

Building a Diverse and Equitable Distributed Wind Workforce: A Strategic Approach to Collaborator Selection

Author's Response

Only reviewer #2 provided written comments requiring edits to the manuscript. Those comments are addressed in this document. Responses to reviewer comments (RC) are in *blue italics*.

Feedback RC 2

The Building a Diverse and Equitable Distributed Wind Workforce: A Strategic Approach to Collaborator Selection provided a novel and reasonable approach to identifying training programs that can increase diversity and equity in wind energy workforce through distributed wind technology. As an experienced wind workforce analyst, the methods are sound and provide valuable approach for making data driven and informed workforce development decisions. To strengthen the article, the authors may consider a more detailed discussion on the types of underserved and underrepresented communities. For example, like utility-scale deployment, distributed wind is likely occurring in more rural areas. What are the unique economic and demographic implications of these types of communities on increasing diversity and equity in wind energy. Several minor comments for authors consideration are also attached as a supplement.

Response

Thank you so much for your thorough and thoughtful feedback. We've made edits to the manuscript to address your supplemented comments and added discussion to section 1.1 on the economic and demographic implications of rural, underserved, and underrepresented communities on wind energy.

In addition, we have removed the project name from the manuscript and refer to the approaches in this work more generically per internal guidance. The comment responses below and the updated manuscript will reflect this name change.

Supplement - Feedback RC 2

Line 10 – Suggest looking to the U.S. Energy and Employment Report for wind energy demographic data. Discuss what improvements distributed wind could provide.

Thank you for suggesting this resource. We have added some insights that reflect the findings in the USEER but do not reference them formally because this is the abstract. There are additional references to this report in the introduction.

Line 55 – I would like to see a discussion if distributed wind has specialized skills (or different from utility scale LBW) that may impact industry and workforce development for these programs.

We have added a few sentences of discussion on the unique skills distributed wind requires compared to LBW. So far, previous work has identified that DW needs multifunction workers - employees with broad abilities that can perform various tasks, from installation and maintenance to troubleshooting and customer service.¹ A key piece of future work for the workforce effort is to further map and define the skills needed for a DW workforce, and additional context has been added in the following paragraph to give background on the project's full scope.

Line 85 – I'm confused why Development and Siting is after listed after Construction in Figures. Consider putting more professional type phases next to each other?

The order of the segments reflects the selection order in the original survey questions. However, the top heading bars incorrectly illustrate the industry segments as if they are sequential. Both Figure 1 and Figure 2 have been updated to make the industry segments more individualized instead of them seemingly depicting a process.

Figure 2 – How was the question asked to manufacturers different than installers? How much insight would a manufacturer have into construction hiring or development?

Manufacturers and installers were provided identical survey questions. There are manufacturers that identified themselves as also conducting turbine construction and thus provided responses for the construction and development segments. I have added a footnote with this detail to the figure references in-line.

Line 115 – Adding a discussion about distributed wind energy demand (current and future employment) may strengthen this discussion. Even empirical information on how many folks are in an installation crew or how many folks are needed for different deployment phases would help add context.

Thank you for this suggestion. These numbers are challenging to gather because of the limited public information about the distributed wind workforce beyond the Distributed Wind Market Report.² The report analyzes the U.S. distributed wind energy sector, and highlights key trends, market dynamics, and technological advancements. However, we have added additional context to support the claim of DW growth needing a growing workforce. In addition, the beginning of the introduction primes this discussion with policy motivation.

Line 109 – Do you have any information on how different underserved and underrepresented communities could be from those communities where utility-scale LBW is constructed? Present different economic or demographic data. While the power is transferred somewhere else, is it generated at similar locations. How demographically

¹ Parker, Kendall M., Esaki-Kua, Lauren A., & Preziuso, Danielle C. (2024). Towards a Workforce Roadmap for Distributed Wind: Phase 1 - Identifying Needs and Barriers. <https://doi.org/10.2172/2440158>

² Sheridan, L. M., Kazimierczuk, K., Garbe, J. T., & Preziuso, D. C. (2024). Distributed Wind Market Report: 2024 Edition. Pacific Northwest National Laboratory. https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-36057.pdf

diverse are these communities? Rural populations are underserved and underrepresented communities, but their workforce development may continue to have a smaller impact on the worker demographics. Which parts of increasing diversity and equity would this project have the biggest influence?

Thank you for this thoughtful comment. We've made a few updates in this section to incorporate your suggestions. We started a new paragraph to highlight that the "local loads and local workers" contribution advances equity, and workforce effort's contribution to this is in the process the project undertakes to contribute to more equitable futures. In addition, there is added clarity on contributions to diversity and their relevance to the wind industry.

Line 110 – what is the definition of “multifunction workers” – workers trained across job or sectors with overlapping skillsets?

This definition was added to address your comment at line 55 and reiterated in the manuscript at line 110 for clarity.

Line 125 – is the project objectives DEWWind – maybe add that explicitly?

Thanks for this suggestion. We added detail on the objectives of the workforce effort and clarified the connection between the objectives and approach showcased in this work.

Line 165 – list dates or administration of EO?

We have added publishing years to each of the Executive Orders.

Line 175 – How are registered apprenticeship programs considered? Do you prioritize RAPs to comply with IRA PWA (since it was mentioned as important in the intro?)

RAPs are not given extra weight beyond what is already specified for technical and trade programs. We have added additional context in this section and in the Rubric Development section to clarify this.

Line 240 – Were institutions filtered to include those programs that had a program type that had relevant skillsets for distributed wind energy? If a program has an existing wind programs, how does that apply? Meaning, if there was an existing wind training program within a particular area, should it get plus points?

No, institutions were not pre-filtered based on overlap with distributed wind skillsets because no current resource exists that identifies the necessary skills for a DW worker. In addition, existing wind programs did not get additional points because of the objective to build up new programs and curriculum (1) through partnerships with new institutions and (2) in areas with predominantly underserved and underrepresented groups. We have added details to this point under the Institution Type description.

Line 295 – indication that training development needs to be around installers; but could you also run a specific analysis to understand training program expansion or development for new market areas?

This is a great suggestion and aligns well with the next steps of the workforce effort to use the place-based characteristics near academic-industry partnerships to assess potential workforce program development. We have added more detail on these next steps.