# Social Housing in the New Climate

## – Building adaptive capacity and resilience of affordable housing

## BC Housing

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Canadian Housing & Renewal Association's
National Congress on Housing and Homelessness
Victoria, April 3, 2019

# Outline

- About BC Housing
- Why are we concerned?
- What are we doing? – adaptation & mitigation

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# BC Housing

- develop, manage and administer subsidized housing;

- license residential builders, administer owner builder authorizations, and carry out research and education

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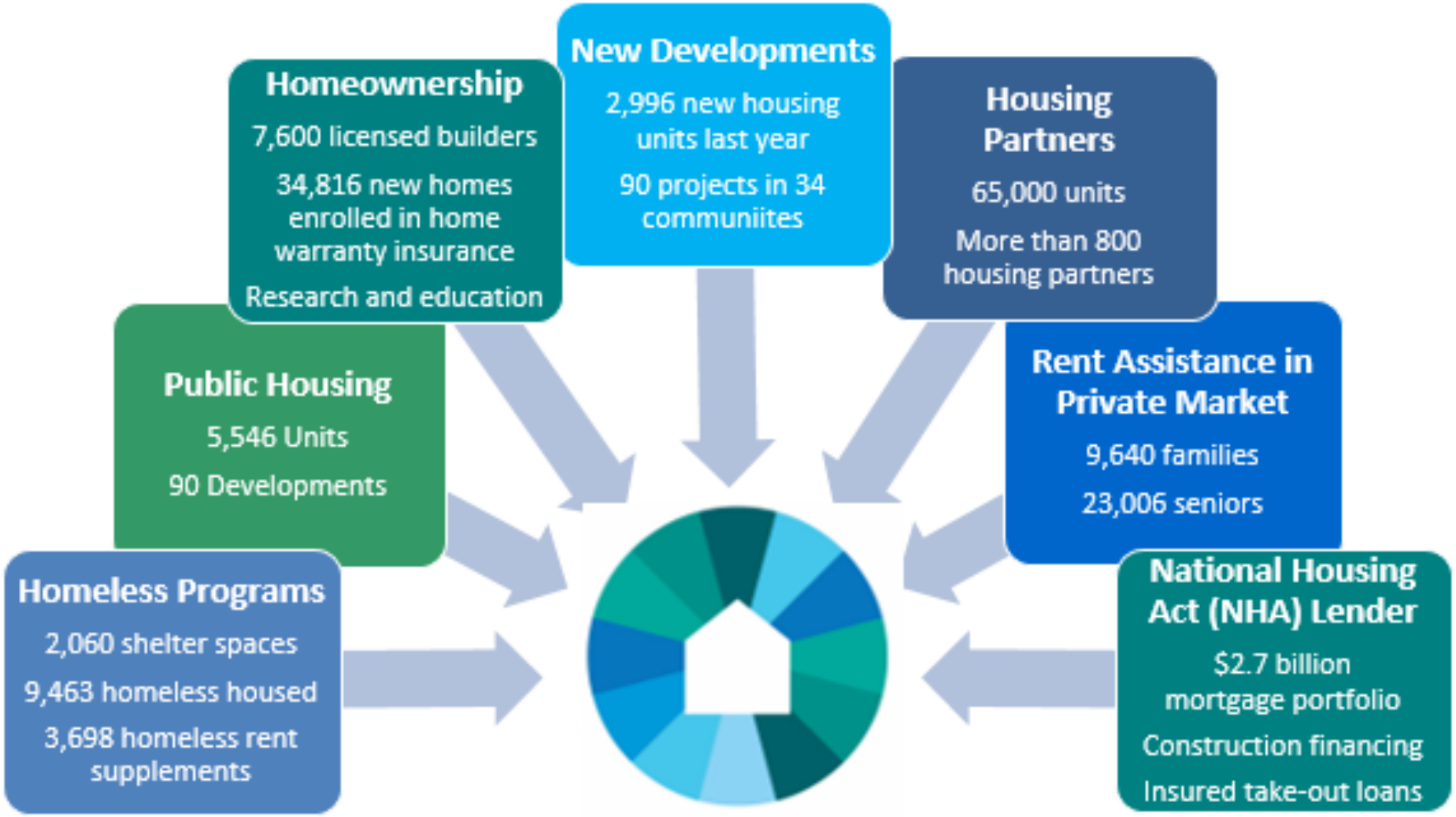
# BC Housing


