



Abstract

Energy Department – Tamil Nadu Green Energy Corporation Limited – Tamil Nadu Repowering, Refurbishment and Life Extension Policy for Wind Power Projects-2024 - Approved - Orders – Issued.

Energy (E1) Department

G.O.(Ms.) No. 80

Dated 22.08.2024

குரோதி வருடம், ஆவணி 5,
திருவள்ளூர் ஆண்டு 2055

Read:-

From the Managing Director, Tamil Nadu Green Energy Corporation Limited, Letter No.CE/NCES /SE/SOLAR/ EE/ WPP/AEE1/F.Repowering Policy/ D.939 /2024, dated 07.08.2024.

ORDER:-

In the Budget Speech for the year 2023 – 2024, in paragraph 103, the following announcement was made: -

“A new policy on repowering windmills in the State will be evolved”

2. In the letter read above, the Managing Director, Tamil Nadu Green Energy has stated that based on the approval accorded in the 111th Board meeting of TANGEDCO held on 08.02.2023, the consultant M/s. Ernst & Young was engaged for preparing and submitting draft Repowering Policy for replacing the old, outdated windmills owned by Private Wind power Developers in Tamil Nadu. After conducting various studies and obtaining comments from various stakeholders, the consultant had submitted the draft Repowering Policy in complete shape. He has informed that the draft Policy has been finalized after consulting with members of TNGECL Board and sent the policy for approval by the Government.

3. The Government, after careful consideration, accords approval to the “Tamil Nadu Repowering, Refurbishment and Life Extension Policy

for Wind Power Projects – 2024”, a copy of which is appended to this order.

(By Order of the Governor)

**PRADEEP YADAV
ADDITIONAL CHIEF SECRETARY TO GOVERNMENT (FAC)**

To

The Additional Chief Secretary/CMD, TANGEDCO, Chennai – 2.

The Managing Director, TNGECL, Chennai – 2.

The Finance Department, Chennai – 9.

All Department of Secretariat, Chennai – 9.

Copy to:-

The Hon'ble Chief Minister Office, Chennai – 9.

The Senior Personal Assistant to Hon'ble Minister (Finance & HRM), Chennai-9.

The Senior Principal Private Secretary to the Chief Secretary to Government, Chennai – 9

The Public (SC) Department, Secretariat, Chennai – 9.

All Officers/All Sections of Energy Department, Chennai – 9

NIC, Chennai – 9 (for uploading a copy of this order in Government Website)

SF/SC.

//Forwarded / By Order//

WA 9
Section Officer *22/8/2024*

Energy (E1) Department

Appendix

Tamil Nadu Repowering, Refurbishment and Life Extension Policy for Wind Power Projects - 2024

1. Introduction

Tamil Nadu stands as one of the leading states in India's Renewable Energy (RE) sector, having a substantial RE generation capacity of 22,754 MW as on 30th June 2024. The major share of renewable energy in the state of Tamil Nadu comprises wind energy at 10,790 MW. The wind energy generation in Tamil Nadu commenced in the year 1986 with machine capacities ranging from 55 kW to 600 kW. Though these machines have completed their full life cycle, they are still in operation. With the advancement in technology over the last three decades, it is observed that there is a potential opportunity to replace these older, lower capacity turbines with new models that have higher capacity and higher CUF. The current machine capacities available in the market are in the band of 225 kW – 5200 kW with sizes such as 225 kW, 250 kW, 500kW, 600 kW, 750 kW, 2,000 kW, 2,100 kW, 2,280 kW, 2,300 kW, 2,700 kW, 2,730 kW, 2,800 kW, 3,000 kW, 3,100 kW, 3,300 kW, 3,465 kW, 3,600 kW and 5,200 kW reflecting the technology advancements in the wind energy sector. By replacing the old wind turbines, optimization of the wind energy potential at each specific site can be explored, which will help in increasing overall installed capacity and wind energy generation in Tamil Nadu.

2. Title

This Policy shall be called "Tamil Nadu Repowering, Refurbishment and Life Extension Policy for Wind Power Projects - 2024".

