

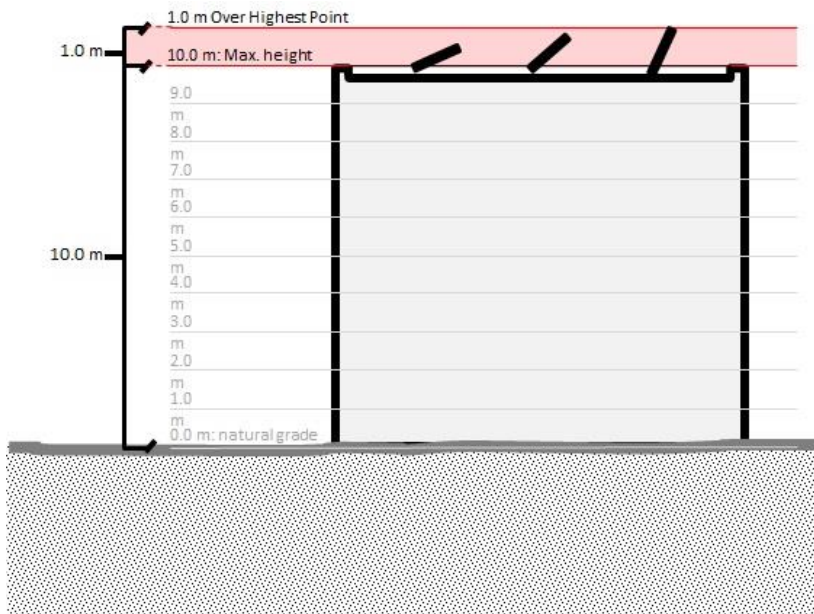
# Bylaw 1285 Amendment Diagrams

## Solar Systems: Height Exemptions

**Scenario 1:** Flat roof built to the maximum permitted height.

Solar systems are tilted to optimize the amount of energy derived from the sun. The optimum tilt angle varies seasonally. At 49.2 degrees north latitude (City of Nanaimo), the optimum summer angle is approximately 25 degrees, the optimum winter angle is up to 62 degrees and the optimum angle for a fixed system, is approximately 40 degrees. Professional installers have suggested that a fixed angle of 30 degrees is acceptable. A building with a flat roof at the maximum permitted height is the most constrained scenario.

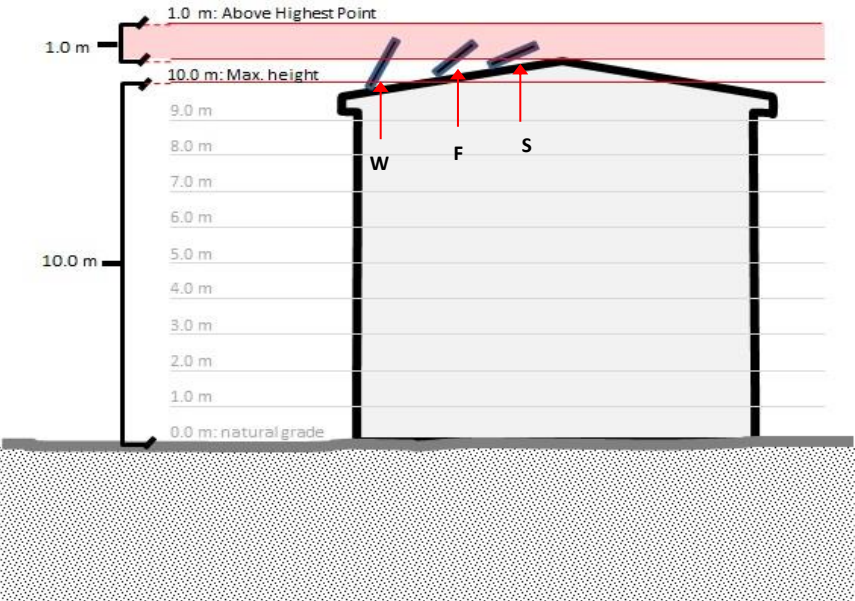
For Bylaw 1285, 2002, the additional 1.0 metre above the highest point of the roof to which the system is attached is sufficient to allow photovoltaic and solar thermal systems on buildings with flat roofs, built to the maximum permitted height.



**Figure 1:** Flat Roof Built to Maximum Permitted Height (Bylaw 1285, 2002)

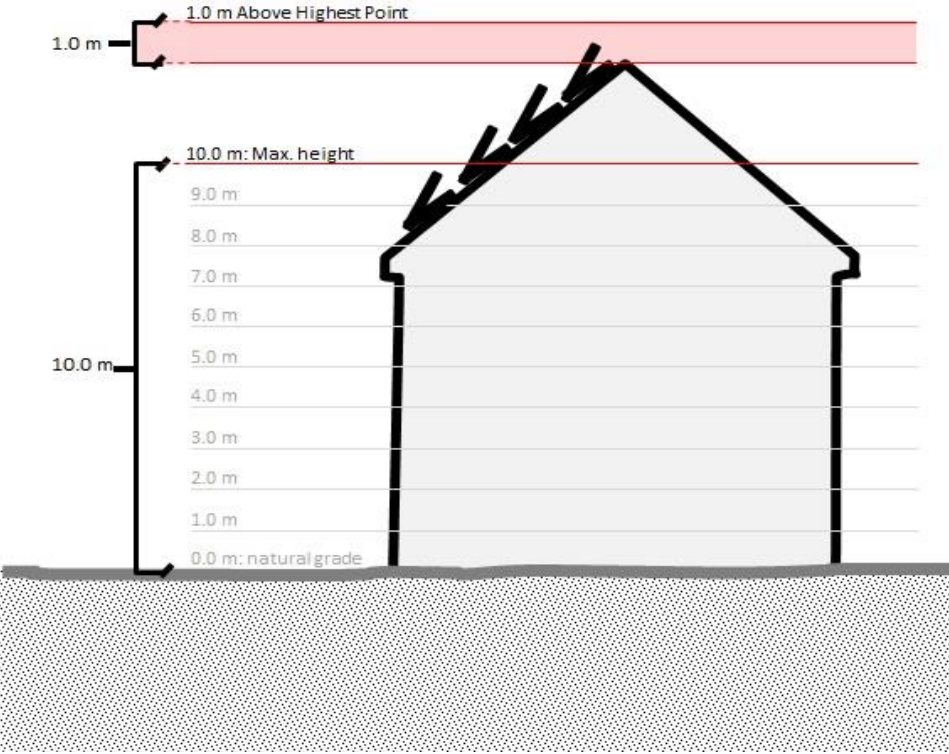
**Scenario 2: Gently Sloped Roof Built to the Maximum Permitted Height.**

