PEMBINA institute

Growth in B.C.'s green building sector spurs job creation

Increased investments will help accelerate a clean energy economy

by Betsy Agar and Hannah Nadler | December 2021

Summary

Despite significant accomplishments within the green buildings sector, B.C.'s trajectory still falls short with respect to what is required to meet 2030 and 2050 carbon emission targets. Identified actions to help close the gap include:

- Increase Demand-Side Management spending by provincial and federal governments and utilities. An estimated annual injection of $1.6 billion is needed, with utilities required to double their current spend.
- Follow through with CleanBC's proposed ban on incentives for gas heating equipment and cap of emissions from natural gas utilities.
- Create a new B.C. tracking and reporting program for buildings that meet the upper tier Energy Step Code steps to document, analyze and encourage progress.

With sufficient investment and strategic planning, B.C.'s green building sector has the potential to reduce emissions and provide jobs to ensure we reach our goals for a clean economy and a strong future.

Over the last five years, British Columbia's green building sector has grown continually, producing a steady stream of jobs and contributing to a cleaner economy. Despite these accomplishments, investment is urgently needed for B.C. to meet the government's goal of reducing emissions in buildings and communities to 59%-64% of 2007 levels by 2030.[1]

[1] Government of British Columbia, "B.C. sets sectoral targets, supports for industry and clean tech," media release, March 26, 2021. https://news.gov.bc.ca/releases/2021ENV0022-000561

Quick facts

- British Columbia's green building sector employed 21,800 people in 2020.
- An estimated 28,900 certified green homes and 1,700 certified green large buildings are located throughout the province.
- Energy use in buildings accounts for 13% of Canada's carbon pollution.
- Canada has committed to reaching net zero emissions by 2050.
- The price of carbon is slated to rise from $50/tonne (2022) to $170/tonne by 2030.
- B.C. communities and buildings are expected to cut carbon emissions by up to 64% of 2007 levels by 2030.

Green building certifications are on the rise

The Pembina Institute has updated its British Columbia Green Buildings Map using recently released data from 2015-2020.[2] This interactive map captures a snapshot of the province's growing green construction industry by showcasing the total number and distribution of certified energy-efficient buildings as well as jobs. Third-party certifications include those offered by NRCAN (0-100 Rating and ERS Rating), Built Green, LEED, Living Building Challenge, BOMA, Passive House and Green Globes, all of whom contributed data for this work.[3]

Figure 1 shows that the number of green buildings certified in B.C. has grown to 30,700, at an average annual growth rate of 13% since 2015.

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[2] Pembina Institute, "British Columbia Green Buildings Map." https://www.pembina.org/bcgreenbuildings/

[3] Data for the Green Buildings Map update came from: NRCan, EnerGuide-Rating System, ENERGY STAR for New Homes and R-2000 Homes. https://www.nrcan.gc.ca/energy-efficiency/energy-efficiency-homes/professional-opportunities/energy-efficiency-housing-initiatives/18767

Built Green Canada. https://www.builtgreencanada.ca/

Canada Green Building Council, Project Database, https://leed.cagbc.org//LEED/projectprofile_EN.aspx

International Living Future Institute, British Columbia projects. https://living-future.org/?post_type=lbc_case_study&s=British+Columbia+

BOMA Canada, "Certified Buildings." https://bomacanada.ca/bomabest/certifiedbuildings/

Passive House Canada, "Featured Projects" (British Columbia). https://www.passivehousecanada.com/projects/

