

***Interactive comment on “Wind turbine power production and annual energy production depend on atmospheric stability and turbulence” by C. M. St. Martin et al.***

**Anonymous Referee #2**

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This manuscript is trying to give the guidance of using a multi-criteria approach of evaluating power performance of a wind turbine. The concept of using of stability and turbulence filters in segregating power curves is not new, but the case study done in this manuscript and the associated evidence shown are of great value as a reference for the future work under this topic. The effort of collecting and quality controlling of the measured data from three sources: nacelle, tower and lidar are very noticeable. ÅIn the following years I hope I will continue my work in turbulent wind inflow study and would love to cite this paper when published and will try using numerical weather forecasting model/ large simulation model interacting with wind turbine models to reproduce the results found in this manuscript. I find the paper to be very well written.

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There is just one general comment:

This manuscript spreads out the observed relations between power curves/annual energy production (AEP) and turbulence intensity (TI)/ turbulence kinetic energy (TKE)/Bulk Richardson number(RB), however, the physics behind the phenomenons have not been discussed. For example, what are the authors' perspectives and explanations on the causes of “increased TI and TKE undermined power production at wind speeds near rated, but increased power production at lower wind speeds” ?

The illustrative examples look appealing and it may be published if this lack of information is added.

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