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**REPORT TITLE: 2020-2030 Climate Change Master Plan: 2020 Annual Progress Report**

**FROM: Kathryn Lockyer, Interim Commissioner of Corporate Services**

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## **RECOMMENDATION**

**That the Region of Peel advocate to the Premier of Ontario, the Minister of the Environment, Conservation and Parks and the Minister of Energy, Northern Development and Mines to set the legislative and policy framework to phase-out all fossil natural gas-fired electricity generation as soon as possible;**

**And further, that the Minister of Energy, Northern Development and Mines be requested to provide Ministerial directives to the Ontario Energy Board and Independent Electricity System Operator to assist in the development of a plan to phase out fossil natural gas-fired electricity generation in the Province while meeting Ontario's electricity needs reliably, competitively, transparently, efficiently and at lowest cost;**

**And further, that copies of this resolution be sent to the City of Mississauga, City of Brampton, Town of Caledon and Peel-area MPPs for their awareness and support.**

## **REPORT HIGHLIGHTS**

- The 2020 Annual Climate Change Master Plan (CCMP) Progress Report found that action must accelerate to achieve the majority of the Region's CCMP 2030 outcomes.
  - Globally, 2020 tied 2016 as the hottest year on record.
  - The Region's most recent corporate greenhouse gas (GHG) emissions inventory (2018) was 8 per cent higher than 2017.
  - The Region's GHG emissions associated with electricity use increased 59 per cent from 2017 to 2018, primarily due to increased natural gas fueled generation in Ontario.
  - Despite notable accomplishments in 2020, the Region is not on track to achieve the 2030 Reduce GHG Emissions target.
  - The Region is achieving scheduled milestones with regards to the CCMP's 2030 Be Prepared outcome.
  - Next steps include:
    - Develop Tiered Net Zero Emissions New Construction standards for Regional buildings;
    - Advance beyond the planning and in-progress stages for on CCMP Phase 1 priorities including Pacesetter Projects, Climate Change Risk Assessment Tool, Energy and Emissions Management Plans, Climate Change Engagement Strategy, and Climate Change Financing Strategy; and,
    - Continue implementing the CCMP, monitor action outputs and report back to Council on Progress in 2022.
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### DISCUSSION

#### 1. Context

Earth's average surface temperature in 2020 tied 2016 as the warmest year on record<sup>i</sup>. The Planet saw record breaking floods<sup>ii</sup>, super cyclones<sup>iii</sup>, rainforest and wetland fires<sup>iv</sup>, and a historic hurricane season<sup>v</sup> in the Atlantic. 2020 was 1.2°C warmer than the late 1800s and experts project the dangerous 1.5°C threshold of warming may be exceeded this decade<sup>vi</sup>. Climate projections for the Region of Peel indicate that this trend will continue<sup>vii</sup>. Insurable losses in Canada reached \$2.5 billion, making 2020 the fourth-worst year for insurable claims since record-keeping began in 1983<sup>viii</sup>.

Eight heat events<sup>ix</sup> occurred in the Region of Peel in 2020, spanning a total of 26 days. This included a nine-day extended event in early July, which is the longest duration observed in the community since Ontario's Harmonized Heat Warning Information System was established in 2015. The combination of heat during the daytime and nighttime causes significant increases in heat-related morbidity and mortality. This is because there is no break from the heat, which is important for allowing the body to cool off. Prolonged exposure to hotter weather is of particular concern for vulnerable residents with limited support systems and access to cooling stations or air-conditioned spaces, a concern heightened during the health pandemic.

In 2020, the world experienced tragic climate disasters that were felt most significantly by vulnerable local populations. However, momentum on climate action is greater now than ever before. Canada's updated climate plan "A Healthy Environment and a Healthy Economy"<sup>x</sup>, the newly appointed US Biden-Harris administration<sup>xi</sup>, Fridays for the Future<sup>xii</sup> youth advocacy, fossil fuel divestment<sup>xiii</sup> by corporations and investors, and a doubling of net-zero carbon pledges from businesses and local governments<sup>xiv</sup> are important signals of significant socio-economic and political change. These changes affect the Region and should be accounted for in decisions on how and how quickly the Region of Peel transforms into a low carbon and resilient community.

