

# Issues to Consider for Building and Construction Around BC Hydro Overhead Infrastructure in the City of Vancouver

*The information contained in this document is for the purpose of assisting the property owner in Vancouver, and those parties acting on behalf of such property owners, who will require a BC Hydro electrical service. This document only provides guidance with respect to BC Hydro electrical service requirements for Laneway Houses and should not be construed as final advice nor as providing advice for the property owner's equipment and premises. BC Hydro advises you must consult with a BC Hydro Designer to obtain the specific BC Hydro electrical service requirement for your property as the requirements described in this document are only to be used as guidance and are subject to change by BC Hydro or other relevant authorities. BC Hydro bears no risk or liability with respect to the information contained in this document and strongly advises property owners to consult with any other relevant authorities such as the City of Vancouver, to ensure they are fully informed.*

This document is intended for the use of parties with some background in construction standards such as architects, building and electrical consultants, developers, and electricians.

The purpose of this document is to assist those applying for electrical service from BC Hydro. All customer electrical installations are required to meet BC Hydro's standards regarding meter location, mast location and access. To learn more about BC Hydro's requirements, please see **Forms and Guides** at [https://www.bchydro.com/youraccount/content/electrical\\_connections.jsp](https://www.bchydro.com/youraccount/content/electrical_connections.jsp).

## **Be Safe!**

**Clearance requirements from BC Hydro's electrical infrastructure are there to keep workers and the public safe.** Property owners and those parties acting on behalf of a property owner who make an application for electrical service are responsible for ensuring that any structure, such as a Laneway House, located close to the property line meets the minimum clearance requirements as set out by Worksafe BC, the Canadian Electrical Code, and the Canadian Standards Association.

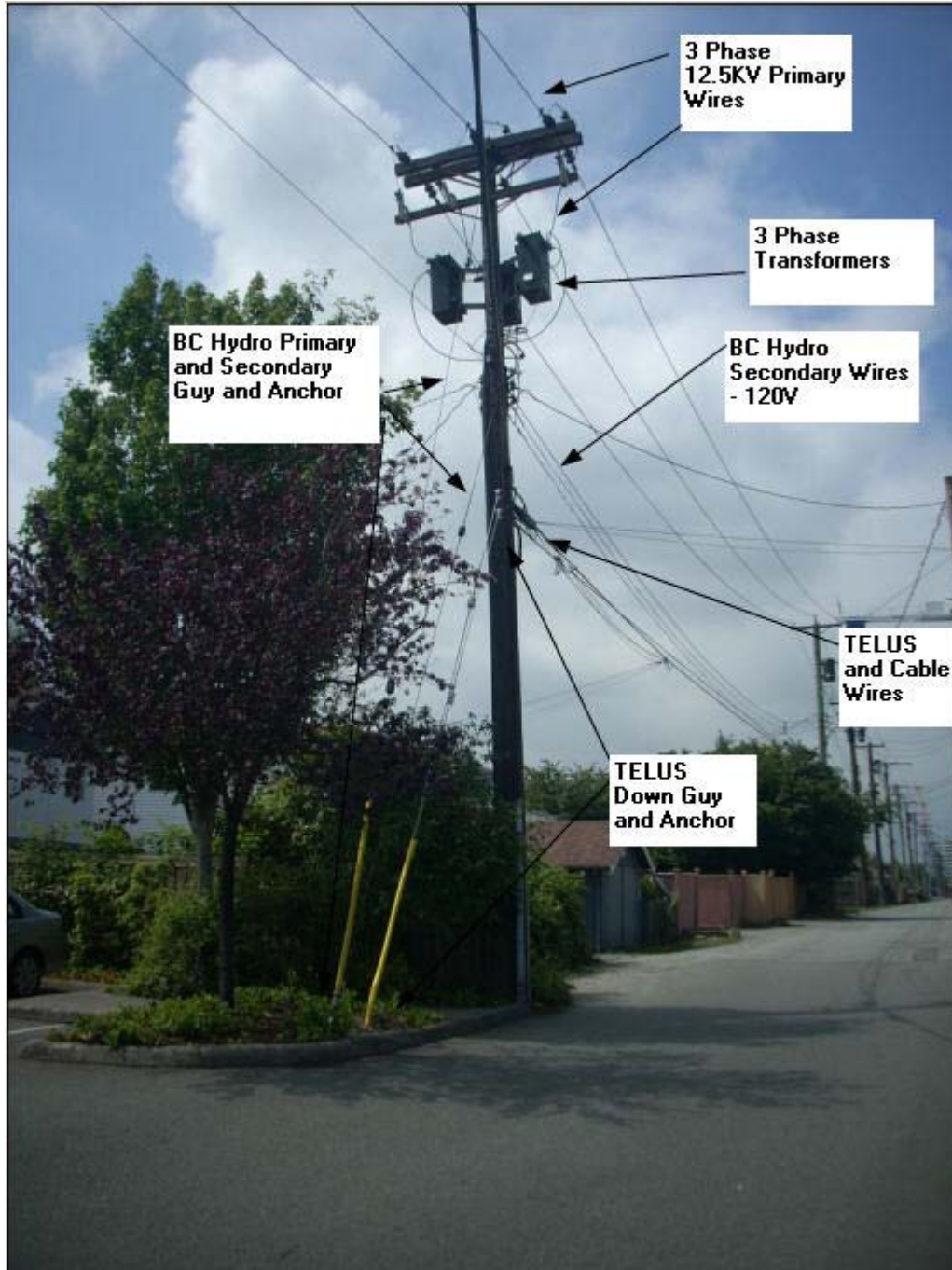
What follows is an overview of the clearance requirements for BC Hydro overhead electrical lines and equipment. The following topics are covered:

1. Overview of the components of BC Hydro Overhead Infrastructure
2. Overhead Primary Lines (4 kV, 12 kV and 25 kV)
3. Overhead Pole-Mounted Transformers
4. Overhead Secondary Lines (neutral to 750 volts)
5. Overhead Service Line to the Building
6. Temporary Relocations or Cover-Ups to meet Clearance Requirements During Construction
7. General Considerations
8. Pole and Anchor Relocations

## 1. Overview of the Components of BC Hydro Overhead Infrastructure

To help understand clearance requirements for BC Hydro's electrical infrastructure, Diagram 1 shows the components of BC Hydro's overhead infrastructure. The photo shows a typical BC Hydro pole with primary and secondary electrical wires, an overhead transformer, a down guy and anchor, and multiple electrical service connections to customers' homes. The photo also shows the TELUS and cable lines.

**Diagram 1: Components of BC Hydro's Overhead Infrastructure with Attachments**



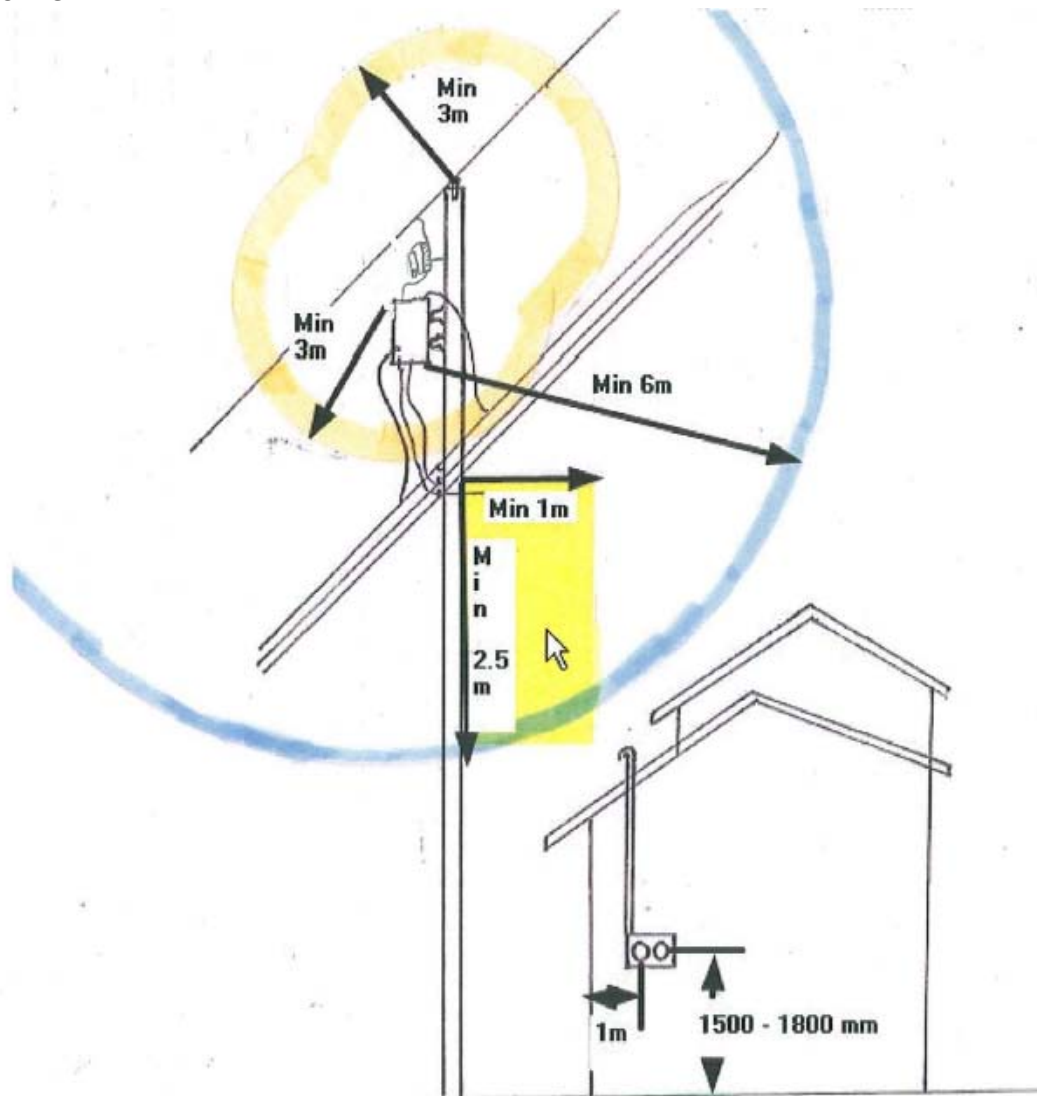
## 2. Clearance to BC Hydro Overhead Primary Lines (4kV, 12kv and 25kv)

These electrical lines are usually the lines located on the very top of the pole as shown in Diagram 1.

Canadian Electrical Code clearance requirements for primary lines are 3.0 meters (horizontal) (CEC Rule 36-110 & Table 33) as shown in Diagram 2. The primary line minimum clearance requirements also cover any primary drop leads from the top of the pole to transformers, cut-outs, potheads, terminators, arrestors, and/or to other equipment attached to the pole.

The clearance requirements for a transformer are discussed in the following section called "Clearances to BC Hydro Overhead Pole-Mounted Transformers".

