



Wind Site Assessor Training

Lesson 3.4 Re-evaluating wind shear values

Introduction

One skill that wind site assessors use is to extrapolate wind speeds on a wind map or from a met tower up or down to the specified tower height for a site. However, the value of a skill is only as good as the tools that are used.

Textbooks and academic classes often site the $1/7^{\text{th}}$ power law for extrapolating wind speeds up or down from a given height. The wind shear values that are commonly used for quantifying different amounts of ground clutter are considered “textbook values”, meaning they may not be reflected in the real world.

This lesson will examine the problems associated with the commonly used wind shear values and make recommendations for modifying more realistic alphas so that assessors can arrive at more accurate wind speed estimates.

Learning Objectives

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

- Explain the problems associated with the wind shear values commonly used by wind site assessors.
- Explain why textbook alphas that are commonly used do not reflect the real world alphas.
- Given the specifics of a location, determine the wind shear value for the site.
- During a site visit, determine the shear value for the site.
- Utilize the new alphas in the wind speed calculator to estimate wind speed.

Assignments

1. Read Chiras *Power from the Wind*, Chapter 4 pages 90 to 91.
2. Review the wind site assessments provided in **Overview** for wind shear used to calculate the hub height wind speed.

© 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.