3. Objective

The objective of the Policy is to promote optimum utilization of wind energy resources by providing a supportive framework to the Wind Energy Generators (WEGs) for the following projects-

1. Repowering Project- It shall be any Project wherein WEG replaces its old wind turbines by newer wind turbines or undertakes Intercropping in its wind park / cluster area. A Repowering project can be classified into two categories:

- a) Standalone Project - A Wind power project having a single or group of Wind turbines owned by a single owner. The Project owner shall be the Project Developer for undertaking the repowering work under this Policy.

- b) **Aggregation Project** - A Wind power project having a group of Wind turbines owned by multiple owners with shared common infrastructure. Herein, Wind Repowering Project Aggregator (WRPA) shall be the Project Developer for undertaking the repowering work under this Policy. In case there are multiple project owners, WRPA shall take formal consent from all project owners via registered agreements.

An existing owner of any of the wind projects or a third party may act as WRPA with or without partnership with owners of other projects in the Aggregation Project. The WRPA can hence be formed under a SPV/ JV / consortium mechanism.

- 2. Refurbishment Project-** It shall be any Project wherein the WEG carries out any suitable modifications in the turbine components such as gearbox, blades, generator, controller, hub height, rotor diameter, etc.
- 3. Life Extension Project-** It shall be any project that undertakes the extension of the operational life period of wind turbines beyond their original design life or 20 years, whichever is earlier. WEGs shall have to however submit the application for Life Extension within 90 days of either completing the design life or 20 years.

These projects will have to fulfill certain requirements to avail benefits under this policy and the same have been detailed here in the policy.

4. Eligibility

All Wind Energy Generators (WEGs) in the State of Tamil Nadu with STU connectivity shall be eligible under this policy subject to the following-

1. It is mandatory for all the WEGs who have completed their operational life period of 20 years to opt for any one of the above activities.
2. For other WEGs, participation is voluntary.

5. Policy Tenure

The policy shall be valid from the date of the issuance up to 31st March 2030 or till the time a new repowering policy is announced, whichever is earlier.

6. Conditions to be fulfilled

6.1 Repowering Project

- a) **Increase in Annual Generation** - A project which satisfies the eligibility criteria as mentioned earlier shall be considered for Repowering under this Policy, provided it leads to an increase in the annual energy generation at least 1.25 times of the existing generation of the old WEGs (average generation of last 3 years) after adjusting the variation due to wind factor based on the certification from an independent agency like NIWE, etc.
- b) **Life Period**- The operational life of the repowered turbines shall not exceed 25 years from the new date of commissioning after repowering. One time permission for this extended life of 25 years after repowering shall be given by SNA.
- c) **Certification**- The WEGs shall have to get wind turbines assessed and certified by any certification agency for quality and safe operation. The Developer shall submit a separate type certificate issued by the certification body to SNA.
- d) **Development Charges** - WEGs shall have to pay the development charges at the rate of Rs. 30 Lakh / MW for the entire wind generation capacity.

6.2 Refurbishment Project

- a) **Increase in Annual Generation** - A project which satisfies the eligibility criteria as mentioned earlier shall be considered for Refurbishment under this Policy, provided it leads to an increase in the annual energy generation at least 1.1 times of the existing generation of the old WEGs (average generation of last 3 years) after adjusting the variation due to wind factor based on the certification from an independent agency like NIWE, etc.
- b) **Life Period** - The total operational life of the refurbished turbines shall not exceed 20 years from the date of refurbishment. Initially, approval for the extended life of 10 years after refurbishment shall be given by SNA which may be renewed after periodic review.
- c) **Certification** - The WEGs shall have to get wind turbines assessed and certified by any certification agency for quality and safe operation for the New Life Period. The assessment of the turbines shall be carried out as per the UL 4143: Wind Turbine Generator Lifetime Extension standard or any such standards issued by the BIS. Subsequent to the assessment, a separate type

certificate or extension of the previous type certificate shall be issued by the certification body.

