

Extreme Heat and Public Health

Sally Radisic, PhD

April 11, 2025

Objectives

Understand	the health risks associated with extreme heat
Recognize	the preventative measures and public health strategies to mitigate the impact of extreme heat on communities
Discuss	the role of public health policy and community planning in addressing challenges posed by extreme heat

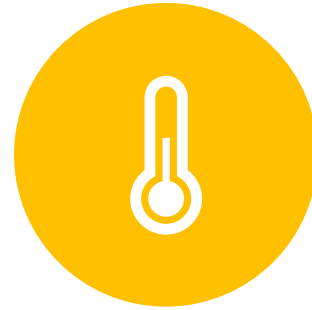
Discussion



EXTREME HEAT



HEAT-RELATED
ILLNESS



HEAT WARNINGS



HEAT RESPONSE
STRATEGY

Extreme Heat and Public Health

- Research is robust identifying that climate change will increase both the frequency and severity of extreme heat events ¹
- City of Hamilton Climate Science Report predicts that the number of heat waves will be more frequent²
- 2021, the province of British Columbia (BC) reported 619 heat-related deaths due to exposure to extreme heat³
- 98% of the heat-related deaths occurred indoors³
- Heat-related deaths were higher among older adults over 65 years of age, individuals with chronic health conditions, living in lower socioeconomic status dwellings that did not have working air conditioning units⁴
- Need for urgent action⁵

Extreme Heat

Table 3: Key Health Concerns from Climate Change

HEALTH IMPACT CATEGORY	POTENTIAL CHANGES	PROJECTED/POSSIBLE HEALTH EFFECTS
Temperature extremes	<ul style="list-style-type: none">• More frequent, severe, and longer heatwaves• Overall warmer weather, with possible colder conditions in some locations	<ul style="list-style-type: none">• Heat related illnesses and deaths• Respiratory and cardiovascular disorders• Possible changed patterns of illness and death due to cold

http://health.gov.on.ca/en/common/ministry/publications/reports/climate_change_toolkit/climate_change_health_va_guidelines.pdf

CityNews

LOCALVIDEOCONTACT US

Ontario coroner investigating 3 potential heat-related deaths

BY ALANNA RIZZA, THE CANADIAN PRESS

POSTED JUL 10, 2018 3:07 PM EDT LAST UPDATED JUL 11, 2018 AT 6:22 AM EDT

News & Events

Multimedia

NASA+LIVE

5 MIN READ

Temperatures Rising: NASA Confirms 2024 Warmest Year on Record

Global NEWS

WorldCanadaLocalPoliticsMoneyHealthEntertainmentLifestyleWatch

ENVIRONMENT

Longer, hotter heat waves are in Canada’s future. Here’s what that means

BY PATRICK CAIN · GLOBAL NEWS

Posted August 28, 2019 10:00 am

Updated August 29, 2019 5:07 am

British Columbia

Coroner's report on B.C. heat-dome deaths calls for greater support for populations at risk

619 deaths reported June 25-July 1, 2021, now deemed heat related; most were elderly with compromised health

CBC News · Posted: Jun 07, 2022 10:29 AM EDT | Last Updated: June 7, 2022

NEWS

ARTS & LIFE

MUSIC

SHOWS & PODCASTS

SEARCH

WORLD

Estimated 70 Deaths Linked To Canada’s Heat Wave

July 10, 2018 · 8:41 PM ET

VANESSA ROMO

Children play in the water fountains at the Place des Arts in Montreal, Canada.
Eva Hembach/APPI/Getty Images

Poll Question 1

What is your main concern regarding extreme heat in your community?

- A) Health risks
- B) Infrastructure
- C) Access to resources
- D) Awareness and education

HEAT EXHAUSTION



- Skin rash
- Muscle cramps
- Dizziness or fainting
- Nausea or vomiting
- Heavy sweating
- Headache
- Rapid breathing and heartbeat
- Extreme thirst
- Dark urine and decreased urination

If you experience any of these symptoms during extreme heat, immediately move to a cool place and drink water.

What are the
SIGNS AND SYMPTOMS
of heat illness?

HEAT STROKE

- High body temperature
- Confusion and lack of coordination
- Dizziness/Fainting
- No sweating, but very hot, red skin

Heat stroke is a medical emergency! **Call 911 or your local emergency number immediately.** While waiting for help—cool the person right away by:

- moving them to a cool place, if you can;
- applying cold water to large areas of the skin; and
- fanning the person as much as possible.



<https://www.canada.ca/content/dam/hc-sc/documents/services/publications/healthy-living/fact-sheet-staying-healthy-heat/fact-sheet-staying-healthy-heat.pdf>

Population At Risk of Extreme Heat

People experiencing homelessness

Outdoor workers

People who exercise in the heat

People with pre-existing medical conditions

People on medications

Low-income earners

Young children

Older adults 65+ years of age

Staying Healthy in the Heat

<https://www.canada.ca/content/dam/hc-sc/documents/services/publications/healthy-living/fact-sheet-staying-healthy-heat/fact-sheet-staying-healthy-heat.pdf>

STAYING HEALTHY *in the* HEAT

TIP 1 PREPARE FOR THE HEAT

- Tune in regularly to local weather forecasts and alerts so you know when to take extra care.
- If you have an air conditioner, make sure it works properly.
- If you don't have an air conditioner, find an air-conditioned spot close by where you can cool off for a few hours on very hot days.

TIP 2 KNOW THE SIGNS OF HEAT-RELATED ILLNESSES

TIP 3 PAY ATTENTION TO HOW YOU AND THOSE AROUND YOU FEEL

Frequently visit neighbors, friends and older family members, especially those who are chronically ill, to make sure that they are cool and hydrated.

TIP 4 DRINK WATER

TIP 5 STAY COOL

How to stay cool?

SAFETY TIPS

Never leave children or pets alone in a parked vehicle.

