

2022

Surrey's Extreme Heat Response Guideline



Surrey

Emergency

Program

6/15/2022

Contents

Intent.....	2
Background	2
Discussion.....	3
Extreme Heat Alert Protocol and Response	4
Monitoring	5
Stage 1: Heat Warning	6
Stage 2: Extreme Heat Emergency.....	6
Agency Response Actions	6
Environment and Climate Change Canada	6
Fraser Health.....	6
EMBC.....	7
BC Housing	7
City of Surrey.....	8
Preseason.....	8
Special weather statement issued by ECCC.....	9
Level 1:	9
Heat Warning Alert Issued	9
Level 2: Heat Emergency Alert Issued.....	10
Stand Down Process.....	10

The City of Surrey Extreme Heat Response Guideline

Intent

The purpose of this plan is to outline the actions available to the City of Surrey to support provincial ministries in mitigating risks to life and safety caused from an extreme heat event.

Background

Urban areas are the hot spots of global warming. Extreme heat is a key risk to the health and well-being of British Columbians. The situation is growing more dangerous, driven by irreversible climate change. Canada is warming, on average, at twice the global rate.¹

As seen locally in the Heat Dome event of June 2021, extremely hot temperatures and heat waves can be deadly and have a severe impact on health, infrastructure, services, the natural environment, and the economy. Not everyone will be affected in the same way, and those most vulnerable will require additional support.

Between June 18 and August 12, 2021, British Columbians experienced heat events that had significant impacts on human health and well-being, resulting in 619 heat-related deaths, with 75% of these being in Vancouver Coastal Health and Fraser Health Authorities. The heatwave that occurred between June 24-30, 2021, was the deadliest weather event in Canadian history. A review following this deadly heat event revealed the following:

- There was a significant increase in deaths of those 70 years of age and older. [1]
- Deaths more frequently occurred in individual residences without adequate cooling systems as opposed to acute or residential care homes. [1]
- Deaths were higher in areas of material and social deprivation as well as low tree canopy cover. [2]

Urban centres face the greatest risk because of the urban-heat-island effect. Surface daytime temperatures can be 10 – 15°C hotter in urban heat islands, while nighttime temperatures can be up to 12°C hotter than in surrounding rural areas. During episodes of extreme heat, everyone is at risk of heat-related illnesses. The danger is greatest for those who are more vulnerable or less able to protect themselves. This includes people who are more sensitive to extreme heat (such as the elderly or chronically ill) and those with fewer resources to adapt (for instance, people on lower incomes who cannot afford actions to retrofit their homes).

¹ BC Coroners Report 2022

² Henderson et al., 2021

Discussion

While posing a significant risk to health and safety, extreme heat mostly affects people where they live and in the privacy of their homes. For this reason, local governments are challenged with developing any response with impactful outcomes. The responsibility to mitigate the risk from extreme heat falls to several levels of senior government agencies as well as people themselves, such as:

- Individuals,
- Property owners & managers,
- Environment and Climate Change Canada (ECCC),
- British Columbia Centre for Disease Control (BCCDC)
- Health Emergency Management BC (“HEMBC”)
- Fraser Health Authority
- Emergency Management BC (“EMBC”)
- BC Housing

Surrey has supplemental resources and can take actions to enhance public safety during these extreme heat events. There are three heat-related support triggers with actions:

- Environment Canada Special Weather Statement for hot weather - communicate educational information for awareness.
- Environment Canada issues a heat warning – educate the public using a multimodal communication strategy.
- When EMBC or the Province declares an extreme heat emergency - open cooling relief facilities, provide additional support for those at higher risk and send out critical health alerts.

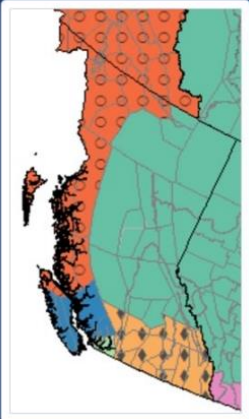
As such, Surrey will follow the heat protocol triggers as developed by Environment and Climate Change Canada. Once a heat event is imminent, Surrey will follow the messaging and recommendations made by the governing health authority to ensure consistent information is distributed.

