

# Climate Change and Health:

An Exploratory Study Investigating  
Perceptions of Climate Change  
Impacts and Adaptations to Protect  
Health in the Parry Sound Region



An Executive Summary on  
Key Findings for the North  
Bay Parry Sound District  
Health Unit



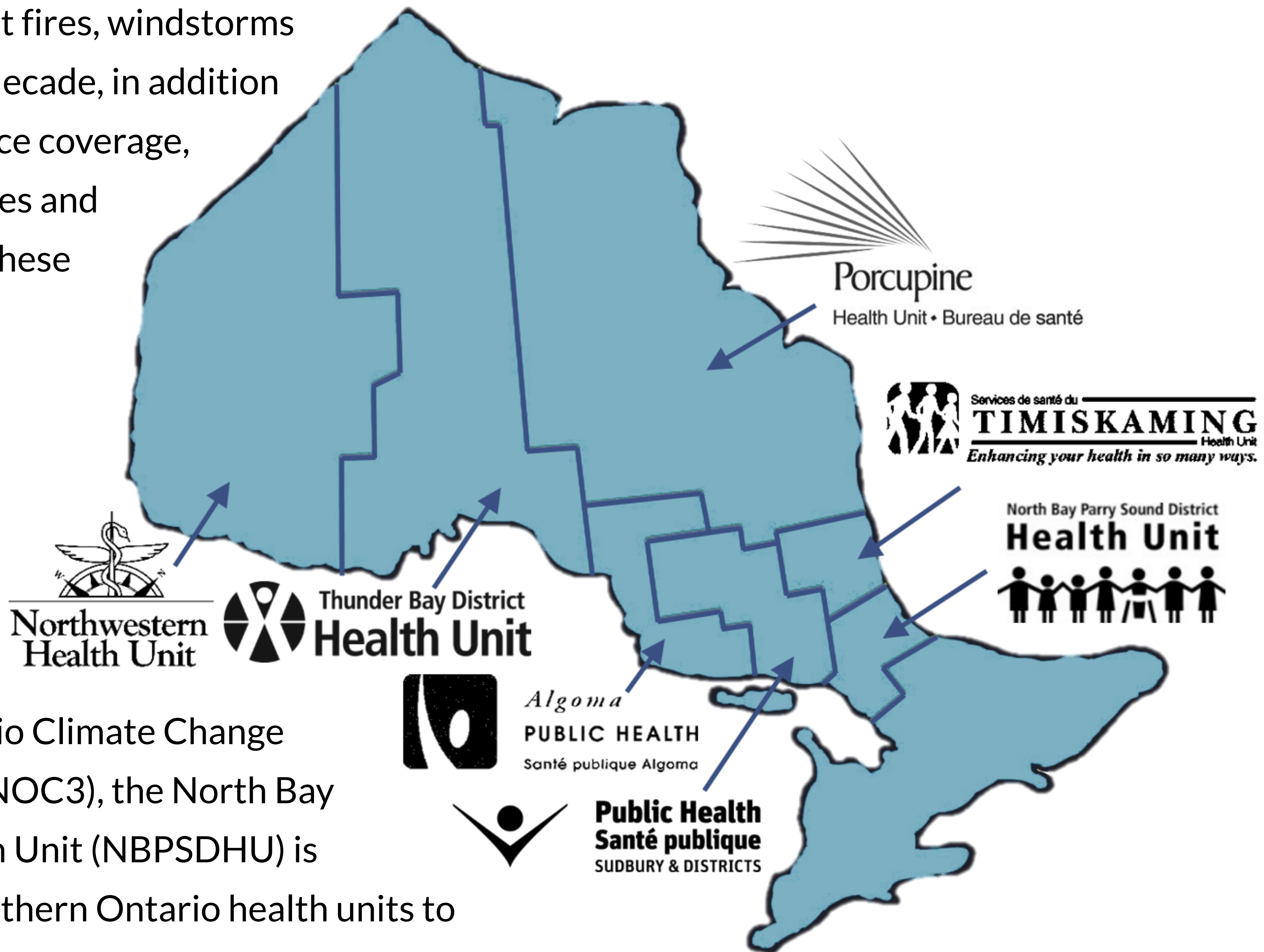
North Bay Parry Sound District  
**Health Unit**