Wear loose-fitting, light-coloured clothing made of breathable fabric.

Take cool showers or baths until you feel refreshed.

Plan strenuous outdoor activities for cooler days, or choose a cooler location, like a place with

Spend time in a cool place. It could be a tree-shaded area, swimming facility or an air-conditioned spot.

Heat Response Stages and Triggers

Response stages

There are two response stages and triggers:

Heat Warning



Two or more consecutive days forecasted with daytime highs greater than or equal to 31°C and nighttime lows greater than or equal to 20°C **or two or more consecutive days** with a Humidex of 40°C or greater.

Extended Heat Warning



Three or more consecutive days observed with daytime highs greater than or equal to 31°C and nighttime lows greater than or equal to 20°C **or three or more consecutive days** with a Humidex of 40°C or greater

Current Status

Heat warning status will update based on Public Health triggers. [Learn more about the Heat Warning status](#)



MEDIA RELEASE

Heat Warning notification for Hamilton effective July 31, 2024

HAMILTON, ON – The Medical Officer of Health for the City of Hamilton has initiated a Heat Warning beginning **today**. Heat Warnings stay in effect until they are cancelled or escalated to an Extended Heat Warning.

A heat event is expected to begin today and continue through Thursday. Maximum daytime temperatures of 30 to 32 degrees Celsius are expected, with humidex values near 40. Overnight minimum temperatures will be 20 to 22 degrees Celsius.

A cooler airmass may arrive by Thursday night.

The City of Hamilton and participating community agencies are responding to the heat by offering "cool places" to go during all stages of a heat event. These locations can be identified by a "Cool Down Here" sign at the entrance.

As part of the heat response plan regularly scheduled Open Swims at all City of Hamilton indoor and outdoor pools will be free of charge. There are many spray pads, additional cool places and outdoor pools across Hamilton. For more information visit hamilton.ca/heat

Signs of heat exhaustion include heavy sweating, weakness, cold, pale and clammy skin, weak pulse, fainting and vomiting. If experiencing symptoms, seek help right away – call 9-1-1 if needed.

Reduce your risk of heat-related illness by following these precautions:

- **Drink plenty of water.** Avoid drinking alcoholic and caffeinated beverages on hot days.
- **Go to an air-conditioned place.** Visit a designated cool place listed on hamilton.ca/heat
- **Dress to protect from the heat.** Wear lightweight, loose-fitting, light coloured clothing. Wear a hat or take an umbrella to keep your head cool and don't forget sunscreen.
- **Take it easy.** Limit physical activities (walking, running, gardening, etc.) during the day. If rescheduling activities to dawn or dusk when it may be cooler, protect yourself with insect repellent as mosquitoes are more active at such times. Check labels to apply.
- **Cool off.** Take a cool bath or shower.
- **Keep your living space cool.** Close your blinds or curtains. Open windows to let air circulate when using a fan.
- **Never leave children or pets alone in closed vehicles.** Temperatures in a car can become life threatening within minutes.
- **Check on your neighbours and family.**
- **Landlords can help to decrease the risk of heat-related illness for tenants.** Connect with tenants to determine if units have adequate cooling. If not, provide tenants with onsite access to a cool space.

<https://www.hamilton.ca/city-council/news-notice/news-releases/heat-warning-notification-hamilton-effective-july-31-2024>

Poll Question 2

Have you or someone you know experienced a heat-related illness?

- A) Yes
- B) No
- C) Unsure



Government
of Canada

Gouvernement
du Canada

[Français](#)

Search Canada.ca



MENU ▾

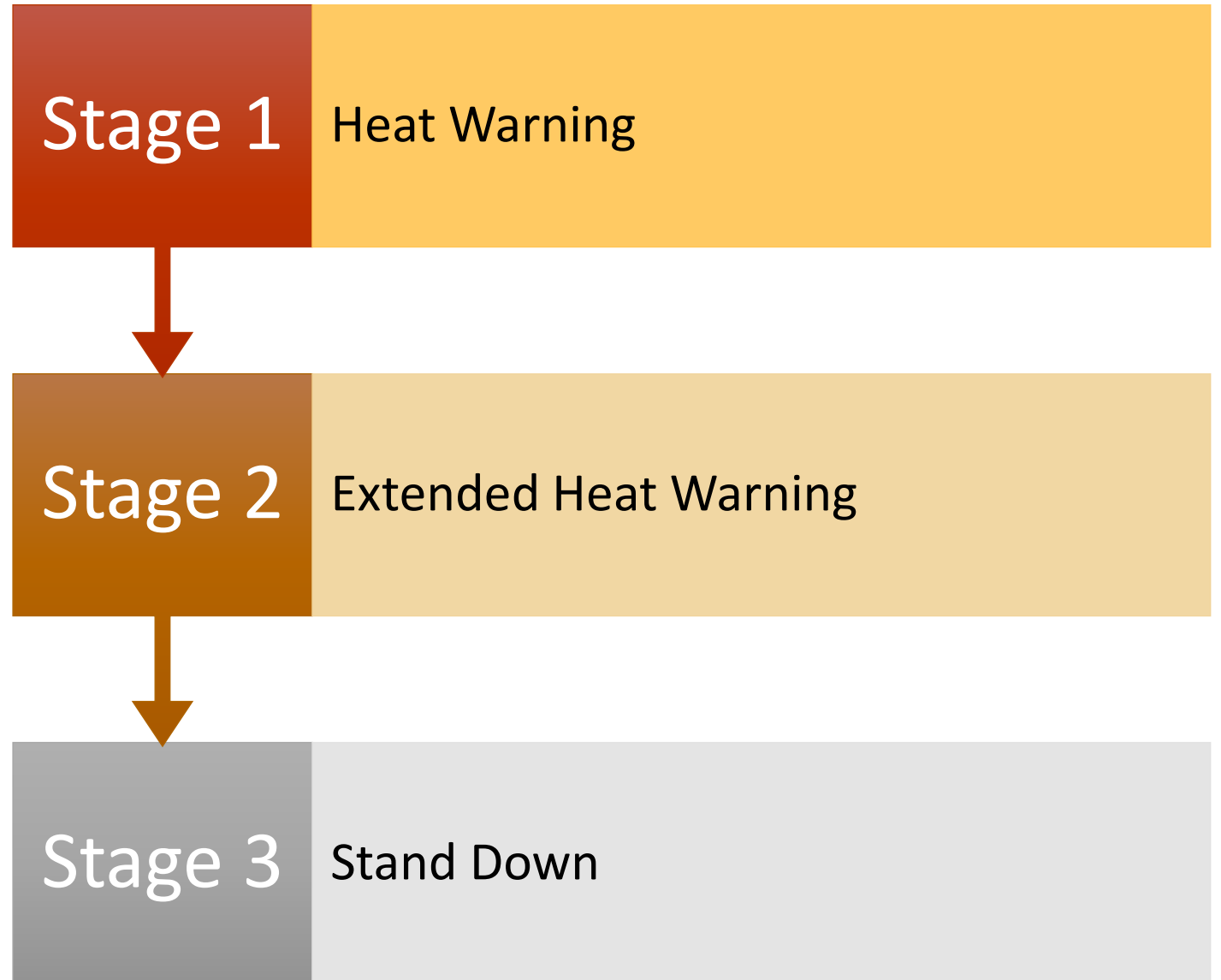
[Canada.ca](#) › [Environment and natural resources](#) › [Weather, climate and hazards](#) › [Get your weather](#) › [Weather general tools](#)

