Case Study

Dogwood & Cypress

Non-Profit Retrofit Resilience Grant (NRRG) Pilot Program

BC Non-Profit Housing Association

CITY OF VANCOUVER

BC Hydro Power smart

Scope of Work

The project involved a deep energy retrofit of two multi-unit residential buildings. Energy upgrades included roof replacement, installation of double-glazed argon-filled windows, exterior wall and floor insulation, common area lighting upgrades and plumbing and electrical improvements. Gas-based systems for space heating, domestic hot water, and clothes drying were replaced with heat pump models. Suite ventilation was enhanced with energy recovery ventilators (ERVs) to improve indoor air quality. This leads to reductions of 98% in emissions, 72% in energy use, and approximately $3,200 in annual utility costs.

Before Equip*	After Equip	Notes
		**Suite Heating & Cooling:** Replaced gas furnaces with Innova 2.0 heat pumps, adding cooling and improving efficiency. *Dogwood image*
		**Domestic Hot Water:** Replaced non-condensing gas boilers with Sanden SANCO2 heat pump water heaters. *Cypress image*
		**Laundry:** Replaced common area gas dryers with electric resistance models. *Cypress image*
		**Windows:** Replaced single-glazed units with double-glazed, argon-filled aluminum windows, with no change to window area or layout. *Cypress image*

*images from FRESCo 2021 energy study

Building Details

Society name	Calling Ministries
Year built	1965
Building size (sq ft)	Cypress 10,899; Dogwood 7,266
Number of units	Cypress 16; Dogwood 20
Number of storeys	Cypress 2; Dogwood 3
Tenant population	Seniors

Project Savings

-1,061 GJ

gas per year; approximately **$9,200 gas costs saved** per year

+51,400 kWh

electricity per year due to electrification; approximately **+$6,000 in electricity costs** per year

-1,364 tCO_2eq

emissions over the project's lifetime; **98% emissions saved**

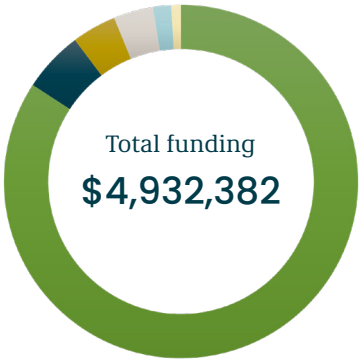
Benefits

1. **Added cooling**
   Heat pumps provide cooling, improving comfort for seniors during hot weather
2. **Better air quality**
   ERVs enhance ventilation and reduce indoor pollutants
3. **Fully electric systems**
   Removing gas systems reduces fire risk and improves air quality for tenants

Funding

The Dogwood and Cypress deep energy retrofits were made possible through financial support from federal, provincial, municipal, utility, and other sources. This funding was essential to both the success and viability of the project, enabling major upgrades while preserving affordability for residents.

- CMHC: $4,153,303
- FCM: $275,000
- City of Vancouver: $200,000
- Vancity: $179,000
- BC Hydro: $81,250
- CleanBC: $43,829



Successes

One of the most celebrated upgrades was the installation of **through-wall heat pumps (TWHPs**). These Innova 2.0 units replaced aging gas furnaces, offering quiet, efficient heating and cooling with individual suite control.

Rupert from Montage noted that "*Innova heat pumps were very well received, especially compared to other projects where they have suffered due to poor installation or lack of consideration around the condensate line."* The team's attention to preconstruction detailing ensured that common issues were avoided, and the contractor's execution was praised as "*well handled*." "*The architect, contractor and envelope engineer were all involved in [the preconstruction design of the condensate line], with multiple iterations until they were all happy*," noted Rupert.

The lack of tenant hesitation around the heat pumps was largely due to the Society's proactive communication. As Terry shared: "*We were telling them that we were getting rid of these 1960s gas [furnaces] and 1. so much safer, 2. no noise and 3. they get air conditioning.*"

The **tenant relocation process** was another major success. Every resident was personally interviewed, their mobility needs considered, and their moves carefully planned. The Society managed the entire relocation internally, even delivering moving boxes themselves. "*Just a lot of good communication which is what it takes... We managed to move a ton of people in two or three days - it was just a machine*," recalled Terry.

> Our people are thrilled, absolutely thrilled. They couldn't believe it when they moved back in.
>
> *Terry Robertson, CEO, Calling Ministries*

> Once tenants understood they were not being evicted or having their leases broken, they were thrilled to temporarily move and then come back to a fully updated unit at no cost to themselves.
>
> *Rupert Campbell, Principal, Montage Development Consultants*

The Project Team

Non-Profit Housing Provider - Calling Ministries

Development Consultant - Montage Development Consultants

Architect - Nick Bray Architecture

Envelope Consultant - Level 5 Consulting

Energy Modelling - Focal Engineering

Mechanical Engineer - Rocky Point Engineering

Electrical Engineer - Nemetz (S/A) & Associates

General Contractor - Narrow Gate Developments

Funding Advisor - BC Non-Profit Housing Association (BCNPHA)

Successes continued ...