Extreme Heat Alert Protocol and Response

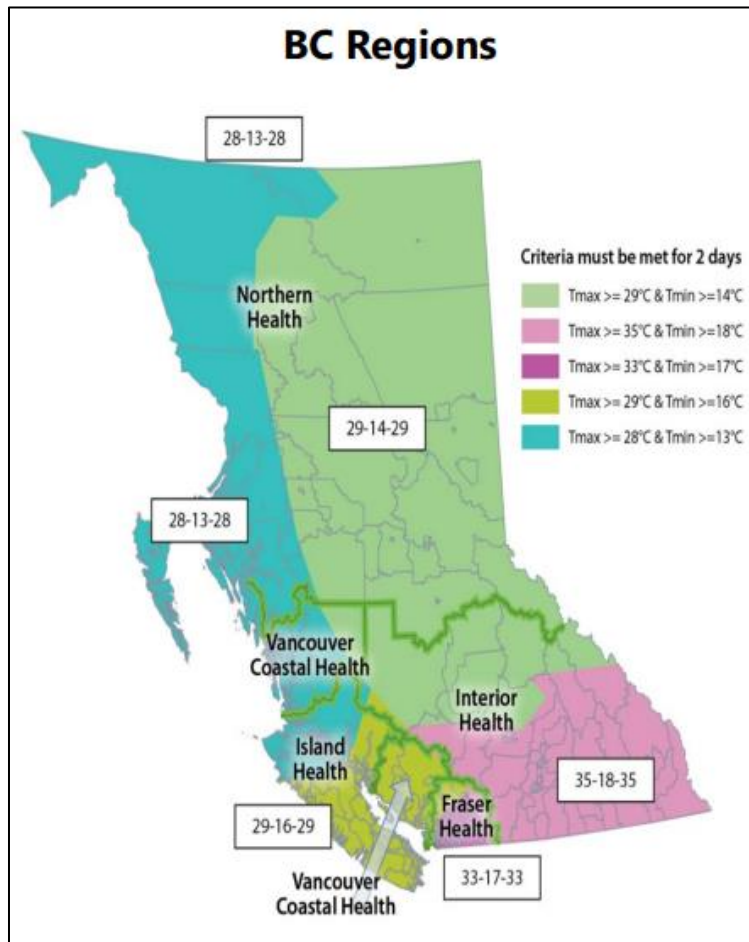
The Heat Alert protocol, developed by ECCC, involves two stages and a stand-down process. Prior to an alert, ECCC will send out special weather statements which forecast increased temperatures approaching an alert stage. This allows for pre-planning and public education messaging to be developed by health authorities and amplified by other agencies throughout the community.

Heat Alerts are activated when conditions deemed severe enough to present a substantial threat to the life or health of the community such as:

- when Environment Canada issues a Heat Warning
- when Environment Canada issues an Extreme Heat Emergency

 <p>BC Regions</p>	Alert level	Heat Warning	Extreme Heat Emergency
	Public health risk	Moderate (5% increase in mortality)	Very high (20% or more increase in mortality)
	Descriptor	Very hot	Dangerously hot
	Historic frequency	1-3 per summer season	1-2 per decade
	Criteria	Southwest = 29-16-29 Fraser = 33-17-33 Southeast = 35-18-35 Northeast = 29-14-29 Northwest = 28-13-28	Heat Warning criteria have been met and forecast indicates that daily highs will substantially increase day-over-day for 3 or more consecutive days

Know as the BC Heat Committee, heat alert stages are coordinated with British Columbia Centre for Disease Control (BCCDC), Vancouver Coastal Health (VCH) & Fraser Health (FH), Health Emergency Management BC (HEMBC) and Environment and Climate Change Canada (ECCC) and are based on the climate attributes of the specific geographical area. The criteria for extreme heat emergencies are a day over day increase in temperature above a heat warning for 3 consecutive days.



Monitoring

BC Centre for Disease Control (BCCDC) will monitor Environment Canada's (EC) daily posted average temperatures at 1400 hrs and the forecasted next day's high.

When the average temperature meets the heat warning criteria BCCDC will send an email notification to Health Heat Response Participants: BCCDC, Vancouver Coastal Health (VCH) & Fraser Health (FH), Health Emergency Management BC (HEMBC) and Environment and Climate Change Canada.

