



## ADMINISTRATIVE REPORT

Report Date: June 10, 2014  
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Meeting Date: June 25, 2014

TO: Standing Committee on Planning, Transportation and Environment

FROM: Director, Sustainability Group, in consultation with the General Manager of Planning and Development

SUBJECT: Updates to Energy Requirements in Two Rezoning Policies

### **RECOMMENDATION**

- A. THAT Council approve revisions to the *General Policy for Higher Buildings*, generally as described in Appendix A.
- B. THAT Council approve revisions to the *Green Building Policy for Rezonings*, generally as described in Appendix B.

### **REPORT SUMMARY**

This report recommends revisions to the General Policy for Higher Buildings, and the Green Building Policy for Rezonings.

If these revisions are approved, the increase in energy efficiency requirements of the recently updated Vancouver Building By-Law (VBBL) will be reflected in corresponding updates to the General Policy Higher Buildings and the Green Building Policy for Rezonings. With these updates, Vancouver will remain in a leadership position in energy efficiency policy in North America while also building capacity for future updates to the Building By-Law on the path to carbon neutral new construction by 2020.

These updates will also improve the alignment between the green building policies and the neighbourhood energy objectives, by providing consistency in measurement of building performance independent of the choice to provide high efficiency natural gas boilers on-site or connect to a neighbourhood energy system that is obligated to become low carbon in the future.

This update is an important step to ensure consistency between the VBBL and the rezoning policies. Staff will continue to work with industry to further streamline the policies in the coming year in the context of the evolving landscape of low carbon neighbourhood energy systems and the forthcoming LEED Version 4. Future versions of

the policies will need to reflect an increased focus on carbon reduction and carbon intensity of new construction.

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

March 2005: Council endorsed the Community Climate Change Action Plan to reduce GHG emissions in the community to 6% below 1990 levels by 2012.

May 2007: Council adopted amendments to the Building By-law which included green building objectives put in place to facilitate the future development of the Green Building Strategy.

June 2008: Council approved the EcoDensity Charter and Initial Actions, including Action A-1, which required all rezoning to be LEED® Silver equivalent, and A-2 that required a detailed analysis of renewable and neighbourhood energy options—a precursor to the Rezoning Policy for Sustainable Large Developments.

July 2010: Council amended what was now known as the Green Building Policy for Rezonings to require LEED Gold equivalent.

January 2011: Council adopted the Greenest City 2020 targets, including that “all new construction to be carbon neutral in operations”.

February 2011: Council adopted the General Policy for Higher Buildings, which marks the prominence of the Central Business District in the downtown skyline, while also requiring demonstrated advances in sustainable design and energy consumption.

July 2011: Council adopted the Greenest City 2020 Action Plan, including Goal 3, to “Lead the World in Green Building Design and Construction”.

February 2011: Council approved a text amendment to the False Creek North Official Development Plan specifying new requirements for connection to a low-carbon neighbourhood energy system for the remaining development sites in this area.

October 2012: Council approved the Vancouver Neighbourhood Energy Strategy.

Sept 2013: Council approved updates to the Vancouver Building By-Law which included improved energy performance for all new construction.

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

The City Manager and the General Manager of Planning and Development RECOMMENDS approval of recommendations A and B.

## ***REPORT***

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

Vancouver has a four-tiered green building strategy that requires increased levels of performance based on the scale of the development:

Tier 1: The Vancouver Building By-Law includes a number of energy-related requirements positioning all new construction in Vancouver to have lower energy use than the Provincial or national energy code for buildings.

Tier 2: The Green Building Policy for Rezonings, which applies to approximately 50% of the total square footage of new development, requires LEED Gold Certification with a specific requirement for LEED energy points to reduce energy use and carbon intensity.

Tier 3: The Rezoning Policy for Sustainable Large Developments increases the sustainability requirements for large developments by requiring additional actions in eight specific categories including an assessment of the viability of renewable and neighbourhood energy.

Tier 4: The General Policy for Higher Buildings, which aspires to the highest level of performance, requires both architectural excellence and superior environmental design.

In the last decade, this tiered policy structure has been used to:

- encourage innovation
- develop industry capacity for energy efficiency and renewable energy
- support requirements for successful low-carbon neighbourhood energy
- support the design of buildings that could meet energy requirements of future building codes

All four tiers support a stepwise approach toward reaching carbon neutral new construction by 2020—where the energy demand of the building stock needs to decrease by an average of 5% per year to reach a 50% reduction below 2010 levels by 2020. In addition, the decarbonisation of the energy supply is being addressed in high growth areas through the District Energy Strategy.

