CITY OF VANCOUVER

POLICY REPORT
DEVELOPMENT AND BUILDING

Report Date:	July 5, 2016
Contact:	Sean Pander
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VanRIMS No.:	08-2000-20
Meeting Date:	City Clerks Use Only

TO: Vancouver City Council

FROM: Green Building Manager, Sustainability Group

SUBJECT: Zero Emissions Building Plan

RECOMMENDATION *

A. THAT Council approve the Zero Emissions Building Plan (attached as Appendix A) and adopt a target to reduce emissions from new buildings by 90% as compared to 2007 by 2025 and to achieve zero emissions for all new buildings by 2030 including intermediary time-stepped GHG emission and thermal energy demand targets as described in the Plan;

B. AND THAT Council direct staff to report back with specific recommendations to reflect the first step of these limits in the Rezoning Policy for Green Buildings and Vancouver's Building Bylaw along with any synergistic updates to Neighbourhood Energy connection requirements by Q1 2017;

C. AND THAT Council direct staff to build all new City-owned and Vancouver Affordable Housing Agency (VAHA) projects to be Certified to the Passive House standard or alternate zero emission building standard, and use only low carbon fuel sources, in lieu of certifying to LEED Gold unless it is deemed unviable by Real Estate and Facilities Management, or VAHA respectively , in collaboration with Sustainability and report back with recommendations for a Zero Emissions Policy for New Buildings for all City-owned and VAHA building projects by 2018;

D. AND THAT Council direct staff, in consultation with industry, to develop a three year, $1.625 million Zero Emissions Home Program for detached and row houses ($325K in 2017 from the Climate Action Rebate Incentive Program Reserve, $650K in 2018 and

$650K in 2019 from a funding source to be determined and reported back to Council), and report back to Council with specific recommendations for tools to catalyze leading builders to demonstrate cost effective approaches to building zero emissions homes by 2017;

E. AND THAT Council direct staff to engage partners, consult with stakeholders and report back to with recommendations in 2017 on the resources and tools required to catalyze leading developers to demonstrate cost effective approaches to building zero emissions multi-unit residential and commercial buildings ;

F. AND THAT Council approves in principle $700,000 over three years ($300K in 2017, $200K in 2018, and $200K in 2019 from the City's 2017 Innovation Fund, subject to Council approval of the 2017 Innovation Fund budget) towards establishing a non-governmental Zero Emissions Building Centre of Excellence with the mission to facilitate the compilation and dissemination of the knowledge and skills required to design, permit, build and operate zero emission buildings in BC, and direct staff to engage partners, secure matching funding, consult with stakeholders and report back with recommendations for implementation in 2017;

G. AND THAT Council direct staff to review and recommend amendments to the City's bylaws, policies, and guidelines to incorporate "zero emission building related rules" including but not limited to Official Development Plans, the Zoning and Development By-law, Vancouver's Building Bylaw, the Subdivision by-law and all other applicable bylaws, policies and guidelines to remove barriers and facilitate the development of zero emission buildings and provide them with equal weight as other public policy objectives wherever such "zero emission building related rules" confer discretion to a City official or board, and report back with initial recommendations in 2017.

REPORT SUMMARY *

This Plan lays out four action strategies to require the majority of new buildings in Vancouver use 100% renewable energy and have no operational greenhouse gas emissions by 2025 and that all new buildings achieve these outcomes by 2030.

These four strategies include:

1. Limits: establish GHG and thermal energy limits by building type and step these down over time to zero
2. Leadership: require City- owned and City managed building projects to demonstrate zero emission building approaches where viable
3. Catalyse: develop tools to catalyse leading private builders and developers to demonstrate effective approaches to zero emission new buildings; and
4. Capacity Building: establish a Centre of Zero Emission Building Excellence to facilitate the removal of barriers, the sharing of knowledge, and the development of the skills required to successfully achieve this goal

These strategies for achieving zero emissions new buildings were developed specifically to ensure comfortable and healthy indoor environments, maximize local economic development, ensure long-term building resilience, protect housing affordability and to facilitate achieving the City's Renewable City Strategy target to have all buildings in Vancouver (including those already built) use only renewable energy by the year 2050.

