. Consultation was also conducted on the proposed regulations for the *Coastal Protection Act*, which was passed in 2019. The regulations are set to define the bounds of the coastal protection zone and to regulate activities that can take place within this zone.

Nova Scotia's Environment & Climate Change Minister re-iterated the province's commitment to supporting and expanding the province's solar industry solar in an [op-ed](#) early 2022, noting that the solar industry's expansion will be critical in meeting the provincial GHG emission targets set out in EGGCRA.

Climate Change Investments: In 2021, the Province made its [second round of investments](#) using the revenue from the Cap-and-Trade program into projects and programs that address climate change. A total of over \$43 million dollars was re-invested in 2021-22 into initiatives related to energy efficiency, renewable energy, electric vehicles, climate change adaptation, and resources for communities, among others. Through the administration of the federal Investing in Canada Infrastructure Program (ICIP), the Province also contributed funding to three HRM projects: the Ragged Lake Transit Centre expansion (including the purchase of Atlantic Canada's first e-bus fleet), a district energy system within the Cogswell District redevelopment, and the deep energy retrofit of five community buildings.

Extended Producer Responsibility: In December 2021, the Province announced intended expansion of the provincial extended producer responsibility (EPR) program to include packaging, single-use plastics and paper. Consultations on this expansion with municipalities, industry, academia and other organizations began in early 2022. EPR will play a key role in moving the province towards a more circular economy, which links to climate action by lowering volumes sent to landfills and limiting carbon-intensive products in circulation.

### ***Halifax Port Authority***

In 2021, the Halifax Port Authority (HPA) set greenhouse gas reduction targets that align with the new Government of Canada emission reduction targets set out in the *Net-Zero Emissions Accountability Act*. The HPA's targets are a 40% reduction from 2018 levels by 2030, and to achieve net-zero by 2050. The HPA continued to deliver on its Emission Reduction Plan, which was originally developed in 2017. To track towards its new targets, the HPA continued to deliver on-site initiatives including vehicle emissions reductions, berthing improvements and its shore power system. For more details on the work of HPA, see their [annual report](#).

### **Utilities**

#### ***Nova Scotia Power Inc.***

Nova Scotia Power Inc. (NSPI) has been a key stakeholder in the development of HalifACT and will be crucial to its successful implementation. The company is focused on new technologies to enhance customer service and reliability, reduce emissions and add renewable energy. In the last decade alone, Nova Scotia Power has tripled their renewable energy from 9% to 30%, and since 2005, they have reduced coal use by 33%. In 2021, the company continued to work towards 80% renewable energy by 2030, removing coal from their energy mix and transforming how they make, deliver and store electricity. This pathway aligns with the direction of NSPI's parent company, Emera, which set a commitment of an 80% reduction in the use of coal by 2023 and a vision of Net-Zero by 2050. Specific to action on HalifACT, NSPI worked closely with the Municipality in 2021 on transit electrification (including ferries) and the Municipal Electric Vehicle Strategy including the planning of new electric vehicle charging infrastructure across HRM.

### ***Heritage Gas***

**Halifax Hydrogen Deployment (H2D) Project:** In 2021, Heritage Gas continued working on the proposed 5-megawatt Halifax Hydrogen Deployment (H2D) project that will produce the equivalent of 100,000 gigajoules of green energy per year, enough to fuel about 50-60 transit buses or to heat 1,000 homes. Some of the hydrogen will be blended with natural gas in the Heritage Gas distribution system, and the rest is proposed to be used in hydrogen fuel cell vehicles for heavy transportation applications in HRM including vehicles operating at the Port of Halifax, drayage trucks transporting shipping containers to and from the Ports, or transit buses. This project would contribute to decarbonization of heavy transportation and high temperature industrial processes.

**Natural Gas Absorption Heat Pump Trial:** Heritage Gas is conducting a pilot project to test a 140 kW Vicot natural gas absorption heat pump in a large multi-unit residential building in HRM, providing space heat and domestic hot water in the building. Energy modelling results indicate that the heat pump could reduce natural gas consumption in the building by over 25% compared to a standard condensing boiler system.

**Renewable Natural Gas (RNG):** Heritage Gas is evaluating opportunities to enable natural gas customers in HRM to purchase RNG to displace some or all of their conventional natural gas use. In 2021, Heritage Gas supported Halifax Water in their evaluation of a proposed new Biosolids Processing Facility that would produce biogas through anaerobic digestion of residual biosolids to generate renewable natural gas.

### ***Halifax Water***

Halifax Water is a strategic partner of HRM in climate action and continued to collaborate with HRM on an integrated stormwater management policy and stormwater management standards. Halifax Water also has a lead role on actions in the HalifACT plan. In 2021-22, Halifax Water progressed on decarbonizing water and wastewater operations and on developing a climate-informed water supply strategy within the municipal boundary. This included work on community solar projects, the Cogswell district energy system, Aerotech biosolids processing facility, a risk and vulnerability assessment for water supply plants and water supply dams, and a safe yield study. Details on these actions can be read starting on p. 8 of Attachment A.

Halifax Water created an internal Climate Resiliency Committee in 2021 to continue Halifax Water's commitment to sustainability, energy efficiency, and to the development of a Climate Action Plan.

### ***Efficiency Nova Scotia***

EfficiencyOne's energy saving programs and rebates have been contributing to energy bill savings and GHG reductions in HRM and in Nova Scotia for over ten years. In 2021, Efficiency Nova Scotia (ENS) reported that their programs have collectively contributed to 24% of Nova Scotia's overall GHG emissions reductions and \$1 billion in energy bill savings since 2011. In large part due to the contributions of ENS programs, Efficiency Canada ranked Nova Scotia #3 in Canada on their [2021 Provincial Energy Efficiency Scorecard](#).

**Greener Homes Grant:** Among other programs that continued to be delivered in 2021, ENS was selected as a delivery agent for the federal Canada Greener Homes Grant, announced in May 2021. The Grant is delivered through the existing Home Energy Assessment service, allowing anyone who takes part in the program to be eligible for grants of up to \$5000 for home energy retrofit work.

**On-site Energy Manager:** The On-site Energy Manager Program continued its partnership with HRM in 2021. Through the program, ENS was able to support Halifax in the Woodside Ferry Terminal retrofit project as well as many others, totalling a reduction of 1,150 tonnes of GHG emissions.

**Net-Zero White Paper:** In 2021, ENS released a white paper titled [2050: Net-Zero Carbon Nova Scotia](#) outlining the challenges and opportunities surrounding energy efficiency and deep decarbonization, partnerships, collaboration and training, as well as financing, equity and capacity building.

### ***Halifax Climate Investment, Innovation and Impact Fund***

2021 was a foundational year for the Halifax Climate Investment, Innovation and Impact (HCi3) Fund, which was established as a subsidiary of EfficiencyOne in 2020. HCi3 plays an instrumental role in advancing local climate action, as one of the founding members of the [Low Carbon Cities Canada \(LC3\)](#) Initiative. The goal of LC3 is to activate climate solutions that have the potential to achieve full-scale implementation across Canada with focus on community benefits, job creation, capacity building and equity.

In 2021, HCi3 created a distinctive brand identity and logo for the organization and hired both an Executive Director and Chief Climate Investment Officer as well as a Program Manager. HCi3 established sound investment practices to manage HCi3's endowment by forming an Investment Committee and finalizing an Investment Policy. In December 2021, HCi3 successfully invested endowment funds in multiple asset-classes with a strong focus on environmental, social and governance (ESG).

A key milestone was met when HCi3 launched the first round of grant funding in February 2022. The program provides grants to innovative projects that seek to reduce GHG emissions in the HRM in support of the HalifACT Climate Plan. HCi3 grant funding totalling just over \$500,000 were awarded to 11 local projects and cover up to 80% of total project costs. There is a diversity of grant projects being supported; electric vehicle sharing, panelized deep energy retrofits, passive tiny home construction, and workforce development for African Nova Scotian Communities, among others. A full list of funded projects is on the [HCi3 website](#).

### **Non-Profit Organizations**

#### ***Halifax Innovation Outpost***

The Halifax Innovation Outpost, a joint initiative between HRM and the Halifax Partnership, has undertaken initiatives to broaden opportunities for start-ups and scale-ups to develop their products and services, including those that contribute to climate action and to HalifACT.

**Climate Action Charter:** In 2021, the Outpost continued working on the development of a CEO Climate Action Charter that would be modeled after the successful Nova Scotia Health and Safety Leadership Charter. The Charter will engage and enroll the region's most impactful CEOs on sustainability principles that can be incorporated into their business practices.

**Climate Action Challenge:** In early 2022, the Outpost launched the first ever Climate Action Challenge, which provided up to \$5000 in seed funding to organizations and community groups to develop and prototype a climate initiative. The theme of the first Challenge focussed on projects that decarbonize the built environment and advance equity in climate action; participation in the Challenge connected teams to larger funding opportunities with the first round of the HCi3 Grant Program. Seven teams were awarded funding and mentorship over a two month period, which took place in early 2022-23.

#### ***Clean Foundation***

The Clean Foundation delivers a breadth of programs that span coastal health, clean energy and transportation, workforce development, education and engagement.

**Residential Energy Audits:** Clean is the delivery agent for Efficiency Nova Scotia's Home Energy Assessment program, which connects homeowners with Certified Energy Advisors to assess their homes, identify energy retrofits and connect to rebates. In 2021-22, Clean conducted 186 initial energy assessments and 38 final energy assessments within HRM. Initial assessments are the visits to determine

potential energy efficiency interventions, and final visits are those where the interventions have been implanted.

**Electrify Rebates:** In 2021-22, the Electrify Nova Scotia Rebate Program celebrated its first year. Clean delivers this program on behalf of the Province and issued more than \$2 million in rebates towards electric bikes and electric vehicles during its first year. This included 1,024 e-bike rebates, and 393 EV rebates to residents residing in HRM.

