

**Supports Item No. 3
CF&S Committee Agenda
May 16, 2013**



POLICY REPORT

Report Date: May 7, 2013
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Meeting Date: May 16, 2013

TO: Standing Committee on City Finance and Services

FROM: General Manager, Planning and Development Services in consultation with the General Manager, Community Services; the General Manager, Engineering Services; the General Manager, Park Board and the Director of the Sustainability Group.

SUBJECT: Rezoning Policy for Sustainable Large Developments

RECOMMENDATION

THAT Council adopt a new name for the Rezoning Policy for Greener Larger Sites (“Rezoning Policy for Sustainable Large Developments”) and updates and revisions to the policy, including that it would apply to rezoning applications that propose more than 45,000 m² (484,375 sq. ft.) of new development floor area.

REPORT SUMMARY

This report recommends revisions to - and a new name for -the City’s Rezoning Policy for Greener Larger Sites. The proposed revisions, if adopted, will refine the definition of a large site to include a definition based on floor area, and will update the policy with information and implementation experience gained in the last three years. As well, the newly named “Rezoning Policy for Sustainable Large Developments” will better align with other City goals such as those expressed in the Greenest City Action Plan (GCAP).

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 environmental protection objectives. Although no new green building requirements were added to the By-law at that time, environmental protection objectives were put into place to facilitate the future development of the City's Green Building Strategy.

June 2008:

Council approved the EcoDensity/EcoCity revised Charter and Initial Actions. Revised Action A-2 (May 2008) - the Rezoning Policy for Greener Larger Sites - established policies to achieve higher sustainability standards as an essential component in the rezoning of large development sites.

October 2009:

Council received the Greenest City Action Team 2020 report and asked for a report back on practical implementation steps to meet the established targets.

January 2011:

Council adopted the various Greenest City 2020 targets.

July 2011:

Council adopted the Greenest City 2020 Action Plan.

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.

October 2012:

Council approved the Vancouver Neighbourhood Energy Strategy.

October 2012:

Council received the report of the Mayor's Task Force on Housing Affordability. The Task Force emphasized the importance of providing certainty for the development community, and recommended that the City develop a more creative inclusionary housing approach for major projects. Council directed staff to implement a revised and clarified 20% policy, consistent with the Sustainable Large Sites Rezoning Policy, which was developed to provide more clarity to applicants regarding rezonings of large sites.

January 2013:

Council adopted the Vancouver Food Strategy.

CITY MANAGER'S/GENERAL MANAGER'S COMMENTS

The City Manager RECOMMENDS approval of the above Recommendation.

REPORT

Background/Context

In 2008, Council approved the the Rezoning Policy for Greener Larger Sites (often referred to as the “large sites policy” or “A2”), which established measures to achieve higher sustainability standards as a condition of the rezoning of large development sites.

The policy was developed because previous large site redevelopment in the city had shown that opportunities to achieve synergies and positive environmental outcomes increased in viability as projects increased in scale. More specifically, the greatest opportunities were found in the realms of transportation, waste and rainwater management, urban food production and renewable energy planning. These outcomes could be achieved at significantly lower costs when developing what could be several parcels on contiguous land, under consolidated ownership. Rezoning was identified as an appropriate tool to leverage these opportunities.

The large sites policy mandated that for rezonings involving a site area of two acres or more, the City would require plans or studies in the following six areas: District Energy, Sustainable Site Design, Green Mobility, Rainwater Management, Solid Waste Diversion and Sustainable Housing. To guide applicants and serve as terms of reference for each required component of the policy, an administrative bulletin was also developed.

In 2011, Council approved the Greenest City goals, targets and action plan. There are 10 Greenest City goals, each with associated specific targets to achieve by 2020. (For a review of the goals and targets, please see: vancouver.ca/green-vancouver/greenest-city-2020-action-plan.aspx)

In 2012, after approximately 3 years of use, opportunities to improve the large sites policy as well as to clarify its supporting bulletin were identified by staff and applicants. This report integrates that feedback, and also aligns the policy with current Council-adopted goals and targets.

Strategic Analysis

Revisions to the large sites rezoning policy, that are recommended for approval by Council, consist of refining the definition of a large site. While 2 acres is still a valid reference point, it became clear that a definition based on floor area was also necessary.

For instance, the City received a few applications for very large projects on sites that were not large enough to trigger the 2 acre large site policy, even though the scale of development lent itself well to consideration under this policy. One such case is the Downtown Toyota (1290 Burrard St) site: the City is currently reviewing an application for this project that involves a 1.58 acre site, but proposes over 800,000 sq. ft. of development in three towers. This scale of development illustrates that a more appropriate term and measure for the large sites policy is large *development*.

The revised policy captures the shift from large *site* to large *development* and states that 45,000 m² (484,375 sq. ft.) or more of new development floor area and/or a site size of 8,000 m² (1.98 acres) or more are the criteria for a development site to be classified as a large development and trigger the policy.

As well, criteria have been developed to deal with applications that trigger the policy but are not good candidates to meet its intent. For example, Jericho Tennis Club applied for an amendment to its CD-1 By-law for a minor expansion and this triggered the policy because the subject site exceeded two acres in area. The revised policy would address cases like this by stating that projects may be excluded from the requirements of this policy if they are limited in scope, such as minor text amendments to the existing zoning of large developments, or if less than 4,700 m² (50,590 sq. ft.) of new development floor area is proposed for a large site.

In sum, the proposed revised policy (which can be found in Appendix A):

- is triggered by projects with:
 - 45,000 m² (484,375 sq. ft.) or more of new development floor area, and/or
 - a site size of 8,000 m² (1.98 acres) or more
- includes an option for projects to be excluded, if applicable

It is proposed that that the recommended policy changes, if adopted by Council, would not apply to applications in process as of the date of adoption.

Staff recommend that the content of the large developments policy be reviewed again in 2016, with a report back to Council on potential policy updates that time.

If the revised policy is adopted by Council, staff also propose updating the administrative bulletin associated with this policy in order to better reflect current Council policies, goals and targets, and to incorporate staff and the design community's better understanding of sustainability and housing issues. A draft revised bulletin has been prepared and is attached for reference in Appendix B (along with a summary of changes made to it).

Implications/Related Issues/Risk (if applicable)

Financial

Because this report formalizes and clarifies a policy already in place, staff do not anticipate any material financial impact on the development community. It is recognized that the change in parameters in this policy may require some applicants with large sites to perform extra analyses they did not previously have to do, while other applicants may experience savings given the new ability to exempt developments that are smaller in scale.

Staff recommend reviewing the parameters on an annual basis to monitor any significant impact.

Environmental

This policy has environmental implications in that it supports GCAP goals and targets and more sustainable development practices.

More specifically, the subject areas of the Rezoning Policy for Sustainable Large Developments support the following noted GCAP goals and targets (in italics):

Sustainable Site Design	supports GCAP <i>Green Buildings</i> goals/targets
Access to Nature	supports <i>Access to Nature</i> goals/targets
Sustainable Food Systems	supports <i>Local Food</i> goals/targets
Green Mobility	supports <i>Green Transportation, Climate Leadership, and Clean Air</i> goals/targets
Rainwater Management	supports <i>Clean Water</i> and <i>Access to Nature</i> goals/targets
Zero Waste Planning	supports <i>Zero Waste</i> goals/targets
Affordable Housing	supports the Mayor's Task Force on Affordable Housing
Low Carbon Energy Supply	supports <i>Green Buildings</i> and <i>Climate Leadership</i> goals/targets
*all of the Large Development Rezoning Policy subject areas have the potential to contribute to growing a <i>Green Economy</i> and helping Vancouver have a <i>Lighter Footprint</i>	

As well this work supports the two broad Metro Vancouver requirements that resulted from the Integrated Liquid Waste and Resource Management Plan: that all municipalities implement Integrated Stormwater Management Plans; and that Metro work with municipalities to establish region-wide baseline rainwater management.

CONCLUSION

The recommended revised policy has been informed by lessons learned in applying the Rezoning Policy for Greener Larger Sites ("large sites policy") over the last three years. It is proposed that the definition of a large site be refined to include large developments and thus target all of the developments that can best deliver on sustainability outcomes, and exclude the developments that are not appropriate. This would align the policy more closely with its original intent. Proposed revisions to the accompanying administrative bulletin incorporate Council-adopted GCAP goals and targets, and better define these with metrics and reference standards.

These changes will make the process of rezoning large developments more clear and user-friendly for both applicants and staff. Given that there are between 5 and 10 such applications per year, there are substantive positive impacts that will result from integrating sustainable development practices into Vancouver's large developments. The General Manager, Planning and Development, therefore recommends adoption of the attached revised policy.

