

BC Hydro's guide to utility clearance requirements

Around high-voltage overhead distribution lines and transformers

These requirements should be considered by a developer or someone attempting to subdivide property in proximity to BC Hydro's existing high-voltage overhead distribution lines and transformers:

- BC Hydro Clearance Standards: ES 43 Section B (Overhead Electrical Clearances)
- National Standards of Canada (CSA C22.3 No.1 Clause 5.7.3 and Table 9—Clearances of Wires and Conductors Passing by or over Buildings; and clause 5.7.6 and Table 12—Horizontal Separations from Supply Equipment to Buildings)
- WorkSafeBC Occupational Health and Safety Policy 19.24 (Minimum separation Distance to be Maintained from Energized High Voltage Electrical Equipment and Conductors)

Note that this document is focused on utility clearance requirements around BC Hydro structures, and does not speak to additional building requirements such as those from the BC Building Code, which are the responsibility of the developer to consider and incorporate.

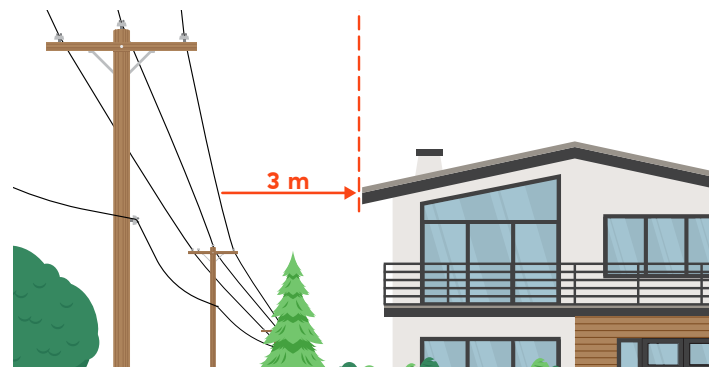
It also does not provide the recommended or required distances from transmission high voltage overhead lines, which are typically greater than what is shown here.

Building clearances from BC Hydro utility structures

Permanent structure clearance from high voltage primary lines

High-voltage (750 V—22,000 V) lines, also referred to as primary lines, are found at the top of utility poles and typically carry 7,200 V at minimum. High-voltage lines are also attached to the top or side of our overhead transformers and other equipment.

In accordance with ES43 Section B and CSA C22.3 No.1 clause 5.7.3 and Table 9, building surfaces are to have a minimum clearance of 3 m, between the outermost projection of the powerline to the outermost portion of any building feature. Refer to third page for detailed building-to-line clearances for typical situations. For spans greater than 75 m, the utility standards CSA C22.3 No.1, may require additional clearances. Please contact BC Hydro to understand what utility pole clearance is appropriate in your area.

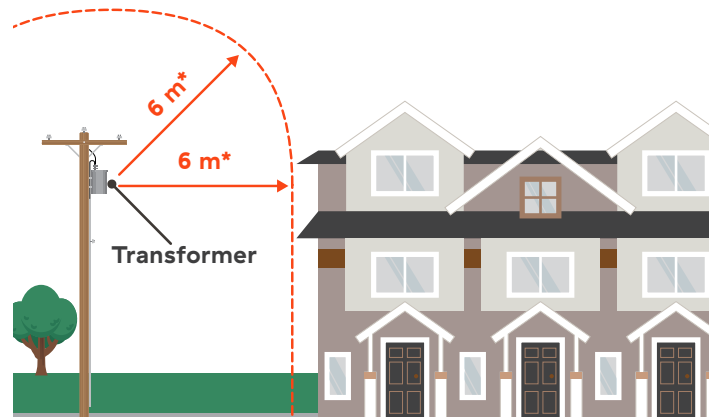


Permanent structure horizontal clearance from high voltage primary lines

Clearance from oil filled transformers

The grey cylinder on a pole is a transformer which steps down high voltage to a lower voltage that may be used by the customer in their home, businesses, and commercial buildings. In accordance with ES43 B1-15 and CSA C22.3 No.1 clause 5.7.6 and Table 12, the design of your building must not allow any of the following to exist within a 6 m radius of an overhead transformer, extending horizontally to the ground:

- any door or window.
- any ventilation inlet or outlet.
- any combustible surface of material on a building or structure.



Clearance from oil filled transformers

*Where BC Hydro transformers are protected by a current-limiting fuse, the separation of the transformer to the building can be reduced to 1.5 m for normally inaccessible areas (not readily accessible to persons unless special means for access are used), and 2.0 m from readily accessible areas (balconies, windows, stairways, etc) per CSA C22.3 No.1. This does not override clearance requirements around primary and secondary lines – see third page for details. Contact BC Hydro to understand what utility pole clearance is appropriate in your area.

