Order on generic tariff for Wind power and related issues

Order No. 6 of 2018 dated 13-04-2018

BEFORE THE TAMIL NADU ELECTRICITY REGULATORY COMMISSION

PRESENT: **Thiru S. Akshaya Kumar - Chairman**
Thiru G. Rajagopal - Member
Dr.T.Prabhakara Rao - Member

Order No. 6 /2018, dated 13-04-2018

In the matter of : Order on generic tariff for Wind power and related issues

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In exercise of the powers conferred by Sections 181, 61 (h), 62 and 86 (1) (e) of the Electricity Act 2003, (Act 36 of 2003), read with the National Electricity Policy, the Tariff Policy and Commission's Power Procurement from New and Renewable Sources of Energy Regulations, 2008, the Commission, after issuing a consultative paper for public view on "Issue of Tariff Order for Wind Energy and related issues" inviting comments from stakeholders and after examining the views of all stakeholders, the views expressed by the Members of the State Advisory Committee (SAC) on the Consultative Paper in the meeting held on 21/3/2018, and on consideration of the views of the stakeholders and the SAC Members on the Consultative Paper, passes this suo motu Tariff Order on Wind Power.

This order shall take effect on and from the 1st of April, 2018.

Sd./-	Sd./-	Sd./-
(T.Prabhakara Rao)	(G.Rajagopal)	(S.Akshaya Kumar)
Member	Member	Chairman

(By Order of the Tamil Nadu Electricity Regulatory Commission)

Sd./-
(S.Chinnarajalu)
Secretary

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TAMIL NADU ELECTRICITY REGULATORY COMMISSION

Order on generic tariff for Wind power and related issues

1.0 Overview

1.1 Commission in exercise of the powers vested under the Electricity Act,2003 and in compliance with the mandate of the Act to promote renewable energy has so far issued seventeen tariff orders in respect of various sources of renewable energy. These orders on renewable energy sources covered tariff determination for purchase of power by the Distribution licensee, issues related to open access, its promotional aspects and banking of energy depending on the source of renewable power.

1.2 The conducive policies of the Central and State Government for promotion of renewable power has helped the sector achieve remarkable progress.

1.3 The total capacity of renewable power in the State in February 2018 is 10789.36 MW of which wind power constitutes 7962.215 MW, the highest in the country. The capacities installed stand testimony to the fact that renewable energy has adequately been promoted. The last of the generic tariff orders of the Commission in the case of Wind power was issued on 31.3.2016 vide Order No.3 of 2016. The control period of this Order No.3 of 2016 on wind energy expired on 31.3.2018.

1.4 Wind power penetration is high in Tamil Nadu. The National Institute of Wind Energy has assessed the wind potential in the State at 100 m hub height as 33.8 GW. Many Developers have chosen this State as the destination for investment in wind generation in the competitive bidding conducted by Solar Energy Corporation of India(SECI).

1.5 Commission has so far issued four tariff orders for procurement of power from wind energy viz. Order No.3 of 2006 dt.15.5.2006, Order No.1 of 2009 dt.20.3.2009, Order No.6 of 2012 dt.31.7.2012 and Order No.3 of 2016 dt.31.3.2016, keeping in view the mandate of the Electricity Act,2003 to promote power from renewable energy sources, provisions in National Electricity Policy, Tariff Policy, the Central Commission's Regulations and the Commission's Power Procurement Regulations from New and Renewable Sources of energy.

1.6 Many developments have taken place since the date of issue of the tariff order on wind energy on 31.3.2016. The wind power sector is gradually transitioning from a preferential tariff regime to tariff based competitive auctions. There is a steep fall in the tariffs of wind power in the recently concluded auctions conducted by State governments and Solar Energy Corporation of India. The decline in tariffs are to such an extent that they are lesser than the average price of power generated from projects using coal as fuel. Slash in prices of equipments, cheap interest rates, advanced technologies have changed the market dynamics.

2.0 Need for a feed in tariff/preferential tariff:

2.1 Legal framework:

2.1.1 Related Provisions of Electricity Act, 2003

2.1.1.1 Relevant provisions of Electricity Act, 2003 are reproduced below:

"Section 3(1): The Central Government shall, from time to time, prepare the National Electricity Policy and tariff policy, in consultation with the State Governments and the Authority for development of the power system based on optimal utilisation of resources such as coal, natural gas, nuclear substances or materials, hydro and renewable sources of energy.