Gently sloped roofs are a relatively common form in the Regional District of Nanaimo because such structures allow for the conventional residential appearance of a pitched roof, but also maximize the interior volume of the building. Figure 2 illustrates that for buildings with gently sloped roofs built to the maximum permitted height, solar thermal and photovoltaic systems can be accommodated within the additional 60 cm afforded by the proposed height exemption. Some planning to locate the system appropriately along the roofline will be necessary to accommodate solar thermal systems tilted at either the optimum fixed angle, or at the optimum winter angle.



**Figure 2: Gently Sloped Roof Built to Maximum Permitted Height (Bylaw 1285, 2002)**

**Scenario 3: 9-12 Pitch Roof Built to Maximum Permitted Height**



**Figure 3: 9-12 Roof Built to Maximum Permitted Height (Bylaw 1285, 2002)**

**Scenario 4: Pole Mounted Solar Systems**

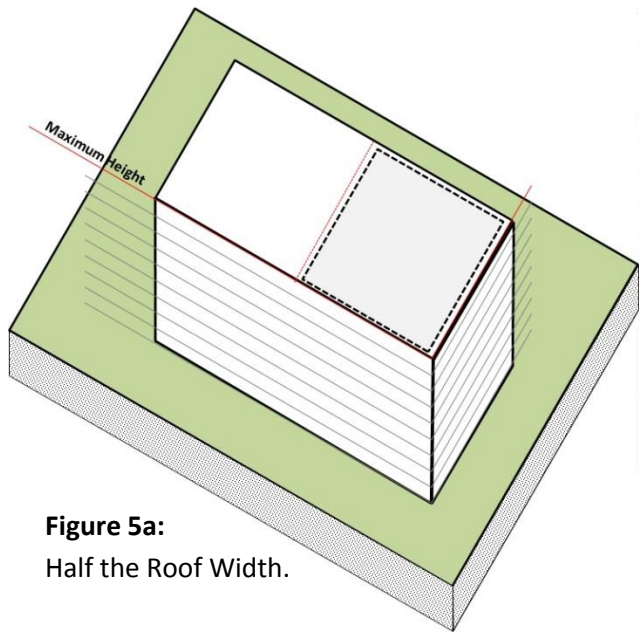
Pole mounted solar systems are required to meet the maximum permitted height requirements for a given zone, as well as setback requirements.



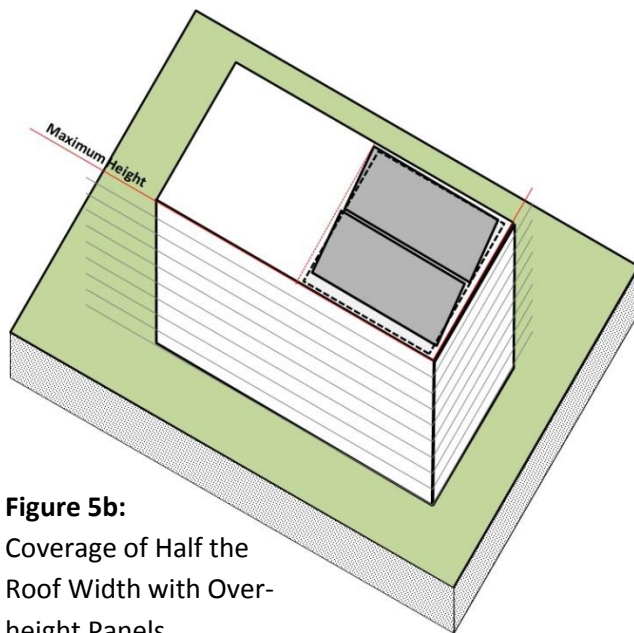
**Figure 4: Pole Mounted Solar Systems (Bylaw 1285, 2002)**

**Scenario 5: Parcels Less than 5,000 m<sup>2</sup>**

To minimize obstruction of views, it is proposed that while solar systems are permitted to exceed the highest point of a roof by up to 1 m, for smaller lots where visual impacts on neighbours is more likely, this height exemption is only permitted to cover up to half the width of the roof to which the system is attached

