RESILIENT RURALS

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Resilient Rurals

COMMUNITY COOLING CENTRES GUIDE

About the guide

Resilient Rurals' Guide to Community Cooling Centres provides a framework for policy-makers and frontline service providers in rural municipalities to develop effective community cooling centres as a response measure during periods of extreme heat and heat waves.

Strategies and best practises for centre planning, implementation and evaluation are outlined in the guide, and accompanied by case studies from Canadian communities. The guide also includes a discussion of heat-vulnerable populations, the impacts of extreme heat on public health and public systems, and the forecast for Alberta's extreme-heat future.

Contents

1 What are cooling centres? Why do Canadian communities need them?

Cooling Centres - An effective community response measure for vulnerable populations

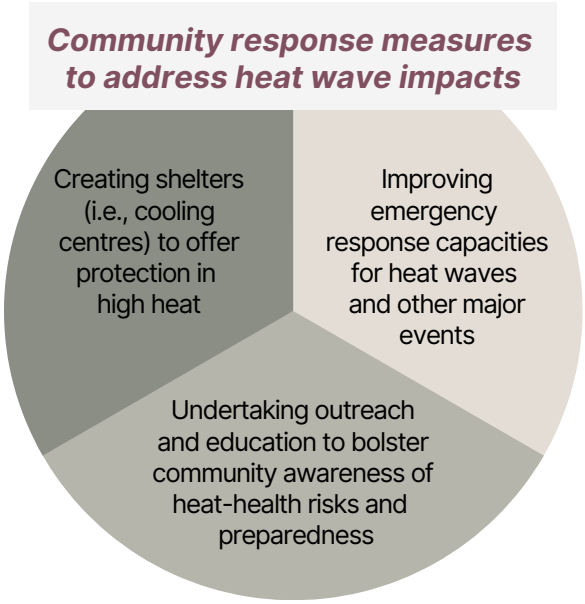
As the climate changes and heat waves and high heat days become a pressing reality for Canadian communities, it's critical for municipalities to mitigate heat-health risks among residents. Developing a community cooling centre plan is a preventative action local governments can take to reduce these risks.

As part of the community response planning component of Heat Alert Response Systems (HARS) in Canada, cooling centres can be an effective response mechanism in the prevention and mitigation of heat-health complications and fatalities among rural residents. Other community response measures of a HARS include outreach to bolster awareness and education on heat-health risks and improving municipal emergency response capacity for heat waves.[1]

Adapting to Climate Change Impacts

Cooling centres are an adaptive climate change measure and should be included as a component of a larger, integrated adaptation and mitigation effort to protect communities from climate change-induced impacts.

For their residents to be resilient, municipalities must address a wide spectrum of climate change impacts, including more frequent and intense heat waves and a greater number of high heat days each year.



Cost-Effective and Energy-Efficient Cooling

A Resilient Rurals risk-defining survey, administered in 2019 to residents of Bruderheim, Gibbons and Lamont found an average of 61% of residents in all three communities do not have air conditioning units to regulate the temperature of their homes.[2] Ensuring every home in a community is air-conditioned is not required for resilience—in fact, running an air conditioning unit requires a great deal of energy, making air conditioning units climate change contributors. The intake also presents a strain to local energy grids and can be a burdensome expense on

households. Alternately, offering a centralized air-conditioned centre open to every community member is one way that residents and municipalities can cool down in an energy-efficient and cost-effective manner.

Heat-vulnerable populations

A number of groups within a community are at higher heat-risk during heat waves and high heat days. These vulnerabilities exist for a variety of reasons, including individual risk factors like age, health and socioeconomic status, as well as environmental conditions like where people live and work.

Planners of effective cooling centre responses understand people in their communities face unequal levels of risk, so they design their cooling centres to make them accessible first and foremost to the most vulnerable groups. They will also target centre promotion and public health messaging to these populations to ensure they understand their vulnerabilities and use the centre.

