



ClimAction Services Inc.

17 Tulip Street, Dartmouth, NS B3A 2S5
902-877-2981
climaction@outlook.com

**CLIMATE CHANGE IN
AFRICAN NOVA SCOTIA COMMUNITIES**

FINAL REPORT

MARCH 2021

Principal Applicant

Dr. Ingrid Waldron, Ph.D.
Associate Professor, School of Nursing, Faculty of Health, Dalhousie University
Email: iwaldron@dal.ca

Workshop Facilitator & Author

ClimAction Services



INDEX

	Page #
Acknowledgments	3
Definitions	4
1. Introduction	5
2. Methodology	7
a. Literature Review	
b. Producing Climate Projections	
c. Community Engagement	
3. Workshop Presentation	8
4. Evaluating the Workshop	10
5. What We Learned	11
a. Climate Change and Racism	
b. Vulnerabilities	
c. Opportunities	
6. Moving Forward	15
a. Community Engagement	
b. Youth	
c. Community Monitoring	
d. Sharing the Results	
e. Government	
f. Business	
g. Associations	
References	17
Appendix 1 – Poll Results	18
Appendix 2 – Climate Projections	19

ACKNOWLEDGMENTS

Principal Applicant: **Dr. Ingrid Waldron, Ph.D.**
 Associate Professor, School of Nursing, Faculty of Health,
 Dalhousie University

Workshop Facilitator: **ClimAction Services**

Funder: **African Nova Scotian Affairs**

DEFINITIONS

Adaptation: Adjustment in natural or human systems in response to actual or expected climate stimuli and their effects, which moderates harm or exploits beneficial opportunities.

Climate: The average pattern of weather in a location from season to season, year to year.

Climate change: A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.

Climate scenario: A plausible and often simplified representation of the future climate, based on an internally consistent set of climatological relationships and assumptions of radiative forcing, typically constructed for explicit use as input to climate change impact models. A “climate change scenario” is the difference between a climate scenario and the current climate.

Climate change impacts: The adverse and beneficial effects of climate change on natural and human systems. Depending on the consideration of adaptation, one can distinguish between potential impacts and residual impacts.

Extreme weather event: An event that is rare within its statistical reference distribution at a particular place.

Hazard: The potential occurrence of a natural or human-induced physical event that may cause loss of life, injury or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision and environmental resources.

Risk: A combination of the likelihood (probability of occurrence) and the consequences of an adverse event (e.g., climate-related hazard).

Sea-level rise: An increase in the mean level of the ocean. Relative sea-level rise considers the mean level of the ocean relative to the land.

Storm surge: An abnormal rise of water generated by a *storm*, over and above the predicted astronomical tides.

Vulnerability: The degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change. Vulnerability is a function of a system’s exposure to climate change, sensitivity and adaptive capacity.

Weather: The specific condition of the atmosphere at a given place and time. It includes temperature, wind, precipitation, humidity and sunshine.

1. *INTRODUCTION*

Wetter, wilder and warmer are now the defining hallmarks of Atlantic Canada's climate as we are now experiencing more frequent and intense rains, higher winds / tides / temperatures, a greater number of storms and severe weather events, the introduction of pests and an increase in the number of wildfires.

There are 48 African Communities located across Nova Scotia and little is known regarding the precise nature and extent of climate change impacts, specific climate threats and future challenges that they will face moving forward

If left unchecked, climate change impacts will become more significant, widespread and continue to threaten the socio / economic fabric, social well-being, public health and safety of residents living in black communities.

In November 2020 ClimAction Services Inc. met with Dr. Waldron to explore organizing workshops on climate change that would be of interest to African Nova Scotian communities.

A proposal to organise a series of workshops was developed. It would provide information to help these communities:

- Understand the nature and significance of climate threats described in terms of their socio-economic, public health, cultural and environmental significance.
- Identify adaptation approaches to address climate change challenges.
- Build the capacity of the community and its residents to act and reduce impacts through adaptive management.

Given that February was African Heritage Month and the theme this year was "Black History Matters: Listen, Learn, Share and Act" the workshops followed this theme by placing a priority on hearing from the participants on their thoughts on climate change issues and actions needed to address them.

Dr. Waldron submitted this proposal to African Nova Scotia Affairs for funding and it was approved in November 2020. It was decided that two 2-hour workshops would be held in each of the following communities: Shelburne, East Preston/North Preston/Cherry Brook and Truro.

