

Thermal Comfort Guidelines: For Large Area Studies, Public Realm Capital Projects, and Large Site Developments – Final Report

Date: January 9, 2025

To: Planning and Housing Committee

From: Chief Planner and Executive Director, City Planning

Wards: All

SUMMARY

This report recommends Council's adoption of the Thermal Comfort Guidelines shown as Attachment 1 to this report and that Council direct staff to apply the Thermal Comfort Guidelines in the evaluation of City-initiated large area studies, major outdoor public realm capital projects, and large site developments (over 5 hectares) with buildings over 6 storeys.

In a period of climate change, it is becoming increasingly important to protect the quality and comfort of the public realm that serves residents, workers, and visitors in the city. Climate change is causing more extreme weather conditions, and there is a growing need to design public spaces that optimize comfort in four seasons. Toronto's population continues to grow, with much growth occurring through vertical densification. The public realm is an important shared amenity that will be relied upon by more and more people for recreation as well as respite from hot indoor conditions. The design of the public realm optimized for thermal comfort is key in building a resilient and livable city.

Thermal comfort is the measure of how someone feels thermally whether they are too hot or too cold, and the degree of their comfort or discomfort. The four primary contributing factors to thermal comfort are air temperature, radiant temperature, relative humidity, and air movement. The outdoor public realm is all exterior public and private spaces to which the public has access. It is a network that includes but is not limited to, streets, lanes, parks, and open spaces.

City Planning identified the need to update the existing study, "Sun, Wind and Pedestrian Comfort: A Study of Toronto's Central Area" (1990), prepared for the former City of Toronto more than 30 years ago to analyse how development would affect street level sun, wind, and thermal comfort conditions. The update incorporates new technology and software, as well as modern methodologies to ensure data-driven insights. The Guidelines take a Toronto-specific approach with performance metrics that

establish seasonal targets. The Guidelines provide a clear methodology to undertake a Thermal Comfort Study as outlined in the appendices, equipping designers, planners, and the development industry with information on the impact of the built environment on the thermal comfort of public spaces.

The outlined Thermal Comfort Study methodology aligns with and integrates the findings of Pedestrian Level Wind Studies and Sun/Shadow Studies, which are required for development applications involving buildings over 6 storeys. While Pedestrian Level Wind Studies and Sun/Shadow Studies are primarily required for development applications, the Thermal Comfort Study methodology, as outlined in the appendices of the guidelines, is designed to inform City-initiated large-scale area studies, major outdoor public realm capital projects, and large site developments (over 5 hectares). For such large area studies or developments, the Thermal Comfort Study assists in organizing streets and blocks and strategically locating outdoor parks, open spaces, and amenities to maximize thermal comfort. This approach fosters a cohesive and comprehensive strategy for city planning, ensuring a more sustainable and livable urban environment.

The Guidelines also feature a Design Toolbox, offering developers and planners practical strategies to mitigate negative thermal impacts. This toolbox helps development proposals address thermal comfort effectively, promoting better urban environments.

Ultimately, the Thermal Comfort Guidelines address outdoor public realm thermal conditions, responding to climate emergencies, sustainability goals, and the needs of a growing population. By prioritizing thermal comfort, the city enhances urban living, encouraging residents to explore the outdoors, stay active, and engage in recreational activities year-round. This dynamic engagement strengthens urban vibrancy and resilience, fostering a city where people and communities thrive.

The purpose of this report is to provide background on the Thermal Comfort Guidelines, an overview of the contents of the Guidelines, how the Guidelines will be used, and an outline of the next steps.

RECOMMENDATIONS

The Chief Planner and Executive Director, City Planning, recommends that:

1. City Council adopt the Thermal Comfort Guidelines, included as Attachment 1 to the report.
2. City Council request the Chief Planner and Executive Director, City Planning and Executive Director, Development Review, to apply the Thermal Comfort Guidelines in the evaluation of city-initiated large area studies.
3. City Council request the Executive Director, Development Review, to apply the Thermal Comfort Guidelines in the evaluation of large site developments (over 5 hectares) with buildings over 6 storeys on a voluntary basis.

4. City Council request the General Manager, Parks and Recreation to apply the Thermal Comfort Guidelines in the evaluation of major outdoor public realm capital projects on a voluntary basis.

FINANCIAL IMPACT

The City Planning Division confirms that there are no financial implications resulting from the recommendations included in this report in the current budget year or in future years.

The Chief Financial Officer and Treasurer has reviewed this report and agrees with the information as presented in the Financial Impact section.