Section 61: The Appropriate Commission shall, subject to the provisions of this Act, specify the terms and conditions for the determination of tariff, and in doing so, shall be guided by the following, namely:-

……

(h) the promotion of cogeneration and generation of electricity from renewable sources of energy;

(i) the National Electricity Policy and tariff policy;

Section 62(1): The Appropriate Commission shall determine the tariff in accordance with the provisions of this Act for –

(a) supply of electricity by a generating company to a distribution licensee:

Section 62(2): The Appropriate Commission may require a licensee or a generating company to furnish separate details, as may be specified in respect of generation, transmission and distribution for determination of tariff.

Section 62(5): The Commission may require a licensee or a generating company to comply with such procedure as may be specified for calculating the expected revenues from the tariff and charges which he or it is permitted to recover.

Section 63: Notwithstanding anything contained in section 62, the Appropriate Commission shall adopt the tariff if such tariff has been determined through

transparent process of bidding in accordance with the guidelines issued by the Central Government.

Section 86(1)(e): The State Commission shall promote cogeneration and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person, and also specify, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee;"

2.1.2. Related Provisions of National Electricity Policy

2.1.2.1 Relevant provisions of National Electricity Policy are reproduced below:

"Section 5.2.20 Feasible potential of non-conventional energy resources, mainly small hydro, wind and bio-mass would also need to be exploited fully to create additional power generation capacity. With a view to increase the overall share of non-conventional energy sources in the electricity mix, efforts will be made to encourage private sector participation through suitable promotional measures.

Section 5.12.2 The Electricity Act 2003 provides that co-generation and generation of electricity from non-conventional sources would be promoted by the SERCs by providing suitable measures for connectivity with grid and sale of electricity to any person and also by specifying, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee. Such percentage for purchase of power from non-conventional sources should be made applicable for the tariffs to be determined by the SERCs at the earliest. Progressively the share of electricity from non-conventional sources would need to be increased as prescribed by State Electricity Regulatory Commissions. Such purchase by distribution companies shall be through competitive bidding process. Considering the fact that it will take some time before non-conventional technologies compete, in terms of cost, with conventional sources, the Commission may determine an appropriate differential in prices to promote these technologies."

2.1.3. Related Provisions of Tariff Policy

2.1.3.1 Relevant provisions of Tariff Policy, 2016 are reproduced below:

"Para 6.4 "(1) Pursuant to provisions of section 86(1)(e) of the Act, the Appropriate Commission shall fix a minimum percentage of the total consumption of electricity in the area of a distribution licensee for purchase of energy from renewable energy sources,

taking into account availability of such resources and its impact on retail tariffs. Cost of purchase of renewable energy shall be taken into account while determining tariff by SERCs. Long term growth trajectory of Renewable Purchase Obligations (RPOs) will be prescribed by the Ministry of Power in consultation with MNRE.

……

(i) Within the percentage so made applicable, to start with, the SERCs shall also reserve a minimum percentage for purchase of solar energy from the date of notification of this policy which shall be such that it reaches 8% of total consumption of energy, excluding Hydro Power, by March 2022 or as notified by the Central Government from time to time.

……

(iii) It is desirable that purchase of energy from renewable sources of energy takes place more or less in the same proportion in different States. To achieve this objective in the current scenario of large availability of such resources only in certain parts of the country, an appropriate mechanism such as Renewable Energy Certificate (REC) would need to be promoted. Through such a mechanism, the renewable energy based generation companies can sell the electricity to local distribution licensee at the rates for conventional power and can recover the balance cost by selling certificates to other distribution companies and obligated entities enabling the latter to meet their renewable power purchase obligations. The REC mechanism should also have a solar specific REC.

(iv) Appropriate Commission may also provide for a suitable regulatory framework for encouraging such other emerging renewable energy technologies by prescribing separate technology based REC multiplier(i.e granting higher or lower number of RECs to such emerging technologies for the same level of generation).Similarly, considering the change in prices of renewable energy technologies with passage of time, the Appropriate Commission may prescribe vintage based REC multiplier(i.e granting higher or lower number of RECs for the same level of generation based on year of commissioning of plant).