**Next Ride:** Next Ride offers the public free electric vehicle test drives and a chance to ask any questions they have relating to the barriers to adoption. To boost the city's shared objective around increasing EV adoption, HRM has been working with the Next Ride program by offering the use of municipal parking lots free of charge. Five events in partnership with HRM took place in 2021, including Electric Avenue, which took place in September 2021 at the Canada Games Centre. These five events saw 189 test drives that gave nearly 300 individuals a chance to test out an EV in HRM.

**Clean Leaders:** As part of their workforce development programming, Clean delivers the Clean Leader Internship Program, which provides youth and students with summer placements working on issues of environment and climate change. In summer 2021, the program placed 25 interns at 20 different Halifax-based organizations for four-month placements during May to August, 2021.

### ***Ecology Action Centre***

The Ecology Action Centre is one of the largest environmental charities in the province, advocating for issues of climate change, biodiversity, and environmental justice. Their work and mandate covers many areas that are directly impacted and aligned with climate action.

**Decarbonizing Buildings:** In 2021-22, the EAC continued to deliver on a number of their programs and to advocate for building decarbonization. They continued to host the Better Building Speaker Series to promote deep energy retrofit techniques and technologies to property owners and building professionals, and they supported dozens of United Churches across the Maritimes to participate in the Faithful Footprints program and reduce their greenhouse gas emissions through retrofits and implementing efficiency measures. In addition, EAC provided input to Efficiency One's Demand Side Management Plan (DSM) and coordinated with the Affordable Energy Coalition to advocate for increased investment in energy efficiency programming for Nova Scotians living on low income.

**Green Jobs for Newcomers:** In 2021-22, the EAC launched the Green Jobs for All Campaign to engage immigrant and newcomer youth and to equip them with the tools they need to advocate for a just transition, while also identifying opportunities that allow them access to the green economy.

**Zero Emissions Vehicles:** In 2021-22, the EAC continued to advocate through media and stakeholder engagement for the proliferation of EV charging infrastructure in order to accelerate EV adoption. They played a role in advocating for a provincial Zero Emission Vehicle (ZEV) mandate, which the Province announced in EGCCRA legislation released in 2021.

With partners across Canada, EAC is participating in a national effort to increase the adoption of electric school buses. As a steering committee member, they participated in the foundation of the Canadian Electric School Bus Alliance and hosted a series of roundtables with partners throughout the province, including bus drivers, teachers, parents, healthcare experts and procurement and operations officials. They also engaged with the Province to advocate for the inclusion of an electric school bus procurement target, recommending that all new school bus purchases after 2025 be zero-emissions, 75 per cent of all school buses on the road be electric by 2030, and that Nova Scotia's school bus fleet go all-electric by 2035.

## Academic Institutions

Dalhousie University

Dalhousie's Office of Sustainability has been working with key departments in the university to incorporate sustainability into policy, planning, projects and operations on campus for more than a decade. In 2021-22, Dalhousie conducted deep energy retrofits on the Howe Hall and Shirreff Hall residence buildings, which included [intensive replacements](#) to the building heating and energy systems. Dalhousie undertook work to update their Climate Change Operations Plan 2020-2030, which includes action on GHG reduction, adapting to climate change, and increasing knowledge of climate change on campus.

**St Mary's University**

St. Mary's University is home to TransCoastal Adaptations, an organization that is leading nature-based solutions for coastal adaptation and climate resilience in Atlantic Canada. In 2021, TransCoastal Adaptation co-delivered Green Shores training to practitioners in the Maritimes, including HRM staff, on how to build living shorelines for climate resilience.

# **Nova Scotia Community College**

Nova Scotia Community College (NSCC) is a leading academic institution in Canada on sustainability. At campuses across Nova Scotia, NSCC has been leading the way on climate and energy through solar PV installations that feed energy back into the provincial grid, EV charging stations and net-zero and highly energy efficient buildings. In 2021, NSCC received recognition for their leadership through the Gold Excellence in Sustainable Development award from Colleges and Institutes Canada, among others.

## **FINANCIAL IMPLICATIONS**

There are no financial implications associated with this information report.

## **COMMUNITY ENGAGEMENT**

Significant community engagement was completed during the development of the HalifACT plan and there has been ongoing stakeholder engagement during the early implementation of the plan. Stakeholders were asked to contribute updates on their respective actions for HalifACT implementation, which are included in this Council Report.

## **ATTACHMENTS**

- Attachment A HalifACT Report Card 2021-22  
Attachment B HalifACT Report Card 2021-22 (Summary)

A copy of this report can be obtained online at [halifax.ca](http://halifax.ca) or by contacting the Office of the Municipal Clerk at 902.490.4210.

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## Attachment A - HalifACT Progress Report Card 2021-22

Progress in this Report Card is assessed in terms of HRM's responsibilities and does not include external progress. The state of progress is defined according to the following:

- **Green:** Progress was made on this action in 2021-22 and the work is tracking towards associated HalifACT targets.
- **Yellow:** Little to some progress was made on this action in 2021-22, and the action is at risk of falling behind in its associated HalifACT targets.
- **Red:** Minimal to no progress was made on this action in 2021-22 and the action is falling behind in its associated HalifACT target(s).
- **Blue:** Action progress in 2021-22 was contingent on/awaiting policy development from the Government of Canada or from the Government of Nova Scotia.
- **Future Action:** Implementation of action is slated for a later date and has not yet begun.

Note that the score reflects the progress that was made during the period of April 1, 2021 to March 31, 2022, and does not reflect the progress that has been made since this period. A summary of the work that took place in 2021-22 is described under each action below.

### Efficient Buildings

HalifACT Actions	Intended Start Date	Core Area	Action Lead	Actively Supporting	Progress 2021-2022
<b>EFFICIENT BUILDINGS</b>					
1. Net-zero & climate resilient new construction	2020	4	P&D – Buildings and Compliance	PFE-ECC	
2. Residential and non-residential deep retrofit program	2020	1	PFE – Environment & Climate Change	--	
3. Industrial coalition and support program	2026	--	PFE – Environment & Climate Change	CAO-GREA	<b>Future Action</b>

#### Action 1 – Net Zero and Climate Resilient New Construction – Contingent on public policy

*Starting in 2020, develop, adopt and apply a net-zero and climate resilient program for new construction that:*

- Sets standards and requirements for energy efficiency, renewable energy generation, climate resilience, EV charging, indoor air quality, and solid waste for new residential and non-residential construction so that by 2030, all new construction is net-zero and is designed and built to withstand future climate conditions; and
- Is applied to all new residential and non-residential development and is applied to new construction of municipal buildings.

**Administrative Order for Net-Zero Construction:** In November 2021, HRM adopted [Administrative Order 2021-002-OP Respecting Net-Zero Construction of New Municipal Facilities Within The Halifax Regional Municipality](#) to address net-zero requirements in our corporate buildings. This AO mandates that all new corporate buildings be designed and constructed to either a net-zero or net-zero ready standard. Net-zero means that 100% of a building's energy need is generated on-site or off-site through a renewable source; net-zero ready means reducing building energy consumption by 50% as compared to the 2017 National Energy Code for Buildings. HRM's corporate buildings make up about 1% of community-wide emissions;

while this is low, the Municipality has the responsibility to lead and demonstrate practices that will encourage broader emission reductions and help spur economic development. In 2021, the AO led to the construction of net-zero public washroom facilities in Fort Needham Park, which were completed in July 2022. The AO also led in 2021 to net-zero ready modelling for the Beechville-Lakeside-Timberlea Community Centre, [new HRFE HQ and community fire station](#), Kiwanis Facility and Halifax Commons Aquatic Facility.

**Federal Tiered Energy Code:** The federal government released the 2020 National Energy Code of Canada for Buildings (NECB) in March 2022; the much-awaited code release was delayed by the COVID-19 pandemic. The new NECB was developed as a tiered energy code, with the most aggressive tier allowing jurisdictions to strive for net-zero buildings. The Nova Scotia *Environmental Goals and Climate Change Reduction Act*, which passed in November 2021, states that the Province shall adopt the new NECB within 18 months of its publishing date. The Municipality has been engaging with the Nova Scotia Department of Natural Resources and Renewables to ensure the province adopts this code as soon as possible and selects the most appropriate tier to align with HalifACT targets. The Province of Nova Scotia has historically been progressive in adopting new versions of the NECB and based on discussion, a specific tier of the code will be adopted in 2022 after a market-ready assessment is completed. Once the tier is known, HRM staff will compare it to the technical analysis of HalifACT and determine the best course of action moving forward with respect to building net-zero energy performance and climate resilient buildings.

## Action 2 – Residential and Non-Residential Deep Retrofit Program – **Some progress**

*Starting in 2020, develop a retrofit program to enable and fast-track energy and climate resilience retrofits in the residential and non-residential sector, so that by 2040, 100% of existing buildings undergo deep retrofits.*

**R3 Pilot Program:** A pilot project to inform the development of Retrofits, Renewables and Resiliency (R3) Program was developed by staff and [approved by Halifax Regional Council](#) in July 2021. The pilot will emulate features of the successful Solar City Program and will offer access to a navigator who will act as the project manager for the entire retrofit. The navigator will be responsible for coordinating all subtrades, financing and rebate approvals. Efficiency One and HRM will jointly administer the pilot, which will launch in late summer 2022 and perform deep energy retrofits on up to 50 homes in HRM. The learnings from this pilot will directly inform the full suite program, which HRM aims to launch and make available to property owners in late 2022/early 2023.

HRM staff were successful in acquiring a Community Efficiency Financing grant from the Federation of Canadian Municipalities to evaluate Halifax's existing Solar City Program for expansion with accessible and at-scale financing options. Through this grant, Dunsky Consulting was engaged in early 2022 to examine innovative financing options that will allow for broad participation in the full-suite R3 program. This work will be completed in Fall 2022 and will result in minimum design criteria for the new R3 program, looking at the program's capacity to deliver universally accessible and equitable financing for deep home retrofits.

