ANDHRA PRADESH ELECTRICITY REGULATORY COMMISSION

Terms and Conditions for Tariff Determination for Wind Power Projects in the State of Andhra Pradesh for the period FY2015-16 to FY2019-20

Regulation No. 1/2015

(Published in AP Extrordinary Gazette Part -II on 31st July, 2015)

In exercise of the powers conferred by Sections 61 and 86 read with Section 181 of the Electricity Act, 2003 (Central Act 36 of 2003), and all other powers enabling it in this behalf and after previous publication, the Andhra Pradesh Electricity Regulatory Commission hereby makes the following regulations, namely:

1. **Short title and commencement:**

   (1) These regulations may be called the Andhra Pradesh Electricity Regulatory Commission (Terms and Conditions for Tariff determination for Wind Power Projects) Regulations, 2015.

   (2) These regulations shall come into force from the date of their publication in the official Gazette and, unless reviewed earlier or extended by the Commission, shall remain in force up to 31st March 2020.

2. **Definitions and Interpretation:**

   (1) In these regulations, unless the context otherwise requires,-

   a) '**Act**' means the Electricity Act, 2003 (Central Act 36 of 2003);

b) ‘**Capital** cost’ means the capital cost as defined in Regulation 10;

c) ‘**CERC**’ means the Central Electricity Regulatory Commission;

d) **‘CERC RE** Tariff **Regulations’** means Central Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2012, as amended from time to time.

e) ‘Commission' means the Andhra Pradesh Electricity Regulatory Commission;

f) ‘**Control Period**’ means the period during which the norms for determination of tariff specified in these regulations shall remain valid;

g) ‘**Inter-connection Point**’ means the line isolator on outgoing feeder on HV side of the pooling sub-station i.e., the sub-station at project site of wind farm which consists of step-up transformer(s) and associated switchgear and to the LV side of which, multiple generating unit(s) i.e., wind turbine generators are connected;

h) ‘**MAT**’ **means** Minimum Alternate Tax;

i) ‘**MNRE**’ **means** the Ministry of New and Renewable Energy, Government of India;

j) ‘**Non-Conventional Energy**’ means the grid quality electricity generated from non-conventional energy sources;

k) ‘**Non-Conventional Energy Power Plants**’ means the power plants other than the conventional power plants generating grid quality electricity from non-conventional energy sources;

l) ‘**Non-Conventional Energy Sources**’ means non-conventional sources such as mini hydel, wind, **biomass**, bagasse, industrial waste, urban or municipal waste and other such sources as approved by the MNRE;

m) **‘Operation and Maintenance expenses**’ or ‘**O&M expenses’** means the expenditure incurred on operation and maintenance of the project, or part thereof, and includes the expenditure on manpower, repairs, spares, consumables, insurance and overheads;

n) **'Project**' means a generating station or the evacuation system;

o) ‘**Tariff period**’ means the period for which tariff is to be determined by the Commission on the basis of norms specified in these Regulations;

p) ‘**Useful Life**’ in relation to a wind power project means Twenty Five years from the date of commercial operation (COD);

q) **‘Year’ means** a financial year.

(2) Save as aforesaid and unless repugnant to the context or the subject-matter otherwise requires, words and expressions used

in these regulations but not defined herein and defined in the Act or the Andhra Pradesh Electricity Reform Act, 1998 (State Act 30 of 1998) or the Rules or Regulations made thereunder shall have the meanings assigned to them respectively therein.

3. Scope and extent of application:

These Regulations shall apply to the wind power projects to be commissioned within the State of Andhra Pradesh for generation and sale of electricity wholly or partly to the Distribution licensees within State of Andhra Pradesh subsequent to the date of notification of these Regulations and where tariff for a generating station or a unit thereof based on wind energy source, is to be determined by the Commission under section 62 read with section 86 of the Act.