(2) States shall endeavor to procure power from renewable energy sources through competitive bidding to keep the tariff low, except from the waste to energy plants. Procurement of power by Distribution Licensee from renewable energy sources from projects above the notified capacity, shall be done through competitive bidding process, from the date to be notified by the Central Government.

However, till such notification, any such procurement of power from renewable energy sources projects, may be done under Section 62 of the Electricity Act, 2003."

2.1.4 Regulation 4 (2) of the Power Procurement from New and Renewable Sources of Energy Regulation, 2008, specifies as follows:

"(2) While deciding the tariff for power purchase by distribution licensee from new and renewable sources based generators, the Commission shall, as far as possible, be guided by the principles and methodologies specified by:
(a) Central Electricity Regulatory Commission
(b) National Electricity Policy
(c) Tariff Policy issued by the Government of India
(d) Rural Electrification Policy
(e) Forum of Regulators (FOR)
(f) Central and State Governments

(3) The Commission shall, by a general or specific order, determine the tariff for the purchase of power from each kind of new and renewable sources based generators by the distribution licensee. ...
Provided where the tariff has been determined by following transparent process of bidding in accordance with the guidelines issued by the Central Government, as provided under section 63 of the Act, the Commission shall adopt such tariff."

2.1.5 The preamble of the Electricity Act, 2003 seeks to promote competition in the power sector. The National Electricity Policy 2005 also promotes procurement of energy from renewable energy sources and promotes purchase of renewable energy by the distribution companies through competitive bidding process. The National Electricity Policy and the Tariff Policy 2006 reconciled to the fact that it will take some time for the non conventional energy sources to compete with conventional sources of energy and hence recommended procurement from such sources by distribution companies at preferential tariffs to be determined by the Commissions. The Tariff Policy 2016 has reckoned

that to keep the tariff low, States have to endeavour to procure power from renewable energy sources, except waste to energy plants, through competitive bidding and the Distribution licensee shall procure power from renewable energy sources from projects above the notified capacity, through competitive bidding process, from the date to be notified by the Central Government.

2.1.6 Commission's Regulations on Power Procurement from New and Renewable Energy Sources provides for determination of tariff by generic or specific order and to adopt a tariff if the tariff has been determined by a transparent process following guidelines issued by the Central Government.

2.1.7 The Central Electricity Regulatory Commission(CERC) in its Regulations on Tariff determination for renewable energy sources issued on 17.4.2017 has not fixed any generic tariff for wind and solar power for the reason that setting generic tariff based on norms may not provide the right price signals. However, the Central Commission has set financial and operational norms that would serve as ceiling norms for determination of project specific tariff.

2.1.8 Government of India has issued guidelines for tariff based competitive bidding process for procurement of power from wind power projects vide resolution No.23/54/2017–R&R dt.8.12.2017. The Ministry of New and Renewable Energy(MNRE) in a communication dt.12.1.2018, has clarified that the States/UTs can consider procuring power from solar and wind projects of less than the defined threshold prescribed (25 MW for wind,5 MW for solar) in the

competitive bidding guidelines through feed in tariff to be determined by concerned State Electricity Regulatory Commissions.

2.2 Competitive bidding vs preferential tariff

2.2.1. In the last tariff order issued for wind energy vide Order No.3 of 2016 dt.31.3.2016, in the context of deciding preferential tariff for wind energy vs competitive bidding, Commission observed that the **'**Government of India has not issued any bidding guidelines for power procurement from wind energy as on date as specified in section 63 of the Electricity Act, 2003. Further, Hon'ble APTEL's order in Appeal No. 129 of 2005 on the subject of competitive bidding for procurement of power from Non Conventional Energy Sources(NCES) issued on 14-05-2007 has been stayed by the Hon'ble Supreme Court by its order dated 26-11-2011 passed in Civil Appeal No. D 26531 of 2007**',** and therefore in line with the Tariff Policy, 2016 that provided for procurement of power from renewable energy source projects under section 62 until a notification is issued by the Central Government, the Commission decided to fix the tariff as per the provisions under section 62 of the Electricity Act,2003. The control period of Order No.3 of 2016 dt.31.3.2016 expired on 31.3.2018.