* * * * *

Note: additions/revisions highlighted in yellow

ACTION A-2: Rezoning Policy for Greener Larger Sites

That it be Council Policy:

for all rezonings that involve 45,000 m² (484,375 sq. ft.) of new development floor area and/or a site size of 8,000 m² (1.98 acres) or more, in addition to the minimum requirements for Green Buildings Policy for Rezonings in EcoCity Action A-1, the City will require the following:

- A business case analysis will be required by a qualified green energy consultant at the discretion of the City to explore the viability of campus or district energy systems. If the business case is viable a system will be required.
- Overall site design shall consider and where appropriate incorporate layout and orientation approaches that reduce energy needs, facilitate passive energy solutions, incorporate urban agricultural opportunities, and replicate natural systems where feasible.
- A Sustainable Transportation Demand Management Strategy will be required that includes the requisite infrastructure where appropriate to prioritize sustainable transportation modes. This includes walking, cycling, public transit and goods movement over automobile use, and facilitates the incorporation of low carbon vehicles (e.g., electric vehicles).
- A sustainable rainwater management plan that utilizes sustainable strategies that allow for infiltration, retention, treatment and utilization of rainwater where applicable and appropriate on site.
- A solid waste diversion strategy that provides space, infrastructure and a plan to divert organics and recyclables from the waste stream, and where possible minimizes the vehicle trips required for collection.
- With sites accommodating housing, a range of unit types and tenures will be considered and negotiated to enhance the affordability that the market can provide, while providing, in accordance with Council policy, opportunities for the development of non-market housing.

The sustainable large development requirements will be evaluated and updated every five years to reflect market evolution, advancements in technology, and Council-adopted goals and targets.

Projects that are limited in scope may be excluded from the requirements of this policy, including:

- text amendments to the existing zoning for minor changes to large sites, or
- projects on large sites that contain less than 4700 m² (50,590 sq. ft.) of new development floor area

In such cases, a request for partial exemption from the policy requirements should be discussed with the rezoning planner prior to submission of the rezoning application. Alternatives can be considered and if warranted, some of the requirements may be waived by the Director of Planning.

The Director of Planning may exercise discretion regarding development floor area if projects are close to either the low (4700 m²) threshold or the high threshold (45,000 m²), or site size, if developments approach the 8,000 m² (1.98 acres) mark.

Consideration of these will be influenced by the site's size, context, proposed uses, opportunities and constraints. Not all site sizes and circumstances allow for the same considerations.

These above components are requirements, and are not compensated with bonus density. In addition, usual City policies and aspirations will apply for land use, urban design, and/or other public amenities and benefits, as appropriate for the specific site.

This policy applies to both residential and non-residential rezonings including commercial, industrial, and institutional.

Appropriate heights and densities are determined through the site-specific rezoning planning process, with public consultation, and options are related to the type of land use, size of site, urban design, neighbourhood context, etc.

Many of the planning policies across the City identify sites of this size (“special sites,” “large sites,” “CD-1s”), most of which do not have specifically prescribed densities or heights for these sites, but rather provide direction on land use or rezoning process and expect height and density to be determined at rezoning. However, in the Oakridge Langara Policy Statement and the Riley Park-South Cambie Vision, there are sites (4 sites and 4 sites, respectively) for which the Plan or Vision specifies site-specific heights or densities. (Sites are listed in table below). It is the intent of this policy that these heights/densities will be used as the base case option when an actual site planning/ rezoning process occurs. Additional options with increased densities and corresponding heights beyond the Plan or Vision may also be created and assessed through the rezoning review and planning process that accompanies rezonings of this scale. Considerable public engagement, including early dialogue with the community and the local vision implementation committee, prior to preparation of alternative options, will be included.

This policy will apply to all new rezoning applications initiated after [insert date], unless a policy statement for the site was approved by Council before that date as part of a rezoning policy program. Where such a policy statement has been approved, staff shall negotiate reasonable green performance improvements compatible with the policy statement in the rezoning stage that respect the intent of this policy. Where a policy process is underway, but there is as yet no approved policy statement, staff shall use discretion as to the extent to which conformity with the above shall be required, depending on the advancement of the process.

The greener site requirements will be re-evaluated, and updated at regular intervals to reflect market evolution, advancements in technology, and progressive City targets that move toward goals such as carbon neutral new construction.

Discussion

As a companion to Action A-1, this Action raises the green requirement for larger **developments** that come through the City rezoning process. The City has learned much about sustainability options in the context of its larger developments over generations, and the intent of this policy is to ensure that learning continues to build. Larger **developments** provide the opportunity for greater green performance requirements than smaller **developments**.

This Action is not intended to enable new site assembly nor favour additional rezonings beyond those sites that would be considered for rezoning under existing City policy. Most often **large developments** that are considered for rezoning are existing assembled, underdeveloped sites. They are usually old CD-1 zoned sites with older social housing projects, or former or existing institutions, or older shopping malls.

For the larger residential sites in the **large development** category, this Action complements and reinforces established City policies and practice to use the potential of large redevelopments to achieve comprehensive new communities that are sustainable environmentally, socially, economically, and culturally. The new communities created **within large developments** should provide a full range of services and amenities, be socially inclusive, and enrich the larger neighbourhoods of which they are part of as well as the city as a whole.

The new Policy above acknowledges two areas of the City where a local policy (Vision or Plan) identifies heights and/or densities for specific sites covered in this Action, and explains how these heights/densities will be used as a base case in developing options for these sites.

Sometimes there has been confusion about whether heights/densities in other sections of Community Visions would apply to these larger **developments**. Visions have two ways of discussing height and/or density:

EcoDensity Initial Actions

1. For Visions in areas where there are larger sites, there are Vision directions that speak specifically to these sites. Most Visions use these directions to provide general guidance on land use or rezoning process for these sites. As noted above, only one Vision and one Plan speaks to specific densities and or heights for these sites.
2. There are other sections of the Visions that provide directions on a variety of more typical or generic locations for height and density in the community, such as around parks or schools, around transit stations, near shopping areas, or generally throughout the community, etc. It has been the consistent interpretation that these general height or density directions do not apply to the larger sites identified separately in the Visions. Thus the new policy above has not had to address these circumstances.

The rezoning process for this size of site typically includes significant public engagement, and all rezonings must include formal Public Hearings and be individually approved by City Council.

Oakridge Langara Policy Statement and Riley Park/South Cambie Vision: Sites over 2 acres with specified site-specific densities and/or heights		
(These will be used in a site specific rezoning process as a base case scenario. Other sites over 2 acres are identified in other Visions, but do not have site-specific policy on density/height)		
SITE	SIZE	DENSITY/HEIGHT
Oakridge Langara Policy Statement (1995)		
former B.C. Transit site, W. 41 st & Oak	6.1 ha, 15 ac.	30 ft. for most of site; 40 ft. along 41st Ave. frontage; 50 ft. strip north of 41st Ave. frontage; mix of townhouses, low-rise and mid-rise to 1.0 FSR (gross)
Langara Gardens, 57th & Cambie	8.51 ha, 21 ac.	40 ft. for most of site; 30 ft. adjacent to single family areas; mix of townhouses & low-rise as infill to 1.0 FSR (gross)
Pearson Centre, 57th & Cambie,	8.1 ha, 20 ac.	40 ft. for most of site; 30 ft. adjacent to single family areas; mix of townhouses and low-rise to overall site-density 1.0 FSR (gross) with 0.6 FSR max residential (max 0.6 FSR institutional)
Dogwood Lodge, 57th & Cambie,	2.43 ha, 6 ac.	40 ft. for most of site; 30 ft. adjacent to single family areas; mix of townhouses and low-rise to overall site-density 1.0 FSR (gross) with 0.6 FSR max residential (max 0.6 FSR institutional)
Riley Park/South Cambie Vision (2005)		
RCMP Fairmont Complex, 37th & Heather	8.5 ha, 21 ac.	3 parcels, up to 4 storeys with lower heights for transition where appropriate
Balfour Block, 18th & Laurel	1 ha, 2.5 ac.	up to 3 storeys, approx. 35 ft.
King Edward Mall, Oak & King Edward	1.6 ha, 4 ac.	up to 4 storeys

Administrative Bulletin Update

The first administrative bulletin was published in 2009 and since that time, staff and the consultant community have formed a better understanding of sustainability drivers and outcomes. As a result, staff have worked to improve the content and utility of the bulletin, and make it a more useful terms of reference document for staff and applicants.

The aim in revising the bulletin was to make the intent more quantifiable and the requirements more explicit for each part of the Rezoning Policy for Sustainable Large Developments. Yet at the same time, staff have tried to retain flexibility and allow for the opportunity to innovate and develop site-specific solutions.