The table below highlights the relative performance of all tiers, with updates to the two tiers proposed in this report:

- Tier 2 - Green Building Policy for Rezonings and
- Tier 4 - General Policy for Higher Buildings

Tier	Policy	CURRENT	PROPOSED
1	Vancouver Building By-Law	ASHRAE 90.1 2010 VBBL update	
2	Green Building Policy for Rezoning	22% lower energy cost* than ASHRAE 90.1 2007	<b>22% lower energy cost than ASHRAE 90.1 2010</b>
3	Rezoning Policy for Sustainable Large Developments	Tier 2 requirement as above plus renewable energy study	Tier 2 requirement as above plus Renewable energy study
4	General Policy for Higher Buildings	40%-50% lower energy use* than ASHRAE 90.1 2007	<b>45% lower energy use than ASHRAE 90.1 2010</b>

\*The current policies refer to both “*lower energy cost*” (Tier 2 and 3) and “*lower energy use*” (Tier 4). Although the intent is to impact energy use, staff are not recommending a change from referencing energy cost *at this time* as further consultation is required to determine the appropriate energy use performance requirement that would be equivalent to 22% lower energy cost. (Initial estimates indicate that 25% - 30% lower energy use is equivalent to 22% lower energy cost in BC). Staff intend to remedy this inconsistency in future policy updates.

**Recommended Policy Changes**

General Policy for Higher Buildings

This policy responds to Council’s directive to: “create requirements for potential higher building sites to include the demonstration of green building design performance (in particular energy performance) that significantly improves local knowledge and results in green design beyond prevailing policy”. The energy performance requirements of this policy have led to applications with advanced environmental design far superior to standard construction.

Both the Vancouver Building By-Law and the Provincial building code were updated in 2013 to reference a more current energy standard (ASHRAE 90.1 2010). Therefore, staff recommend updating the General Policy for Higher Buildings to reference performance relative to the current Vancouver Building By-Law, as follows:

Current Policy:

- a 40-50% reduction in energy use from the 2008 VBBL (based on ASHRAE 90.1 2007)

Proposed Policy:

- a 45% reduction in energy use from the 2013 VBBL (based on ASHRAE 90.1 2010)

The proposed update to the General Policy for Higher Buildings would exclude any applications that have already been submitted, and would only apply to the 10-12 remaining eligible sites that have not yet received applications.

### Green Building Policy for Rezoning

For development proposals put forward through rezoning applications, applicants are required to design and construct buildings that can be certified as LEED Gold as defined by the Canada Green Building Council (CaGBC) and achieve 6 LEED energy points, which is equivalent to a 22% reduction in energy cost as compared to the 2008 VBBL. This policy applies to approximately 50% of the total square footage of new development in the City of Vancouver, and has proven to be an effective way to test and prepare industry to comply with future, more stringent, versions of the Vancouver Building By-Law.

Since the introduction of this policy, there has been a 46% increase in the number of LEED Gold Projects in Vancouver. Given the recent update to the Vancouver Building By-Law, staff recommend updating the policy as follows:

Current:

LEED Gold Certification + 6 energy points: which is equivalent to  
22% lower energy cost than the 2008 VBBL (Based on ASHRAE 90.1 2007)

Proposed:

LEED Gold Certification +  
22% lower energy cost than the 2013 VBBL (Based on ASHRAE 90.1 2010)

The update from “current” to “proposed” is similar in step to the recent update of the VBBL in adopting ASHRAE 90.1 2010 – approximately 5%-7% improvement in energy performance for residential and 10%-15% for other building types. However, the shift from specifically referencing six LEED energy points (in the current policy) to referencing the corresponding energy cost savings (in the proposed policy) has several benefits:

- The current reference to LEED energy points has generated inconsistency in industry given that energy points vary between an increasing number of LEED designations (LEED Version 1, LEED version 2.2, LEED NC 2009, LEED for Mid-Rise, LEED for Healthcare, LEED for Core and Shell, and LEED version 4). Shifting to a specific performance reference relative to ASHARE 90.1 2010 allows for consistency and comparability among all types of buildings regardless of the LEED designation.
- It enables a better alignment between the City’s green building policies and its district energy strategy: LEED does not recognize the future environmental benefits of conventional neighbourhood energy systems unless these systems will be converted to a low-carbon source within two years. Staff will develop a guide entitled “City of Vancouver Neighbourhood Energy Interpretation Guide for Rezoning” that will provide a clear methodology on how building designs can demonstrate “equivalent building envelope performance” while ensuring the rezoning policies are not imposing a higher building envelope performance requirement on buildings that connect, in the near term, to a lower efficiency neighbourhood energy system.
- Referencing a specific reduction in energy cost will not compromise a project’s ability to meet LEED Gold. A project only needs to achieve 63 points out of a possible 110 points, so there are a large number of alternative paths to reach LEED Gold.

### Other LEED Considerations

The current Rezoning policy recognises that in some cases (such as townhouse developments) LEED Gold is not as well suited. The Policy allows for an equivalent standard such as Built Green Gold—provided it achieves an EnerGuide score of 82 or higher. However, given that the new VBBL for a typical home will reach an EnerGuide score of 81, staff recommend that developments choosing to certify under Built Green Gold must obtain a minimum score of EnerGuide 84.

### Demonstration of Leadership

The City of Toronto introduced new energy standards with their building code effective January 1, 2014, exceeding not only the 2014 VBBL in performance, but also our Green Building Policy for Rezoning in terms of energy performance. The table below provides a comparison between Vancouver’s proposed Green Building Policy for Rezoning and Toronto’s building code noting both are leading in North America:

	Large Buildings	1&2 Family
Vancouver’s Proposed Rezoning Policy	22% lower energy cost* than ASHRAE 90.1 2010	EnerGuide 84
Toronto’s 2014 Building Code	20% lower energy use than ASHRAE 90.1 2010	EnerGuide 83

*\*Note: The Vancouver policy references 22% low energy “cost”, however, the actual energy “use” savings will be higher—in the range of 25%-30% energy use savings.*

### Impact on Construction Costs

Given that the required performance improvement of 22% is consistent between the current rezoning policy (referencing ASHRAE 90.1 2007) and the proposed rezoning policy (referencing ASHRAE 90.1 2010), the cost impact is derived from the differences between the two ASHRAE standards. There are no substantive differences between the building envelope or the boiler efficiency requirements in the two standards, so the impact is primarily related to improvements in lighting and mechanical equipment—to which there has been significant advances in the last 4 years. Staff anticipate the construction cost premium will be similar in magnitude to the cost premium of the recent update to the VBBL to reference ASHRAE 90.1 2010—which was estimated in a joint UDI-City 2012 costing study to be in the range of 0.02%-0.04% for the six most common building types.

The City of Toronto recently adopted an energy performance requirement of 20% lower energy use than the ASHRAE 90.1 2010—a target similar to the proposed update to Vancouver’s proposed rezoning policy. Toronto undertook a study which showed a positive net present value for a 20% reduction in energy use over ASHRAE 90.1 2010 for a long list of building archetypes—indicating that any minor incremental construction costs are more than offset by energy cost savings and, therefore, improve overall affordability.

### Industry Consultation

Staff conducted consultation with industry including several workshops with the Urban Development Institute (UDI) on the proposed changes. The eventual policy language

was shaped by that consultation, and industry is supportive given the city's path to carbon neutral. UDI recognizes that the proposed changes will have only modest cost impacts and eliminate the unfair treatment of buildings in future low-carbon district energy areas. At the same time, they have pointed out that there is room for further improvement. UDI has agreed to work with staff to identify opportunities to incorporate additional improvements in future revisions to these policies.

### ***Implications/Related Issues/Risk (if applicable)***

#### ***Financial***

Based on the joint UDI-City 2012 costing study, the construction cost premium arising from the proposed changes is estimated to be 0.02% - 0.04% for most building types. This small increase should have a nominal impact on project viability and on potential community amenity contributions.

#### ***Human Resources/Labour Relations***

There are no impacts on staff related to the change in policy.

#### ***Environmental***

The update to these two policies will result in a 5%-7% energy performance improvement for residential developments and 10%-15% improvement for other building types.

#### ***Legal***

There are no anticipated Legal implications.