Chapter 1: General Principles

4. Control Period:

The Control Period under these Regulations ends by 31st March, 2020. First year of the Control Period shall commence from the date of notification of these Regulations and shall cover upto the end of the financial year 2015-16:

Provided that the tariff determined as per these Regulations for the wind power projects commissioned during the Control Period, shall continue to be applicable for the entire duration of the Tariff Period as specified in Regulation 5 below.

5. **Tariff Period**:

a) The Tariff Period for wind power projects shall be equal to the useful life of the projects as defined under Regulation 2 (p).

b) Tariff period under these Regulations shall be considered from the date of commercial operation of the wind power projects.

6. **Proceedings for determination of Tariff**:

The Commission shall notify the generic preferential tariff on suo-motu basis at the beginning of each year of the Tariff Period for wind power projects for which norms have been specified under these Regulations:

Provided further that for FY2015-16, the generic preferential tariff on suo-motu basis, shall be notified soon after the publication of the regulations in the official gazette to be applicable with effect from the date of these regulations coming into force.

7. **Tariff Structure**:

The tariff for wind power projects shall be single part tariff consisting of the following cost components:

a) Return on equity;

b) Interest on loan capital;

c) Depreciation;

d) Interest on working capital;

e) Operation and Maintenance expenses;

8. **<u>Levellized Tariff</u>:**

Levellized Tariff is calculated by carrying out levellization for 'useful life' considering the discount factor for time value of money.

The discount factor considered for this purpose is equal to the weighted average cost of capital on the basis of normative debt-equity ratio (70:30) specified under Regulation 11. Considering the normative debt-equity ratio and weighted average of the rates of interest and post tax return on equity, the discount factor is calculated. Interest rate for the loan component (i.e.70%) of Capital Cost is considered as explained under Regulation 12. For equity component (i.e. 30%), post tax Return on Equity (ROE) of 16% is considered as explained in Regulation 14.

9. **<u>Despatch principles for electricity generated from Wind Power Projects</u>:**

All Wind Power Projects shall be treated as 'MUST RUN' power plants and shall not be subjected to 'Merit Order Despatch principles' (MOD):

Provided that where the sum of generation capacity of the plants connected at the interconnection point to the transmission or distribution system is 10 MW and above and interconnection point is 33 kV and above, such Wind Power Generation Plants shall be subjected to scheduling and despatch code as specified in Indian

Electricity Grid Code (IEGC) – 2010 and/or A.P. State Electricity Grid Code (APSEGC) as amended from time to time.

Chapter 2: Financial Principles

10. Capital Cost and Capital Cost Indexation Mechanism:

The norms for the Capital cost shall be generally inclusive of all capital work including plant and machinery, civil work, erection and commissioning, financing and interest during construction (IDC) and evacuation infrastructure.

The capital cost for FY2015-16 shall be `600 lakhs / MW.

The capital cost indexation mechanism as prescribed in the CERC RE Tariff Regulations, 2012 shall be considered as indicated below for arriving at the capital cost of the wind power projects for each year of the Control Period beyond FY2015-16, which shall be notified at the beginning of each financial year.

The following indexation mechanism shall be applicable for adjustments in capital cost over the control period beyond FY2015-16 with the changes in Wholesale Price Index for Steel and Electrical Machinery.

$CC_{(n)} = P\&M_{(n)} * (1+F1+F2+F3)$

$P\&M_{(n)} = P\&M_{(0)} * (1+d_{(n)})$

$d_{(n)} = [a*\{(SI_{(n-1)}/SI_{(0)}) - 1\} + b*\{(EI_{(n-1)}/EI_{(0)}) - 1\}]/(a+b)$

Where,

$CC_{(n)}$ = Capital Cost for nth year

$P\&M_{(n)}$ = Plant and Machinery Cost for n^{th} year

$P\&M_{(0)}$ = Plant and Machinery Cost for the base year

Note: $P\&M_{(0)}$ is to be computed by dividing the base capital cost (for the first year of the control period i.e., FY2015-16) by (1+F1+F2+F3)