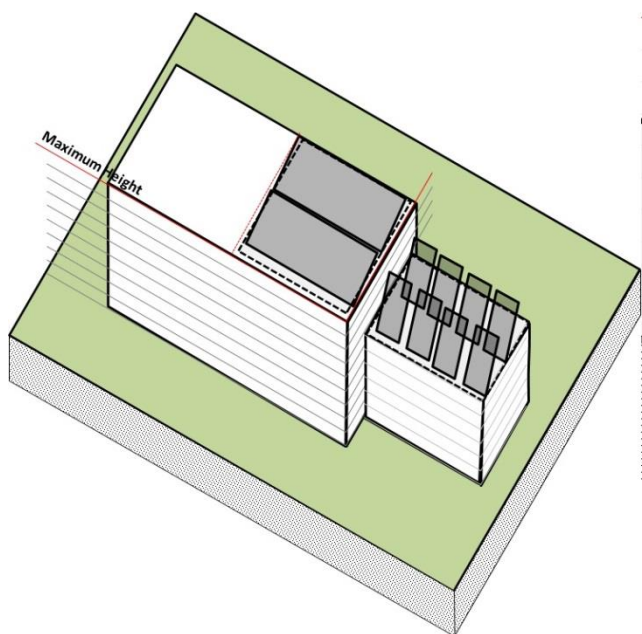


**Figure 5a:**  
Half the Roof Width.



**Figure 5b:**  
Coverage of Half the  
Roof Width with Over-  
height Panels

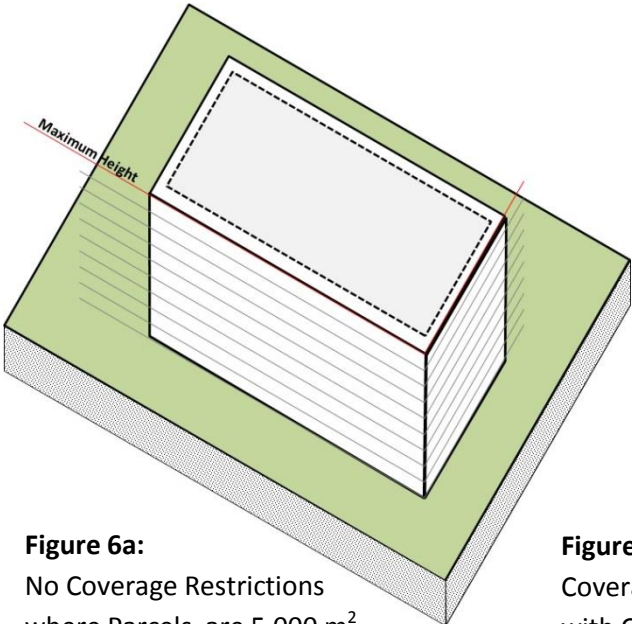
For areas of roof where solar systems do not project beyond the maximum permitted height, there are no restrictions on roof coverage of solar systems.



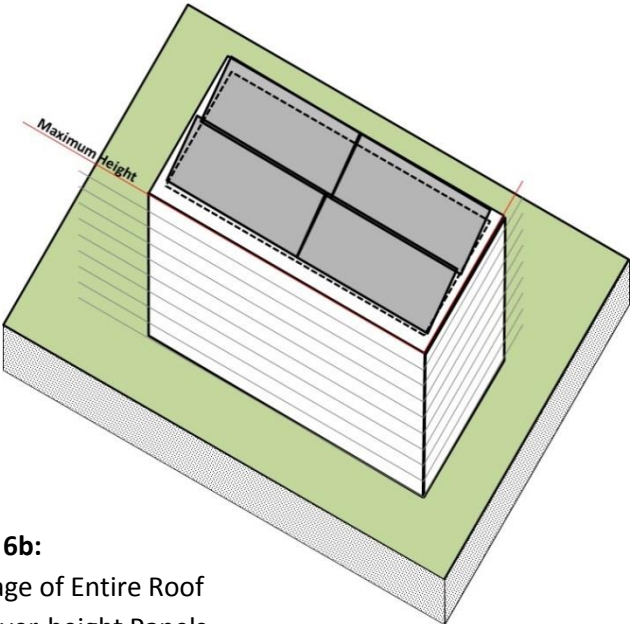
**Figure 5c:**  
No Coverage Restrictions where Panels are  
Below Maximum Permitted Height

**Scenario 6: Parcels 5,000 m<sup>2</sup> or Greater**

There are no roof coverage restrictions on parcels 5,000 m<sup>2</sup> or greater. This is because buildings on larger lots will be further away from one another, and view obstructions associated with a solar system projecting 1 m beyond the highest point of a roof are anticipated to be minimal.