COUNCIL AUTHORITY/PREVIOUS DECISIONS *

In July 2004, Council adopted the *Green Building Strategy*, demonstrating early leadership by setting high environmental standards for the construction of new civic buildings and special development projects such as Southeast False Creek (SEFC). The strategy mandated the use of the LEED Gold Green Building Rating System, and 30% lower energy consumption than current VBBL, with higher targets set for the Olympic Athlete's Village in SEFC. This neighbourhood and development were planned to be a model sustainable community, and by demonstration, contribute to a paradigm shift toward green buildings in private-sector developments across the city.

In June 2008, Council adopted a set of Building By-law amendments directed at reducing the environmental impacts of new one- and two-family dwellings. The amendments made Vancouver's Building By-law the greenest building code for one- and two-family dwellings in North America at the time.

In June 2008, Council also adopted a Building By-Law amendment to require the use of ASHRAE 90.1 2007, to improve the energy efficiency performance of all new Part 3 (large residential, commercial, industrial) buildings.

In July 2010, Council approved the *Green Buildings Policy for Rezonings*, which required all applicable developments applying for rezoning to achieve the LEED standard. In its current revised form, the policy requires meeting LEED Gold with additional energy reductions. This policy was developed to use a well-established City process (rezoning) to help transition industry toward more sustainable building practices.

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 October 2012, Council approved the *Vancouver Neighbourhood Energy Strategy and Energy Centre Guidelines*, to address the *Greenest City 2020 Action Plan* objective of reducing 120,000 tonnes carbon dioxide per year through the conversion of existing steam heat systems to low carbon energy sources and the deployment of sustainable energy systems for high-density neighbourhoods.

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. In sum, the new code required higher energy efficiency for walls, roofs, windows and skylights; energy efficient hot water tanks, boilers and furnaces; and improved air-

tightness. 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), detailing how Vancouver will achieve the target of 100% renewable energy use by 2050 and directed staff to bring forward recommendations for achieving zero emissions new buildings by 2030 and where possible, sooner.

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

The City Manager supports these recommendations as an effective approach for rapidly transitioning the local building industry towards higher quality and healthier new buildings that are highly energy efficient and rely only on renewable energy.

REPORT

*Background/Context **

Vancouver's Greenest City Action Plan (GCAP) includes targets to achieve carbon neutral new construction and to reduce emissions from existing buildings and industry by 20% from 2007 levels by 2020.

Changes to the City's Building Bylaw and the introduction of green building requirements for rezonings have successfully begun to transform construction practices in Vancouver. Emissions from newly constructed houses have been reduced by 48% as compared to 2007. Sixty seven large condominium, apartment, and commercial buildings representing over 8.5 million square feet of new development are under construction or have been built to achieve LEED Gold certification. These building are shifting standard construction approaches towards more efficient lighting, heating, and water systems along with improved ventilation system designs and the use of healthier materials for improved indoor air quality.

In addition, the increased production of renewable electricity in BC combined with recent trends towards warmer winters and City/energy utility programs to support and incentivise energy conservation have reduced GHG emissions from existing buildings and industry by 20% as compared to 2007, meeting the GCAP target for 2020.

Building on this success, Council established more aggressive and longer term targets in the fall of 2015 with the adoption of the Renewable City Strategy. This Strategy targets 100% of all energy used in Vancouver come from renewable sources by 2050.

Analysis undertaken in the development of the Renewable City Strategy estimated that of all the buildings (measured by floor space not number of structures) that are anticipated by 2050:

- 30% would be built prior to 2010
- 30% would be built between 2010 and 2020
- 40% would be built after 2020.

If all buildings are to use only renewable energy by 2050, the sooner new buildings achieve near zero emissions, the fewer buildings there will be that require costly and challenging deep energy retrofits to achieve the target.