**Diagram 2: Example of Clearance Requirements for a Primary Overhead Line with a Transformer**

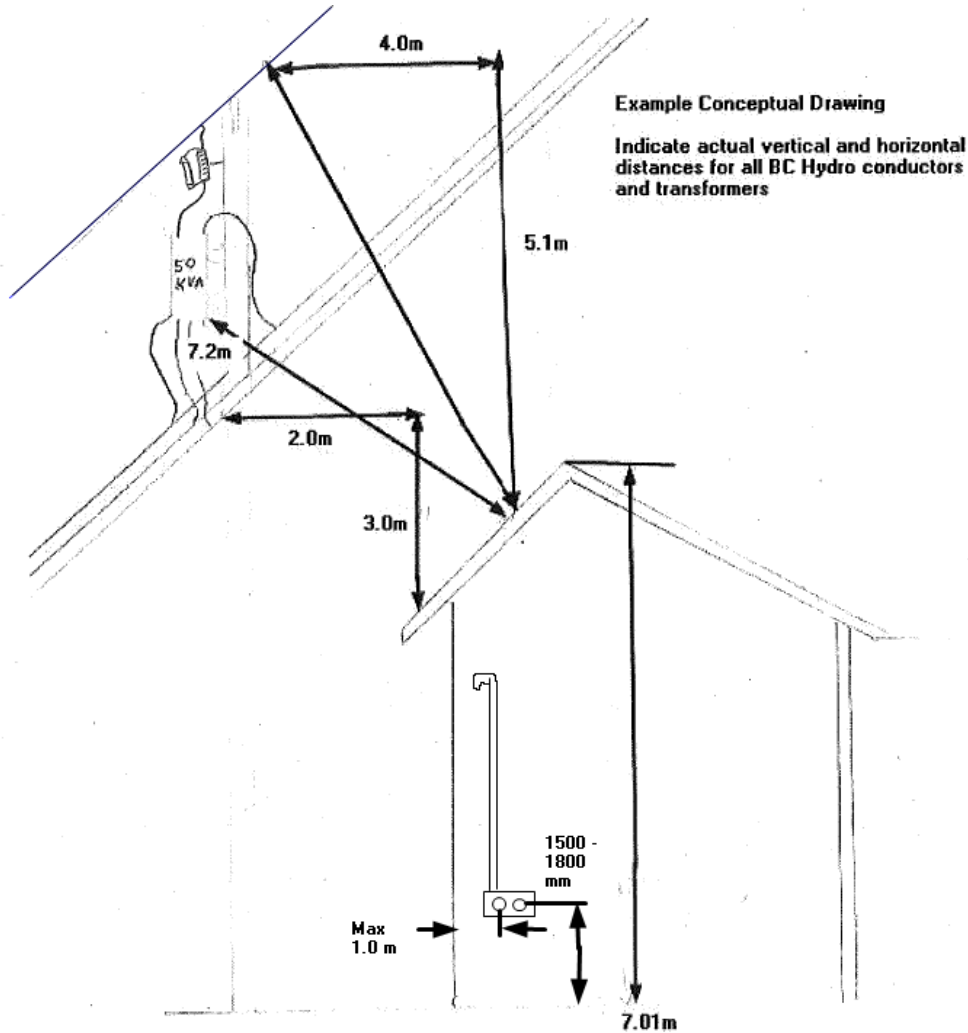


Buildings and all work activity during construction must be outside the 3.0 meter minimum clearance requirement as per the Canadian Electrical Code. However, temporary cover-up can

be constructed to accommodate a reduced clearance to BC Hydro primary lines during construction. Cover-ups are discussed in the section below called “Clearances for Temporary Cover-Ups”.

The applicant must provide a scaled profile of their building(s) in relation to BC Hydro poles, electrical wires and transformers. Please follow the example provided in Diagram 3 below.

**Diagram 3: Example of a Conceptual Drawing of a Laneway House and BC Hydro Poles**



If you have any questions or concerns about these requirements please discuss them with the BC Hydro Designer.

### 3. Clearances to BC Hydro Overhead Pole-Mounted Transformers

Pole-mounted transformers are the objects hanging from the pole that can be round or square and they hang between the primary and the secondary electrical lines as shown in Diagram 1. Not all poles will have a transformer.

The Canadian Electrical Code requires a minimum 6.0 meter clearance (see CE Code Rule 26-014) from any electrical equipment containing oil, such as BC Hydro overhead transformers. See Diagram 2 above. This clearance requirement applies to the following:

- Combustible surfaces or material on a building.
- Doors or windows.
- Ventilation inlets and outlets.

An applicant may request that BC Hydro relocate a transformer, however, please be advised that this is generally not technically possible to do. If it is possible, the request must be approved by BC Hydro and the City of Vancouver, and there will be charges for any relocation.

#### **4. Clearance to BC Hydro Overhead Secondary Lines (neutral to 750 volts)**

BC Hydro's overhead secondary lines are usually situated about 2.7 meters below the primary lines. Finally, TELUS or cable lines are usually situated 1.2 meters below BC Hydro's secondary lines and are typically the lowest set of wires located on poles as shown in Diagram 1.

The Canadian Standards Association (CSA) requirements for minimum clearances between BC Hydro secondary wires and the customer's building (CSA C22.3 No. 1-M87, Table 9) are:

- 1.0 meter to building, horizontal.
- 1.5 meters to windows, balconies, or other openings, horizontal.
- 2.5 meters to building accessible roof, vertical.