### ***CONCLUSION***

This report recommends revisions to two green building-related rezoning policies to bring them up to date with the recently adopted VBBL. It also keeps the policies in alignment with the path to carbon neutral new construction by 2020.

These updated policies will play an important role in building capacity by demonstrating the viability of future building codes and encouraging innovation. More importantly, the update to reference ASHRAE rather than LEED energy points, will allow the City of Vancouver to recognise and encourage connection to neighbourhood energy systems that are obligated to become low carbon in the future.

## APPENDIX A:



# City of Vancouver

## *Land Use and Development Policies and Guidelines*

Planning and Development Services, 453 W. 12th Ave Vancouver, BC V5Y 1V4 F 604.873.7344 fax 604.873.7060

[planning@vancouver.ca](mailto:planning@vancouver.ca)

# GENERAL POLICY FOR HIGHER BUILDINGS

*Adopted by City Council on May 6, 1997*

*Amended February 1, 2011, November 20, 2013 [and June 25, 2014](#)*

### **Application and Intent**

These guidelines are to be used in conjunction with all applicable Official Development Plans for buildings seeking approval for significant additional height above current zoning and policy, or for those entering into the Queen Elizabeth View Corridor. The intent of these guidelines is to mark the prominence of the Central Business District in our downtown skyline, while also providing opportunities for strategically placed height at two prominent bridge “gateways” to mark the entry into downtown from the Burrard and Granville Bridges.

### **General Policy for Higher Buildings**

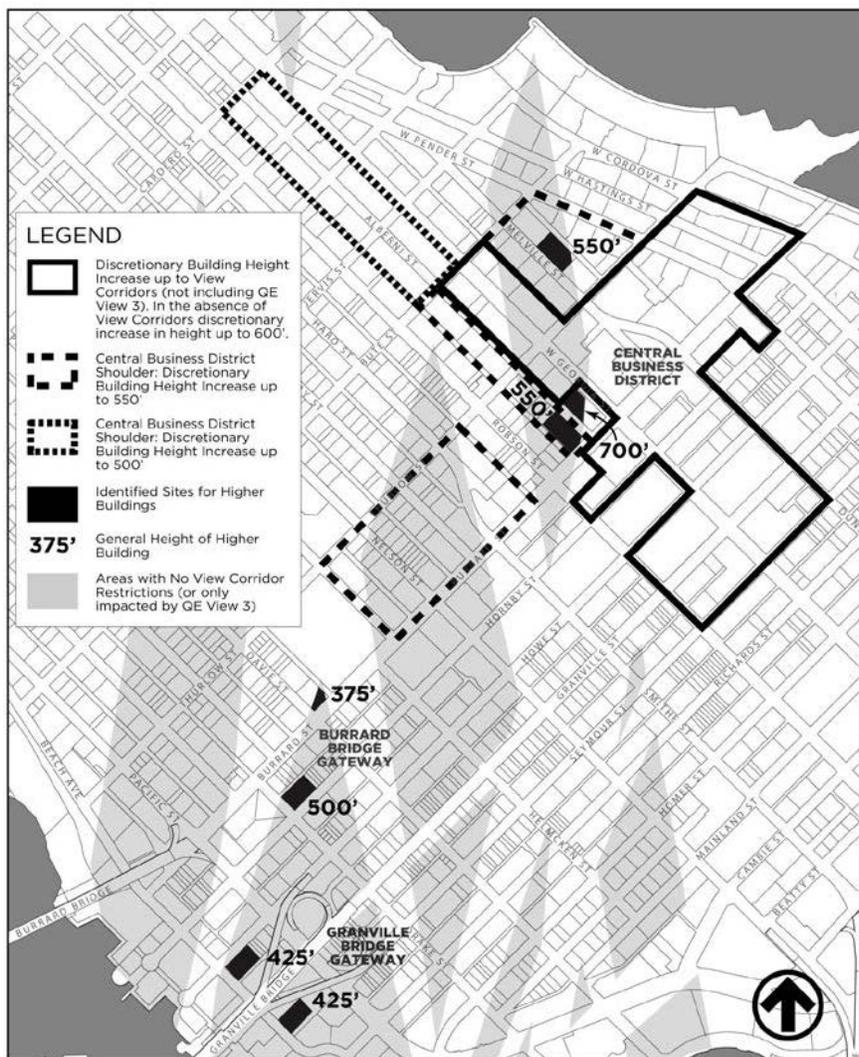
The following should be considered when reviewing proposals for Higher Buildings (i.e. those which significantly exceed current height limits and/or enter into the Queen Elizabeth View Corridor):