- d) Periodic Review** – Initially, approval for 10 years shall be given after refurbishment by SNA. Thereafter, it shall be reviewed by SNA for satisfactory performance and safety as per DPR and safety norms for wind turbines. Approval for another tenure of maximum 10 years shall be given by SNA based on the review and certificate issued by certification body. If it is found in the review, that the generation in any year was lower than the minimum annual generation criteria based on the certification from an independent agency or if plant is posing any safety issue, the approval shall be revoked.
- e) Development Charges** - WEGs shall have to pay the development charges at the rate of Rs. 30 Lakh / MW for each approval for the wind generation capacity.

6.3 Life Extension Project

- a) Eligibility** - WEGs which have completed their life period of 20 years and whose average generation of the last 3 financial years is not less than 90 % of their rated generation based on the certification from an independent agency like NIWE, etc.
- b) Life Period** - The total operational life of the life extended turbines shall not exceed 20 years from the date of life extension. Initially, approval for the extended life of 5 years after life extension shall be given by SNA which may be renewed after periodic review.
- c) Certification** – The WEGs shall have to get wind turbines assessed and certified by any certification agency for quality and safe operation for the New Life Period. The assessment of the turbines shall be carried out as per the UL 4143: Wind Turbine Generator Lifetime Extension standard or any such standards issued by the BIS. Subsequent to the assessment, a separate type certificate or extension of the previous type certificate shall be issued by the certification body for the new life period.
- d) Periodic Review** – Initially, approval for 5 years shall be given for the Life extension project by SNA. Subsequent approvals for life extension of 5 years shall be given after validating that the average generation of any 3 financial years should not be less than the 90 % of the rated generation after taking into account the variation in generation due to wind factor based on the certification from an independent agency. If it is found in the review that the average generation of any 3 years is lower than

90% of the rated generation after taking into account the variation in generation due to wind factor based on the certification from an independent agency, the extension granted shall be revoked.

- e) Development Charges** - WEGs shall have to pay the development charges at the rate of Rs. 30 Lakh / MW for each approval of life extension for the wind generation capacity.

7.Implementation Arrangements

The Repowering/Refurbishment/ Life Extension of STU connected projects would be implemented through the State Nodal Agency (SNA). The modalities which shall be adopted for development of Repowering/Refurbishment / Life Extension projects are as below:

- a) The Repowering/Refurbishment/Life Extension projects shall have to be done after obtaining approval from SNA.
- b) The Developer shall submit the application and all other requisite documents for approval through "online mode" on the portal provided by SNA.
- c) The Project Developer will prepare a Detailed Project Report (DPR) for land acquisition and development of the site for Repowering/Refurbishment project and submit it to SNA for verification.
- d) For Repowering/Refurbishment projects, the pre-feasibility for evacuation of anticipated energy after repowering/refurbishment through STU shall be assessed by the developer.
- e) The project developer shall apply for obtaining approval for grid connectivity, open access and wheeling for additional wind generation capacity from the competent authority as approved by TNERC.
- f) SNA shall forward the application to TNPDC/TANTRANSCO for their approval, as the case may be. TNPDC/TANTRANSCO shall give their approval and cost estimation for infrastructure augmentation, if required, within 60 days.
- g) Upon receiving the cost estimation from TNPDC/TANTRANSCO, SNA shall intimate the Developer about the cost of infrastructure augmentation and development charges to be payable by the Developer. The Developer shall pay the said charges within 30 days of getting the intimation from SNA. SNA shall give the approval within 30 days of receiving the payment from the Developer.

- h) The dismantling and de-commissioning of existing WEGs, land acquisition, augmentation of the evacuation system, renewal of leases, renewal of approvals, etc. shall be at the cost, risk and responsibility of the Project Developer.
- i) After completion of Repowering/Refurbishment/Life Extension projects, Project Developer is required to inform SNA for certification of Repowering/ Refurbishment/ Life Extension. Date certified by SNA shall be considered as date of Repowering/ Refurbishment/ Life Extension.
- j) **Fresh agreement for sale of power /third party sale/captive consumption-** WEGs need to execute necessary agreement after completion of repowering/refurbishment/Life Extension as per applicable laws/regulations.