New Developments
2,996 new housing units last year
90 projects in 34 communiites
Homeownership
7,600 licensed builders
34,816 new homes enrolled in home warranty insurance
Research and education
Housing Partners
65,000 units
More than 800 housing partners
Public Housing
5,546 Units
90 Developments
Rent Assistance in Private Market
9,640 families
23,006 seniors
Homeless Programs
2,060 shelter spaces
9,463 homeless housed
3,698 homeless rent supplements
National Housing Act (NHA) Lender
$2.7 billion mortgage portfolio
Construction financing
Insured take-out loans

# Who do we serve?

- Individuals who are homeless
- Individuals with disabilities
- Indigenous individuals and families
- Women and children at risk of violence
- Low-income seniors and families
- Buyers of new homes

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# Climate change mitigation actions

28%

reduction in GHGs from buildings owned and leased by BC Housing compared to 2005 baseline

Canada's Greenest Employers

– Fourth year in a row

6,868

hours of training related to sustainable building practices offered to the residential construction industry.

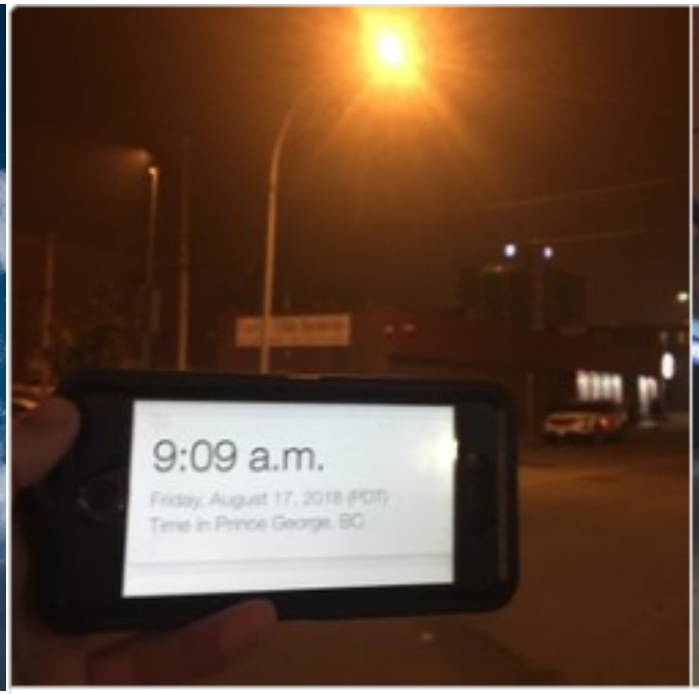
59%

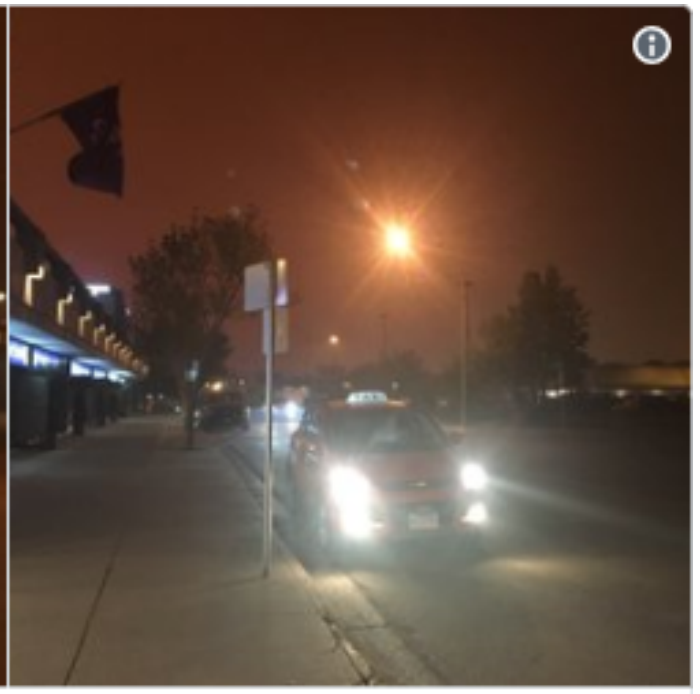
reduction in our GHG emissions resulting from paper consumption since 2005.

