

MNRE National Repowering Policy for Wind Power Projects, 2022 [Draft]

Summary:

Introduction:

The share of Wind power in the country has increased from 21.1 GW in March, 2014 to 40.3 GW in March, 2022. The wind turbines installed earlier at the sites with high wind energy potential are of sub MW capacity with low hub height. These wind turbines were inefficient and needed to be repower with the latest technologies.

Repowering Potential: NIWE has estimated repowering potential of the country to be 25406 MW considering Wind turbines of capacity below 2 MW. The state wise details of repowering potential is given as under:

States	0.5 MW	0.5-1 MW	1-1.5 MW	1.5-2 MW	02 MW
Tamil Nadu	1181	2919	1813	1473.5	4100
Maharashtra	243	1068	1389	731.35	1311
Karnataka	0.3	954	652	1417.05	954.3
Gujarat	51	1457	1352	1805.35	1508
Rajasthan	39	1192	788	914.9	1231
Madhya Pradesh	0	290	260	1012	290
Kerala	0	18	0	10	18
Andhra Pradesh	92	378	195	1701.2	470
Total	1610	8280	6449	9067	25406

Objective:

The objectives of the Repowering Policy are optimum utilization of Wind energy resources by maximizing energy (kWh) yield/ sq. km of the project area and utilizing the latest state of the art onshore Wind turbine technologies.

Eligibility:

- All wind turbines identified under BIS Act.
- Wind turbines completed their design life.
- Wind turbines below 2 MW rated capacity.
- Turbines connected to a single Polling Sub Station (PSS).
- Wind power Project with adjacent land area.
- More than 90% of the total capacity of the project should have completed its design life.

Repowering Project:

The capacity of the wind turbine will be enhanced by 1.5 times the aggregate capacity of old turbines. Two types of repowering projects- Standalone and Aggregation Projects.

The document can be accessed [here](#).

CER Comments

- 1. Minimum limit of turbine capacity after repowering (Clause No. 6):** The draft Clause states “.....*The capacity of the repowered Wind turbines is enhanced by at least 1.5 times of its aggregate capacity of old turbines*”. Further, as per Clause 2, “.....*the repowering of Wind turbine of below 2 MW capacity must be considered*”. If the turbine of capacity 1 MW is considered for repowering, the policy would allow

selection of new turbine of 1.5 MW, which is would still fall below 2 MW threshold specified for repowering. Hence, new turbines should not be less than this limit of 2 MW. This criteria should be over and above the 1.5 times limit suggested in the policy.

2. **Definition of Private Developer (Clause No. 7 (ii) (a)):** The draft Clause states that *“SNAs/CNA may identify the potential turbines for repowering. In such cases SNAs/CNA either nominate any State/Central PSEs as Wind Repowering Project Aggregators (WRPA) to repower the project or elicit interest from **private developers** for the same” (emphasis added)*. The policy does not leave any room for a public entity (e.g. SECI) to be a WRPA entity for carrying out the repowering. Policy should not exclude participation of public entities.
 - a. In case of aggregation project, if one/multiple individual project refuses to participate in the repowering, it needs to be clarified whether the remaining capacity of the aggregation project will be considered for repowering or not.
 - b. In case of projects having disputes related to ownership or legal or the consent to be provided for the repowering of the project, the methodology for the repowering should be defined for such cases and a Clause may be inserted stating that, *“Repowering shall proceed with consent of at least 80% or 90% of the wind farm capacity”*.
3. **Modification of Power Purchase Agreement (Clause No. 9 (a)):** The draft Clause states that *“The power generated corresponding to average of last three years’ generation prior to repowering would continue to be procured as per the terms of PPA in-force till the PPA tenure”*. The power generated corresponding to average of last three years prior to repowering would be at lower CUF. The new turbine would have higher CUF and capacity.

If the old terms of PPA are considered for the repowered project, there will be no benefit to the discoms for their consent provided for repowering. Provision for financial incentives to the discom should be included so that benefits of better economics are shared with the discoms and hence the final consumers of electricity.
4. **Duration of project execution for repowering (Clause No. 9 (c)):** The draft Clause states *“...repowering period shall not exceed 2 years from the date of commencement of execution of re-powering”*.

The duration of **2 years for repowering of the existing turbines seems to be long**, as the primary site preparation work such as road widening, etc., would have already been completed.

