

Municipal Climate Action Initiative Resource Package



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1. Climate Change in Nova Scotia



Atlantic Canada will experience:

- Increased temperatures
- Sea level rise
- Changes in precipitation
- Ocean acidification
- Increased rates of erosion
- Loss of biodiversity/habitat reorganization
- Frequency/severity of extreme weather events

Future projections for NS include increased number of “hot days”, fewer days of snow, changes in growing seasons, more extreme precipitation events, sea-level rise, ecosystem changes through species loss and introduction.

The extent of climate change will depend on how ambitious we are mitigating GHG emissions. This is why there are different projections for climate change. If we do we little to curb our GHG emissions, we will experience greater fluctuations in climate change impacts. In other words, how we behave influences which path we follow. Ambitious GHG mitigation strategies means less damage and financial investment reacting to climate change impacts in the future. Although the extent of change is uncertain based on our behaviour, we need to plan for changes we are experiencing now based on our historic and present day emissions.



Climate Data for Nova Scotia – provides information on maximum temperatures, minimum temperatures, precipitation, extreme precipitation, growing season lengths broken up into different regions of Nova Scotia.

- Historical data for a 30 year baseline period (1961-1990)
- Future projections up to 2100
- Link: <https://climatechange.novascotia.ca/climate-data>

Nova Scotia Historic and Future Projections

Season	Historical 1980s	Projected 2020s	Projected 2050s	Projected 2080s
Winter	-4.1°C	-2.9°C	-1.5°C	-0.2°C
Spring	4.2°C	5.1°C	6.2°C	7.4°C
Summer	16.9°C	17.9°C	19°C	20.1°C
Autumn	8.8°C	9.8°C	11°C	12.2°C
Annual	6.4°C	7.5°C	8.7°C	9.9°C

1.1. Sea-level rise projections

Provided by Department of Fisheries and Oceans ECoAS Project partners:
These projections are strictly the amount of sea level rise that is likely to occur by 2050 and 2100. It does not account for local coastal conditions such as slope, tidal range and wave climate. It is important to include that information in planning for sea level rise in your community.

	RCP8.5 SLR 2010-2050 (m)	RCP8.5 SLR 2010-2100 (m)
Cumberland (municipality) – Northumberland	0.2	0.7
Cumberland (municipality) - Bay of Fundy	0.3	0.8
Halifax (municipality)	0.3	0.9
Digby (municipality)	0.2	0.7
Yarmouth (municipality)	0.3	0.8
Shelburne (municipality)	0.3	0.8
Kings (municipality)	0.3	0.8
Annapolis (municipality)	0.2	0.7

2. Adaptation Techniques

Adaptation: a response to reduce risk in a changing climate. Adaptation strategies may be long term plans and large scale projects or a reactive response after an issue has occurred (reacting to extreme weather events).

Adaptation approaches can be different:

- Behavioural changes
- Operational modifications
- Technology intervention
- Planning changes
- Revised investment practices
- Regulations and legislation

Relevant principles for adaptation in Nova Scotia municipalities and towns:

1. Public safety - Make sure the risks to human health and safety are reduced by being prepared for the potential risks from climate change such as road wash outs, falling trees, storm surges, and power failures.

2. Ensure Water Quality and Quantity - Protect existing infrastructure (drinking water and waste water systems) and protective features (wetlands, recharge areas) to reduce to damage from intense rainfall and flooding.
3. Protect Buildings, Roads and Jobs - Ensure new development and existing coastal infrastructure are protected from the potential impacts of climate change; reducing the long term cost of maintenance and repair, and maintaining resource based jobs.
4. Let the Coast do the Work - Ensure natural coastal features like salt marshes and beaches, and shoreline processes (erosion and deposition) can continue to provide to cost effective coastal protection for inland areas.

2.1. Nova Scotia Legislation – Land use planning

Provincial Government:

Environmental Act (1994-5): Environmental Impact Assessment regulations

Statements of Provincial Interest: Statement of provincial interest on flood risk.

