



Ontario's Conservation Authorities Addressing Climate Change Impacts in Ontario

Conservation authorities (CAs) are local watershed management agencies that deliver services and programs to protect and manage impacts on water and other natural resources in partnership with all levels of government, landowners and many other organizations. Conservation authority watershed management programs reduce greenhouse gases and help Ontario communities to adapt to local climate change impacts.

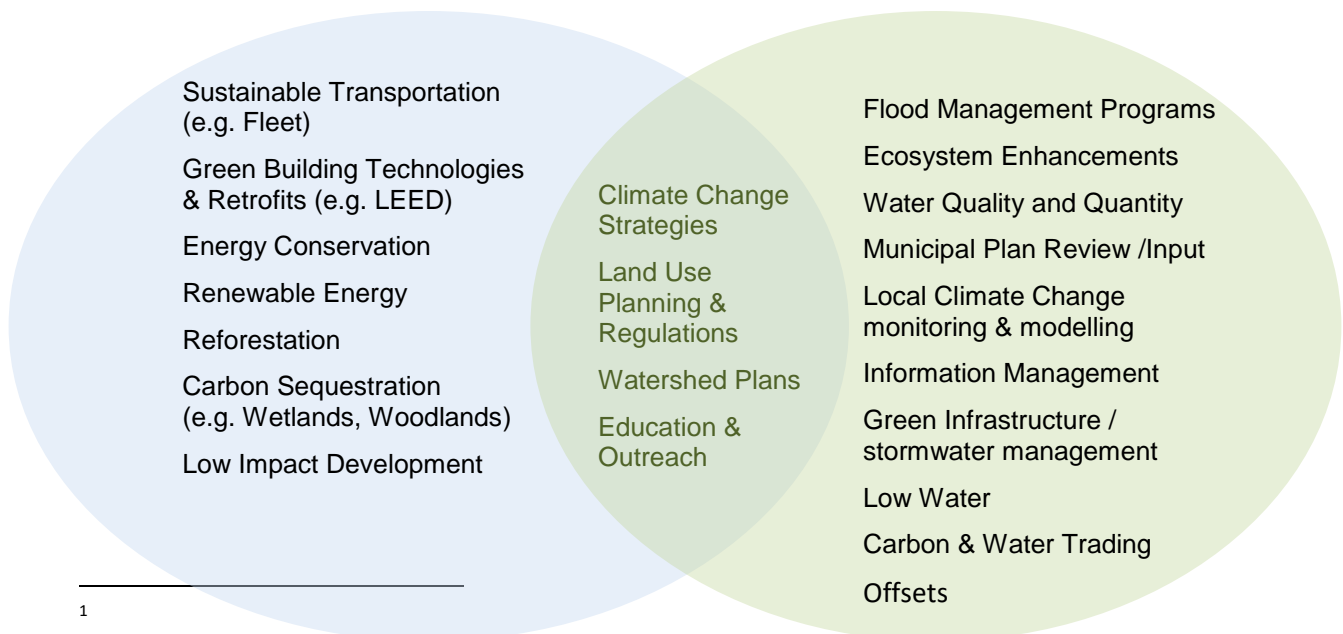
Through their various monitoring and other watershed management programs, conservation authorities see the impacts of climate change across Ontario's watershed including:

- threats to water quality and supply,
- rising temperatures with heat waves and changing precipitation patterns,
- more frequent severe weather with extreme rainfall,
- lowered river flows and warmed surface water,
- increased shoreline erosion and other hazards,
- degraded biodiversity (forests, wetlands, rivers, wildlife, birds and fish), and
- public health impacts including heat stroke, water borne diseases, bacteria and virus' from mosquitos, ticks and other organisms, cardiovascular and respiratory illnesses from poor air quality.

Conservation Authorities feel that mitigation and adaptation are critical, complementary initiatives which should be pursued together in order to work towards implementing a greener, low carbon economy supported by sustainable nature capital.

Mitigation

Adaptation



Role of Conservation Authorities in Mitigation and Adaptation Actions

Mitigation: Conservation authorities contribute to greenhouse gas mitigation through their own operations by increasing the use of sustainable transportation within their fleet operations, identifying and applying energy conservation technologies and practices, and incorporating or implementing renewable energy systems (e.g. water power). Where possible, green building technologies, low impact development, and retrofits are also being implemented or promoted, in urban and rural areas.

Additional conservation authority program areas that mitigate greenhouse gases include reforestation, carbon sequestration (e.g. wetlands), low impact development, and partnering in carbon offset initiatives (reforestation, habitat enhancement).

Adaptation: Conservation authority watershed management programs address the impacts of climate change as well as protect the ecosystem benefits we regularly rely on such as for drinking water, food, and support for manufacturing and other industries.

