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Now is the time to invest in deep energy retrofits

Monday, July 6, 2020

By Erin Ruddy

The benefits of investing in deep energy retrofits have been touted by building experts for years. Yet still, here we are heading into the second half of 2020 and not everyone has been quick on the uptake. Adding to the slowdown, Canada is in the midst of emerging from a deadly health crisis—the economic consequences of which will be felt for years to come. As offices and businesses gingerly attempt to reopen, some building owners may be reluctant to undergo an extensive retrofit project. But now, says Terry Bergen, Managing Principal at RJC Engineers, is precisely the time to do it, and he is optimistic municipal, provincial and federal governments will continue, if not expand their support of Canadian businesses in the building and construction sector.

“Retrofit work, particularly for substantive deep energy retrofits, is generally labour intensive. Aside from the positive environmental impact retrofitted buildings will provide, there is a multi-layered economic benefit to the Canadian workforce,” he says. “Recognizing that new construction will continue, there will be a significant skilled labour and contractor shortage for retrofit construction. This shortage will create opportunities for a new generation of workers in high value construction jobs, and the work they perform will support and further stimulate materials and supply industries.”



From improved operational efficiencies, to job creation, to significant community benefits, deep energy retrofits also help lower greenhouse gas (GHG) emissions as Canada strives to fulfill its ambitious 2030 climate change targets. Given all these positive outcomes, Bergen isn't alone in his belief that Canada needs to include deep energy retrofits in its post-pandemic government stimulus package. "Existing buildings over 20 years of age make up the vast majority of building stock in Canada," he says. "Improving the performance of these buildings is a key strategy to retrofitting buildings at a national scale. It will provide generational stimulus to the Canadian economy."

Why incentive is needed

With most of the "low hanging fruit" in terms of retrofit projects having already been picked, many older buildings require more substantive improvements—work that is often invasive and leads to disruptions in building use and occupancy. In the absence of external incentives or pressure due to operational failure or deficiency, most building operators will generally plan more significant upgrades to coincide with planned major renewals, often in 10-year capital renewal cycles. "This doesn't mean that operators aren't investing in their buildings," Bergen points out. "It's just that they need to be strategic so as to minimize disruptions for all parties."



In addition, substantive deep energy retrofits may have ROI periods that are greater than other capital return opportunities—which is where incentives, or stimulus, can be of particular benefit to building owners while also providing advantages to occupants (via comfort) and the environment (via reduced energy use and net carbon footprint).

Furthermore, the rapid speed of innovation can be daunting, leaving many operators unsure about how or when to take advantage of new equipment. "Building technology, instrumentation and controls are evolving quickly," says Bergen. "Good professional relationships with consultants and suppliers can alleviate much of this concern."

Next level improvements

Assuming most building owners have already upgraded their mechanical/HVAC and electrical/lighting systems, next level improvements with better performance gains are what's needed to bring most of Canada's aging building stock up to a sufficient level.

According to Bergen, these "deep" retrofits will often begin with further mechanical/HVAC upgrades in conjunction with improving the airtightness of the building envelope. Additional performance gains will be achieved with window and glazing upgrades or replacement, and further improved with insulation upgrades to the walls and roofs, potentially combined with over-cladding and shading additions. In areas where seismic activity is a concern, operators should consider making structural upgrades to augment operational [resilience](#). For all buildings, energy modelling and life cycle assessment for embodied carbon intensity is required to determine the optimal solution.

These projects are by no means “low hanging fruit”, but as the benefits show us, the investment is well worth it. That said, to enable full-scale uptake on deep energy building retrofits, Bergen says support and services from related professional and construction partners are needed.

“Engineers for energy, envelope, embodied carbon, mechanical and electrical assessments, models and designs. Architects for potential alterations and changes of use for improved comfort, health and efficiency,” he says. “Also, incorporation of on-site renewables or local energy districts to further reduce grid demands and improve building specific ROI would greatly benefit the retrofit sector.”

The time is now. Canada is lagging. Your aging building will only depreciate unless the right steps are taken today.

To find out more about deep energy retrofits and what RJC can do for you, please visit www.rjc.ca or contact [Terry Bergen](#) directly.