EQUITY STATEMENT

Evidence shows that vulnerable populations are disproportionately affected by extreme climatic conditions. Areas and populations that are disadvantaged with respect to access to high-quality public space often bear the brunt of climatic change.

The Thermal Comfort Guidelines work along-side several strategies and actions that support equity-deserving groups, including: the Resilience Strategy, TransformTO and the Parkland Strategy.

Through extensive engagement with the public, stakeholders and Indigenous communities, guiding principles were established to steer the study and ensure comprehensive and effective outcomes. "Applying an Equity Lens" was identified as one of the guiding principles of the guidelines.

The Guidelines identify several approaches to effectively apply an equity lens, including continuing to grow the tree canopy; prioritizing areas of low parkland provision; focusing on high-density residential areas; using neighbourhood profiles for data-driven planning; designing around childcare centres, schools, playgrounds and senior spaces; and improving walkability for all abilities.

CLIMATE IMPACT

In 2019, City Council declared a Climate Emergency for the purpose of "naming, framing and deepening our commitment to protecting our economy, our ecosystems and our community from climate change" (Item MM10.3). This was followed up with the adoption of TransformTO Net Zero Strategy, which includes targets to achieve net-zero emissions in Toronto by 2040 (Item IE26.16).

The Provincial Growth Plan supports intensification and building "compact and complete communities" as a strategy to help reduce greenhouse gas emissions and plan more adaptive communities that are resilient to the impacts of climate change. Toronto's growing population, driven by vertical densification, increases reliance on the public

realm for recreation and as places of refuge and respite. Prioritizing thermal comfort in parks, streets, and public spaces is crucial to ensuring a high-quality, safe, and comfortable outdoor environment for all.

DECISION HISTORY

On November 26, 2019, City Council adopted [2019.HL10.4](#) - Strengthening Heat Resilience in the City of Toronto, which directed all City divisions to continue to incorporate hot weather response activities in their divisional mandates and collaborate on the City-wide Heat Relief Strategy's implementation.

On December 17, 2019, Council adopted [2019.PH11.4](#) -Official Plan Amendments to Built Form and Public Realm Policies, which were then subsequently reviewed and approved by the Minister of Municipal Affairs and Housing, coming into force on September 21, 2020. The report recommended the adoption of updated Official Plan Public Realm and Built Form Policies, including policies of providing a comfortable setting with wind and sunlight conditions that promote use and enjoyment of the outdoor public realm spaces.

On November 27, 2023, the Board of Health adopted [2023.HL8.3](#) - Public Health Impacts of Climate Change in Toronto: A Path Forward for Responding to the Climate Crisis, which directed staff to develop a dedicated surveillance framework for monitoring climate change health impacts for Toronto.

COMMENTS

Background

Toronto, like many other cities, is experiencing an increase in the frequency and intensity of extreme heat events, exacerbated by climate change. These events are anticipated to become more frequent and intense, with over 60 additional days per year by the end of century experiencing temperatures above 30°C compared to the 1980s. As a result, the number of heat warnings is expected to increase and last longer. Very cold days (below -20°C) are projected to become less common and the city is also likely to get wetter, although precipitation patterns will be more variable compared to the steady increase in average temperatures.

Toronto's population continues to grow, with much growth occurring through vertical densification. The public realm is an important shared amenity that will be relied upon by more and more people for recreation as well as respite from hot indoor conditions.

In 1990, the former City of Toronto commissioned the "Sun, Wind and Pedestrian Comfort: A Study of Toronto's Central Area", which later became part of the 1991 City of Toronto Plan. The Study established performance standards to measure sunlight access in the public realm and pedestrian-level wind comfort. Since 2000, advancements in technology introduced software tools, such as Computational Fluid Dynamics (CFD) simulations, AutoCAD, and SketchUp. These tools enabled more efficient Pedestrian Level Wind Studies and Sun/Shadow Studies, marking a significant

evolution in thermal comfort analysis. Although over 30 years old, the principles outlined in this groundbreaking study are still relevant today.

Over the past decade, technology has evolved considerably, and more detailed information such as future weather projection data has become publicly available. Modern modeling software enables us to evaluate additional layers of data, and consolidate all comfort factors such as wind, sun radiation, air temperature and humidity, to accurately assess the level of thermal comfort of outdoor public spaces. As we experience more extreme climate conditions, there is a pressing need to undertake a more comprehensive approach to thermal comfort studies.

