2022-2025 Climate Change Action Plan

Nottawasaga Valley Conservation Authority

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Message from the CAO

Climate change is a phenomenon that leads to changes in Earth's long-term weather patterns, which has many impacts that are felt globally and locally. It results from increased levels of greenhouse gases, such as carbon dioxide and methane, which trap heat in our atmosphere.

The United Nations (UN) stated that in the last 150 years, human activities such as the burning of fossil fuels and clearcutting have increased the concentration of these greenhouse gases substantially. Many of these activities continue to be undertaken today, leading to impacts on wetlands, species and residents.

With the goal of achieving a more sustainable future, the UN has created 17 Sustainable Development Goals (SDG) to guide policymakers, organizations, and citizens as they address global challenges. SDG 13 is a goal called Climate Action, highlighting the need for confronting climate change and strengthening efforts to address its impacts.

The Nottawasaga Valley Conservation Authority's (NVCA) vision is to support a sustainable watershed that is resilient to the effects of climate change, urban growth and other stressors, and supports safe, healthy and prosperous communities. As climate change is recognized as a driver of change in our watershed, we have incorporated its threats into our core Integrated Watershed Management Plan and 2020 – 2025 Strategic Plan and Business Plan.

The next few years are critical for slowing greenhouse gas emissions. The Intergovernmental Panel on Climate Change most recently indicated that to limit warming to 1.5°C, emission levels must reach a peak before 2025 and be reduced by over 40% by 2030. NVCA recognizes the importance of responding to climate change and is committed to supporting our partners' actions to reduce impacts of climate change.

The 2022-2025 Climate Change Strategy is a part of NVCA's continued response to climate change and our commitment to face the challenges it poses to our communities and ecosystems.

Doug Hevenor

Chief Administrative Officer

Context of Climate Change

In 2015, the Government of Canada signed the Paris Agreement along with nearly 200 other countries to limit the global average temperature rise to below 2°C. In Ontario, efforts are being taken by the province, counties, and municipalities towards addressing climate change and its impacts to air, land, and water.

There is also a lot being done at the local level.

- Counties in the Nottawasaga Watershed have developed their own Climate Change Strategy
- Several municipalities in the Nottawasaga Watershed have created an action plan or are working towards one
- Some municipalities have Climate Change Action Teams and encourages community carbon footprint challenges
- Residents are joining the conversation through sharing creative solutions, stories, and blogs

Trends and Impacts

According the UN, impacts of climate change are already being observed globally. Surface temperatures have risen, with 2011-2020 being the warmest decade on record. More heat waves are occurring, threatening public health. In many areas, storms and weather events have increased in frequency and intensity causing damages to people and nature. While in others, droughts have put stress on water and food availability.

Over the last decade, Canada has been warming at twice the global rate. Average annual temperatures in Canada have increased by 1.7°C between 1948 and 2016 and are projected to continue to increase between 1.8°C and 6.3°C by 2100. Future temperature increase is dependent on the amount of greenhouse gases emitted.

The Government of Canada has observed that temperature increases vary by region, with Northern Canada experiencing greater warming.

The average annual precipitation has increased across Canada, and future projections show that changes will vary based on region and season. From 2050-2100, a low emission scenario projects small precipitation increases across Canada, while under a high emission scenario, a larger increase of precipitation is projected annually in winter, with a small decrease in summer precipitation over much of Southern Canada. The amount of extreme, short-term precipitation is also projected to increase.

In the Nottawasaga Watershed, climate changes such as rising temperatures and more extreme weather events have been observed. Local projections in the Nottawasaga Valley watershed include:

- Increased average air temperatures
- Increase in precipitation
- Wetter, warmer winters and springs, and drier, hotter summers
- Higher intensity storms
- Increased stream temperature as air temperature rises
- Longer growing season
- Longer heat waves
- Less days of frost

These changes may have social, economical, ecological impacts in the Nottawasaga Watershed. Infrastructure, transportation systems, energy systems may also be affected.

Greater precipitation increases flood risk, while more frequent freeze thaw cycles impacts local infrastructure, rates of erosion and agriculture production, which may require increased maintenance.

Heat waves and severe storms affect the mental health and well-being of watershed residents by increasing heat-related illnesses, increasing emergency visits, and impacting their sense of security. Additional risks, such as increases in vector-borne diseases, like Lyme diseases from ticks will also put stress on the health of the residents.

Episodes of drought causes damages to crops and poses risk to drinking water sources. Lower water levels impact the presence of wetlands and wetland species, while warmer air and stream temperatures reduces suitable habitat for many organisms.

Native species will also face challenges due to increase of invasive species, population declines, forced migration or extirpation to find suitable habitat, and changes in their behaviour relating to temperature, such as earlier flowering of plants.