**Resilient Retrofit Initiative:** this initiative supports the incorporation of resiliency retrofits into the Municipality's building retrofit programming through exploration of techniques, discussions across sectors, and creation of a guidebook for homeowners. It also aims to address resiliency retrofits in non-residential buildings so that by 2040, 100% of existing buildings undergo resilient retrofits. Resilient retrofits are measures that help increase the resiliency of homes and properties to the impacts of climate change such as flooding, extreme heat events, wildfires etc. An initial review of resilient retrofit approaches from across Canada was completed in Summer 2021. Additionally, HRM partnered with Earth Day Canada in Fall 2021 to develop and host an [Eco-Hack a city event](#) around Climate Resiliency Retrofits for Residential Buildings. The event took place in May 2022 and consisted of a [public panel of experts](#), a facilitated design hack with project teams, and a solutions presentation to a panel of judges.

**Commercial Retrofits:** HRM staff held an initial engagement with commercial buildings stakeholders in winter 2022 to open discussion on deep retrofits in the non-residential building sector. Staff will be conducting jurisdictional scans of deep building retrofit policies for commercial buildings in other municipalities and a workshop with planning staff to explore options.

## Renewable Energy

HalifACT Actions	Intended Start Date	Core Area	Action Lead	Actively Supporting	Progress 2021-2022
<b>RENEWABLE ENERGY</b>					
4. Rooftop solar PV and energy storage program	2020	1	PFE – Environment and Climate Change	--	Yellow
5. Community scale solar PV and wind generation	2020	--	PFE – Environment and Climate Change	--	Dark Blue
6. Create Coalition to expand and decarbonize district energy systems	2026	--	PFE – Corporate Facility Design & Construction	PFE-ECC, CAO-GREA	Future Action
7. Advocate and support provincial electricity grid decarbonization	2022	--	PFE – Environment and Climate Change	CAO-GREA	Green

### Action 4 – Rooftop Solar PV and Energy Storage Program - Some progress

*Significantly scale up or revamp the existing Solar City program to fast-track rooftop solar PV installations and energy storage with the target of installing 1,300 MW solar PV by 2030.*

Action 4 is related to Action 2, as HRM staff are examining the possibility of integrating the Solar City Program into the new Retrofits, Renewables and Resiliency (R3) Program.

**Solar City Program:** Since the Program launched in May of 2016, nearly 3,200 property owners across the municipality have shown interest in solar energy by registering their property for consideration. As of December 31, 2021, 683 Solar City Participant Agreements have been executed, totaling \$17.80 million in financing committed to the installation of solar energy technologies. These systems are expected to save property owners a total of \$1.24 million annually in utility costs and reduce annual greenhouse gas (GHG) emissions in the community by approximately 5,400 tonnes. To date, the Solar City Program has enabled the installation of 6.43 megawatts (MW) of renewable energy in the municipality.

### Action 5 – Community-Scale Solar PV and Wind Generation - Contingent on public policy

*With partners, develop and/or participate in local community renewable energy initiative that coordinates and advances the development of utility-scale renewable energy generation.*

In June 2021, Halifax Regional Council approved the submission of an Expression of Interest to the Nova Scotia Green Choice Program (GCP) to procure 100% of Halifax's electricity needs (75 gigawatt-hours). The GCP offers large-scale electricity consumers the option of purchasing 100% of their annual electricity need through new, local renewable sources. HRM is waiting for the GCP application to open to formally apply to the program, which was anticipated for the fall of 2022. HRM's participation in this program would support the development of utility-scale renewable energy generation projects in Nova Scotia and would be instrumental in achieving the HalifACT target of net-zero municipal operations by 2030.

### Action 7 – Advocate and support decarbonization of the provincial electricity grid – Progressing

HRM has been an active participant in the ongoing development of Nova Scotia Power's Evergreen Integrated Resource Plan (IRP). The Evergreen IRP is a commitment to facilitate annual updates to the

2019 IRP, as conditions change, and technology or market options develop. Key to the initial update includes the emission targets as outlined in the *Environmental Goals and Climate Change Reduction Act*. As outlined in the Act, the Government's targets for greenhouse gas emissions reductions include having 80% of electricity in Nova Scotia supplied by renewable energy by 2030. HRM will continue to work with NSP on achieving this target.

## Decarbonizing Transportation

HalifACT Actions	Intended Start Date	Core Area	Action Lead	Actively Supporting	Progress 2021-2022
<b>DECARBONIZING TRANSPORTATION</b>					
8A. Expand transit infrastructure	2020	3	Halifax Transit – Planning & Customer Engagement	P&D-IP, PW-DCS, PFE-CRE	Yellow
8B. Expand active transportation infrastructure	2020	3	PW – Project Planning & Asset Management	P&D-IP, PW-DCS	Green
9. Community-wide EV strategy	2024	3	PFE – Environment and Climate Change	PFE-CF, PW-PS	Green
10. EV planning and policy	2020	3	P&D – Regional Planning	PFE-ECC	Green

### Action 8.A – Build out transit infrastructure according to Integrated Mobility Plan – Some progress

*By 2030, build out the transit infrastructure needed to achieve the 2030 mode share targets set out in the Integrated Mobility Plan.*

Action 8A links to the implementation of the Integrated Mobility Plan (IMP), which was adopted in 2017 to direct investment in transportation demand management, transit, active transportation, and the roadway network. The IMP lays out a roadmap for achieving mode share targets set in the 2014 Regional Plan, which are to achieve at least 30% of all trips made by walking, rolling or transit and no more than 70% of trips made by private vehicle. The [Rapid Transit Strategy](#), approved by Council in May 2020, lays out the municipality's plan to build out a Rapid Transit system by 2030, building on the vision of the IMP.

**Priority Transit Corridors:** The municipality has been implementing transit priority lanes in key corridors to improve the reliability of transit services, and start working towards the future potential for Bus Rapid Transit (BRT) service as proposed in the approved Rapid Transit Strategy. Phase 1 of the Bayers Road transit corridor project was completed in November 2021, connecting Connaught Avenue to Coleman Court. An interim outbound lane was also added on a portion of Bayers Road. The Robie Street transit corridor project entered its second phase in 2021, which included work to build bus-dedicated lanes in both directions in the corridor between Quinpool Road and Windsor Street. Both projects will continue into 2022-23, including land acquisition.

### Action 8.B – Build out active transportation infrastructure according to Integrated Mobility Plan - Progressing

*By 2030, build out the transit infrastructure needed to achieve the 2030 mode share targets set out in the Integrated Mobility Plan.*

Action 8B links to the implementation of the Integrated Mobility Plan (IMP), which was adopted in 2017 to direct investment in transportation demand management, transit, active transportation, and the roadway network. The IMP lays out a roadmap for achieving mode share targets set in the 2014 Regional Plan,

which are to achieve at least 30% of all trips made by walking, rolling or transit and no more than 70% of trips made by private vehicle.

**Regional All Ages and Abilities (AAA) Bike Network:** The Regional Centre All Ages and Abilities (AAA) Bike Network is a project to implement a network of safer, more accessible and multi-modal connected pathways in the regional center. In 2021, HRM added a total of 3.3 kilometers of new AAA infrastructure and reached 40% of the targeted network total distance. This included the Wyse Road protected bike lanes and Nova Scotia's first ever bicycle traffic signals, among other projects. HRM also launched the "Get There By Bike" marketing campaign to help make the public more aware of this new infrastructure.

**Active Transportation Measures in Infrastructure Projects:** The city is incorporating active transportation priority measures and considerations into major infrastructure projects such as the Windsor Street Exchange Redevelopment, the Water Street Functional Plan, the Spring Garden Road streetscaping project and the Rainie/Brunswick and Dutch Village Road Complete Streets projects. These considerations include analysis of transit gaps, and looking into ways that transit corridors can be created or improved as part of these major infrastructure projects.

**Street Improvement Pilot Projects:** Also known as tactical urbanism, this project includes the installation of temporary features designed to improve the safety and comfort of those walking, rolling and cycling.

### **Action 9 – Community-wide Electric Vehicle Strategy – Progressing**

*Starting in 2020, establish an electric vehicle joint venture with partners to significantly increase the uptake of personal and commercial EVs in Halifax.*

The Municipal Electric Vehicle Strategy was adopted unanimously by Halifax Regional Council in November 2021. The strategy provides recommendations relating to public infrastructure, policy requirements, education needs and a municipal light duty fleet transition plan to position Halifax as an EV-ready municipality. Since adoption, HRM staff have begun implementation of all four areas of the Strategy and Council approved \$4.5 million in funding for 2022/23 and the posting of an Environmental Professional position dedicated to implementation of the Strategy.

HRM staff began working in January 2022 with WSP to design a fast-charging package (175kW) for multiple HRM-owned sites. Once fully designed, staff will issue a multiple year RFP for the supply of the charging infrastructure and then use our standing offer to complete the install. The sites will span the entirety of the Municipality and fill current gaps in the charging network. The target for completing the installs is mid-2023.

To boost the city's shared objective around increasing EV adoption, HRM has been working with the Clean Foundation's Next Ride program by offering the use of municipal parking lots free of charge. Five events in partnership with HRM took place in 2021, including Electric Avenue, which took place in September 2021 at the Canada Games Centre. These five events saw 189 test drives that gave nearly 300 individuals a chance to test out an EV in HRM.

### **Action 10 – Electric Vehicle Planning and Policy – Progressing**

*Prepare for and catalyze EV uptake through HRM planning and policy.*

To achieve the targets of HalifACT, the Municipal Electric Vehicle Strategy recommends that 100% of parking stalls in new residential buildings (multi-unit and single unit dwellings) and 20% of parking stalls for non-residential buildings must be "EV Ready". It also recommends that the existing Zero Emission Vehicle (ZEV) mandate as outlined in the provincial *Environmental Goals and Climate Change Reduction Act* be strengthened to better align with other jurisdictions.