Staff from several branches of Engineering, the Park Board, Planning and Development Services, Social Policy and Sustainability have collaborated on this work and contributed to the resulting document. For reference, key changes to the bulletin are summarized in the following table, organized by each subject area of the policy. The draft Bulletin follows on page 2 of this Appendix.

Site Design	<ul style="list-style-type: none"> - now titled Sustainable Site Design - refined the deliverables - focussed more explicitly on site - provided more examples of solutions - tied this content more closely to passive design
	<ul style="list-style-type: none"> - expanded and separated content on Access to Nature - focused more on GC2020 Access to Nature targets - provided a more specific deliverable – now require an Access to Nature plan
	<ul style="list-style-type: none"> - expanded and separated content on Sustainable Food Systems - aligned more closely with current food policy - provided more specific deliverables – now must deliver at least three food assets
Transportation	<ul style="list-style-type: none"> - now titled Green Mobility - updated to better reflect current priorities - more mention of low carbon vehicles
Rainwater	<ul style="list-style-type: none"> - now titled Rainwater Management - introduced targets re: run-off quantity and quality - introduced landscape measures such as water-wise planting
Waste	<ul style="list-style-type: none"> - now titled Zero Waste Planning - redesigned to require a clear and articulated plan for both design and operations
Housing	<ul style="list-style-type: none"> - now titled Affordable Housing - revised to reflect current initiatives, policy and priorities
Energy	<ul style="list-style-type: none"> - now titled Low Carbon Energy Supply - added detail re: the feasibility screening study and process

REZONING POLICY FOR SUSTAINABLE LARGE DEVELOPMENTS

(FORMERLY: POLICIES FOR REZONING OF SUSTAINABLE LARGE SITES)

Authority - Director of Planning
Effective December 15, 2010
*Revised **Date?**, 2013*

GENERAL INFORMATION

In June 2008, Council approved the EcoDensity/EcoCity Revised Charter and Initial Actions. Revised Action A-2 established policies to achieve higher sustainability standards as an essential component in the rezoning of large development sites.

The policy was revisited in 2012 to refine the definition of a large site to include large developments, and better articulate the requirements associated with this policy and their association with the Greenest City 2020 goals and targets. The policy is now known as the Rezoning Policy for Sustainable Large Developments, and can be found online at: vancouver.ca

In essence, the policy states that:

in rezonings that:

- involve site size of 8,000 m² (1.98 acres) or more, or
- contain 45,000 m² (484,375 sq. ft.) or more of new development floor area

the City requires defined plans or studies on the following:

1. Sustainable Site Design
2. Access to Nature
3. Sustainable Food Systems
4. Green Mobility
5. Rainwater Management
6. Zero Waste Planning
7. Affordable Housing
8. Low Carbon Energy Supply

Projects that are limited in scope may be excluded from the requirements of this policy, including:

- text amendments to the existing zoning for minor changes to large sites, or
- projects that contain less than 4700 m² (50,590 sq ft) of new development

In such cases, a request for partial exemption from the policy requirements should be discussed with the rezoning planner prior to zoning application submission. Alternatives can be considered and if warranted, some of the requirements may be waived by the Director of Planning.

For rezoning sites of any size, there are minimum requirements for green buildings that must be met – for more information, please see EcoDensity/EcoCity Action A-1 and the “Green Rezoning Process” Planning By-law Administration Bulletin.

In the following sections, this bulletin discusses the large development requirements, and options to consider toward meeting them. But first, it outlines the typical process involved in rezoning a sustainable large development.

PROCESS

In general, the following process should be followed, noting the applicant’s responsibilities:

Rezoning Pre-Application

The applicant and Rezoning planner will meet to discuss the Rezoning Policy for Sustainable Large Developments requirements, and the applicant and planner will together determine any further meetings to be scheduled with City staff regarding the policy. At the initial meeting, the applicant will be provided with Rezoning Policy for Sustainable Large Developments submission requirements.

Rezoning Application

The applicant will submit the rezoning package, including the Rezoning Policy for Sustainable Large Developments requirement documents specified. The package should contain specific language on how the applicant is addressing the policy, and include any reports/appendices. City staff will review the application package to ensure that the intent of the Rezoning Policy for Sustainable Large Developments requirement has been met, and provide comments and conditions of approval.

Development Permit Pre-Application

The applicant and City staff team will meet to review the Rezoning Policy for Sustainable Large Developments requirements. The applicant will provide preliminary drawings and other materials that demonstrate how they intend to meet the requirements of the policy. References to these conditions will be incorporated into the drawings submissions for the development permit.

Development Permit Application

The applicant will submit the development permit application package, including any materials, drawings and documents related to the Rezoning Policy for Sustainable Large Developments that were unresolved from the rezoning and pre-app phases. The project coordinator will circulate the application to the appropriate City staff team members for review.

Building Permit Application

As per standard building permit submissions, the plans at this stage must be detailed and reflect the refinements made at the development permit stage. The project coordinator will circulate the application to the appropriate City staff team members for compliance. The applicant must fulfill any requirements to submit materials, drawings, and documents related to the Rezoning Policy for Sustainable Large Developments that remain unresolved from the rezoning and development permit stages.

Occupancy Permit Application

The applicant must fulfill any requirements to submit materials, drawings, and documents related to the Rezoning Policy for Sustainable Large Developments that were identified at previous stages.

There will be a periodical random review of projects for compliance post-occupancy.

1.0 SUSTAINABLE SITE DESIGN

1.1 Objective

The City will require a Sustainable Site Design Plan that considers, and where appropriate, provides a written strategy and plan illustrating the use of layout and orientation approaches that reduce energy needs and facilitate passive design solutions.

This will contribute to our Greenest City target on Green Buildings – to achieve carbon neutral new construction by 2020.

1.2 Intent

The intent of passive site design is to reduce energy needs by reducing reliance on mechanical systems for heating, cooling and lighting, and making increased use of solar power, the direction of the wind and other climatic effects for building needs. By leveraging the natural environment, sites and buildings that incorporate passive design can reduce utility bills, improve the comfort of the interior environment, and reduce GHG emissions.

1.3 Primary Deliverables

The primary deliverable is a Sustainable Site Design, composed of a study, site plan, and design rationale (written and illustrated statement) evaluating the opportunities for optimized layout, and site structure and orientation. The Sustainable Site Design should also demonstrate how it supports the Access to Nature and Sustainable Food System Plans noted in sections 2.0 and 3.0.

Applicants should be prepared to demonstrate how strategies for passive heating, cooling and ventilation have been applied to their proposal, and to identify the specific design elements employed in each development, including:

- siting and orientation
- tree retention
- landscape plan
- building shape and massing
- solar shading

Sustainable site design should be used in conjunction with passive building design, including the use of buffer spaces, thermal mass, insulation, and strategic window placement. Particular consideration should be given to building orientation and responding to the different conditions of each façade in the design. For example, the south façade can capture desirable solar gains during winter when the sun angle is low making it ideal for passive solar heating during winter, but it must be well-shaded during summer. For more information, see the City of Vancouver's two Passive Design Toolkits (2009).

The influence and benefits of the urban tree canopy on the micro-climate of neighbourhoods must be considered when designing the landscape. Healthy trees must be retained wherever possible.

The Sustainable Site Design Plan (study, site plan and design rationale) must be completed to the satisfaction of the Director of Planning.

2.0 ACCESS TO NATURE

2.1 Objective

The City will require an Access to Nature Plan that demonstrates how the project will contribute to improving access to nature.

This will contribute to our Access to Nature Greenest City targets – by 2020 ensure that every person lives within a 5 minute walk to a natural space, and to plant 150,000 additional trees between 2010 and 2020.

2.2 Intent

The intent of improving access to nature in the city is to improve the health and wellbeing of the community, to provide habitat, to enhance ecosystem function and services, to create public open spaces for people to gather and socialize, and to create opportunities for people to directly experience nature in the city.

2.3 Primary Deliverable

The primary deliverable is a detailed Access to Nature Plan demonstrating how the project will contribute to improving access to nature. The Plan should seamlessly integrate with the Sustainable Site Design and Sustainable Food System Plans (see sections 1.0 and 3.0), aiming to optimize opportunities for nature and food production together. The Plan should illustrate how the applicant intends to contribute to the City's Access to Nature goal and targets in the Greenest City 2020 Action Plan (2011)¹. These include but are not limited to:

- trees planted on the project site, with particular attention paid to opportunities for growing large trees
- habitat created on the site
- contributions toward planting trees in other public spaces (i.e. streets, parks)
- provision of public open space/park space on the project site
- contributions to new park space on other land (i.e. new park acquisition, conversion of streets to parks), particularly how these contributions might decrease the number of people not living within a 5 minute walk of a park²

Note: staff anticipate a metric will be added to this section when it is reviewed as part of the Urban Forest Strategy. Changes will be made by updating this administrative bulletin, as well as through information bulletins, related policy or reporting.