CAs monitor, track, and report on local conditions in Ontario's watersheds which can be used for climate change modelling and monitoring.

Watershed programs build local natural resource resiliency by protecting and improving water quality, ensuring sustainable water supplies, restoring and protecting biodiversity, and addressing low water issues.

Conservation authorities also protect people and property from increased flooding and other natural hazards, as well as work with agencies, businesses and residents to implement a wide variety of green infrastructure and stormwater management strategies and practices.

Next to the Province, conservation authorities own and manage the second largest amount of land in Ontario. These conservation lands provide both mitigating and adaptation benefits including:

- forests, wetlands, grasslands, waterways and other natural features which provide habitat for wildlife, pollinators and other biodiversity, reduce the risk of flooding, build shoreline resiliency, help to cool rising temperatures and sequester carbon
- sustainable and safe drinking water sources
- year-round recreational opportunities that provide both mental and physical public health benefits for Ontario residents, particularly during heat waves, pandemics and other stressful conditions

Conservation Authorities and Natural Hazards Management

The conservation authorities' role in flood management is critical for protect people and property in Ontario. Flooding, erosion and other natural hazards are dangerous and costly outcomes from climate change impacts. Conservation authorities monitor and predict flood flows and water levels year-round, operate flood control structures and provide flood risk information to local municipalities and emergency management officials. This information is used to keep people out of harm's way in advance of potential flood and erosion events. Conservation authorities also regulate new and existing development which guides development away from flood and erosion-prone areas in order to protect lives and property and reduce the cost of flooding to all levels of government.

Conservation Authorities Support Development of Ontario's Low Carbon, Green Economy

Conservation authorities protect water resources used as renewable sources of energy, practice water conservation, help to reduce emissions, and provide the local data and information that informs planning decisions & implementation of climate change adaptation actions that helps to build increased resiliency in watersheds.

These services contribute to curbing our consumption of resources, reducing our waste and emissions, and saves costs. In this way, we can adapt to continually unpredictable conditions and live within the means of the natural world.

Value of Conservation Authority Science

Conservation authorities' science and monitoring programs provide up-to date information and can significantly contribute to an improved understanding of watershed conditions and climate change impacts. Their watershed science initiatives assist communities to build local resilience by providing information that helps to guide development & implementation of climate change strategies, protect drinking water sources, assess and reduce flood risk as well as protect important farmland and biodiversity.

Conservation Authorities have well-established long term monitoring programs. Several CAs also undertake modelling studies for various purposes and some have in-house modelling capabilities. Further, this collection and analysis undertaken by conservation authorities across the province involves local municipal, provincial and federal government partnerships. This information is used in conservation authority Watershed Report Cards which are produced once every five years. Climate change science has been incorporated in this work as demonstrated in examples below:

- **Watershed monitoring programs:** CAs monitor a range of surface water and groundwater quality and quantity parameters. In addition to a few dedicated climate change monitoring stations, there are also event-based monitoring stations.
- **Low Water Response Programs:** CAs collaboratively manage these local programs, issuing low water advisories to indicate the state of water resources including an impacted state where water supply fails to meet demand despite water conservation measures.
- **Water Budgets:** Models used under the *Clean Water Act, 2006* Drinking Water Source Protection (DWSP) Program for water budget studies are also being utilized for climate change modeling at some conservation authorities. Some conservation authorities use these models, in addition to various studies, in order to assess the adaptive capacity of conservation organizations to respond to the effects of climate change.
- **Watershed and subwatershed studies:** CAs examine trends in quantity and quality of water as well as the aquatic and terrestrial resources over time. As well, a number of conservation authorities are incorporating climate change modeling studies into their watershed management

Protecting the Great lakes and St. Lawrence River from Climate Change Impacts

The Great Lakes are the primary source of drinking water to millions of Ontarians and they have great ecological and economic significance. The Great Lakes and St. Lawrence River are significantly influenced by fluctuating water levels which threaten shoreline resiliency, and by upstream land use practices which affect the quality/quantity of water from contributing watersheds. Conservation authorities use an integrated watershed management approach which manages our activities upstream, in order to protect downstream conditions in addition to addressing shoreline threats directly. This approach requires CAs to:

1. Use local monitoring and other information to learn about watershed conditions including their physical characteristics, how they function, what kind of land uses are currently underway, and the current state of local water and land resources,
2. Identify critical issues such as drought, flooding, fluctuating water levels and poor water quality, caused by climate change and rapid urbanization,
3. Collaboratively develop interrelated strategies and plans such as source protection plans, watershed management plans, natural heritage strategies and climate change strategies,
4. Collaboratively implement local actions such as flood management, water conservation, watershed stewardship, rural water quality programs and green infrastructure/low impact development.