## INTRODUCTION

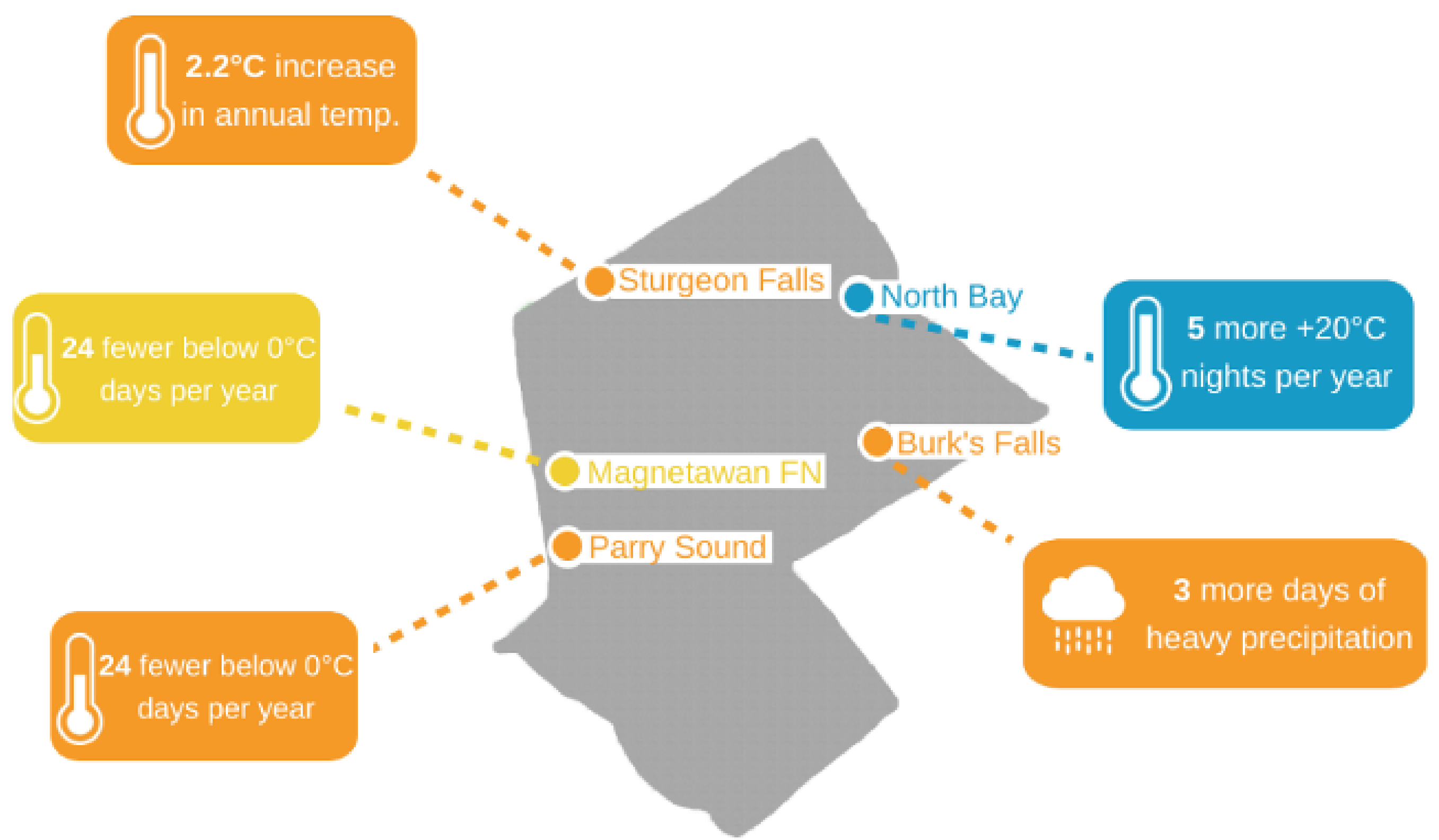
Across the North Bay Parry Sound district, average annual temperatures are projected to increase, rainfall events are projected to intensify, and extreme weather events are projected to occur more frequently (1). Many of these climate-amplified impacts are being recognized, as the region has experienced dramatic forest fires, windstorms and floods within the past decade, in addition to noticeable decreases in ice coverage, warming water temperatures and ecosystem damage (2-4). These impacts present significant challenges for tourism, the economy, and the health of the region, highlighting the necessity for greater regional understanding and informed action. As

part of the Northern Ontario Climate Change and Health Collaborative (NOC3), the North Bay Parry Sound District Health Unit (NBPSDHU) is working with the other Northern Ontario health units to complete regional climate change and health vulnerability and adaptation assessments to develop a foundational understanding of the localized risks to health from current and projected climate amplified impacts, and assess adaptation strategies to address these challenges.