Green Globes, Product Selection. http://www.greenglobes.com/homeca.asp

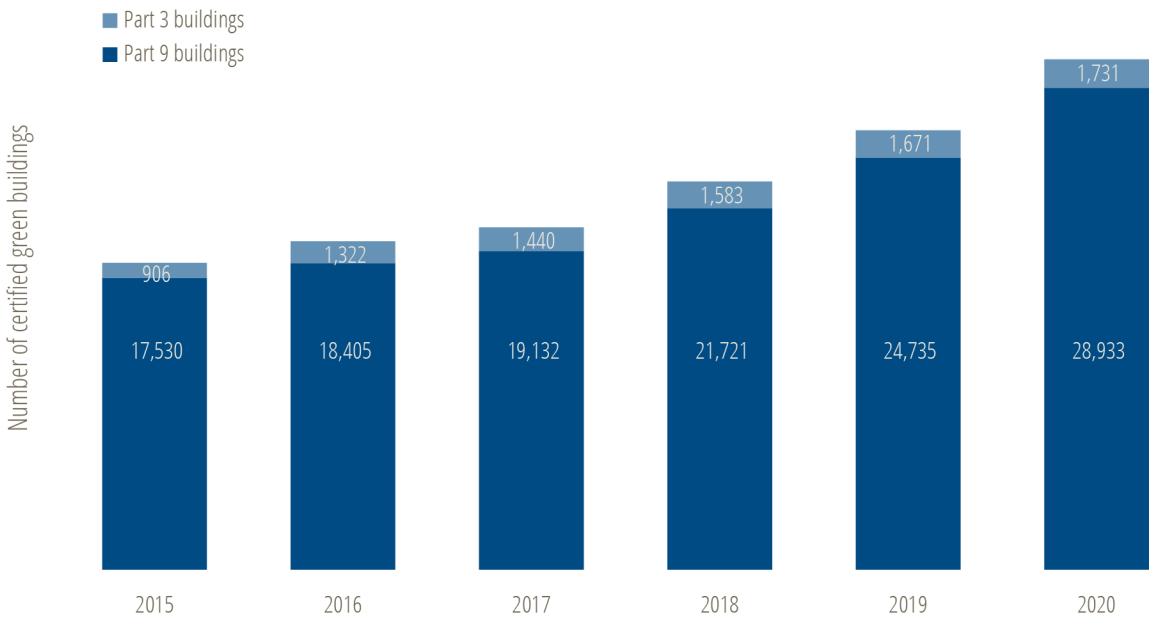

Figure 1. Green building certifications have grown by an average of 13% annually since 2015.

Data source: Green Buildings Map

Looking ahead, we expect the number of certified green homes and buildings to increase as more and more municipalities adopt requirements or incentives to meet the upper tier steps of the Energy Step Code (ESC).[4] It is also possible that where municipalities require homes and buildings to meet the top steps of the ESC, builders may see that as sufficient for demonstrating quality construction, which could then result in a drop in demand for third-party certifications. This could challenge our capacity to continue tracking the evolution of the green building industry comprehensively because it is currently based on third-party certifications, not on Energy Step Code compliance. The province is not actively tracking or compiling municipal data on the number of buildings meeting the top steps of the ESC.

Our recommended solution is for all regulators and authorities with jurisdiction to develop a system to track and report buildings that meet the upper-tier ESC steps.

We also recommend that B.C. develop and maintain a database to co-ordinate data collection and reporting by authorities. Database results could be integrated into future analyses.

[4] "Energy Step Code." https://energystepcode.ca/

Demand side management spending is lagging

We noted three trends on demand side management (DSM) recent spending records that affected our green job estimates:

a. Incentives surpassed 2016 levels; however, despite recent increases, the five-year average is trending downward due to a significant spending drop in 2018 (Figure 2).
b. The bulk of Fortis BC's 2020 DSM spending was directed toward residential natural gas incentive programs, which saw an increase in spending from $12.7 to $32.9 million between 2015 and 2020.
c. BC Hydro has halved DSM spending directed at the commercial sector while its residential spending is approaching 2016 levels.

