From: **"Amrolia, Armin"**
To: **"Direct to Mayor and Council - DL"**
Date: 9/24/2025 11:08:03 AM
Subject: Memo to Mayor and Council - Motion Response - Innovative ways to reduce urban heat islands
Attachments: CMO-PB-ENG-PDS - Council Memo - Motion Response - Innovative ways to reduce urban heat islands - 2025-09-24.pdf

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Dear Mayor & Council,

Please see the attached memo, providing an update to the **May 21st Council Motion**, which directed staff to explore innovative ways to reduce urban heat islands in neighbourhoods with minimal tree canopy cover - including vegetated shade structures, as part of the Urban Forest Strategy report.

This memo highlights:

- Current actions to increase tree canopy in priority neighbourhoods
- The City shaded space pilot in the public realm
- The challenges with vegetated shade structures based on the review of the *GreenShades* system referenced in the motion
- Future cost-effective actions to help reduce urban heat islands.

If you have any questions, please feel free to reach out to me directly.

Best,
Armin

Armin Amrolia - Deputy City Manager (she/her)

CITY OF VANCOUVER

OFFICE OF THE CITY MANAGER
Armin Amrolia, Deputy City Manager

MEMORANDUM

September 24, 2025

TO: Mayor and Council

CC: Donny van Dyk, City Manager
Armin Amrolia, Deputy City Manager
Karen Levitt, Deputy City Manager
Sandra Singh, Deputy City Manager
Katrina Leckovic, City Clerk
Maria Pontikis, Chief Communications Officer, CEC
Teresa Jong, Administration Services Manager, City Manager's Office
Mellisa Morphy, Director of Policy, Mayor's Office
Trevor Ford, Chief of Staff, Mayor's Office
Steve Jackson, General Manager, Parks and Recreation
Josh White, General Manager, Planning, Urban Design and Sustainability
Lon LaClaire, General Manager, Engineering Services

FROM: Armin Amrolia, Deputy City Manager

SUBJECT: Reducing urban heat islands in priority neighbourhoods

Purpose

The purpose of this memo is to provide an update to the May 21st Council Motion, which directed staff to explore innovative ways to reduce urban heat islands in neighbourhoods with minimal tree canopy cover - including vegetated shade structures, as part of the Urban Forest Strategy report. See Appendix A.

This memo highlights (1) current actions to increase tree canopy in priority neighbourhoods, (2) the City shaded space pilot in the public realm, (3) the challenges with vegetated shade structures based on the review of the *GreenShades* system referenced in the motion, and (4) future cost-effective actions to help reduce urban heat islands.

Background

The update to the Urban Forest Strategy approved by Council on May 21, 2025, exposed the challenges to Vancouver's tree canopy, including climate change, development, and infrastructure pressure, increasing costs of tree maintenance, and unequal distribution of tree canopy in neighbourhoods across the City of Vancouver. Many low-cost planting sites such as grass boulevards have already been filled and expanding the urban forest in more challenging locations, including in neighbourhoods with minimal tree canopy cover, will be more expensive, necessitating a strategic approach to direct resources that provide the greatest benefit.

As part of the Urban Forest Strategy implementation plan, staff have initiated an area-based canopy modelling

project that will evaluate various land uses and their capacity to support tree canopy equitably and strategically by adding the 'right tree' in the 'right place' at the 'right pace'. This will inform a 4-year action plan to equitably deliver tree planting in priority neighbourhoods with below average urban forest cover and disproportionately impacted populations.

Discussion

Current Actions to Increase Canopy in Priority Neighbourhoods

Currently, the City is actively working to increase canopy in priority neighbourhoods to reduce the urban heat island effect and prioritize cooling and shade for vulnerable communities by:

1. **Planting trees in priority neighbourhoods**
   a. Park Board will have planted over 4,200 trees in priority neighbourhoods, out of the approximately 5,000 trees to be planted across 2024 and 2025.
2. **Creating tree planting opportunities and additional pervious space in highly impervious streetscapes.** *See Figure 1: Photograph of trees planted in Green Rainwater Infrastructure at Terminal Avenue.*
   a. Engineering & Park Board will have constructed and delivered ~80 new tree pits across 2024 and 2025.
   b. Various green rainwater infrastructure systems will also have been installed in priority neighbourhoods over this period, helping to reduce impervious surface area and support the growth of street trees by providing additional soil and space for roots, as well as directing more rainwater into the surrounding soil.
3. **Reallocating road space** which creates more space for trees, landscaping, and green rainwater infrastructure, as well as other uses that support public life, active mobility, recreation and respite. For example, the new permanent plazas under construction have provided additional space to increase the tree canopy in these popular locations.

