

From: "Johnston, Sadhu" <Sadhu.Johnston@vancouver.ca>
To: "Direct to Mayor and Council - DL"
CC: "City Manager's Correspondence Group - DL"
"Kelley, Gil" <Gil.Kelley@vancouver.ca>
"Aujla, Bill" <bill.ujla@vancouver.ca>
"Pander, Sean" <sean.pander@vancouver.ca>
"Djurkovic, Danica" <Danica.Djurkovic@vancouver.ca>
"Harrison, Luke \ (VAHA\)" <Luke.Harrison@vaha.ca>
"Smith, Doug \ (Sustainability\)" <doug.smith@vancouver.ca>
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Subject: Memo - Fast-tracking of City-Led Zero Emissions Demonstration Building Projects - RTS 12632
Attachments: Memo to Mayor and Council - RTS 12632 - Fast Tracking of City-Led Zero E....pdf

Greetings Mayor and Council,

The attached memo from Gil Kelley summarizes quick start City-led zero emissions building projects and related public educational initiatives as Council requested in January of this year. Progress includes:

- Four public Passive House certified projects that will start construction this year or in early 2019 including Firehall 17, 2 new day cares, and an artists' gallery and studios building; all except the last one will include solar panels and educational programming.
- Five VAHA projects targeting Passive House certification, including two mid-rise buildings, that are currently being negotiated with the Community Land Trust
- Additional public educational initiatives on zero emissions buildings and renewable energy such as solar energy demos at Central Library, Creekside Rowing Centre, and 2nd Beach Pool and a partnership with BCIT to build a zero emissions building module for educational programming at Science World and other public locations throughout the lower-mainland

Should you have any questions, please contact Doug Smith, Director of Sustainability at 604.829.4308 / Doug.Smith@vancouver.ca.

Best,
Sadhu

Sadhu Aufochs Johnston | City Manager
City of Vancouver | 453 W 12th Avenue
Vancouver | BC V5Y 1V4
604.873.7627 | Sadhu.johnston@vancouver.ca
Twitter: sadhuajohnston



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MEMORANDUM

July 25, 2018

TO: Mayor and Council

CC: Sadhu Johnston, City Manager
Paul Mochrie, Deputy City Manager
Katrina Leckovic, City Clerk
Lynda Graves, Administration Services Manager, City Manager's Office
Rena Kendall-Craden, Communications Director
Kevin Quinlan, Chief of Staff, Mayor's Office
Naveen Girn, Community Relations Director, Mayor's Office
Bill Aujla, General Manager, Real Estate and Facilities Management
Sean Pander, Green Building Program Manager
Danica Djurkovic, Director of Facilities Planning and Development
Luke Harrison, CEO Vancouver Affordable Housing Agency

FROM: Gil Kelley, General Manager, Planning, Urban Design and Sustainability

SUBJECT: RTS 12632 Fast-tracking of City-Led Zero Emissions Demonstration Building Projects

Dear Mayor and Council,

In January of 2018, Council directed staff to report back with a short list of City-led zero emissions building projects that could be started within the year and that these projects should include the production of renewable energy and related educational programming.

Prior to this, as part of the 2016 Zero Emissions Building Plan, Council approved a new Corporate Zero Emissions Building Policy requiring all City-owned and Vancouver Affordable Housing Agency projects to be designed and built to achieve Passive House or alternate zero-emissions building standard and to fully utilize renewable energy where feasible. These requirements have been incorporated into the Real Estate and Facilities Management Design and Technical Guidelines for all new City-owned buildings. The intent of this Policy was to accelerate the development of the building industry's capacity to design cost effective and attractive zero emissions buildings.

It is important to keep in mind that buildings that use only electricity, especially those that incorporate highly efficient heat pumps, are nearly 100% renewable without needing to produce any energy on-site. This is because the BC Hydro grid is required by legislation to produce a minimum of 93% its power from renewables and is currently producing 98%+ from renewables. While BC Hydro is committed to producing 100% of its power from renewable sources by 2025,

on-site renewables such as photovoltaic panels will continue to provide value in: their ability to engage and educate residents; helping to reduce power bills; and by minimizing or delaying expensive grid upgrades required to get that power to a specific part of the city.