Stage 1: Heat Warning

ECCC Issues a level 1 Heat Warning when criteria for above-average temperatures for the areas have been met. This is the trigger for community agencies and the public to take the appropriate precautions. A BC Heat Committee Consultation will occur between ECCC, Public Health and EMBC. Following this, a regional coordination call will be organized by EMBC to distribute relevant information.

Stage 2: Extreme Heat Emergency

ECCC issues an Extreme Heat Emergency based on a meeting criterion for a day over day increase in temperatures for 3 consecutive days. A coordination call will be organized through EMBC for all impacted regions.

Agency Response Actions

Environment and Climate Change Canada

Provide current and forecasted temperatures, issue weather warnings, heat warnings and extreme heat emergencies. Potential issuing of broadcast intrusive alert by EMBC Alert Ready. Participation in EMBC led coordination calls to provide situational updates to regional stakeholders.

Fraser Health

The local health authority will coordinate proactive services for more vulnerable people who may be at risk during the heat event, including ensuring heat warnings are sent out with tips for staying cool and advice to help vulnerable community members.

Patient monitoring in any Health Authority operated care facilities.

EMBC

EMBC works with local governments and First Nations to support communities. Once the threat of an emergency develops, EMBC will conduct a coordination call between the local governments, First Nations, and lead agencies to ensure relevant information is distributed for appropriate preparedness and response activities. Should resources be needed, EMBC will assist with the logistics for its acquisition. Following the event, EMBC will provide financial reimbursement (Appendix I) for activities that have been authorized such as:

- opening cooling centres
- transportation to and from cooling centres in communities where no scheduled public or reasonable transportation exists
- staff wages and overtime to open a civic facility that would otherwise not be open
- water for distribution within the facility
- public transportation to and from cooling centres
- costs related to fire services responding to increased heat-related medical calls.
- print, radio, and social media messages to the local population
- “Just in time” training for volunteers on wellness checks
- cost of cooling device rentals and utility expenses
- basic snacks for the public

BC Housing

BC Housing works with partners to provide social housing. This is a housing development that government subsidizes and that either government or a non-profit housing partner owns and/or operates. As such, BC Housing has a heat plan to mitigate risks to those within their purview and considered more at risk due to decreased access to resources. Being government-subsidized, many tenants in social housing include the following groups of whom are considered at risk in extreme heat.

- Older adults (in Metro Vancouver particularly those aged between 65 and 75)
- Those who are chronically ill
- Those who are socially isolated
- Infants
- New residents to Canada

In an extreme heat event, BC Housing will utilize trained staff to take actions to protect their tenants from risks. These activities include and are not limited to identifying tenants most at risk, providing cooling rooms and areas for refuge as well as the distribution of communication materials to educate tenants.

City of Surrey

The following actions can be taken by the City of Surrey in support of a heat event.

Preseason

- Update Surrey's Extreme Heat Response Guideline
- Update Surrey's Extreme Heat website
- Participate in regional exercises and forums to discuss and improve a heat event response
- Prepare heat messages and identify communication channels
- Publicly promote subscription to Alertable, Surrey's public emergency notification system
- Conduct contingency planning for a/c and power supply in city owned facilities
- Assess and validate a list of facilities which can be used by the public to escape the heat
- Ensure adequate supplies are procured, such as extra water for public distribution and staff needs
- Recognize those more vulnerable to the health impacts of extreme heat. Studies show certain groups of people are more vulnerable to hot weather mortality and morbidity.[2] Of the following groups, there is an overwhelming base of evidence suggesting that older adults are at greater risk for mortality during hot weather. More so for persons over the age of 70. ECCC identifies additional individual factors resulting in increased vulnerability:
 - no air conditioning
 - poor health status
 - social isolation
 - low income
 - dangerous behaviours during extreme heat events (strenuous physical activity, inadequate hydration, inappropriate clothing)

- type and location of place of work and/or residence (people in occupations with exposure to high temperatures or those living on higher residential floors without air conditioning)

Special weather statement issued by ECCC

- Monitor forecasted temperatures to ensure a state of readiness.
- Distribute updates accordingly to appropriate city staff.
- Be prepared to amplify messaging as provided by the health authority to provide further reach into the community if necessary.