These clearance requirements also apply to any existing or proposed electrical service wires to the Laneway House or main house that are in proximity of the BC Hydro secondary electrical lines. See section 5. Clearance for the BC Hydro Overhead Service Line to the Building below.

The 1.0 and 1.5 meters minimum clearance requirements apply to all work activity during construction. However, in some cases during construction, cover-ups can be temporarily installed to accommodate a reduced clearance to our secondary lines. Please see *6. Temporary Relocations or Cover-Ups to meet Clearance Requirements During Construction* below.

#### **5. Clearance for the BC Hydro Overhead Service Line to the Building**

The overhead service line runs from the BC Hydro infrastructure to the building such as a Laneway House. Diagrams 2 and 3 above show the clearance requirements for the electrical service to a building such as a Laneway House on private property.

For clearance requirements for the overhead service line that runs to your building, see the Customer Guide to Overhead Connections found under the Declaration Form link. This can be found by searching for "How to apply for a connection" at [www.bchydro.com](http://www.bchydro.com). All requirements including the location of the service line and meters must meet BC Hydro's requirements as outlined in the BC Hydro's Overhead or Underground Service Declaration Form and Site requirements must be met.

#### **6. Temporary Relocations or Cover-Ups to meet Clearance Requirements During Construction**

Where any clearances to BC Hydro overhead electrical lines cannot be met during the construction phase of your project, BC Hydro may be able to provide temporary cover-ups or temporarily relocate existing electrical lines.

There will be charges for any cover-ups or relocations. **Please allow adequate time for any cover-ups or relocation work to take place** once payment is received. The cover-up will be removed by BC Hydro after the agreed upon date. To proceed with a request for cover-ups, please contact the BC Hydro Design Assistant (604-528-7895). A BC Hydro line technician will meet the applicant on site and complete a 30M33 Work Safe form. Shortly after this site meeting, the applicant will be advised of the charges for the cover-ups or relocation work. The cover-ups or relocations work will proceed upon receipt of payment.

After the cover-ups are removed, the installation must meet all minimum clearances to BC Hydro primary and secondary wires as per the Canadian Electrical Code and CSA Standards. In most cases, cover-ups can be installed within 2 weeks of receipt of payment. However, there are some situations in which the installation could take much longer.

With cover-ups in place, the clearances are as follows:

- For overhead primary lines: flag lines are installed. There are two options;
  1. With cover-ups, a flag line will be placed 1.0 meter from the closest primary wire. Construction activities can take place up to the flag line.
  2. Without cover-ups, the flag line will be placed 3.0 meters from the closest primary line. Construction activities can take place up to the flag line.With both options, work can be done up to the flag line but not beyond.
- For transformers: the barriers are installed and are approximately 1.0 meter from the transformer.
- For secondary wires: If insulated covers are placed over the secondary wires, work can be done up to the insulated covers, but cannot make hard contact. Otherwise, you must stay 1.0 meter away.

Where BC Hydro temporarily relocates electrical poles and lines, **BC Hydro electrical lines will be restored to their original position when construction is complete.** Once the electrical infrastructure is returned to its original position, it is the owner and developer's responsibility to ensure that all clearance requirements will be met when the electrical infrastructure is returned to its original position.

## 7. General Considerations

Where electrical conductors cross over private property, clearances must conform to the requirements of the B.C. Electrical Code. Please refer to CSA Standard C22.1, and the Canadian Electrical Code Part 1 with B.C. Amendments.

The applicant should consider any future costs a customer might incur if the building does not allow for clearance requirements to be met for activities such as window washing, which might not meet the Canadian Electrical Code clearance requirements.

## 8. Pole and Anchor Relocations

If you wish to know if BC Hydro can relocate any poles and anchors to accommodate either permanent access or temporary construction, you must consult the BC Hydro Designer at the beginning of the project. There will be situations in which BC Hydro and TELUS will not be able to accommodate the request for anchor or pole relocations. If the relocation is approved, the applicant is responsible to pay for all associated costs for the relocations. TELUS must also be contacted regarding their pole and anchoring requirements, and their charges.

All pole and anchor relocations are subject to City approval and will be reviewed by the City of Vancouver's Utilities Management Branch to ensure property access is preserved. Please **allow adequate time for any relocation work to take place** once payment is received.