As a first step in completing a regional climate change and health vulnerability and adaptation assessment, the NBPSDHU

conducted an exploratory study to meaningfully hear from and work towards collaborating with key stakeholders in the region in order to understand localized perceptions of concern and vulnerability surrounding climate change impacts to health. This study was designed with two intended purposes.





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The first intention was to gather a foundational understanding of climate change and health perspectives and concerns to inform all further stages of the project. By inquiring and listening to grounded, established community voices, a deeper understanding of climate impacts of concern, areas of desired action and the perceived role of the health unit can be achieved to ensure all stages of the project, including the final vulnerability and adaptation assessment, are accurate and valuable. The second intention was to generate awareness of the NOC3, while establishing community partnerships to enhance support, feedback and collaboration on all aspects of the project. Recognizing that in order to effectively adapt to the impacts of climate change, organizations cannot act in silos, and we must foster support and effective collaboration to enhance adaptive capacity and resiliency to minimize unavoidable impacts. Through conducting this preliminary study, it is the intention that this project will develop and enhance partnerships with key community organizations and service providers to ensure the greatest impact and sustainability of climate adaptation work.

## OBJECTIVES

The objectives of this case study are as follows;

- 1 To explore regional perceptions of climate change impacts on health and identify populations disproportionately vulnerable to the impacts of climate change.**
- 2 To learn of and document ongoing regional adaptation action and the relationship to health.**
- 3 To understand the perceived role community leaders, organizations and service providers feel the health unit could play in enhancing resiliency and adaptive capacity to climate change.**

## METHODS

From August 2020 – March 2021 key informant interviews were conducted (n=10) to examine climate change impacts of concern and perceptions of the health implications and necessary adaptation actions needed in the Parry Sound region<sup>[1]</sup>. Conversations were semi-structured, and as such an interview guide helped to shape the conversation, but allowed for exploration of topics of interest and importance as valued by the participants. The interview guide can be reviewed in Appendix I. Interviews lasted between 20 minutes and 1.5 hours, and with participant permission were recorded and subsequently transcribed for thematic analysis. Below is a summary of findings from the participant interviews.

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[1] The Parry Sound region was intentionally selected to narrow the scope of the project and further contextualize the study results. This case-study community has documented interest and active engagement in climate change, and will be combined with similar case-studies led by other NOC3 teams to create a comprehensive picture of Northern Ontario.

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## KEY FINDINGS

### Engagement finding

Participants represented a diverse scope of occupations and organizations including voices from municipal leadership, social services and health providers, emergency and conservation management, youth as well as community groups. Participating organizations are presented below.



When asked what populations they provided services to, participants responded with various populations in Parry Sound and the surrounding region including:

- Those in poverty/ low-income
- Marginalized youth/ young adults
- Newcomers to Canada
- First Nations individuals and communities
- Older adults
- Vulnerable or at-risk groups experiencing health inequities
- People with disabilities
- General population

### Impacts of concern

A variety of impacts were highlighted from participants ranging from direct (immediate) impacts to indirect (slow, accumulated) impacts. Participants conveyed an understanding of the complexity and interconnectedness of impacts, highlighting that climate change impacts will not occur independently, and many impacts will increase in frequency and intensity.

"Lot of impacts aren't necessarily started by climate change, but those unseasonably dry conditions definitely amplified the effects of what is and will be experienced."

- (Participant A, GBB)