$d_{(n)}$ = Capital Cost escalation factor for year (n) of control period

$SI_{(n-1)}$ = Average WPI Steel Index prevalent for calendar year ending in (n-1) financial year of the control period

$SI_{(0)}$ = Average WPI Steel Index prevalent for the calendar year ending in financial year (0) at the beginning of the control period i.e, January 2014 to December, 2014

$EI_{(n-1)}$ = Average WPI Electrical Machinery Index prevalent for calendar year ending in (n-1) financial year of the control period

$EI_{(0)}$ = Average WPI Electrical and Machinery Index prevalent for the calendar year ending in financial year (0) at the beginning of the control period i.e., January 2014 to December, 2014

a = Constant to be determined by Commission from time to time, for weightage to Steel Index

b = Constant to be determined by Commission from time to time, for weightage to Electrical Machinery Index

F1 = Factor for Land and Civil Work

F2 = Factor for Erection and Commissioning

F3 = Factor for IDC and Financing Cost

The constants **‘a’** and **‘b’** and factors **‘F1’**,**’F2’** and **‘F3’** are specified and these would be determined by the Commission from time to time.

11. <u>Debt Equity Ratio</u>:

The debt equity ratio shall be **70:30**.

12. <u>Loan and Finance Charges</u>:

(1) Loan Tenure: For the purpose of determination of tariff, loan tenure of Ten years shall be considered.

(2) Interest Rate:

(a) The loans arrived at in the manner indicated in the Regulation 11 shall be considered as gross normative loan for calculation of interest on loan. The normative loan outstanding as on April 1st of every year shall be worked out by deducting the cumulative repayment up to March 31st of previous year from the gross normative loan.

(b) For the purpose of computation of tariff, the normative interest rate shall be considered as average State Bank of India (SBI) Base rate prevalent during the first six months of the previous year plus 300 basis points.

(c) Notwithstanding any moratorium period availed by the generating company, the repayment of loan shall be considered from the first year of commercial operation of the project and shall be equal to the annual depreciation allowed.

13. Depreciation:

(1) The value base for the purpose of depreciation shall be the Capital Cost of the asset admitted by the Commission. The Salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the Capital Cost of the asset.

(2) Depreciation per annum shall be based on 'Differential Depreciation Approach' using 'straight line' method over two distinct periods comprising loan tenure and period beyond loan tenure over the useful life. The depreciation rate for the first ten years of the Tariff Period shall be 7% per annum and 1.33% for the remaining useful life of the project from 11th year onwards.

(3) Depreciation shall be chargeable from the first year of commercial operation.

14. Return on Equity:

(1) The value base for the equity shall be 30% of the capital cost as determined under Regulation 11.

(2) The normative Return on Equity shall be **16%** with MAT/income tax as pass through.

15. Interest on Working Capital:

(1) The Working Capital requirement shall be computed as follows:

(a) Operation and Maintenance expenses for one month,

(b) Receivables equivalent to 2 (two) months of energy charges for sale of electricity calculated on the normative Capacity

Utilisation Factor (CUF),

(c) Maintenance of spares at 15% of Operation and Maintenance expenses.

(2) Interest on Working Capital shall be computed at the interest rate equivalent to the average State Bank of India Base Rate prevalent during the first six months of the previous year plus 350 basis points.

16. <u>Operation and Maintenance Expenses</u>:

(1)'Operation and Maintenance expenses' shall comprise repair and maintenance (R&M), establishment including employee expenses, and administrative and general expenses including insurance.

(2)Operation and maintenance expenses for the first year of the control period shall be `8.57 lakhs / MW.

(3)Normative O&M expenses allowed during first year of these Regulations (i.e. FY 15-16) shall be escalated at the rate of **5.72%** per annum over balance of the control period.

17. <u>Rebate</u>:

(1)For payment of bills of the generating company through letter of credit, a rebate of **2%** shall be allowed.

(2)Where payments are made other than through letter of credit within a period of one month of presentation of bills by the generating company, a rebate of **1%** shall be allowed.