251

trees were saved last year by purchasing primarly 100% recycled paper.

# Why are we concerned?



Photos: Global News, showing Prince George on 17 Aug.2018, 9:09am

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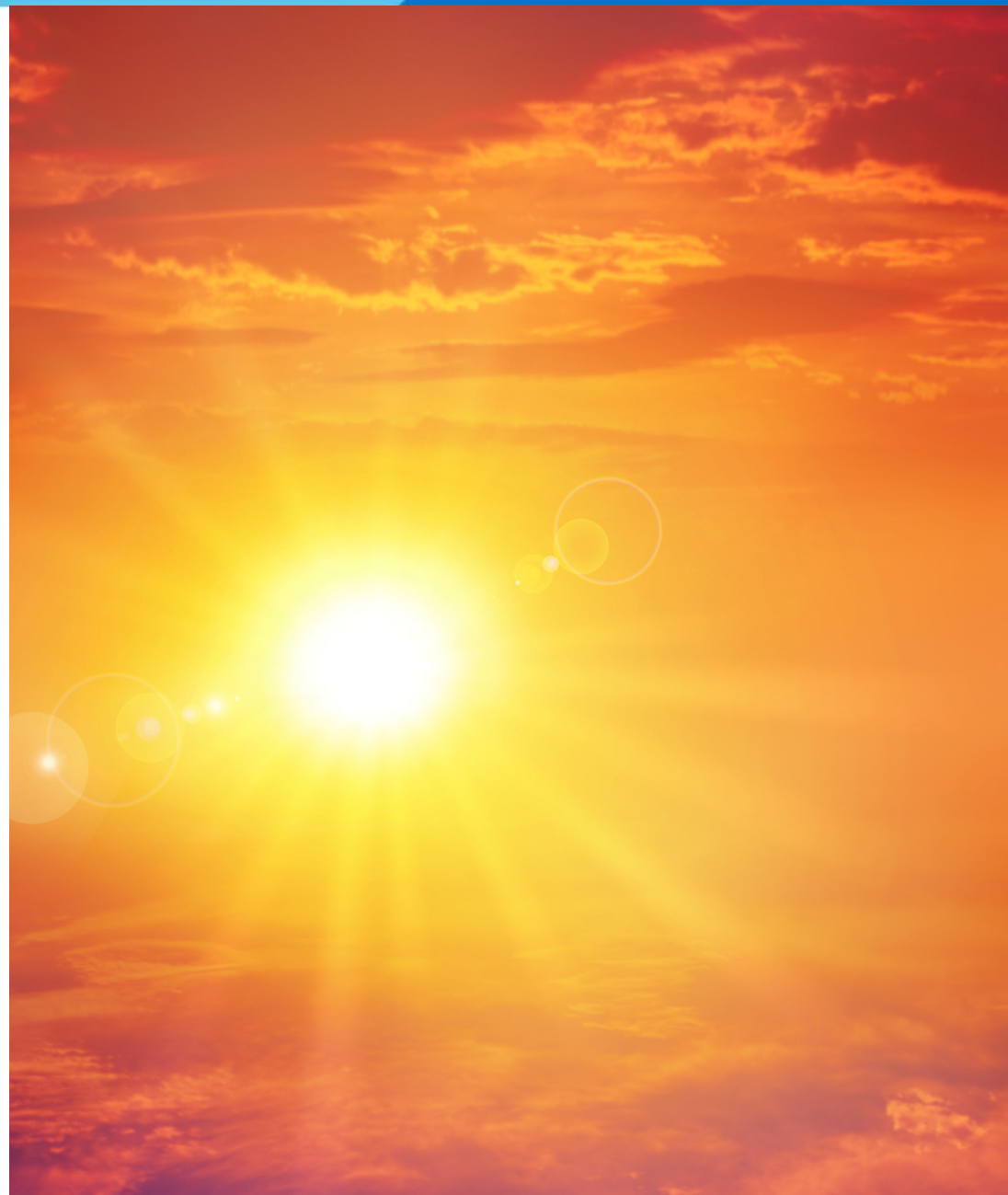
# Why are we concerned?