Work area clearances from high-voltage electrical lines

Considerations for construction of permanent structure

For construction work near energized high-voltage electrical lines, WorkSafeBC regulations specify that a working clearance distance of 3 m must be maintained by any worker, tool, machine, equipment or material. This includes equipment like ladders, power tools, scaffolding, cranes and machinery.

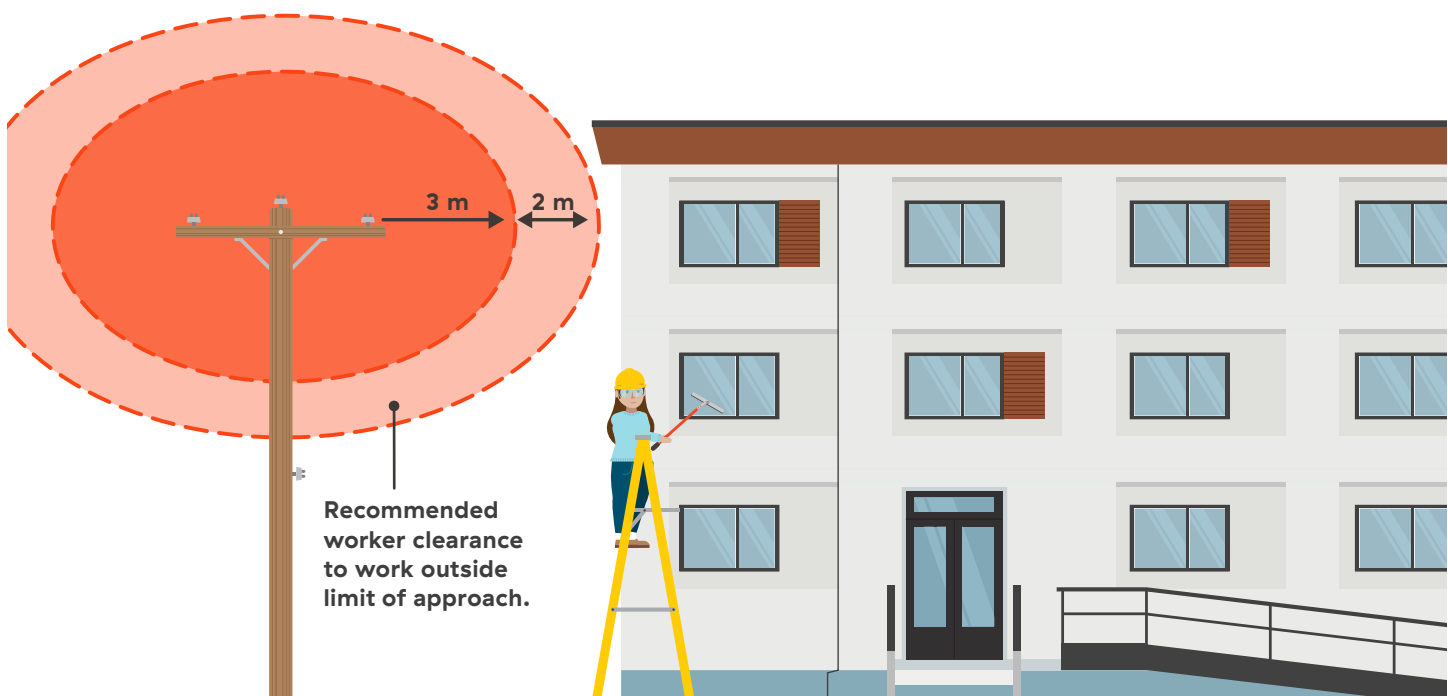
Considerations for the use and maintenance of the permanent structure

Failure to maintain 3m of clearance between the high voltage power lines and the building can result in additional costs for the building owner. Work done on the building exterior would need to comply with WorkSafeBC's Electrical Safety Occupational Health and Safety Regulations 19.24 – 19.29. Table 19-A summarizes the required clearance for workers, and section 19.25 provides options to consider if clearances are not practical; the cost of implementing any of these options are the building owner's responsibility.

Have you considered:

- The opening of windows?
- People standing on balconies or roof tops?
- Window-washers and their equipment?
- Painters with scaffolding?
- Awnings, balconies, flag posts, lighting and signs?

Our recommendation for carrying out such activities is to allow 2 m of additional clearance beyond the WorkSafeBC working clearance requirement. For instance, a window washer, their scaffolding and the reach of their equipment must all be 3 m away from high-voltage power lines. Our recommended additional 2 m clearance allows the window washer to do their job without needing costly mitigation measures to be paid for by the building owner.