HRM will be examining the changes to policy that will be required in the Regional Plan, including land use regulations and removal of barriers in current municipal bylaws for the implementation of electric vehicle infrastructure. The Regional Plan was in the second review phase in 2021, during which staff began looking into considerations for EV charging within the municipal right of way. This work will be continuing into 2022 as the Regional Plan review process advances.

## Greening Government Operations

HalifACT Actions	Intended Start Date	Core Area	Action Lead	Actively Supporting	Progress 2021-2022
<b>GREENING GOVERNMENT OPERATIONS</b>					
11.A Net-zero municipal operations – decarbonizing municipal buildings and fleet	2022	2	PFE – Facility Design & Construction, Corporate Fleet	PFE-ECC	
11.B Net-zero municipal operations – decarbonizing transit	2022	2	Halifax Transit-Planning & Customer Engagement	PFE-ECC	
11.C Net-zero municipal operations – decarbonizing solid waste	2022	2	PW – Solid Waste	PFE-ECC	

**Action 11.A - Net-zero municipal operations (Municipal buildings and fleet) – Progressing**  
*Adopt a commitment, develop a costed plan and implement net-zero municipal operations by 2030, including net-zero and climate resilient new buildings; retrofitting existing buildings by 2030; electrification of municipal fleets; and renewable energy generation and purchase.*

**HRM Building Energy Roadmap:** In 2021, a draft municipal Building Energy Roadmap was completed to prioritize and plan net-zero retrofit work for all existing buildings owned and operated by HRM. The Roadmap determines roles and responsibilities across the organization, staffing requirements, costs and potential funding sources. This work was facilitated by a 3-year extension of HRM's On-Site Energy Manager Partnership with Efficiency Nova Scotia.

In support of this work, HRM's building automation software was updated and moved to a stand-alone server in 2021. This move allows staff to more easily track trends in energy usage, respond to issues and avoid service disruptions in HRM owned and operated buildings.

**Building Retrofit Projects:** HRM is investing in deep energy and resilience retrofits for buildings owned and operated by the municipality, including public buildings and community centres. Deep energy retrofits in 2021 were undertaken at the Woodside Ferry Terminal, Fire Station #2 on University Avenue and the Dartmouth North Community Centre.

Energy retrofits also included conversion of oil-fired furnaces to electric heating and cooling; staff completed a prioritization matrix in 2021 that plans and schedules conversions for all HRM buildings that rely on heating oil by 2030.

Starting in 2022, deep energy retrofits and oil conversions will be initiated at 5 large community centres that are located in underserved communities of Halifax. Upwards of \$10 million in funding was secured to support this work from federal Investing in Canada Infrastructure Program and the provincial Low Carbon Communities Program. Guided by the HRM Building Energy Roadmap, deep energy retrofits will also start in 2022, prioritizing the retrofit of oil-heated facilities, at multiple properties including the Halifax North Library, Sackville Sports Stadium, Acadia Centre, Keshen Goodman Library, Ragged Lake Bus Depot, Sackville Terminal, Eastern Shore Arena, McPhee House, Blackpoint Fire Station and the Bicentennial Theatre.

**HRM Fleet Transition:** The Municipal Electric Vehicle Strategy provides a roadmap for transitioning the municipal light duty fleet. In winter 2022, a new Green Fleet Analyst was hired in the Corporate Fleet division

to lead the light-duty fleet transition. As of March 31, 2022, HRM ordered 32 plug-in hybrid electric vehicles and have one fully electric van in our fleet.

### **Action 11.B - Net-zero municipal operations (Transit) – Progressing**

*Adopt a commitment, develop a costed plan and implement net-zero municipal operations by 2030, including the electrification of HRM transit and other transit fleet vehicles, including ferries, by 2030.*

**Electric Buses:** In 2021, a funding agreement under the Investing in Canada Infrastructure Program (ICIP) was reached for Phase 1 of electrifying the Halifax Transit bus fleet. Phase 1 is a \$112M project and includes the acquisition of 60 battery electric buses and chargers, as well as an expansion to the Ragged Lake Transit Centre to accommodate the fleet. In spring 2022, Nova Bus was awarded the contract for the vehicles, which have now been ordered and are pending delivery starting in late 2023. The schematic design for the Ragged Lake Transit Centre expansion is now complete, and it is expected that the tender for construction will be awarded in early 2023. In addition, in September 2022, ICIP funding in the amount of \$20.8M was announced for the design and planning for the Burnside Transit Centre Eco-Rebuild project, the critical next step for advancing into the next stage of electrification.

**Mill Cove Ferry Service:** In June 2021, ICIP funding was secured to commence Phase 1 of the Mill Cove Ferry Service project, which included six studies to assist with planning and design of the proposed service. One of these studies, the vessel technology study determined that the most appropriate way to move forward with this new ferry service is with electric vessels. An application for funding of Phase 2 (Implementation) of this project, will be submitted in November 2022.

**Woodside Ferry Terminal Recapitalization:** This recapitalization project is intended to serve Halifax Transit for the next 20-30 years, a time frame which is also expected to be a period of growth for the ferry operations. The project will improve passenger flow, universal accessibility and customer experience while also reducing building energy consumption by 76% from a 2016 baseline. Construction of this project was completed in fall 2022.

### **Action 11.C - Net-zero municipal operations (Solid waste) – Progressing**

*Adopt a commitment, develop a costed plan and implement net-zero municipal operations by 2030, including the reduction of emissions from waste.*

**Solid Waste Resources GHG Study:** The HRM Solid Waste Resources group is currently engaged with a consultant to produce a baseline carbon footprint tool that can be updated annually to provide solid waste system emissions that can be input into HRM's main emissions model for annual HalifACT reporting. Updates by HRM will include waste disposal and diversion tonnages, as well as emission offsets due to GHG reduction projects. The study, which was awarded and commenced in the 2022-23 fiscal year, will summarize and combine carbon footprint and GHG emissions estimates prepared to date on the solid waste system in HRM into a comprehensive tool for future use.

## **Water**

HalifACT Actions	Intended Start Date	Core Area	Action Lead	Actively Supporting	Progress 2021-2022
<b>WATER</b>					
12. Net-zero water and wastewater operations	2024	--	Halifax Water	P&D-IP	
13.a Climate-informed water supply strategy – municipal service boundary	2024	--	Halifax Water	PFE-ECC	

13.b Climate-informed water supply strategy - outside service boundary	2024	--	PFE – Environment and Climate Change	--	<b>Future Action</b>
14. Climate-informed stormwater management plan and program	2020	5	P&D – Infrastructure Planning	PFE-ECC, Halifax Water	

**Action 12 – Net-zero water and wastewater operations – Progressing (ahead of schedule)**

*Adopt a commitment and develop a plan to achieve net-zero water and wastewater operations by 2030.*

**Community Solar PV and Renewable Energy:** Halifax Water has continued to progress in their construction of on-site renewable energy as well as the purchase of clean electricity. Four solar PV projects with a combined capacity of 425 kW were successful in securing funding from the federal Investing in Canada Infrastructure Program in 2021. The first of these four projects will be operational by December 2022. Halifax Water submitted an Expression of Interest to procure approximately 60% of their electricity use, reducing 20,940 tonnes of CO<sub>2</sub>e per year, from the provincial Green Choice Program.

**Cogswell District Energy System:** In 2021-22, Halifax Water continued to advance the Cogswell District Energy project within the Cogswell Redevelopment Area in downtown Halifax. The project received funding from the federal Investing in Canada Infrastructure Program and the project was approved by Council in September 2021. Construction started in January 2022.

**Aerotech Biosolids Processing Facility:** The existing Aerotech Best Practices Framework will be upgraded by 2026 to enhance resource recovery through Renewable Natural Gas generation via anaerobic digestion, which will be produced at a rate of 80,000 GJ annually increasing to 140,000 GJ annually by 2046. Project milestones including the Request for Qualifications were completed in February 2022. Halifax Water was unsuccessful in this application to the federal Investing in Canada Infrastructure Program in 2021, however other sources of funding for this project are continuing to be explored.

Halifax Water is a strategic partner of HRM in climate action. For more information on their climate work in 2021-22, refer to p. 13 of the Council Report.

**Action 13.A – Climate informed water supply strategy in the municipal boundary – Progressing (ahead of schedule)**

*Develop a holistic water supply strategy with climate as its core focus.*

**Water Supply Plants and Water Supply Dams Risk and Vulnerability Assessment:** In alignment with Halifax Water's Climate Change Management Framework, this pilot program is the first climate change risk and vulnerability assessment to be conducted by Halifax Water. The key objectives of the pilot involved developing a climate change risk assessment methodology and testing this methodology through application on two target asset classes. The Risk Assessment report was reviewed and finalized in 2021-22, with plans to proceed to other asset classes in starting 2022-23.

**Safe Yield Study:** Halifax Water is seeking a better understanding of the safe yield of each water source for planning purposes. In 2021-22, Halifax Water worked on the first phase of this project, which included a review of available data, industry best practices, identification of data gaps and potential solutions to address these. This study will be moving into the development of a monitoring program to address data gaps in 2022-23, and future phases will include the completion of a safe yield study for each water source.

Halifax Water is a strategic partner of HRM in climate action. For more information on their climate work in 2021-22, refer to p. 13 of the Council Report.

**Action 14 - Climate informed stormwater management plan and program – Some progress**  
*Develop a holistic integrated stormwater management plan and program with climate as its core focus.*

**Stormwater Management Best Practices:** HRM staff are working with Halifax Water to establish standards and details for the construction and maintenance of stormwater management infrastructure in the public right-of-way. In 2021, HRM installed two pilot projects to test these approaches with the Prince Albert Road raingarden and the Spring Garden Road bio-retention cells. This work can help to remove stormwater volumes from combined stormwater and sanitary sewer systems, which in turn reduces the volume of water that reaches and is processed by treatment plants.