Commonalities among those at greater heat-risk

- Underlying health conditions
- Caregiver dependence
- Age
- Social isolation
- Physical strain outdoors
- Poor working or living conditions

Groups at-risk

- Older adults and the elderly
- People with chronic illnesses
- People with physical impairments
- Infants and young children
- Occupational groups working outdoors or in hot indoor conditions
- Residents who are unsheltered, emergency sheltered, provisionally accommodated or in unsuitable housing
- Rural disadvantaged (living in poor housing conditions)
- Those exercising outdoors or in hot conditions
- Newcomers to Canada
- Tourists

Note: It's important to remember that while certain groups face a higher risk of heat-induced illness, everyone's health is at risk in extreme heat.

2 Alberta's Heat Forecast: Projections and impacts

Heat Waves in Alberta

Climate projections and recent heat events warn that Canadian communities will see more high heat days annually, more frequent and intense heat waves, and unique and greater risks during the summer season.

Environment Canada's current heat warning criteria for central Alberta is if daytime maximum temperatures are expected to reach or exceed 29°C, with nightly temperatures only falling to 14°C or warmer for 2 or more consecutive days.[3]

Projected number of annual heat waves for the Edmonton Region (high carbon and low carbon climate change scenarios.)[4]

Historic	2021 - 2050		2050 - 2080	
	High carbon	*Low carbon*	*High carbon*	*Low carbon*
0.4 heat waves/year	1.5	1.3	3.3	2.1

Source: Climate Atlas of Canada

Projected number of annual high heat days (days 30°C and above) for the Edmonton Region (high carbon and low carbon climate change scenarios.)[5]

Historic	2021 - 2050		2050 - 2080	
	High carbon	*Low carbon*	*High carbon*	*Low carbon*
3.4 days 30°C+/year	10.8	9.4	25.2	15.2

Source: Climate Atlas of Canada

Climate scientists and policy-makers are closely watching the changes happening today and the future projections for their regions. As the Canadian climate changes, the average annual daily temperature for the country will increase between 2°C and 6°C by 2100, depending on the level of global emissions produced over the next century. However, it's evident the rates of warming are not equally distributed; Western Canada is warming faster than the rest of the country at three times the global rate, and it is particularly important to note that nighttime temperatures during the summer are warming faster than daytime temperatures.[6]

The impacts of high heat days and heat waves

As heat waves become more frequent and intense, they will also become more deadly and disruptive. With the annual number of dangerously hot days increasing overtime, Canadian communities must prepare and adapt to mitigate the various impacts to public health, healthcare systems, and different areas of the workforce.

Each of the following areas of impact reveal the significant costs to life and community wellbeing that a more intense climate presents.

Impacts to public health

There can be severe impacts to cardiovascular systems, respiratory health, and even mental health when the body is not able to cool itself down due to blistering ambient temperatures. Communities will see more high heat days passing the temperature threshold for inducing heat-related deaths. Along with more premature heat-related deaths, we should expect increases in mild, moderate, and severe heat illnesses.

Heat illnesses include:

- Cramps and rashes
- Fainting
- Heat exhaustion
- Heat stroke

Edmonton Journal Reports:

During Alberta's historic, record-breaking heat wave in July 2021, the Edmonton Journal reported the province logged 66 more deaths than the same week in 2020—a 55% increase.[7]

Healthcare impacts

Hotter days will mean more hospital visits for Alberta communities. The new strain will present costs to the healthcare system, putting more pressure on resources as well as taxpayers.

As stated above, new heat patterns will increase illness and death in communities. In a 2021 report the Canadian Institute for Climate Choices determined that the greatest changes in hospitalizations will be from four diseases: coronary heart disease, stroke, hypertensive disease, and diabetes.[8]

Productivity impacts

Industries like manufacturing, agriculture, quarrying, oil and gas extraction, utilities, transportation, forestry, and construction may need to face challenges of reduced labour productivity and outputs during high heat days and heat waves. Workers in these industries can work extended hours outdoors and/or in indoor workspaces that potentially do not provide sufficient and safe cooling. The greater risk for heat exposure and the resulting illnesses that these employees face can potentially undermine industry productivity.[9]

Other impacts

In addition to impacts relating directly to community health and productivity, extreme heat has serious implications for agricultural production, local ecosystems, and infrastructure.