To ensure that community needs and priorities were met coordinators for each location were identified. These coordinators dedicated significant time and effort in helping to organize the workshops and we wish to thank them for their efforts.

During the COVID-19 pandemic consideration for the health and safety of participants was of utmost importance. Two options were looked at: in-person or via Zoom. For either option there were limitations as to the number of participants that could be accommodated. In addition, in-

person workshops would need to meet all COVID protocols for masks, social distancing and disinfection procedures. After consultation with the communities themselves Shelburne opted to have their workshops via Zoom, East Preston/North Preston/Cherry Brook and Truro decided on in-person workshops. During February and March 2021, the workshops were presented to 34 participants from these three communities.

2. METHODOLOGY

Literature review – A literature review of media reports, grey literature and published documents were undertaken to identify climate change impacts across the province and within the communities, highlight climate threats associated with a changing climate and determine how existing adaptive management approaches could be used to reduce climate change impacts.

The literature review was useful in identifying some of the more pressing challenges the communities face and confirming that the main impacts are those associated with precipitation, temperature, extreme events and storm surge/sea level rise.

Producing the Climate Projections – To generate climate hazard projections that are unique and relevant to each community, ClimAction Services Inc. accessed a number of scientifically based data and global climate model output sites. The predominant source was the Environment Canada Climate Change Climate Services Portal (Climate Data Portal) that includes customized climate hazard projections for specific locations and communities in Canada. This listing of projections was reviewed and evaluated to help fulfill the objectives of the study.

The projections extend to 2100 and include change values for temperature, precipitation amounts, wind values, freezing rain occurrence, extreme weather events, including hurricanes, and sea level rise/storm surge events, specific to each community; Truro, East Preston/North Preston/Cherry Brook and Shelburne.

Once the projections were presented, the implications and impacts on the community were examined and discussed. These threats were described in terms of socio-economic, health, cultural and environmental impacts.

Community engagement - One of the main objectives of the workshops was to involve participants in a discussion about climate change. Throughout the presentation participants were encouraged to ask questions and/or make comments. The presentation included a section highlighting community and related climate impacts that talked about specific events (heat waves, droughts, flooding) to encourage participants to discuss what effects that they had seen and how important these impacts were to the community.

A three-question poll was presented to participants to gauge what threats were of most concern, what the community vulnerability was to these threats and what might be the priority actions to deal with this vulnerability. The questions included what are the climate threats of concern, what is the community vulnerability and what priority actions might you employ? The participants were asked to rank the answers in terms of high, medium or low impact in their community. The questions and a summary of the rankings are attached in Appendix 1.

3. **WORKSHOP PRESENTATION**

The presentation included four main components:

- An overview of climate change which identified the role of burning fossil fuels in contributing to the problem of climate change and some of the more significant impacts due to heat waves, flooding and extreme weather events including hurricanes.
- Impacts on each community which discussed the climate change threats and their impacts (e.g., temperature increases, drought, extreme weather) in terms of socio-economic, health, heritage, cultural impacts.
- Responding to the challenge - This section covered the two-pronged approach to tackling climate change.
 - The first approach is aimed at reducing Greenhouse Gases to slow the occurrence of global warming and climate change through a combination of reducing energy demands, carpooling and using energy efficient products.
 - The second approach is to develop adaptation strategies by, for example, adopting water conservation measures to ease water shortages during droughts.
- Opportunities for your community - The participants were asked to identify actions that they could take to help address climate change challenges.

It also included some examples of threats, impacts, and opportunities in order to focus discussions with participants.

Threats - summarized version of the threats:

- Temperature Change – Extreme temperatures (days >30C) increasing by over 10-fold.
- Precipitation Change – Increasing Annual Amounts (13% more by 2100).
- Seasonal Change - Less precipitation amounts in summer, more in autumn and winter.
- Daily and Hourly extreme precipitation amounts - becoming more frequent.
 - (24hour extreme 50-yr amount becoming 10-yr amount, 25-yr amount becomes 5-yr amount).
- Sea Level Rise – Increasing to 1-1.5m by 2100. (increased events of storm surge and wave run-up).
- Extreme events increasing – higher winds, increasing occurrence of thunderstorms/lightning/hail, etc.

Impacts - Examples of potential impacts:

	Impacts
Increase in heat wave and heat stress occurrences.	Increased risk from respiratory illness, heat stroke and sometimes death.
Drought - Less water availability.	Increased demand for emergency health services. Increased risk to community from forest fire hazard.