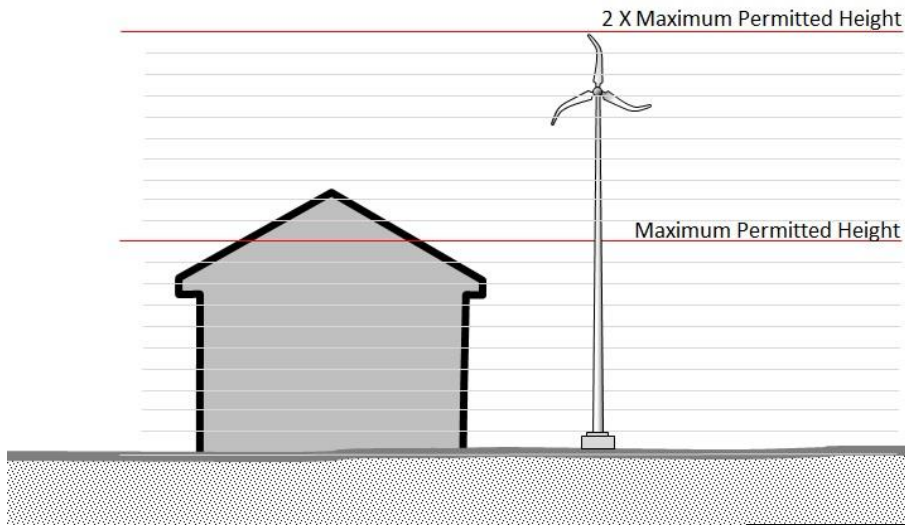


**Figure 6a:**  
No Coverage Restrictions  
where Parcels are 5,000 m<sup>2</sup>  
or more.



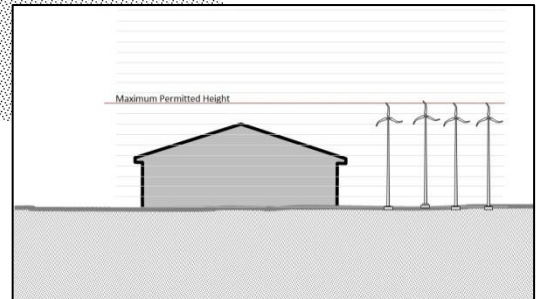
**Figure 6b:**  
Coverage of Entire Roof  
with Over-height Panels

