Comment on wes-2021-164
Anonymous Referee #1

The authors performed a comparative study of modelling approaches for the interaction of wind turbines with nearby obstacles in siting analyses. Four different strategies were tested: the classical Perera model, a novel analytical model derived from an extensive dataset of CFD simulations (ANL), a modified urban dispersion model (QUIC-URB) and a machine-learning model, fitted to site-specific data. As benchmark for the evaluation of the models' performance, wind data derived from production data of a set of small turbines located in the Netherlands were employed. The analysis gives useful insights into the capabilities and limitations of the different models and how they affect the predicted production of the site.

The reviewer believes that the topic and the activity are very interesting, innovative and worthy of investigation. The approach is rigorous and consistent throughout the whole activity. The paper is well presented, and the results are clear. Some specific considerations:

- The use of first-person plural is not recommended for a scientific publication;
- line 49: it is not clear which models are from the literature and which from the authors. Please clarify this aspect;
- line 97: references to “prior validation results” are missing;
- line 100: it is not clear from the text that the work is from some of the authors;
- line 124: in the Reviewer’s opinion, the term “layers” would be more fitting than “slices” in this context;
- Section 3: it would be useful to add a table comparing the different models in terms of main characteristics, type, computational effort, input data, etc...;
- Typos: line 99, “establisheddd” is written with two d; line 296, “AP” instead of “AEP”;

The Reviewer recommends the publication of this paper after the proposed minor modifications have been performed.