

# High-powered high-rise:

The energy footprint disconnect  
of B.C.'s high-end condo dwellers



**Report**

April 2019

BCH19-320

 **BC Hydro**  
Power smart

# The energy footprint disconnect of B.C.'s high-end condo dwellers

British Columbians' shift to smaller housing means the number of 'luxury' condos has skyrocketed. Despite many new, high-end condo buildings being marketed as energy-efficient, those living in them have a much larger energy footprint than those living in older style buildings – despite what they may think.

## Highlights

- With high housing prices, more British Columbians – especially those in larger cities like Vancouver, Victoria and Kelowna – are purchasing condos.
- BC Hydro has seen evidence of this shift in housing, with a nearly 22% rise in the number of apartment accounts since 2011.
- BC Hydro data shows the amount of electricity used in condo buildings is also on the rise –nearly doubling since the 1980s, with the largest period of growth between 1999 and 2009 when the average electricity consumption of a newly-built condo building grew by 65%.
- Despite the suites in newer high-rise buildings often being marketed as energy-efficient and including things like LED lighting and ENERGY STAR® appliances, the combined electricity usage of the overall building is approximately two times more than high rises built in the 1980s, and almost four times more than low-rise buildings built that same decade.
- This increase can largely be attributed to these newer, high-rise condo buildings (those with five stories or more) being equipped with high consuming luxury amenities, including pools, hot tubs, party rooms and fitness centres.
- In fact, BC Hydro has found that around 50% of these buildings' electricity use is covered by the common-use account to pay to power these amenities, along with the electricity used to keep these larger buildings lit, heated and cooled all day, every day.
  - In comparison, the common-use account of low-rise electrically heated building built in the 1980s accounts for just half of that – at 29% of the building's total consumption.
- This has created a disconnect between a condo dweller's perceived and actual energy footprint.
- If the cost for this appeared on their bill, it could add up to \$40 to their monthly electricity costs – nearly doubling the average apartment suite's bill of \$43 dollars. This would bring it much closer to the average single-family home's bill of \$103 per month.

## Solutions

BC Hydro offers a variety of incentives for replacing older, inefficient technologies to improve the energy efficiency of multiunit residential buildings, including:

- Adding occupancy sensors to ensure lights are only on when a space is occupied.
- Lighting upgrades to reduce lighting costs while also cutting down on cooling costs because of the reduced heat output from lights.
- Automated controls for HVAC systems to cut down on the energy used by the building's heating and cooling systems.

## Condo sales in B.C. are up, while single-family home sales are down

With high housing prices in the province, more and more British Columbians are living in smaller homes. According to Statistic Canada 2016 Census data, Vancouver has the highest concentration of condo dwellers, with more than one-third of the population living in condos. Abbotsford–Mission and Kelowna took the third and fourth spots with one in every five households living in a condo.

A **Century 21 Canada report** found the average price for a condo in downtown Vancouver in the first half of 2018 was around \$1,345 per square foot, which was 39% higher than the same time period in 2017. This price increase is not only in downtown Vancouver, prices for condos in Burnaby, Richmond, and West Vancouver also increased.

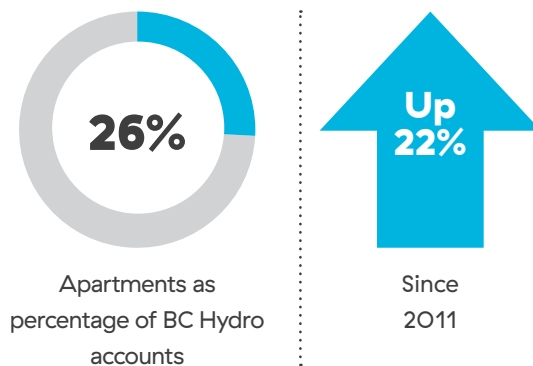
Despite high costs, a **RE/MAX report** on luxury home sales found sales of luxury condos in B.C. in the \$1 million to \$2 million price range are on the rise. In fact, sales of these condos has increased by 6% in Vancouver and 19% in Victoria since 2017. This trend is believed to be largely driven by baby boomers looking to downsize and millennials that are wanting to enter the housing market, but cannot afford a single-family home or townhouse. As condo sales are on the rise, the report also found sales of single-detached homes in the \$1 million to \$3 million range are down by 31% in Vancouver.