Further, it is suggested that the following Clause may be added after the existing draft Clause *“There should not be any additional environmental impact and any road widening should be avoided while repowering”*. Adoption of airlifting the turbines would prevent further environmental damage. Also, the **provisions to address delay in completion of repowering, including penalty in terms of discount on tariff to the discom, should also be included in the policy.**

It is suggested that, in case the repowering project is done in stages, so that power supply can commence from partially completed repowering.

5. Refusal to procure additional power (Clause No. 9(b)): The draft Clause states *“The project developer(s) shall be at liberty to sell additional Wind power capacity (MW)/ generation to the incumbent DISCOMs or to any other entity through Open Access **subject to refusal of concerned DISCOM**”* (emphasis added). The term *“subject to refusal of concerned DISCOM”* needs more clarification as it is not clear whether the refusal is for the additional power to be procured by the discom or for power procurement through open access. It is recommended that the draft Clause may be rephrased as *“.....subject to the refusal of consent of discom to procure the additional power from the repowered wind project”*.

6. Early termination (Clause No. 9(d)): The draft Clause states *“The project developer(s) shall be at liberty to seek early termination by mutual consent of both the parties”*.

The term “early termination” used in the draft Clause needs further clarification as with the reference in which it is being used.

In case, the original PPA does not include the conditions for early termination with the mutual consent, the insertion of this Clause may conflict with the original PPA. Would a compensation be payable to the discom in case of early termination or vice versa.

7. Privileges of Captive Plant (Clause No. 9(f)): *The draft Clause states “In case of repowering of captive/ third party sale Wind power project, the consumer shall be allowed to purchase power from grid (through DISCOMs or any other available source) during the period of execution of repowering, as per relevant rules & regulation”*. During repowering of the captive projects, power procured by a captive consumer would be subject to the provision of open access including cross subsidy surcharge, as well as the renewable purchase obligation (RPO)¹. **Consumption by captive consumers whose projects are undergoing repowering may be considered as deemed captive consumption for the specified duration of repowering, beyond which applicable terms/regulations would apply.** Appropriate amendments would be required in the respective regulations for the same.

8. Exemption of RPO compliance (Clause No. 10. (iv)): The draft Clause states *“The Wind RPO compliance of concerned states **in which the repowering project is situated** shall be exempted for the remaining period till the commissioning of repowered project”*. (emphasis added)

A number obligated entities (for RPO) procure RE from plants located in other states. Exemption of RPO for the states hosting such RE projects does not seem to be justified. As it is the entities located in importing states that would be affected in terms of their RPO. The above provision would enhance complexity of mapping the RPO vs procurement for such cases.

This Clause may be rephrased as *“The Wind RPO compliance of concerned states in which the repowering project is situated shall be exempted **only to the extent of shortfall on account of wind turbine or wind farms under repowering (given that***

¹ RPO differ between captive and open access consumers in some states.

the project is being used to supply energy to the state in which it is installed) and to the extent that the original wind turbines are unavailable for generation till COD of the repowering projects ”. Also, if the energy generated from the project is procured by a consumer situated in another state, then the repowering of such wind project will not affect the RPO of the state in which the project is installed.

9. Multiplier for RPO (Clause 10 (5)): As per the Clause 86 (1) (e) of the Electricity Act, 2003, RPO is equivalent to the renewable energy consumed by an obligated entity as a percentage of the energy consumed from the conventional sources (excluding hydro). Providing a RPO multiplier would give the generator/ consumer significant undue advantage while undermining the overall compliance of actual RPO to be achieved by the respective discom/ obligated entity.

Also, this would lead to testing of the provisions of EA, 2003, as, for e.g., it is not feasible to translate 1kWh of electricity consumed into more than 1kWh of RPO equivalent. Providing RPO multiplier for repowered wind projects doesn't seem technologically justified.

It should be further clarified that the energy consumed from these repowered projects would be used to fulfill the 'Wind' RPO or would be included in the 'Others' RPO as per the new RPO trajectory provided by the MoP in 2022².