2.4 Plan Components

Components of the Access to Nature Plan may include:

- pre-development plan indicating existing trees, other planting, habitat, and public open space
- a landscape plan demonstrating plant locations and species
- an ecological study demonstrating contribution of the project to habitat provision
- detailed design of any public open space provided on the site
- number of trees anticipated to be planted on the site

¹ Access to Nature long-term goal: Vancouver residents enjoy incomparable access to green spaces, including the world's most spectacular urban forest. 2020 targets: 1 – Every person lives within a 5 minute walk of a park, beach, greenway, or other natural space; 2 – Plant 150,000 additional trees in the city.

² Review map showing areas of the city not within a 5 minute walk of a park, beach, or green space and the full Access to Nature plan starting on pg. 98 : <http://issuu.com/greencity/docs/greencity2020actionplan/1> Request most up to date map at rezoning pre-application stage.

- details about the specific contributions to improving access to nature in areas outside of the project site, including financial and other contributions to tree planting, street-to-park conversions, and park acquisition.

The Access to Nature Plan must demonstrate how opportunities to maximize access to nature on the project site have been realized, as well as how opportunities created through the development of this project will contribute to improving access to nature in the city of Vancouver. Because large development design can vary widely, both on- and off-site contributions to improving access to nature should be considered, and it is expected that there will be a reasonable balance between those two potential strategies.

The Access to Nature Plan must be completed to the satisfaction of the General Manager, Parks Board.

3.0 SUSTAINABLE FOOD SYSTEMS

3.1 Objective

The City will require a Sustainable Food System Plan that utilizes strategies that allow for an increase in overall community food system assets. Food assets are defined as resources, facilities, services or spaces that are available to residents of the city (either at the city-wide or neighbourhood scale) and which are used to support the city's food system.

This will contribute to our Greenest City target of supporting Local Food – by 2020, to increase city and neighbourhood food assets by a minimum of 50% over 2010 levels.

3.2 Intent

The intent of creating a sustainable food system is to improve the resilience of Vancouver's food system in accordance with the principles defined in the Vancouver Food Charter (2007): community economic development, ecological health, social justice, collaboration and participation, and celebration.

3.3 Primary Deliverable

The primary deliverable is a Sustainable Food System Plan. The Plan should illustrate how the applicant intends to meet the City's food system vision, goals and principles as reflected in current City food policies, initiatives, and guidelines. In order of priority, these are:

1. Vancouver Food Strategy (2013): The Vancouver Food Strategy provides a vision, principles, goals, and action plan that integrate the City's food system priorities in one policy framework.
2. Greenest City Action Plan (GCAP) (2011): The Local Food section of the GCAP targets an increase in neighbourhood and city-wide food system assets of 50% by the year 2020. Food system assets include community gardens, community kitchens, farmers markets, and composting facilities.
3. Vancouver Food Charter (2007): Identifies a vision and principles of a sustainable food system in the City of Vancouver.

For reference, additional policy and guidelines include:

- Guidelines for Urban Beekeeping (2005)
- Operational Guidelines for Community Gardens on City Land Other than Parks (2009)
- Urban Agriculture Design Guidelines for the Private Realm (2009)
- Guidelines for Keeping Backyard Hens (2010)
- Farmers Market policy (2013)

3.4 Plan Components

The Sustainable Food System Plan will comprise an analysis of a broad range of food system issues in order to inform actions to improve community food system resilience. The City, at its discretion, may require that the Plan be prepared by a qualified food system consultant. The Plan must include a minimum of **three** food system assets from the following list:

- *Community Gardens/Community Orchards:* Land managed by non-profit societies or groups of individuals and residents used to grow plants and harvest food or ornamental crops for use or donation by those cultivating the land and their households, or for use in the programs of partner non-profit organizations such as community centres, neighbourhood houses or neighbourhood food networks.
- *Edible Landscaping:* Using food-bearing plants for landscaping purposes. General landscaping plant materials must be food-bearing plants. Educational or interpretive signage adjacent to edible landscape plantings must be provided.
- *Community Kitchen:* A public kitchen facility will be required to accommodate a minimum of 12 people in a teaching environment, where community members have the opportunity to come together to share the cost, planning and preparation of healthy meals. A full size stove, refrigerator and dishwasher are required at a minimum.
- *Community Food Market:* Venues or sites that enable farmers or third party operators to sell healthy, fresh foods directly to the public. This may include access to space within an existing site and/or designated space that permits commercial food retail.
- *Food Composting Facilities:* Designated sites and facilities for community use for compostable food scraps and yard trimmings.
- *Facilities to support Neighbourhood Food Network activities:* Multipurpose facilities and space for programs and projects on food system issues at the neighbourhood level, which may include learning, sharing and celebration opportunities connected to food and connecting consumers and producers, food storing, processing, and distribution.

In lieu of three food assets, the City may also consider a contribution to a broader scope, city-wide food processing/storage/distribution infrastructure/operation and would assess this on a case-by-case basis. Applicants are also encouraged to present innovative examples of food assets that may not be listed above, for review and approval by City staff. Social Policy Department will be coming forward with detailed design guidelines to assist applicants with developing the food systems plan.

The Sustainable Food System Plan must be completed to the satisfaction of the Director of Social Policy.

4.0 GREEN MOBILITY

4.1 Objective

The City will require a Green Mobility Plan that provides measures and strategies to prioritize more sustainable travel to and from the site. This will include prioritizing walking, cycling, and public transit over automobile use, and facilitating the incorporation of low carbon vehicles, such as electric vehicles.

This will contribute to the Greenest City Green Transportation targets of having, by 2020, 50% of trips take place by walking, cycling, and public transit, and to reduce motor vehicle km traveled per resident by 20% from 2007 levels. It will also contribute to the Greenest City target on Climate Leadership – to reduce community-based greenhouse gas emissions by 33% from 2007 levels.

4.2 Intent

The intent of encouraging sustainable transportation is:

- to reduce reliance on travel that consumes excessive energy and contributes to GHG emissions and poor air quality, and
- to meet mobility needs while minimizing environmental impacts and providing long term health benefits.

4.3 Primary Deliverable

The primary deliverable is a detailed Green Mobility Plan that assesses the site's transportation infrastructure and programming. The Plan should illustrate how the applicant intends to meet the City's transportation goals and principles as reflected in current City policies, including but not limited to:

- City of Vancouver Transportation Plan (1997)
- Downtown Transportation Plan (2002)
- Community Climate Change Action Plan (2005)
- Greenest City 2020 Action Plan (2011)
- Transportation 2040 Plan (2012)

The City's standard transportation requirements for new development can be found in the Parking By-law, the Vancouver Building By-law, the Zoning and Development By-law, and City design and study guidelines. The primary purpose of the Green Mobility Plan is to identify and evaluate opportunities to support sustainable transportation choices **beyond these minimum requirements.**

4.4 Plan Components

The Green Mobility Plan will include a detailed assessment of the potential for walking, cycling and transit trips to and from the site. Where deficiencies exist in these networks, or where opportunities exist to enhance the quality of infrastructure or programming, the Green Mobility Plan will evaluate the viability of incorporating these improvements into the project. Plan elements can range from small scale changes, such as provision of additional bicycle racks, to larger scale improvements, such as the planning of safe and attractive cycling or pedestrian routes.

The Plan will also include an assessment of the site's motor vehicle facilities and programming. It will identify opportunities for projects to incorporate strategies to encourage use of low and zero carbon vehicles as well as opportunities to support reduced vehicle ownership and use. Plan elements might include additional vehicle charging infrastructure, on-site car share services, pricing policies, etc.

The Plan should also look for opportunities to reduce the impact of goods movement on the community and environment, such as through better matching delivery vehicles to delivery size.

The Green Mobility Plan does not replace requirements for traffic impact analysis, travel demand management plans, or other study required to review and approve development or rezoning applications.

The Green Mobility Plan must be completed to the satisfaction of the General Manager of Engineering Services.

5.0 RAINWATER MANAGEMENT

5.1 Objective

The City will require a Rainwater Management Plan that recognizes rainwater as a resource to enhance the community and environment.

This will contribute to our Clean Water Greenest City target – to reduce per capita residential water consumption by 20% by 2020. It also supports several other Greenest City goals.

5.2 Intent

The intent is to reduce stormwater discharge, reduce the generation of run-off, treat surface run-off to reduce contaminants, and where possible, conserve potable water use.

5.3 Primary Deliverable

The primary deliverable is a Rainwater Management Plan that addresses how the project will meet the following requirements (which are modelled on industry best practices):

Quantity

Goal: to limit interference with natural hydrology by maximizing pervious cover, increasing on-site infiltration opportunities, limiting runoff generation and reducing and/or eliminating pollution by not generating it.

