Review for: Wind Energy Science
Manuscript Number: wes-2019-82 Rev 1
Title: Operational-Based Annual Energy Production Uncertainty: Are its Components Actually Uncorrelated??

May 1, 2020

1 General Comments

I appreciate the authors' responses to reviewer comments and updating of manuscript. The methods followed are much more clear now. Unfortunately, with that greater clarify in the method employed, I am less able to recommend publication than originally as the underlying central thesis of paper, exploration of input correlations, doesn't seem to be what's actually being revealed in the paper's results. My fundamental difficulty with the paper now is I think in-line with other reviewer's comments around seeming absence of a correlation matrix in the Monte Carlo procedure. If I understand correctly, the 5 input parameters have been sampled using an MC procedure completely independently drawing on non-correlated random number generators for each. This was done with individual per-parameter sampling, and then all-at-once sampling from all 5 parameters. Pearson coefficients were then used to examine correlation between input parameters.

If my understanding of the procedure presented is correct, then the results are unsurprising. For example, Revenue meter measurement error, a priori based on the definition of uncertainty included in the MC process could never be correlated with any of the other input parameters. There is no mathematical connection between that and the other 4 parameters. The statistical application of the MC process to establishing correlation between the inputs is therefore I think erroneous and the results are artefact's of the definitional form of the parameters. The main correlation found was wind resource IAV and long-term windiness correction; as the authors themselves state, both are driven definitionally by the same underlying data set. The MC method is independently randomly sampling from the input data sets, and so it's not clear to me that the statistical results obtained are actually representing the true correlation statistics between the input parameters.

Ultimately too, the connection from parameter correlated uncertainty back to operational AEP is not well articulated, but in any case as per above comments I'm not convinced the MC method used is actually exploring parameter correlation.