Adaptation - Potential adaptation strategies.

- Water conservation measures may be required, installing water efficient devices and enhancing water conservation education.
- Adopt community cooling centres.
- Develop an early warning system to alert community members of weather conditions that could potentially pose health risks.
- Review emergency plans for community to include evacuation routes.

Opportunities - At the end of the discussions on threats, impacts and adaptation some potential opportunities for addressing climate change were offered to stimulate ideas that would work for the community. They included:

- Securing funding support or entering partnership arrangements to address climate change challenges by working with sustainable businesses and Efficiency Nova Scotia and pursuing greening the community opportunities using a variety of methods (e.g., community gardens, planting trees).
- Influencing government policy and priorities to protect the community (e.g., influencing priorities under the Nova Scotia Sustainable Prosperity Act, adapting flood protection measures and using climate resilient construction materials).
- Engaging others to address climate change priorities (e.g., Green Youth Corps, influencing school curriculum to include more emphasis on science, engineering and math and supporting community monitoring by youth of weather [CoCoRaHS]) and developing a community-based communication strategy.

4. *EVALUATING THE WORKSHOP*

About half of the participants completed an evaluation of the workshop itself. All participants who answered would recommend this workshop to others. Most participants who answered (63%) said the workshop met their expectations and 31% of those answering felt it exceeded their expectations.

Overall participants who answered felt they had increased their knowledge of climate change (58%) and of adaptive management (63%).

Some comments with regards to what participants felt were relevant in understanding climate change and how to reduce the impacts include:

“I learned that I need to take action myself and include as many people as I can share this knowledge with...”

“Enhanced knowledge is powerful to our community at large and important for our children and grandchildren for sustainability.”

“We need to get the youth involved. Starting with youth and them knowing what is coming for their future but we need to support them.”

“That I could make a difference by trying to get the younger community members involved. Let them know how it will affect them in years to come.”

“The list of available funding programs was valuable.”

What were the highlights?

“All of it.”

“The ‘blanket’ analogy was very helpful in creating a visual to understand how quickly the impact is happening.”

“The group conversation.”

What could be improved?

“Nothing, it was good.”

“More workshops.”

5. *WHAT WE LEARNED*

Climate Change and Environmental Racism

While environmental racism was not explicitly referenced in the workshop agenda, there was extensive discussion with participants regarding the climate change risks, and unique vulnerabilities within the communities. This issue is an important factor in the ultimate impacts on individuals and the communities.

International agencies, such as the United Nations, recognize that those least responsible for contributing to the causes of climate change are most vulnerable to the impacts. A Working Paper from the United Nations Department of Economic and Social Affairs highlights that.

Inequality has been a persistent issue in the climate change discussion. Much of the focus in this discussion has been on inequality across countries where debates are raging over differences regarding the responsibility for causing climate change and the consequent responsibility for dealing with the impacts. By contrast, within-country social inequality has received less attention.

In the United States, Dr. Robert Bullard has authored a number of books on environmental racism. He highlights the complexity of the climate change issue, and how disproportionality makes it a serious social justice issue. While being a global and national issue, many of the challenges exist at the local level, where the population is at the front line of the impacts of climate change. For African Americans, a couple of examples include vulnerability to extreme heat in the urban core, or at a high risk of flooding, such as in New Orleans which was impacted severely by Hurricane Katrina. Many of these communities are also at higher risk of other issues like food and water security, or health problems (e.g., asthma).

While there hasn't been much documented study of the impacts of climate change on the African Canadian population, Dr. Ingrid Waldron's book (*There's Something in the Water: Environmental Racism in Indigenous and Black Communities*) and her ENRICH project, illustrate the ways in which the effects of environmental racism (such as community proximity to waste disposal sites and toxic industries) are compounded by pre-existing vulnerabilities, such as long-standing social and economic inequality. These same vulnerabilities contribute to enhanced vulnerability in climate challenge, and, therefore, an important context for the work completed in this project with the three African Nova Scotia communities.