- Higher Buildings will only be permitted within the areas identified below in Figure 1;
- The tallest buildings ( i.e. ~ 550-700’ ) should be located within the Central Business District with the tallest buildings (i.e. ~ 700’) located on one of Vancouver’s three primary streets: Georgia, Burrard and Granville;
- Secondary heights may be considered for buildings at the Granville and Burrard Bridgeheads with a single prominent tower (~ 500’) in axial alignment with the Burrard Bridge, and two towers framing the Granville Bridge Gateway (~ 425’);
- All other application for additional height at these two bridgehead locations should be analyzed to ensure that the experiential intent of these gateways is maintained;
- All Higher Buildings must establish a significant and recognizable new benchmark for architectural creativity and excellence, while making a significant contribution to the beauty and visual power of the city’s skyline;
- Higher buildings should demonstrate leadership and advances in sustainable design and energy consumption and as a result must be subjected, not only to current review requirements, but also to review by a Council appointed panel including respected community leaders, notable local design experts, and leaders in sustainable design;
  - All Higher Buildings must significantly demonstrate and advance the city’s objective for carbon neutrality for new buildings with a stated objective to achieve a **45%** reduction in energy consumption as compared to the **2014 Vancouver Building By-Law**; however, if the development is **connecting to a neighbourhood energy system approved by the City that has a defined path to a low carbon outcome, in order to ensure consistency between minimum performance requirements for building envelopes in DE versus non-DE areas, building designs must comply with the methodology described in the “City of Vancouver Neighbourhood Energy Interpretation Guide for Rezoning”**.
- An enhanced review for buildings with a proposed height of 550’ or more as well as for the Granville Bridge Gateway buildings (~ 425’) and the land mark building in axial alignment with the Burrard Bridge (~ 500’) will include two international design experts joining the panel in addition to the two local experts. There will be special public engagement, such as a public forum or guest lecture, should be held featuring the guest panel members and experts to expand public discussion and education around architectural excellence and green design in Vancouver.

In addition, all Higher Buildings should be considered with careful effort to provide a lasting and meaningful public legacy to Vancouver and should include careful consideration of the following:

- The buildings should achieve community benefits (i.e. as a recipient site for density transfers; retention of important heritage components; provision of significant cultural or social facilities; or provision of low cost housing);
- The development should not involve the demolition of a Class ‘A’ heritage building;
- The building should include activities and uses of community significance such as public observation decks or other public amenity;
- The development should provide on-site open space that represents a significant contribution to the downtown network of green and plaza space;
- The building should not contribute to adverse microclimate effects;
- Careful consideration should be given to minimize adverse shadowing and view impacts on public realm including key streets, parks and plazas, as well as neighbouring buildings;
- Signage on the buildings should not be located at a height which exceeds the building’s current height limit.

**Figure 1: Areas and sites where Higher Buildings are permitted.**



## City of Vancouver Amended “Green” Rezoning Policy: Green Building Policy for Rezonings

THAT it be Council Policy effective ~~January 1st 2011~~ June 25, 2014 that all rezonings for buildings meet the minimum requirements to participate in the Leadership in Energy and Environmental Design for New Construction program, and commit to achieving a minimum 63 points (LEED Gold), ~~with a minimum of 6 optimize energy performance points~~, with 1 water efficiency point, and 1 storm water point and a 22% reduction in energy cost as compared to ASHRAE 90.1 2010.

Buildings will be required to register in the LEED program and demonstrate to the City at all three levels of permitting that the project is on track to achieve 63 points. Upon receiving occupancy permit, projects are further required to submit proof of application for LEED certification and may be required to send a copy of all certification materials to the City if requested. See Appendix C for further clarification on how compliance will be managed and this program is proposed to be implemented. ~~Rezoning projects being enacted between July 30th 2010 and January 1st 2011 are exempted from the requirement to submit proof of application for certification.~~

### Other Green Building Rating Systems:

Buildings that are either not eligible or extremely ill-suited to participate in the LEED for new construction program due to form of development shall achieve a minimum of Built Green Gold, or LEED for Homes Gold, and a minimum score of EnerGuide ~~82-84~~.

