

**Climate Change**

**Mitigation:**

Reducing the amount of greenhouse gases emitted into the atmosphere, or taking measures to reduce existing atmospheric greenhouse gases.

**Climate Change**

**Adaptation:**

Reducing the negative impacts of climate change and taking advantage of any positive effects.

As a result of historic and current anthropogenic greenhouse gas emissions, global air temperatures continue to rise. The impacts resulting from these continued emissions warrant communities to prepare for the expected impacts and adapt to climate variability and change.

Recent climate events such as drought, flooding, heat waves and warmer winters have resulted in a wide range of impacts to Ontario. These impacts have had substantial economic and social costs, raising questions about the province's vulnerability to future climate change.<sup>1</sup>

# Hamilton Conservation Authority Climate Change Strategy

Case Study

Spring, 2012

## Hamilton in a Changing Climate

Temperature and precipitation records from the Hamilton area dating back to the 1970s show that annual mean temperatures have risen 0.9°C and total annual precipitation has increased by 26mm, with increases in precipitation in all seasons except for winter. Therefore, the Hamilton area is warmer and wetter than it was 41 years ago, except in the winter when it is warmer and drier.<sup>2</sup>

Stemming from these changes is a number of impacts over the past few years, including heat waves, periods of prolonged drought, intense storms, extreme wind, flooding, erosion, and more. In fact, several significant flooding events have occurred in the Hamil-



Hamilton will likely experience more severe weather events as a result of climate change.

ton area costing the city hundreds of thousands of dollars in damage. From an environmental perspective, these flooding events, as well as periods of drought, have caused stress on local flora and fauna (e.g. tree blow downs, stream bank erosion, etc.).<sup>3</sup>

Climate models suggest that by 2050, the average annual temperature in Ontario could increase between 2.5°C and 3.7°C.<sup>4</sup> This change in climate could result in even greater impacts to the Hamilton area, including more frequent and intense storms. In this context, it makes good sense to begin identifying existing climate sensitivities and vulnerabilities and adapt to both the current and future changes in climate.

## HCA Makes Climate Change a Priority

Recognizing that the extremes of flooding, drought and wind are expected to increase in intensity in the context of climate change, and seeing the damage to both the natural and built systems in the watershed, the Hamilton Conservation Authority (HCA) decided to start taking action on climate change.

The catalyst for drawing attention to climate change at the corporate level was the development of a discussion paper in October 2010 titled *“Managing Change: Defining HCA’s Role in Climate Change.”* The discussion paper, developed by HCA staff, included global to local perspectives, basic climate change information, as well as local instances of extreme weather events. The paper also served to gain endorsement on allocating staff time and resources on climate change issues.

In June 2011, a workshop held in Hamilton,

hosted by the Ontario Centre for Climate Impacts and Adaptation Resources (OCCAR), helped create momentum for adaptation by creating a venue for key players to meet, learn about the science and impacts of climate change, and to hear about local observations of change driven by climate. The workshop also provided the HCA with advice and insights on key components of a climate change strategy.

In August 2011, the discussion paper was presented to the HCA Board of Directors who then directed staff to develop the HCA Climate Change Strategy. Then, on March 1, 2012 the HCA Climate Change Strategy was endorsed by the HCA Board of Directors. This 3-year Strategy aims to increase the resiliency of Hamilton’s watersheds, systems (natural and man-made) and communities to meet the challenge of climate change.<sup>3</sup>



Flooding on the Red Hill Valley Parkway, Hamilton, summer 2009

“Hamilton has been recognized by the World Wildlife Fund as one of the top cities in Canada addressing climate change.”<sup>6</sup>



Drought in Spencer Creek, Hamilton, summer 2007

## Community Climate Change Action Charter

On October 12, 2011 the City of Hamilton introduced an Ontario first: A Community Climate Change Action Charter. The Charter is a voluntary statement that acknowledges the reality of climate change and seeks commitment to set targets and measure progress on the reduction of emissions at a personal, organizational, and community level. The charter builds awareness and communication between citizens, organizations and businesses in the Hamilton area and represents a public statement to the com-

mitment of each member to lessen their GHG footprint and find ways to adapt the impacts of climate change.<sup>5</sup>