Many Regional employees were redeployed in 2020 to address immediate community and organizational needs due to the COVID-19 pandemic. This impacted progress on regional climate action; however, the Region's evolving response to the COVID-19 pandemic is a clear demonstration of resilience, steadfast leadership and workforce determination to pivot, adapt, and serve the community in an emergency. The health pandemic also revealed that devastating impacts were not experienced evenly across individuals, communities or businesses; and underlying social inequities contributed to serious issues of disease transmission. Climate change will also disproportionately affect Peel residents and those with lower socioeconomic or health status will bear the brunt of any climate-related emergencies. Applying the lessons learned from the health crisis to the climate response is necessary to meet the Region's climate change goals and contribute to a stabilized, healthy and safe planet that leaves no one behind. Going forward with a strong vision for recovery, in January 2021, Regional Council endorsed the Federation of Canadian Municipalities' recommendations for a green, inclusive, and resilient economic recovery (Resolution 2021-22.1). Implementing the Region's Climate Change Master Plan will enable the Region to build back better together.

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### 2. Background

On October 24, 2019, Regional Council declared a climate emergency and approved the 2020-2030 Climate Change Master Plan (CCMP) for the Region to lead through climate action and influence the change needed to transform the community into a low carbon, resilient, equitable, healthy, prosperous, and secure place to live and work in the future. This report provides the first annual progress update of CCMP implementation as required by Resolution 2019-971.

The Primary Outcomes of the CCMP are:

- Reduce GHG Emissions: Corporate greenhouse gas emissions are reduced by 45 per cent by 2030 relative to 2010 levels.
- Be Prepared: A safe, secure, and connected community is provided by ensuring Regional services and assets are more resilient to extreme weather events and future climate conditions.

To achieve these Primary Outcomes, the Region also needs to achieve the Enabling Outcomes to Build Capacity, Invest, and Monitor and Report.

### 3. 2020 Climate Change Master Plan Progress Updates

In-year 2020 accomplishments gauged progress towards the outputs of CCMP actions. Reporting on performance using Key Performance Indicators (KPIs) to measure the impact of cumulative or multi-year work and investment on CCMP outcomes will be completed in the longer term and against a defined target, as appropriate; however, the KPI for Reduce GHG Emissions is available as annual GHG inventories and are measured as shown in section 3b). Progress updates discussed in this report primarily relate to the CCMP Phase 1 (2020 – 2023) priority work as follows:

- Net Zero Emissions Building Pilots (referred to as “Pacesetters”);
- Climate Change Risk Assessment;
- Updated Service Level Operational Plans;
- Financing Strategy; and,
- Engagement Strategy.

Progress updates on all CCMP actions, beyond Phase 1 work, are described in more detail in Appendix I.

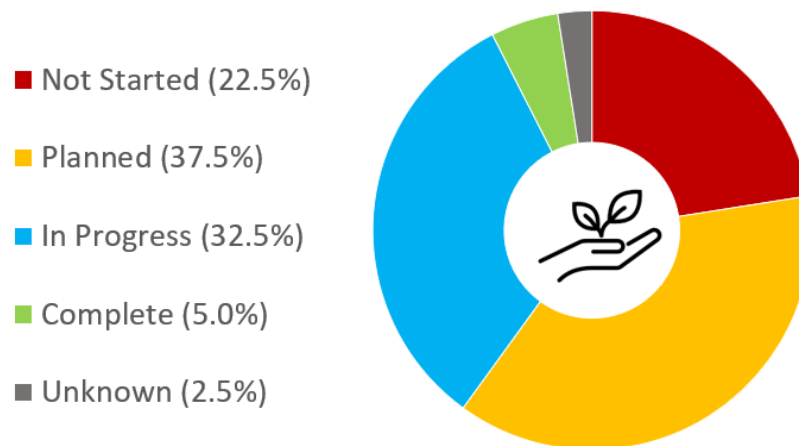
#### a) Overall Assessment

Finding: The 2020 Annual Climate Change Master Plan Progress Report found that action must accelerate to achieve the majority of the Region’s CCMP 2030 outcomes.

The CCMP output summary status for all CCMP outcomes is shown in Figure 1 below. The majority of work is in the planned or in-progress stages. However, with the exception of the Climate Change Risk Assessment, Phase 1 projects have been slow to progress or subject to delays related to the COVID-19 response. It is critical these projects are prioritized going forward, especially the Pacesetters, as they will lay the foundation to accelerate climate action from 2023 onward. Rapid scaling of Net Zero Emissions Buildings is essential to keep pace with the Low Carbon Pathway and achieve the 2030 GHG reduction target as outlined in the CCMP.