- Protect public safety and property
- Reduce requirement for flood control works
- Reduce flood damage restoration in floodplains
- Applies to flood risk areas that are designated by the Canada-Nova Scotia Flood Damage Reduction Program *No coastal areas have been identified under this program*

Municipal Government:

Municipal Government Act – Adopted 1998 (updated 2010):

- Municipal authority to develop Municipal Planning Strategies (MPS) and Zoning Bylaws – Under PART VIII, Section 220 of the act can regulate land use through an MPS and Zoning Bylaws.
 - Municipalities have significant power in regulating what type of development is allowed within their jurisdiction. In order for municipalities to regulate and direct land use they must have a MPS and land use bylaw in place.
 - Coastlines in municipalities that do not have a municipal land use plan are only protected by province wide standards set out by provincial subdivision regulations, building codes, and provincial department acts, such as the *Environmental Act*.

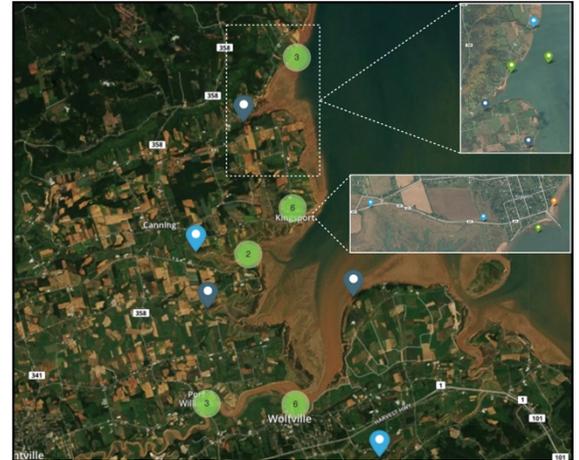
The fact that municipal governments in Nova Scotia have direct control over land use regulations for most land uses is both a blessing and a curse. There is power in the ability to regulate what type of development is allowed within their jurisdiction. However, these decisions require financial, technical and staff capacity to address that is often limited in Nova Scotia communities and municipalities.

2.2. Adaptation Approaches

Public outreach around climate change impacts is often necessary to increase understanding on local situations and gain support for any adaptation strategies the municipality decides to take part in. Social and educational strategies include:

- Educational programs supporting outreach activities
- Community engagement sessions
- Creating local interest committees to support community input in decision making

Examples of adaptation approaches



Approach	Implementation
Building standards	Specify minimum technical and safety regulations for designing buildings to reduce the effects of flooding, sea level rise and extreme storm events. i.e. Raising buildings, flood proofing and retrofitting.
Community emergency measures plans	Communities need to have plans that prevent, mitigate and prepare them for natural hazards and extreme climatic events. Everyone knows what they need to do (fire dept, ambulance) i.e. If the road washes out and cuts people off.
Development/ Construction setbacks	Restricts development a certain distance back from at risk areas (i.e. buffer from the coasts). Can prohibit or restrict the size/density of development, type of shore stabilization allowed, activities, removal/cutting of vegetation and require only temporary structures (boardwalks) be built . Setbacks can be vertical, horizontal, or both; vertical setbacks protect against flooding while horizontal setbacks protect against erosion. Benefits: can reduce infrastructure losses, mitigate erosion and flooding, and allow coast to change naturally.
Easements/ Rolling easements	Creates barrier similar to setbacks. Rolling easements do not restrict development but prevent landowners from holding back the sea (no shore hardening allowed) so help maintain shoreline processes. Owners are responsible for own repairs if coastline changes (rolls back) and there is damage. Have minimal impact on property values. Allows dry or intertidal land to always be available, preserving public access to the shore and water dependent uses. Can promote construction of small, more easily mobile structures near the shore. Appropriate where preventing development is not feasible and shore protection is unsustainable.
Hazard mapping (erosion and flooding)	Provides information to land owners, insurers, regulators on hazard areas so they can plan for and reduce impact on infrastructure and human safety from riverine and coastal flooding as a result of storm surges and heavy rains. i.e. Locate new development away from hazards (flooding, erosion zones).