Fast-Start Zero Emission Building Projects

Four zero or near-zero emission City-owned building projects starting construction in 2018 or early 2019 will use significantly less energy than conventional new buildings as result of their Passive House certified design. These buildings will also utilize highly efficient electrical heat pumps for space heating (and cooling) and for domestic hot water. As a result, they will have no direct (on-site) greenhouse gas emissions and an overall GHG intensity of less than 1 kg/m² (resulting from the small fraction of fossil fuels used in BC Hydro's grid energy production). This is more than 95% less carbon pollution than a typical building in Canada, making them nearly zero emission buildings. These buildings include:

- **Firehall #17**
Canada's first Passive House certified firehall, starting construction in the fall of 2018, will incorporate 220 photo-voltaic (PV) solar panels and public educational elements; not only will the firehall require significantly less energy to heat and cool due to its passive design, it will produce as much energy as it uses on an annual basis. The firehall is one of the pilot projects for the Canadian Green Building Council's Zero Carbon Building Standard and the solar elements were funded by a Green Municipal Fund grant from the Federation of Canadian Municipalities.
- **Gastown Child Cares**
Two Passive House certified 69 space child care buildings will start construction in early 2019 on top of the City-owned Water Street/Cordova Street parkade in Gastown. In response to Council direction in January, Real Estate and Facilities Management (REFM) have directed the design team to incorporate a solar PV array of sufficient size to generate 7% of each childcare's total annual energy use as well as to provide educational elements.
- **801 Pacific Artist Studio Building**
A private developer will start construction in early 2019 on a seven storey Passive House certified, community amenity building providing an artists' gallery and studios. At seven storeys, this building will be taller than any Passive House currently in Canada. Because this is a developer led amenity contribution, it was not possible to incorporate renewable energy generation on-site since the requirements for the building had already been agreed upon.

In addition to these public facilities, the Vancouver Affordable Housing Agency is in negotiations with the Community Land Trust to develop five multi-family housing projects, including two mid-rise towers, targeting the Corporate Zero Emissions Policy of Passive House certification.

Numerous additional City-owned projects are nearing construction but the requirements for these developments were established prior to the 2016 Zero Emission Building Policy. While these buildings have not been designed to achieve the Passive House standard, many of them are not dependant on fossil fuels and incorporate highly efficient electric heat pumps for space

heating and domestic hot water. One of these, the new Roddan Lodge/Evelyn Saller Center, is going to achieve near zero emissions due to the use of high efficiency air source heat pumps for both space heating and domestic hot water, and is able to incorporate a small solar PV array and educational elements onto the limited roof space not designated for use as occupant outdoor space.

Additional Renewable Energy and Zero Emission Building Education Initiatives

In addition to these zero and near zero emissions new building projects, REFM is developing educational solar PV arrays with funding support from Clean Energy Canada for installation this year at the Creekside Paddling Centre and at the Central Library. They are also working with Park Board to install a solar hot water system (with educational elements) to reduce fossil fuel consumption and GHG emissions at Second Beach outdoor pool. Numerous energy retrofit projects are under design or construction to greatly reduce GHG emissions from existing City facilities through the installation of high efficiency heat pumps including the main City Hall building, Kitsilano Community Center and Arena, Firehall Library, Roundhouse Community Center, etc.

Further to this the City is also supporting a BCIT initiative to develop an interactive Near Zero Emissions/Energy Experiential Module where the public will be able experience and learn about the improved air quality, thermal comfort, and quiet of near zero emission buildings at Science World and other locations in the City and across the lower mainland starting in 2019.

As you can see from this summary, the City has a considerable number of zero and near zero emissions projects underway. In response to Council's January 2018 direction, staff have incorporated on-site renewable energy generation and zero emissions building educational elements to a number of these projects and have partnered with Clean Energy Canada and BCIT to develop additional public engagement and educational initiatives.



Gil Kelley, FAICP
General Manager, Planning, Urban Design and Sustainability

604.873.7456 | gil.kelley@vancouver.ca

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