Furthermore, the updated Official Plan Public Realm and Built Form Policies, which came into effect in September 2020, emphasize creating outdoor public spaces with comfortable wind and sunlight conditions to encourage their use and enjoyment.

City Planning identified the need to update guidance related to thermal comfort in the outdoor public realm, to make use of advancements in technology. DIALOG and Buro Happold (Consultant Team) were retained in early 2022 to work with City Planning to create Thermal Comfort Guidelines. The Thermal Comfort Guidelines provide details on how to conduct a Thermal Comfort Study. The City also brought together a team of professionals from various City divisions and agencies including City Planning (Urban Design, Community Planning, Strategic Initiatives, Policy & Analysis); Environment & Climate; Parks, Forestry and Recreation; Public Health; and Transportation Services to form a Technical Advisory Committee (TAC). The Consultant Team engaged the TAC and other stakeholders, researchers, and academics regularly to report on the work to date and gather input and direction for the next steps. With Environment & Climate staff support, the project team worked with the Canadian Centre for Climate Services staff to incorporate the best available future weather projection data into the study.

Currently, the City of Toronto requires development applications with buildings over six storeys / 20 metres in height, to submit a Pedestrian Level Wind Study and a Sun/Shadow Study. Components of these two studies are aligned with the methodology of a Thermal Comfort Study. In particular, the studies utilize many of the same data sets, the size of study area is compatible and the months of focus for sun/shadow analysis are aligned. While a Thermal Comfort Study provides the most comprehensive picture of the outdoor comfort of existing and proposed site conditions, the information provided by the Pedestrian Level Wind Study and Sun/Shadow Study can be used as inputs into a Thermal Comfort Study.

Engagement and Consultation

The project team engaged with Indigenous communities and undertook public and stakeholder consultation.

In March and May 2023, the project team engaged with Indigenous community members from a variety of Nations (Anishinabek, Haudenosaunee and Inuk), including seniors, adults, young adults and youth. The sessions introduced the participants to the goals and objectives of the study and preliminary guiding principles. Through this

engagement, participants shared ideas and comments which were incorporated into the study work.

Broad public consultation for the study was undertaken through two online surveys, in July 2022 and January 2023 to capture both warm and cold weather experiences in public spaces. The surveys were promoted on social media and received over a thousand responses. The results of the surveys informed the guiding principles.

Staff and the consultant team engaged with the City's Design Review Panel (DRP), industry experts and the development industry at the beginning of the project, and later with a draft of the Guidelines. The DRP provided overwhelming support for this initiative and their input on content, graphic quality, and process helped to refine the final version of the Guidelines.

Consultation with industry experts included academics, architects, landscape architects, and thermal comfort experts. The input provided by the industry experts guided the approach to the performance metrics and design toolbox. In the final stage of the study, the development industry was consulted through the Building Industry and Land Development Association (BILD). This engagement helped to inform the recommended approach for applying the Thermal Comfort Guidelines.

Overview of the Thermal Comfort Guidelines

The Thermal Comfort Guidelines include guiding principles that establish a strong foundation to shape the approach for decision making; performance metrics that define the amount of thermal comfort to be targeted; a design toolbox to assist both at the outset of the project to design new developments and capital projects with thermal comfort in mind and as a mitigation strategy to offset any potential negative impact a development might have on thermal comfort; and appendices which include an implementation approach and how to conduct thermal comfort studies.

Guiding Principles

Through public and stakeholder consultation and engagement with Indigenous communities, six guiding principles were developed: Equity; Life-Centric Approach; Seasonal Shade and Comfort; Shoulder Seasons: Different Modes of Transportation; and Toronto-Specific Standards.

The two principles Life-Centric Approach and Seasonal Shade, focus on preserving sunlight in the public realm and providing shade to address the city's warming climate. The Life-Centric Approach was suggested by a member of the Indigenous community and focuses on creating environments that support all forms of life—humans, animals, insects, plants, and other species—thereby forming a sustainable, ecological system. Enhancing environments where all life thrives ultimately creates a more comfortable space for humans.

In Toronto, access to sunlight is essential for most of the year, particularly during the long winter months. For nine months, people are more comfortable outdoors when they experience the warmth of the sun and shelter from the winter winds. This is evidenced

by the preference of pedestrians walking on the sunny side of the street from September to May.

Shade is crucial in the summer to mitigate the heat, and the best way to achieve seasonal shade is by planting deciduous trees in public spaces such as parks and streets. Unlike the shadows cast by buildings, tree shade is localized and adaptable to seasonal changes, offering sun protection in warmer months and allowing sunlight to penetrate in colder months. According to the 2018 City of Toronto Tree Canopy Study, the city’s canopy cover averages 28.4-31%, with a goal of 40% by 2050 to increase climate resilience.