NVCA Actions and Next Steps

In recent years, NVCA has incorporated adaptation and mitigation actions to reduce the impact of climate change into its programs. Adaptation efforts aim to respond to the effects of climate change, while mitigation measures address the sources of climate change, such as greenhouse gas emissions.

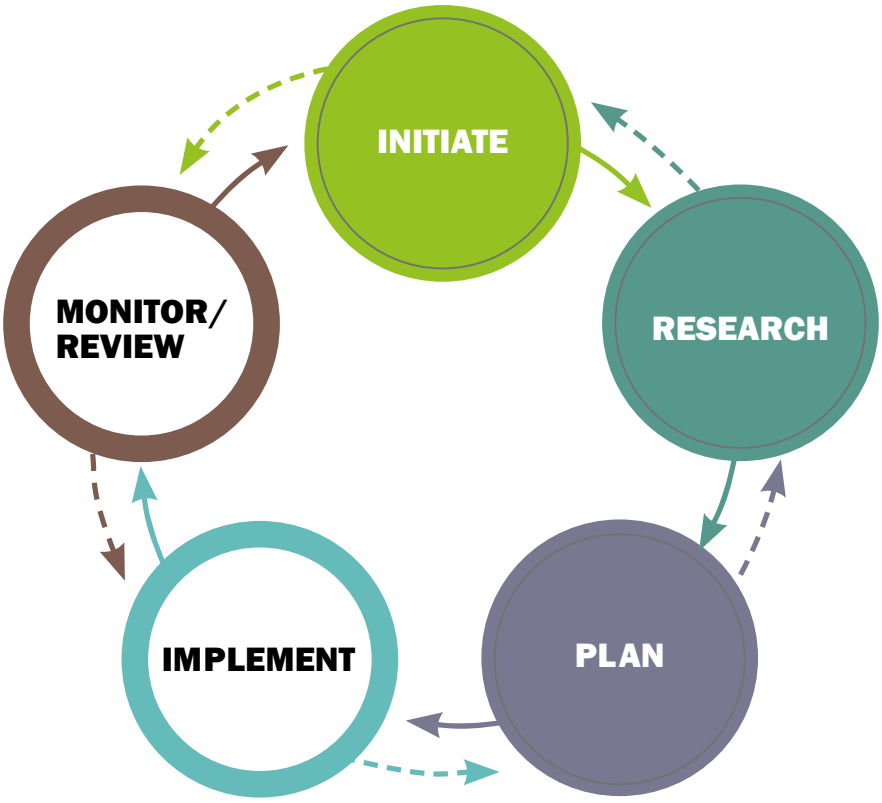
Monitoring biological and physical processes in the watershed (i.e., streamflow, precipitation, temperature and biological indictors) help us understand how ecosystems may be changing as a result of climate change. This information helps NVCA update our review guidelines and provide appropriate advisory comments to our partner municipalities.

NVCA staff and volunteers have planted trees across the Nottawasaga Watershed and incorporated climate change materials into education programs.

To have a better understanding of the corporate carbon footprint, NVCA has calculated the amount of greenhouse gas emissions reduced from staff working remotely during the COVID-19 pandemic.

NVCA has followed the 5-step milestone framework presented by the Local Governments for Sustainability. To date, NVCA has produced documents that correspond to the first 3 milestones of this framework: Initiate, Research, and Plan as well as developed the 2016-2018 Climate Change Strategy and Action Plan. This plan includes adaptation and mitigation measures and identifies the goals and targets NVCA will work towards and the how progress will be reported on.

Basic Milestone Framework



Source: ICLEI Municipal Climate Change Adaptation Guide and Workbook

Flooding and Erosion

Goal

Work with partners and stakeholders to increase knowledge of how climate change will impact flooding and erosion levels in Nottawasaga Watershed communities.

Actions

1. Develop new hydraulic and hydrologic models and mapping that consider future climate projections, impacts on watershed, high risk areas, vulnerabilities, risks and opportunities.

2. Collaborate with other conservation authorities, municipalities and the Province of Ontario to ensure guidelines incorporate future climate projections to help enhance local flood capacity.

3. Redefine Intensity Duration Frequency (IDF) curves using future climate projections to reflect extreme events and changes in rainfall distribution.

4. Enhance flood forecasting and real-time flood monitoring prediction and warning systems to keep watershed residents more informed.

5. Work with municipalities to develop more detailed water budgets for the Nottawasaga watershed.

6. Review drought response policies and procedures, receive stakeholder input, and revise drought response guidelines including low water/ drought emergency response plans.

Monitor

Goal

Enhance knowledge of the Nottawasaga Watershed's natural environment and its response to a changing climate.

Actions

1. Integrate climate, groundwater and surface water monitoring and analysis systems to effectively track climate change and associated adaptation and mitigation measures including ambient conditions, changing trends in precipitation, temperature, hydrology and hydrogeology.

2. Report on key indicators of climate change and its impacts to help make science-based decisions, as well as recommend actions help to mitigate and adapt to climate change.