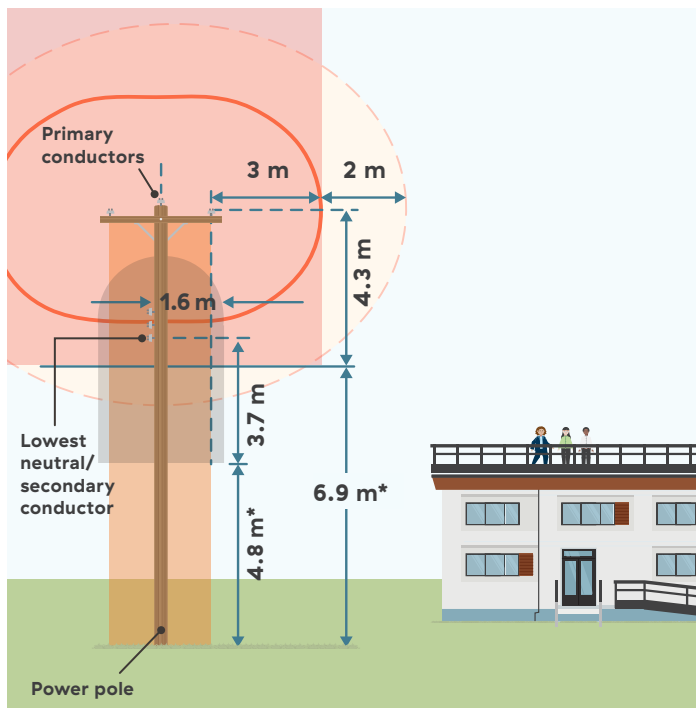


Detailed building-to-line clearances around typical BC Hydro distribution lines

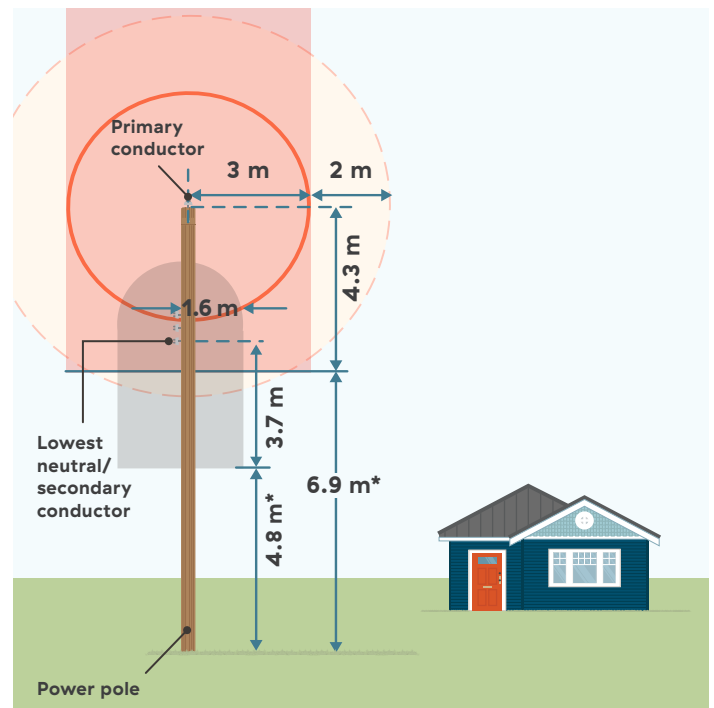
For buildings or building additions being constructed in the vicinity of existing overhead high-voltage lines, these are the minimum distances which need to be maintained around three-phase and single-phase overhead power lines, as per Table 9 from CSA C22.3 No. 1, and applicable occupational health and safety regulations in BC.

This illustration is for informational purposes only; it is not drawn to scale. The customer is responsible for confirming if any additional local requirements apply to their building design; please review all applicable laws and regulations, such as local government bylaws and safety legislations, to confirm what is acceptable in your area.

Three-phase power line



Single-phase power line



*Dimensions provided are typical measurements for a 45 ft pole assuming a 50 m line spanning between adjacent poles.

- Overhead distribution primary conductors require a minimum 3 m horizontal clearance from any structure or working area, and a 4.3 m vertical clearance from any structure, working area or furthestmost building projection. No structure may be located directly below the primary conductors.
- Overhead distribution secondary and neutral conductors require a minimum 1.6 m horizontal clearance from any structure or working area, and a 3.7 m vertical clearance from any structure, working area or furthestmost building projection.
- WorkSafeBC Occupational Health and Safety Policy 19.24 (Minimum separation Distance to be Maintained from Energized High Voltage Electrical Equipment and Conductors) requires a minimum 3 m radial separation from BC Hydro overhead distribution primary conductors.
- BC Hydro's recommends placing the building 2 m away from the minimum radial separation to avoid costly additional mitigations and delays arising from assurance of compliance with OHSR Part 19.25 (3OM33 form) for cleaning and maintenance of building.

Contact us

Additional considerations apply if balconies or walkways are planned adjacent to the identified clearances, warranting a discussion with BC Hydro. If you have any questions regarding these requirements or recommendations, please contact BC Hydro Express Connect at 1 877 520 1355.