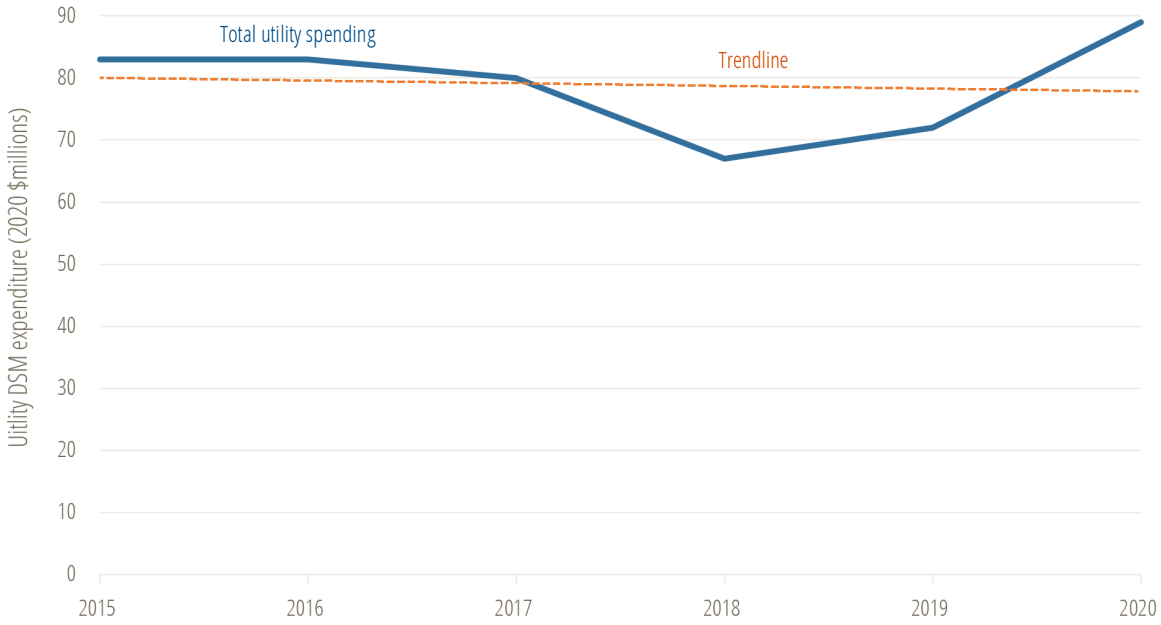

Figure 2: Five-year DSM spending by utilities is trending downward due to low spending in 2018-2019, but the recent increase is a welcome trend.

Data source: Green Buildings Map

Green building jobs are stable

Based on DSM spending, green building certifications and the major projects underway, we estimate that in 2020 the green building sector in B.C. generated at least 21,800 direct and indirect full-time jobs. Following a 21% decrease in 2017, green building jobs have since been trending upward slightly every year. B.C. is also home to an increasing

number of green building component manufacturers and suppliers. As of 2020, we identified 100, which is up 285% from 35 reported in 2018.

Figure 3 illustrates job estimates for each year since 2015. Over the years, job factors have been adjusted and this graph reflects job estimates based on job factors reported by Statistics Canada in 2017 for large buildings[5] and our estimate that 8-10 direct, indirect and induced jobs are created for every $1 million spent on green building retrofits and new construction of smaller homes.[6]

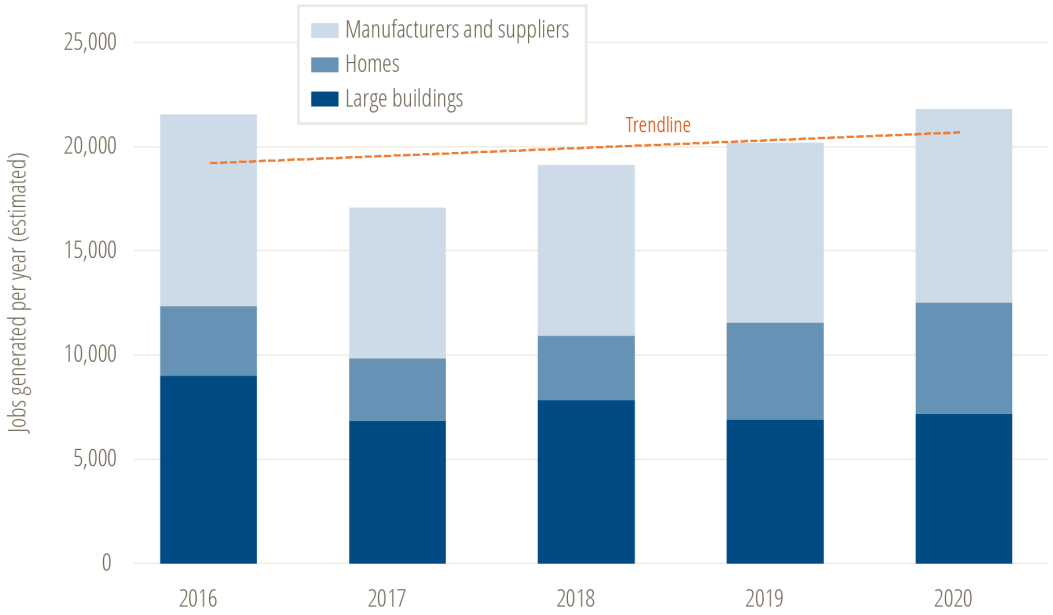

Figure 3: Total annual estimate of direct jobs generated by construction of large green buildings and homes, and indirect jobs generated by manufacturers and suppliers located in B.C.

