



# City of Vancouver *Land Use and Development Policies and Guidelines*

## Planning, Urban Design and Sustainability Department

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# LOW-CARBON ENERGY SYSTEMS POLICY

*Adopted by City Council on November 15, 2017*

## 1 Background

Policy and By-Law amendments to implement the Zero Emissions Building Plan (“ZEBP”) establish greenhouse gas (“GHG”) limits for new buildings in Vancouver, supported by limits on heat loss and energy use. These limits require new buildings to have improved envelope and ventilation systems to reduce heat loss and energy use. Beyond this, developers of new rezoned buildings can choose one of two pathways for compliance with the City’s GHG limits:

- (a) Envelope Pathway – requires additional improvements in envelope and ventilation systems to further reduce heat loss and energy use;
- (b) Low Carbon Energy System (“LCES Pathway”) – in addition to the base envelope and ventilation system improvements, buildings are supplied with heat energy from a professionally operated and maintained district-scale or on-site low carbon energy system.<sup>1</sup>

This Policy defines the requirements of the LCES Pathway. The LCES Pathway is only available if a development will obtain its heat energy from an LCES that meets the requirements of this Policy.

## 2 Policy Objective

The objective of this Policy is to define requirements for low carbon energy systems. These requirements provide assurance that these systems will be available to provide low carbon energy to developments in a timely manner, will result in reliable and permanent GHG reductions over the life of such developments, enable innovation, and use all energy responsibly.

## 3 Definition of a Low Carbon Energy System

Low carbon energy systems (“LCES”) supply heat energy primarily derived from highly efficient and renewable sources in order to provide space heating and conditioned ventilation air for buildings seeking to meet GHG limits using the LCES Pathway. These systems may also provide domestic hot water and cooling service.

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<sup>1</sup>The LCES Pathway was named the Renewable Neighbourhood Energy System (RNES) pathway in the Zero Emissions Building Plan. This term was expanded to include all types of low-carbon energy systems when implemented in the Green Buildings Policy for Rezoning (November 2016).

Low carbon is defined as the provision of heat energy at a carbon intensity that is much less than that of fossil fuels, and low enough so that when applied to modelled building energy use, the development satisfies the City imposed GHG limits.

#### **4 LCES Types and Requirements to be met prior to Application for Building Permit**

The types of LCES that are eligible under this Policy and the requirements of each LCES type are set out in the following sections 5 to 8. If a developer elects to pursue the LCES Pathway, the developer must also choose one of the LCES types described below to provide heat energy to its development.

A developer may not apply for a building permit until all of the requirements of the chosen LCES type are met to the City's satisfaction. To help ensure a developer and its chosen LCES type is on track prior to an application for building permit, some requirements will need to be met at earlier stages of a development. In addition to this Policy, City staff will develop and issue an accompanying bulletin to further clarify the specific requirements that may need to be met at earlier stages of development, as well as any documentation that may be acceptable to the City to satisfy these requirements. For projects pursuing a staged building permit, building permit refers to the full construction application stage only.

Some requirements are complex and may take a long time to achieve or may be outside the developer's or the City's control. These include approvals that may be required from the British Columbia Utilities Commission ("BCUC") pursuant to the *Utilities Commission Act* or the purchase of an LCES system by a utility. Due to these factors, it is recommended that a developer consider and prepare a contingency plan that would allow the developer to, if necessary, satisfy the City's GHG limits through another LCES type or the Envelope Pathway. In addition to the specific requirements of each LCES type set out below, a developer must also satisfy the City in respect of the following:

- (a) each LCES type must comply with all applicable requirements of the *Utilities Commission Act*;
- (b) whenever the requirements of an LCES type involve a utility, such utility must be authorized to operate in British Columbia, and to engage in the required activity, in accordance with the *Utilities Commission Act*; and
- (c) whenever the requirements of an LCES type include certain contracts relating to the LCES or the supply of energy service, such contracts, if applicable, must comply with the *Utilities Commission Act* and have been approved by the BCUC.

#### **5 LCES Type 1: City-Owned LCES**

This type refers to a City-owned LCES that produces and supplies low carbon energy to numerous connected buildings, possibly with different owners.

Type 1 LCES must meet the following requirements:

- (a) the LCES must be:
  - (i) an operating City-owned LCES; or
  - (ii) a proposed extension of an operating, or a newly proposed, City-owned LCES approved by Council; and
- (b) the City has agreed to provide energy service to the development in question.

Connection to this LCES type may be required in a by-law, rezoning condition or may be voluntary. Rezoning conditions for potential connection requirement to a City-owned system under active study will be resolved prior to development permit issuance.

## **6 LCES Type 2: Utility-Owned LCES**

This type refers to a utility-owned, professionally maintained and operated LCES that could be an on-site or district-scale system providing heat energy to one or more buildings. The requirements for this type are divided into the following two sub-types:

### **6.1 LCES Type 2a: Utility-Owned On-Site LCES**

This type refers to a new utility-owned LCES located on-site within a development. Type 2a LCES must meet the following requirements:

- (a) a qualified engineer must provide written verification that the LCES is designed to provide low carbon energy such that the development will meet the City's GHG limits;
- (b) there must be evidence that a utility will purchase the LCES and supply long term energy service from the LCES to the development; and
- (c) the utility must have demonstrated experience with other similar successful LCES.

Prior to the application for an occupancy permit, the developer must deliver evidence to the City's satisfaction that the LCES was successfully registered with the BCUC, and that the ownership of the LCES was, or will soon be, duly transferred to a utility.