Additionally, Halifax Water, Transportation & Public Works, Planning & Development, and Environment & Climate Change are working to develop and maintain Stormwater Management Best Management Practice standards for use in the public right-of-way. Specifically, HRM is working with partners to identify additional pilot project sites to showcase best management practices, and is developing a public education campaign focused on actions that homeowners can take to reduce the impact of stormwater on their property (e.g. rain gardens, rain barrels, etc.).

## Critical Infrastructure and Services

HalifACT Actions	Intended Start Date	Core Area	Action Lead	Actively Supporting	Progress 2021-2022
<b>CRITICAL INFRASTRUCTURE AND SERVICES</b>					
15. HLRA for critical infrastructure in the municipality	2020	5	HRFE- Emergency Management	PFE-ECC, Halifax Water	
16. Risk and vulnerability analysis for critical infrastructure owned and operated by HRM	2020	5	PFE – Environment and Climate Change	HRFE-EM, P&D-IP, PFE-FDC, PW-PPAM, PW-DCS, FAM-AM	
17. Zero emissions back-up power in critical infrastructure	2026	--	PFE – Facility Design & Construction	--	<b>Future Action</b>
18.a Develop inspection procedures for high-risk infrastructure - transportation	2026	--	PW – Infrastructure Maintenance & Operations	--	<b>Future Action</b>
18.b Develop inspection procedures for high-risk infrastructure - buildings	2026	--	PFE – Facility Design and Construction	--	<b>Future Action</b>
19.a Updated and climate-informed design standards for new infrastructure - transportation	2022	1	PW – Design & Construction Services	PFE-ECC, P&D-IP	<b>Future Action</b>
19.b Updated and climate-informed	2022	1	PFE – Facility Design and Construction	PFE-ECC, P&D-IP	<b>Future Action</b>

design standards for new infrastructure - buildings					
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### Action 15 - High-Level Risk Assessment for critical infrastructure in the municipality – Minimal progress

*Conduct a High-Level Risk Assessment, with internal and external stakeholders, to assess the ability of critical infrastructure systems in the municipality to operate and withstand future climate and extreme weather.*

Action 15 is rated red for 2021-22 as minimal work on this action took place within the fiscal year. This area of work is accelerating in 2022-23 through increased staffing and resources from the 3-year (2022-2025) HalifACT Resource Plan.

**High-Level Risk Assessment Project:** The High-Level Risk Assessment (HLRA) project was kicked off in 2021 with the establishment of a joint project team with staff from Emergency Management and Environment & Climate Change. The team started work on identifying critical infrastructure in the region and the completion of community risk profiles through Joint Emergency Management volunteer teams. Moving forward, Environment & Climate Change is supporting Emergency Management to lead and complete a full HLRA with internal and external stakeholders (critical infrastructure owners and operators) to assess the ability of critical infrastructure systems as defined by Public Safety Canada (e.g., utilities, transportation, water, health facilities and telecoms) to operate in and withstand future climate and extreme weather, with a specific focus on understanding interdependencies between systems.

### Action 16 – Risk and Vulnerability Analysis for critical infrastructure owned and operated by HRM – Minimal progress

*Conduct a spatially-based risk and vulnerability analysis of HRM owned and operated critical infrastructure at the asset class and system level.*

Action 16 is rated red for 2021-22 as minimal work on this action took place within the fiscal year. This area of work is accelerating in 2022-23 through increased staffing and resources from the 3-year (2022-2025) HalifACT Resource Plan.

**Critical Infrastructure Prioritization Project:** HRM is working identify Critical Infrastructure throughout the municipality as defined by Public Safety Canada. As part of this, HRM is looking to assess the risk and vulnerability of HRM's owned and operated critical infrastructure and prioritize and increase resilience of infrastructure at greatest risk to current and future climate impacts. In Fall 2021, coordination around pluvial, fluvial and coastal flood hazard map procurement for all of HRM began and included meeting with technical staff, internal users, and regional modelling and flood hazard experts. Work also began to create a spatial inventory of municipally owned and operated critical infrastructure within HRM. Next steps for this project will include completing the Pluvial, Fluvial, and Coastal Flood Hazard Maps for all of HRM, creating spatial layers of wildfire and extreme heat hazards within the municipality, and conducting a multi-criteria evaluation to determine the priority of municipally owned and operated assets for CI resiliency funding in the 2023/24 fiscal.

## Natural Areas and Green Infrastructure

HalifACT Actions	Intended Start Date	Core Area	Action Lead	Actively Supporting	Progress 2021-2022
<b>NATURAL AREAS AND GREEN INFRASTRUCTURE</b>					
20.a Fund and implement Green Network Plan	2020	6	P&D – Regional Planning	PFE-ECC, P&R-SPD	Yellow
20.b Fund and implement Urban Forest Master Plan	2020	6	PW – Infrastructure Maintenance & Operations	--	Yellow
21. Implement region-wide naturalization program	2020	6	P&R – Strategic Planning & Design	PFE-ECC, PW-PPAM, PW-DCS, P&D-RP	Yellow
22. Implement region-wide tree planting and re-greening program	2020	6	PW – Infrastructure Maintenance & Operations	PFE-ECC, PW-PPAM, PW-DCS, P&R-SPD	Red

### Action 20.A – Fund and implement the Green Network Plan – **Some progress**

Of the 79 actions in the Halifax Green Network Plan, 5 have been completed, 24 are being used as guidance for municipal operations and decision-making, and 46 are in progress. Implementation of the Green Network Plan is anticipated to be on track to progress in the upcoming fiscal years, following the initial required background work for the Regional Plan Review.

Many GNP actions are being undertaken as part of the ongoing Regional Plan Review project. During 2021-22, the Regional Plan Review established key directions and undertook public engagement through the [Themes and Directions Report](#) (May 20, 2021) and the [What We Heard Report](#) (January 25, 2022). The Themes and Directions Report included a theme for “Enhancing Environmental Protection” which outlined how the Regional Plan Review process will adopt policy to consider the implementation of the Halifax Green Network Plan. The Regional Plan Review work plan will be phases, and GNP implementation will take place during all phases of this work. This work will include: establishing a framework for integrating the Green Network Plan into secondary planning and bylaw amendment processes (including the identification of important ecological areas and corridors); incorporating the Green Network Ecology Map into planning policy to help guide regional planning decisions; reviewing and revising regulations to protect wetland and riparian areas; and establishing policies to support the use of naturalization and green infrastructure during development.

### Action 20.B – Fund and implement the Urban Forest Master Plan – **Some progress**

Though the UFMP remained behind the targets set in the 2013 plan in 2021-22, a substantial amount of work took place during that year, noted below. The UFMP will be moving into a new phase starting in the 2022-23 fiscal year; a new iteration of the UFMP will be developed and managed, supported by new staffing and resources from the 3-year (2022-2025) HalifACT Resource Plan.

**Street Tree Planting and Maintenance:** In 2013, the Urban Forest Master Plan (UFMP) set out a street tree planting target for the following 10 years. The 2021 season saw the successful planting of 3100 caliper street trees under the UFMP planting program, one of the largest street tree planting efforts in HRM to date. Capital construction planted an additional 171 caliper street trees across all projects. In 2021, HRM staff also secured funding from Tree Canada to facilitate the replanting of street trees in Sheet Harbour. Since the adoption of the UFMP, 13,800 street trees have been planted, or 52% of the target. Into the 2022-23

year, capital funding was approved to achieve another significant planting year with the aims to achieve 75% of the original UFMP planting target.

HRM is conducting a multi-year project to collect inventory data for municipally owned street trees. HRM staff applied to a matching funds grant from the Federation of Canadian Municipalities (FCM) in 2021 to top up on approved municipal budget for this work, however the application was not reviewed in time for consideration in the 2021-22 season. Budgeted funds enabled two of three planned inventory districts to be completed in 2021-22. The FCM application will be considered again in 2022-23.

HRM also conducted cyclical pruning of ornamental trees in the city. The 2021-22 year saw a focus on more difficult areas of the city to prune (e.g. high traffic arterials, high traffic pedestrian locations). In total, 2300 mature trees were pruned under the cyclical program in 2021-22.

**Red Book “Tree Chapter”:** As part of the Municipal Design Guidelines (Red Book) updates, a new chapter was developed specific to supporting and maintaining street trees throughout HRM. In 2021, this chapter was approved by Council and published with the broader updated guidelines. The new standards, including updated planting specification for brownfield and greenfield developments, came into effect this fiscal. Urban Forestry staffed a Forestry Technician position to oversee development and capital construction related tree protection and planting to ensure better education and uptake, as well as compliance towards these new standards.

**Dalhousie University Research & Monitoring:** Initiated at the adoption of the UFMP, this partnership leverages resources and students to assist with monitoring of the street tree planting program as well as assisting with public educational & outreach, and various other research initiatives related to the urban forest and to naturalization. In 2021-22, four interns were staffed through a MITACS Accelerate Grant to support this work.

**Urban Forestry Field School Sessions:** A consortium of academic institutions, including Dalhousie University, hosted a one-week field school in Urban Forestry in 2021. HRM was signatory to the application for funding for this initiative, participated in the curriculum development and hosting of this field school, and delivered virtual and field sessions on Urban Forestry from a municipal perspective.

### Action 21 – Region-wide naturalization program – Some Progress

*Continue the naturalization program through pilot project, public education and awareness to support the development of region-wide naturalization programming.*

Action 21 is accelerating in the 2022-23 year, with the inclusion of a key deliverable to begin expansion of the naturalization pilot into a region-wide program in the Parks & Recreation 2022-23 Business Plan. Staff presented a [report](#) on the HRM Naturalization Strategy to Council on July 7, 2022.