Vulnerabilities

Based on the workshop discussions and the answers to the poll that participants completed the concerns are as follows:

- The number one concern shared by participants was the relative high proportion of **elderly residents** in the communities. Elsewhere in the world, heat waves associated with a changing climate have impacted health and resulted in a much higher proportion of loss of life amongst the elderly. Older residents, some of which have mobility challenges, are also at higher risk from the impacts of storms when evacuations are required, or when there are extended power outages.
- Participants agreed that **community shelters** (for heating, cooling, food and water) were an important community need to deal with the impacts of extremes.
- **Water quantity and quality** is important to all communities. The increased likelihood of droughts (that are already being observed) and the impact on water availability, are of concern, especially for residents relying on wells for their source of water. There was frustration from some Shelburne participants that town drinking water had not been extended into their community.
- Many of the participants identified concerns with **legacy waste sites**, where enhanced precipitation and runoff would further threaten contamination of their soil and freshwater resources. There was also an air quality issue raised where unregulated burning of potential toxic materials may be a threat to health, especially with open windows due to the increased number of hot days in a changing climate.
- The age and **condition of homes** was shared as a potential vulnerability. Certainly, there were concerns with the ability of structures to withstand more powerful storms. In addition, many homes do not have air conditioning, leaving residents more vulnerable to heat events.
- The elevated threat from **heat and drought** raised concern from participants from the resultant elevated threat of wildfire, with the amount of fallen trees from previous storms adding to that risk.
- The increased threat from freshwater and coastal **flooding** associated with climate change was of highest concern from participants that have experienced recent floods. Truro, for example, have had a couple of extreme events in the past 10 years, and residents of Shelburne have observed the impact of rising seas on the waterfront areas of downtown. The Climaction team pointed out that flood risk maps are not available for community and emergency planning, and until they are, residents may not appreciate the real threat.
- Substantial action to address the climate risks to the communities would be required by **government**. Workshop discussions with a couple of the communities clearly indicated a

level of distrust or lack of confidence that their concerns may not be taken seriously, because they were Black.

- On a couple of occasions it was discussed that there was not **adequate representation** from African Nova Scotians from the environmental sciences or related businesses that provide energy efficient options (e.g., heat pumps). It is worth noting that the community coordinators were extremely helpful providing advice and feedback to the Climaction Team, who are all White, to enable an open and trusting dialogue with participants during the workshops.

Opportunities

The workshops wrapped up with a discussion on potential next steps (opportunities). These were categorized in three broad categories:

Community Engagement - The importance of discussing climate change with friends, families and neighbours was emphasized. The workshops were an opportunity to start the discussion, and participants were encouraged to keep the conversation going. Given the leadership demonstrated by the youth, we discussed the value in engaging young people in the community, through youth groups, faith activities, and school.

Funding and Partnerships - Discussion took place on a number of energy efficiency and greening funding options available to communities from various levels of government. Engagement within the community would enable priorities to be established which would enable nimble response to available funding programs (several examples provided to participants).

Influencing Government and Business - Given the investment and expertise required for significant projects to enable community resilience to climate change, it will be necessary for all levels of government, and community development agencies to recognize the priority needs and vulnerabilities in the communities.

After discussion of the various options participants identified priority opportunities for action. All three communities were in agreement on the top priorities (in order):

- Participants welcomed the opportunity to discuss climate change and agreed that, in order for the community to be positioned for future opportunities, a community-wide communication strategy was required.
- Given the fact that young people would be faced with even more severe impacts from climate change, and they are the future leaders in our communities, an engagement strategy is required to take advantage of their energy and talents, to become involved in the climate change challenge.
- Recognizing the importance of climate change in the current political context, participants agreed on the importance of influencing elected officials to recognize the

climate change threat to African Nova Scotia communities and for them to invest in community resilience.

- Participants also discussed taking advantage of initiatives offering energy efficiency audits and green related programs (e.g., community gardens and tree planting). Related to this, it is recognized that “Green” economy presents employment and business opportunities for African Nova Scotians.

6. *MOVING FORWARD*

To position the communities in addressing climate change, ClimAction Services Inc. is offering several suggestions that the communities, the governments and citizens may wish to pursue.

Community Engagement - Since participants felt that the sessions were of value and would recommend it to others, the suggestion is that additional workshops be offered in other African Nova Scotian communities.

Furthermore, communities might benefit from adding climate change to the mandate of an existing grass-root organizations such as the South End Environmental Injustice Society (SEED) in Shelburne. These organizations could act as a focal point in addressing climate change issues and opportunities for the communities and their residents. As an initial step an action plan could be drafted to address climate challenges by:

- Ranking and evaluating the issues to determine which ones require immediate attention and which ones are less urgent,
- Deciding on which strategy can be implemented through community engagement, which ones require external funding and those that can be delivered through strategic partnership arrangements,
- Forging partnerships with municipalities the province and others to identify areas where increased cooperation and joint delivery would be mutually beneficial.