WeatherCAN

Download and use the WeatherCAN app on your mobile device

WeatherCAN has your latest forecast information directly from Canada's official weather source. Get weather alerts for anywhere in Canada.

City of Hamilton Community Heat Response Plan



Poll Question 3

How effective do you think your local community is in preparing for extreme heat events?

- A) Very effective
- B) Somewhat effective
- C) Not very effective
- D) Not effective at all

Hamilton Community Heat Response Strategy

Appendix "A" to Report BOH24010
Page 1 of 10



CITY OF HAMILTON
COMMUNITY HEAT RESPONSE STRATEGY
2024

DRAFT



EXPLORE EQUITY IN YOUR CITY

[View Tutorial](#)

1 CITY

Hamilton

2 BUILT ENVIRONMENT

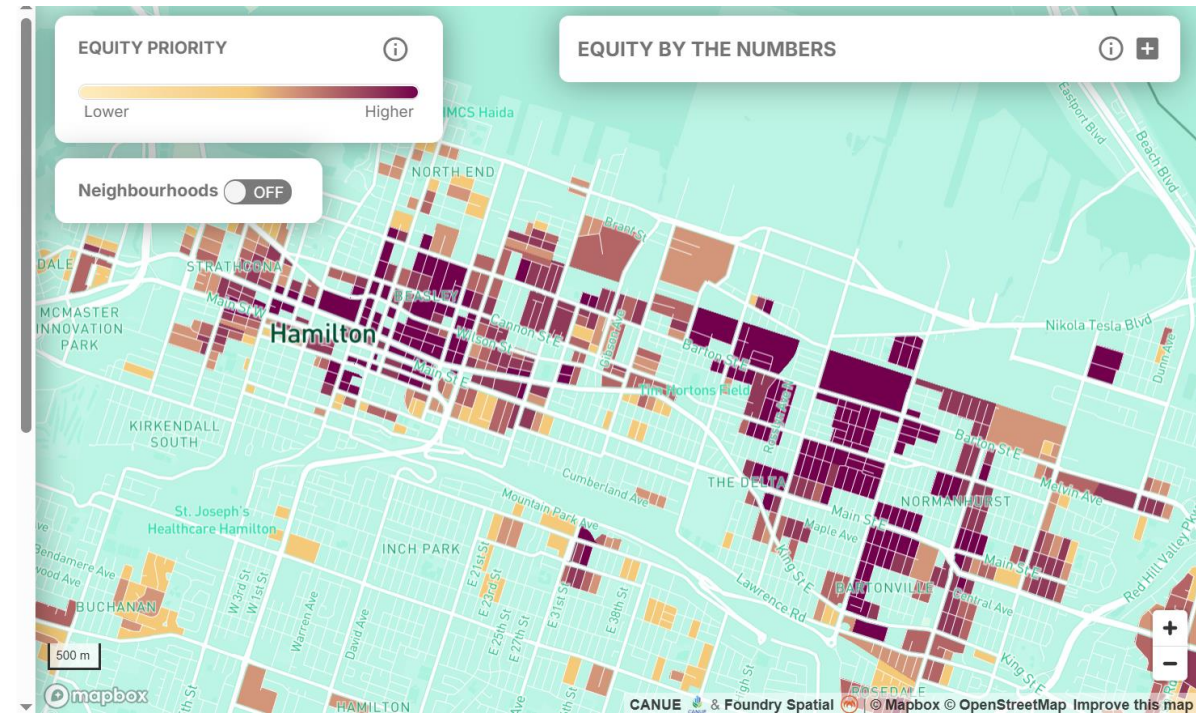