**Naturalization Pilot Program:** As a step in the development of a broader naturalization program in 2021, pilot sites were selected and developed at Merv Sullivan Park and at Leighton Dillman Park to improve habitat for birds and pollinators. In addition, sections of felled urban trees at Merv Sullivan Park were repurposed into natural log seating.

### Action 22 – Implement region-wide tree planting program – Minimal progress

*With partners, develop and implement a region-wide tree planting and re-greening program.*

Actions 22 is rated red for 2021-22 as minimal work on this action took place within the fiscal year. Work to develop a pilot tree planting program for private property, and to assign a project team to the full action, is taking place in the 2022-23 fiscal year.

## Planning

HalifACT Actions	Intended Start Date	Core Area	Action Lead	Actively Supporting	Progress 2021-2022
<b>PLANNING</b>					
23. Integrate climate into land-use planning	2022	E	P&D – Regional Planning	PFE-ECC, P&R-SPD	
24. Planning policy to enable district energy and microgrids	2024	--	P&D – Regional Planning	PFE-ECC, PFE-FCD	<b>Future Action</b>
25. Land protection and conservation on private lands	2020	6	P&D – Regional Planning	PFE-ECC, P&R-SPD	
26. Preservation of natural areas	2020	6	P&D – Regional Planning	PFE-ECC, P&R-SPD	

### Action 23 – Integrate climate into land-use planning – **Some progress**

*Integrate climate into land use planning policies and processes to reduce the upward trend of emissions associated with growth, and ensure it is more resilient to the impacts of climate change.*

As described under Action 20.A above, the Regional Plan Review process is on-going. The work will include text amendments to the Regional Plan that will require the objectives, policies, and actions of priority plans, such as the Halifax Green Network Plan, HalifACT, and Integrated Mobility Plan, to be considered during planning policy amendment processes. These amendments will provide more opportunity for the consideration of protecting areas of environmental significance, wildlife corridors, wetlands and watercourses, green infrastructure, and climate mitigation and adaptation design within the planning process.

### Action 25 – Land protection and conservation on private lands – **Some progress**

*Increase land protection and conservation on private lands through partnerships, collaboration, and municipal planning requirements.*

Actions 25 is linked to the Green Network Plan, which will be integrated into secondary planning and bylaw amendment processes during Phase 4 of the Regional Plan Review. HRM was in Phase 2 during the 2021-22 fiscal year. See Action 20.A for more details.

### Action 26 – Preservations of natural areas and green space planning – **Some progress**

*Prioritize the protection and expansion of green spaces through land use planning policies and mechanisms.*

Actions 26 is linked to the Green Network Plan, which will be integrated into secondary planning and bylaw amendment processes during Phase 4 of the Regional Plan Review. HRM was in Phase 2 during the 2021-22 fiscal year; see Action 20.A for more details. The projects listed below are led by the Environment & Climate Change team.

**Wetland Inventory and Prioritization:** In 2021, HRM continued working with Ducks Unlimited Canada (DUC) to functionally assess wetlands in HRM using the Wetland Ecosystem Services Protocol (WESP). DUC staff assessed ~35 wetlands and presented results to HRM staff in fall 2021. The information on priority wetlands and wetland function will be used to inform wetland policy in the Regional Plan Review process. In early 2022, HRM staff convened a Wetland Working Group with representatives from external NGO stakeholders, Nova Scotia Environment and Climate Change, and the NS Department of Natural

Resources and Renewables. The Working Group is a forum to discuss best practices and ideas to more effectively conserve wetlands in HRM.

**Municipal Natural Assets Inventory Project:** The Municipal Natural Assets Inventory (MNAI) project is led by Environment & Climate Change and is a partnership with staff from Asset Management, Regional Planning, Infrastructure Planning and Parks & Recreation. This inventory is the foundation for embarking on natural asset management, which includes valuations, modelling, planning, and implementation. The MNAI project represents an opportunity for the municipality to work towards including natural asset management into our decision-making, an important step towards implementing and supporting our climate plan, HalifACT. In 2021, HRM staff worked with MNAI to complete a natural asset inventory for HRM and public-facing online dashboard. The dashboard and inventory report were posted on the HRM website in October 2021; HRM started to meet with MNAI staff in winter 2022 to begin scoping the implementation of this project.

## Coastal Preparedness

HalifACT Actions	Intended Start Date	Core Area	Action Lead	Actively Supporting	Progress 2021-2022
<b>COASTAL PREPAREDNESS</b>					
27. Detailed coastal risk and vulnerability analysis	2020	5	PFE – Environment and Climate Change	--	On Track
28. Develop coastal adaptation strategy	2024	--	PFE – Environment and Climate Change	HRFE-EM	Future Action

### Action 27 – Detailed coastal risk and vulnerability analysis – **Some progress**

*Conduct a detailed spatially-based risk and vulnerability analysis of Halifax's coastal, waterfront and shoreline areas.*

**Coastal Extreme Water Level Mapping:** With federal funding through the National Disaster Mitigation Program, Halifax acquired high-resolution LiDAR and associated digital elevation models (DEMs) for the entire municipality in 2018-2020, which are available on Halifax Open Data. In 2021-22 HRM worked with CBCL to update the Extreme Water Level projections for the whole municipality and included the most recent scientific data from the new Intergovernmental Panel on Climate Change report on climate science that was released in August 2021. Consultants presented findings to over 30 internal staff in March 2022, and staff will be working to integrate Extreme Water Level projections into the HRM Regional Plan.

**Flood Hazard Mapping:** As part of the Critical Infrastructure Prioritization Project, coordination around pluvial, fluvial and coastal flood hazard map procurement for all of HRM began in Fall 2021 and included meeting with technical staff, internal users, and regional modelling and flood hazard experts. Digital elevation and surface models that will inform mapping were created and are available on Halifax Open Data along with LiDAR data. Comprehensive pluvial, fluvial, and coastal flood hazard maps under multiple climate scenarios and planning horizons will support the completion of a coastal vulnerability analysis for HRM.

The Province of Nova Scotia opened up public consultation on the proposed Coastal Protection Act regulation considerations on July 15th, 2021. HRM staff worked across Business Units to provide over 22 pages of detailed recommendations, questions, and feedback that will inform the development of the detailed regulations, which will be integrated into HRM's municipal planning policies.

## Emergency Management

HalifACT Actions	Intended Start Date	Core Area	Action Lead	Actively Supporting	Progress 2021-2022
<b>EMERGENCY MANAGEMENT</b>					
29. Integrate climate into emergency planning	2020	7	HRFE – Emergency Management	--	Red
30. Improve emergency management communication and coordination	2020	7	HRFE – Emergency Management	CAO-GREA, CAO-Public Safety	Yellow

### Action 29 – Integrate climate into emergency management planning – Minimal progress

*Integrate climate into emergency management planning, including:*

- Systematic, transparent and up-to-date plans for emergency management that incorporate climate considerations;
- Integration of climate risk and vulnerability mapping;
- Development of a registration system for individuals who need help;
- Development of a heat response plan
- Development of evacuation plans for flooding, wildfire and coastal storm surge;
- Review of HRM's ability to provide for the needs of extreme event evacuees;
- Update Community Emergency Response Training to incorporate climate-change hazards.

Actions 29 is rated red for 2021-22 since it is preceded by the need to complete local climate hazard mapping (led by the Environment & Climate Change team) and to update HRM's Hazard Risk Vulnerability Assessment (led by Emergency Management). These foundational pieces of work will provide local information on climate risks and on vulnerabilities within HRM, which in turn will be used to develop various response plans related to climate-related emergencies. Work to update the HRVA and to develop local climate hazard mapping was included in the 2022-23 Business Plans for Halifax Regional Fire & Emergency and for Property, Fleet and Environment, respectively. This work is being supported by increased staffing and resources from the 3-year (2022-2025) HalifACT Resource Plan.

While the foundational work is taking place in 2022-23, Emergency Management made progress on initiatives in 2021-22 that tie climate change into emergency management planning. This included work to develop an Interface Wildfire Preparedness Strategy and the reinvigoration of Joint Emergency Management teams across Halifax.

### Action 30 – Improve emergency management communication and coordination - Some progress

*Improve emergency management communication and coordination, including:*

- Convening a coalition of emergency, social service and health agencies to identify gaps and needs for service delivery and improve communications and coordination
- Develop new internal and external institutional alliances to increase resiliency;
- Improve communications with general public around extreme weather events;
- Ensure back-up for communication systems.

Action 30 is accelerating in the 2022-23 year, with the inclusion of a strategic initiative on emergency management coordination and communication in the Halifax Regional Fire & Emergency 2022-23 Business Plan.

**Storm Kits for Newcomers:** In partnership with the Halifax Public Libraries, HRM launched a pilot project in 2021 to support newcomers to Canada in learning about and preparing for extreme weather and the impacts of climate change in Nova Scotia. The pilot included storm kits for 10 families with emergency supplies (flashlights, thermal blankets, duct tape etc.), a list of emergency phone numbers, and an informative brochure. All written and spoken content was available in English and Arabic. Kits were distributed to families by team members at libraries. Participants in the program saw great value, and the pilot will be expanding to a larger program in 2022-23.