## Micro Wind Turbine Systems: Height Exemptions

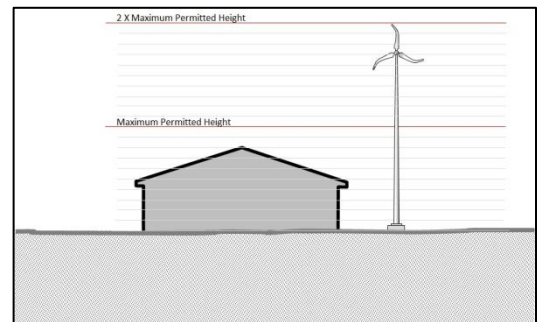


**Figure 7a:** Maximum Micro Wind Turbine Height is Twice the Maximum Permitted Height.

**Inset:** Maximum Micro Wind Turbine Height Exemption Applies Irrespective of Actual Building Height.

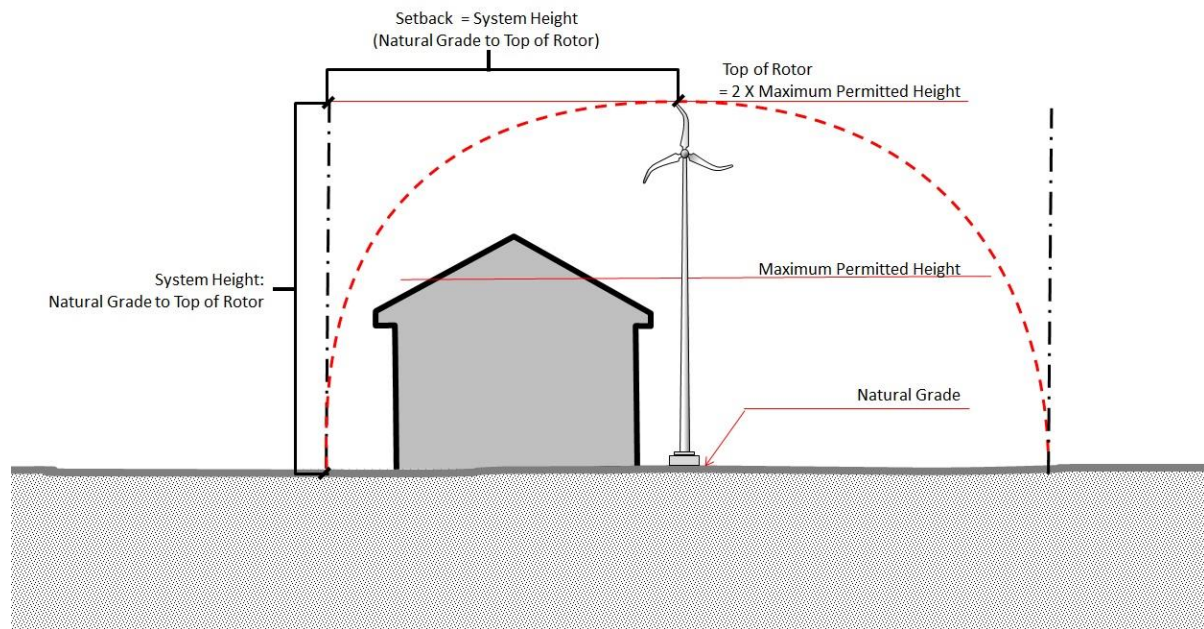


**Figure 7b:**  
No Restriction on the Number of  
Turbines Below the Maximum  
Permitted Height Allowed by Zoning.



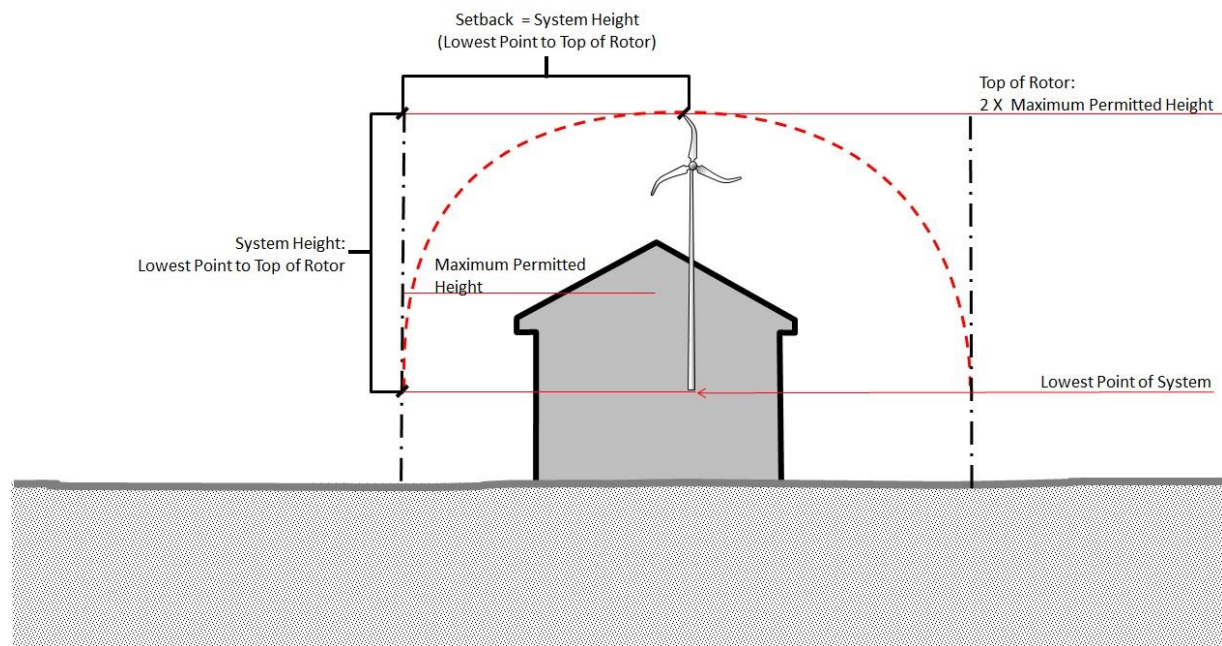
## Micro Wind Turbine Systems: Setbacks

### Scenario 1: Freestanding Micro Wind Turbine



**Figure 8:** Setback for Freestanding Micro Wind Turbine

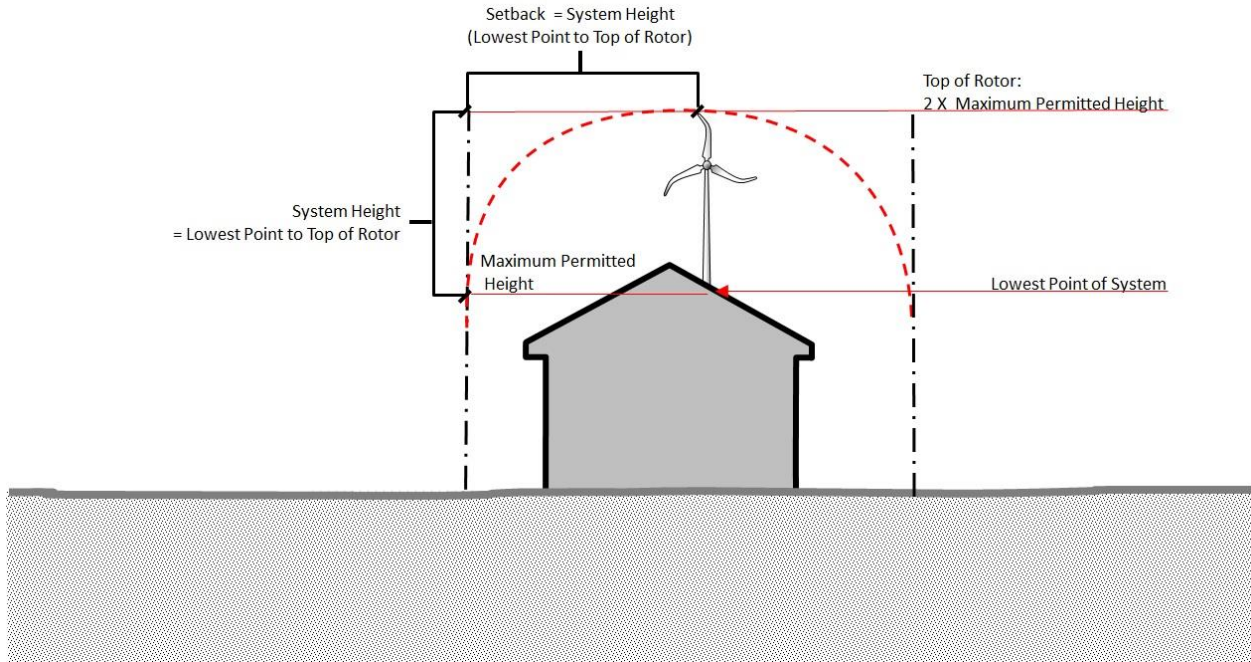
### Scenario 2: Micro Wind Turbine Affixed to the Side of a Building