Consequently, the Renewable City Strategy targeted new buildings to be zero emissions by 2030 by:

- Demonstrating zero emission standards in new City of Vancouver buildings
- Utilizing rezoning policy tools to lead the transition
- Incentivizing and streamlining development of near zero emission buildings
- Establishing and enforcing GHG intensity limits for new development
- Developing innovative financing tools
- Building partnerships to foster industry capacity
- Mandating energy use reporting

In adopting the Strategy, Council directed staff to bring forward a plan to action these measures that was to include recommendations on achieving zero emissions new buildings by 2030 or sooner where possible. This Zero Emissions Building Plan is staff's response to this direction.

Consultation

This is a Plan to fundamentally shift building practice in Vancouver in just under 10 years. It focuses building policy, catalyst tools, and an investment in capacity building on high performing building envelopes and transitioning to100% renewable energy for new buildings.

In order to succeed, it will be essential that other local governments, professional associations, academic institutions, non-governmental agencies, energy utilities and the development industry are aligned with and committed to the success of the shift articulated in this Plan. Consequently, it was developed not only in consultation with these stakeholders but through close collaboration with them.

Concurrent with the development of this Plan, the Province was working with local governments and these same stakeholders to develop recommendations on the structure and targets for a Provincial energy "stretch code" as well as for new actions for their Climate Leadership Plan. To foster alignment between the City's Near Zero Emissions Building Plan and recommendations for these Provincial plans, the City and Province actively shared research and undertook joint consultation exercises.

The full list of organizations actively involved in the development of this Plan is listed in Appendix B but key partners included:

- BC Hydro (co-funded research and consultation)
- Urban Development Institute (collaborated on establishing scope of research work and supported industry consultation to ensure representative voices from the designers, developers, builders, and suppliers for multi-unit residential buildings)
- Greater Vancouver Home Builders Association

- BC Ministry Responsible for Housing, Building and Safety Standards Branch
- BC Ministry of Energy and Mines, Electricity and Alternative Energy Division
- Staff from the cities of Richmond, New Westminster, and Surrey
- BC Housing and the Homeowners Protection Office
- International Building Performance Simulation Association - BC Chapter
- Fenestration Association of BC
- New Buildings Institute (one of the leading U.S. building energy code think tanks)
- Pembina Institute
- Canadian Passive House Institute

The Plan was also shaped and informed by ongoing discussions with the cities of New York and Brussels, whose involvement was made possible through a grant from the Carbon Neutral Cities Alliance.

Strategic Analysis *

On average, 82% of new development in Vancouver is residential, 1-2% is office space and the remaining 16% is made up of a wide variety of building types. As per Council's direction in November 2015 when the Renewable City Strategy was adopted, this Plan includes detailed actions to reduce emissions in all new residential and office building to zero by 2025 with the exception of high-rise multi-unit residential buildings which do not go through a rezoning process; these will be required to achieve zero emissions in the Building Bylaw by 2030.

One key factor that will enable Vancouver to achieve this aggressive target is that electricity in BC is legislated to be at least 93% renewable and currently, 97% of electricity is provided from renewable sources. As a result the emphasis in this Plan is to reduce heating energy demand and to transition heating systems in new buildings to renewable energy such as waste heat, electricity, and bio-energy resources recovered from local waste (e.g. bio-methane from composting, clean wood waste).

Further research and analysis will be required before recommending detailed actions for achieving zero emissions in the dozens of other buildings types that make up the remaining 16% of new development in Vancouver as each of these buildings types has very unique energy usage and emissions profiles. Interim approaches for addressing all other building types will be recommended in the Rezoning Policy for Green Building later in 2016.

Past policy approaches to reduce energy use in new buildings combined with a gradual increase in the amount of renewable energy in electricity has resulted in a 33% reduction in greenhouse gas emission intensity (amount of GHG per unit area per year) in new buildings from 2007 requirements.