As outlined in the City’s Official Plan, development adjacent to parks or open spaces should be designed to provide a transition in scale that ensures access to sunlight and daylight. The Thermal Comfort Guidelines emphasize the importance of offering sun protection in warmer months and allowing sunlight to penetrate in colder months in the public realm, supporting the city’s climate resilience strategies to ensure all life thrives in urban spaces.

Performance Metrics

Achieving optimal thermal comfort in an urban environment requires understanding a range of factors, from weather conditions to urban design and human activity. The performance metric established in the Guidelines define the amount of thermal comfort to be targeted, to provide a foundation for informed decision-making and sustainable urban planning.

The Universal Thermal Climate Index (UTCI) quantifies thermal comfort using an equivalent temperature scale based on four key factors: air temperature, relative humidity, wind speed, and radiant temperature. It provides a practical "feels-like" measure to assess how individuals perceive heat or cold stress in specific conditions. UTCI's simplicity and global recognition make it a valuable tool for urban design in Toronto, helping to evaluate thermal conditions and guide strategies to enhance comfort in the public realm.

Toronto has a unique physical context and therefore requires Toronto-specific targets.

- Toronto's weather is highly variable, with microclimatic differences influenced by proximity to Lake Ontario and other factors.
- Thermal comfort perception varies among individuals, shaped by lived experiences, seasonal context, and Toronto's diverse population, where over 50% are immigrants.
- The city’s semi-continental climate brings expected conditions like "moderate heat stress" in summer and "slight cold stress" in winter as defined by the UTCI.

A Toronto-specific set of target conditions is given here which aims to supplement the UTCI comfort-criteria categories and make it more specific to the unique Toronto climate.

Year Period	Time Period	Acceptable UTCI Temperature Range
March - May	08:00-20:00	9°C to 26°C (inclusive)
June - August	06:00-21:00	9°C to 32°C (inclusive)

September - October	08:00- 20:00	9°C to 26°C (inclusive)
November - February	08:00-17:00	0°C to 26°C (inclusive)

The target values are based on studies of a series of test sites around Toronto, representative of different urban densities, heights, topography, and location around the city. Using these test sites, sensitivity assessments were used to ascertain targets that are both challenging (to encourage design sensitive to the thermal comfort needs of occupants) and attainable.

For Toronto, the following outlines the targets for thermal comfort achievement, within the time periods and UTCI categories associated with those periods.

- >65% time comfortable in summer months (Jun-Aug, 06:00-21:00, between 9-32°C UTCI)
- >30% time comfortable in winter months (Nov-Feb, 08:00-17:00, between 0-26°C UTCI)
- >45% time comfortable in shoulder months (Mar-May and Sep-Oct, 08:00-20:00, between 9-26°C UTCI)
- <5% reduction in annual comfortable hours, defined as the combined time periods and temperature ranges for seasonal comfort, when comparing the proposed scenario against the existing scenario.

Design Toolbox

This chapter of the Guidelines offers a set of design tools that can be used both at the outset of the project to design new developments and capital projects with thermal comfort in mind and as a mitigation strategy to offset any potential negative impact a development might have on thermal comfort.

The chapter begins by emphasizing the importance of prioritizing thermal comfort from the outset, integrating strategies that balance key environmental and design elements to enhance physical and mental well-being. The outlined strategies focus on understanding Toronto's unique climate, conducting microclimate analyses, assessing human activity patterns, applying an equity lens to address disparities, and designing adaptable elements for seasonal variation.

The design toolbox is organized into three scales to address thermal comfort effectively:

Neighbourhood Scale

The design tools emphasize creating thermally comfortable public spaces through:

- Street and Open Space Orientation: Aligning streets and designing public spaces, including parks, plazas, and POPS, to optimize sunlight access and reduce wind impacts.
- Natural Cooling Features: Utilizing natural elements like ravines and lakes as cooling mechanisms.
- Urban Cooling Strategies: Incorporating green spaces, tree canopies, and green roofs to counteract Urban Heat Island effects and enhance overall outdoor comfort.

Block Scale

The design tools aim to enhance thermal comfort in urban areas through thoughtful building and space design:

- **Building Placement for Wind Control:** Position buildings to minimize the "wind canyon effect" and avoid accelerating wind speeds in dense urban settings.
- **Sunlight Optimization:** Strategically orient buildings to ensure sufficient sunlight reaches publicly accessible open spaces, promoting human comfort and supporting healthy vegetation.
- **Outdoor Space Design:** Thoughtfully plan and design parks, plazas, POPS, and private outdoor spaces to balance sunlight access, wind protection, and adaptable features for year-round thermal comfort.

