Low Carbon Considerations for Maximum Temperature Bylaws

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An Urgent Need to Address Exposure to Extreme Heat

With rising global temperatures and increasingly frequent extreme heat events, protecting people from the harmful effects of heat exposure has become a critical public health priority.

Heat waves can be deadly, particularly for those without adequate access to cooling. Lower-income individuals and renters, along with seniors, children, people living with chronic illnesses, and those living alone are at heightened risk.

Extreme Heat by the Numbers

- The three most impactful heat waves in Canada resulted in the cumulative deaths of over 1000 people in Canada.
- The British Columbia Heat Dome of 2021 was responsible for an estimated 619 deaths - the vast majority of people died in residential buildings without access to space cooling.
- Toronto Public Health estimates that extreme heat contributes to an average of 120 premature deaths each year in Toronto alone.
- By midcentury, it is estimated that Toronto will experience 66 days of temperatures over 30°C each year – more than triple the average between 1996 and 2010, with similar trends for the broader GTHA.

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About

Maximum Temperature Bylaws

Maximum temperature bylaws are local regulations that set an upper limit on indoor temperatures in residential buildings to ensure safe and comfortable living conditions during extreme heat events.

Addressing extreme heat exposure has become a priority for cities in the Greater Toronto and Hamilton Area (GTHA). Like many across North America, some cities are exploring or implementing maximum temperature bylaws as a solution. Such bylaws can support other public priorities, such as reducing carbon emissions and enhancing community resilience. By encouraging and enabling efficient heat pumps as the best option for complying with maximum temperature limits, municipalities can reduce carbon while creating savings for housing operators and residents. Conversely, if compliance is met through conventional cooling systems, municipalities and building owners could create stranded investments in systems that are incompatible with municipal climate targets.

Maximum temperature bylaws could risk other unintended consequences, such as triggering increases in rents or utility costs for tenants. Thoughtful bylaw design including a predictable and phased approach, along with support for building owners and coordination with climate action, are needed to ensure an equitable and successful outcome.

Landscape

Residential Bylaw Examples in North America

See cooling requirements and compliance options in various jurisdictions across North America, with links to relevant policies.

CITY	POLICY DETAILS
Chicago, IL	**Residential buildings over 80ft in height or 100 units, or any building housing seniors** MINIMUM AREA: One common area gathering room or all common areas for seniors housing INDOOR TEMPERATURE LIMIT: 23.9°C (75°F) COMPLIANCE OPTIONS: Portable equipment allowed until 2024, permanent equipment required thereafter
British Columbia, Canada	**All new residential buildings or homes** MINIMAL AREA: At least one room in each residential unit (excluding bathrooms, storage rooms, etc.) INDOOR TEMPERATURE LIMIT: 26°C (78.8°F) COMPLIANCE OPTIONS: Permanent cooling equipment and/or passive measures (with modelling demonstrating compliance with temperature limit)
Tucson, AZ	**All residential buildings** MINIMAL AREA: All habitable rooms INDOOR TEMPERATURE LIMIT: 27.8°C (82°F) COMPLIANCE OPTIONS: Permanent cooling equipment required. Fans or portable cooling devices may be used temporarily while a permanent cooling system is being repaired or replaced

Dallas, TX	**All rental homes** MINIMUM AREA: All habitable rooms INDOOR TEMPERATURE LIMIT: 8.3°C (15°F) cooler than the outside temperature – up to a maximum indoor temperature of 29.4°C (85°F) COMPLIANCE OPTIONS: Portable or permanent cooling equipment solutions allowed
Montgomery County, MD	**Rental townhomes and multi-family buildings** MINIMUM AREA: All habitable rooms INDOOR TEMPERATURE LIMIT: 26.7°C (80°F) COMPLIANCE OPTIONS: Air conditioning units or central air conditioning
Tempe, AZ	**All rental housing units** MINIMUM AREA: All habitable rooms INDOOR TEMPERATURE LIMIT: 27.8°C (82°F) COMPLIANCE OPTIONS: Permanent cooling equipment required

The Canadian Environmental Law Association provides a model bylaw as a recommendation for Ontario municipalities.