average summer temperature

3 VULNERABLE POPULATION

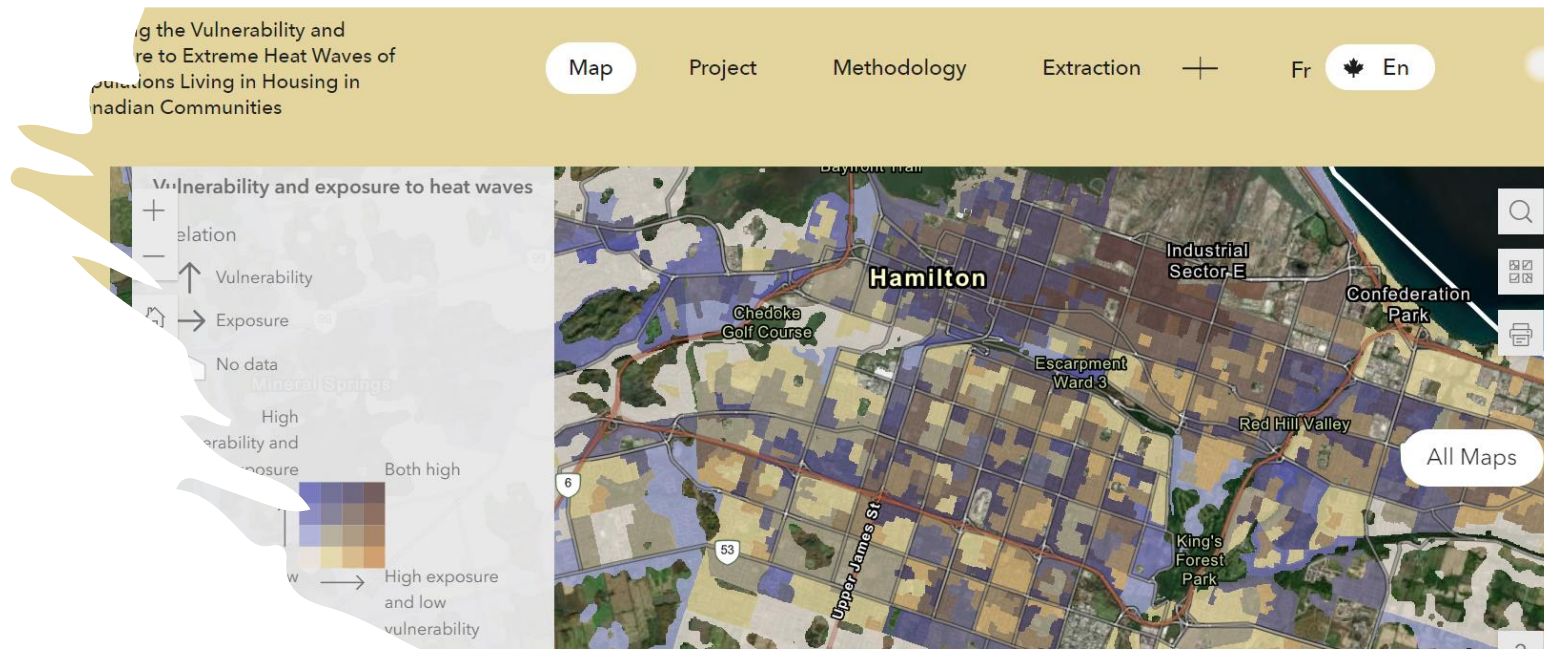
low-income older adults

COMMUNITY STORIES

Weaving Equity



Mapping Vulnerability and Exposure



<https://vaguesdechaleur.ffgg.ulaval.ca/en/>

Hamilton Community Heat Response Strategy - 10 Actions

1. Education and Outreach
2. Heat Warning Notifications
3. Cool Places
4. Cooling and Energy Efficiency Support
5. Vegetation Cover Expansion and Maintenance
6. Wellness Check-ins
7. Shade Structures
8. Heat-related Illness Population Health Surveillance
9. Misting Stations
10. Transportation

Action 1: Education and Outreach

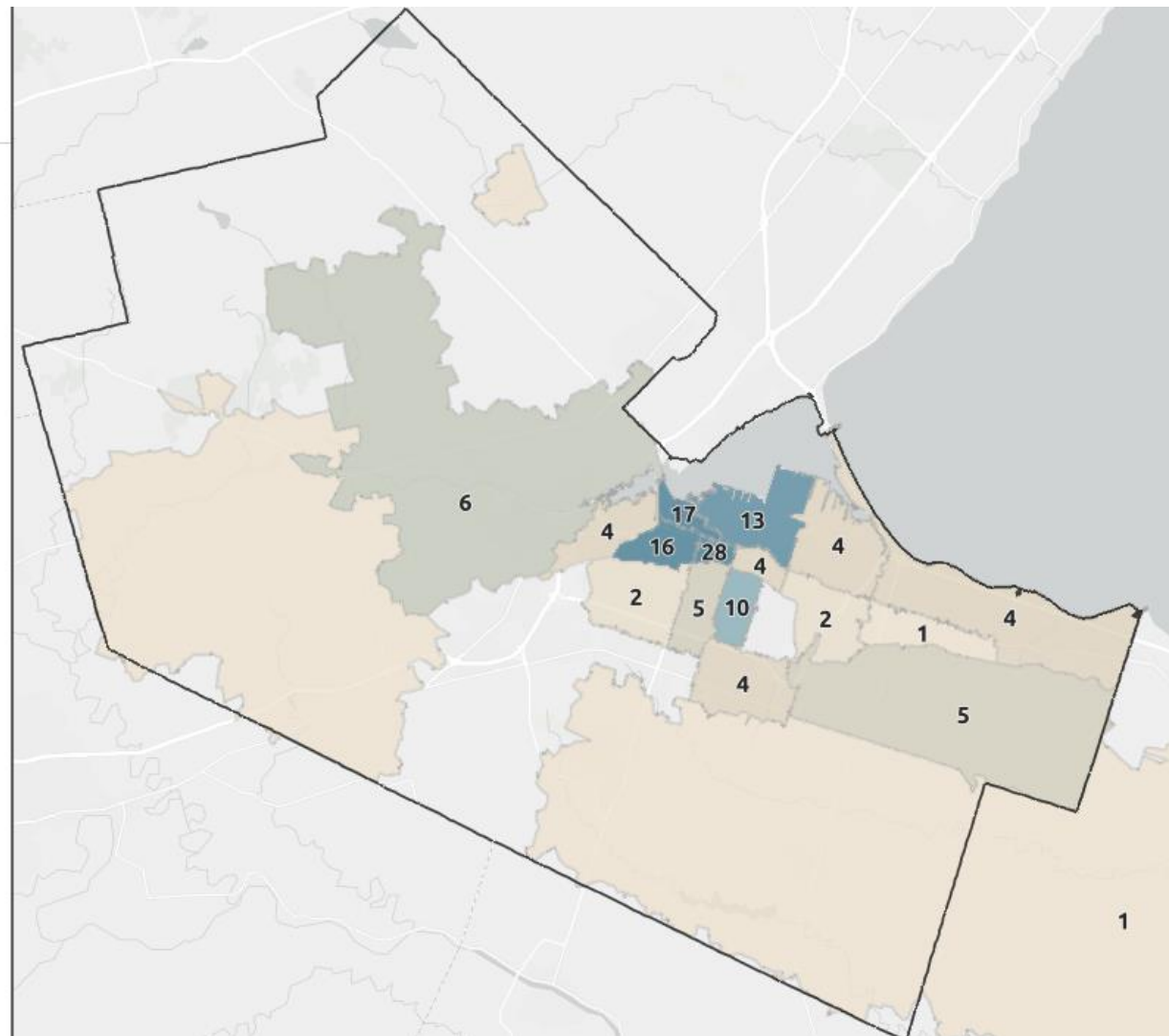
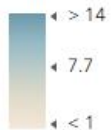
City Boundary