Extreme heat enhances conditions for other climate hazards like drought and wildfire, which are also occurring more frequently across the Prairies. Together with extreme heat, these hazards put considerable stress on crop health. Along with the hotter environment directly threatening crop production, hot temperatures also lead to various pests expanding into regions that were previously too cold to survive in. In terms of livestock rearing, farmers will need to prepare for a greater chance of heat stress on their animals in order to keep them healthy and productive if heat strikes.

At the municipal level, extreme heat presents expensive stressors to infrastructure systems. Municipalities will see greater and potentially excessive pressure on electric systems during heat waves as more and more residents install and run air conditioning units and fans. High temperatures also lend to quicker deterioration of pavement and this fact will present new issues for maintaining road systems—the capacity and budgets of municipalities to repair these systems could even be surpassed.

Did you know?

Alberta broke the summer record for electricity demand during the 2021 summer heat wave.[10] Such a demand for electricity can quickly lead to widespread outages.

An outage within a community increases the need for a local cooling centre as residents seek places to cool down while they aren't able to run their fans or air conditioning at home.

3 Guide for developing cooling centres for rural communities

Location

Ideal community cooling centre locations are spacious, easily accessible, and equipped with air conditioning and a drinking water supply. Municipalities may choose to operate a centre in a municipal-owned building or to coordinate with the owner of a privately-owned building or business to provide residents with a place of refuge from the heat.

Potential locations

- libraries
- recreational or community centres
- city halls
- places of worship
- local businesses
- senior centres or legions
- bingo halls
- shelters
- cool rooms in apartment buildings established by landlords
- museums
- parked air conditioned mobile vehicles (e.g., school bus)

What to have on-site

- drinking water supply
- places to sit and/or lie down
- medical supplies
- trained staff and/or volunteers
- brochures and/or posters with heat-health information
- back-up power source as a safeguard in the case of a power outage

Some rural communities may be challenged by a limited number of large, easily accessible and air-conditioned buildings. Alternately, outdoor locations like splash pads or wading pools can also be designated as cooling facilities. Another option is to connect with the local business community and have vendors with air conditioning and cool spaces open their doors to people. A coordinated response like this would offer more options at once, rather than relying on a single suitable space.

Best practices for effectiveness

Accessibility

A community cooling centre should be accessible in terms of location, mobility features, convenient operating hours, and information adapted for English-as-second-language community members. A heat-response plan should consider how to overcome any obstacles the community—particularly heat-vulnerable people—may face in benefiting from the centre.

Accessibility considerations:

- How are people going to travel to and from the centre?
- Are there ways to transport people who do not have access to vehicles (i.e., elderly)?
- Is the location familiar to most people in the community?
- Does the location have wheelchair access ramps and doors?
- Should centres have extended hours?
- Is the information about the cooling centre and heat-health communicated in simple language?

Staff and/or volunteers

Having knowledgeable staff or volunteers on-site is invaluable to the health and safety of visitors; they can provide assistance by ensuring people are hydrated, answering questions, and delivering heat-health information. And in the case of serious distress, a staff member who is either medically trained or has first aid training can be on standby to notice and potentially manage the symptoms.

It's critical that any staff member or volunteer on-site is knowledgeable in identifying heat-illness symptoms, and is prepared to contact emergency officials in the case of severe illness.

Communication

Integrating strategic communications and outreach into a cooling centre response can help ensure its effectiveness by increasing usage by targeted populations, raising awareness of heat-health risks among the community and improving efficiencies in emergency responses. Timely and direct communication will be most effective in protecting community members.