### **6.2 LCES Type 2b: Utility-Owned District LCES**

This type refers to a utility-owned district-scale LCES. Type 2b LCES must meet the following requirements:

- (a) there must be a feasibility study that confirms the LCES will provide low carbon energy such that the development will meet the City's GHG limits;
- (b) the BCUC must have issued a Certificate of Public Convenience and Necessity ("CPCN"), in accordance with the *Utilities Commission Act*, approving the district-scale LCES that is designed in accordance with the City-approved feasibility study to provide low carbon energy such that the development it serves will meet the City's GHG limits;
- (c) there must be evidence of long term supply of low-carbon energy from the district-scale LCES to the proposed development; and
- (d) there must be an agreement between the utility and the City for annual utility reporting on the energy used and provided by the district-scale LCES.

If a developer believes one or more of the above conditions may not be met by the time of building permit application, the developer may, in discussions with the City, as an alternative to the above, elect to obtain energy from a Type 2a on-site LCES instead and comply with the Type 2a requirements.

For new developments connecting to an existing Type 2b LCES, the LCES must demonstrate sufficient low-carbon energy capacity to serve the new loads. Note that no Type 2b LCES exists in the City of Vancouver as of the effective date of this Policy but could be established and recognized under this Policy.

## **7 LCES Type 3: User-Owned On-Site LCES**

This type refers to an on-site system that supplies low carbon energy that is owned by, located within, and serves a particular development. Type 3 LCES must meet the following requirements:

- (a) a qualified engineer must provide written verification that the LCES is designed to meet the following requirements:
  - (i) the system seasonal average co-efficient of performance  $> 2$ ;
  - (ii) the modelled GHGI  $< (\text{GHGI limit} - 33\%)$ ; and
  - (iii) any natural gas fired peak demand heating equipment is sized appropriately and is to augment the primary low-carbon system under peak demand conditions;
- (b) there must be a 2-year minimum maintenance, warranty, and optimization contract; and
- (c) there must be a 5-year minimum long-term, owner-funded maintenance contract, with a qualified provider.

In the case of a building to be owned by a residential strata corporation, prior to the application for an occupancy permit, the developer must deliver evidence to the City's satisfaction that the funding structure for long-term maintenance has been established (including an initial strata budget and strata fees consistent with the maintenance funding requirements).

## **8 LCES Type 4: Existing Utility-Owned District Energy System**

This type refers to an existing utility-owned district energy system that is not yet a permanent LCES. As a temporary bridging measure before such a utility builds or connects to a permanent low carbon energy plant and becomes a permanent LCES, the utility must be able to obtain a reliable source of low-carbon energy. Such utility must also have a plan and commitment to build or connect to a permanent low-carbon energy plant in order to provide permanent low-carbon energy to the developments served by it. Type 4 LCES must meet the following requirements:

- (a) during the interim period before the utility becomes a permanent LCES, the utility must be able to obtain a reliable source of low carbon energy (which could include, without limitation, renewable natural gas, Aggregation as per section 10 of this Policy, or installation of temporary on-site low carbon heating equipment), and must supply such low-carbon energy to the proposed development for it to meet the City's GHG limits, all in accordance with the *Utilities Commission Act* and any BCUC approvals as necessary;
- (b) there must be a feasibility study and business plan confirming the technical and financial viability of building or connecting to a permanent low carbon energy plant and investing in all necessary ancillary equipment in order to provide permanent low carbon energy to the proposed development;
- (c) there must be evidence that the utility is making real and measurable progress towards being able to provide permanent low carbon energy to the proposed development;
- (d) if the City is satisfied as to the viability and progress of providing permanent low carbon energy to the proposed development, there must be one or more binding agreements between the utility and the City, or some other framework as may be determined by the City, to ensure that the utility commits to, and makes real and measurable progress towards, providing permanent low carbon energy to the proposed development. Such agreement or framework may include the following requirements:
  - (i) key milestones to be achieved by the utility;

- (ii) a commitment by the utility to build or connect to a low-carbon energy plant once agreed criteria are met;
- (iii) a commitment by the utility to the City to:
  - annual reporting of the energy used and provided by the LCES; and
  - continue to comply with section 8(a) until such time that the utility is able to provide permanent low carbon energy to the proposed development; and
- (iv) any other requirement that the City considers necessary;
- (e) there must be a covenant registered in favour of the City on the title of new development requiring such development to comply with the City's GHG limits during the period of interim low carbon energy supply; and
- (f) if the utility has entered into an agreement with, or has otherwise made commitments to meeting certain milestones including building, or connecting to, a low carbon energy plant in accordance with section 8(d), the City must be satisfied that the utility is making real and measurable progress towards those commitments.

The City intends to reassess this LCES type two years after this Policy initially takes effect and periodically thereafter to determine whether it provides a realistic pathway to achieving reliable and permanent GHG reductions in buildings. If the City is not satisfied that a utility is making sufficient progress towards providing permanent low-carbon energy from its existing district-scale system, the City may no longer make this Type 4 LCES path available to new developments.

## **9 Reporting**

All developments following the LCES Pathway will require an Energy Reporting Agreement to provide energy and emissions data for both the building, and the LCES, to the City after occupancy. An Energy Reporting Agreement means an agreement entered into between the City and a developer (to be assigned to the strata corporation) in respect of a proposed development to meter and accurately report, on an annual basis, the energy use by type, energy cost, and carbon intensity of both the development and its LCES.

## **10 Aggregation**

Where a utility can demonstrate the operational carbon intensity of a building served by such utility outperforms the City's GHG requirements, the City may, on the request of a developer that intends to pursue one of the LCES Pathways by obtaining energy service from such utility, consider applying the extra GHG performance of such utility towards meeting the requirements of any of the LCES Pathways in this Policy, if the City determines that doing so will achieve reliable and permanent GHG reductions. If a developer makes this request of the City, such developer must submit all such information, and do all things as the City may consider necessary, in order for the City to make such a determination.