Incentives and funding	Mandate or provide financial incentives: septic tank pump outs and repairs, water harvesting, rebates/ grants for water saving devices. Can minimize water runoff and pollution of coastal waters.
Increase green space/decrease hard surfaces	Reduce hard surfaces/imperviousness and increase green space to reduce flow rates (absorb/detain) to outfalls and minimize flooding and erosion i.e. Increase grassed areas and vegetation, create more wetlands. Also serves to protect wetlands and coastal habitats from land pollution.
Land acquisition	Purchase coastal lands to protect and preserve coastal lands, significant habitats, hazard lands (erosion), and areas susceptible to effects of climate change. Can reduce the need for shoreline stabilization and can protect and maintain natural shoreline processes.
Land exchange	Use individual negotiation to encourage owners to exchange property in coastal areas for municipality owned land away from shoreline. Frequently used where land is exchanged for hospital/school developments and similar to transfer of development rights used successfully in farmland preservation.
Natural shore line stabilization	Restore natural shoreline stabilization to better deal with erosion and natural storm surges. For example: stabilize beaches and dunes with vegetative plantings and, restore wetlands to act as natural buffers against erosion and storm surges - dampens wave energy.
Realignment of the coast	Remove/abandon hardening and restore natural coastline to allow it to migrate naturally and act as a natural buffer from rising sea level and storm surges. Replace undersized culverts, remove dykes, enhance and restore structural complexity and biodiversity of coastal wetlands which also act as water quality filters and refuges and nurseries for many species.
Relocation of structures	Relocate vulnerable and important infrastructure away from the coast. Reduces infrastructure losses & human safety risks. i.e. Point de Chene, NB moved buildings away from shore.
Structural shore line stabilization/shoreline hardening	Use hardening or armouring techniques (seawalls, dykes, bulkheads) to protect critical infrastructure. Option of last response and although may provide immediate results, may not successfully protect coastal land in long term.
Water conservation measures	Mitigate and plan for potential salt water intrusion of shallow aquifers and freshwater shortages i.e. water harvesting, conservation, reclamation, grey water usage.
Zoning/ Zoning overlay districts	Zoning by-laws are effective for guiding development on vacant land. They can regulate how much and type of development that can occur, shoreline protection, landscaping, building materials, flood prevention, drainage, watercourse alteration and soil removal. Zoning overlays require further requirements to certain areas a community identifies as valuable and vulnerable (shoreline areas, erosion areas etc). Overlays sit on top of the existing zoning ordinances land use requirements.

3. Cost Benefit Analysis Chart Template

PROJECT TITLE						
AUTHOR		DATE		VERSION	0.0.0	

BASIC COST BENEFIT ANALYSIS CHART						
PROPOSED ACTION / ALTERNATIVE	BENEFITS	BENEFIT IMPACT HIGH=3 MEDIUM=2 LOW=1	COSTS	COSTS IMPACT HIGH=3 MEDIUM=2 LOW=1	RATIO BENEFITS / COSTS	RANKING

4. Project Management Action Plan Template

GOAL 1	ACTION STEP DESCRIPTIONS	PARTY / DEPT RESPONSIBLE	START DATE	DATE DUE
Write your goal statement here.				
List resources and desired outcomes.				
GOAL 2	ACTION STEP DESCRIPTIONS	PARTY / DEPT RESPONSIBLE	START DATE	DATE DUE
Write your goal statement here.				
List resources and desired outcomes.				
GOAL 3	ACTION STEP DESCRIPTIONS	PARTY / DEPT RESPONSIBLE	START DATE	DATE DUE
Write your goal statement here.				
List resources and desired outcomes.				

5. Funding Opportunities

There are a number of funding streams available to municipalities and community organizations. Types of funding include: Family Foundations, Community Foundation, Corporate Foundation, and Government Grant Program, Corporate Grant Program/Fund, and Government Foundations. Funding can also come from private entities and corporations. These groups often support environmental protection and social activism through grants. These types of projects are usually small scale funding opportunities that produce a physical adaptation strategy in a community (community accessibility enhancement, tree planting, educational murals or art pieces, coastal restoration, etc.) Consider partnering with a local organization or group if municipalities are not eligible to apply.