Deliverable: Create a Rainwater Management Plan that illustrates the measures that will be employed to meet the following target: post-development runoff rate and volume = pre-development* runoff rate and volume for the 2-year 24 hour duration storm. (*pre-development means the site's immediate preceding use.)

Quality

Goal: Manage rainwater runoff quality

Deliverable: Create a Rainwater Management Plan that treats 90% of the average runoff volume. The practices used to treat runoff must be capable of 85% TSS removal. Preference will be given to landscape-based treatment systems integrated with the site's overall landscaping plan. However, mechanical filtration systems will be considered on a case-by-case basis.

5.4 Study Components

Applicants will be required to produce a Rainwater Management Plan that demonstrates how the project will meet the two above-noted requirements for quantity and quality.

The Plan must include the following elements:

- pre-development site plan showing orthophoto and existing drainage appurtenances
- developed site plan showing general arrangement of proposed rainwater management works

- hydrologic and hydraulic analysis prepared by qualified professional in the area of rainwater management showing how the site will meet the requirements
- supplementary documentation for any pre-manufactured products
- a letter from a registered professional stating that all proposed systems and appurtenances required by the Plan meet the Vancouver Building By-Law

As well, the following must be considered and addressed/incorporated:

- prioritize retaining existing healthy trees in the overall site design in consultation with an ISA Certified Arborist
- use waterwise planting selections (see the City of Vancouver Waterwise Planting Guidelines)
- provide adequate planting medium depth for all plantings to be maintained on structures
- provide in-ground tree planting with sufficient planting medium area and connection to the natural water table.
- locate rain gardens to capture runoff from hard surface areas and to recharge soft landscape areas
- utilize open space on rooftops for green roof plantings

The Plan must demonstrate how the above six measures are integrated into the project design. If one of these measures is not feasible on a particular site, the applicant must provide an explanatory rationale and propose an alternative. All measures must meet the Vancouver Building By-Law.

The Rainwater Management Plan must be completed to the satisfaction of the Chief Building official in consultation with the General Manager of Engineering Services and the Director of Planning.

6.0 ZERO WASTE PLANNING

6.1 Objective

The City will require a Zero Waste Design and Operations Plan (Zero Waste Plan), that considers deconstruction, infrastructure design, and post-construction operations, and meets or exceeds the City's GC2020 goals with respect to waste reduction, increased opportunities for material re-use and recycling, and reduced GHG emissions.

This will contribute to our Greenest City target on Zero Waste – to reduce solid waste going to the landfill or incinerator by 50% from 2008 levels.

6.2 Intent

The ultimate objective is to facilitate the reorientation of peoples' habits and practices toward the City's zero waste target. Therefore, the key objectives of a project's Zero Waste Plan are to foster ongoing waste reduction and increased diversion of products and materials from the waste stream through re-use, composting and recycling. The Plan should also aim to reduce operations-related environmental emissions, notably GHG emissions, through strategies such as reduced service-vehicle trips.

6.3 Primary Deliverable

The primary deliverable is a Zero Waste Design and Operations Plan composed of a site/development infrastructure design component, and an ongoing operations/maintenance component. For both the infrastructure design and the operations components, the Plan will thoroughly describe the proposed zero waste strategies and alternatives, and the residual waste management considerations. The Plan should be consistent with current policies, programs,

mandates, initiatives, guidelines, etc. that are supported and/or used by the City of Vancouver. For reference, these include:

- City of Vancouver Garbage and Recycling Storage Facility Design Supplement (2010)
- City of Vancouver Greenest City Action Plan 2020 (Chapter 5. Create Zero Waste)
- City of Vancouver Demolition/Deconstruction Permit
- Metro Vancouver Banned and Prohibited Materials List (updated periodically)
- Current and future Metro Vancouver Solid Waste Management Plans (2011)
- Extended Product Responsibility (EPR) Stewardship Programs
- Metro Vancouver's Zero Waste Challenge (2007)
- City of Vancouver Solid Waste By-law
- City of Vancouver Green Building Strategy

6.4 Plan Components

The Zero Waste Design and Operations Plan should illustrate how the applicant intends to meet the City's requirements and how the plan will be implemented. The following are expectations and considerations for infrastructure design and ongoing, post-construction operations that must be addressed in the Plan. The applicant is encouraged to put forward additional or alternative ideas that enhance the intent of this policy.

1. Vision Statement

The vision statement should reflect the intent of this policy: to facilitate achievement of the City of Vancouver's zero waste target by fostering waste reduction, increasing diversion through re-use, composting and recycling, and reducing GHG emissions in the design and operation of the proposed development's solid waste system.

2. Description of Project and Diversion Objectives

The Plan should provide:

- Consideration of deconstruction opportunities and practices, to reduce landfilled deconstruction material and create opportunities for material re-use and recycling
- A summary of the types and number of units in the development (e.g. MFD residential, retail, food, etc.)
- The types and estimated quantities of waste generated by unit type, consistent with City expectations for waste diversion in each type of unit
- The types and estimated quantities of waste diverted, based on the proposed design and operations plan

3. Site/Development Infrastructure Design

Space Allocation Expectations for Zero Waste Initiatives

The site design should provide dedicated space to accommodate waste diversion initiatives (i.e., re-use, organics, recycling), in addition to residual waste collection. Ample space allocation should be provided in all domains of occupancy: in the individual unit, within each building, and in shared public spaces. Detailed considerations for each type of development are shown below. The plan should show how the applicant intends to meet these design expectations:

For multifamily complexes, space should be allocated in:

1. Each residential unit.
 - a. Provide ample space for organics and recycling bins, preferably in the kitchen area under the sink or in cabinetry. The space allocation should take into consideration the number of recycling bins needed by the resident to meet current product stewardship program (eg beverage containers on

- deposit) and City material segregation requirements (eg newsprint, mixed paper, mixed containers).
2. Common areas such as lobby and laundry room.
 - a. Design so that recycling containers are always placed with garbage containers in common areas (twinning).
 3. Re-use/recycling space in building.
 - a. Design to accommodate a sufficient number of organics and recycling carts/containers to meet the needs of the entire building (see City of Vancouver “Garbage and Recycling Storage Facility Design Supplement”).
 - b. Design for the installation of signage to instruct occupants on appropriate use of the organics and recycling containers.
 - c. Consideration should be given to the allocation of space in the recycling storage area for a re-use and materials exchange kiosk. Amenities such as shelving and a bulletin board should be supplied.

For office and retail buildings, space should be allocated in:

1. Individual retail/office units in retail/office complexes.
 - a. Design to accommodate recycling bin(s) in each working space.
 - b. Depending on size of building complex and overall waste collection plan, consider providing a common area space that can accommodate recycling carts (in accordance with product stewardship program and City material segregation requirements).
 - c. Consider allocating space for organics bins/carts to attract/accommodate sustainability-oriented occupant demand.
2. Common/public areas such as lobby and corridors.
 - a. Design so that recycling containers are always placed with garbage containers in common areas (twinning).
 - b. Consider allocating space for organics bins to foster organics diversion opportunities.
 - c. Consider waste reduction strategies in design, such as hot air hand dryers instead of paper towels in public washrooms.
3. Recycling storage space in building.
 - a. Design to accommodate a sufficient number of recycling carts/containers to meet the needs of the entire building (see City of Vancouver “Garbage and Recycling Storage Facility Design Supplement”).
 - b. Design for the installation of signage to instruct occupants on appropriate use of the recycling containers.
 - c. Consider allocating space for organics bins/carts to foster organics diversion opportunities.
 - d. Consideration should be given to the allocation of space in the recycling storage area or in another common area for an inter-office materials exchange bulletin board and zero waste information kiosk.

For food services, space should be allocated in:

1. Work spaces.
 - a. Design to accommodate convenient source segregation of organics, greases and recyclables in food handling and preparation work spaces.
 - b. Allocate space for organics and recycling containers in all other work spaces
2. Customer/public spaces for food consumption.
 - a. Design to facilitate convenient customer/public source segregation of organics, beverage containers, and other recyclables in clearly marked disposal containers (twinning).
 - b. Consider waste reduction strategies in design, such as hot air hand dryers instead of paper towels in public washrooms.
3. Organics and recycling storage space in building/complex.

- a. Design to accommodate a sufficient number of organics, grease and recycling carts/containers to meet the needs of the entire building (see City of Vancouver “Garbage and Recycling Storage Facility Design Supplement”).
- b. Design for the installation of signage to instruct occupants on appropriate use of the organics and recycling containers.