Site Scale

The design tools for outdoor public realm include:

- **Landscaping:** Strategically plant deciduous trees for seasonal benefits and use vegetation as windbreaks to enhance thermal comfort.
- **Water Features:** Incorporate ponds and fountains for evaporative cooling and improved microclimates.
- **Shelter and Structures:** Design shelters and overhead structures to reduce sunlight exposure and provide wind/weather protection.
- **Surface Materials:** Select materials that balance heat absorption, reflection, and evaporation to reduce the urban heat island effect.
- **Public Amenities:** Locate amenities thoughtfully to enhance comfort in public spaces.

The design tools for buildings include:

- **Wind Mitigation:** Design tall buildings with strategies to reduce wind impacts at the pedestrian level.
- **Sunlight and Shadows:** Shape buildings to optimize sunlight access while minimizing negative shading effects and incorporate adaptable shading solutions.
- **Balconies:** Include balconies to reduce wind speeds and provide adaptable outdoor spaces.
- **Material Selection:** Use materials optimized for thermal insulation and heat reflection to mitigate urban heat impacts.

Using the Guidelines

The Thermal Comfort Guidelines should be read comprehensively and together with other City documents that provide direction on built form and public realm, including the City's Official Plan, city-wide and area-specific guidelines, and other applicable regulations.

The Thermal Comfort Guidelines can be used in different ways to support both area studies and development applications.

The Design Toolbox, as a chapter in the Thermal Comfort Guidelines, can serve as a valuable tool for assessing the thermal performance of development applications. By utilizing this toolbox, designers, developers and planners can take various design strategies and apply them to proposals.

To fully apply the Thermal comfort guidelines, a detailed Thermal Comfort Study would be necessary. This study would analyze factors such as solar exposure, wind conditions, and thermal climate, assessing if the proposals meet the performance targets outlined in the guidelines.

As outlined in the implementation strategy appendix of the guidelines, a detailed Thermal Comfort Study is primarily recommended for City-initiated large area studies, major outdoor public realm capital projects, and large site developments (over 5 hectares) with buildings over 6 storeys to assess the impact of built environment changes. Such studies are also recommended on a voluntary basis for developments with significant public realm or built form changes that deviate from Council-approved Secondary Plans or Site Area Specific Policies, which include detailed thermal comfort studies. If thermal comfort criteria are unmet, a mitigation analysis should be conducted, design changes proposed, and a revised study performed to ensure compliance with performance metrics.

Although the Thermal Comfort Study is voluntary, it is recommended that large site developments (over 5 hectares) with buildings over 6 storeys conduct the study as part of the development review process. The chart below summarizes the number of large site projects (over 5 hectares) over the past five years.

Number of Large Site Projects (over 5 hectares) Submitted, January 2019 – September 2024

Year Submitted	Large Site Projects (over 5 hectares)	Large Site Projects (over 5 hectares) with Buildings over 6 storeys
2019	11	5
2020	20	8
2021	14	6
2022	7	4
2023	9	4
2024Q3	3	1
Total	64	30

Among these, approximately 4 to 8 projects annually involve large site projects (over 5 hectares) with buildings over 6 storeys. Some examples of these projects include Downsview, Scarborough Town Centre, Sherway Gardens. They typically require pedestrian-level wind studies and sun-shadow studies as part of the development application process. Recommending a detailed thermal comfort study for these large site projects (over 5 hectares) could leverage insights from the required wind and sun/shadow studies. This approach would help optimize the layout of potential new public streets, parks, and open spaces, as well as enhance how buildings frame and interact with these outdoor areas, especially at an early stage of the planning process.

Aligned Studies and Initiatives

A Thermal Comfort Study is complementary to a Pedestrian Level Wind Study and a Sun/Shadow Study, which are required for development applications for buildings over 6 storeys or 20 meters in height, as outlined in the City of Toronto Terms of Reference. The Pedestrian Level Wind Study and Sun/Shadow Study assess the comfort impacts on adjacent public realm spaces, ensuring they remain functional and comfortable throughout the year. The Thermal Comfort Study is recommended for large-area studies and large site developments (over 5 hectares) with buildings over 6 storeys. It offers a holistic approach to evaluating how environmental factors, such as temperature, wind, and sunlight, affect human comfort in outdoor spaces. This comprehensive evaluation supports the design of more comfortable, functional, and sustainable urban environments.