Along with more sales, the price paid for the most expensive condos is increasing year-over-year as well. According to the same report, the priciest condo sold in Vancouver in 2018 was \$11.7 million, a 34% increase over the top price of \$8.7 million paid in 2017.

## BC Hydro's shifting customer profile

BC Hydro has also seen evidence of British Columbians' shift to smaller homes. Since 2011, it has observed<sup>1</sup> a 22% increase in the number of apartment and condo accounts. At 470,000 accounts – apartments and condos now make up almost a quarter of all BC Hydro's residential customers. BC Hydro has also seen a decrease in the number of its customers living detached homes. In Vancouver, the number of apartment and condo accounts has increased by 14% since 2011, the number of single-family detached home accounts have grown by only 4%. A similar story is playing out in other parts of the province, with the number of BC Hydro customers living in apartments and condos increasing by 10% since 2011 in Victoria and 15% in Kamloops.

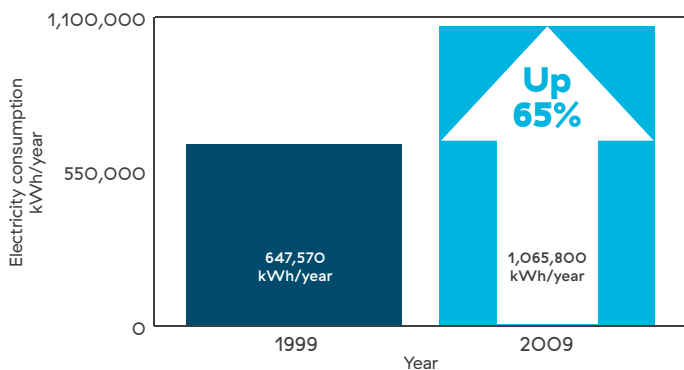
BC Hydro research found electricity use across apartment types is on the rise with the amount of electricity used per square foot nearly doubling since for new buildings in comparison to those built in the 1980s, with biggest period of growth being between 1999 and 2009 when the average electricity consumption of a newly-built condo building grew by 65%. This trend has also been seen in non-electrically heated condo buildings where heating is not a factor.



Apartments and condos in B.C. account for approximately 18% of BC Hydro’s total residential electricity consumption<sup>1</sup>. Amongst these, high-rise buildings (those with five stories or more) use approximately three to four times the amount of electricity as low-rise buildings. BC Hydro data shows the average electrically heated high-rise condo building built after 2010 uses approximately 1,045,028 kilowatt hours of electricity per year, which is four times the amount used by a low-rise building built in 1980s that uses just 235,266 kilowatt hours a year.

Even amongst electrically heated high-rise buildings, BC Hydro data shows newer buildings (those built after 2010) use more than twice the amount of electricity of high rises built in 1980. This increase in electricity usage is largely because newer high-rises typically have more suites, larger common spaces and more luxurious amenities – all of which lead to a higher electricity consumption.

#### ELECTRICITY USE OF HIGH-RISE CONDO BUILDINGS



<sup>1</sup> BC Hydro Electricity Use in Apartments Report, March 2019

<sup>2</sup> BC Hydro 2014 Commercial End Use Survey

## Condo dwellers’ energy footprint disconnect

The average BC Hydro bill of someone living an apartment or condo is approximately \$43 per month, compared to a single-family home with an average monthly bill of \$103. However, for most condo dwellers – especially those living in high-end buildings with more amenities – this lower bill amount does not provide a full picture of the energy footprint of their living habits.

Recent analysis from BC Hydro has discovered that in condos built between 2011 and 2017, up to 50% of the total building’s electricity use is driven by its common-use account to cover the building’s amenities such as a common use pool, hot tub, party room, spacious gym and sometimes even a movie theatre. In comparison, the common use account of a low-rise electrically heated building built in the 1980s accounts for just half of that – at 29% of the building’s total consumption.