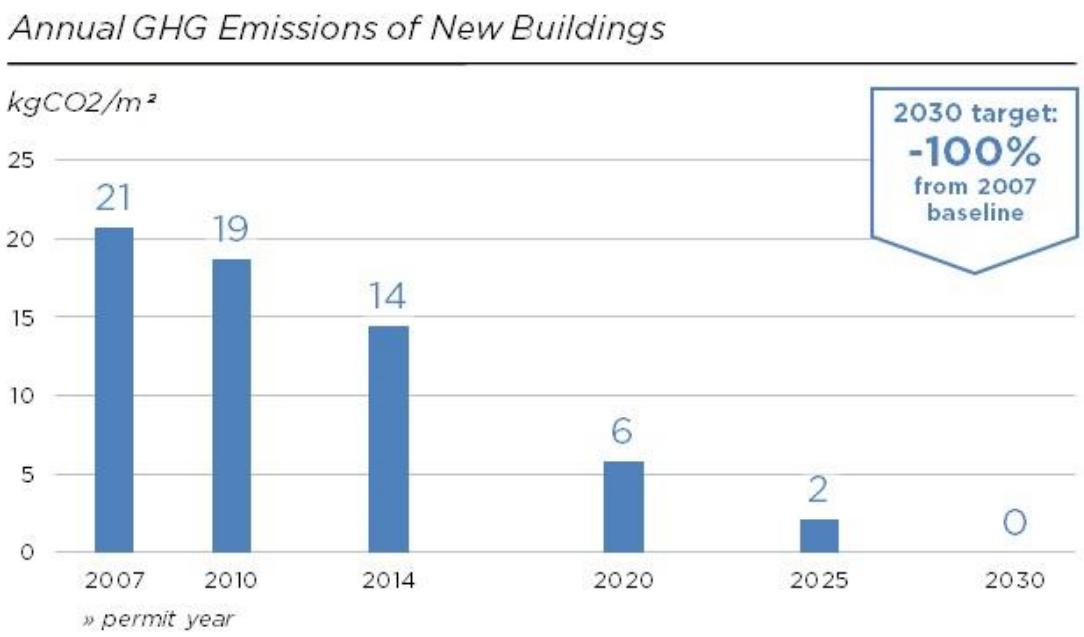

Figure 1: Weighted Average GHG Intensity for New Buildings in Vancouver

In accordance with the Renewable City Strategy, this plan sets a path to achieve significant reductions in energy demand in new buildings and increase the use of renewable energy. Beginning in 2016, new residential buildings will follow one of the following general paths towards achieving real and durable GHG emission reductions for new residential buildings in Vancouver:

1) First Path - Reduce Focused: where Neighbourhood Renewable Energy connections are not available, policy will initially focus on significant reductions in space heating and fresh air heating demand through greatly improved building envelope performance and highly efficient "passive" heat recovery ventilation. Once envelopes have improved significantly, requirements for renewable energy for hot water heating will be introduced in later years.

This Plan leverages the *Passive House* standard and its associated research, tools, training and verification processes to assist industry in successfully transitioning to highly energy efficient building envelope and ventilation system designs. Passive House is the leading global standard for high efficiency building envelopes and is supported by extensive designer and builder training (available locally), building science research, specialized energy modelling, third party design review and validation, and a strong Canadian and North American network of practitioners.

2) Second Path – Renewables Focused: new buildings connecting to a Neighbourhood Renewable Energy System (NRES) will also be required to reduce demand for space heating energy but the emphasis for these buildings will be on providing renewable heat energy for heating, ventilation air, and hot water. Neighbourhood Renewable Energy Systems are often viable in high density

neighbourhoods such as Southeast False Creek and enable the use of a wide variety of local and renewable energy sources that are not otherwise feasible for individual buildings. In addition, these systems will make it possible for existing buildings that are already connected or can be connected in the future to transition to 100% renewable energy without requiring expensive and disruptive building renovations. Given the significant investment required to establish this shared infrastructure and the GHG benefits achieved, new buildings connecting to these systems will not be aiming to achieve passive house levels of performance and will require more modest improvements to building envelope performance in order achieve zero emissions. In addition, the City must collaborate with NRES utilities to ensure their continued success.

Office buildings and other building types where heating energy use is a less significant factor than it is in residential buildings will be required to pursue better envelopes while simultaneously transitioning to renewable energy.