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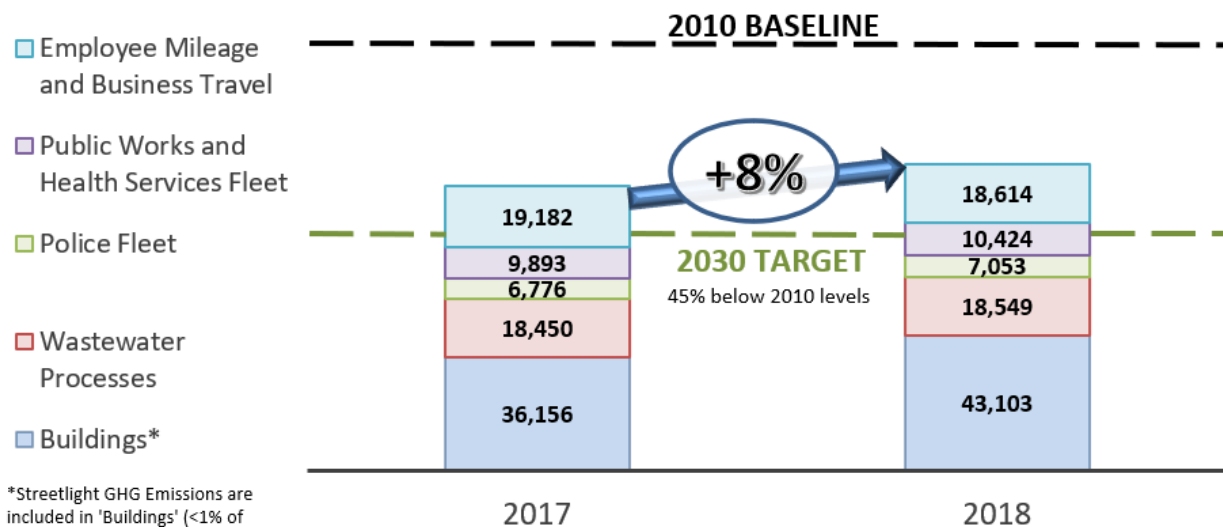
**Figure 1: CCMP Outputs Progress Status**



### b) Reduce GHG Emissions

The most recent corporate GHG inventory is for 2018 as the required factors to complete the calculations are only available on a 2-year lag time from the National Inventory Report<sup>xv</sup>. Thus, the following discussion of emissions trends and sources pertain to conditions in 2018 and do not reflect seasonal variations, pandemic responses or climate actions taken in 2020. The Region's 2018 GHG emissions increased by 8 per cent from 2017. Increased fleet fuel use, and a hotter summer and colder winter resulted in more building and process energy demand, driving emissions up; however, more than half of the emissions increase was due to a dirtier electricity grid. Between 2017 and 2018 the Region's emissions associated with electricity use increased 59 per cent. As shown in Figure 2, the Region is moving further away from its target of 45 per cent below 2010 levels by 2030.

**Figure 2: 2017 vs. 2018 Corporate GHG Emissions Inventories [t CO<sub>2</sub>e]**



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Up until 2017, a significant portion of the Region's GHG emissions reductions were attributed to the Province's electricity continually getting cleaner. However, electricity sourced GHG emissions are planned to increase as the Province uses natural gas generation to make up for lost electricity production from nuclear plant refurbishments, and to meet growing demand. A dirtier electricity grid puts meeting the Region's 2030 target at-risk and will significantly increase community emissions. Additional background on the Province's transition to a more carbon intensive electricity grid and the recommendations to advocate to the Province to phase out fossil-based natural gas in electricity generation is found in Appendix II.

The Region is at the forefront of understanding the economic and environmental case for retrofitting and constructing Region and Peel Housing Corporation owned facilities to achieve net zero emissions standards. These pilot projects are referred to as "Pacesetters," defined as taking the lead or setting new standards of achievement, which can be replicated across the building portfolio to achieve CCMP outcomes. While five feasibility studies were scheduled, only two were completed and one was initiated in 2020 for the following locations respectively: a headquarters retrofit, an affordable housing new construction site and an affordable housing retrofit, all with proposed timelines to start implementation by 2023.