**Figure 9:** Setback for Micro Wind Turbine Affixed to Side of Building

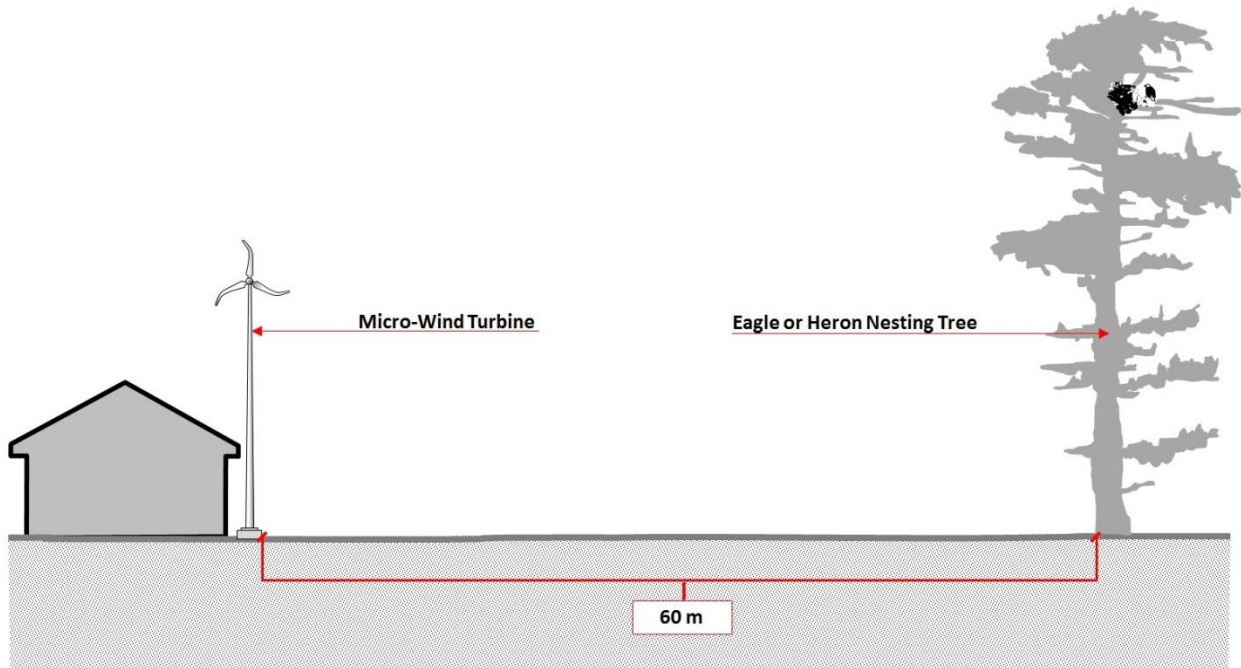


**Scenario 3: Micro Wind Turbine Affixed to the Roof of a Building**



**Figure 10:** Setback for Micro Wind Turbine Affixed to Roof of Building

**Scenario 4: Micro Wind Turbine in the Vicinity of an Eagle or Heron Nesting Tree**

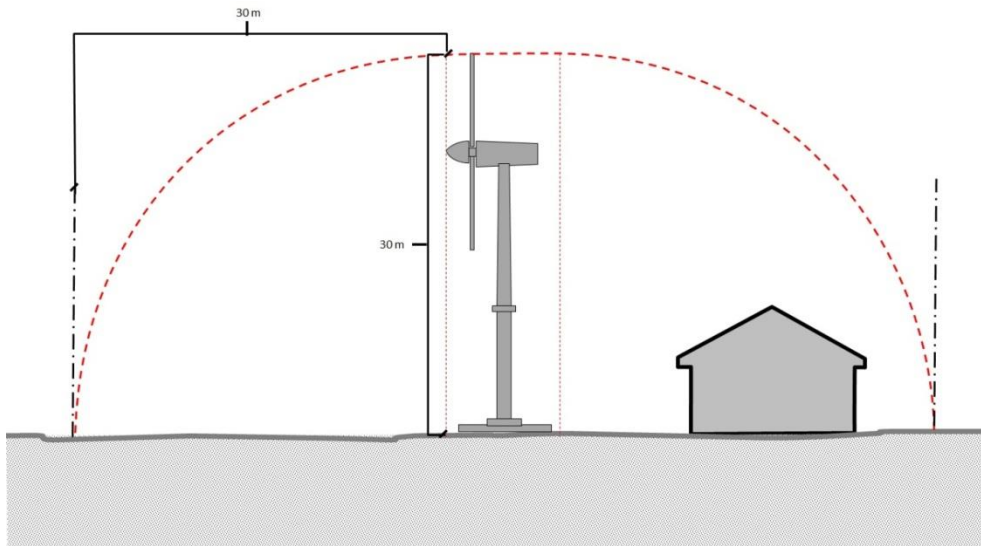


**Figure 11:** 60 m Setback for Micro Wind Turbine From Eagle or Heron Nesting Tree

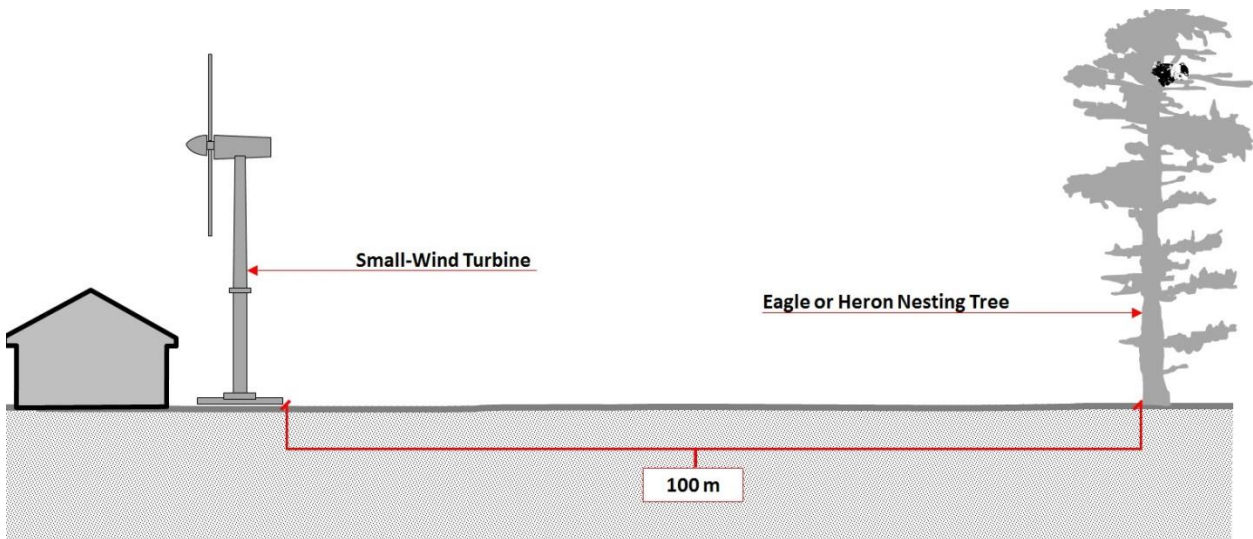
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## Small Wind Turbine Systems: Height Exemption and Setbacks