[5] Statistics Canada. Table 36-10-0013-01 Input-output multipliers, summary level

[6] Madi Kennedy, Tom-Pierre Frappé-Sénéclauze, *Canada's Renovation Wave: A plan for jobs and climate* (Pembina Institute, 2021), 22. https://www.pembina.org/pub/canadas-renovation-wave

Utilities need to double down on electrification

Electrification is B.C.'s best path to decarbonizing its economy, but current and projected spending falls considerably short of what is needed to drive necessary building emission reduction. BC Hydro is allocating $82.2 million for traditional DSM spending in 2022 (includes industrial spending), down from $90 million planned for 2020 and 2021.[7] Its recently released electrification plan begins to close the gap by allocating an additional $33.8 million over the next five years (or $6.76 million per year) towards incentives and programs promoting fuel-switching in buildings, transportation and industry. But the total spend planned for DSM and building electrification still falls short at $88.96 million.[8] The Accelerated Scenario in BC Hydro's Draft 2021 Integrated Resource Plan projects how much clean electricity will be needed if B.C. is to meet its climate target, and also calls for significantly more DSM investments.[9]

FortisBC has earmarked $97.7 million for 2022 DSM programs, up from $88.8 million in 2021.[10] Increases in DSM programs are good, but given that 85% of FortisBC customer accounts are for natural gas services,[11] this can also create problems if the programs further lock in natural gas equipment and delay a transition to using clean electricity for heating. Considering that natural gas heating equipment lasts 20 years or more, installing zero-carbon heating systems (alongside reducing energy waste) must be a priority if we are going to meet our climate targets.

CleanBC's recently released Roadmap to 2030 addresses this issue in two ways: first, by proposing to ban gas utilities from providing incentives for gas heating equipment, and instead focusing their DSM spending on reducing GHG emissions by improving building envelopes.[12] Second, it plans to set a cap on the total emissions from the natural gas

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[7] BC Hydro, *Fiscal 2022 Revenue Requirements Application* (2020). https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/corporate/regulatory-planning-documents/regulatory-filings/rra/00-2020-12-22-ex-b-2-bchydro-f22-rra-application.pdf

[8] Tom Berkhout, BC Hydro, personal communication, November 9, 2021.

BC Hydro, *BC Hydro's Electrification Plan: A clean future powered by water* (2021). https://www.bchydro.com/toolbar/about/planning-for-our-future/electrification-plan.html

[9] BC Hydro, *Draft 2021 Integrated Resource Plan* (2021), 2. https://www.bchydro.com/content/dam/BCHydro/customer-portal/documents/corporate/regulatory-planning-documents/integrated-resource-plans/current-plan/draft-integrated-resource-plan.pdf

[10] FortisBC Energy, *Application for Updated Demand Side Management Expenditures for 2021 and 2022* (2021). https://www.bcuc.com/Documents/Proceedings/2021/DOC_61761_B-1-FEI-Updated-DSM-Expenditures-2021-2022-Application.pdf

[11] Fortis Inc, "FortisBC." https://www.fortisinc.com/our-companies/fortis-bc

[12] Government of B.C., *CleanBC: Roadmap to 2030,* 41. https://cleanbc.gov.bc.ca/

utilities — which should help align their business decisions and long-term resource planning with the climate objectives of the province.[13] These are bold measures that will help propel the transition of heating systems to low-carbon alternatives, while still allowing gas utilities to provide DSM programs to help their customers save energy and money.

In addition to spending DSM dollars on the right technologies, we also need to increase the scale of funding. The recent increase in DSM spending is helping bring back green building jobs, but it is not yet back to 2016 levels, nor anywhere close to the investments required to decarbonize the building sector and meet our 2030 and 2050 targets. Indeed, the Pembina Institute's analysis shows that B.C. needs an annual injection of $1.6 billion/year in incentives for retrofits to reach the scale and pace needed.[14] Assuming the province picks up a quarter of that tab and the federal government a half, then B.C. utility funding for incentives would be estimated at $400 million/year, at least twice current levels.

[13] *CleanBC: Roadmap to 2030,* 29.

[14] *Canada's Renovation Wave: A plan for jobs and climate*, 22.