For large venues (greater than 2,000 visitors per day), space should be allocated in:

1. Individual units in large venues.
 - a. Design to accommodate recycling bin(s) in each working space.
 - b. Depending on size of building complex and overall waste collection plan, consider providing a common area space that can accommodate recycling carts (in accordance with product stewardship program and City material segregation requirements).
 - c. Consider allocating space for organics bins/carts to foster organics diversion opportunities.
2. Common/public areas such as interior public/mall corridors, public washrooms, green spaces.
 - a. Design so that recycling containers are always placed with garbage containers in public areas. Facilitate convenient customer/public source segregation of beverage containers, and other recyclables in clearly marked disposal containers.
 - b. Consider allocating space for organics bins to foster organics diversion opportunities.
 - c. Consider waste reduction strategies in design, such as hot air hand dryers instead of paper towels in public washrooms.
 - d. Consideration should be given to the allocation of space for a zero waste/sustainability information kiosk for occupants and the public.
3. Recycling storage space in building.
 - a. Design to accommodate a sufficient number of recycling carts/containers to meet the needs of the entire building (see City of Vancouver “Garbage and Recycling Storage Facility Design Supplement”).
 - b. Design for the installation of signage to instruct occupants on appropriate use of the recycling containers.
 - c. Consider allocating space for organics bins/carts to foster organics diversion opportunities.

Space Allocation for Residual Waste Storage

Sufficient space must be allocated for residual waste storage. See the City of Vancouver “Garbage and Recycling Storage Facility Design Supplement” for guidance on estimating space requirements and related design considerations.

In the assessment of space requirements, consider accommodating storage container systems and vehicles that will have the least environmental impacts during operation, particularly with respect to GHG emissions. For example, compactor systems can reduce trip frequency, which in turn can reduce GHG emissions.

4. Operations

The zero waste objective of this policy should be integrated into the design of the development’s ongoing, post-construction operating systems. Therefore an operations component is required in the Zero Waste Design and Operations Plan, that addresses each of the following:

Recycling and Waste Collection Systems

Waste is generated at numerous points in a large development, such as in each multifamily unit, as well as in corridors, public washrooms and retail outlets that might be part of the complex. Therefore, the recycling and waste collection system should be designed holistically to incorporate and integrate the various sources and points of generation. It is expected that the system as a whole will be designed to facilitate zero waste (through waste reduction, re-use, composting and recycling), increase efficiency, and minimize GHG and other emissions. The plan should show how the applicant intends to meet this expectation through initiatives such as:

- Maintaining an on-site re-use/freeware/materials exchange facility or bulletin board for occupants
- Providing an on-site communal composting facility or system
- Providing or offer fee-for-service organics collection even where not mandated by the City
- Facilitating diversion of reusable and recyclable construction and renovation materials generated in individual units and components of the development
- Facilitating establishment of on-site product stewardship take-back program or take-back depot (for large venues with public access)
- Facilitating installation of additional publicly accessible on-site diversion initiatives via NGO programs for items such as clothing, textiles and used books
- Engaging a single hauler for all waste streams generated on site in order to reduce trips
- Providing a service or billing model that offers occupants incentives to reduce, re-use or recycle rather than dispose waste

Occupant/Public Education and Outreach

The provision of training and ongoing outreach to occupants of the development is a critical factor in the successful implementation of the Zero Waste Design and Operations Plan. Therefore the plan should consider:

- How new occupants will be educated in the implementation of the zero waste initiatives and collection systems. It may be necessary to provide a hands-on training program for large scale occupants such as anchor retailers
- How, through signage and visual cues such as bin colour and shape, occupants and the public will be directed toward using the zero waste collection systems provided on site
- Procedures and actions that provide occupants with continuous encouragement and support in implementing/participating in the zero waste plan. Consideration could be given to:
 - Establishing a building level zero waste/ sustainability team to engender a community culture around zero waste
 - Providing regular newsletters that report on successes and identify issues and challenges
 - Maintaining a zero waste bulletin board in a prominent place for information and collaboration
 - Establishing a corporate zero waste leadership award program for businesses on site, and promoting it
 - Providing or facilitating on-site consultations on ways individual businesses can improve their performance

Facility Operations Training and Support

The success of the zero waste operations plan will depend on continuous oversight, education and enforcement on the part of the designated property manager.

Therefore the plan should indicate:

- How the property will be managed (i.e. directly by the applicant or by a property management firm)
- The responsibilities of the property manager
- The steps taken to ensure that the property manager is trained to implement and oversee the plan
- The documents or standard procedures that are used to train staff on zero waste initiatives

Consideration should also be given to how the operations plan will be implemented with respect to the selection, training and oversight of janitorial services. Janitorial services in large complexes play a significant role in aspects of the collection system such as whether and how recyclables are segregated. Janitorial services can also be addressed in terms of the minimization of toxic cleaning products and reduction of cleaning related wastes, such as containers and paper toweling.

Plan Implementation Report

The applicant is expected to provide the City with a report on implementation of the Zero Waste Design and Operations Plan within 18 months of occupancy. The criteria for the implementation report shall include:

- Types and quantities of waste diverted
- Quantity of waste disposed
- Names and locations of recycling processing facilities used
- Description of on-site re-use options, product stewardship facilities, NGO drop-off bins, etc.
- Description of annual education initiatives undertaken
- Summary of initiatives to reduce GHG emissions
- Summary of other initiatives undertaken to facilitate zero waste on-site

Value Added

The applicant is encouraged to consider innovative ideas that will enhance the Zero Waste Design and Operations Plan, such as smart metering for waste diversion measurement and centralized vacuum systems.

The final prepared Zero Waste Design and Operations Plan should be structured so as to replicate all of the numbered headings and their sub-headings in section 6.4 of this bulletin and should meaningfully address each of these headings.

The Plan must be completed to the satisfaction of the Director in Planning and in consultation with the General Manager of Engineer Services.

7.0 AFFORDABLE HOUSING

7.1 Objective

The City will require - for sites accommodating housing – an Affordable Housing Plan that considers a range of unit types and tenures, and demonstrates how the project will meet or exceed the requirements of Council's Affordable Housing in New Neighbourhoods policy (the 20% policy). Providing affordable housing is a key focus for large development rezonings. Applicants are required to meet with City staff at the pre-application stage to discuss the appropriate mix of incomes, household types and tenures.

7.2 Intent

The intent is to create options for more housing affordability, types and choices, including housing for individuals and families that fall under the Housing Income Limits published by BC Housing, and purpose-built rental housing for moderate income households. Applicants should refer to the City's Affordable Housing in New Neighbourhoods policy (the 20% policy) for Council's priorities on achieving affordable housing through large developments.

For reference, there are a number of relevant housing policies, including:

- Mayor's Task Force on Housing Affordability – Priority Action Plan (2012) which contains a priority action to revise and clarify the City's inclusionary housing policy (20% Policy) to enhance flexibility in the delivery of affordable housing in large developments.
- Vancouver Housing and Homelessness Strategy 2012 – 2021, which contains strategic directions to:
 - 1) increase the supply of affordable housing, including market and non-market rental housing; and
 - 2) encourage a housing mix across all neighbourhoods
- Rate of Change Policies and Regulations (2007), which affect all RM, FM and CD zoned properties, including those with Official Development Plans. Intended to protect the existing stock of affordable rental housing

7.3 Primary Deliverable

The primary deliverable is to achieve a project with a balanced housing mix that gives consideration to a wide range of household types and income groups. Affordable housing units achieved through this policy will be secured through a Housing Agreement and any other legal mechanism deemed necessary by the Director of Legal Services and the Managing Director of Social Development.

7.4 Plan Components and Review

In assessing an Affordable Housing Plan and giving feedback to applicants on developing a Plan that is socially sustainable, staff will look to the priorities identified in Council's inclusionary housing policies referenced above and will take into consideration the particulars of each site and the market conditions at that time.

Affordable Housing Plans will be developed and assessed on a case-by-case basis, as rezonings occur, and must be completed to the satisfaction of the Managing Director of Social Development.

8.0 LOW CARBON ENERGY SUPPLY

8.1 Objective

The City will require a Low Carbon Energy Supply Feasibility Screening Study, performed by a qualified green energy consultant at the discretion of the City, to explore the viability of campus and/or district energy systems. If the business case is viable, a system will be required.

This will contribute to our Greenest City target on Climate Leadership and target to reduce community-based greenhouse gas emissions by 33% from 2007 levels. It will also contribute to the Greenest City target for Green Buildings, to reduce energy use and greenhouse gas emissions in existing buildings by 20% over 2007 levels.

8.2 Introduction and Purpose

The Terms of Reference for completing the required Low Carbon Energy Supply Feasibility Screening Study are outlined from this section (8.2) through to section 8.9. These Terms of Reference are to be followed for development projects requiring an evaluation of low carbon energy supply opportunities. Where the applicant is seeking BC Hydro co-funding for the study, BC Hydro's *Minimum Requirements for A Sustainable Communities District Energy Pre-Feasibility Study* must also be met. Although less detailed in scope, these City of Vancouver Terms of Reference have been designed to be compatible with BC Hydro's study requirements.

