

Second review of “Seasonal Variability of Wake Impacts on U.S. Mid-Atlantic Offshore Wind Plant Power Production” by Rosencrans et al., submitted to WES

The author have done an excellent job at addressing my concerns. I only a few minor requests.

1. The 25% TKE correction value is the default in WRF. It does not matter that only one study to date (Archer et al. 2020) has supported it. What matters is that *everybody* is using that value unless they have extensive knowledge of the issues associated with it and change it manually. I disagree that “The 0% added TKE is more similar to the impact in the Volker et al. parameterization which has been used in several studies.” Volker et al. used a totally different approach for TKE and therefore I disagree that they should be cited in support of 0% TKE. Other studies have used 0% TKE, but only as sensitivity. One of the first papers by Fitch et al. demonstrated that adding 0% TKE was indeed inaccurate for example. We all know that some TKE is indeed added by the turbines and therefore 0% is not a representative value. 100% is the old default and there is value in using it. But not having anything in between is not good. I wish that the authors had done some runs at 25%, but it’s too late for that. But the sentence in the abstract: “We also vary the amount of added turbulence kinetic energy (TKE) between 0% and 100% to provide some uncertainty quantification” is untrue. You did not “vary” the added TKE between the two extremes, you only used the two extremes. Thus the sentence should be rephrased as “To provide some uncertainty quantification, we tested two values of added TKE: 0% and 100%.”

2. I suggest a small change in the order of the equations for the losses, to improve readability (shorter acronyms) and be more consistent (no mix of Loss and LOSS):

$$Loss_{tot} = 100\% - \left(\frac{P_{LA,CA}}{P_{NWF}} \right) \times 100\% \quad (9)$$

$$Loss_{int} = 100\% - \left(\frac{P_{VW}}{P_{NWF}} \right) \times 100\% \quad (10)$$

$$Loss_{ext} = 100\% - \left(\frac{P_{LA,CA}}{P_{VW}} \right) \times 100\% \quad (11)$$

$$Loss_{ext} = Loss_{tot} - Loss_{int} \quad (12)$$

3. I disagree that L=1000 m is a good choice here. The authors provide one reference only for it, Munoz-Esparza et al. (2012), which I am not familiar with. I provided 5 or 6 references for shorter values and recommended 500 m, which is in the ballpark of all of them. Dismissing them because not all of them are offshore is not convincing; not to mention that at least one, Archer et al. (2016), was offshore, more recent than Munoz-Esparza et al. (2012), and obtained from measurements in the Nantucket Sound, which is in the area of interest here. Lastly, using L=500 m the authors obtained a more typical frequency of neutral cases (11.2% versus the previous low value of 4.5%). As such, I have to insist that the calculations be modified using L=500 m.