Applicants may also choose to use another green building rating system or approach if equivalent or greater performance and rigor can be demonstrated. The application of this policy shall favor approaches that use passive design practices to reduce energy demand before the application of green energy technologies, as outlined in the City of Vancouver Passive Design Toolkits. Programs that are widely proven, have broad credibility, and are third party verified are preferred. For example, Green Globes would not be viewed as equivalent in performance to LEED. By comparison, systems such as Passiv Haus, BREEAM, and Living Buildings would be considered as preferred alternatives.

### Connection to Neighbourhood Energy Systems

If the development is connecting to a neighbourhood energy system that is legally obligated to convert to low carbon energy sources in the future based on clearly defined conditions, in order to ensure consistency between minimum performance requirements for building envelopes in DE versus non-DE areas, building designs must comply with the methodology described in the “City of Vancouver Neighbourhood Energy Interpretation Guide for Rezonings”.

### Heritage Buildings:

This change in policy does not apply to Heritage Revitalization Agreements (HRAs) where density is being increased. As with rezonings, HRAs often have both heritage aspects and new development aspects. For heritage components in either HRAs or rezonings, the increased LEED requirement will not directly apply, however reasonable design efforts shall be made to improve green performance where appropriate while respecting heritage aspirations and promoting heritage retention.

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## Green Rezoning Process

Key Desired Outcomes of the Green Building Policy for Rezonings:

- Increase the number of third-party certified Green Buildings in Vancouver.
- Transform the market by increasing consumer choice and awareness for Green Buildings.
- Develop a process that is workable for industry participants that wish to rezone their property.
- Nurture an already rapidly growing Green Building industry in Vancouver.

Proposed Program Design Principles:

- Develop a process that is equitable, and able to be applied evenly.
- Deliver clear expectations to industry on what is required to rezone a property in Vancouver
- Create a Green Building Policy for Rezonings context and process that allows for the development community to still achieve their financing, insurance, and warranty requirements.
- Achieve a process that does not add significant administrative burden to the City's rezoning or development permit process.
- Provide security to the City that the goals, objectives and desired results of the Green Building Policy for Rezonings are being achieved.

Green Building Policy for Rezonings Requirements:

When an application for rezoning is received by rezoning staff, new standard conditions will be added to the rezoning report. The objective of these standard conditions will be as follows, noting that the actual language may change:

- A. The applicant commits to building, designing and constructing a building that enables them to achieve a LEED Gold standard as defined by the CaGBC (63 points). The applicant will demonstrate where possible to the City of Vancouver that their project is on a pathway to compliance with the above stated standard at all three levels of permitting (Development Permit (DE), Building Permit, (BU) Occupancy (OC)).
- B. The applicant will register their project for LEED certification with the CaGBC and demonstrate this as part of the Development Permit application.
- C. The applicant will submit all necessary documents and fees in order to certify their project with the CaGBC within ~~six~~ twelve months of achieving occupancy. They will also supply the City of Vancouver with proof of submission and if requested separate copies of all application documents.
- D. The development industry has outlined concerns with warrantees and potential loss of presales resulting from the implementation of a LEED Gold mandate. As a result we are proposing a strategy for implementing Council's goals of achieving LEED Gold certification in a way that does not jeopardize the viability of the developments, nonetheless, it is our expectation that all projects will achieve LEED Gold certification. We plan to revisit this strategy with a report to Council after the first five projects are completed to reassess whether we are achieving Council's goals.

With reference to item 'A' we propose that the submissions from the applicant to demonstrate a pathway of compliance will include, but may not be limited to at:

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(DE) A 'Sustainable Design Strategy' submitted at Development Permit that articulates which LEED Credits the applicant will be pursuing and how their building application, as submitted, incorporates features or technologies that will help achieve these credits. References to these strategies will be incorporated into the drawings submissions for Development and Building Permits where possible, and proof of registration with the CaGBC.

(BU) An updated sustainable design strategy that reflects the refinement of the sustainable design approach and interventions outlined at the DP stage. Full energy modeling demonstrating energy savings requirements over and above the energy efficiency requirements of the Vancouver Building By-law will be submitted at this time.

(OC) A LEED Gold compliance report with a credit by credit outline of how each of the targeted credits was addressed in construction and applicant's opinion on how successful they believe they will be in achieving each of the targeted credits.