2.2.2 Since the time of issue of the last tariff order on wind energy on 31st March 2016, the wind energy sector has also moved towards sale through competitive bidding. Government of India issued draft guidelines for procurement

of wind power though competitive bidding. The task of conducting reverse auctions for wind power was entrusted to Solar Energy Corporation of India(SECI). The auctions conducted by SECI in February 2017 for wind power fetched a low tariff of Rs.3.46 per unit. Considering a ceiling price of Rs.3.46 per unit discovered in the auction for wind energy, the Distribution licensee, TANGEDCO, after obtaining approval from the Commission proceeded with reverse bidding for procurement of wind power of capacity 500 MW. A tariff of Rs.3.42 per unit was discovered in the reverse bidding conducted by the Distribution licensee. The auction for wind energy conducted by SECI in October 2017 saw the wind tariff falling as low as Rs.2.64 per unit. Every competitive bidding of SECI is seen to set a new benchmark tariff. The State run auction by Gujarat for wind power fetched a tariff of Rs.2.43 per unit. The Ministry of Power issued the final guidelines for tariff based competitive bidding for wind power on 8.12.2017. The latest auction in February 2018 after issue of guidelines for competitive bidding for wind power, conducted by SECI saw a tariff rate of Rs.2.44 per unit.

2.2.3 The tariff determined for wind energy in the tariff order of 2016 dt.31.3.2016 was Rs.4.16 per unit without accelerated depreciation and Rs.3.70 per unit with accelerated depreciation. Compared to the prices discovered through competitive bidding process conducted by SECI and a few other States, the tariff fixed in the order of 2016 is off the benchmark price.

2.2.4 Reports that appeared subsequent to the SECI auctions indicated that the Developers were optimistic of the take off and IRR of the projects, but turbine manufacturers were uncertain about the duration of survival of low power cost of wind as in their point of view low cost was possible due to the equipment manufacturers laden with inventory disposing the same with discounts, and discounts on turbines are not possible in the long run.

2.2.5 During the State Advisory Committee (SAC) meeting held by the Commission, members of the SAC also had different views of determination of tariff and the process of competitive bidding. Chairman and Managing Director/Tamil Nadu Generation and Distribution Company (TANGEDCO) wanted the feed in tariff mechanism to be done away with as done by the Central Commission. He was of the view that fixation of tariff could send wrong price signals and TANGEDCO may not get any response for the bidding. However, if a tariff is to be determined it may be at a lower price considering the latest auction price and suggested Rs.2.26 per unit. Chairman and Managing Director/Tamil Nadu Energy Development Agency suggested determination of separate tariffs for capacities less than 25 MW. One of the members of the SAC, stated that it is usual in the case of competitive biddings to have an undisclosed price, and sometimes cartelization is possible and therefore it would be right for the State Regulatory Commission to determine a tariff through a transparent exercise and have a benchmark price though it would be difficult to consider all developments.

Other members expressed concern about the investors' confidence, commercial interest of the licensee and the impact on consumers.

2.2.6 Reports broadly suggest reduction in prices of wind power turbines to an extent of 20% in the last two years. The recent auctions show that the developers have adopted combination of various factors that has brought down the per unit price of wind energy to such an extent which is less than the variable cost of coal fired plants.

2.2.7 Under the statutory provisions of the Act, section 62 and section 63 are two alternatives available to the Distribution licensees to procure power with the tariff being determined or approved by the Commission and the State Commission is bestowed with statutory powers to determine tariff. Policies, notifications of Government serve as guidelines and the same has been specified in the Commission's Regulations. The provisions in the Tariff Policy 2016 for the Distribution Licensee to procure power through competitive bidding above the notified capacity from renewable sources aims for procurement of power at low tariffs. Though bidding guidelines have been issued, in view of the statutory provisions of the Act and for the reasons aforementioned, Commission is of the view that a feed in tariff that reflects the prevailing market trend is necessary for the State. The Central Commission's RE Tariff Regulations 2017 specify that the capital cost and tariff shall be as per prevailing market trends in project specific cases.