Youth - Youth need to be engaged in the climate challenge to provide their energy and enthusiasm to addressing climate change issues: The youth of today could become the meteorologists of tomorrow. There are a number of models which would encourage participation by the youth of the community. For example, Shelburne's SEED initiative includes youth participants and leaders and the National Anti-Environmental Racism Coalition (NAERC) has recently been formed which includes a Youth Leadership Working Group.

Community Monitoring - Communities have the opportunity to develop their own climate monitoring activity through the establishment of a Community Collaborative Rain Hail and Snow (CoCORaHS) station. This initiative allows the communities to measure precipitation amounts daily and use the data to monitor extremes, anticipate impacts, and develop adaptation strategies. This activity is also suitable for schools.

Note: Climaction Services Inc. would be pleased to assist in this, including providing the equipment for each community hosting a workshop.

Sharing the Results - The results of these workshops should be shared with African Nova Scotia Affairs, municipal governments, the community and others, as appropriate, to identify areas where cooperation, coordination and support would be mutually beneficial.

Government - All levels of government are placing a high priority on climate change. Climaction Services Inc. has met with individuals responsible for planning and consultation with

the HalifACT (Halifax) climate plan, as well as the Nova Scotia department of Environment and Climate Change Sustainable Development Goals Act. Based on the feedback we received at the workshops, we encouraged them to develop an inclusive consultation strategy with African Nova Scotia communities so their unique perspectives and priority needs are addressed.

Business - Climaction Services Inc. has been in contact with the NS Black Business Initiative (BBI) and the Halifax Partnership (Road to Economic Prosperity Action Plan) to recommend including “Green” related business and economic development support. In the case of BBI, they have already explored internship options with the Clean Foundation.

Associations - Given the gap in Black professionals in the weather, water and climate sciences, the Canadian Meteorological and Oceanographic Society (CMOS) has agreed to work with the Imhotep Legacy Academy to support their work with young African Nova Scotia students and expose them to the exciting opportunities within the Earth Sciences. Discussions are also taking place with the NS Black Business Initiative regarding support to their Business is “Jammin” initiative for youth.

REFERENCES

IPCC, 2014: *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.

Bush, E. and Lemmen, D.S., editors (2019): *Canada's Changing Climate Report*; Government of Canada, Ottawa, ON. 444 p

ClimateData Portal, Canadian Centre for Climate Services, Environment Canada Climate Change; <https://climatedata.ca>

UN Secretariat, 405 East 42nd Street New York, N.Y. 10017, USA e-mail: undesa@un.org
<https://www.un.org/development/desa/publications/workingpaper>

Bullard, D. D., Gardezi, M., Chennault, C., & Dankbar, H. (2016). Climate Change and Environmental Justice: A Conversation with Dr. Robert Bullard. *Journal of Critical Thought and Praxis*, 5 (2). <https://doi.org/10.31274/jctp-180810-61>

There's Something In The Water Environmental Racism in Indigenous & Black Communities
Ingrid Waldron, Fernwood Publishing

Municipal Climate Change Action Plan – Halifax Regional Municipality September 2013
[MunicipalClimateChangeActionPlanReport.pdf \(halifax.ca\)](#)

Municipal Climate Change Action Plan – Municipality of the District of Shelburne December 2013
[file.html \(municipalityofshelburne.ca\)](#)

Municipal Planning Strategy, Town of Truro September 2010, Amended June 2018
[file.html \(truro.ca\)](#)

WORKSHOP – CONSOLIDATED POLL RESULTS
Summary of results from all three communities ranked high to low

Climate Threats of Concern

1. Heavy rain/flooding
2. Heat waves/human health threats
3. Windstorms/power outages
4. Drought/water shortages
5. Sea level rise/flooding

Community Vulnerability

1. Large elderly population
2. Wells that are prone to go dry
3. Older homes with aging roofs
4. Contaminated sites that may impact water quality
5. Few homes with air conditioning
6. Nearby forests & wildlife threats
7. Homes near the coast
8. Limited access in and out of community
9. Frequent outages impacting food & water availability
10. Homes prone to freshwater flooding