## Community Capacity

HalifACT Actions	Intended Start Date	Core Area	Action Lead	Actively Supporting	Progress 2021-2022
<b>COMMUNITY CAPACITY</b>					
31. Neighbourhood resilience and disaster support hubs	2020	7	HRFE – Emergency Management	PFE-ECC	Red
32. Widely available emergency management training	2020	7	HRFE – Emergency Management	--	Yellow
33. Undertake neighbourhood climate planning	2024	--	PFE – Environment and Climate Change	HRFE-EM, CAO-DI	Future Action
34. Broad, deep, and collaborative engagement	2020	E	PFE – Environment and Climate Change	---	Yellow

### Action 31 – Neighborhood resilience and disaster support hubs - **Minimal progress**

*Create Disaster Support Hubs or Community Resilience Hubs for community self-sufficiency.*

Actions 31 is rated red for 2021-22 as minimal work on this action took place within the fiscal year. This area of work is accelerating in 2022-23 following the approval in January 2022 of an Emergency Management Technology Roadmap, which is allowing multiple new projects associated with HalifACT that are dependent on technology to move forward starting in 2022-23. This includes the installation of generators at communities centres such as Dartmouth North, Lake Echo and East Preston. Projects in 2022-23 also include the of SATURN (Situational Awareness software) for use during emergency responses and as a planning tool for emergency preparedness including location of critical infrastructure, comfort centres, road closures, and more.

### Action 32 – Widely available emergency management training - **Some progress**

*Train local residents to plan for and respond to emergencies through making emergency management and CERT training widely available to residents and businesses.*

**Emergency Management Training:** In 2021-22, Emergency Management continued to offer training to elected officials, senior management and the municipality's solicitors. Presentations were offered and provided to external stakeholders.

**Joint Emergency Management Teams:** In 2021-22, Emergency Management worked to reestablish community Joint Emergency Management (JEM) teams. These teams met more regularly and received increased budgets, while new JEM team boundaries were drawn and expanding residential areas were added to the roster of JEM team needs across the city.

**Action 34 – Broad, deep and collaborative engagement - Some progress**

*Work purposefully, meaningfully and collaboratively with Mi'kmaq and Indigenous community leaders, African Nova Scotian communities, and marginalized communities in Halifax on the continued development and implementation of HalifACT.*

Action 34 is accelerating in the 2022-23 year with an increase in staffing focused on building partnerships and engagement on HalifACT in the broader community with a focus on equity.

**Science Literacy Week 2021:** Science Literacy Week showcases the many ways kids and families can explore and enjoy science. In September 2021, the theme was "C for Climate". HRM staff, in collaboration with Halifax Public Libraries, developed a Climate Bingo Card, shared fact sheets about how to prepare for extreme climate events in the municipality, and other infographics and activity books.

**HalifACT 1<sup>st</sup> Birthday:** On June 23rd, 2021 HalifACT celebrated one year of implementation. To celebrate all of the work accomplished by community and staff, HRM staff created a social media campaign around HalifACT and launched the "Celebrate HalifACT: Youth Climate Art Contest". Over a dozen young artists from ages 5-18 submitted their creative interpretation of the climate crisis in Halifax Regional Municipality and climate action.

**Flood Risk Challenge Game:** HRM partnered with researchers at the University of Waterloo to host a Flood Risk Challenge Game for flood risk management decision makers throughout the municipality. The Flood Risk Challenge Game was hosted in April 2021 and brought together over 10 participants who operate in HRM's flood risk management sector including: youth, academics, municipal and provincial employees and non-profit organizations.

**HalifACT Presentations:** As part of broad engagement, the Environment & Climate Change Team have developed and delivered many presentations and lectures to academia, professional organizations, non-profits, different levels of government, community organizations and youth, in an effort to educate on HalifACT and the associated targets. Among others, staff delivered engagement presentations in 2021-22 to students at St Mary's University and at Dalhousie University.

## Food

HalifACT Actions	Intended Start Date	Core Area	Action Lead	Actively Supporting	Progress 2021-2022
<b>FOOD</b>					
35. Improve food security and food-systems resilience	2020	7	CAO – Government Relations	--	

**Action 35 – Improve food security and food-systems resilience - Progressing**

*Fund and implement a Food Action Plan, including climate as a core component.*

**JustFOOD Project:** [JustFOOD](#) is a project that is being co-led by HRM and the Halifax Food Policy Alliance. It is a food action plan that is working towards a vision of Halifax Regional Municipality where no one is hungry, where food and people are celebrated, where the local food economy is strong and the environment is protected for generations to come. The Steering Committee is comprised by the Ecology Action Centre as co-chair, Nova Scotia Health Authority (on hiatus due to COVID response), Schulich School of Law, FeedNS, the Nova Scotia Federation of Agriculture and ReachABILITY. In 2021-22, the JustFOOD team hosted virtual workshops to increase the awareness of the project, test the project framework and generate ideas for action with over 200 people working in the Halifax region's local food system. The JustFOOD website was launched in summer 2021 and engagement support toolkits were prepared for partners to host their own engagements. Over 500 *Food for Thought* dinner kits were distributed in 2021 for groups of 6-8 to come together and share a meal and conversation on ideas for food

system resiliency. In addition, the JustFOOD team launched a survey for distribution with partners, hosted public engagement and targeted engagements.

HRM's Environment & Climate Change staff have been providing subject matter expertise into the project so that the plan considers future climate impacts. In 2021, HRM staff developed a Climate-Food Position Paper to explore the connection between climate and food in the region.

## Mainstreaming Climate into Municipal Operations

HalifACT Actions	Intended Start Date	Core Area	Action Lead	Actively Supporting	Progress 2021-2022
<b>MAINSTREAMING CLIMATE INTO MUNICIPAL OPERATIONS</b>					
38. Integrate climate into financial decision-making	2020	E	FAM – Financial Policy & Planning	PFE-ECC	
39. Establish new mechanisms for financing climate action	2020	E	FAM – Financial Policy & Planning	PFE-ECC	
40. Green municipal investments	2020	E	FAM – Financial Policy & Planning	PFE-ECC	

### Action 38 – Integrate climate into financial decision-making - Some progress

*Integrate climate into municipal financial decision-making through:*

- *Climate-related financial disclosures;*
- *Cost of carbon and social cost of carbon in financial analysis, capital and business planning;*
- *Municipal carbon budget;*
- *Climate lens on capital planning;*
- *Financial impacts of climate risks and emissions in asset management and service delivery.*

Progress on Action 38 is accelerating in the 2022-23 year with an increase in staffing and resources focused on integrating climate into financial decision-making, in part from the 3-year (2022-2025) HalifACT Resource Plan.

**Capital Budget – Project Evaluation Framework:** As of 2020, climate change has been included as a category for consideration under the HRM Capital Project Evaluation Framework. In 2021-22, a “collaboration checklist” was added for all capital project submissions to promote project collaboration at the scoping and design review stages with the Environment & Climate Change team in relation to HalifACT targets.

**HRM Consolidated Financial Statements:** HRM staff have been monitoring international accounting standards for potential incorporation of environmental measures in HRM's consolidated financial statements.

**Asset Management Policy:** HRM staff have been working to incorporate environment and climate change considerations into the draft HRM Asset Management Policy, which includes work on the Municipal Natural Assets Initiative (noted under Action #26).

**Climate Liability:** In 2021-22, HRM began working with legal staff representatives to gain better insight into the municipal liability around climate inaction, climate hazard data sharing, and planning and permitting approaches as climate impacts increase.

**Business Planning:** To enhance the visibility of HalifACT-related actions, each business unit annual plan and presentation to Council now highlights deliverables in support of HalifACT's Core Areas.

### Action 39 – New mechanisms for financing climate action - Some progress

*Explore and establish new mechanisms for financing climate action, including private sources of finance.*

Action 39 is accelerating in the 2022-23 year with an increase in staffing focused on sustainable finance and with the inclusion of a HalifACT 30-year sustainable financing strategy as a strategic initiative in the Finance & Asset Management Business Plan for 2022-23. HRM staff brought forward a proposal to collect a Climate Action Tax on property, which was voted on and approved by Council during the 2022-23 budget deliberations and will contribute to financing HalifACT starting in 2022-23.

**HalifACT Strategic Initiative Funding:** HRM is working to create a Strategic Initiative (SI) reserve for transformational projects and programs of the municipality that contribute towards Council priorities, including strategic initiatives of HalifACT. In 2021-22, \$10 million was approved by Council as initial funding to the SI reserve from 2021-22 funds to support municipal fleet electrification, critical municipal infrastructure adaptation, and deep energy retrofits of municipal buildings.

**Private Sector Financing Opportunities:** HRM staff are looking into ways that the full scale of HalifACT actions can be funded, which is pivotal on being able to leverage private funding. In 2021-22, discussions with private lenders began around the innovative financing study awarded to Dunskey Consulting for the full-suite R3 residential retrofit program development (Action #2).

### Action 40 – Green municipal investments - Some progress

*Incorporate Environmental, Social, Governance (ESG) principles, specifically as they relate to climate, into management of HRM's municipal funds.*

In 2021-22, staff were assigned and have a plan in place to establish ESG standards for municipal investments. This work is accelerating and on target to be completed in 2022/23, at which time the analysis and recommendations will be presented to the Investment Policy Advisory Committee.

## Governance and Capacity

HalifACT Actions	Intended Start Date	Core Area	Action Lead	Actively Supporting	Progress 2021-2022
<b>GOVERNANCE AND CAPACITY</b>					
41. Establish a central Climate Change Office	2020	E	CAO – Government Relations		Yellow
42. Increase staff capacity for implementation	2020	E	CAO – Government Relations	PFE-ECC, HRCC	Green

### Action 41 – Establish a central Climate Change Office - Some progress

*Establish a central Climate Office, that reports directly to the CAO, with a distributed network of coordinated support.*

In 2021-22, the Environment & Climate Change team was moved from the Infrastructure Planning division in Planning & Development to become its own division in the reorganized Business Unit of Property, Fleet and Environment. This move allowed the ECC team to engage in more direct reporting and connection with senior leadership during the 2022-23 fiscal year. A governance model has been developed and will be proposed for adoption by the Senior Leadership Team in fall 2022.