Impacts on:

1. Health and safety of tenants & building occupants

2. Increased building maintenance & repair costs

3. New demands on employees & resources



| Tenants | Buildings | Resources |
| --- | --- | --- |
| Increased morbidity and mortality from extreme heat | Overheating of units; Increased capital and maintenance and operations costs to implement cooling | Increased costs and impacts associated with tenant relocation due to events and/ or increasing renovations/repairs |
| Impacts on mental health & behaviours | Increased sewer back-ups cause water damage and increased insurance costs and claims | Impacts to energy bills including less heating costs but potentially increasing cooling costs |
| Temporary or permanent housing relocations | Increased damage to buildings from flooding: Specifically damage to ground floor, mechanical and electrical rooms, and foundation | Increased staffing and resource needs to respond to increasing events triggering emergency response |
| Injury and illness arising from flooding | Increase in power outages affecting building systems and tenants | Increased budget pressure for more frequent emergency response and clean-up |
| Temporary or permanent housing relocations | Impacts on warranty programs & insurance providers. E.g. - Premature failures of systemic defects of buildings under warranty. | Increased maintenance costs and repair due to more variable and extreme weather |

# BC Housing's Climate Adaptation Framework

## Why is Climate Adaptation Needed?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www.bchousing.org/about/CSR/sustainability-livegreen

# Climate Adaptation Framework – Integrated Decisions

| livegreen STRATEGY PILLARS | CLIMATE ADAPTATION GOALS | ACTIONS |
|---|---|---|
|  **Integrated Decisions** Integration of financial, social, and environmental considerations in planning and decision making | Integrate climate resilience considerations into our core business activities | ▸ Monitor insurance costs and claims, as well as emergency response reports for climate related impacts on social housing<br>▸ Monitor and review resources and staffing given the increased pressures<br>▸ Establish community partnerships and share knowledge<br>▸ Integrate climate risk assessment within our Enterprise Risk Management program<br>▸ Identify specific climate risks mitigation actions and policies across business areas<br>▸ Monitor and evaluate implementation of climate adaptation actions |

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# Integrating resilience into existing programs

