

# BC Housing:

## Creating a Cost-Effective Adaptation Strategy



*Numerous studies show that vulnerable populations are most heavily impacted by climate change. BC Housing recognized the importance of planning for climate impacts to protect the health and safety of tenants, as well as reduce future building maintenance and replacement costs. Through the steadfast commitment of a small internal team and reliance on existing knowledge and resources, BC Housing succeeded in developing a comprehensive adaptation strategy that will help address the financial, social and physical risks associated with climate change.*

### Project Summary

BC Housing's adaptation strategy began not with a vast budget and team of external experts, but with a core group of staff from across different branches who recognized the importance of integrating climate change adaptation into the organization's long-term operational plans.

Using the Pacific Climate Impacts Consortium's Plan2Adapt tool, the team developed an understanding of how the climate is expected to change in the geographic areas relevant to their operations. Workshops and subject matter expert presentations helped the team further hone their understanding of how climate-related events could present a potential risk to BC's social housing tenants and stock.

*Climate change effects are often reported in terms of extreme weather events and other natural disasters, but many of the changes—such as more freeze-thaw events and warmer temperatures—also create impacts over time to buildings, infrastructure and the people who rely on them.*

The team interviewed staff to identify priority vulnerabilities and discovered that impacts, expected to become significant in the next decade, were already starting to be felt by tenants, particularly seniors and those with mobility challenges and pre-existing health conditions. These included an increase in incidents requiring maintenance and emergency management responses as a result of heatwaves, flooding, wind and rain storms. From this initial work, it became clear that a more detailed, site specific understanding would be helpful for the development of the overall approach.

BC Housing partnered with the Climate Action Secretariat and a student intern to conduct a qualitative building vulnerability assessment at two public housing sites. The case studies identified specific hazards related to these locations and high-level mitigation strategies. This was very helpful for clarifying the potential impacts extreme weather could have on social housing tenants and buildings. However, it was determined that a more detailed building assessment would be needed to create a business case for action. BC Housing hired an engineering co-op student from the University of Victoria to conduct a detailed assessment of five additional social housing buildings located in five different geographic zones across the province.

#### Benefits of an adaptation strategy:

- Helps organizations plan for, and reduce, future building costs
- Safeguards current investments in buildings
- Protects health and safety of building occupants
- Integrates climate resilience into core business
- Leads to better, more holistic, long-term decision-making
- Can support emissions reductions, cost efficiencies and community building

#### Steps to Consider:

- Build an adaptation working team from across the organization
- Identify business areas that are already being affected
- Use existing resources to assess climate risks
- Discuss measures to make your organization more resilient to climate impacts
- Integrate adaptation into existing asset management and other business processes



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In parallel, BC Housing began work on a broader adaptation strategy using existing literature and climate data for B.C., consulting with internal and external stakeholders, and incorporating learnings from the building resilience assessment tool. Phase 1 of the strategy, completed in the summer of 2017, focused on:

- completing a portfolio-level, exposure and vulnerability analysis to identify locational risks areas;
- integrating the building resilience tool into capital planning;
- incorporating resilient design principles into BC Housing standards and resources for new construction;
- creating a response plan to extreme heat events; and
- integrating community resilience building within the existing tenant support and community development programs.

Over the long term, the strategy will allow the organization to integrate climate resilience considerations into their core business, establishing policies, structure, and monitoring and evaluation protocol. Next steps are implementation and monitoring.

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## Making the Case

Working with one group at a time, BC Housing generated buy-in from their key internal stakeholders: their asset management, operations and research branches. The team found it was easier to start the conversation on adaptation once they had an understanding of current climate impacts, as identified through interviews with business areas across the organization. For example, they discovered that the number of complaints about housing units being too hot had been increasing in recent years. This created a good foundation for making the case on the need to consider future temperature projections.

Through information briefs, workshops and expert presentations, they demonstrated to their senior leadership teams that proactively planning for climate impacts would allow them to reduce potential negative consequences on the health and safety of their the tenants, safeguard current

investments made in new buildings and major upgrades and retrofits, and create additional benefits such as community building and cost efficiencies. There was also awareness and concern about climate impacts at the board level and interest in addressing it. Together, these substantiated the need for a comprehensive climate change adaptation strategy.