Figure 1: Climate Change Adaptation Strategy Funded Trees Planted in Green Rainwater Infrastructure, Terminal Avenue, 2025 Photo Credit: City of Vancouver

Shaded Space Pilot in the Public Realm

To provide shaded spaces during summer and light rain protection year-round, staff launched a pilot of various weather protection structures in select plaza and parklet locations across the city, including the Downtown Eastside. The intent is to find weather protection structures that are easy for community partners to manage, with additional considerations being cost, durability and functionality.

Weather protection structures are being tested at varying plazas (including Cambie & 18th, Granville & 14th, Main & 14th, Sasamat & 10th and Fraser & 48th over the last year) as well as the Downtown Eastside Women's Centre parklet and the Drinkers' Lounge parklet.

All structures are surface mounted and can be easily removed, including (*See Figure 2 and 3*):

- Metal umbrellas
- Umbrellas with integrated solar powered lighting
- Four-post louvred roof structures

Figure 2: Downtown Eastside Women's center parklet

Figure 3: Fraser & 48th avenue

Initial community partner feedback has been positive on all structure styles, with no major concerns on usage or maintenance. This is promising and staff anticipate being able to add more weather protection structures to plazas and parklets around the city over time. However, in all locations there is an active community partner who helps manage the public space. This is considered a key factor in the success of the weather protection measures so far and a significant limitation to scaling in public spaces city-wide.

Vegetated shade structures

Staff reviewed the *GreenShades* system referenced in the Council Motion. Currently one major flagship project has been deployed in Valladolid, Spain:

- The Green Shades system installed on Santa María Street in Valladolid is a pioneering urban greening initiative largely funded by the European Union's Horizon 2020 program.
- It includes 21 vegetated awnings covering 145 m² along a 201 m stretch, at a total cost of €375,000 (approx. $600,000 CAD). *See Figure 4.*

Figure 4: example of vegetated shade structure in Valladolid

Due to the complexity of the system – including custom tensile structures/sails, integrated irrigation, and hydroponics – along with Vancouver's wider streets and wetter climate, replicating this approach locally poses significant feasibility challenges. Moreover, for the same investment, the City could create around 30 additional tree pits with new trees in priority neighbourhoods, potentially generating 1,500m2 of shade – up to ten times the coverage provided by the GreenShades installation.

Near-term actions (from 2026)

In the near-term, the City will continue to address the urban heat island effect in the most cost-effective manner through the following actions:

- **Continue to add trees in priority neighbourhoods,** coordinating with road or sidewalk renewal and using the allocated funding both in the current capital plan and the Growing Canada's Community Canopies grant applications:
    - ~30 tree pits in 2026 through the remaining capital funding from the Climate Change Adaptation Strategy
    - 50 new tree pits and 3,050 street trees planted through the federal Growing Canada's Community Canopies grant between 2026 and 2029
- **Extend the weather protection pilot through 2026**, including opportunities to test new plaza and parklet locations where there is an interested community partner and available existing budget.
- **Advance Climate Change Adaptation Strategy actions** to reduce urban heat impacts by improving access to cooling in the public realm. This includes:
    - Expanding green spaces and infrastructure
    - Retrofitting community facilities for cool and clean air
    - Partnering to support seniors and people with disabilities during extreme heat and poor air quality events, as part of the Resilient Neighbourhood Program.

Sincerely,

Armin Amrolia
Deputy City Manager

APPENDIX A

2025-05-21 COUNCIL MOTION TO URBAN FOREST STRATEGY REPORT

C. THAT staff explore innovative ways to reduce urban heat islands in neighbourhoods with minimal tree canopy cover, particularly in public areas where trees have struggled to grow or in areas where space constraints limit traditional tree planting, including looking at the feasibility of piloting vegetated shade structures – such as the *GreenShades* system successfully implemented in European cities – as part of the Urban Forest Strategy's approach to urban cooling and equitable canopy coverage.

   FURTHER THAT staff report back on potential locations, costs and implementation options as part of the 2026 action plan update.