Level 1: Heat Warning Alert Issued

- Advertise city owned facilities of which the public can use to escape the heat
- Consider staffing requirements needed to distribute water, conduct check-ins to those identified as more vulnerable to a heat event (Appendix II), operate public facilities used for heat relief and increase medical responses.
- Employ a multi-modal communication strategy to disseminate relevant information to the public such as:
- Utilizing a public notification system called “Alertable” to send messages to those in the community who have signed up. This system can alert citizens and provide instruction to mitigate risks through the contact medium of their choice including a landline. This provides a better opportunity to reach seniors in their homes using their landlines or preferred device.
- Leverage City webpage, social media, digital billboards, newsletters, and any other opportunity to reach the public to educate on mitigative actions they can take such as:
 - It’s not outdoor temperatures that matter – it’s indoor
 - Use awnings, shutters, blinds, window films
 - Indoor temperatures can peak far later in the day than outdoor temperatures
 - Close windows approximately between 10 am to 8 pm (check outdoor and indoor temp)
 - Use fans to move cooler air in
 - Fans do not lower body temp for vulnerable people – do not rely on as a primary cooling method
 - Need to spend a long time in a cooling centre to benefit

Level 2: Heat Emergency Alert Issued

Once ECCC issues a Heat Emergency Alert, all actions at lower tier will continue with the addition of the following:

- The Surrey Emergency Coordinator will participate in the EMBC facilitated coordination call for a situation update.
- Undertake community outreach focusing on high-risk populations and groups that support them.
- Consider extending hours and/or opening additional areas for heat relief.
- Distribute resources to the public, such as water for those experiencing heat-related conditions.
- Increase the available on-duty first responders to build capacity into the emergency response system.
- Increase the number of staff to operate facilities used for refuge to support the public
- Increase the number of staff to distribute water to at-risk individuals
- Continue to communicate to the public including messaging done during the Heat Warning plus:
 - Indoor environments without air conditioning may become dangerously hot
 - Monitor indoor temperatures (26 and below is safe, 26-31 may pose a risk to the most susceptible people, sustained exposure over 31 should be avoided for most susceptible populations, if it is 31 degrees at home, go somewhere else that is cooler)
 - Indoor temperatures peak around 8 pm and maybe dangerous overnight
 - Check on others multiple times a day, especially in the evening
 - Escape the heat by going to cool places such as the mall, rec centre or library

Stand Down Process

Once the heat event no longer poses a threat to public safety, ECCC will issue a cancellation alert.

This is the trigger by which the city can scale down all heat event-related activities as deemed appropriate. Following this, an after-action report will be conducted to analyze the effectiveness of the response to inform adaptations to Surrey's Extreme Heat Response Guideline.

APPENDIX I

Effective Date: May 25, 2022

Eligibility Assessment for Heat Emergency			
<p><i>The best way to ensure the eligibility of your expense is to submit an Expense Authorization Form (EAF) to EMBC for approval. The EAF provides the details of the expenditure, its rationale, and an estimate of the total expense for the response activity. Incremental costs will be considered for an extreme heat emergency, a forecasted extreme heat emergency or heat warning where actions are taken as outlined in the BC Provincial Heat Alert and Response System (HARS).</i></p>			
Expense Item	Response Item	Eligible	Not Eligible
Bottled Water	Materials	<ul style="list-style-type: none"> Bottled water made available at community cooling centre facilities Bottled water distributed during health and wellness checks where water is not readily available 	<ul style="list-style-type: none"> Bottled water purchased for distribution to private residences or locations that have water readily available
Staff Overtime	Wages and Overtime	<ul style="list-style-type: none"> Incremental overtime for current staff to keep civic facilities open as cooling centres outside of normal operating hours Incremental costs for the wages of temporary auxiliary staff hired under contract to specifically to support a designated cooling centre facility 	<ul style="list-style-type: none"> Regular salaries or straight time for current staff; benefits and taxes; and the incremental payroll expenses (when working outside of the deployment shift length guidelines are ineligible. For example: <ul style="list-style-type: none"> The regular salary or hourly wage expense associated with response activities Benefits, taxes and overhead or loading costs for current staff Payroll expenditures not directly related to response activities (i.e., the backlog of regular work due to time spent working on the event)
Day and night facility for use as Cooling Centre	Facility Rental	<ul style="list-style-type: none"> Rental of a non-local authority or First Nation facility for the provision of a cooling centre Incremental janitorial and utilities Incremental security costs 	<ul style="list-style-type: none"> Rental of community-owned facility or loss of use charges
Transportation to and from Cooling Centre	Emergency Response Measures	<ul style="list-style-type: none"> Commercial transportation of community members to and from cooling centers as needed in communities where no scheduled public or reasonable transportation exists Mileage reimbursement at Provincial government rates for vehicles operated by a First Nation and local authorities for the transportation of community to and from cooling centers where no scheduled public or reasonable transportation exists 	<ul style="list-style-type: none"> Transportation costs where other reasonable alternatives exist
Emergency Services	Fire Services	<ul style="list-style-type: none"> Incremental costs to fire services responding to increased heat related medical calls, specifically, operational response to assist 	<ul style="list-style-type: none"> Routine operations supporting medical response.

