

This study aims to provide a quantitative and qualitative comparison of the planned Prinses Elisabeth wind farm cluster across different fidelities of numerical wake models, ranging from mesoscale weather prediction models to fast-running engineering models. However, five of the six sections in the result discussion focus on the mesoscale model, with only the last section discussing the comparison. I believe the authors should make a more detailed analysis comparing the mesoscale model to the engineering model to justify their title. Additionally, the setup and design of the engineering model are not clear to me. Therefore, I don't think the comparison is valid.

### **Major Comments:**

**Section 2.4:** More details are needed to describe the setup of the engineering model:

1. How big is the domain? What is the grid resolution? (I assume it is much smaller than the WRF domain, perhaps just the BE-NL wind farm?)
2. "Driving each model with the resulting homogeneous wind fields" – where does the initial wind field come from?
3. "Similar to the WRF case setup, to isolate the effects of the PE wind farm cluster on the existing zone, for every engineering wake model two simulations are performed, i.e., one with and one without the PE." Again, I am curious to know how the wind field is initialized for these simulations.
4. Do you run the engineering model for one year using the wind field from WRF? How do you update the incoming wind field in the engineering model using WRF data?

**Section 3.6:** I believe a more thorough analysis can be done to understand the difference in wake loss between the WRF model and the engineering model. For instance, examining the spatiotemporal differences in wind speed and TKE over the wind farm and its wake region, as well as the wake extent. Differences in the vertical profiles of these variables could provide another perspective. The authors should make a more sincere effort to justify the goal of their paper.

### **Minor Comment:**

The definition of internal wake loss (Equation 2) is technically incorrect. While the equation is correct, the definition is flawed due to the design of the experiment. The internal wake loss for a particular wind farm should be the difference between the simulation with and without that particular wind farm only. However, based on how the simulation is set up in this paper, all internal wake losses are contaminated by the external wake loss from other wind farms. Therefore, Table 7 is incorrect.