**Action 42 – Increase staff capacity for implementation - Progressing**

*Significantly increase staff capacity for implementation.*

Six positions were approved as part of the operating budget in 2021-22 for the purposes of implementing HalifACT. Four of the positions were filled during this time, while the remaining two were held back by Planning & Development. The four new positions include:

1. Manager, Community Energy
2. Environment Specialist
3. Climate Change Specialist – Mainstreaming & Change Management
4. Climate Change Specialist - Adaptation

The two positions with Infrastructure Planning have yet to be filled but have been consolidated into one Program Engineer position to focus on standards for resilient linear infrastructure.

More staffing is required as outlined in the 3-year HalifACT Resource Plan, which calls for an increase in 25 staff within the team and throughout the organization over the period of 2022 to 2025.

## Monitoring and Reporting

HalifACT Actions	Intended Start Date	Core Area	Action Lead	Actively Supporting	Progress 2021-2022
<b>MONITORING AND REPORTING</b>					
43. Annual Indicators Report	2020	E	PFE – Environment and Climate Change	All BUS	

**Action 43 – Annual Indicators Report – Some progress**

*Develop an Annual Indicators Report and report annually.*

**HalifACT Annual Progress Report:** In 2021-22, staff developed and delivered the first HalifACT Annual Progress Report, which was presented to Council in December 2021 for the period of June 2020 to March 2021. A process was developed for collecting progress updates from Business Units which was adapted in late 2021 to be used for the second annual report (this Council report). Moving forward, HRM staff will be looking into ways that reporting can be further facilitated and streamlined to track progress based on KPIs.

**Strategic Performance Reporting:** The municipality's public facing [Strategic Performance Snapshot](#) contains numerous environment-related metrics that allow residents to track progress on key indicators of performance for Council's Environment Priority Area and the associated Priority Outcomes of Net-Zero Emissions, Climate Resilience, and Protected & Sustainable Environment.

## Carbon Accounting

HalifACT Actions	Intended Start Date	Core Area	Action Lead	Actively Supporting	Progress 2021-2022
<b>CARBON ACCOUNTING</b>					
43. Carbon offsets framework	2024	--	PFE – Environment and Climate Change	FAM	<b>Future Action</b>
44. Consumption-based emissions inventory	2026	--	PFE – Environment and Climate Change	FAM	<b>Future Action</b>
45. Include embodied carbon in new construction standards	2026	--	P&D – Buildings and Compliance	--	<b>Future Action</b>

## Attachment B - HalifACT Report Card 2021-22 (Summary)

#	HalifACT Actions	Intended Start Date	Core Area	Action Lead	Actively Supporting	Progress 2021-2022
<b>EFFICIENT BUILDINGS</b>						
1	Net-zero & climate resilient new construction	2020	4	P&D – Buildings and Compliance	PFE-ECC	
2	Residential and non-residential deep retrofit program	2020	1	PFE – Environment & Climate Change	--	
3	Industrial coalition and support program	2026	--	PFE – Environment & Climate Change	CAO-GREA	<b>Future Action</b>
<b>RENEWABLE ENERGY</b>						
4	Rooftop solar PV and energy storage program	2020	1	PFE – Environment and Climate Change	--	
5	Community scale solar PV and wind generation	2020	--	PFE – Environment and Climate Change	--	
6	Create coalition to expand and decarbonize district energy systems	2026	--	PFE – Corporate Facility Design & Construction	PFE-ECC, CAO-GREA	<b>Future Action</b>
7	Advocate and support provincial electricity grid decarbonization	2022	--	PFE – Environment and Climate Change	CAO-GREA	
<b>DECARBONIZING TRANSPORTATION</b>						
8A	Expand transit infrastructure	2020	3	Halifax Transit – Planning & Customer Engagement	P&D-IP, PW-DCS, PFE-CRE	
8B	Expand active transportation infrastructure	2020	3	PW – Project Planning & Asset Management	P&D-IP, PW-DCS	
9	Community-wide EV strategy	2024	3	PFE – Environment and Climate Change	PFE-CF, PW-PS	
10	EV planning and policy	2020	3	P&D – Regional Planning	PFE-ECC	

GREENING GOVERNMENT OPERATIONS							
11A	Net-zero municipal operations – municipal buildings and fleet	2022	2	PFE – Facility Design & Construction, Corporate Fleet	PFE-ECC		
11B	Net-zero municipal operations – transit	2022	2	Halifax Transit-Planning & Customer Engagement	PFE-ECC		
11C	Net-zero municipal operations – solid waste	2022	2	PW – Solid Waste	PFE-ECC		
WATER							
12	Net-zero water and wastewater operations	2024	--	Halifax Water	P&D-IP		
13A	Climate-informed water supply strategy – municipal service boundary	2024	--	Halifax Water	PFE-ECC		
13B	Climate-informed water supply strategy - outside service boundary	2024	--	PFE – Environment and Climate Change	--	Future Action	
14	Climate-informed stormwater management plan and program	2020	5	P&D – Infrastructure Planning	PFE-ECC, Halifax Water		
CRITICAL INFRASTRUCTURE AND SERVICES							
15	High-level risk assessment for critical infrastructure	2020	5	HRFE – Emergency Management	PFE-ECC, Halifax Water		
16	HRM critical infrastructure risk and vulnerability analysis	2020	5	PFE – Environment and Climate Change	P&D-IP, PFE-FDC, PW-PPAM, PW-DCS, HRFE-EM, FAM-AM		
17	Zero emissions back-up power in critical infrastructure	2026	--	PFE – Facility Design & Construction	--	Future Action	
18A	Develop inspection procedures for high-risk infrastructure - transportation	2026	--	PW – Infrastructure Maintenance & Operations	--	Future Action	

18B	Develop inspection procedures for high-risk infrastructure - buildings	2026	--	PFE – Facility Design and Construction	--	<b>Future Action</b>
19A	Updated and climate-informed design standards for new infrastructure - transportation	2022	1	PW – Design & Construction Services	PFE-ECC, P&D-IP	<b>Future Action</b>
19B	Updated and climate-informed design standards for new infrastructure - buildings	2022	1	PFE – Facility Design and Construction	PFE-ECC, P&D-IP	<b>Future Action</b>
<b>NATURAL AREAS AND GREEN INFRASTRUCTURE</b>						
20A	Fund and implement Green Network Plan	2020	6	P&D – Regional Planning	PFE-ECC, P&R-SPD	
20B	Fund and implement Urban Forest Master Plan	2020	6	PW – Infrastructure Maintenance & Operations	--	
21	Implement region-wide naturalization program	2020	6	P&R – Strategic Planning & Design	PFE-ECC, PW-PPAM, PW-DCS, P&D-RP	
22	Implement region-wide tree planting and re-greening program	2020	6	PW – Infrastructure Maintenance & Operations	PFE-ECC, PW-PPAM, PW-DCS, P&R-SPD	
<b>PLANNING</b>						
23	Integrate climate into land-use planning	2022	--	P&D – Regional Planning	PFE-ECC, P&R-SPD	
24	Planning policy to enable district energy and microgrids	2024	--	P&D – Regional Planning	PFE-ECC, PFE-FCD	<b>Future Action</b>
25	Land protection and conservation on private lands	2020	6	P&D – Regional Planning	PFE-ECC, P&R-SPD	
26	Preservation of natural areas	2020	6	P&D – Regional Planning	PFE-ECC, P&R-SPD	
<b>COASTAL PREPAREDNESS</b>						
27	Detailed coastal risk and vulnerability analysis	2020	5	PFE – Environment and Climate Change	--	
28	Develop coastal adaptation strategy	2024	--	PFE – Environment and Climate Change	HRFE-EM	<b>Future Action</b>

<b>EMERGENCY MANAGEMENT</b>						
29	Integrate climate into emergency planning	2020	7	HRFE – Emergency Management	--	
30	Improve emergency management communication and coordination	2020	7	HRFE – Emergency Management	CAO-GREA, CAO-Public Safety	
<b>COMMUNITY CAPACITY</b>						
31	Neighbourhood resilience and disaster support hubs	2020	7	HRFE – Emergency Management	PFE-ECC	
32	Widely available emergency management training	2020	7	HRFE – Emergency Management	--	
33	Undertake neighbourhood climate planning	2024	--	PFE – Environment and Climate Change	HRFE-EM, CAO-DI	<b>Future Action</b>
34	Broad, deep, and collaborative engagement	2020	E	PFE – Environment and Climate Change	--	
<b>FOOD</b>						
35	Improve food security and food-systems resilience	2020	7	CAO – Government Relations	--	
<b>BUSINESS AND ECONOMY</b>						
36	Workforce and technology development for building decarbonization and resilience	2024	--	PFE – Environment and Climate Change	CAO-GREA	<b>Future Action</b>
37	Resilient decarbonized business program	2026	--	PFE – Environment and Climate Change	CAO-GREA	<b>Future Action</b>
<b>MAINSTREAMING CLIMATE INTO MUNICIPAL OPERATIONS</b>						
38	Integrate climate into financial decision-making	2020	E	FAM – Financial Policy & Planning	PFE-ECC	
39	Establish new mechanisms for financing climate action	2020	E	FAM – Financial Policy & Planning	PFE-ECC	
40	Green municipal investments	2020	E	FAM – Financial Policy & Planning	PFE-ECC	

<b>GOVERNANCE AND CAPACITY</b>						
41	Establish a central Climate Change Office	2020	E	CAO – Government Relations	--	Yellow
42	Increase staff capacity for implementation	2020	E	CAO – Government Relations	PFE-ECC, HRCC	Green
<b>MONITORING AND REPORTING</b>						
43	Annual Indicators Report	2020	E	PFE – Environment and Climate Change	All BUs	Yellow
<b>CARBON ACCOUNTING</b>						
44	Carbon offsets framework	2024	--	PFE – Environment and Climate Change	FAM	<b>Future Action</b>
45	Consumption-based emissions inventory	2026	--	PFE – Environment and Climate Change	FAM	<b>Future Action</b>
46	Include embodied carbon in new construction standards	2026	--	P&D – Buildings and Compliance	--	<b>Future Action</b>