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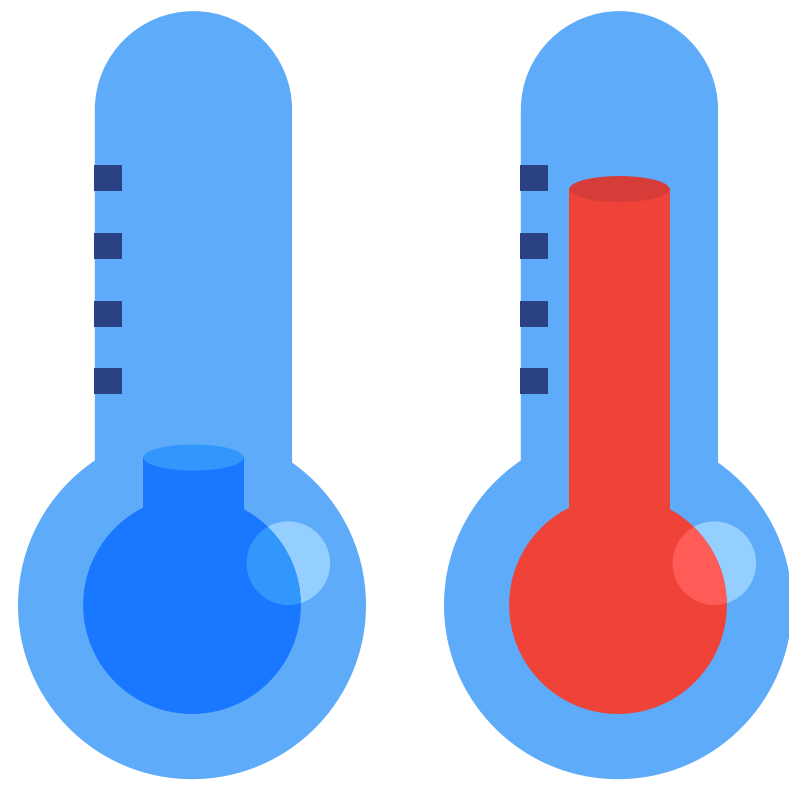




## Direct impact

Direct climate change impacts most often highlighted by participants included extreme weather and extreme temperature events. Participants discussed the impacts intense rainfall events, windstorms, and most recently wildfires have had on the populations they work with. Participants were able to share stories of personal and client experiences, with direct linkages to negative health implications. While these direct, more visible impacts were discussed, all participants indicated the burden of indirect impacts would be prevalent, and most concerning for the region.

"We've seen evidence already... the tornado touched down what, four years ago, that went through Oastler park... That was a huge eye opener for us... we never get tornadoes around here. Certainly now when the high winds come, we're all bracing for larger impact than we were maybe 10 years ago.

- (Participant F, WPSHC)

Direct impact	Description
<p>Extreme Temperature</p> 	<p><b>Extreme Heat</b></p> <ul style="list-style-type: none"> <li>Participants identified extreme heat as an impact of concern. This impact was of particular concern for participants working in social services and with populations who experience homelessness or precarious housing.</li> <li>Participants recognized the danger of tropical nights when the lowest temperature of the day does not go below 20°C. This poses a threat to those physiologically or economically disadvantaged, particularly older adults and those unable to afford or access air conditioning.</li> </ul> <p><b>Extreme Cold</b></p> <ul style="list-style-type: none"> <li>Participants acknowledged temperature fluctuations as an impact of importance, highlighting serious consequence of injury and death for those not able to adapt or unaccustomed to rapid cold events.</li> </ul>
<p>Extreme Weather</p>  	<p><b>Forest Fires</b></p> <ul style="list-style-type: none"> <li>All participants discussed the 2018 Parry Sound 33 wildfire. Participants described the impacts they witnessed and experienced including increased incidences of respiratory complications, mental health challenges and habitation destruction. Participants acknowledged that forest fire preparedness is an important area of focus since the 2018 fire, and a desired area to improve community adaptive capacity.</li> </ul> <p><b>Wind Storms</b></p> <ul style="list-style-type: none"> <li>Participants identified recent windstorms, including a tornado, that have occurred with greater frequency and intensity in recent years.</li> </ul> <p><b>Flooding and Extreme Precipitation</b></p> <ul style="list-style-type: none"> <li>Participants highlighted the danger that fluctuating water levels, in combination with intense precipitation events, have had and will continue to have. Participants highlighted the added danger of these events, recognizing the proximity many residents live to Georgian Bay and inland lakes, and the potential for injury and infrastructure damage.</li> </ul>



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## Indirect impact

"I think there's mental health issues and spiritual issues of meaninglessness, hopelessness, on things like that as well."

- (Participant D, MSC)

Indirect impacts were commonly discussed, emphasizing the lasting, connected implications to health caused by the previously mentioned direct impacts. Many participants expressed an understanding of indirect impacts presenting as the way in which human health is impacted by environmental health. A shared perspective among Indigenous partners recognizes the need to

view human health from a holistic perspective, as the indirect impacts resulting from climate change are not only affecting physical health, but a more comprehensive experience of mental health and cultural connection. For example, outdoor programming that focuses on traditional knowledge and cultural practices was seen as beneficial to wellness and addressing symptoms of anxiety and depression, however these experiences are negatively impacted by climate change resulting in program cancellation. In addition, when discussing the risk of wildfires in the region, participants were able to share insight on the mental and psychosocial health impacts as a result of trauma from evacuation and loss of connection to place.

