



Wind Site Assessor Training

Lesson 3.3 Displacement Height

Introduction

You now understand the importance of wind quantity and quality to the performance of a wind turbine, and how to use aerial photographs and topographic maps to qualify a proposed wind site.

Often those sites will be compromised by groves or trees forested areas. This lesson will review the rules that are used to determine the effect of trees on the wind profile.

Learning Objectives

Upon completion of this lesson, you should be able to:

1. Explain the concept of displacement height, where and when it is applicable, and how it is applied over deciduous trees, evergreen trees, and suburban areas.
2. Given the specifics of a location (or during a site visit), determine if displacement height should be applied to the wind profile, then apply it in a wind speed calculator
3. During a site visit, determine the displacement height for that location.
4. Determine if the trees of concern are above or below the proposed wind turbine site, and adjust displacement height accordingly.
5. Given the specifics of a location with two opposing prevailing wind directions and the seasonal wind directions, apply the proper displacement height “penalty” for the site.

Assignments

1. Review the wind site assessments provided in **Overview** for wind speed corrections due to displacement height.
2. Read the “Displacement Height” handout
3. Read the “Displacement Height” document from AWS TruWind

© 2011 Roy Butler and Mick Sagrillo

This material is based upon work supported by the Department of Energy under Award Number DE-EE0000095 and the Minnesota Department of Commerce Division of Energy Resources.