The Plan includes four essential areas of action:

1. Limits: establish GHG and thermal energy limits by building type and step these down over time to zero
2. Leadership: require City-owned and city managed building projects to demonstrate zero emission building approaches where viable
3. Catalyse: develop tools to catalyse leading private builders and developers to demonstrate effective approaches to zero emission new buildings; and
4. Capacity Building: establish tools and a Centre of Zero Emission Building Excellence to facilitate the removal of barriers, the sharing of knowledge, and the development of the skills required to successfully achieve this goal

GHG and Thermal Energy Limits

This plan recommends establishing GHG Intensity (GHGI) targets for each major building type and stepping these down over time to zero by 2025, except for high-rise MURBs that do not go through a rezoning process which will be required to achieve zero emissions by 2030 in the Building Bylaw. These are to be complemented by Thermal Energy Demand Intensity (TEDI) targets to ensure real and durable reductions through building envelope performance improvements for all buildings.

These time-stepped GHG intensity reduction targets by building type will result in a 90% reduction in emissions from new buildings as compared to 2007 by 2025 and will ensure all new buildings permitted from 2030 onward will have zero emissions.

These targets are to be reflected as maximum GHGI and TEDI limits in the Rezoning Policy for Green Buildings and the Building Bylaw which are to be updated in 2016/2017, 2020, 2025 and 2030. Furthermore, requirements for buildings to be connectable to a Neighbourhood Energy System will need to be reviewed and updated to reflect only geographical areas where the City has certainty in a renewable energy source for the system supply.

Also note that, the requirements and limits established in the Rezoning Policy become Building Bylaw requirements 4-5 years later. Refer to the Plan (attached as Appendix A) for the specific targets by building type and date.

In summary:

- Detached Houses: Vancouver's 2014 Building Bylaw introduced aggressive new energy efficiency measures and emissions in these buildings have been reduced by 48% since 2007. Aside from establishing a cap on maximum allowed GHG emissions (effectively requiring large new houses to be more efficient than modestly sized ones) no *significant* new regulations will be imposed until 2020 and the immediate focus will be on the provision of catalyst tools and capacity building for early adopters of zero emission building approaches.
- Low-Rise Multi-Unit Residential Buildings (4-6 story MURBs): These buildings have not had significant new requirements imposed recently and provide an ideal form for Passive House levels of performance. Proposed amendments to the Building Bylaw and the Rezoning Policy for this form of development in 2016 will reduce emissions from this building type by nearly 50%, primarily by aligning insulation, window and ventilation system performance requirements with those for detached housing. The Plan targets 2020 updates to the Rezoning Policy to require Passive House performance for this form of development, thus emphasizing the immediate importance of catalyst tools and capacity building for early adopters of zero emission building approaches.
- High-Rise Multi-Unit Residential Buildings (MURBs): This Plan recommends establishing a GHGI limit in 2016 that would result in 64% lower emissions as compared to current rezoning policy outcomes (for buildings not connected to a renewable neighbourhood energy system). The incremental costs of improved envelope and ventilation systems will be offset by the savings from not being required to build a hydronic heated building.

Establishing these limits in policy and regulation will be undermined without also investing in clear and simple compliance processes supported with tools for both staff and industry, such as training, best-practice guides, etc..

City Leadership

In order to transition industry to building zero emissions by 2025 it is essential that the City demonstrate effective approaches in new building projects that it leads or influences so as to:

- inform what approaches work best under what conditions
- identify regulatory, permitting, and financing barriers so that these can be removed
- share real development experiences with private industry
- help catalyze the development of the required professional services, builder skills, and the supply of building components
- create opportunities for the public to experience the health and comfort benefits of these buildings

This Plan commits the City to build all new City facilities to the Passive House standard and certification, and use only low carbon fuel sources, or utilize equivalent near zero emission approach *wherever feasible* and to work with partners on other City influenced developments to assess and pursue opportunities to do the same. Given the magnitude of this shift in design and construction practice, feasibility of these approaches may be curtailed by financial, technical, schedule, and partner limitations that cannot be managed in the immediate term. This experience will enable the City to develop tools and processes to overcome challenges and will be used to inform a detailed policy for all City-led projects within two years.

Catalyst Tools

Rapid and effective transformation of the local building industry will require more than defined GHGI and TEDI reduction targets or City demonstrations of leadership. In order to achieve zero emissions for the majority of new buildings by 2025, the City must begin fostering zero emission design and building experience with numerous private sector leaders immediately. This will also stimulate local production and competition in the supply of highly efficient building elements while also improving the available selection and decreasing costs.