Heat Survey Respondents - Awareness and Outreach by FSA



Number of Respondents



Action 2: Cool Places

Cool Place Locations

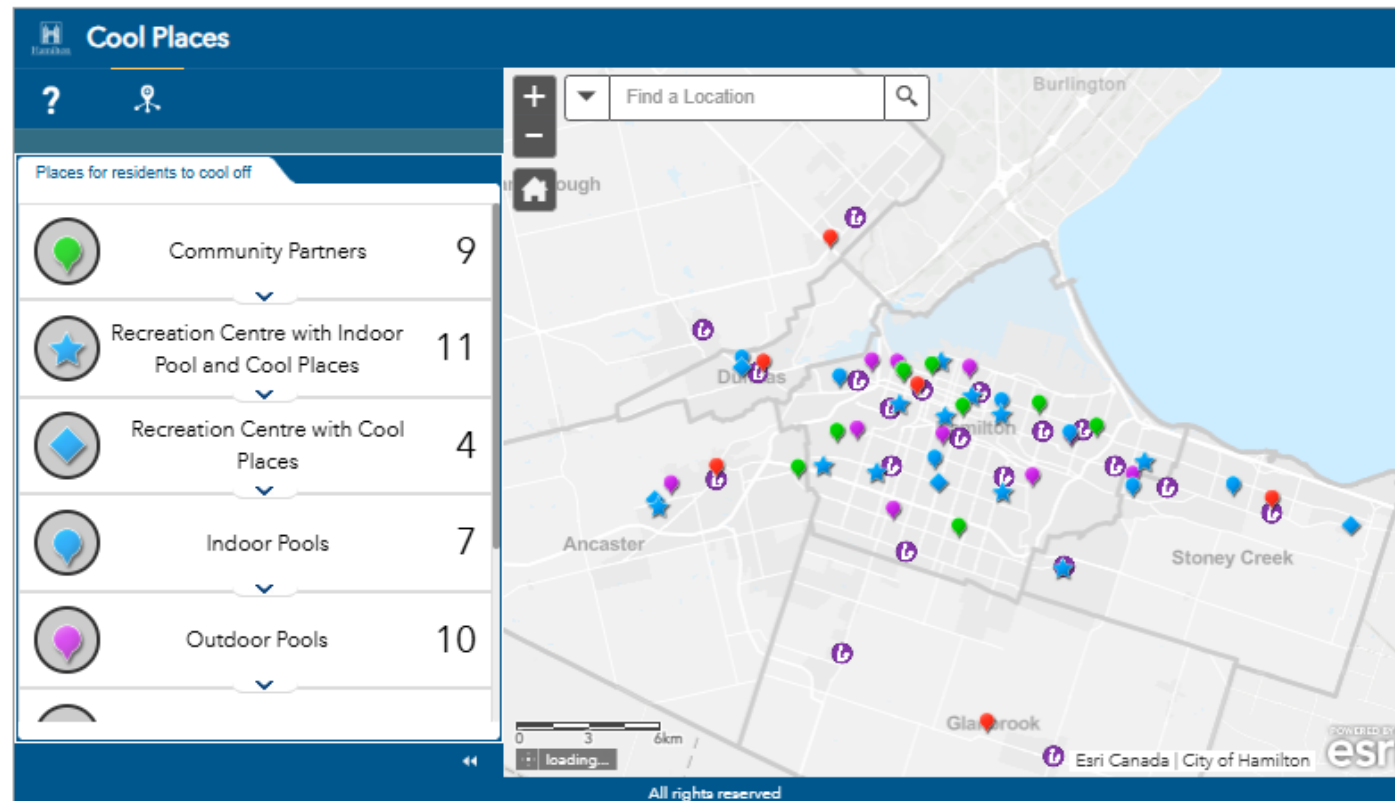
During a Heat Warning

During an Extended Heat Warning

Reducing Your Risk

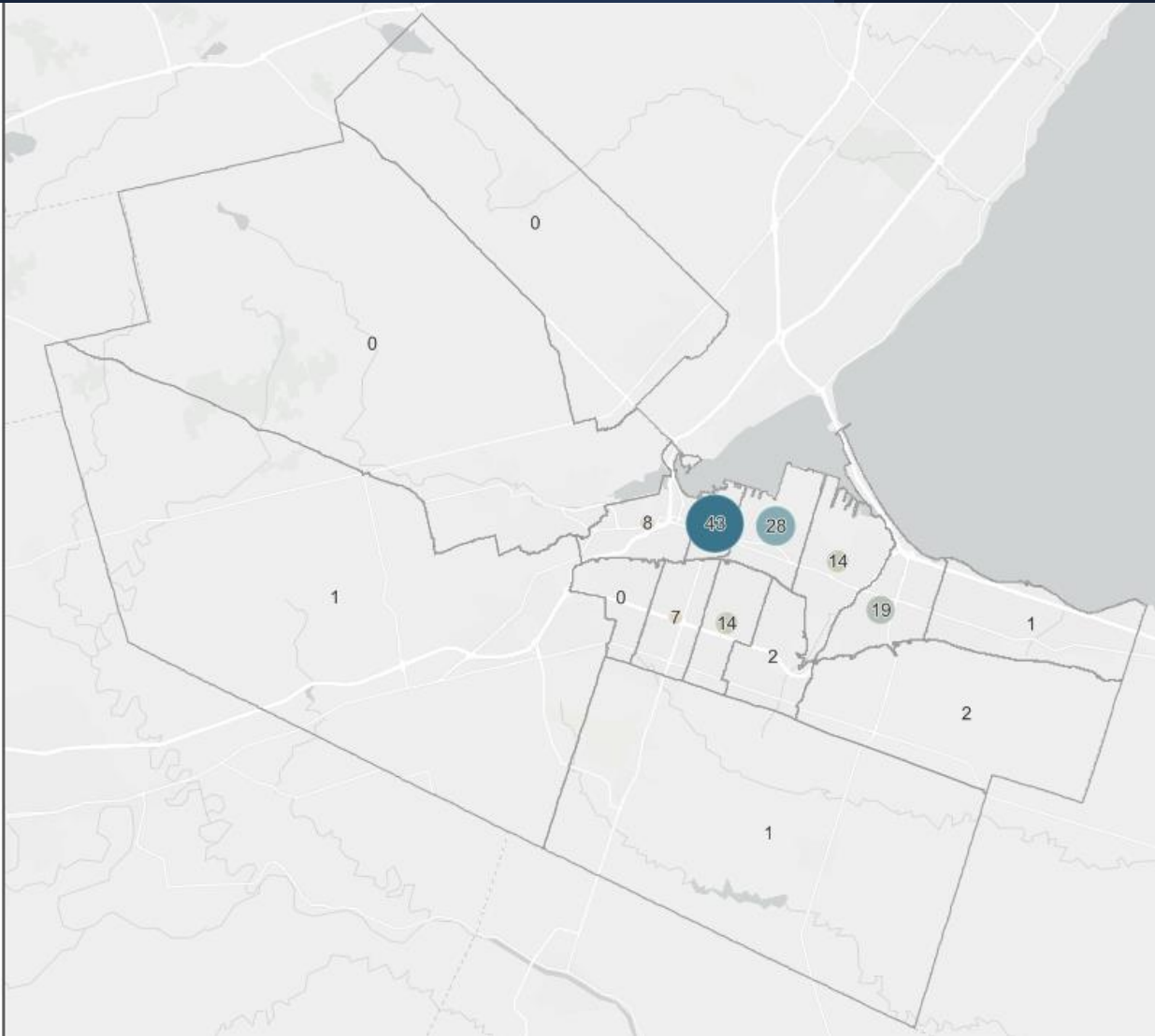
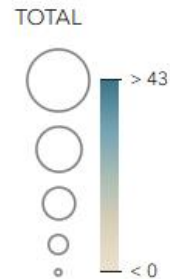
Cool Places Map

The City of Hamilton and participating community agencies are responding to the heat by offering "cool places" to go during all stages of a heat event. These locations can be identified by a "Cool Down Here" sign at the entrance. [View map in new window ↗](#)