The adaptation team was able to gain executive support by demonstrating the benefits of small scale pilot projects, and finding cost-effective ways of moving forward. By using largely in-house resources, existing climate change adaptation literature and resources, hiring co-op students for small focussed projects, and identifying how climate adaptation could be integrated with existing business processes, BC Housing advanced their climate change adaptation strategy in affordable stages.

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## Resilience Assessment Tool for Residential Buildings

As part of the site-specific assessment, BC Housing's co-op student developed a tool for assessing building resilience against the following climate hazards: flood, storm, heat, freeze-thaw, cold, draught, erosion, subsidence, wildfire and mosquito-borne illnesses. The tool was designed to integrate with existing facilities condition index (FCI) assessments, thus allowing the work to be easily integrated with existing business processes.

With the use of this simple and affordable resilience assessment tool, BC Housing was able to obtain relevant data that provided a focal point for the evolution of their adaptation strategy. The tool comprises a checklist format that generates vulnerability scores for building components and climate risk priority levels. Developed using Microsoft Excel, it includes specific adaptation recommendations for facility components that are identified as vulnerable. The tool is intended to be used in conjunction with building condition assessments and capital plans, which are regularly conducted for all social housing sites.

Moving from a general understanding of likely impacts within each geographic region to a deeper understanding of risk at an individual building level, BC Housing has started to define and prioritize climate change adaptation actions to ensure their buildings

can withstand climate impacts. These include creation of a heat response plan for tenants, integration of climate-resilient design considerations for new construction and considerations of adaptation measures in existing retrofit plans.

*“The conversation about climate adaptation at BC Housing started when we realised two things: 1) that a number of other social housing organizations and BC municipalities are already taking action, and 2) that as an organization we are already feeling the impacts of more frequent extreme heat events, precipitation and flooding. Learning from others and utilizing existing data and reports helped us tremendously. What surprised me was that many of our staff were keen to get involved as they understood the impacts and benefits in their respective business areas.”*

## Lessons Learned

### Form a Dedicated Adaptation Working Team

For BC Housing, supporting, advocating and creating a climate change adaptation strategy would not have been possible without a dedicated, cross-departmental working team. In addition, involving staff across the organization helped to identify existing issues early on, generated organization-wide buy-in, and developed internal expertise. While an in-house team may not be feasible for every public sector organization, it is important to at least strike an internal working group dedicated to the project for the long-haul.