Examples

Funding Sources

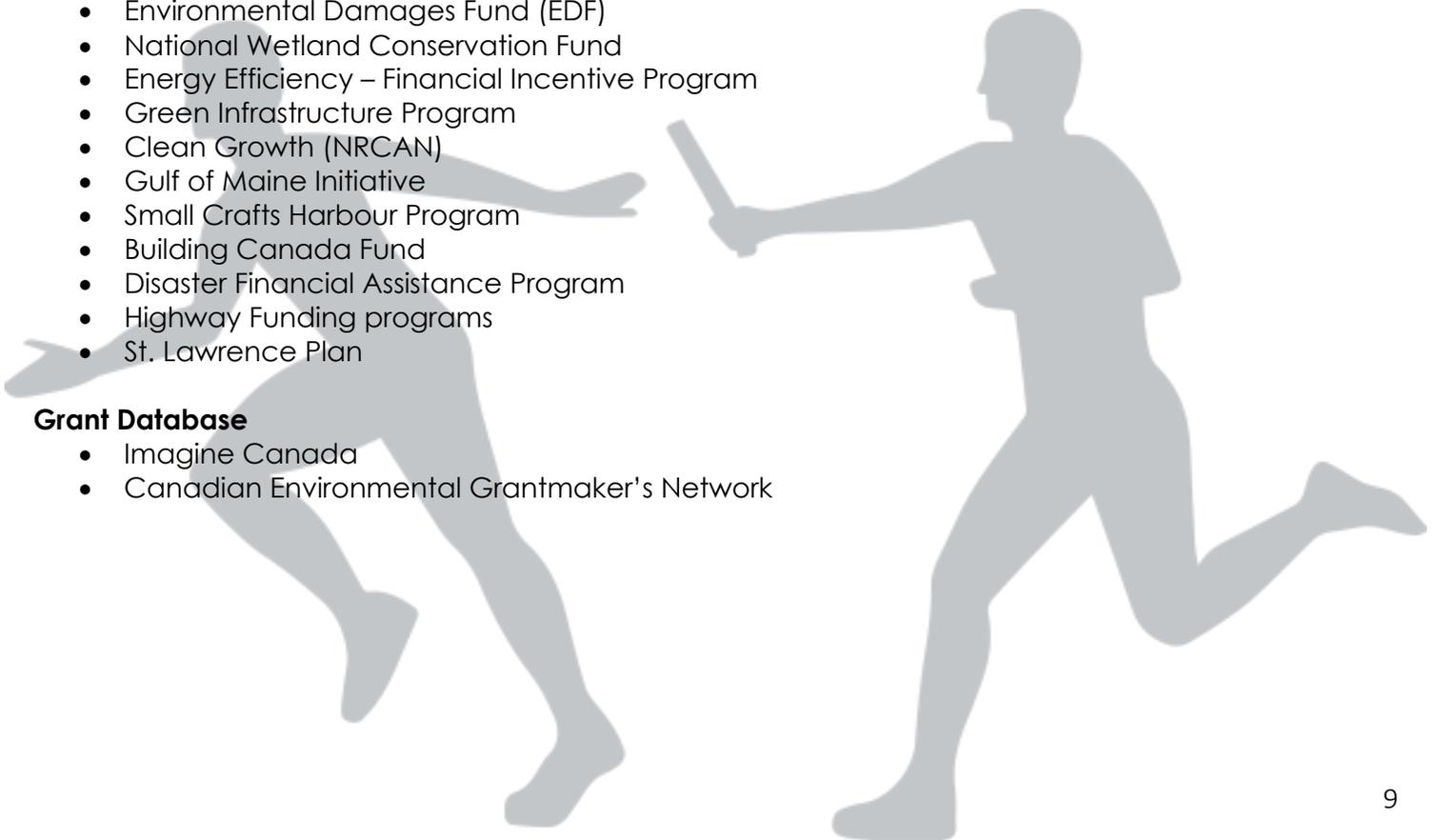
- Federation of Canadian Municipalities (FCM)
- Federation of Nova Scotia Municipalities (FNSM)
- Natural Resources Canada (NRCAN)
- Environment and Climate Change (ECCC)
- Infrastructure Canada
- Metcalf Foundation
- Sustainable Development Technology Canada

Specific Programs

- Green Municipal Fund (FCM)
- Community Economic Development Initiative (FCM)
- Municipalities for Climate Innovation Program (FCM)
- EcoAction Community Funding Program
- Environmental Damages Fund (EDF)
- National Wetland Conservation Fund
- Energy Efficiency – Financial Incentive Program
- Green Infrastructure Program
- Clean Growth (NRCAN)
- Gulf of Maine Initiative
- Small Crafts Harbour Program
- Building Canada Fund
- Disaster Financial Assistance Program
- Highway Funding programs
- St. Lawrence Plan

Grant Database

- Imagine Canada
- Canadian Environmental Grantmaker's Network



6. Resource Contacts

Federal Contacts

Environment and Climate Change Canada

Telephone: 1-800-668-6767

Email: ec.enviroinfo.ec@canada.ca

Atlantic Office

45 Alderney Dr

Dartmouth NS B2Y 2N6

Federation of Canadian Municipalities

Provides resources, training and funding to local governments through programs and projects. They have a number of focus areas to fit a variety of needs for local governments.

