

General comments

The manuscript entitled “A method to correct for the effect of blockage and wakes on power performance measurements” describes a strategy to account for blockage when a turbine is operating within a wind farm rather than in isolation. The work is interesting and the motivation is strong, as blockage effects can have a large impact on power performance. However, the proposed method suffers from limited practicality, as either multiple simulations or lidar measurements are required to apply it to a real wind farm. While I recommend this work for publication in *Wind Energy Science*, I suggest the authors propose some solution to these limitations (e.g., using simplified models or SCADA measurements) either within the body of the manuscript or as a direction for future research.

Specific comments

1. Page 2, lines 50-51: This sentence in the introduction is unclear to me: “Specifically, wind farm blockage appears to affect the wind speed relationship between the mast location and the rotor in these results.” What is the relationship and how is it affected?
2. Page 4, lines 106-107: Could you provide some support for the assumption that the blockage/induction remains constant with wind speed over the plateau of the thrust coefficient curve?
3. Page 5, lines 143-144: Can you comment on the effects of wind farm size and spacing?
4. Page 9, lines 215-217: Why do the largest power losses occur at the edges of the farm rather than at the location of the largest velocity deficits?
5. Page 13, section 5: Can you please elaborate on how this section ties into the rest of the manuscript?
6. Page 16, lines 324-327: Nacelle lidar measurements are also not trivial to obtain. Most turbines are still not equipped with lidars. Though it is interesting to propose measurements as an alternative to simulations, it does not significantly improve the practicality of this method.
7. Page 18, lines 336-337: Site-specific sensitivity is another strong limitation of this work. How much is this ratio expected to change under different conditions?

Technical corrections

1. Page 8, figure 3: Please put the axes in terms of D .
2. Page 11, figure 6: It is not clear how useful this plot is. The information shown seems redundant with figure 5. In addition, the variations shown are very small. If the authors choose to keep this figure, the y-axis should be labeled in terms of percent.
3. Page 12, figure 8: Once again, I am not sure how much this figure adds to the manuscript. The same information can be gleaned from figure 7.

4. Page 18, figure 14: This figure feels out of place here. It would make more sense to talk about the fidelity of the lidar measurements before talking about the relationship between lidar measurements and power (figure 13).