2.2.8 In view of the various factors that have brought about a steep decline in prices of wind power, Commission feels that a new benchmark price may be required for the State that may come in handy to the distribution licensee in any emergent situation such as to go in for reverse bidding based on trends in this State and to the projects that have failed to commission within the control period of 31.3.2018. Commission decides to fix a feed in tariff taking into account the market prices. However, in order to realize the best advantage of the prevailing situation to harness maximum quantum in shorter timeline at the most competitive rates it is considered necessary that the licensee shall procure wind power through competitive biddings/reverse auctions following the bidding guidelines of the Government of India. When the licensee opts for procurement through other than competitive bidding they may do so after obtaining approval of the Commission. For any changes in the agreements that have been entered into, the distribution licensee shall obtain prior approval of the Commission.

3.0 Applicability of this order

3.1 This Order shall come into force from 01.04.2018. The tariff fixed in this order shall be applicable to all wind power plants commissioned during the control period of the Order. The tariff is applicable for purchase of wind power by Distribution Licensee from Wind Energy Generators(WEGs). The open access charges and other terms and conditions specified shall be applicable to all the WEGs, irrespective of their date of commissioning.

4.0 Tariff determination process

4.1 With regard to tariff determination process, the relevant portion of Regulation 4 of the Power Procurement from New and Renewable Sources of Energy Regulations, 2008 is reproduced below:

"(1) The Commission shall follow the process mentioned below for the determination of tariff for the power from new and renewable sources based generators, namely;-

a) initiating the process of fixing the tariff either suo motu or on an application filed by the distribution licensee or by the generator.

b) inviting public response on the suo motu proceedings or on the application filed by the distribution licensee or by the generator.

d) issuing general/specific tariff order for purchase of power from new and renewable sources based generators."

4.2 In line with the above regulation, the Commission prepared a consultative paper on "Issue of Tariff order on Wind Energy and related issues' and hosted the same on 02.03.2018 in the Commission's website inviting comments and suggestions from stakeholders. The consultative paper was also presented in the State Advisory Committee (SAC) meeting held on 21/03/2018 and discussed. The list of stakeholders who furnished comments is annexed with this order as Annexure II and the summary of the comments received from the stakeholders is annexed as Annexure III. The list of members present at the State Advisory Committee meeting on 21/03/2018 is enclosed as Annexure IV. Taking into account the important comments/suggestions received from the stakeholders and the SAC Members, parameters adopted by other State Electricity Regulatory Commissions, Central Electricity Regulatory Commission(CERC) and

deliberations on all issues, the Commission issues this "Order on generic tariff for Wind Power and related issues" .

4.3 Appeals have been filed by the stakeholders against Hon'ble Appellate Tribunal of Electricity (APTEL)'s order in Appeal Nos.197,198 of 2012 dt.24.5.2013 that dealt on issues in the order of 2012, before the Supreme Court of India. APTEL had remanded few issues in Order No.2012 and Commission passed orders in R.A No.6 of 2013 dt.31.3.2016. Appeals have been filed against certain issues in the Order No.3 of 2016 dt.31.3.2016 and on the order passed in R.A No.6 of 2013.

5.0 Tariff/Pricing methodology

5.1 Tariff / Pricing Methodology specified in Regulation 4 of the Power Procurement from New and Renewable Sources of Energy Regulations, 2008 is reproduced below:

"(2) While deciding the tariff for power purchase by distribution licensee from new and renewable sources based generators, the Commission shall, as far as possible, be guided by the principles and methodologies specified by:

(a) Central Electricity Regulatory Commission
(b) National Electricity Policy
(c) Tariff Policy issued by the Government of India
(d) Rural Electrification Policy
(e) Forum of Regulators (FOR)
(f) Central and State Governments

(3) The Commission shall, by a general or specific order, determine the tariff for the purchase of power from each kind of new and renewable sources based generators by the distribution licensee. In case of small hydro projects with a capacity of more than 5 MW but not exceeding 25 MW capacities, Commission decide the tariff on case to case basis.

Provided where the tariff has been determined by following transparent process of bidding in accordance with the guidelines issued by the Central Government, as provided under section 63 of the Act, the Commission shall adopt such tariff.