Action 4: Cooling and Energy Efficiency Support

Air Conditioner Program Eligibility

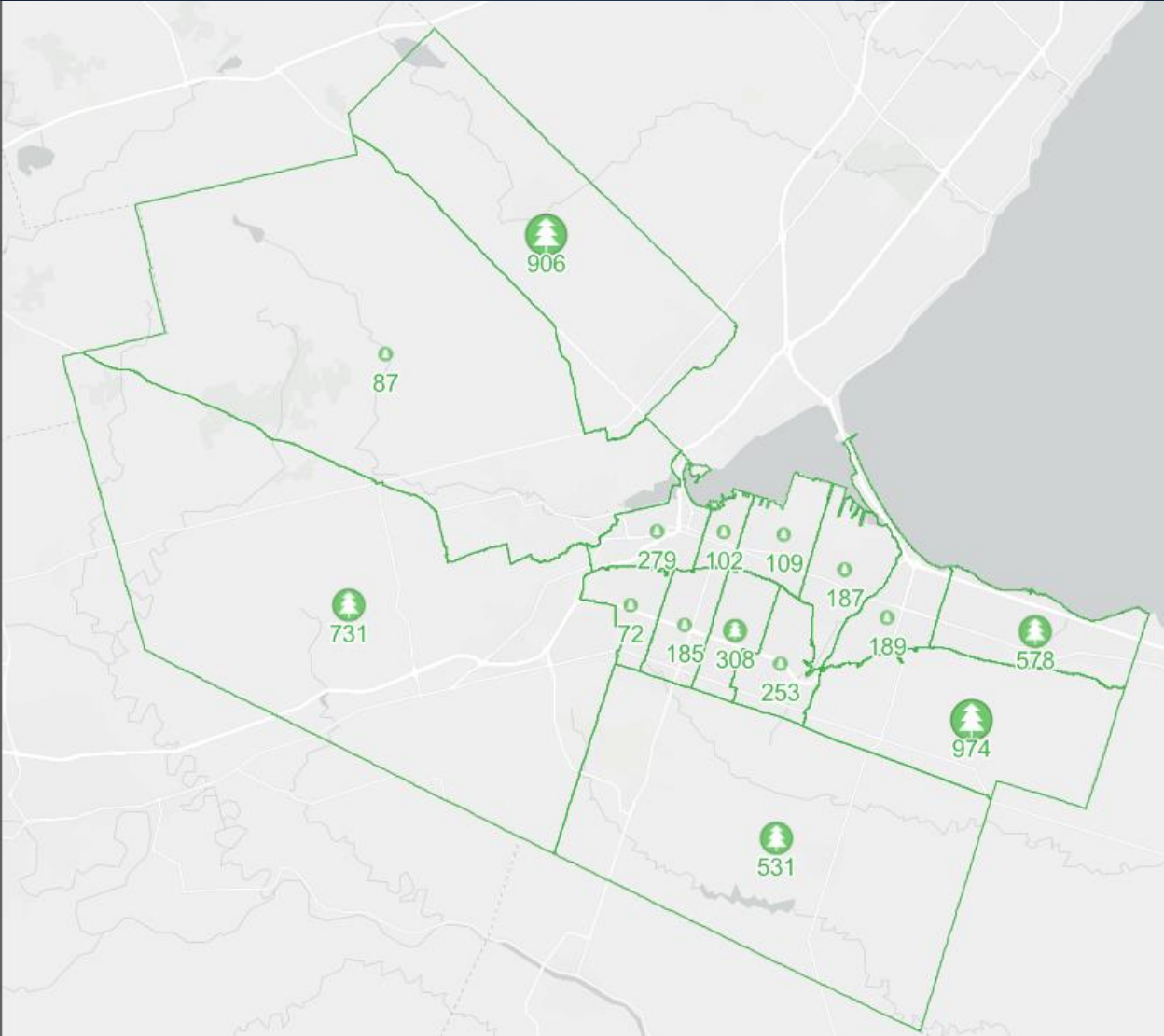


Action 5: Vegetation Cover Expansion and Maintenance

Trees Planted by Ward

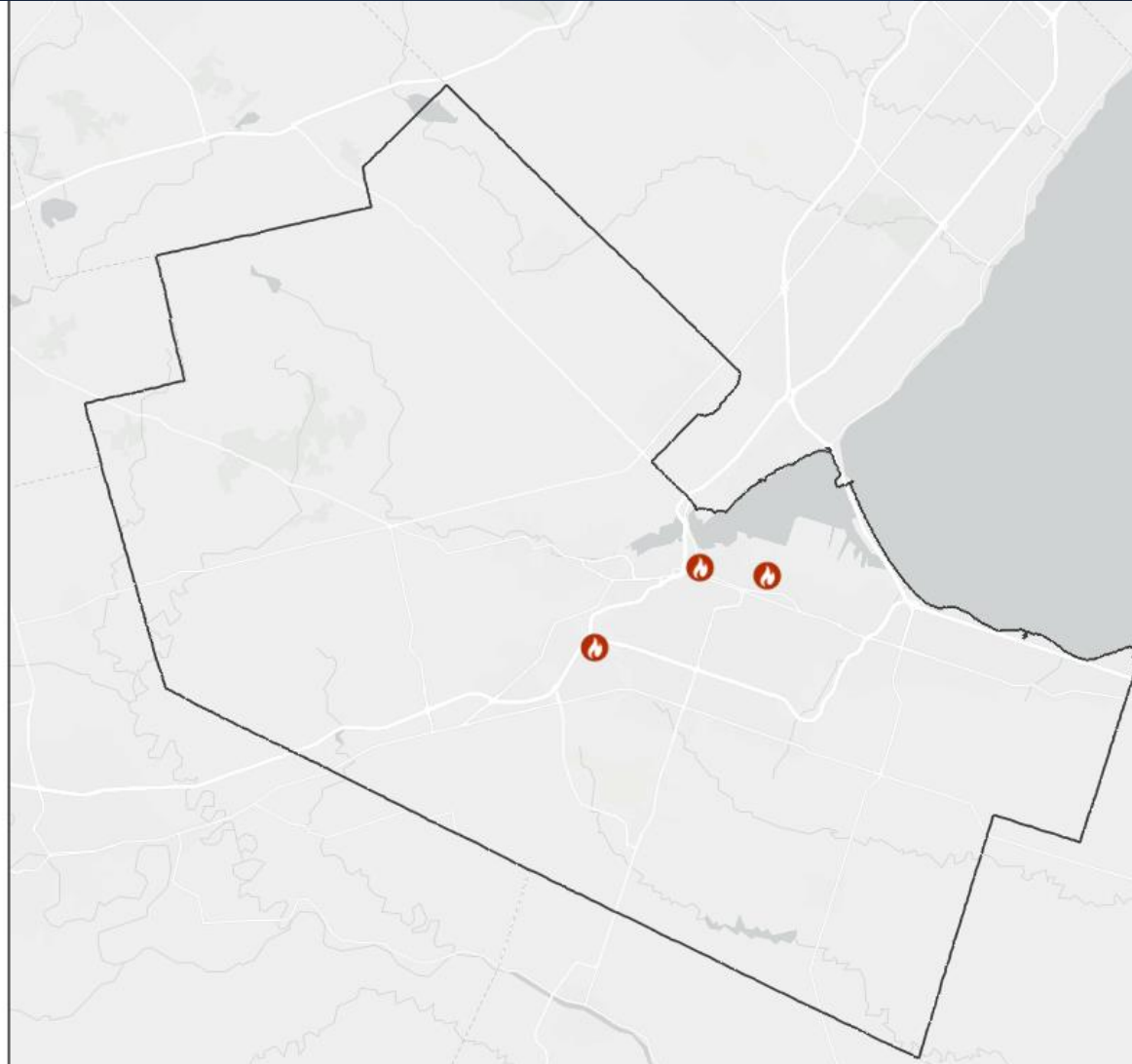
TREES

- > 748 - 974
- > 523 - 748
- > 297 - 523
- 72 - 297



Action 7: Shade Structures

Shade Structures (2024)