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**Figure 12:** 30 m Height and 30 m Setback for Small Wind Turbine System



**Figure 13:** 100 m Setback for Small Wind Turbine System From Eagle or Heron Nesting Tree

Rainwater Harvesting Systems: Setbacks

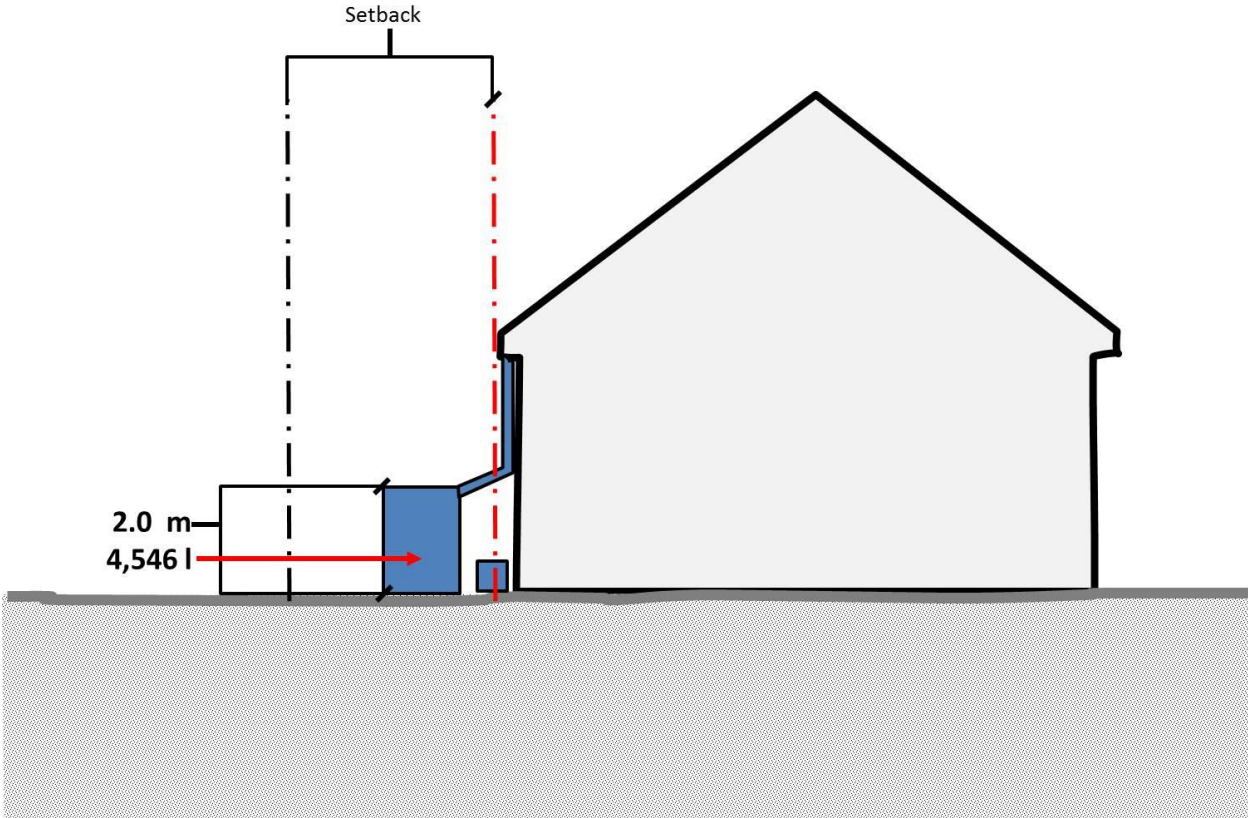
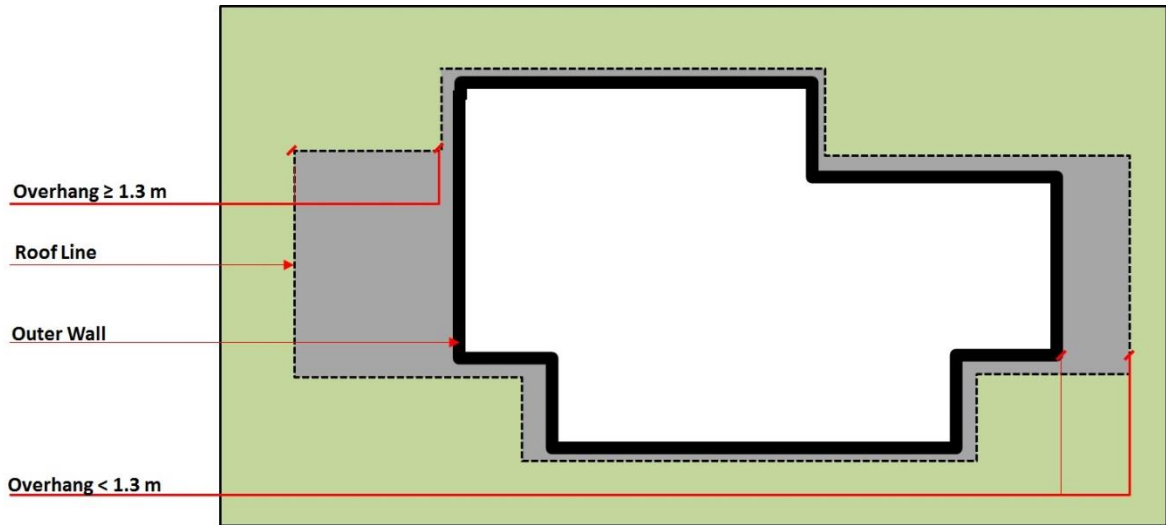