The purpose of this document is to provide an outline of the requirements for completing a Low Carbon Energy Supply Feasibility Screening Study (also known as a Pre-Feasibility or Phase I Study) to the satisfaction of the General Manager, Engineering Services. A Feasibility Screening Study is a preliminary technical and business case analysis used to assess whether viable district- or development-scale low carbon energy opportunities are present warranting further evaluation. The purpose of such a study is to support the advancement of affordable, low carbon energy solutions throughout Vancouver.

Modifications to these Terms of Reference may be warranted based on consideration of a specific project's location. For example, an abbreviated scope of work that focuses on solely on campus-scale low carbon energy opportunities may be approved for projects located outside of the three key target areas for district energy, namely downtown, Cambie Corridor and Central Broadway, as discussed in the Vancouver Neighborhood Energy Strategy approved by Council on October 3, 2012. Modifications to these Terms of Reference and the required study scope of work shall be at the discretion of the General Manager of Engineering Services.

The Study must be completed by qualified professional with proven expertise in the evaluation of low carbon energy supply opportunities. Should the preliminary results indicate that a district- or development-scale energy system may be viable and beneficial, a more detailed feasibility study may be required.

In locations where rezoning applications are being proposed for several nearby sites, the City strongly encourages developers to undertake joint studies of potential district energy solutions. This approach generally results in a higher probability of finding a viable low carbon energy option, and also typically results in a lower feasibility study cost for developers.

8.3 Implementation Objectives

The City's objectives with respect to the implementation of low carbon energy supply technologies, including district systems, are reductions in GHG emissions, and the long-term flexibility to adapt to new and more sustainable technologies and fuels. The City also has an interest in improvements to energy efficiency and supporting the development of local green technologies and jobs.

The Low Carbon Energy Supply Feasibility Screening Study aims to identify the potential impacts of low carbon energy supply options, relative to a realistic reference case scenario, on:

- long-term GHG emissions
- long-term life-cycle energy costs to energy end users
- risks to energy end users, including financial and reliability considerations
- qualitative benefits to energy end users (e.g. reliability, quality of service, etc.)
- resource consumption (e.g. electricity, natural gas or recovered waste)
- other significant environmental impacts or benefits (e.g. local air quality, waste management, water use, space requirements, etc.)

The evaluation of low carbon energy supply opportunities is a phased process which begins with the completion of the Feasibility Screening Study. In cases where the Study suggests there

are district- or development-scale low carbon energy opportunities offering environmental benefits with life-cycle energy costs comparable or lower than a reference case approach, taking into consideration uncertainties in the capital and operating cost estimates. In these cases a Detailed Feasibility Study (also known as a Phase II study or business case analysis) may be required. The purpose of the Detailed Feasibility Study is to further confirm costs and benefits of preferred short-listed option(s), and to address implementation issues such as ownership and operations strategies. In some cases (i.e. for smaller systems), a full Feasibility Study may not be necessary and the developer may choose to proceed directly with identification of a utility provider, site testing, and/or other supplemental technical or financial evaluations supporting the development of a low carbon energy system .

8.4 Primary Deliverable

The primary deliverable of the Low Carbon Energy Supply Feasibility Screening Study is a report identifying and ranking potentially technically viable low carbon energy supply solutions, both at a district and development scale, based on lifecycle energy costs and benefits. The Study must focus on energy supply system options which reduce GHG emissions associated with space, ventilation, and domestic hot water heating. Low carbon energy supply options for cooling and power generation may be considered where there is a financial or GHG reduction benefit to doing so.

Completion of the Low Carbon Energy Supply Feasibility Screening Study, to the satisfaction of the General Manager of Engineering Services, is required as part of the rezoning application package to satisfy the requirements of this policy. Additional deliverables may be required at later stages of project permitting, which may include a more detailed feasibility study or business case analysis of low carbon energy opportunities, and/or other specific documentation related to detailed design of the development's energy system.

8.5 Study Elements

The Low Carbon Energy Supply Feasibility Screening Study should include the following elements, at minimum:

1. Executive Summary

- development location, size, and use
- regional context (potentially connectable surrounding loads of interest)
- site loads and connectable surrounding loads including percentage of annual energy to be serviced through low carbon technologies
- reference case energy supply scenario description with levelized reference case energy supply costs, GHG emissions, natural gas and electricity consumption
- low carbon energy supply options short-listed with associated levelized energy supply costs and GHG emissions, natural gas and electricity consumption
- summary of risks associated with reference case and short-listed low carbon energy supply options
- recommended next steps

2. Site and Neighbourhood Overview

General description of the site and surrounding area including:

- project location
- site constraints and amenities
- planned site density and use mix
- regional context (current and planned surrounding land use by archetype and density)
- proximity to other redevelopment sites and major infrastructure
- development timeframes
- connectivity analysis to nearby buildings, future development sites and other district energy systems within 500 m radius of the site

Note: key connectable buildings must be identified which considers building size/load, existing heating/cooling mechanical design, age of equipment, and distance from the site, where information is available or reasonably easy to acquire or infer.

3. Energy Profile and Load Analysis

Base Case Loads: Using proposed floor areas and City-approved end use energy use intensity factors (energy use per m² of floor area), prepare an expected (base case) forecast of annual and peak end use heating (space heating, domestic hot water and ventilation air) and cooling demands for buildings within the development. Reflect the proposed phasing schedule in the demand forecasts. For larger sites, loads may be separated into sub-areas for the purposes of evaluating layout, siting, and phasing issues. (note: energy use intensity is a unit of measurement that describes a building's energy use, specifically the energy consumed per m² - or other area unit - of building floor space).

An annual heating load duration curves must be provided for full build-out of the development including any existing buildings that will remain on-site. Annual cooling load duration curves must also be provided where annual cooling loads exceed 5% of annual heating loads. The proposed percentage of peak and annual energy requirements to be served through low carbon sources must be stated. A target of 70% annual heating energy to be met through low carbon sources is recommended, however it is at the discretion of the energy consultant to select an appropriate split between low carbon and conventional energy sources. Approval must be granted from the City to consider low carbon energy approaches that serve less than 70% of annual heating energy requirements.

Energy use intensity assumptions are provided in Section 8.8: Supporting Information. Alternative demand scenarios may be prepared reflecting higher or lower energy demands based on higher end use efficiency assumptions (beyond code requirements) or alternative development assumptions.

Neighbourhood Loads: For the purpose of evaluating district energy opportunities, also identify and estimate existing or proposed loads within an approximate radius of 500 m of the site for the purpose of assessing district energy opportunities. For existing surrounding loads, only significant building energy loads that may be suitable for interconnection with a district energy system should be included. Potentially connectable loads are those which satisfy all of the following requirements:

- heated floor space exceeding 2,000 m² per building
- existing hydronic heating systems with minimal electric resistance heating or gas fired roof-top ventilation air heaters (does not apply to proposed developments)
- located within 500 m of the site

All nearby building loads satisfying these requirements should be summarized. Assumptions on connectability may be inferred based on building archetype and age, where building-specific mechanical information is not available.

Considering both on-site and potentially connectable off-site loads, prepare combined heating and cooling load duration curves at full build-out. Where no connectable loads have been identified, consider entire site loads only. The combined load forecast should consider the effects of diversification on central equipment requirements.

Summarize the expected optimal sizing of any district energy solutions at full build out including the percentage of peak and annual energy to be serviced by low carbon energy technologies and the percentage to be covered by conventional boilers, or alternative means, for peaking and back-up.

4. Reference case

Reference case energy supply scenario refers to the preferred form of the mechanical heating and cooling system in the absence of a low carbon energy system. A description of the reference case energy supply scenario should indicate the delivery method for each heating and cooling end use (i.e. residential, non-residential and common area space heating and cooling, make-up and ventilation air, and domestic hot water).

The reference case analysis should include the following:

- estimates of the levelized unit cost of energy (\$/MWh/yr) for the reference case over a 25 year timeframe (including annual boiler/heating equipment capital, operating and maintenance costs)
- estimates of gas consumption, electricity consumption, and GHG emissions over the analysis timeframe

Estimates of costs, GHG emissions, and electrical and gas energy consumption should be Class D level estimates (estimate variance of -25%, +50%).