Initially, the development of zero emission new buildings will involve additional real or perceived risks and costs. New tools will be required in order to effectively catalyze private sector building innovation at the scale that will be required to enable zero emission building regulations within 9 years. Design and construction catalyst tools will target whole building performance and/or specific high performing building elements and practices.

The Plan describes key principles to guide the development of effective catalyst tools including appeal, clarity, timeliness to inform decision making, scale for impact, diversity of participants, and consistency of objectives/requirements.

Catalyst Tools for Detached and Row Houses

Given the relatively small size of detached and row house buildings, the fairly modest and reasonably well understood incremental costs of building these to near zero emissions, and a fairly consistent regulatory structure for the majority of these buildings, catalyst tools for this sector can be developed and launched relatively quickly.

The Plan outlines numerous catalyst tools that will be explored in further detail including expedited permitting, permit cost waivers, funding for case studies and design insight sharing, design competitions, and the potential for time limited relaxation of targeted City requirements such as those for minimum subdivision lot sizes or design guidelines for new homes in character neighbourhoods.

Preliminary research of the required costs to develop and provide catalyst tools at an adequate scale was undertaken and it was estimated that an incentive program of $325,000 for the first year and $650,000 for each of the next two years for a total of 1.625 million dollars would provide a meaningful start which could inform, and be re-evaluated in conjunction with, the proposed Building Bylaw updates proposed for 2020.

Catalyst Tools for Low-Rise MURBs
The Plan proposes that the 2020 Rezoning Policy for Green Buildings require 4-6 story MURBs achieve Passive House performance. In order to enable this, significant catalyst tools that can be launched in 2017 are required.

Given the far greater diversity of requirements and existing programs that impact the majority of these buildings, additional research is required to assess the cost to deliver and provide effective catalyst tools for this sector. That said, these same requirements and programs introduce additional opportunities to create meaningful catalyst tools.

In addition to exploring expedited permitting and permit fee waivers, staff will research options for the provision of required parking and potential, synergies with the Rental 100 Program, the Rezoning Policy for Green Buildings, and the green building requirements for large developments sites.

Significant delays in launching a meaningful incentive program may necessitate a delay in introducing the rezoning requirement for these buildings to meet Passive House levels of performance.

Catalyst Tools for High-Rise MURBs
Given their scale and the smaller pool of developers and design professionals who typically get involved in these large scale projects, only a few high-rise MURBs per year striving to attain Passive House like levels of performance would have a meaningful impact on our understanding of what is possible and would begin to lower the incremental costs for key building elements. Similar options as described for low-rise MURB catalyst tools will be explored. In addition to these, opportunities to introduce a design-build competition where entries could be judged on GHG performance, cost effectiveness, and public appeal will also be explored.

For all these incentives, and in particular those for the MURBs, the City should engage and seek support from higher levels of government given the transformative nature that a successful incentive program would have not only for the building industry in Vancouver but across BC and could help inform similar changes in major urban centres across Canada and the US.

Capacity Building
In order to successfully achieve zero emission for the majority of new buildings by 2025, the capacity of the building industry will need to be rapidly increased. This means providing resources and training, encouraging knowledge-sharing and supporting peer-to-peer learning. Capacity building will also include strengthening the relationship between the City and the building industry, with an emphasis on single-family-home builders to ensure that they are engaged and well supported with training and resources.

Not only will an investment in developing industry capacity for zero emissions buildings result in increased local jobs in design, construction, and manufacturing, it

will increase business opportunities across North America as other jurisdiction adopt more energy efficient and lower emission building practices.