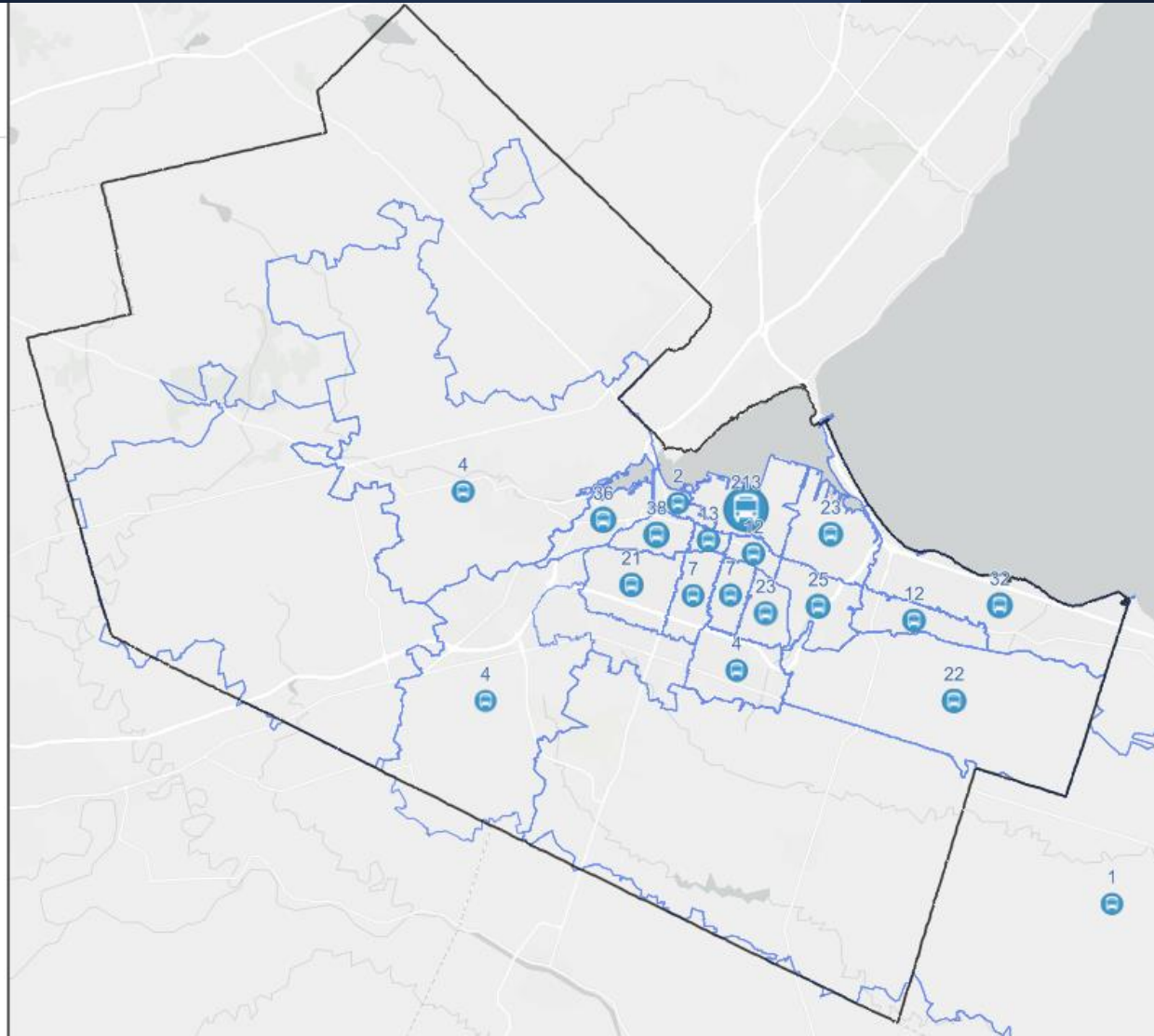
Action 10: Transportation

City Boundary



Bus Ticket Distribution by FSA

Bus Tickets Distributed



Poll Question 4

What types of initiatives do you believe to be most beneficial for your community during heat waves?

- A) Cooling centers
- B) Public education campaigns
- C) Emergency alert systems
- D) Community outreach programs

References

1. Yoon, L., Richardson, G. R., et Gorman, M. (2024) [Reflections on a Century of Extreme Heat Event-Related Mortality Reporting in Canada](#). *GeoHealth*, 8(2).Bustinza, R. et Dubé, M. (2021) [Bilan des impacts des vagues de chaleur extrême sur la mortalité au Québec à l'été 2020 dans un contexte de COVID-19](#). Institut national de santé publique du Québec.
2. City of Hamilton Climate Science Report. (2022). <https://www.hamilton.ca/sites/default/files/2022-10/climate-change-impact-adapatation-plan-science-report.pdf>
3. BC Coroners Service. (2022). Extreme heat and human mortality: A review of heat-related deaths in B.C. in Summer 2022. https://www2.gov.bc.ca/assets/gov/birth-adoption-death-marriage-and-divorce/deaths/coroners-service/death-review-panel/extreme_heat_death_review_panel_report.pdf
4. Lee, M. J., McLean, K. E., Kuo, M., Richardson, G. R. A., & Henderson, S.B. (2023). Chronic diseases associated with mortality in British Columbia, Canada during the 2021 western North America extreme heat event. *GeoHealth*, 7, e2022GH000729. <https://doi.org/10.1029/2022GH000729>
5. Hebborn et al., (2023). Future temperature-related excess mortality under climate change and population aging scenarios in Canada. *Canadian Journal of Public Health*.114:726–736. <https://link.springer.com/article/10.17269/s41997-023-00782-5>

For more information about this presentation, contact:

Sally Radisic, PhD
Health Hazard Specialist
Public Health Services
Healthy and Safe Communities Department
City of Hamilton

sally.radisic@hamilton.ca

Thank you.