Tamil Nadu Green Energy Corporation Limited (TNGECL) shall act as SNA until any further change is made by Government of Tamil Nadu in this regard.

8. Evacuation Arrangements

The evacuation of power from Repowering/Refurbishment projects shall be facilitated subject to the following –

- a) The cost for distribution infrastructure augmentation work, including feeders, carried out by TNPDC or TANTRANSO required due to increase in capacity of WEG due to repowering/refurbishment shall be borne by the Developer.
- b) If there is a change in injection voltage level, the evacuation of power shall be allowed subject to availability of spare capacity at the substation. Otherwise, option shall be given to the Developer for alternate evacuation arrangements.

9. Arrangement for Sale of Power

- a) **Time period for Repowering/Refurbishment** – If any WEG opts for repowering under this Policy, the allowed time shall be maximum of 1.5 years for repowering and 1 year for refurbishment from the date of approval for execution of Repowering and Refurbishment respectively.
- b) During the period of repowering/refurbishment of the WEG, WEG shall be allowed to draw power from the grid for execution of the project as per applicable tariff.

c) Sale of additional generation on account of repowering- The Repowered/Refurbished projects shall be at liberty to self-consume or sell additional generation to TNPDC/any other entity/in power exchanges as per the existing laws/rules.

d) WEGs having PPA with TNPDC at the time of Repowering/Refurbishment/Life extension-

- i. **Continuity of existing PPA** - For any WEG, which has an existing PPA with TNPDC and it opts for undertaking repowering/ refurbishment/ life extension under this policy, the existing generation would continue to be procured as per the terms of existing PPA till the PPA tenure. The existing PPA tenure shall also be extended by a period taken for completing the repowering / refurbishment work or a period of 1.5 year / 1 year respectively, excluding Force Majeure events, whichever is lesser.
- ii. **Exemption on supply of power to TNPDC during repowering period-** A Wind turbine undergoing Repowering/Refurbishment would be exempted from supplying Power to the TNPDC during the period of execution of Repowering/Refurbishment projects.
- iii. **Extension of PPA for new life period-** PPA for existing generation may be extended for the new life period after repowering/refurbishment/life extension at the existing tariff under the agreement.
- iv. **Procurement of Additional generation-** Additional generation due to repowering/refurbishment projects may be procured by TNPDC at the latest tariff discovered by competitive bidding undertaken by SECI or any other central agency in India or Tariff fixed by Hon'ble TNERC whichever is lesser.

e) WEGs not having PPA with TNPDC at the time of Repowering/ Refurbishment / Life extension-If such repowering/ refurbishment/ life extension projects want to sell power to TNPDC, TNPDC may sign PPA with such projects to procure wind energy generation at the latest tariff discovered by competitive bidding undertaken by SECI or any other central agency in India for the life period remaining after repowering/refurbishment/life extension.

10.Incentives

The Policy is hereby providing a host of incentives to encourage WEGs to undertake the repowering / refurbishment projects. This shall not only help these projects to become more commercially viable but also help in optimal harnessing of the available wind energy potential in the state.

10.1.Micro siting norms

In order to encourage the WEGs to undertake repowering / refurbishment projects, the Policy hereby provides for relaxation in the micro siting norms –

- a) For WEGs within their own wind farm - the Project Developer will have the liberty for adopting micro siting norms based on the optimized generation.
- b) For WEGs situated in the outer periphery of wind farms- 5D X 7D norms shall be relaxed to 3D X 5D.
- c) For WEGs within a cluster area - Group of individual Wind Generators can form a cluster and mutually decide the micro siting norms within that cluster area. However, for WEGs located on the periphery of wind farms, the 3Dx5D norms shall be applicable.

10.2.Annual Banking Arrangements

In Tamil Nadu, at present, the existing provision allows for annual banking arrangements exclusively for WEGs commissioned up to March 31, 2018. However, this policy introduces modified banking arrangements for

1. WEGs that have completed their operational life of 20 years,
2. WEGs that have not completed their operational life of 20 years but choose to opt for repowering/ refurbishment/life extension under this policy, and
3. WEGs commissioned after March 31, 2018 and willing to opt for banking arrangements under this policy.