Participants made the connection between climate change and larger social determinants of health. Most commonly, participants discussed the impact climate change would have on food security, and the serious implications climate change would present to food availability and accessibility. This was commonly described through participants' recognition of the reliance the Parry Sound area has on transported food, emphasizing the dependence on southern grown food which will be impacted by a rapidly warming climate. A participant from Magnetawan First Nation expressed their community's concern over the decline in fish and moose populations, as these are heavily depended upon for subsistence hunting and maintenance of traditional practices. This was used as an example of indirect impacts holistically impacting health, as not only is there a decrease in food security, but the cultural and social elements which help support mental, spiritual, and social health are being negatively impacted.

One central theme surrounding the indirect impacts discussed by participants was water, encompassing aspects of water safety, quality and disease. Participants from the Georgian Bay Biosphere and Magnetawan First Nation spoke to the negative impacts warming temperatures will have on the regions ecosystem, including blue-green algae and biodiversity loss and disease proliferation. These impacts were discussed as a predominant concern for human

"We need to be looking at health from a holistic scale, not just human health cause human health is a direct reflection of environmental health...we have to make sure that we're maintaining a healthy environment to maintain healthy humans."

- (Participant H, MFN)

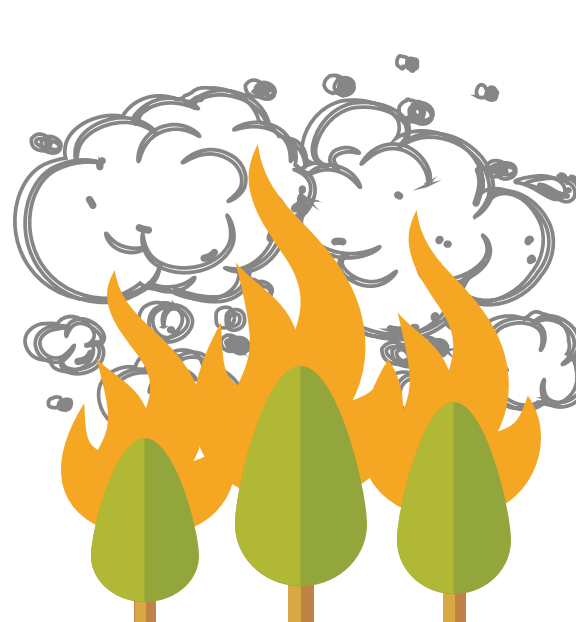
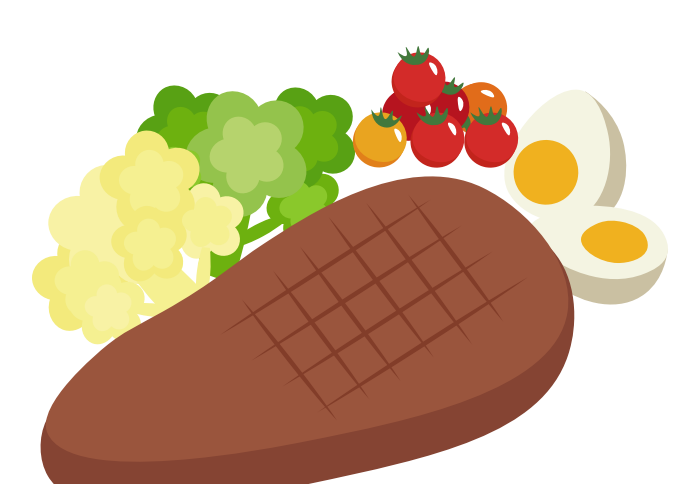



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health as well as an indirect impact on tourism and outdoor recreation, impacting larger social determinants of health.

Additionally, participants discussed the impact climate change would have on public infrastructure and housing, stressing that many of their clients do not have access to safe or affordable housing. Increased and intensified weather events will lead to poorer community health as unsafe and unreliable housing will not adequately protect those most vulnerable from these impacts.