Net zero emissions buildings are a significant opportunity for GHG reduction as buildings represent 44 per cent of corporate emissions. The first new construction feasibility study presented a strong economic case to meet net zero emissions standards; specifically finding this level of performance is projected to require less than a 2 per cent premium of total capital costs, can achieve operational savings over the life of the asset and avoid the burden of new emissions. On a project basis, operational savings may be an appropriate mechanism to service potential debt financing, if debt is an appropriate option. A number of new buildings are planned this decade, including many affordable housing developments, and the Region can embrace the opportunity of an inclusive recovery by ensuring low income residents experience the benefits of better buildings, as zero emissions buildings offer improved occupant comfort and resilience to manage through potential power outages. Implementation of the Pacesetters is needed to build staff experience, define actual costs, and verify performance. These are essential learnings to apply in standardizing and scaling the Region's approach to net zero emissions construction, including existing building retrofits. Zero emissions building standards have already been adopted by other municipalities such as City of Toronto, City of Vancouver and City of Mississauga.

Employee commuting represented 18 per cent of all corporate emissions in 2018 and is another significant opportunity for the Region to lower emissions. The Region's 'Remote Work First' directive, in response to the COVID-19 pandemic, is anticipated to reduce the total 2020 GHG emissions inventory by 5 per cent. These reductions can only be sustained long-term and contribute to achieving the Region's 2030 target if more employees commute to and from work using low carbon alternatives and active transportation, and, to some extent, the Region continues to enable remote work for the eligible component of the workforce. Details on employee commuting calculations are found in Appendix III. The Region also progressed in other sustainable transportation actions through the transition of over 100 Regional vehicles to green fleet hybrid technologies.

The Region continues to implement energy conservation measures that achieve emissions reductions and seeks financial incentives for these initiatives. For example,

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the Region avoided 370 tonnes of annual CO<sub>2</sub>e emissions and collected \$360K in incentives through participation in the Independent Electricity System Operator's (IESO's) Embedded Energy Manager Program in 2020.

While the CCMP has corporate actions; it also aims to transform community outcomes. Community-based 2020 climate change work includes:

- The Peel Climate Change Partnership was awarded \$207K from Natural Resources Canada to install 43 publicly accessible electric vehicle charging stations; 13 were installed by the end of 2020;
- Advancement in the procurement of an Anaerobic Digester facility that will produce renewable natural gas from waste and could play a significant role in reducing corporate and/or community greenhouse gas emissions; and,
- Collaboration between the Region and City of Mississauga to continue exploration of low carbon district energy using wastewater from Regional facilities at Lakeview Village (future reporting to Council will provide details).

Reduce GHG Emissions Progress Assessment: Despite notable accomplishments in 2020, the Region is not currently on track to achieve the 2030 Reduce GHG Emissions target. The Region faces a growing challenge this decade as the electricity grid is forecasted to become more carbon intensive, projected future weather trends will drive up electricity use and the Region will need to meet higher service demands to support the increasing population. Implementing existing Pacesetter pilots should accelerate to minimize impacts of slower progress in 2020, while future planning for all new buildings to achieve net-zero emissions standards should be prioritized to avoid new emissions. Further, investment in retrofitting existing buildings to near net zero emissions and continued sustainable and active transportation initiatives remain critical. Achievement of the 2030 target is also highly dependent on the Province ensuring grid electricity remains clean.

### c) Be Prepared

The Region owns over \$30B of assets that are subject to varying degrees of impacts of a warming climate, including worsening extreme weather events. In 2020, project planning was started for an enterprise level climate change risk assessment for all Regional infrastructure. Development of the Climate Change Risk Assessment Tool is now underway and will be integrated into the Enterprise Asset Management Decision Support System. Modelled scenarios outlining climate change risks, impacts and costs will help factor resilience into an asset's level of service, develop adaptation strategies, and quantify future infrastructure investments. Results from the risk assessment are expected in 2023. This work helps ensure the Region's compliance with O. Reg 588/17 Asset Management Planning for Municipal Infrastructure. This tool will leverage strategic and incremental cost learnings from a climate change probability and risk analysis for select Water and Wastewater Infrastructure also initiated in 2020.

Additional Be Prepared initiatives in 2020 included progress on green infrastructure opportunity assessments for Peel Housing Corporation and Long-Term Care sites, and green infrastructure capital projects implemented on Regional roads.

Be Prepared Progress Assessment: The Region is achieving scheduled milestones with regards to the 2030 Be Prepared outcome. Operationalizing the Climate Change Risk Assessment Tool to understand risks and the magnitude of investment required to

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address them, and continued investment in green infrastructure projects, are near term priorities to ensure Regional services and assets are more resilient to extreme weather events and future climate conditions.

