



## ADMINISTRATIVE REPORT

Report Date: April 20, 2017  
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Meeting Date: May 2, 2017

TO: Vancouver City Council

FROM: General Manager of Planning, Urban Design and Sustainability

SUBJECT: Zero Emissions Buildings - Initial Catalyst Tools - Grant to Offer Discounted BCIT Passive House Trades Training Course

### **RECOMMENDATION**

- A. THAT Council approve a grant of up to \$95,000 to the British Columbia Institute of Technology ("BCIT") to enable BCIT to offer a Passive House trades training course up to a total of five times during 2017 and 2018 at a discounted tuition rate; source of funding is the 2017 operating budget for the Zero Emissions Homes Program, supported by the Climate Action Rebate Incentive Program reserve.
- B. THAT the General Manager of Planning, Urban Design and Sustainability and the Director of Legal Services be authorized to enter into an agreement with BCIT for the grant, subject to each of them being satisfied with the terms and conditions of such agreement.
- C. THAT no legal rights or obligations will be created by Council's adoption of these recommendations unless and until the grant agreement is executed by the City's authorized signatories.

Recommendation A is for a grant and requires eight affirmative votes of Council for approval.

### **REPORT SUMMARY**

One of the key actions approved under the Zero Emissions Building Plan is to develop tools and programs to support private sector leaders striving to build to near zero emissions. In adopting the Plan, Council approved a \$1.625 million (\$325K in 2017)

Zero Emissions Homes Program (RTS 11195) to support builders to voluntarily demonstrate practical approaches to achieve zero emissions.

As the initial action to support this private sector leadership, staff recommend that Council approve a grant of up to \$95,000 to BCIT to enable BCIT to offer a Passive House trades training course up to a total of five times during 2017 and 2018 at a discounted tuition rate that will benefit up to approximately 100 local builders and tradespersons operating in the City of Vancouver. The City of New Westminster is also providing a similar grant to benefit up to 9 builders and tradespersons who are active in that city. Courses will be held in 2017 and 2018.

Not only does this support Vancouver's Renewable City Strategy but it also supports our Economic Action Strategy by helping to create green job expertise in Vancouver that will be sought after across BC and North America to build buildings that will save residents money, and develop a healthier, more resilient building stock.

### ***COUNCIL AUTHORITY/PREVIOUS DECISIONS***

In January 2011, Council adopted the revised Greenest City Action Plan 2020 targets, which included the target to have all buildings constructed from 2020 onward will be carbon neutral in operations.

In April 2014, Council adopted a set of progressive Building By-law amendments as part of Vancouver's revised 2014 Building By-law that made great strides forward in terms of energy efficiency for one- and two-family dwellings and laneway houses. The new code required higher energy efficiency for walls, roofs, windows and skylights; energy efficient hot water tanks, boilers and furnaces; and improved airtightness. As well, commercial and large residential buildings were required to meet the most up-to-date energy standards.

In November 2015, Council approved the Renewable City Strategy (RCS), outlining how Vancouver will achieve the target of 100% renewable energy use before 2050 and directed staff to bring forward recommendations for achieving zero emissions new buildings by 2030 and where possible, sooner.

In July 2016, Council approved the Zero Emissions Building Plan (ZEBP) which directed staff to establish limits on the greenhouse gas emissions for newly constructed building and to step these limits down to zero by 2030. To enable this timeline for market innovation and change, \$1.625 million was approved for a Zero Emissions Homes Program to support leading designers and builders to demonstrate practical approaches to achieve near zero emissions houses and townhomes in Vancouver.

### ***CITY MANAGER'S/GENERAL MANAGER'S COMMENTS***

This training aligns with the Zero Emissions Building Plan and will help to catalyse private sector leaders by ensuring that local builders and tradespersons have the skills required to build very low emission, highly insulated, air tight and well ventilated new houses and townhouses in a cost effective manner. This work will lead to more local

green jobs by ensuring locals have the skills to meet the construction needs of the Zero Emissions Building plan.

## **REPORT**

### ***Background/Context***

The success of the Zero Emissions Building Plan relies upon leading designers and builders to pursue zero or near zero emissions buildings immediately. These local leaders will build industry capacity, lower costs, refine processes and identify policy barriers.

The Zero Emissions Home Program, an initiative approved by Council as part of the Zero Emissions Building Plan, seeks to accelerate market uptake and capacity building of zero or near zero emissions projects through a package of catalyst tools and barrier removal.

Passive House is a well-established, ultra-low energy building performance standard and certification process that is applicable to nearly every building type, including retrofits of existing buildings. A Passive House has a thicker layer of insulation, high performance triple glazed windows and doors, an airtight envelope, and mechanical ventilation with filters that continuously supply's fresh air in and exhausts stale air out.

As a result of this design, a Passive House has a quiet interior, very stable indoor temperatures, very high air quality, and requires little energy for space heating, resulting in very low GHG emissions.

Passive House is a common building standard in Europe but is not well established in North America. While Vancouver's designers, buildings and manufacturers are North American leaders in Passive House there is significant potential to accelerate the adoption of more energy efficient buildings.

By catalysing this industry locally, it not only accelerates the creation of direct green building jobs but also stimulates the local development of green building products, clean technology, and local expertise to satisfy international demand.

Passive House is an effective means of meeting the Zero Emissions Building Plan targets, as well as supporting our Greenest City Action Plan and Renewable City Strategy.