In developing this plan, staff conducted two workshops with industry stakeholders, held a meeting with leading architects and designers, and met with a number of the key stakeholders individually. Staff also researched leading capacity-building programs around the world, including multiple engagements with staff in Brussels and New York City. The result of this research and consultation is a set of actions in the Plan aimed at rapidly increasing the capacity of Vancouver's building industry to design and build zero emissions buildings. These actions include:

- Providing funding to designers to share technical case studies and host tours of near-zero emission buildings;
- Requiring energy performance audits to be done after near-zero emission buildings are operating;
- Producing resources, guides to address industry-identified knowledge gaps;
- Hosting panel, exhibits and other networking events;
- Supporting training (primarily delivered by partner organizations) to help the industry gain needed skills, particularly those that are unique to zero-emission buildings;
- Removing barriers identified by the industry, such as permitting challenges;
- Showcasing Vancouver's leading developers, designers and builders through events and awards; and
- Engaging the public through tours and communication materials highlighting the aesthetics and liveability of near-zero emission buildings.

In order to coordinate the delivery of these actions, it is recommended that a neutral, arms-length Zero Emission Building Centre of Excellence be established:

Zero Emission Building Centre of Excellence
The proposed Centre is to be neutral and arms-length as Vancouver will not be acting alone to facilitate the development of zero emission building expertise – numerous other public sector and industry association groups have acknowledged the need for and advantages of establishing such an entity. The Centre will serve as a neutral space where developers, designers and builders can convene to learn, network and identify concerns or barriers to high-performance buildings. In this way, the Centre will help streamline the City's permitting processes.

The proposed Centre of Excellence will partner with professional and industry associations to host training events, courses, panels, and exhibits. In addition, the Centre could administer mission-related programs on behalf of partner organizations, such as energy-efficiency incentive programs. Several leading cities have established similar knowledge-sharing hubs for green buildings (see "New York's Building Energy Exchange") and they've proven to be highly effective in supporting the local building industry.

The Zero Emission Building Centre for Excellence is anticipated to be a physical space, centrally located, with a small staff trained in architecture and building

science. Following best practices seen elsewhere, the centre is expected to be operated by an existing third-party organization with expertise in delivering training, education and communication materials and with a proven financial track record. This approach will ensure neutrality and a continued focus on the mission. Staff will be evaluating a number of potential host organizations in the coming months. Should there not be a suitable existing organization staff will consider other alternatives such as establishing a new arm's length non-profit.

Seed funding of $700,000 over the next three years is being requested to establish and begin operating the Centre, contingent upon receiving at least matching funds from external partners. A number of groups have expressed strong interest in partnering with the City, including BC Hydro, BC Construction Association, Wood Works BC, Simon Fraser Community Trust, other local governments, and the provincial government. While specific external funds have not yet been identified, the centre is expected to have impacts beyond the City and as such there are a number of potential funding sources, including but not limited to the Western Diversification Grant, Metro Vancouver Sustainability Grant, and Provincial Innovative Clean Energy funding.

Staff will report back to Council within six months with a detailed organization structure and funding strategy for the centre, including confirmed external funding sources.

Removing Barriers
Some existing City policies, regulations, bylaws, and guidelines make it challenging and more expensive to build to zero emission levels of performance. As the City and private leaders accelerate the development of zero emission buildings, the City will allocate dedicated staff to assess barriers and implement changes to minimize them. Ideally, adjusting how a policy is structured may enable its original public interest to be served while reducing the barrier to zero emission building. In more challenging instances, the benefits of reducing barriers to zero emissions buildings will need to be balanced against other public interests that a policy might be serving.

In addition, given the new, highly efficient approaches that designers and builders are already beginning to pursue, it is also critical that staff are provided with training and that internal processes are adjusted to ensure public safety is maintained while avoiding unnecessary delays in permitting for these buildings.

Implications/Related Issues/Risk (if applicable)

Financial *

This report recommends a total of $1,625,000 be allocated over three years ($325,000 in 2017 from the Climate Action Rebate Incentive Program Reserve, $650,000 in 2018 and $650,000 in 2019 from a funding source to be determined and reported back to Council) to develop and provide tools to catalyze private sector leadership in demonstrating effective approaches to near zero emission detached and row housing.

In addition, staff will explore the development of similar catalyst tools multi-unit residential and commercial buildings and will report back to Council with specific resource requests and program recommendations in 2017.