<https://fcm.ca>

Infrastructure Canada

General Inquiries: Email: infoc.info.infoc@canada.ca

Telephone Infrastructure Canada: 613-948-1148

Toll Free Number: 1-877-250-7154

Natural Resources Canada

General Inquiries:

Toll-Free in Canada: 1-855-525-9293

Telephone: 343-292-6096

Fisheries and Oceans Canada

Directory for Office: <http://www.dfo-mpo.gc.ca/contact/regions/index-eng.html>

Provincial Contacts

- For a List of Current **Nova Scotia Ministers** and **Member of Legislative Assembly (MLA)**:
<https://nslegislature.ca/>

Nova Scotia Environment

<https://novascotia.ca/nse/>

Department of Lands and Forestry

<https://novascotia.ca/natr/>

Service Nova Scotia and Municipal Relations

Responds to requests for information on provincial government programs and initiatives.

Service Nova Scotia Office Locations: <https://www.gov.ns.ca/snsmr/contact/locations.asp>

Nova Scotia Energy and Mines

<https://energy.novascotia.ca/>

Department of Transportation and Public Works

<http://www.gov.ns.ca/tran/>

Organizations

Clean Nova Scotia - <http://www.clean.ns.ca>

Ecology Action Centre - <http://www.ecologyaction.ca>

Educating Coastal Communities About Sea-Level Rise <http://www.sealevelrise.ca>

Clean Annapolis Royal Project - <https://www.annapolisriver.ca/>

Bluenose Coastal Action Foundation - <https://www.coastalaction.org/>

Quest Canada - <https://questcanada.org/>

Nature United - <https://www.natureunited.ca/>

7. Writing Proposals

Funding calls go out through the year from a variety of sources. The process of looking for funding opportunities can be a time consuming pursuit. Before you start your search, it may be good to narrow down your topic of interest. Things to consider before you seek out funding opportunities:

- What is your top priority in looking for funding?
- What is your long term strategy and what sort of work could help achieve that?
- What is your staffs current commitments and in what ways will the new funding help address current capacity?
- Are there any partnership opportunities for this work?

Once you've determined what funding you would like to pursue, confirm deadlines and writing process with any persons who will be helping write and review the proposal.

- **Read through the application from start to finish and note key information:**
 - Who has to sign the application? If it's a specific person, ensure you notify them well in advance
 - Do you need letters of support? If so, how many and from whom? Reach out early – these can be time consuming. Offer to draft a letter and at the very least, provide all key details to partners
 - When is it due?
 - Are there any sections where you'll need information that doesn't come from your own head? Gather these things early.
- **Build a draft budget**
 - Before beginning the budget, first have a good idea of the scope of work, resources required, activities, and timeframe of the work
 - Send draft budget & key information from proposal to financial team to review.
 - Things you might need to include in your budget
 - Travel, food, venue, facilitator for team retreats and/or for remote team members to visit
 - Honoraria and travel for participation of marginalized populations
 - Communications (video, graphic design etc.)

- Professional development
- Computers
- Evaluation (outside consultant, software, report design, etc.)
- For multi-year projects, allow space in salary line in case of staff turnover; also budget for salary increases
- **Application writing**
 - Think about what the funder is looking for. Know the funder, build a relationship, and see the work through their eyes
 - Goals, Objectives, Outcomes, Activities, Outputs
 - Goal: your big vision. This is your reason for doing the work. It should be larger than the time frame of the grant application
 - Objective: The overarching thing you want to accomplish within the time frame of this proposal. Often this sentence start with "To...."
 - Outcome: The result or what you intend to achieve
 - Output or Activity: These terms could be interchangeable depending on the context
 - Give persons reviewing the draft proposal at least one week in advance, up to two weeks for larger proposals.
 - Think about scope of work and people resources needed to complete work.