



Health Canada is Collaborating with Canadian Communities to Reduce the Urban Heat Island Effect

The majority of Canadians live in urban centres. How we maintain and grow our communities can influence behaviours and impact our health. Since 2011, Health Canada has been working with communities to help identify the causes of urban heat islands (UHI) and support approaches to reduce heat-health impacts through interventions in the built environment. Health Canada has been collaborating with communities in Ontario (Windsor, Ottawa, London, and the Regions of Peel and York) and British Columbia (Vancouver) on eight innovative community-driven projects. The results from these collaborations, which are being disseminated to stakeholders and partners across Canada and internationally, help raise awareness and support action to reduce UHIs at the local level.

What is the urban heat island effect?

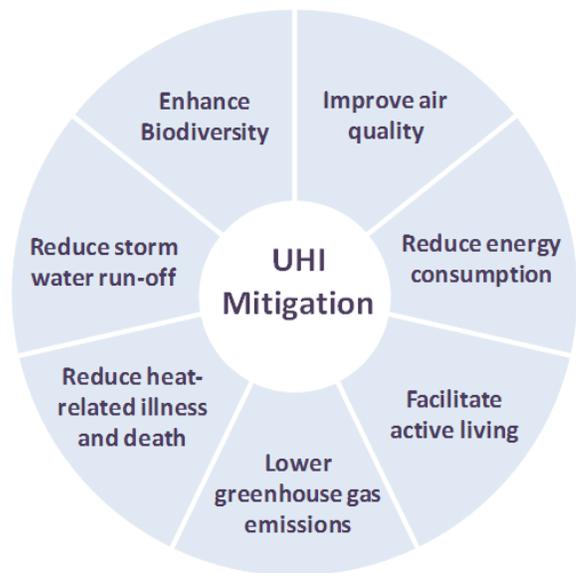
The UHI effect is a phenomenon where the ambient temperature in an urban area is hotter than that of surrounding rural areas. UHIs occur where there is minimal vegetation cover and a high percentage of dark surfaces such as tar roofs, asphalt roads or parking lots. The dark surfaces absorb the sun's rays and radiate it out slowly, thereby increasing the ambient air temperature. UHIs can exacerbate the impact of an existing extreme heat event, putting additional stress on the health of vulnerable people. At risk groups include young children, older adults, people with chronic illnesses, socially isolated individuals and the marginally housed or homeless.

What are the key measures to reduce the urban heat island effect?

1. **Expand vegetation** cover by planting trees, shrubs and climbing plants, creating new open spaces, and installing vegetative (green) roofs.
2. **Increase surface reflexivity of paving and other construction materials** by installing reflective roofs, using light-coloured paving materials for roads, sidewalks parking lots, play spaces and driveways.
3. **Reduce waste heat** by retrofitting buildings and utilities for higher energy efficiency, installing energy-efficient appliances, and reducing the use of heat sources during hot times of the day.

Implementing measures to reduce urban heat islands can have many co-benefits that support community well-being (Figure 1). Intersectoral collaborative action can also support healthy public policy and innovative land-use practices that facilitate active living and healthier communities.

FIGURE 1: The co-benefits of advancing action to reduce the urban heat island effect.



Case study: measures to reduce the urban heat island effect in Windsor, Ontario

The City of Windsor (population 216 000) is Canada's southernmost city and has summertime temperatures that are among the highest in the country. The hot and prolonged temperatures in summer are a significant public health concern, particularly for vulnerable populations. The UHI effect, which is pronounced in parts of Windsor, exacerbates existing health risks from heat. In addition, climate change projections show that over the next 40 years the number of extreme heat days – where the maximum temperature exceeds 30 degrees Celsius – in Windsor is expected to double the current average of about 23 days a year.

In 2009, Health Canada, under its heat resiliency program, partnered with the City of Windsor to develop a Heat Alert and Response System. This resulted in the successful launch of the City's "Stay Cool Windsor-Essex" program in 2010. Since that time Health Canada and Windsor have continued their collaboration on resiliency to extreme heat by focusing on preventative approaches to reducing urban heat islands and improving outdoor thermal comfort to support active living. The following is a synopsis of key UHI-related reports, plans and policies developed and implemented by the City of Windsor:

Windsor UHI-related plans and policies

- **Windsor's Climate Change Adaptation Plan (2012).**ⁱ The City developed a comprehensive adaptation plan which directly calls for action to reduce UHIs. Specifically, it recommended the City "complete an urban heat island study to identify hot spots and their causes as well as the prioritization of actions to reduce them."
- **An assessment of UHI mitigation strategies in Windsor (2012).**ⁱⁱ The City collaborated with Health Canada to map the urban heat island effect and conduct an assessment of UHI reduction measures (e.g. white roofs, green roofs, and street trees). A report with targeted recommendations for action at the local level was endorsed by the City Council.
- **Assessing urban parks and playgrounds to improve outdoor thermal comfort (2013).**ⁱⁱⁱ The City, in collaboration with Health Canada, led an assessment of Windsor's parks and playgrounds to determine characteristics that may either improve or reduce human comfort to heat. The report recommended various actions (both design and policy considerations) to improve park design.
- **Draft shade policy for parks (2014).** The City developed a draft shade policy that applies to all City parks and playgrounds. The purpose of the policy is to facilitate the use and enjoyment of City parks for all residents during the summer months by ensuring that all users have reasonable access to shade at City parks and related facilities.

UHI reduction actions in Windsor

Building on the results and recommendations from the above-listed reports, the city is moving forward on direct action to reduce UHIs, including:

- **Installation of green and reflective roofs on municipal buildings (2007 - present).** The City is leading by example through the installation of five green roofs and two reflective roofs on municipal buildings. Where roofing shingles are being replaced, efforts have been made to replace dark shingles with lighter coloured alternatives.

ⁱ <http://www.citywindsor.ca/residents/environment/environmental-master-plan/documents/windsor%20climate%20change%20adaptation%20plan.pdf>

ⁱⁱ <http://www.citywindsor.ca/residents/environment/environmental-master-plan/documents/urban%20heat%20island%20report%20%282012%29.pdf>

ⁱⁱⁱ http://www.citywindsor.ca/residents/environment/Environmental-Master-Plan/Documents/Improving%20Thermal%20Comfort%20in%20Parks_no%20appendices.pdf

- **Integrated thermal comfort considerations into the retrofit of City parks (2013-14).** The Parks and Recreation Department has integrated thermal comfort design features – including installing shade structures, planting trees and using lighter coloured artificial mats under playground equipment – into five city parks that were being retrofitted.



Source: City of Windsor

The Windsor case study demonstrates how communities can proactively make changes to the built environment to create healthier, more resilient and vibrant communities. The new splash pads, trees, shade structures and other cooling features being installed by the City of Windsor in parks and playgrounds across the city have the potential to increase social connectedness and levels of physical activity among residents by providing cool and comfortable spaces. It shows that targeted measures can be implemented incrementally to advance community well-being.

Additional Resources:

- <http://www.hc-sc.gc.ca/ewh-semt/pubs/climat/index-eng.php>
- <http://www.staycoolwindsor-essex.com/>



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