5. Screening of Low Carbon Energy Sources

Review of Opportunities: Identify potentially viable low carbon energy sources for consideration, including, but not limited to, process/waste heat recovery, sewage heat recovery, geexchange (open loop, closed loop, surface water exchange), air source heat pumps, bio-energy (biomass combustion, biogasification, anaerobic digestion), and other nearby district energy systems. Provide a high level assessment of the technical and logistical viability of each potential opportunity considering study area loads, location, and resource capacity. The opportunity to serve any existing buildings that will remain on-site with low carbon energy sources as well as potential demand side management strategies for existing buildings should be evaluated and summarized. Milestone = Sources under consideration must be approved by the City of Vancouver at the time of project kickoff.

Analysis of Short-Listed Opportunities: Create a short-list of low carbon energy options deemed potentially technically viable at a development- and/or district-scale at full buildout for inclusion in a more detailed qualitative and quantitative analysis. Short-listed options may include scenarios which consider site loads only, but must also include scenarios which consider a district-scale approach incorporating surrounding proposed or existing connectable loads at full buildout, where present. Milestone = Short-listed options must be approved by the City of Vancouver prior to proceeding with further technical and financial analysis of short-listed opportunities.

Analysis for each short-listed option must include at minimum the following:

- description of the high level concept design of the proposed low carbon energy system including equipment requirements, equipment sizing, system capacity, backup and peaking energy supply strategy, and distribution approach (i.e. distribution temperature, equipment centralization, etc.)
- estimates of capital, operating and maintenance costs associated with the energy centre, distribution piping, building connection, and any retrofits or upgrades required to connect buildings under consideration. Provide an itemized summary of major cost components, and supporting assumptions
- estimates of levelized cost of energy (\$/MWh/yr) for each scenario over a 25 year time horizon. Compare results to reference case including percentage premium / saving over reference case

- estimates of total natural gas consumption (GJ/yr), electric energy consumption (MWhr/yr), and GHG emissions (tonnes/yr) under each low carbon energy supply scenario at full build-out. Compare results to reference case including percentage increase/decrease over reference case
- estimates of alternative fuel source consumption (i.e. biomass, biogas)
- high level qualitative summary of relevant risks and benefits associated with each supply scenario (i.e. fuel price and supply stability, long term flexibility to adapt to other heat source options, air quality, water quality, social impacts)
- ranking of opportunities based on GHG reduction and levelized cost of energy
- concept design schematics for the preferred (highest ranking) low carbon energy option(s)

Estimates of costs, GHG emissions, and electrical energy consumption should be Class D level estimates (estimate variance of -25%, +50%). Clearly indicate any exclusions in the cost estimates provided. Major assumptions used throughout the analysis should be clearly stated (refer to “Study Assumptions and Cost Estimates”).

6. *Sensitivity Analysis*

The City will assess the need for inclusion of a sensitivity analysis based on the draft study findings. Where few or no low carbon opportunities show levelized costs competitive with reference case, a sensitivity analysis of select input parameters and assumptions may be warranted.

Additionally, in the event that the lowest cost low carbon energy supply alternative is more expensive than reference case, estimates the size of grant that would be required to make the low carbon energy supply alternative equal cost to reference case must be provided.

7. *Recommendations / Next Steps*

Provide recommendations and next steps related, but not limited, to the following:

- further evaluating the technical and economic viability of the preferred low carbon energy supply option(s)
- potential opportunities for improving the economic viability of the preferred low carbon energy system
- strategies for demand side management for any existing buildings to remain on-site
- strategies for improving future flexibility for the development to connect to a hot water district energy scheme and/or other energy source options
- risks and sensitivities warranting further analysis moving forward

8.6 **Study Assumptions and Cost Estimates**

Developers are expected to use the energy use intensity factors supplied by the City (refer “Supporting Information”) unless there is satisfactory evidence that alternative energy intensity factors are more accurate or relevant to the study.

Energy price forecasts, GHG emission multipliers for gas and electricity, and other key assumptions (other than EUIs) should agree with the *District Energy Assumptions* provided by BC Hydro’s Sustainability Communities Program, or otherwise be approved by the City.

Key assumptions influencing load forecasts and levelized cost results should be clearly summarized, including but not limited to:

- energy use intensity
- load diversification
- annual average equipment efficiencies and coefficients of performance
- low carbon fuel prices
- commodity prices (gas, electricity, carbon)

- GHG offset value
- equipment selection and capacities (boilers, heat pumps, etc.)
- equipment capital costs for heat production and distribution
- construction unit costs, where applicable
- O&M costs
- engineering, project management, and regulatory approval costs (can be estimated as a percentage of direct costs)
- contingency
- equipment replacement schedule
- discount rate
- interest on debt
- return on equity

The developer must identify and discuss with the City where assumptions deviate from BC Hydro and City recommended assumptions, where present, and provide rationale for any discrepancy.

8.7 Milestones and Involvement of the City

To ensure that the work being undertaken meets the Terms of Reference specified herein for the Low Carbon Energy Supply Feasibility Screening Study and incorporates appropriate assumptions and site-specific considerations, regular involvement of City staff throughout the execution of the Study is required.

Developers are encouraged to consult City staff on current or expected nearby loads as well as potential energy sources, in particular sources associated with City infrastructure (e.g., sewer heat opportunities).

The following milestones shall be incorporated into the Low Carbon Energy Supply Feasibility Screening Study schedule:

- **Study Kickoff Meeting:** This meeting provides an opportunity for the applicant, energy consultant, and City of Vancouver to discuss and define the scope of the Study and appropriate assumptions surrounding low carbon technologies and nearby building loads to consider. Studies for some larger sites may be eligible for BC Hydro co-funding. These opportunities should be investigated prior to study kickoff.
- **Status Update Meeting:** This meeting provides an opportunity for the energy consultant and applicant to share preliminary findings with the City of Vancouver, discuss and review assumptions and selected opportunities for short-listing, and work through any barriers or challenges encountered to date.
- **Draft Report:** The draft report should be issued prior to the draft results meeting. The City will provide a list of comments and questions within two weeks of receiving the draft report.
- **Draft Results Meeting:** This meeting provides an opportunity for the energy consultant and applicant to present findings summarized in the draft report and discuss any sensitivity analysis which may be warranted.
- **Final Report:** The final report shall address all City comments and questions, and shall be issued to the City within one month of receiving City comments.

Sufficient time and budget should be allocated for addressing and responding to City comments and questions on the draft report, and integration of these comments into the final Low Carbon Energy Supply Feasibility Screening Study.

The final Low Carbon Energy Supply Feasibility Screening Study must be completed to the satisfaction of the General Manager of Engineering Services.

8.8 Supporting Information

Energy Use Intensity Factors

Table 5-1: EUIs for New Buildings

	Units	BCBC ¹		ASHRAE 90.1-2007 ²	
		Low Rise	Mid / High Rise	Office	Retail
Peak Space Heat Demand	W/m ²	41	47	47	63
Annual Space Heat Loads	kW.h/m ²	67	84	70	32
Peak DHW Demand	W/m ²	4	4	1	0
Annual DHW Loads	kW.h/m ²	24	24	3	1
Peak Space Cooling	W/m ²	N/A	14	60	38
Annual Space Cooling	kW.h/m ²	N/A	14	26	17

Notes:

¹ BC Building Code

² Assumes double pane thermal break window. Overall U-0.55.

Table 5 - 2: EUIs for Existing Buildings

	Units	Low Rise ¹	Mid / High Rise ²	Office ³	Retail ³
Peak Space Heat Demand	W/m ²	41	51	83	66
Annual Space Heat Loads	kW.h/m ²	77	86	82	65
Peak DHW Demand	W/m ²	12	11	2	1
Annual DHW Loads	kW.h/m ²	36	35	7	5

Notes:

¹ EUIs based on City of North Vancouver MURB study. Assumes 1970s vintage.

² EUIs based on City of North Vancouver MURB study. Assumes 1990s vintage.

³ EUIs based on BC Hydro 2007 Conservation Potential Review

EUIs for other building typologies (i.e. grocery stores, community and institutional buildings) should be assessed on a case-by-case basis.

8.9 Resources

Additional resources include:

- **Commodity Prices and Other Assumptions:** Please contact the City of Vancouver or BC Hydro for a copy of BC Hydro's latest commodity price forecasts and district energy study assumptions for use in conducting feasibility screening studies and business case evaluations.
- **VanMap:** Orthophoto images, cadastral (parcel) data, and other relevant property information may be viewed at: <http://vancouver.ca/Vanmap/index.htm>. Information can be downloaded for GIS use from: <http://data.vancouver.ca/datacatalogue/index.htm>.
- **Land Use Policies:** Land use policy information can be found on the Community Services page at: <http://vancouver.ca/commsvcs/guidelines/pol&guide.htm>.
- **Boiler Database:** Information on installed boiler capacity for specific street addresses can be obtained from the BC Safety Authority.
- **Building Details:** Information on building square footage, age, etc. can be obtained from the BC Assessment Authority.