18. Sharing of Clean Development Mechanism (CDM) benefits:

The **proceeds** of carbon credit from approved CDM project shall be shared between generating company and concerned beneficiaries in the following manner, namely-

a) 100% of the gross proceeds on account of CDM benefit is to be retained by the project developer in the first year after the date of commercial operation of the generating station;

b) In the second year, the share of the beneficiaries shall be 10% which shall be progressively increased by 10% every year till it reaches 50%, whereafter the proceeds shall be shared in equal proportion, by the generating company and the beneficiaries.

19. Taxes and Duties:

a) Tariff determined under these regulations shall be exclusive of taxes and duties as may be levied by the Government:

Provided that the taxes and duties levied by the Government shall be allowed as pass through on actually incurred basis.

b) Income tax/MAT is a pass through and is to be paid by the Distribution Licensees to the developer upon receipt of the claim from the developer. This is over and above the tariff determination made herein.

c) Electricity Duty is a pass through and is to be paid by the Distribution Licensees to the developer upon receipt of the claim from the developer. This is over and above the tariff determination made herein.

20. Subsidy or incentive by the Government:

The Commission shall take into consideration any incentive or subsidy offered by the Central or State Government, including accelerated depreciation (AD) benefit, if availed by the generating company, for the Wind Power Projects while determining the tariff under these Regulations.

Provided that the following principles shall be considered for ascertaining income tax benefit on account of accelerated depreciation, if availed, for the purpose of tariff determination:

a) Assessment of benefit shall be based on normative capital cost, accelerated depreciation, rate as per relevant provisions under the Income Tax Act and Corporate Income Tax Rate.

b) Capitalization of Wind Power Projects during second half of the fiscal year. Per unit levellized accelerated depreciation benefit has to be computed considering the post-tax weighted average cost of capital as discount factor (as explained in Regulation 8).

Chapter 3: Technology specific parameters for Wind Power Projects

21. Capacity Utilization Factor:

The Capacity Utilization Factor (CUF) for the control period shall be 23.5%.

Chapter 4: Miscellaneous

22. <u>Deviation from Norms</u>:

Tariff for sale of electricity by the Wind Power Project may also be determined in deviation from the norms specified in these Regulations subject to the condition that the levallized tariff over the useful life of the project on the basis of the norms in deviation does not exceed the levallized tariff calculated on the basis of the norms specified in these Regulations:

Provided that the reasons for deviation from the norms specified under these Regulations shall be recorded in writing.

23. <u>Power to Relax</u>:

The Commission may, by general or special order, for reasons to be recorded in writing, and after giving an opportunity of hearing to the parties likely to be affected, relax any of the provisions of these Regulations on its own motion or on an application made before it by an interested person.

24. <u>Issue of Orders and Practice Directions</u>:

Subject to the provisions of the Act, the Andhra Pradesh Electricity Reform Act, 1998 and these Regulations, the Commission may, from time to time, issue orders and practice directions in regard to the implementation of these Regulations, the procedure to be followed and other matters, which the Commission has been empowered by these Regulations to specify or direct.

25. <u>Power to Amend</u>:

The Commission may, at any time, vary, alter, modify or amend any provisions of these Regulations.

26. <u>Power to Remove Difficulties</u>:

If any difficulty arises in giving effect to the provisions of these Regulations, the Commission may, by general or specific order, make such provisions not inconsistent with the provisions of the Act, as may appear to be necessary for removing the difficulty.

27. <u>Others</u>

i) **Evacuation Guidelines:**The Evacuation Guidelines/practice directions issued by the Commission from time to time shall be applicable for all the wind power projects established since these regulations coming into force.

ii) **Model PPAs:** The model Power Purchase Agreements earlier approved by the Commission shall be applicable to all the wind power projects established since these regulations coming into force also to the extent they are in consonance with these regulations.

(By Order of the Commission)

Sd/-

Hyderabad **Dr. A. Srinivas**

31.07.2105 **Commission Secretary (i/c)**