DESIGN A BUILDING THAT GENERATES AS MUCH ENERGY AS IT CONSUMES ON AN ANNUAL BASIS

That was the goal for the SEFC Net Zero building, a focal point of sustainable design at SEFC and Canada's first Net Zero multi-unit residential building. The ambition to build a Net Zero building emerged in 2006 from the City of Vancouver's Sustainability Group. "At that time, the idea of doing something that was carbon neutral was really out there," says David Ramslie, the City's Sustainable Development Program Manager.

The City targeted one of the affordable housing buildings, an eight-storey seniors' residence with 67 units, including 6 street-level townhouses, to be the Net Zero building. "With this building, the City wanted to go above and beyond, and see what could be accomplished. LEED™ Gold was impressive, but we knew that Net Zero would be the next generation of green building. This approach was new and could be significant – this would be our showcase piece," says Ramslie.

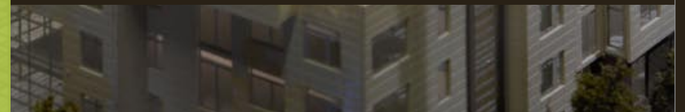
The project was supported by Canada Mortgage and Housing Corporation (CMHC), who spearheaded the initial design charette for the building. "The SEFC Net Zero Building demonstrates the application of sustainability principles at the multi-unit scale, which is particularly important given that multi-unit buildings account for an increasing share of new construction in Vancouver and cities across the country," says Lance Jakubec, Senior Consultant at CMHC.

"This project – a multi-unit residential Net Zero building – was a North American first. This presented an added challenge, as there was not a lot of experience to draw upon," says Esteban Undurraga, co-founder and former partner at Recollective Consulting, the green design consultant on the project. "What's more, the design was already addressing a multi-stakeholder set of objectives: the City of Vancouver's green building and community plan, Olympic venue requirements, BC Housing's standards, LEED™ Gold rating and the developer's business feasibility.

"In the face of all these challenges, the City's constant support was key to developing this new professional capacity: accepting mistakes, exploring options, making timely decisions and moving forward," says Undurraga.

BUZZWORD: Net Zero

The SEFC Net Zero building generates as much energy as it consumes over the course of a year. Buildings account for about one-third of Vancouver's energy consumption. Much of the energy we use is derived from fossil fuels, which, when burned, release greenhouse gases (GHGs) into the environment. Therefore, reducing our energy use and seeking greener options is one of our biggest sustainability challenges. Net Zero building is a step toward GHG-neutral (or carbon neutral) low-impact building design.



"We knew Net Zero was the next generation of green building"

David Ramslie, Sustainable Development Program Manager, City of Vancouver

Net Zero Design: The Business Case

There's no formula for reaching Net Zero, and, in the case of the SEFC building, there was no precedent to follow. With all of the constraints associated with the project – schedule, budget, physical site limitations, stakeholder conditions and the required level of innovation – the design team had to build a solid case if they were to be able to realize the Net Zero target.

"One word: resourcefulness," says Albert Bicol, a mechanical consultant with Cobalt Engineering. "The more resourceful you are, the more success you will have in a project like this." By examining the building in its specific context, the team looked for an appropriate strategy for achieving Net Zero. As it happened, the perceived constraints of the project – the building's dense urban context – became the vehicle to reaching the annual energy balance.

"What we learned from the process is that the success of this building was contingent upon the relationships between it and its neighbours. The Net Zero aspiration would not have been attainable without the ability to take advantage of connections to other buildings," says Undurraga.

"People associate the Net Zero concept with off-grid living. The pastoral image of a carbon neutral building out on its own in a field – like a spaceship – is not what this project is about," says Ramslie. "It's true that it takes a village. Trading energy between buildings, and integrating systems, is how we are able to meet the Net Zero goal."

Northern elevation view including the Net Zero building (second from left).