The HCA was one of the founding members to sign the Charter, which provided an opportunity for the HCA to be seen as taking a leadership role. It allowed decision makers to become actively involved in the process.<sup>3</sup> For more information on the Hamilton’s Community Climate Change Action Charter, please visit: [www.climatechangehamilton.ca](http://www.climatechangehamilton.ca)

## Developing the Climate Change Strategy

From the onset of the effort to bring action on climate change into the HCA, senior staff were supportive. Managers were engaged through the development of the discussion paper and were kept apprised of activities through regular updates at staff meetings.

The Climate Change Strategy was developed with input from a number of sources, including environmental organizations, representatives from provincial and federal governments, academic researchers, consultants, climate change experts, technical experts, neighbouring Conservation Authorities, as well as the City of Hamilton. These groups provided input on HCA’s role in climate change and were asked to comment on the draft strategy when it was developed. Most of the expert groups suggested an interest in staying connected with the HCA in an advisory capacity as the strategy is implemented.

Following Board endorsement of the Cli-

mate Change Strategy, an internal Task Force was created with representation from all HCA divisions in order to address the implementation of activities in the Strategy within each program area.

To date, the Task Force has created a library of resource material as well as a list of actions to implement during 2012/2013 under each of the 4 main strategic directions identified in the Strategy. This list includes a description of each action, the lead department responsible for each action, the resources that are needed to implement each action, as well as timelines for implementation.

HCA is also working with the City of Hamilton and many other local agencies on a number of other activities to raise awareness of climate change. The City has been working on a very successful mitigation strategy and there is hope that HCA will work with the City on adaptation efforts in the near future.<sup>3</sup>

## Why take a Watershed Approach?

With a watershed-based mandate, HCA will play a critical role in adapting to climate change impacts. By taking a collaborative approach to local adaptation decision making and by using watershed-scale information, the HCA and other partners will develop a strategy that responds to the vulnerabilities at a watershed level.

**The advantages of a watershed-based approach include:**

- Looking at the cumulative impacts and understanding the cascading effects on

how features (e.g. wetlands), functions (e.g. shallow groundwater flow) and linkages (e.g. connecting stream corridors) within and between watersheds will be affected by these changes;

- The ability to develop local solutions that will provide the ‘biggest bang for the buck’; and
- Having the ability to scale up to regional scales or scale down to subwatershed or subcatchment levels for appropriate analyses and corrective measures.<sup>3</sup>

## The Climate Change Strategy

The Climate Change Strategy defines HCA's role in mitigating and adapting to climate change and contains a suite of principles to aid in decision-making. It contains one overall goal and four major strategic directions that reflect the HCA's mandate and its focus on watershed health.<sup>2</sup>

The following principles have been developed to guide HCA's strategic directions on climate change:

- Where possible, climate change actions will address **both mitigation and adaptation**;
- **Collaboration** with partners (e.g. government agencies, municipalities, academia, the business and agricultural communities, NGOs, and the public) will be central to actions on climate change mitigation and adaptation;
- Priority will be placed on **integrating** climate change mitigation and adaptation into core activities;
- Priority will be placed on **'no regrets'** actions that will improve the resiliency of systems, whatever the eventual climate changes.
- **Information-based decision making** will guide actions;
- **Adaptive management** will allow plans and actions to be guided by information obtained over time through environmental monitoring and other means and adapted as circumstances warrant.<sup>2</sup>

Actions in the Climate Change Strategy are categorized under 4 main strategic directions that will address climate change:

- 1) **Understand the problem:** Increase the understanding of climate change, what can be done to mitigate it, the impacts on watersheds, systems, and communities, and what needs to be done to adapt to these impacts;
- 2) **Share information:** Share knowledge and information about climate change with other partners (e.g. government, City of Hamilton, academia, NGOs, public, etc);
- 3) **Integrate into existing policies:** Work with partners to integrate mitigative and adaptive measures into existing policies, plans, programs and practices;
- 4) **Develop new policies:** Where needed, work with partners to develop new policies, plans, programs and practices to mitigate climate change and reduce vulnerability to its impacts.<sup>2</sup>



Micro-burst in Christie Lake Conservation Area, Hamilton, spring 2011

"The overall **GOAL** of this 3-year strategy is to increase the resiliency of our watersheds, systems (natural and man-made) and communities to meet the challenge of climate change."<sup>3</sup>

## Why is HCA in a good position to adapt?

The HCA has many core functions within its mandate, including water resource management, natural areas and built heritage, outdoor recreation, conservation education and awareness, as well as corporate sustainability.

HCA is uniquely positioned to begin to address impacts from climate change because of its understanding of the watershed and because it:

- 1) Conducts monitoring on many aspects related to water quality and water quantity and climate indicators such as temperature and precipitation;
- 2) Implements good risk management through policies, floodplain management, subwatershed planning, and storm water management;
- 3) Works with the City of Hamilton to develop good flood emergency plans;
- 4) Maintains flood mitigation structures such as the Christie Dam;
- 5) Maintains updated watershed hydrology; and
- 6) Carries out reforestation.<sup>2</sup>

"Given that we are local and watershed-based, we have significant amounts of **ecological data** from our monitoring work and data from development proposals which we review. Our engineers and ecologists are therefore able to carry out **scientific assessments** to establish baseline conditions and determine changes to these conditions. Working with our partners, we are then able to **develop solutions** to the impacts we see from a number of sources (e.g. growth, servicing, climate change, etc.)."

- Hazel Breton, HCA

Although the level of interest and support for the HCA Climate Change Strategy was very high, the HCA was challenged in a few areas:

1) **Lack of climate change knowledge.** Some staff members lacked sufficient knowledge on the subject of climate change. For example, terminology was not well understood (i.e. mitigation versus adaptation). This barrier was overcome through various educational and training resources, including workshops, presentations, guest speakers, etc.;

2) **Availability of funding.** For example, some of the major analyses that are needed (i.e. vulnerability and risk assessments) require additional funding; and

3) **Access to sufficient amounts of spatial and temporal data.** For example, additional stations are required, and there is a need to build long-term data to improve the understanding of local circumstances.<sup>3</sup>



Erosion on Spencer Creek, storm activity, Hamilton, spring 2011

## Next Steps

The 3-year HCA Climate Change Strategy is in the initial stages of implementation. In 2012, HCA will focus its efforts on implementing the actions listed under each strategic direction, with the HCA Task Force focusing on the actions that are part of current work plans, easy to do, and involve low costs. Implementation of the Strategy is currently the responsibility of the HCA, but responsibility will likely spread to include the City of Hamilton and others in the future.

### The next steps to be taken include:

- Continue to work on actions identified by the internal HCA task force;
- Educate and empower HCA staff and Board members to incorporate climate change into their programs and policies;
- Work externally with agencies to develop a work plan for carrying out risk assessments, vulnerability analyses and predictions for extreme events; and
- Work with external groups on raising awareness and implementing the Climate Change Action Charter.<sup>3</sup>

## Lessons Learned

According to Hazel Breton, Manager of Water Resources Engineering at HCA, there are four important lessons learned from developing HCA's Climate Change Strategy:

- 1) Keep the strategy **simple**;
- 2) **Consult** with staff regularly on the development and implementation of the Strategy;
- 3) Provide **learning** opportunities for staff and Board members (e.g. webinars, literature, guest speakers, etc.);
- 4) Have an individual within the organization **assigned the task** of leading the climate change initiative; and
- 5) Stress **local relevancy**.<sup>3</sup>

### For more information, please contact:

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