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Access to cooling is vital

Legislative context: In Ontario, the Residential Tenancies Act defines heat as a 'vital service' landlords must provide but does not include cooling. Cooling must also be considered a vital service crucial to year-round livability.

Climate adaptation and health: Evidence suggests that prolonged exposure to temperatures above 26°C increases risks of mortality and morbidity. Without mechanical cooling, temperatures in multi-residential buildings are commonly above this threshold for the majority of summer hours. Cooling to temperatures significantly below 26°C may provide enhanced comfort, but is not considered to have the same degree of health benefit.

Most maximum temperature policies focus on multi-residential housing. However, there are other building types where occupants remain for long enough for heat exposure to create risks such as workplaces, schools.

Phased-in approaches

Feasibility: Phasing-in maximum temperature bylaws gives building operators and utilities more time to plan for and adapt to requirements, manages potential grid impacts and prevents potential supply chain issues. Policymakers should also be aware that permanently installed cooling systems (including heat pump systems) may often require an extended period (>18 months) for engineering design, permitting and construction.

Approaches: There are a variety of potential approaches to phasing in maximum temperature bylaws. Options to consider include:

- ✓ Phased implementation by building size and/or building type
- ✓ Prioritizing buildings housing vulnerable populations
- ✓ Tiered compliance deadlines with initial requirements that can be met with portable cooling units, and full compliance by transitioning to permanent cooling with heat pump systems at a later date

- ✓ Beginning with requiring cooling for a single room and transitioning over time to whole building requirements

Coordination with climate action

For many municipalities, decarbonizing heating and cooling with heat pumps is a key part of existing or emerging climate action plans, and is required for meeting local and federal climate targets. However, the synergy between heat pump retrofits and addressing exposure to extreme heat is not broadly understood. Municipalities should:

- ✓ **Align with climate goals:** Integrate cooling solutions within broader climate action plans, emphasizing the use of heat pumps to address overheating while reducing emissions.
- ✓ **Consider integrating temperature limits with Emissions Performance Standards for existing buildings:** Many cities are considering developing emissions performance standards for existing buildings, following leading cities across North America including NYC and Vancouver. Maximum temperature limits can be integrated with these policies, or at a minimum, developed in coordination to avoid any conflict or confusion.
- ✓ **Provide technical support to building owners:** Any policy response to extreme heat exposure should also include information and resources to support building owners in understanding and realizing the long-term benefits and cost-savings associated with heat pump retrofits.

Equity considerations

Some populations are more vulnerable to extreme heat exposure, such as renters, low-income households, seniors, children, or those with underlying health conditions. Municipalities should ensure cooling bylaws are designed and implemented to prioritize and support these groups as needed. Municipalities should:

- ✓ Identify and map the most vulnerable community members in their region to ensure their cooling needs are prioritized during implementation.
- ✓ Ensure people have easy and round-the-clock access to cooling, minimizing disruption to their lives. While common spaces and outdoor cooling stations can help communities, in-suite solutions should be the primary objective of the bylaw.
- ✓ Define support(s) available to help low-income tenants cover their cooling costs. In cases where building owners pay for utilities, provide measures to ensure the added cost of cooling is not just passed down to the tenant.

- ✓ Outline landlord responsibilities as it relates to maintaining and/or repairing cooling equipment.
- ✓ Develop a compliance framework and support program(s) to enable landlords to comply with the bylaw.
- ✓ Define maximum and minimum temperature limits, giving tenants autonomy to choose a comfortable setting within that range.

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TAF The Atmospheric Fund

TAF is a regional climate agency that invests in low-carbon solutions for the Greater Toronto and Hamilton Area and helps scale them up for broad implementation.

We are experienced leaders and collaborate with stakeholders in the private, public, and non-profit sectors who have ideas and opportunities for reducing carbon emissions.

Supported by endowment funds, we advance the most promising concepts by investing, providing grants, influencing policies, and running programs.

We're particularly interested in ideas that offer benefits beyond carbon reduction such as improving people's health, creating local green jobs, boosting urban resiliency, and contributing to a fair society.

The Atmospheric Fund

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