Indirect impact	Description
<p>Air Quality</p> 	<ul style="list-style-type: none"><li>• Impact of forest fire smoke on those with existing respiratory and cardiovascular conditions.</li><li>• Impact warming temperature has had on the length and intensity of pollen and the associated impact on those with allergies.</li></ul>
<p>Food Insecurity</p> 	<ul style="list-style-type: none"><li>• Impact changing weather conditions could have on the access and availability of food. Participants discussed the reliance of our current food system on transportation of food, and the precarity of this dependence with a projected increase in frequency and intensity of extreme weather.</li><li>• Changes in natural resources, highlighting that many communities subsist on foraging and wild game for nutrition which has been altered with a warming climate.</li></ul>
<p>Vector Borne Disease</p> 	<ul style="list-style-type: none"><li>• Lyme disease and West Nile were two identified vector borne diseases with the recognition of having the potential to impact the Parry Sound region with warming temperatures creating favourable conditions for disease proliferation.</li></ul>
<p>Water Quality and Safety</p> 	<ul style="list-style-type: none"><li>• Blue-green algae was a serious concern of many participants. Participants cited warming waters in addition to increased runoff from intense precipitation events as having the potential to decrease water safety in many lakes, which many residents rely on for drinking water.</li></ul>
<p>Mental Health</p> 	<ul style="list-style-type: none"><li>• Impacts on livelihood and tradition were indicated as the predominant impacts climate change is having on populations' mental health. Participants highlighted the connection populations have with the land, and the uncertainty as well as anxiety that comes with a rapidly changing environment.</li></ul>

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## Vulnerable Populations

When asked to indicate populations participants perceived to be more vulnerable to the impacts of climate change, older adults and low-income individuals were unanimously highlighted<sup>[2]</sup>. Participants shared experiences that emphasized their cause for concern, from their occupation as well as through their work as community leaders.

Participants listed examples of older adults, individuals with existing health conditions, infants, recent immigrants, and outdoor workers as populations of greatest concern. Participants recognized that the climate change impacts will be felt differently and unequally across the region, further exacerbating existing health, economic and social challenges faced by many individuals.

"Extreme heat with an aging population, especially in Parry sound and region. That's going to turn into increases in heat stroke and all these heat-related illnesses that can come from that. Especially with increased heat waves..."

- (Participant A, GBB)

"Those are the people that will... they are already suffering and are going to suffer more"

- (Participant E, Community Living Parry Sound)



"Youth today are facing higher levels of anxiety and stress due to this feeling that they're inheriting some of these really big problems such as climate change"

- (Participant I, CMHA-MPS)

One emergent theme shared by a few participants was the recognition of the impacts climate change is having on youth. With a particular focus on mental health, participants acknowledged the impact current climate change media and messaging is having on some youth, highlighting the importance of empowering youth to take action and reduce their vulnerability to the health impacts of climate change, in addition to feelings of hopelessness, anxiety and stress, through climate action such as connecting to the land and land-based culture.

[2] Vulnerability is not inherent. Environmental, political and socially constructed conditions have made many individuals and communities more vulnerable to the health impacts of climate change. Climate change vulnerability is constructed by multiple factors, which vary depending on region, health status, age, socioeconomic status, and many other social determinants of health.