		with supporting medical emergencies	
Messaging	Emergency Response Measures	<ul style="list-style-type: none"> Print, radio, social media messages to local population amplifying ECCC and/or HEMBC messaging 	<ul style="list-style-type: none"> Messaging unrelated to heat wave response and/or unapproved by ECCC and/or HEMBC
Volunteer support for wellness checks	Materials Wages or overtime	<ul style="list-style-type: none"> Incremental overtime for Local and First Nations Government staff to provide "Just in Time" training for volunteers on wellness checks Incremental costs for Local and First Nations Governments to provide additional materials, additional transport costs, or tools to do wellness checks (e.g., thermometer, and bottles of water) 	<ul style="list-style-type: none"> Training that can be planned for in advance of a heatwave.
Partner organization support to operate cooling centers	Wages or overtime for organizations contracted by First Nations and Local Governments *Costs should be run through contracting Local Government or First Nation	<ul style="list-style-type: none"> Incremental overtime for organizational staff keeping facilities open as cooling centres outside of normal operating hours Incremental janitorial and utilities 	<ul style="list-style-type: none"> Regular salaries or straight time for current staff; benefits and taxes; and the incremental payroll expenses
First Nations Supports	Community Navigator	<ul style="list-style-type: none"> Incremental costs for First Nations Community Navigator(s) connecting public with supports provided by First Nations Health Authority (FNHA), First Nations Emergency Services Society (FNESS) and/or Indigenous Services Canada (ISC). 	
First Nations Supports	Cultural Activity Locations Support (CALs)	<ul style="list-style-type: none"> Incremental costs for activities aimed at providing culturally appropriate services at cooling centres Incremental costs associated with a dedicated space within or close to a cooling centre, or when requested by a FN community, a separate designated gathering space where culturally appropriate services can be provided 	<ul style="list-style-type: none"> Rental of a community-owned facility or loss of use charges
Cooling device rental for Provincial government partner organizations		<ul style="list-style-type: none"> Cost of cooling device rentals Incremental utility expenses 	<ul style="list-style-type: none"> Cooling device costs submitted in the absence of a prior approved EAF
Basic snacks and bottled water at day and night facilities	Materials	<ul style="list-style-type: none"> Snacks to be available for the general public at community cooling centre facilities 	<ul style="list-style-type: none"> Food purchased for distribution to private residences Meals provided at day and night facilities

References

1. BC Corners Report. Extreme Heat and Human Mortality: A Review of Heat-Related Deaths in B.C. in Summer 2021. Available from chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/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
2. Henderson, S., McLean, K., Lee, M. and Kosatsky, T. (2021) Analysis of community deaths during the catastrophic 2021 heat dome. *Environmental Health Services*, 6(1) 1-8. Available from https://journals.lww.com/environepidem/Fulltext/2022/02000/Analysis_of_community_deaths_during_the.8.aspx
3. National Collaborating Centre for Environmental Health [Internet]. Vancouver, Canada: Public Health Agency of Canada. 2010 Oct. Available from <https://ncceh.ca/content/vulnerable-populations>