10. Loss of revenue for the duration of the repowering: The draft Clause in the annexure states that *“In such cases, the existing owners deciding to go for repowering may be losing the future revenue from their projects”* (emphasis added). **Repowering of existing wind projects would not lead to loss of revenue for the project developers, but will only lead to loss of time value of RoE for the duration of repowering** i.e. during project execution. Since PPA will get extended after repowering so there would not be any future loss. It is the time value of money that will be lost. The projected loss which is attributed to “loss of future revenue from the project” would lead to significant overestimation as the project under repowering would lose the revenue only for the duration of implementation of the repowering. This would be relevant only in the case the revenue from PPA (for RE) with discoms is passed from the original owner to the WRPA and, hence, needs to be accounted for while estimating the transfer value of the asset. (See Figure 1 below)

² Renewable Purchase Obligation (RPO) and Energy Storage Obligation Trajectory till 2029-30 [Order], Ministry of Power.

https://powermin.gov.in/sites/default/files/Renewable_Purchase_Obligation_and_Energy_Storage_Obligation_Trajectory_till_2029_30.pdf

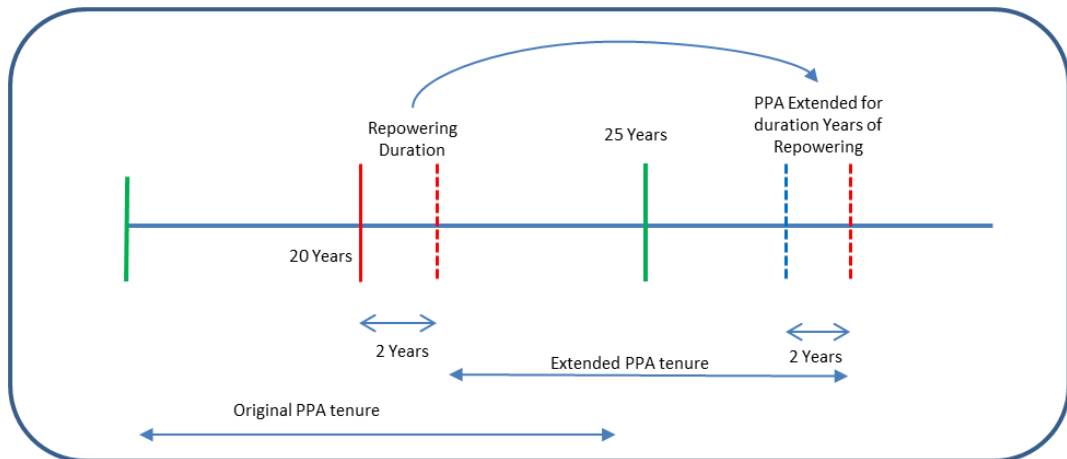


Figure 1. Addition of duration of repowering to extended PPA.

- 11. Definition of tariff in case of captive consumption:** The draft Clause of the annexure states that *“In case of captive consumption, tariff as per tariff order(s) of the appropriate commission.....”*. In the case of captive consumption, **tariff (of the consumer) as per tariff order will lead to a significant overestimation of PPA value**. It is suggested that the tariff should be taken as a feed-in tariff of the generator.

$$\text{PPA value} = \text{NPV of } \sum_{k=0}^n [(t * G_k) - (OM_k)]$$

- 12. Consideration of annual average generation for calculation of PPA value:** **While calculating PPA value, average realization (after adjusting for DSM related charges) should be used** instead of annual generation multiplied by the feed-in tariff since a generator over-/under-injects energy due to error in generation forecasting, and is paid (to be paid) as per the DSM regulation.

- 13. Sharing of risk/ revenue between project owner and WRPA:** It is recommended that there should be an alternate approach to share the risk between the original developer/owner and the WRPA. Instead of outright purchase of the ‘rest of the PPA period’ from the original owner, an alternate approach is to **let the original PPAs revenue as well as risk to be continued to the associated with the original owner, whereas the risks as well as the revenue associated with the additional capacity (due to repowering) be allocated to the WRPA**. However, a mechanism needs to be implemented wherein risks associated with generation forecasting (and hence the applicability of DSM charges) is shared proportionately for the original as well as the additional capacity.

- 14. Clause No. 7 (i) (b):** The draft Clause states *“Project Owner may submit the Detailed Project Report (DPR) for repowering the old project to concerned SNA/CNA for verification”*. Further clarification is required with regards to the kind of ‘verification’ and its cope (i.e. technical or financial aspects or both). It is desirable to keep the subjectivity to the minimum so as to reduce risk for the repowering projects.

15. Clause No. 5. (iv): The term “*Polling Sub Station (PSS)*”, may be replaced as “*Pooling Sub Station (PSS)*”.

16. Clause No. 10. (iv): The term “*PLF*” should be replaced as “*CUF*”.