This report also recommends approval in-principle for $700,000, contingent upon securing matching funding, to be allocated over three years with $300,000 in 2017, $200,000 in 2018 and $200,000 in 2019 from the City's 2017 Innovation Fund (subject to Council approval of the 2017 Innovation Fund budget) towards establishing an Zero Emission Building Centre of Excellence with the mission to facilitate the compilation and dissemination of the knowledge and skills required to design, permit, build and operate zero emissions buildings.

The City's contribution of $700,000 towards a Zero Emission Building Centre of Excellence is expected to leverage at least $700,000 in direct matching funds plus over $100,000/year of in-kind contributions from a wide range of potential partners including, but not limited to: other BC local governments; the Provincial Government; Metro Vancouver; the Federal Government; energy utilities; and charitable foundations with strong commitments to climate protection.

Staff will report back with the sources of matching funding and recommendations for establishment of the Centre of Excellence in early 2017.

Additional financial implications such as those potentially required for new City-led buildings to demonstrate zero emissions as well as to develop and provide tools to catalyze early industry leaders to build zero emission multi-unit residential buildings to will be included in separate Council reports as additional research and consultation are completed.

CONCLUSION *

Meeting the City's 2050 target to use only renewable energy will require the majority of new buildings be designed and built to achieve zero emissions by 2025 and all new buildings to achieve this target by 2030. Meeting these aggressive targets and timelines will require a restructuring of the City's policies and tools as well as leadership by the City and industry in demonstrating effective approaches for achieving this goal. It will also require a collaborative approach amongst many stakeholders to share knowledge, remove barriers, and ensure that the required skills are developed and widely available in BC.

This collaborative effort to transform how new buildings are designed and built will not only reduce their GHG emissions but will also make them healthier and more comfortable for their occupants. In addition, this innovation in the building industry will make buildings more resilient to changes in weather, climate and energy prices while providing significant opportunities for local professionals, trades, and industries.

* * * * *

DEPARTMENTAL APPROVAL AND REPORT CONCURRENCES

General Mgr.:

Date:

This report has been prepared in consultation with the departments listed to the right, and they concur with its contents.

Report Date: July 5, 2016

Author: Sean Pander

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Concurring Departments:

Budgets:

_____ _____
Name (please print) Signature

Real Estate and Facilities Management:

_____ _____
Name (please print) Signature

Planning and Development Services:

_____ _____
Name (please print) Signature

Engineering Services:

_____ _____
Name (please print) Signature

Double-click the link below and Open to go to a copy of the Zero Emissions Building Plan in VanDocs.

RTS 11195 - Zero Emissions Building Plan - Appendix A.tr5

VanDocs Details: Record number DOC/2016/199950

Organizations Involved in the Development of the Zero Emissions Building Plan

Energy Utilities

- BC Hydro (cofounded research and consultation)
- FortisBC
- Creative Energy
- River District Energy

Industry and Professional Associations

- Urban Development Institute BC
- Greater Vancouver Homebuilders Association
- BC Construction Association
- Architectural Institute of BC
- Association of Professional Engineers and Geoscientists of BC
- International Building Performance Simulation Association – BC Chapter
- Fenestration Association of BC
- RealPAC

Public Sector

- BC Ministry Responsible for Housing, Building and Safety Standards Branch
- BC Ministry of Energy and Mines, Electricity and Alternative Energy Division
- Cities of Richmond, New Westminster, Surrey, Victoria, Burnaby, North Vancouver, New York, Seattle, and Brussels
- Metro Vancouver
- BC Housing and the Homeowners Protection Office

Non-Governmental Associations

- Pembina Institute
- Canadian Passive House Institute
- Building Energy Exchange (New York)
- Wood Works BC
- Canadian Green Building Council
- Lighthouse Sustainable Building Centre

Academic Institutions

- UBC
- SFU Community Trust
- BCIT

Consultant Team

- RDH Engineering
- Integral
- BTY
- EnerSys
- Morrison Herchfield
- New Buildings Institute

Companies

- Recollective
- Perkins and Will Architecture
- Cornerstone Architecture
- Lanefab Design/Build
- Peak Construction
- Insightful Healthy Homes
- Lang Wilson Practice in Architectural Culture
- DLP Architecture
- Brantwood Consulting
- Numerous additional builders, window manufacturers, and building system supply companies