Tenants were relocated to available units within two buildings on the same site for approximately three months. Although the process involved time and financial losses from vacant units, it was necessary to minimize the impact on the tenants. They returned to upgraded units without incurring any additional costs - such as mail redirection and moving costs - which were fully handled and paid for by the Society. The response was overwhelmingly positive: "*They couldn't believe it when they moved back in.*"

The retrofit delivered significant improvements to the **building envelope**, including new windows and insulation. Tenants noticed immediate benefits. As Rupert described, "*new windows added huge improvements to sound, insulation, air tightness, and overall envelope and livability.*"

Behind the scenes, **project coordination** was a key driver of success. A skilled site supervisor and a responsive contractor navigated challenges efficiently. "*We are under budget - even with adding scope*," Terry shared, crediting fixed-price contracts and internal financial capacity for keeping the project on track. The process - from feasibility in May 2022 to construction start in August 2024 and completion in April 2025 - spanned just under three years, a timeline made possible by effective coordination.

Finally, the **project's funding strategy** exceeded expectations. Calling Ministries secured grants and loans from CMHC, Vancity, and others. Terry reflected, "*we are so grateful for all of the grants we were able to receive.*"

Canada Mortgage and Housing Corporation's (CMHC) Canada Greener Affordable Homes (CGAH) program allowed for a broader scope and faster approvals, making the retrofit financially viable. The Society was also in a strong financial position to incur upfront costs which helped accelerate the process. As Terry noted, "*we didn't have to wait to obtain grant funds; we were able to get moving as we had enough internal funds, and to then have the grant funds reimbursed. Not every non-profit is in that position.*"

Challenges

Retrofitting two aging buildings while housing vulnerable seniors came with a host of unexpected and complex challenges. From technical hurdles to bureaucratic delays, the project demanded flexibility, persistence, and strong leadership.

Early in construction, crews encountered **unforeseen structural issues**, such as needing to chip away concrete during window installation at Dogwood. "*It was a lot more work,"* Terry recalled. Siding installation also proved more complicated than expected, requiring on-site adjustments to metal cladding. "*Once you get there, you start looking at just how much crimping needs to be done.*"

Permitting delays added further strain to the project timeline. As part of City of Vancouver's typical permitting requirements, the retrofit needed to go through a development permit process due to the Tenant Relocation Policy (TRP). The project team successfully advocated for a design/build pathway via the building permit process, still incorporating the TRP. Navigating these permitting requirements proved complex and introduced challenges for scheduling and budgeting. The entire process ultimately took nine months. However, Terry shared that they "*appreciated the City of Vancouver's overall guidance in moving through the process and in the NRRG grant funding.*" Establishing a clearer, more streamlined process would help reduce uncertainty and enable better planning for future retrofit projects.

The team also faced significant challenges **coordinating funding**, particularly as one of the first groups to navigate multiple programs, including CMHC's CGAH program. The volume of paperwork and back-and-forth between funders, consultants, and lenders was substantial. Each program operates on different timelines and requires distinct deliverables. "*It's a lot of paper*," Terry admitted "*but it was well worth the effort. We recognize it's always challenging for grant delivery staff with new programs.*" Improving the stackability and better aligning program requirements would make the process far less onerous. A more integrated and streamlined funding framework would greatly support future retrofits.

Lessons Learned

The Calling Ministries retrofit offered strategic insights that will inform future projects - especially in how to plan, communicate, and prioritize.

A key lesson was the benefit of **managing tenant engagement** internally. Rather than outsourcing relocation planning, the Society took a personal approach, meeting with each resident and tailoring the move to their needs. Though they considered hiring a consultant, the cost was prohibitive, so they led the process themselves, coordinating directly with the City of Vancouver. This built trust and ensured smoother transitions, especially for seniors with mobility concerns. "*I sat down with each one of them in an interview and we talked about each detail related to the move... I gathered any information specifically related to their mobility,*" Terry explained. "*We talked - how do you want to do the move, do you want someone to do it all for you, do you just want boxes?*" Their thorough communication throughout proved to be a key factor in the project's success.

Technology integration brought its own set of complications. In particular, **ERVs** generated disruptive noise in the compact studio suites, affecting tenant comfort. "*The fans make a slight whirring sound which affected a few residents,*" Terry explained, "*so we had to figure out technically how to allow the few to shut it off.*" Based on this experience, the project team advised that future retrofits should prioritize ERV models with the lowest possible noise ratings to better suit small-unit living environments. In addition, **heat pump dryers** were installed but they posed significant challenges as their longer drying cycles did not align with the needs of a multi-unit building. Rupert noted they "*have been a source of complaints, as they take longer to dry clothes.*" The Society has since replaced them with electric resistance models because heat pump units could not dry quickly enough. Going forward, efficient electric resistance dryers will be selected for multi-family applications from the outset.

From a technical standpoint, the retrofit highlighted the need to critically **assess energy measures**. While insulation was included, its marginal impact on energy savings and high embodied carbon led the team to reconsider its value. "*We would not pursue additional insulation in future unless the base building had literally zero insulation to begin with*," Rupert reflected. In future, greater consideration will be given to the trade-offs and overall benefits of every measure.

The project also highlighted the effectiveness of a **design/build approach**. By coordinating closely with the architect, engineers, and contractor from the outset, the team was able to align budget, scope, and constructability. "*That process is atypical*," Rupert noted, "*but it worked well for us.*" Initially, there was discussion about reducing the consulting team by omitting the **architect**, but the team ultimately decided that including one was essential. "*It makes more sense and will be overall better and more streamlined to bring on an architect,*" Rupert explained. Furthermore, involving the **general contractor during the design phase** - rather than completing the design and then proceeding to a tender process where the contractor is awarded - proved to be significantly more effective. "*We would not do it a different way.*"