Communicating about the cooling centre(s)

The public, particularly vulnerable populations, should be made aware of their local cooling centre prior to extreme summer heat as well as during a heat wave. Make sure to communicate:

- The purpose of the centre; who it is for, what services visitors will receive
- How to get to the centre and how to identify cooling centre signage
- The hours of operation; clarify if there will be overnight access
- If there will be drinks and food on site
- If pets are allowed
- Additional rules that must be followed during extraordinary circumstances (e.g., COVID-19 pandemic)

Additionally, educate the community about the risks heat waves pose to health and why cooling is critical to stay safe in extreme heat.

Best practices for effectiveness cont.

Communication channels

Organizers should use multiple channels to reach people who would benefit from the cooling centre and information about heat-health risks. Consider coordinating with credible partner organizations to target vulnerable groups.

Channels can include:

- Town authorities - websites, social media
- Frontline service providers
- Public notification systems
- Institutions - hospitals, clinics, schools, retirement homes, help centres, child centres, schools
- Local media and newsletters
- Vulnerable populations registration programs

On-site communication

Knowledgeable staff/volunteers on-site can be another vehicle to share heat-health information to visitors, and can connect them to further agencies and resources.

Site staff and/or volunteers can also act quickly to coordinate an emergency response if a visitor is in severe distress.

Have an emergency action plan in place for the cooling centre and be prepared to contact emergency officials in the case of severe illness.

Additionally, keep brochures on hand and place posters around the centre with key heat-health messages.

Messaging could include:

- Recommendations for cooling and hydrating
- Tips for keeping the home comfortable
- How to avoid unnecessary heat exposure in the day
- How to help children, elderly and other vulnerable populations
- Recommendations for people with health problems
- Signs of heat distress and what to do when someone feels unwell

The *Resilient Rurals Resource Hub* hosts a bank of downloadable heat-health fact sheets for heat wave education

Coordinated outreach

The benefits of community cooling centres are magnified with a complementary and rigorous outreach strategy on the part of the municipality, community members, and local businesses and organizations.

Outreach tactics include:

- Reaching people with limited social networks and interaction, and those continuing regular activities (i.e., outdoor physical activity) with a false sense of safety.

Best practices for effectiveness cont.

- Encouraging people to act as 'buddies' for their friends, neighbours, family, and to check in on those they know to be heat-vulnerable.
- Encouraging people to open their homes—if they are cool—to family and neighbours as a refuge.
- Encouraging local businesses with air conditioning to welcome the public into their shop without expectation of purchase. Businesses may use signage provided to them by Resilient Rurals to indicate they are a centre for cooling.

Evaluation

To improve emergency efforts season after season, it's important to integrate evaluation of the cooling centre response into planning processes. Evaluation can be based on quantitative data gathered by staff/volunteers for a variety of metrics that can include, but aren't limited to:

- Number of days cooling centre is used
- Total visitors/day
- Peak usage time and visitor volumes
- Visitor demographics
- Visitation lengths
- Number of visitors with heat illness signs

Gathering feedback from those accessing and staffing the cooling centre can also be valuable to gauge the public support for a cooling centre facility and to identify any shortcomings in amenities, location and staffing.

Government of Canada recommendation:

Set up systems for people to self-register or be registered by family members to receive updates on response measures.[11]

The *Rural Assist* program, a pilot developed by Resilient Rurals for the Town of Bruderheim, will provide residents with the opportunity to receive tailored information during heat waves and other climate-related events. The program will be delivered through the Bruderheim Alert System (an Everbridge platform), which allows residents to register to receive information through phone, email or text messages. Residents will have the option to respond to messages if they require assistance.

Rural Assist will also offer an opt-in service, through which vulnerable members of the community can identify themselves and provide information about their specific concerns, vulnerabilities and services they may require during extreme weather events like heatwaves.

4 Cooling centres in action

Case Study: Gibbons' response to the 2021 summer heat wave

During Alberta's record setting summer 2021 heat wave, Gibbons' Town Office operated a cooling centre and hydration station to accommodate residents looking to escape the heat. The town's air conditioned cultural centre was opened up to the public, which had previously been closed due to COVID-19 restrictions.