### d) Build Capacity, Invest, and Monitor and Report

To varying extents, Phase 1 actions towards the Enabling Outcomes were paused in 2020 to divert employee resources to the COVID-19 response. Despite this reality, the Region initiated planning to create Energy and Emissions Management Plans for Water, Wastewater, and Peel Housing Corporation, which together account for more than 50 per cent of the Region's corporate emissions. While only preliminary discussions ensued to develop a Climate Change Financing Strategy, the scope of work was developed for a Climate Change Engagement Strategy with objectives to increase employee literacy on climate change and integrate climate change considerations into organizational decision making, planning and accountability.

In developing this progress report, a framework for measuring progress has been established and will allow for consistent progress reporting year over year. A commitment was also made to develop KPIs and targets to measure the cumulative impact Regional climate actions have towards achieving the CCMP outcomes. These KPIs may also be used to measure the impact of investment on community resilience to climate change.

Build Capacity, Invest and Monitor and Report Progress Assessment: Continued progress through accelerated action is needed to build sufficient capacity and support investment in the implementation of the Climate Change Master Plan. Completing the Climate Change Financing Strategy and advancing the scope of work for the Climate Change Engagement Strategy to implementation stage are both ongoing deliverables.

## RISK CONSIDERATIONS

The Region has committed to address climate change and will lead by example. Many other municipalities have taken the advocacy position to ask the Province to phase out fossil-natural gas from the electricity grid. Meeting the Region's 2030 GHG emissions reduction target is at-risk should the electricity grid not remain clean. The reliance on a clean grid is expected to significantly increase as electrification of the broader transportation and building sectors is a key and common strategy to rapid decarbonization. As such, the most concerning implication of the electricity grid not remaining clean is the environmental risk related to the magnitude of rising GHG emissions from province-wide sectors using electricity, including municipalities.

## FINANCIAL IMPLICATIONS

The proposed federal price on carbon pollution is scheduled to escalate on April 1<sup>st</sup> of every year, increasing 750 per cent between 2020 and 2030. Applying this price escalation to the Region's 2018 fossil fuel consumption (natural gas and liquid fuel), and without reductions in corporate GHG emissions, the cumulative carbon costs could be \$50 million over the 2020 to 2030 period. The 2022 carbon tax costs are estimated to increase by \$0.5 million to \$2.3 million. Estimated carbon cost calculations associated with inaction are found in Appendix IV.

Taking into account the Region's current capital plans, the CCMP estimated an incremental investment of \$300 to \$400 million would be needed, primarily to achieve the Reduce GHG Emissions outcome. Progress towards this target is demonstrated through energy conservation

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and renewable generation, thus the CCMP forecasted a cumulative operational savings of \$85 million by 2030, with escalating annual returns in the following decade. A smaller portion of the estimated incremental costs (\$80 million) was attributed to green infrastructure to help achieve the Be Prepared outcome, along with initiating the planning to better understand, monitor, and address climate risks.

Program and project costs associated with implementing the CCMP are not currently reflected in existing budgets or approved 10-year capital plans, with the exception of two Pacesetter projects (one retrofit and one new construction building) and actions supporting the Enabling Outcomes. Staff are currently developing a Climate Change Financing Strategy for the CCMP's original \$300 to \$400 million incremental cost estimate. It is important to acknowledge the investment required to achieve the Be Prepared outcome will be substantial and greater than the current green infrastructure cost allocation in the CCMP.

The Region will be refining adaptation strategies and costs to achieve the Be Prepared outcome using the Climate Change Risk Assessment Tool, as well as the Reduce GHG Emissions outcome as Pacesetter project implementation continues.

### **NEXT STEPS**

In support of a green, inclusive recovery, and to better ensure the Region achieves its 2030 GHG emissions reduction target, it is recommended that the Region of Peel advocate to the Province of Ontario to set the legislative and policy framework to phase-out all fossil fuel natural gas-fired electricity generation while meeting Ontario's growing electricity needs.

As next steps, staff will establish climate change (mitigation and adaptation) performance standards for all Regionally owned assets and infrastructure to achieve 2030 primary outcomes of the CCMP and beyond, prioritizing the following work in 2021:

- Develop Tiered Net Zero Emissions New Construction standards for Regional buildings;
- Advance beyond the planning and in-progress stages for on CCMP Phase 1 priorities including Pacesetter Projects, Climate Change Risk Assessment Tool, Energy and Emissions Management Plans, Climate Change Engagement Strategy, and Climate Change Financing Strategy; and,
- Continue implementing the CCMP, monitor action outputs and report back to Council on Progress in 2022.