A Thermal Comfort Study aligns with the Pedestrian Level Wind Study as follows:

- Both studies use wind data (directional speed and frequency) to inform thermal comfort models, particularly for evaluating wind chill in winter and ventilation in summer.
- Both studies leverage findings to identify areas where wind amplifies thermal stress, ensuring consistent strategies across studies.
- They coordinate mitigation measures like wind breaks, canopies, or landscaping to address both wind comfort and thermal comfort simultaneously.

A Thermal Comfort Study aligns seasonally with Sun/Shadow Studies:

- The thermal comfort targets (March–May, June–August, September–October, November–February) correspond to the seasonal periods defined in the Sun/Shadow Study.
- While the Sun/Shadow Study prioritizes maximizing access to sunlight, the Thermal Comfort Study develops a framework to balance priorities (e.g., maximizing sunlight versus mitigating heat stress), especially in sensitive areas like public plazas or transit stops.
- The Thermal Comfort Study introduces a seasonal focus by recommending tailored shading structures / landscaping or solar access solutions to address seasonal variations in comfort needs.

Although the Thermal Comfort Study complements the Pedestrian Level Wind Study and Sun/Shadow Study, it cannot fully replace them. The Pedestrian Level Wind Study assesses pedestrian safety during extreme wind conditions, while the Thermal Comfort Study evaluates comfort levels throughout the year. By incorporating the Thermal Comfort Study into large-area analyses and major development sites, Toronto aims to create spaces that achieve a dynamic balance between solar exposure, wind conditions, and thermal comfort, ultimately fostering vibrant and resilient urban environments.

Furthermore, the Thermal Comfort Study aligns with and supports:

- [Toronto Green Standard – City of Toronto](#) for development application requirements by integrating urban heat island findings. It prioritizes thermal comfort interventions in high-heat zones, such as enhancing vegetation cover, implementing green roofs,

or using cool pavements, thereby addressing both thermal comfort and sustainable design objectives.

- Toronto Public Health's recommendations in the report [Public Health Impacts of Climate Change in Toronto: A Path Forward for Responding to the Climate Crisis](#). City Planning collaborated with Toronto Public Health to incorporate human health impacts into the thermal comfort mitigation strategies.
- The initiatives in the [PH17.5 - Establishing a Framework to Address Excessive Indoor Temperatures in Leased Residential Premises](#) developed by Municipal Licensing and Standards, Toronto Public Health, and Environment and Climate with input from the Customer Experience Division, City Planning, Toronto Building, Toronto Emergency Management, Toronto Employment and Social Services, and the Housing Secretariat, to maximize the outdoor thermal comfort and provide the heat relief during the extreme heat events.

Next Steps

Upon adoption of the Guidelines, the project team will:

- lead training sessions for staff in the City Planning, Development Review, and Parks, Forestry & Recreation divisions. Training sessions will be made available to new staff on an on-going basis.
- test the guidelines through two active studies: Weston in Gear Planning Study; and the Kennedy Station Area Public Realm Master Plan.
- develop Terms of Reference to include in the City of Toronto Development Guide.

Conclusion

In the face of climate change and rapid urban densification, ensuring thermal comfort in Toronto's public realm is vital for creating high-quality, safe, and livable outdoor spaces. The Thermal Comfort Guidelines address these challenges by optimizing public spaces such as streets, parks, and open areas for year-round comfort, accounting for factors like air temperature, humidity, and air movement.

Updating Toronto's 1990 "Sun, Wind, and Pedestrian Comfort" study, the new guidelines incorporate modern technology and methodologies with Toronto-specific performance metrics to inform design strategies. The study complements existing Pedestrian-Level Wind and Sun/Shadow Studies, offering a framework for City-initiated large area studies, major outdoor public realm capital projects, and voluntary use in large site developments (over 5 hectares) with buildings over 6 storeys.

CONTACT

Emilia Floro, Director Urban Design, City Planning,
Emilia.Floro@toronto.ca, 416-392-1126

Kristina Reinders, Program Manager Urban Design, City Planning
Kristina.Reinders@toronto.ca, 416-338-5780

Rong Yu, Project Manager Urban Design, City Planning
Rong.Yu@toronto.ca , 416-395-7106

SIGNATURE

Jason Thorne
Chief Planner and Executive Director
City Planning

ATTACHMENTS

Attachment 1: Thermal Comfort Guidelines