3. Conduct research to identify vulnerable aquatic ecosystems, anticipated changes associated with climate change, and acceptable mitigation/adaptation approaches.

4. Incorporate anticipated climate impacts into programs and services through regular updates provided by the Watershed Science and Flood Departments. Updates can include information such as current climate projections, monitoring data and climate science.

Communicate and Educate

Goal

Facilitate partnerships and connect people to the Nottawasaga Watershed in order to build awareness of climate change and capacity to adapt to climate impacts.

Actions

1. Develop interactive communication tools to engage the public about extreme weather events and watershed conditions.

2. Develop a climate change communications strategy to inform and engage staff and our stakeholders including but not limited to invasive species, drought, flood / emergency preparedness, and climate friendly property management.

3. Provide landowners, property managers and other professionals with knowledge and resources to help them make informed decisions that contributes to building climate change resilient and environmentally sustainable communities.

4. Prepare educators so they can properly inform today's youth about climate change.

5. Educate staff, Board of Directors, and partners on the need for both mitigation and adaptation to climate change.

6. Communicate high priority areas of our land securement strategy so landowners in those areas know they have ecologically significant properties.

Natural Heritage

Goal

Protect and improve natural heritage systems in the Nottawasaga Watershed to build resilience and assist with adaptation and mitigation.

Actions

1. Review the minimum planting requirements to ensure that the recommended species lists include species that are expected to adapt to future climates.

7. Collaborate with partners to develop an invasive species strategy that considers climate change and includes elements such as a species watch list, education and outreach, response protocols, monitoring and citizen science.

8. Manage, sustain, and restore the natural heritage system, and features such as wetlands, to increase resiliency to future climate projections.

9. Enhance the current aquatic and terrestrial natural heritage program to record impacts of climate change, including ecological and hydrologic systems, community function utilizing technology and community/citizen science where possible.

Stewardship and Land Conservation

Goal

Increase watershed resistance and resilience to climate change through conservation, restoration, and improvement of natural systems.

Actions

1. Design restoration projects based on design guidelines, modelling, prioritized opportunities, long-term monitoring and watershed plans which consider the impact of climate change.

2. Maintain and improve the health of local watercourses and their aquatic communities by implementing targeted programs to remove and mitigate areas that contribute to stream warming. Install and maintain features that contribute to stream cooling.

3. Promote the reforestation and naturalization of riparian and upland areas to enhance aquatic habitats and organisms and to sequester carbon.

4. Consider carbon offsetting opportunities on NVCA properties through restoration projects such as tree planting, wetland and grassland restoration.

5. Create a stewardship prioritization mapping tool for terrestrial and aquatic projects, combining natural heritage system and stormwater considerations (permeability, level of development, existing stormwater infrastructure). This map will help staff allocate resources and can be shared with project implementation partners.

Partnerships

Goal

Be leaders in sustainability making NVCA the partner of choice for local climate change initiatives.

Actions

1. Develop tools with partners to guide climate change adaptation efforts and collectively manage environmental, social and human health.

2. Work with provincial and federal governments and other science-based organizations to develop and refine tools to improve climate change projections and forecasting for the Nottawasaga Watershed.

3. Collaborate with watershed stakeholders across all sectors to ensure individual climate change adaptation plans have a cohesive regional approach and demonstrate leadership by supporting external partners in adopting urban and rural best management practices to support watershed and human health resiliency.

4. Engage farmers, farming associations and OMAFRA through knowledge exchange meetings to learn how they are adapting to climate change and how NVCA can provide support to minimize the impacts of climate change on the environment.

Corporate Practices

Goal

Build corporate capacity to adapt to future climate projections and reduce NVCA's corporate carbon footprint by embracing a culture of conservation through using best practices and solutions while measuring progress and effectiveness.

Actions

1. Implementation of NVCA Climate Change Strategy will be reported annually to ensure that the objectives are being considered or implemented.

2. Enhance and change our corporate culture, business practices and operations to reduce GHG emissions.

3. Increase employee awareness of NVCA's environmentally sustainable operating practices to promote cost-effective, sustainable behaviour that reduces our corporate carbon and environmental footprint.

4. Complete a corporate risk assessment to identify locations, operations and assets that are vulnerable to extreme weather events. The assessment should then be used to develop and implement adaptation strategies to mitigate any identified risks.

5. Conduct a Greenhouse Gas Emissions (GHG) inventory of NVCA's operations

Implementation and Reporting

Departments will integrate the above targets into their workplans and continue to develop the steps to reach these goals. The goals and targets will be reviewed annually to provide an updated report on their progress to the Board of Directors. Along with the 2021-2025 Strategic Plan and the 2021-2025 Business Plan, this 2022-2025 Climate Change Strategy will be updated for the 2025 period.

Nottawasaga Valley Conservation Authority

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