Figure 14: Setback Exemption for Rainwater Harvesting Structures, Equipment and Apparatus

## Floor Area

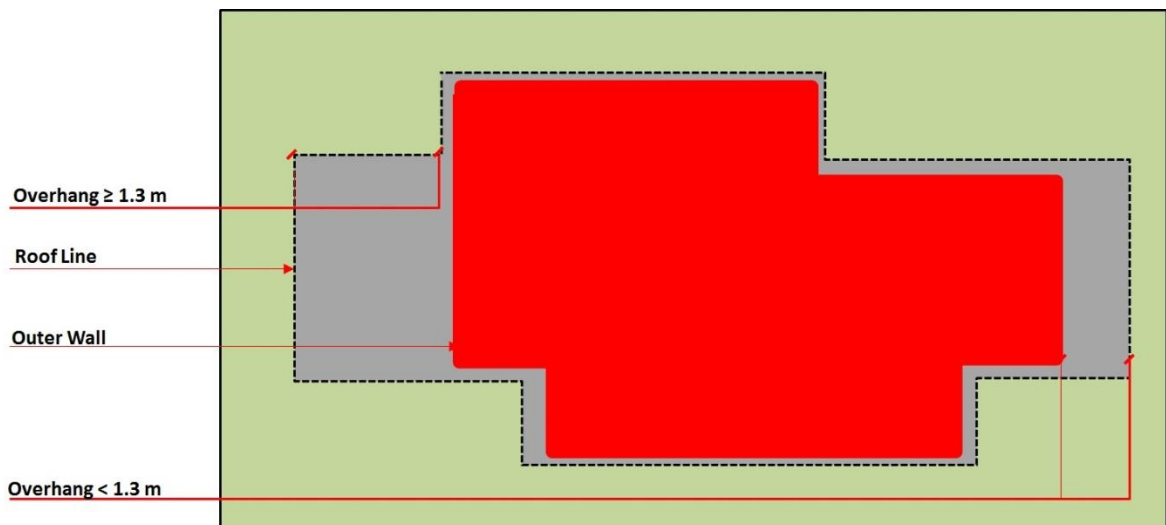
### Scenario 1: Hypothetical Dwelling with Large Overhangs



**Figure 15:** Diagram of Hypothetical Dwelling and Roofline

### Bylaw No. 1285: Floor Area for Scenario 1 Dwelling

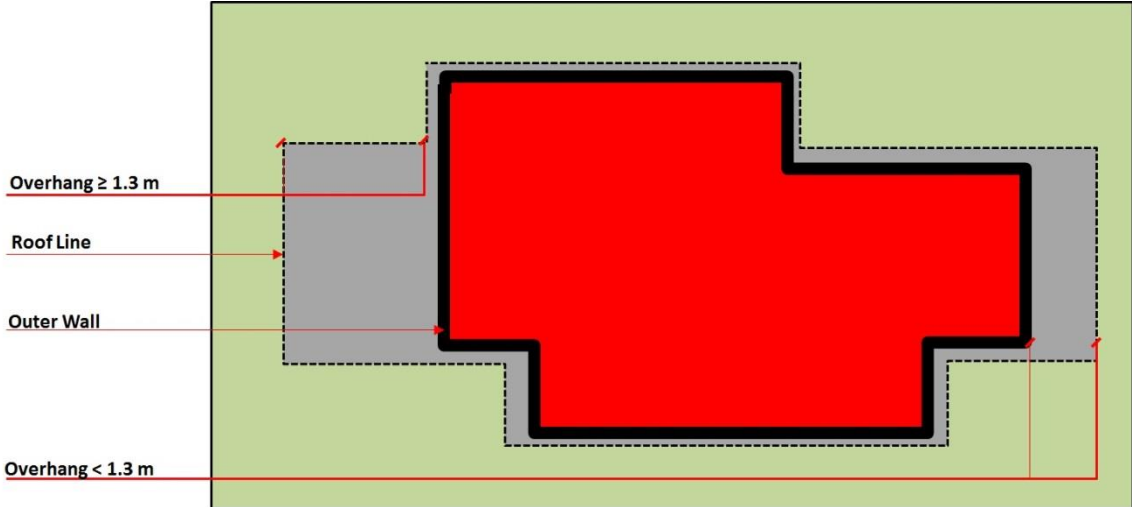
*Floor Area means the sum total of the horizontal area of each floor of a building as measured from the outermost perimeter of the building, but does not include eaves, roof overhangs or door overhangs*



**Figure 17:** Diagram of Floor Area (Bylaw No. 1285, 2002)

**Proposed Revision: Floor Area for Scenario 1 Dwelling**

*Floor area means the sum total of the gross horizontal area of each floor of a building as measured from the inside surface of outermost exterior walls.*



**Figure 18:** Diagram of Floor Area (Proposed)