### Start with Identifying Current Impacts

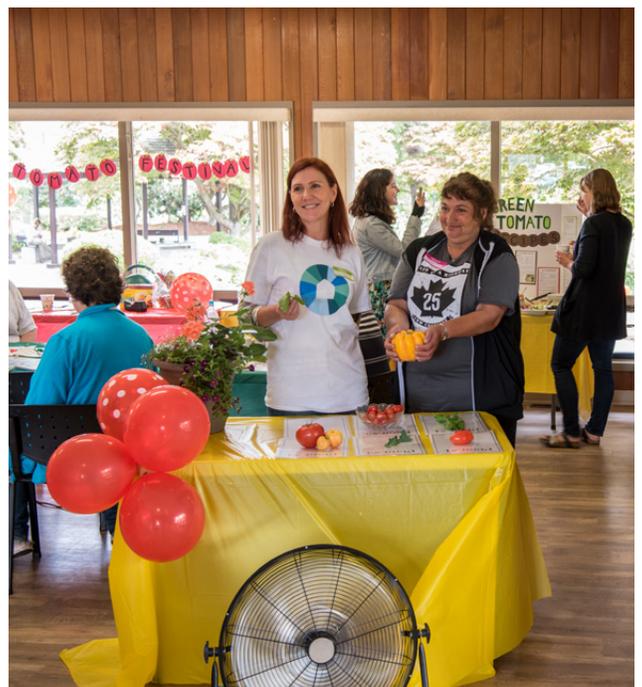
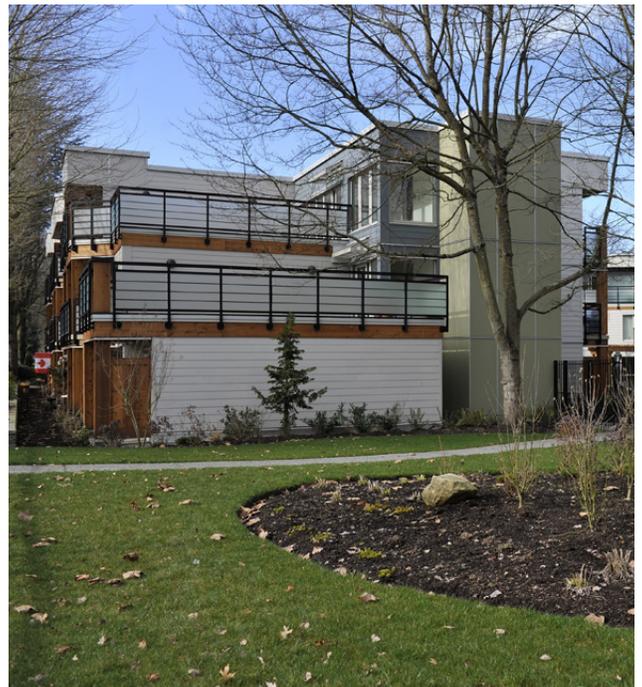
Early in the process, the working team interviewed staff in business areas across the organization to identify current climate impacts. Once they had an understanding of climate impacts, it was easier to start the conversation on adaptation with their key internal stakeholders.

### Use Existing Resources

BC Housing learned the value of finding out and using what’s already known. Numerous municipalities, government, non-government and academic groups in B.C. are studying the risks of the changing climate (see resources below). Using existing resources saves costs while providing well-established, locally relevant data. It may also be feasible to work with other public sector organizations to achieve economies of scale in research and information-sharing.

### Start Small, Stay Flexible

There’s no question that creating a comprehensive climate adaptation strategy is a significant task that can, at times, appear daunting. The BC Housing team took two specific projects from the ground up—the development of an individual building resilience assessment tool and portfolio level climatic hazard and vulnerability assessments—while still working on the overall adaptation plan. Not having a complete plan in place did not stop the organization from moving forward. They remained flexible and adjusted goals as they increased understanding with each step. This iterative approach works during implementation as well.



## Related Resources & Links

### Resources

- Retooling for Climate Change – Fraser Basin Council  
<http://www.retooling.ca/>
- Plan2Adapt – Pacific Climate Impacts Consortium  
<https://www.pacificclimate.org/analysis-tools/plan2adapt>
- Pacific Climate Impacts Consortium  
<https://pacificclimate.org/>
- B.C. Adapts Video Series – Government of B.C.  
<http://www.gov.bc.ca/BC-Adapts>
- Pacific Institute for Climate Solutions (PICS)  
<http://www.pics.uvic.ca/>
- CivicInfo BC – contact your municipality to learn about their work on a climate adaption strategy.  
<https://www.civicinfo.bc.ca/>
- Climate Change Adaptation in B.C. – Government of B.C.  
<http://www2.gov.bc.ca/gov/content/environment/climate-change/adaptation>
- Public Infrastructure Engineering Vulnerability Committee (PIEVC) – Engineers Canada  
<https://pievc.ca/>
- ACT Adaptation to Climate Change Team – Simon Fraser University (SFU)  
<http://act-adapt.org/>

### Articles/Documents

- Preparing for Climate Change: British Columbia's Adaptation Strategy (PDF) – Government of B.C.  
[https://www2.gov.bc.ca/assets/gov/environment/climate-change/adaptation/adaptation\\_strategy.pdf](https://www2.gov.bc.ca/assets/gov/environment/climate-change/adaptation/adaptation_strategy.pdf)
- Vancouver Climate Change Adaptation Strategy – City of Vancouver  
<http://vancouver.ca/green-vancouver/climate-change-adaptation-strategy.aspx>

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