## Resilient and Connected Neighbours Project


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Source: Shift Collaborative

# Resilient and Connected Neighbours Project

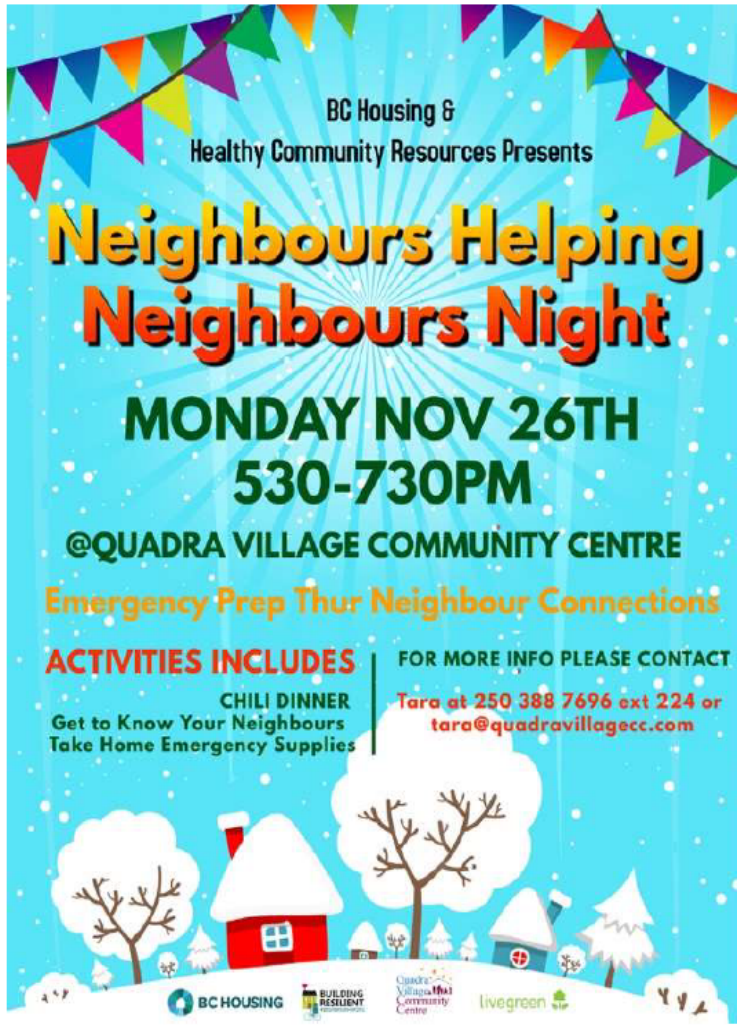
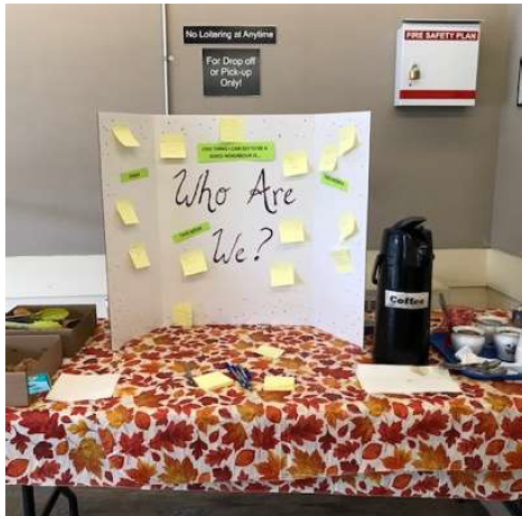



Image: BC Housing Staff and Partners at Workshop 1




# Climate Adaptation Framework – Housing Excellence

| livegreen STRATEGY PILLARS | CLIMATE ADAPTATION GOALS | ACTIONS |
|---|---|---|
| **Housing Excellence**<br>Innovation in the design, construction, renovation and management of housing | Upgrade existing housing and design new developments to withstand climate change impacts | ▸ Create a better understanding of climatic hazards related to our social housing portfolio by completing a Portfolio Exposure and Vulnerability Analysis<br>▸ Integrate the Building Vulnerability Assessment Tool into existing facility condition index evaluation processes and capital planning for existing social housing<br>▸ Ensure safe, comfortable temperatures for tenants in existing social housing units by responding to risk of overheating during extreme heat events<br>▸ Incorporate resilient design principles into BC Housing's standards and resources for new construction of social housing<br>▸ Be a leader, through research and education activities, to help facilitate new residential construction to be more resilient to impacts of climate change |

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# Mobilizing Building Adaptation and Resilience – MBAR project

Through facilitating and piloting sustainable and resilient design and renovation of buildings, MBAR aims at:

→ stabilizing communities in a natural disaster (e.g. earthquake); and

→ helping building owners and occupants
- better protect their investments; and
- adapt to anticipated climate change stresses (e.g. higher precipitation, warmer summers, fire-related air pollution) and climate change shocks (e.g. severe flooding/fire/windstorms)….

……. such that *no one is stressed beyond their ability to cope*.