This means that even if the individual units in a newer high-rise building are energy-efficient and include things like LED lighting and ENERGY STAR® appliances and owners’ electricity costs are low, the electricity used to power all the high-consuming “extras” must also be accounted for – often in an owners’ strata fees. This creates a disconnect between a condo dwellers’ perceived and actual energy footprint.

The common-use account also covers the electricity required to run the elevators, light the lobby, hallways and parking garage, plus operate the heating and cooling systems, all day, every day. In comparison to a single-family home, condo and apartment buildings use electricity differently. For example, unlike in a single-family home where the lights and heat are turned down or off when occupants are out of the home or overnight when they are sleeping, an apartment building typically keeps its interior and exterior lights and heating and cooling systems in its common spaces running 24 hours a day, 365 days a year. In fact, BC Hydro data<sup>2</sup> shows that over half (55%) of these buildings use at least three-quarters of their indoor lighting during unoccupied hours, like at night when most building residents are asleep.

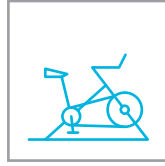
To put this in perspective, if a resident living a typical high-rise apartment building constructed between 2010 and 2017 were to pay for the electricity used to power the building’s common spaces and amenities directly, this would add around \$40 to their monthly electricity costs. As a result, their electricity bill would be much closer to that of the average single-family home’s bill.



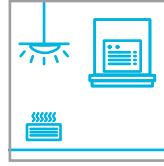
**Pool**



**Hot tub**



**Fitness room**



**Heating, cooling, lighting on 24/7**

**= additional \$40/month**

## Luxury, energy-efficient living is possible

Based on Statistics Canada data, it can be assumed that the number of condos in B.C. will increase over the coming years. Stats Canada data shows there are over 45,500 units in multi-unit residential buildings currently under construction in B.C.

While many luxury condos are high energy consumers, there are examples of developers in B.C. that worked with BC Hydro to bring energy-efficiency to the forefront of their building's design. The result is a building that combines high-class living with a low energy footprint. An example of this type of development is the 2010 Olympic Village by the Millennium Development Corporation on southeast False Creek. The development includes twenty-four separate buildings with 1.5 million square feet of residential and commercial space, all designated as LEED Platinum. Each building includes increased wall and roof insulation, passive and active solar shading, lighting controls and occupancy sensors, which combined, result in at least a 50% reduction in energy use.

Another example is The Heights in Vancouver, which is a six story 65,000 square foot building that includes three retail operations and 85 residential units and is one of the largest Passive House buildings in Canada. This means that the building not only meets high standards of energy efficiency – and an estimated energy-savings of around 205,000 kilowatt hours of electricity per year – but also takes into account the comfort of its tenants, including minimal temperature fluctuations, improved air quality and reduced noise levels.

## Solutions

### Improving a building's energy efficiency

The majority of a building's energy usage goes towards lighting and its heating, cooling and ventilation systems. BC Hydro offers a variety of incentives for replacing older, inefficient technologies to improve a buildings' energy efficiency such as:

- Adding occupancy sensors: this ensures lights are only on when a space is occupied, which can help reduce wasted electricity by up to 30%.
- Lighting upgrades: lighting can offer one of the greatest opportunities for savings. Switching to energy-efficient lighting can reduce lighting costs up to 40% and also cut down on cooling costs as there will be less heat output from lights.
- Automated controls for HVAC systems: these go a long way in improving the energy-efficiency of a building's heating and cooling systems, helping reduce energy consumption by approximately 30%.

### Energy-efficient tips for condo dwellers

British Columbian condo dwellers can follow some simple tips to be more energy-efficient and save on their bills this spring and summer. For example:

- Shading windows on sunny days: reduce the need for fans and air conditioning by using internal blinds and drapes. These can block out 65% of heat that would otherwise come in through windows.
- Using a ceiling fan: a ceiling fan can affect a room's temperature by up to 10%. Set the fan to rotate counter-clockwise on warm days to help generate a cool breeze and reduce the need to use an air conditioner.
- Draftproofing: installing draftproofing around windows and doors helps to keep the cold air out of the home in the winter months and prevent warm air from coming in during the summer months.