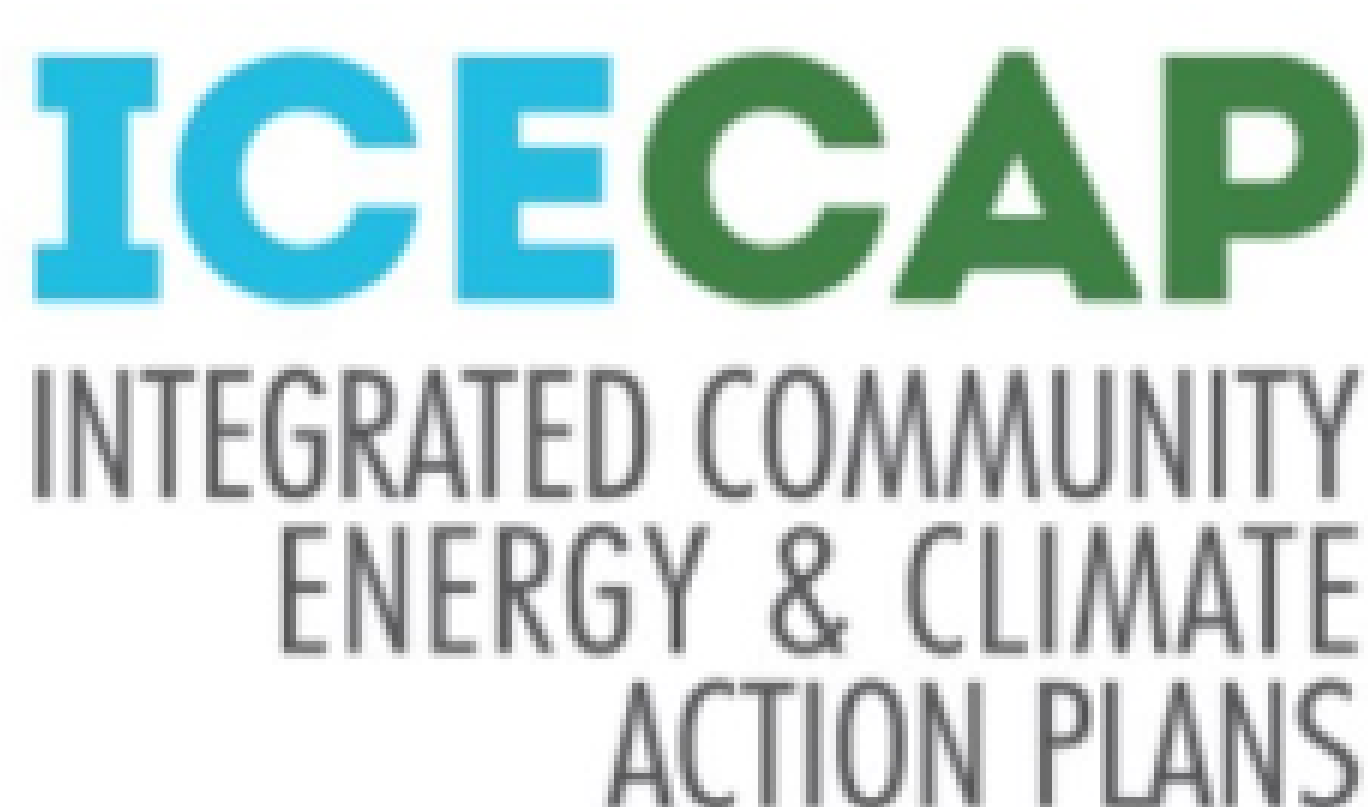
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## Community Adaptation Action

Questions investigated existing adaptation planning or action occurring within participants' workplace or community group. Although all participants were able to discuss ways they are adapting to climate change impacts, all acknowledged they would like to do more. The West Parry Sound Health Center (WPSHC) was the only organization with adaptation planning directed specifically to protect health. Representatives from WPSHC discussed conducting yearly risk assessments to help inform gaps in preparedness for potential environmental emergencies. However, these same participants acknowledged that long-term climate change is not overtly recognized as an area of focus within this planning, and areas of priority are based on prior experiences, not projections. Furthermore, voices from the Town of Parry Sound, specifically the emergency services department, highlighted their integration of climate adaptation planning into their emergency management planning, yet also showed the difficulty of preparing, indicating that "it just feels difficult to prepare for the impacts other than from a response standpoint" (Participant G – Town of Parry Sound).

Other adaptation action which participants connected to climate change included updated storm water management planning, community garden initiatives, green infrastructure, water protection and waste conservation. When participants were asked if there was more they wish their organization could be doing, all participants expressed a strong desire and interest in further adaptation action. Adaptation action participants wish was occurring included increased green infrastructure in conjunction with active transportation, increased local food production and affordable housing. However, participants were able to elaborate on many limitations preventing further adaptation action including a lack of capacity, resources and collective action.

Most participants were involved in external organizations with a strong climate adaptation focus, mainly consisting of the Parry Sound Area Food Collaborative and the Integrated Community Energy and Climate Action Planning group (ICECAP). These organizations both had strong community ties and are fostering a strong sense of collaboration among climate engaged individuals and organizations. Members of the Parry Sound Area Food Collaborative discussed past educational events and advocacy initiatives surrounding increase food security within the region. Member of the ICECAP partnership predominantly discussed adaptation action pertaining to improving community resilience and assessing greenhouse gas emissions.





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## Role of the health unit

Participants were asked what role they feel the health unit could play in increasing resilience and improving adaptive capacity in the region. Responses centred around two themes; 1) provide resources and voices to improve regional education and awareness, and 2) increase regional collaboration as a centralized, trusted organization. Participants called for public health to leverage their community trust and knowledge of health to educate and promote the benefits of climate adaptation. Participants recognized that their messaging would be strong if they were able to provide accompanying localized data on regional impacts to health and asked for the health units to share any relevant outputs from their work. Participants from the hospital and town indicated a desire to better understand the projected health impacts climate change poses to the region to better inform their risk management planning.