Priority Actions

1. Influence politicians to invest in community resilience
2. Engage the youth
3. Develop community communications strategy
4. Programs for energy efficiency & green energy
5. Business/employment opportunities for the community
6. Work through an existing mechanism (e.g., ratepayers association)

CLIMATE PROJECTIONS – TRURO

Truro - Climate Change Projections

	Historical (1981-2010)	2030s (2021-2050)	2060s (2051-2080)	2080s (2071-2100)
TEMPERATURE PROJECTIONS				
Average Mean Temperature (°C)	6.5	8.3	10.1	11.3 (4.8)
Average Max Temperature (°C)	11.7	13.3	15	16.4 (4.7)
Average Min Temperature (°C)	1.5	3.2	5.2	6.5 (5.0)
Frost Free Days	211	232	255	275
Max Temp >30C	2 days	8 days	27 days	38 days
PRECIPITATION PROJECTIONS				
Average Annual Total Precipitation	1172mm	1263mm	1208mm	1317mm
Heavy Rain (highest 24hr)	114mm	138mm	138mm	160mm
EXTREME EVENTS				
Max Wind Spd/Gust	93/132 kmh	133kmh	135kmh	137kmh
Freezing Rain (number of days)	7.5-11	11.5	12	12.5
Thunderstorm Hail Frequency	10.3/0.4 days	increasing	increasing	increasing
Forest Fire Hazard (area burned)	increasing	increasing	increasing	increasing
Tropical Storm Hurricane Freq	1.2/0.3 events	increasing	increasing	increasing



ClimAction Services Inc.

CLIMATE PROJECTIONS – EAST PRESTON, NORTH PRESTON, CHEERYBROOK

East Preston / North Preston / Cherrybrook Climate Change Projections

	Historical (1981-2010)	2030s (2021-2050)	2060s (2051-2080)	2080s (2071-2100)
TEMPERATURE PROJECTIONS				
Average Annual Mean Temperature (°C)	7.1	8.8 (1.7)	10.5 (3.4)	11.9 (4.8)
Average Annual Max Temperature (°C)	11.6	13.2 (1.6)	14.9 (3.3)	16.1 (4.5)
Average Annual Min Temperature (°C)	2.9	4.6 (1.7)	6.4 (3.5)	7.6 (4.7)
Frost Free Days	229	252 (23)	277 (48)	291 (62)
Max Temp >30C	2 days	4 days	14 days	26 days
PRECIPITATION PROJECTIONS				
Average Annual Total Precipitation	1364mm	1521mm (12%)	1491mm (9%)	1574mm (15%)
Heavy Rain (highest 24hr)	233mm	268mm	291mm	328mm
EXTREME EVENTS				
Max Wind Spd/Gust	93/132 kmh	133kmh	135kmh	137kmh
Freezing Rain (number of days)	7.5-11	11.5	12	12.5
Thunderstorm Hail Frequency	10.3/0.4 days	increasing	increasing	increasing
Forest Fire Hazard (area burned)	increasing	increasing	increasing	increasing
Tropical Storm Hurricane Freq	1.2/0.3 events	increasing	increasing	increasing

CLIMATE PROJECTIONS – SHELBURNE

Shelburne - Climate Change Projections

	Historical (1981-2010)	2030s (2021-2050)	2060s (2051-2080)	2080s (2071-2100)
TEMPERATURE PROJECTIONS				
Average Mean Temperature (°C)	7.4	8.9	10.6	11.8(4.4)
Average Max Temperature (°C)	12	13.4	15.2	16.4(4.4)
Average Min Temperature (°C)	2.8	4.3	6.2	7.4(4.4)
Frost Free Days	232	256	281	295
Max Temp >30C	1 days	2 days	6 days	18 days
PRECIPITATION PROJECTIONS				
Average Annual Total Precipitation	1396mm	1521mm	1438mm	1578mm
Heavy Rain (highest 24hr)	115mm	126mm	137mm	148mm
EXTREME EVENTS				
Max Wind Spd/Gust	93/132 kmh	133kmh	135kmh	137kmh
Freezing Rain (number of days)	7.5-11	11.5	12	12.5
Thunderstorm Hail Frequency	10.3/0.4 days	increasing	increasing	increasing
Tropical Storm Hurricane Freq	1.2/0.3 events	increasing	increasing	increasing
Sea Level Rise (exceeding 3m)	2 events	increasing	increasing	increasing



ClimAction Services Inc.