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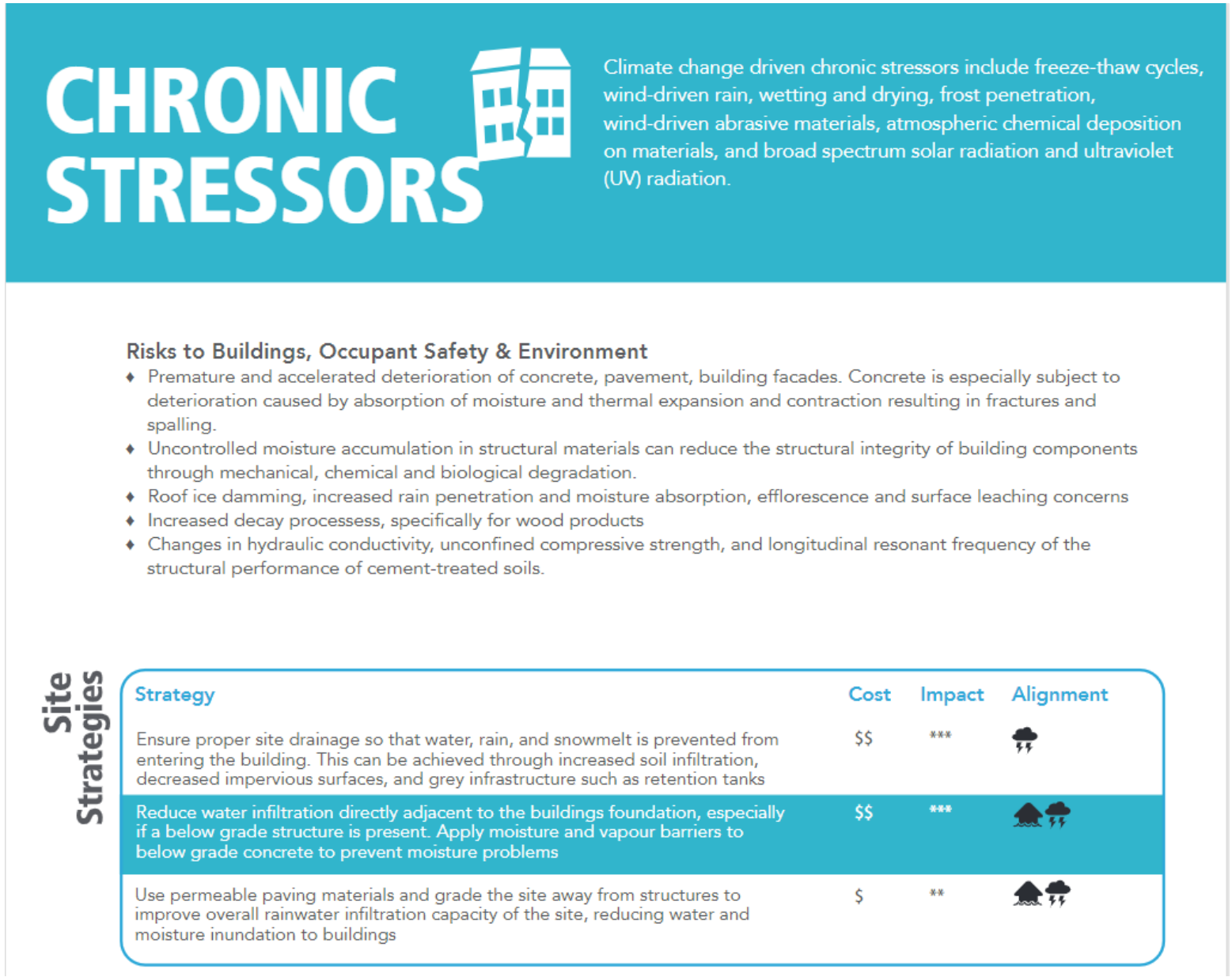
# Mobilizing Building Adaptation and Resilience – MBAR project



## CHRONIC STRESSORS

Climate change driven chronic stressors include freeze-thaw cycles, wind-driven rain, wetting and drying, frost penetration, wind-driven abrasive materials, atmospheric chemical deposition on materials, and broad spectrum solar radiation and ultraviolet (UV) radiation.