### **APPENDICES**

Appendix I – Climate Change Master Plan Outcome Report Cards

Appendix II – Supporting Information for Advocacy

Appendix III – Briefing Note on Employee Commuting Emissions during the Pandemic

Appendix IV – Carbon Tax Implications Based on 2018 Regional Fossil Fuel Use

Appendix V – Glossary



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### ***Reviewed and/or approved in workflow by:***

Department Commissioner, Division Director, Financial Support Unit and Legal Services.

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## SOURCES

<sup>i</sup> <https://www.nasa.gov/press-release/2020-tied-for-warmest-year-on-record-nasa-analysis-shows>

<sup>ii</sup> <https://www.usatoday.com/story/news/world/2020/02/25/jakarta-floods-2020-indonesia-capital/4865913002/>; <https://www.cbc.ca/news/world/kenya-deadly-floods-1.5557400>; <https://guardian.ng/apo-press-releases/west-and-central-africa-flooding-situation-as-of-25-september-2020/>

<sup>iii</sup> <https://edition.cnn.com/asia/live-news/live-updates-cyclone-amphan-intl-hnk/index.html>

<sup>iv</sup> <https://www.bbc.com/news/world-australia-50951043>; <https://www.theguardian.com/environment/2020/oct/01/brazil-amazon-rainforest-worst-fires-in-decade>; <https://www.nature.com/articles/d41586-020-02716-4>; <https://www.latimes.com/projects/california-fires-damage-climate-change-analysis/>; <https://www.cbsnews.com/news/colorado-wildfire-climate-change-evacuations-grand-county/>; <https://www.theguardian.com/australia-news/2020/dec/01/catastrophic-bushfire-on-queenslands-fraser-island-threatens-ecological-disaster>

<sup>v</sup> <https://www.noaa.gov/media-release/record-breaking-atlantic-hurricane-season-draws-to-end>; <https://www.washingtonpost.com/weather/2020/11/20/iota-flooding-central-america/>

<sup>vi</sup> <https://abcnews.go.com/Technology/wireStory/world-hit-15-degree-warming-threshold-years-71687896>

<sup>vii</sup> <https://climateconnections.ca/app/uploads/2017/07/Climate-Trends-and-Future-Projections-in-the-Region-of-Peel.pdf>

<sup>viii</sup> <https://globalnews.ca/news/7646478/canadian-cities-study-flood-risk-poor-grade/#:~:text=A%20study%20conducted%20by%20the,of%20C%2B%20in%20flood%20Dreadiness.>

<sup>ix</sup> Heat Warnings occur when daytime temperatures reach at least 31°C and overnight temperatures are 20°C or above and/or the humidex is at least 40. If these conditions persist for 3+ days, it is classified as an Extended Heat Warning. <https://www.peelregion.ca/health/heat/>

<sup>x</sup> [https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/climate-plan/healthy\\_environment\\_healthy\\_economy\\_plan.pdf](https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/climate-plan/healthy_environment_healthy_economy_plan.pdf)

<sup>xi</sup> <https://www.whitehouse.gov/briefing-room/statements-releases/2021/01/27/fact-sheet-president-biden-takes-executive-actions-to-tackle-the-climate-crisis-at-home-and-abroad-create-jobs-and-restore-scientific-integrity-across-federal-government/>; <https://www.whitehouse.gov/priorities/>

<sup>xii</sup> <https://fridaysforfuture.org/what-we-do/who-we-are/#:~:text=Fridays%20for%20future%E2%80%A6%20or%20FFF,%20is%20a%20global,day,%20demanding%20urgent%20action%20on%20the%20climate%20crisis.>; <https://fridaysforfuture.ca/>

<sup>xiii</sup> <https://www.theguardian.com/business/2019/jun/12/worlds-biggest-sovereign-wealth-fund-to-ditch-fossil-fuels>; <https://cleantechnica.com/2020/12/31/divestment-year-in-review-2020-from-cleantechnica/>

<sup>xiv</sup> <https://sdg.iisd.org/news/75-leaders-announce-new-commitments-during-climate-ambition-summit/>; <https://unfccc.int/news/commitments-to-net-zero-double-in-less-than-a-year>

<sup>xv</sup> <https://unfccc.int/ghg-inventories-annex-i-parties/2020>