Referee's comments to second revision of wes-2024-79

Thanks to the authors for making another iteration. The small changes did not address the concerns. However, for the sake of our time, the paper can be accepted after addressing minor revisions, and the editors will acknowledge that some of one Referee's comments were pushed back. The manuscript will be released publicly, and readers will have a chance to formulate their own opinions.

Comments:

1. The main point remains not addressed. The Referee understands that the LES simulations (finite or infinite layout) show that the C_T^* is fairly constant for a large set of inflows and that the associated $C_{p,Ninshino}$ is a good first-order approximation of the near-ideal (i.e., an upper limit among all layouts) farm performance. However, the conclusions that (i) $C_p/C_{p,Nishino}$ is a measure of local flow effects and that (ii) $C_p/C_{p,Nishino}$ means "no wake effects" are not agreed upon. Again, there is merely a problem with the narrative. $C_p/C_{p,Nishino}$ is mathematically nothing more than a correction on top of the Nishino model, which is certainly unaware of the layout, but also of changes in velocity profile across the turbine rotors, reliant on 1D momentum theory, valid for infinite layouts, etc. Why would $C_p/C_{p,Nishino}$ be a measure for "local effects" only is not sufficiently supported by results.

   The latest change:

   "In this study our LES results showed that, for a large staggered array of 160 turbines, the downstream power degradation was not due to turbine-wake interactions, i.e., individual turbine wakes (or more specifically, local flow regions having a lower flow speed than the "average" flow speed) were not directly causing the reduction of downstream turbine power (in the sense that how the power of downstream turbines would have been reduced if they had been located in such a locally slower flow region)"

   Has honestly made things even more obscure. If we are still in the realm of fluid mechanics, a lower velocity region does cause a very "directly" a reduction in available power downstream. The last sentence in parentheses sounds very philosophical and not understood at all and should be removed/revised.

2. The addition: "The 'double spacing' case gives an even higher η_{FS} because of the low array density, which reduces the total farm thrust and thus the vertical mixing due to turbulence compared to the 'standard' case." sounds confusing. A coarser layout will lead to lower farm-scale efficiency just as the result of reduced wake interactions, which brings the $C_{p,Nishino}$ (which included wakes effects at a farm level) closer to the Betz limit (which is the limit for isolated turbine). The authors themselves say Section 2.2 that $\lambda/C_{f0} \rightarrow 0$ implies $C_{p,Nishino} \rightarrow C_{p,Betz}$ without need to call out "vertical mixing". Please remove the reference to "vertical mixing" which does not play a direct role here.