### Risks to Buildings, Occupant Safety & Environment

- Premature and accelerated deterioration of concrete, pavement, building facades. Concrete is especially subject to deterioration caused by absorption of moisture and thermal expansion and contraction resulting in fractures and spalling.
- Uncontrolled moisture accumulation in structural materials can reduce the structural integrity of building components through mechanical, chemical and biological degradation.
- Roof ice damming, increased rain penetration and moisture absorption, efflorescence and surface leaching concerns
- Increased decay processess, specifically for wood products
- Changes in hydraulic conductivity, unconfined compressive strength, and longitudinal resonant frequency of the structural performance of cement-treated soils.

### Site Strategies

| Strategy | Cost | Impact | Alignment |
|---|---|---|---|
| Ensure proper site drainage so that water, rain, and snowmelt is prevented from entering the building. This can be achieved through increased soil infiltration, decreased impervious surfaces, and grey infrastructure such as retention tanks | $$ | *** | |
| Reduce water infiltration directly adjacent to the buildings foundation, especially if a below grade structure is present. Apply moisture and vapour barriers to below grade concrete to prevent moisture problems | $$ | *** | |
| Use permeable paving materials and grade the site away from structures to improve overall rainwater infiltration capacity of the site, reducing water and moisture inundation to buildings | $ | ** | |

First set of materials: Resource Sheets for:
**Site, Design & Operations Strategies** for:

- Heat Waves
- Chronic Stressors
- Fire
- Flood Events
- Power Outages
- Seismic Events
- Severe Storms

# Climate Adaptation Framework – Change Agent

| livegreen STRATEGY PILLARS | CLIMATE ADAPTATION GOALS | ACTIONS |
|---|---|---|
|  **Change Agent** Guiding and supporting others in taking actions towards sustainability | Make tenants safe and prepared by strengthening community resilience to the impacts of climate change | ▸ Develop a heat response guidelines, program and committee<br>▸ Integrate community resilience actions within the existing tenant support and community development programs<br>▸ Respond to flood risks |

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1. Staff training (including how to do a tenant assessment when doing door-to-door checks & reporting).
2. Staff checklists.
3. Inventory of fans.
4. Communication materials.
5. Cooling rooms in all common areas.
6. Extreme Heat and Air Quality response procedure.

| ONCE YOU RECEIVE NOTIFICATION OF EXTREME HEAT, THE FOLLOWING ACTION ITEMS ARE TO BE COMPLETED | |
|---|---|
| Extremely Hot Weather Actions – Pod Team Members (High Risk) | Completed? – check box Or write NA: Not Applicable |
| Building Cooling | |
| 1. If my building has a common area, I have set it up as a "chill zone" using fans or air-conditioning. | ☐ |
| 2. I have posted signs for the 'chill room', if it's activated. | ☐ |
| 3. If appropriate, I have provided shaded outdoor areas for tenants to spend time. | |
| 4. I check the weather forecast on regular basis for hot weather or air quality warnings and alerts. | ☐ |
| 5. I posted Tips to Beat the Heat poster around my site/s. | ☐ |
| 6. I checked that all the heating in the building is turned off. (And reported up if there are any challenges with it) | ☐ |
| 7. I have opened windows in hallways slightly to allow air to circulate (if appropriate). [5] | ☐ |
| 8. I encourage tenants to reduce solar heat gain by putting blinds down or drawing the curtains; and have windows open only when outdoor air is cooler than indoor air (e.g. at night). | ☐ |
| 9. I have checked on tenants that might be at high risk and notified Health & Housing Services if further assessment should be conducted. | ☐ |

# Resources & Contact

BC Housing's Sustainability Plan, Carbon Neutral Action report, Adaptation Framework
https://www.bchousing.org/about/CSR/sustainability-livegreen

Extreme Heat Resources:
https://www.bchousing.org/partner-services/non-profit-training-resources/extreme-heat-resources

*Contact:*
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# Thank you!


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