The recommended grant to BCIT to offer discounted Passive House trades course represents the initial delivery of catalyst tools under the Zero Emissions Homes Program. The Grant will ensure a wide diversity of local builders and tradespersons develop skills required to construct new homes and retrofit existing homes to near zero emissions in the short term.

The knowledge acquired in this class is not restricted to just Passive House construction; expertise in such areas as air tightness, exterior insulation, and heat

recovery ventilation applies to many green building approaches or programs including the new BC Step Code, Canada's R-2000 standard and the Living Building Challenge.

The 5-day tradesperson course (CESA 1500 - Building Envelope Specialization) is an existing course offered at the BCIT Burnaby Campus in the High Performance Building Lab. Starting in 2016, it was the first Passive House Tradesperson Course to be offered in Canada. This course was created in collaboration between BCIT's School of Construction and Passive House Canada.

The course covers the basics from 'what is Passive House?' and 'what are the benefits?' to applicable, hands-on skills such as air tightness techniques and window and door detailing.

Following completion of the course, students will have the option to register to write the Passive House Canada exam to become a Certified Passive House Tradesperson.

### ***Strategic Analysis***

There is a high degree of private interest in building to the Passive House standard, demonstrated by the many Passive House projects under development in British Columbia.

Passive House training for architects and designers in Vancouver is very well subscribed but one barrier to having project teams commit to a Passive House approach is the relatively small pool of skilled building superintendents and tradespeople who understand how to successfully build to the standard. This lack of understanding can lead to inflated bid prices and construction challenges.

Industry consultations revealed that the interest in the Passive House Trades training is highly elastic and a reduction of price would result in an equivalent rise in enrolment. A 50% tuition discount would be highly effective in attracting participation from those in the building community that may not otherwise enrol due to cost constraints and therefore this supports a diversity of builders in gaining these skills.

With this grant, BCIT is able to offer the course for up to approximately 100 students at a 50% tuition discount per student. Each time the course is offered, usually up to 20 students enrol and so the grant enables BCIT to offer the course at the discounted rate up to five times to benefit up to a total of 100 students. The grant, calculated on a per course basis, is approximately \$19,000 each time the course is offered. The discounted course will be targeted towards builders and tradespersons actively operating in the City of Vancouver.

Under the grant agreement, the intent is to enable BCIT to offer the course at least twice during 2017 and 2018. Depending on the level of student interest, the level of need in the market, and other factors, the City may, with the agreement of BCIT, allow BCIT to offer the course three more times during 2017 and 2018. The total amount granted under this program will not exceed \$95,000 unless staff report back and receive Council approval.

According to BCIT management interest for the existing courses has been good. There are already 3 existing public course offerings in 2017. The majority of past students were builders, with the remainder being engineers, architects, and trades.

A number of City of Vancouver staff, including building inspectors, have also completed the course. This saves time and removes barriers for projects by assigning planning and inspections staff that are familiar with Passive House design and construction to Passive House projects.

After outreach to other jurisdictions, the City of New Westminster agreed to also participate, and will provide a similar grant to benefit up to 6 builders and tradespersons that operate in New Westminster.

The first course is tentatively scheduled to run from October 2 to 6, 2017. If approved by Council, program outreach and enrolment will commence immediately.

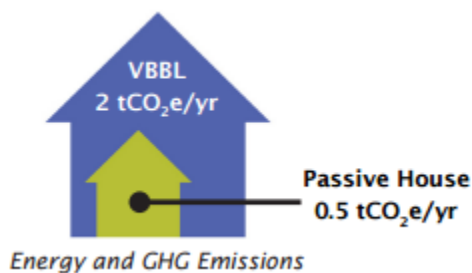
### *Implications/Related Issues/Risk*

#### *Financial*

Funding of up to \$95,000, for this grant, will be provided from the \$1.625 million Zero Emissions Home Program (2017 allocation of \$325K), with funding from the Climate Action Rebate Incentive Program Reserve (CARIP Reserve).

#### *Environmental*

A Vancouver Passive House study estimated that "heating energy savings and corresponding GHG emissions reductions of 75% can be achieved by constructing to the Passive House standard."<sup>1</sup>



The construction of one low-rise residential home to the Passive House standard as opposed to the Vancouver Building By-law saves 1.5 tonnes CO<sub>2</sub>e / year. These savings last the entire lifespan of the home, resulting in 75 tonnes CO<sub>2</sub>e saved per house over a 50 year lifespan. It is estimated by staff that the catalyst tools outlined in this report will incentivize a least 60 homes (or double business as usual) to follow the Passive House standard in the short-term (i.e. by the end of 2019). This represents a total of 4,500 tonnes CO<sub>2</sub>e saved over the lifespan of these homes.

<sup>1</sup> City of Vancouver Passive House Costing Study, RDH Consulting Ltd. (2015)

## *CONCLUSION*

This report recommends a grant of up to \$95,000 to BCIT to enable BCIT to offer a Passive House trades training course up to a total of five times during 2017 and 2018 at a discounted tuition rate that will benefit up to approximately 100 builders and tradespersons operating in the City of Vancouver.

This is a key initial catalyst tool to help the City of Vancouver achieve the Zero Emissions Building Plan and Vancouver's Green Economy goals by supporting well-paying local green jobs, local green building product and clean technology development, and international demand for local expertise. If approved, this builder training will help Vancouver reach its goal of zero emissions from new buildings by 2030 by ensuring local tradespeople have the requisite skills needed to construct high performance, zero or near-zero emissions buildings.

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