As the cooling centre was set up in quick response to rising temperatures, no long-term, formal planning processes occurred before implementation.

Cooling during COVID-19: The Town received approval from Alberta Health Services (AHS) before opening the centre, and limited user capacity to meet current COVID-19 policies. Chairs were set up to meet social distancing requirements, and users were provided with hand sanitizer and asked to sign in for contact tracing. The program was designed for self-sufficiency, with limited staff supervision. Signage encouraged residents to enter, and a staff member was always present in the building in case of any issues.

Hydration station: A hydration station was set up in the parking lot of the Cultural Centre while the cooling centre was closed. The hydration station is normally used for public events in the town and involves 300-gallon tanks that dispense refrigerated water to eight fountains and eight water fill stations.

Centre usage: Staff saw relatively low utilization rates, with approximately five to ten residents using the cooling centre each day, but attributed this to the novelty of the program. They predict usage will increase in future years

with residents becoming more familiar with the cooling centre concept. The cooling centre was promoted through Gibbons' website, social media accounts and public alert system, Voyent.

Future considerations: Overall, Town staff were content with the cooling centre's operation and would run it again during future heat waves. In the event that COVID-19 restrictions were not limiting capacity and facility options, staff would have set up the centre in a larger space. Although the centre was somewhat under-utilized, it was generally successful, and in future years, usage may increase as more residents learn about it.

Case Study: Developing a HARS and cooling centre in rural Manitoba

The Assiniboine Regional Health Authority (ARHA), serving a large rural region in Manitoba, piloted a Heat Alert Response System (HARS) development project with Health Canada. To ensure coordination and effectiveness, the HARS was integrated into the authority's Disaster Emergency Response Plan.

This case demonstrates what a rural community, appearing limited in resources and capacity, can accomplish with a comprehensive map of regional assets, strategic communication and coordination among existing departments and health care providers, and meaningful stakeholder engagement.

ARHA first conducted a temperature-mortality assessment for the region. As a region made up of small rural communities, planners didn't have heat mortality data for the communities. To work around this, they used the heat mortality curves of nearby urban communities in Manitoba as evidence of local heat risks. They then completed a vulnerability assessment through rigorous stakeholder engagement. This process determined there was a need to prioritize community response measures like cooling centres for both year-round residents and tourists that frequent the region during the summer.

Cooling Centre Response: One challenge found during stakeholder consultation was the region's limited options for buildings that were spacious, easily-accessible and air conditioned. This fact was taken into consideration, and for some areas, cooling was brought directly into homes for seniors and those with limited mobility. Air-conditioned common areas provided easily accessible refuge for residents in seniors living and care facilities. For the community cooling facilities that were established successfully, ARHA leveraged existing volunteer networks to have volunteers on-site to aid people and provide them drinking water.

Note: *As of 2012, Assiniboine Regional Health Authority is now Prairie Mountain Health, following an amalgamation of three regional health authorities in Manitoba.*[12]

Endnotes

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About Resilient Rurals

Resilient Rurals is a partnership between the towns of Bruderheim, Gibbons and Lamont for a regional climate adaptation and resilience project in Alberta's Industrial Heartland. It is a new approach—created by small towns, for small towns.

In 2015, the Town of Bruderheim was selected for participation in a one-day Climate Resilience Express workshop with All One Sky Foundation. The Town was provided with a Climate Resilient Action Plan that outlined a number of actions to promote resilience in a changing climate.

The plan was a unique opportunity—a launching point from which to build a regional collaborative framework with neighbouring municipalities of similar size (under 3,500) in Alberta's Industrial Heartland. The towns of Gibbons and Lamont agreed to partner with Bruderheim to form Resilient Rurals.

With Bruderheim as the project lead, the group identifies shared priority risks and opportunities for collaboration among partners, and creates climate education, communication and planning resources for rural communities.

Contact

Resilient Rurals
780-299-2946

www.ResilientRurals.com
Connect@ResilientRurals.com
@ResilientRurals