WEGs that were commissioned before March 31, 2018 and have not chosen to undergo repowering or refurbishment, will remain under the old banking arrangements until they complete their 20 years of life from the date of commissioning.

The benefits of annual banking under the new arrangements will be subject to the following conditions:

- a) Annual Banking shall be allowed within the same financial year. i.e. from 1st May up to 31st March of the same financial year, subject to the condition that at least 50% generation is consumed within the wind months (May to September).
- b) Slot wise Banking will be allowed up to 50% of total generation in the respective slots from 01st May to 30th September. The slots are given as below-

Slot	Time
C1	6 AM to 8 AM
C2	8 AM to 5 PM
C3	5 PM to 12 AM (Mid-night)
C4	12 AM (Mid-night) to 6 AM

- c) Any surplus energy in excess of 50% of the Total Energy Generated fed into the grid by the WEGs shall lapse and shall not be added in the Banked Energy quantum.
- d) Slot wise utilization of energy from 01st October to 31st March will be allowed, i.e., utilization of energy during the months of October to March can be done in that particular slot in which it was generated during the period of 01st May to 30th September subject to the following-
 - a. The minimum utilization shall be 20% of the Net Banked Energy each month from 01st October to 31st December. During the period of 1st January to 31st March, the utilization shall not exceed 15% of Net Banked Energy each month.
 - b. In the event that the WEG utilizes less than 20% of the Net Banked Energy in any of the months between 01st October to 31st December, the unutilized energy for that month shall lapse.
 - c. Any unutilized Net Banked Energy as on 31st March shall lapse.
- e) WEGs shall be charged 16% of the Banked Energy as Banking charges in kind with revision every year based on the difference between the weighted average cost of power purchase from power exchange by TNPDCCL for May-September and October-March period as per the below formula:

$$\text{Banking Charges (in \%)} = \left(1 - \frac{PP_1}{PP_2}\right) * 100$$

$$PP_1 \text{ (in Rs/kWh)} = \sum_{i=1}^5 \sum_{j=1}^4 P_{ij} * B_{ij}$$

$$PP_2 \text{ (in Rs/kWh)} = \sum_{i=6}^{11} \sum_{j=1}^4 P_{ij} * U_{ij}$$

Where,

- PP₁ - Weighted Average cost of power purchase from power exchange during the months of May-September
- PP₂ - Weighted Average cost of power purchase from power exchange during the months of October-March
- P_{ij}=Weighted average cost of power purchase from power exchange by TNPDCCL in jth slot of ith month
- B_{ij}=Cumulative Banked Energy by all WEGs in jth slot of ith month (May to September)
- U_{ij}=Cumulative Banked Energy Utilized by all WEGs in jth slot of ith month (October to March)
- i ranges from 1 to 11 representing months as below :

	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
i	1	2	3	4	5	6	7	8	9	10	11

- j ranges from 1 to 4 representing slots C1, C2, C3 and C4 respectively as defined under *Clause 10.2.b*. The slots may change from time to time and shall be notified by TNGECL.

f) Adjustment of energy generated against consumption by the captive users shall be as per the applicable TNERC orders / regulations including the Deviation Settlement Mechanism Regulations.

10.3. Fall in Distance

According to the Government of Tamil Nadu Combined Development and Building Rules 2019, the required fall in distance from a dwelling unit is 500 meters. However, this requirement is being relaxed to a distance calculated as below:

the hub height (in meters) + half the diameter of the blade/rotor (in meters) + 5 meters

This relaxation is contingent upon the implementation of adequate noise mitigation measures by the WEG.