"Education is definitely one of those things, the Parry Sound health unit district has been really great and helping us provide some of these resources to be able to carry out some of these [climate change related] projects, which has been immensely helpful. So continuing the education specifically on the health implications."

- (Participant A, GBB)

### Educate



### Collaborate



Secondly, participants suggested health units could act as a unifying voice among municipalities within the region, strengthening existing networks and collaborations to address climate change. This has been acknowledged as an on-going challenge within the Parry Sound region. Health units are also well positioned to bring together the voices of communities who are most dependent on the land and most strongly impacted by climate change. Participants recognized that health units are likely to have the greatest awareness of these populations, and are also likely to have previously established connections which can be built upon to further address the regional health impacts of climate change. Participants felt that increasing the health unit presence and commitment within the regional climate networks could strengthen collective commitments and catalyze further action.

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Participants felt that if climate change was promoted by the health unit as a health issue, this could minimize some of the politicized public perceptions. Participants spoke to recent examples of the COVID-19 pandemic response, recognizing the immense impact health units had in a short period of time, while framing health as the center piece for action. Participants believed these same approaches could hold great potential for creating collaborative, impactful action on a regional scale.

"It's incredibly challenging to be such a small fractured area and not being able to act together to move small things forward. [Public health] can help with the creation of a unifying voice"

- (Participant G, TPS)

## Conclusion

Organizations within the Parry Sound region recognize the current and potential impacts climate change presents to health, and are committed to furthering adaptation action to improve adaptive capacity. Participants recognize the wide array of direct and indirect climate change impacts to health, and view climate change as an important challenge that needs collective action to address. The health unit is positioned in an advantageous position to help further regional climate action utilizing the trusted and unifying voice of health professionals. The results from this exploratory study will better direct the continuing work of the North Bay Parry Sound Health Unit, helping to ensure meaningful and impactful action is achieved towards protecting regional health from climate amplified impacts. Specific findings from this study will help to inform our regional climate change and health vulnerability and adaptation assessments, which will provide a comprehensive overview of pertinent regional climate amplified impacts and prioritized adaptation action the health unit can take and support in the North Bay Parry Sound District.

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## References

1. ClimateData.ca. Canadian Centre for Climate Services; 2020.
2. Douglas A, Morand A, Cobb P. Climate change in Muskoka: A workshop on extreme weather and waterfront property. Ontario Centre for Climate Impacts and Adaptation Resources (OCCIAR); 2017 p. 40.
3. State of the Bay [Internet]. Georgian Bay Biosphere Reserve; 2018 [cited 2020 Sep 12]. Available from: [http://www.stateofthebay.ca/wp-content/uploads/2018/07/GBBR\\_State-of-the-Bay\\_2018\\_Magazine.pdf](http://www.stateofthebay.ca/wp-content/uploads/2018/07/GBBR_State-of-the-Bay_2018_Magazine.pdf)
4. Climate Change Impacts | Georgian Bay Forever [Internet]. [cited 2020 Sep 17]. Available from: <https://georgianbayforever.org/water-levels/climate-change-impacts/>



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# Appendix I

## Interview Guide (General Impacts on Health)

### Part A - Perception of climate change impacts on health: What do you see?

1. What do you consider to be the biggest impacts of climate change on health in the Parry Sound region? (positive and negative)
2. How concerned are you about these climate change impacts to health and what is most concerning?
3. Who (what populations) do you consider to be most vulnerable to the impacts of climate change in the Parry Sound region?
  - What impacts have you observed among this population?
  - Why do you feel these populations are more vulnerable to the impacts of climate change?

### Part B - Stakeholder adaptation action to protect health: What has been done and what is needed?

4. What work has your organization done to adapt to climate change impacts?
5. Is your organization involved in activities to promote policy change around climate change adaptation?
6. What adaptation action do you think would protect health within the Parry Sound region?
7. How would these adaptation actions impact health and well-being?
8. Is there anything more you or your organization could be doing to respond to climate change impacts on health?

### Part C - Health Unit Adaptation: How can public health units support and respond to climate change?

9. How can the public health unit best support the community and families to adapt to the impacts discussed?
  10. Is action/change required beyond the level of our community and the health unit?
    - What type of action do you feel is needed?
    - How can the health unit help to support this action and move change forward?
  11. What additional information do we need to know or are missing?
  12. Are there other community leaders or organizations within the region that you feel we should hear from?
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