10.4. Permission to convert wind projects into wind solar hybrid Projects.

The Project Developers who shall be undertaking wind repowering / refurbishment projects under this Policy are hereby being given permission to convert their wind projects into wind solar hybrid Projects subject to the following provisions-

- a) Generation capacity (MW) from wind and solar at any time should not exceed the allotted evacuation capacity (MW)
- b) Banking as per this policy for the wind solar hybrid plant shall be allowed for the energy generated from WEG only and all the provisions of this policy shall apply to wind energy only.
- c) Slot wise monthly solar banking shall be provided as per existing solar policy and regulations.
- d) Developers will have the option to install solar wind hybrid plant with or without battery storage.
- e) Must run status for solar capacity in wind solar hybrid plant shall not be applicable during wind season (May to September)

10.5. Facilitation for financing

MNRE's National Repowering & Life Extension Policy for Wind Power Projects-2023 provides that financial institutions such as PFC/ REC/ IREDA shall provide loans for repowering on the same terms and conditions as laid out for the new Projects. It also provides that IREDA shall provide an interest rebate of 0.25% over and above the interest rate available to new wind projects. TNGECL shall support WEGs in availing loans for repowering/ refurbishment of their Projects under this Policy, with these financial institutions.

10.6. Other incentives

- a) WEG under wheeling agreement with TNPDC, will be exempted from paying open access charges from the date of approval to the date of commissioning or 1.5 years whichever is lower.
- b) SNA shall provide No Objection Certificate (NOC) to repowered/ refurbished projects, if required, for availing the fiscal and financial benefits available to the new Wind Projects.

11. Power to Remove Difficulties and Interpretation

The Government of Tamil Nadu will have power to amend or review or relax or interpret any of the provisions under this Policy as and when required. If any difficulty arises in giving effect to this Policy, TNGECL is authorized to issue clarifications as well as interpretations to such provisions, as may appear to be necessary for removing the difficulties either on its own motion or after hearing those parties who have represented for change in any provisions.

If there is any confusion or dispute about the meaning, intent or purpose of any provision of this Policy, the interpretation given by TNGECL shall be final and binding to all concerned.

Notwithstanding anything contained in this Policy, the provisions of the Electricity Act, 2003, MNRE guidelines, applicable CERC Regulations, Grid Code, and the applicable Regulations issued by the TNERC from time to time shall prevail for the purpose of implementation of this Policy.

12. Abbreviations and Definitions

Unless the meaning is repugnant to the context, the following words shall have the meanings assigned to them.

- i. "Additional Generation" means incremental generation achieved by a WEG due to repowering / refurbishment over and above the existing generation.
- ii. "Banked Energy" means the Total Energy Generated minus the Energy Consumed/Sold by Wind Energy Generators during 01st May to 30th September.
- iii. "Banking Charges" refer to the charges levied in kind as a percentage of the banked energy as on 01st October fed into the grid during 01st May to 30th September for utilization during 01st October to 31st March.
- iv. "BIS" means Bureau of Indian Standards.
- v. "CEA" means Central Electricity Authority.
- vi. "CERC" means Central Electricity Regulatory Commission.
- vii. "CUF" means Capacity Utilization Factor per annum.
- viii. "Existing Generation" means average generation (MUs) of last 3 financial years before the financial year in which repowering/refurbishment is commenced.

- ix. "Intercropping" means erection of new wind energy generators surrounding the existing WEGs to increase the total capacity of Wind farm/cluster area.
- x. "MNRE" means Ministry of New and Renewable Energy.
- xi. "Nett Banked Energy" refers to balance banked energy. available as on 01st October of financial year after deduction of applicable banking charges.
- xii. "NIWE" means National Institute of Wind Energy.
- xiii. "PPA" means Power Purchase Agreement.
- xiv. "Rated Generation" means Energy generated by the WEG as per power curve certified by the any certification body.
- xv. "SNA" means State Nodal Agency as notified by Government of Tamil Nadu.
- xvi. "TNERC" means Tamil Nadu Electricity Regulatory Commission.
- xvii. "Total Energy Generated" means the cumulative energy produced by the WEGs from 01st May to 30th September.

Pradeep Yadav
Additional Chief Secretary to Government (FAC)

//TRUE COPY//

LDN RC
Section Officer 22/8/2024