(4) While determining the tariff, the Commission may, to the extent possible consider to permit an allowance / disincentive based on technology, fuel, market risk, environmental benefits and social impact etc., of each type of new and renewable source.

(5) While determining the tariff, the Commission shall adopt appropriate financial and operational parameters.

(6) While determining the tariff the Commission may adopt appropriate tariff methodology."

5.2. Project specific or Generalized Tariff

5.2.1 A generalized tariff mechanism would provide incentive to the investors for use of most efficient equipment to maximize returns and for selecting the suitable site while a project-specific tariff would provide each investor, irrespective of the machine type, the stipulated return on equity which, in effect, would shield the investor from the uncertainties involved. This order provides for power purchase by distribution licensees to meet their Renewable Purchase Obligation as specified in the Commission's Regulations and the commitment to promote renewable energy. The wind power plants commissioned in the State have mostly adopted similar technology with minor modifications. Hence, the Commission decides to issue a generalized tariff order for Wind power.

5.3. Single Part vs. Two Part Tariff

5.3.1. Two part tariff is generally adopted when the variable component is significant. In the case of wind energy generation, wind being the motive force, variable generation cost is nil. Variations in operation, maintenance and

insurance cost could be taken care of by adopting suitable parameters. Therefore, the Commission decides to adopt single-part tariff for wind energy generation.

5.4. Cost-Plus Tariff Determination

5.4.1 Regulation 4(6) of "Power Procurement from New and Renewable Sources of Energy Regulations, 2008" empowers the Commission to adopt "appropriate tariff methodology" to determine the tariff for wind power. Cost-plus tariff determination is a more practical method. It can be easily designed to provide adequate returns to the investor and a surety of returns will lead to larger investment in wind power plants. Commission in the last tariff order issued for wind energy adopted cost plus single part levellised tariff taking into account the Accelerated Depreciation (AD) benefit as done by many other SERCs. The Commission decides to adopt the same in this tariff order.

6.0 Tariff components

6.1 The Commission has carried out a detailed analysis of the existing policies/procedures and commercial mechanisms in respect of wind power generation. The tariff determined in a cost plus scenario, would depend significantly on the following operating and financial parameters:

1. Capital cost
2. Capacity Utilization Factor

3. Operation and Maintenance expenses

4. Insurance cost

5. Debt-Equity ratio

6. Term of Loan and Interest

7. Life of plant and machinery

8. Return on Equity

9. Depreciation rate applicable

10. Interest and Components of Working Capital

11. Discount factor

6.2 Capital cost

6.2.1 The cost of wind turbines have considerably reduced over the years from 2010. One of the reasons widely reported for lower tariffs of Rs.3.46 per unit and Rs.2.64 per unit in the auctions conducted by SECI is the significant reduction in the price of wind turbines with advanced technologies and discounts offered by the wind turbine manufacturers. The cost of wind turbine with tall wind towers and advanced technology have reportedly come down by 20% in terms of cost per MW. Stakeholders have requested to adopt capital costs ranging from Rs.5 crores to Rs.7.5 crores and have requested to factor in land costs, evacuation, operation and maintenance costs, forecasting of wind power etc.

6.2.2 Commission adopted a capital cost of Rs.6.2 crores per MW in the wind tariff order of 2016. With the cost of the wind turbine that makes for 70% or more

for a wind power project added with other costs for installation, and considering the reduced prices of machinery, a capital cost of Rs.5.25 crores per MW is adopted. It is upto the developer to identify land, factor in various parameters that influence the performance of the plant. Based on the recommendation of MNRE, Commission in its tariff orders No.1 of 2009, order No.6 of 2012 and order No.3 of 2016, considered 85% of the capital cost as attributable to machinery cost,10% for civil works and 5% for land cost. Commission decides to adopt the same percentage in this order also.

6.3 Capacity Utilisation Factor (CUF)

6.3.1 Different views on adoption of CUF have been received. Some of the stakeholders have sought for retention of CUF at 27.15% and some of them have requested to adopt lower CUFs of 18.15%, 23% etc. Some of the stakeholders have requested to adopt CUF of 34 to 35% due to sophisticated technologies and capability of machines to generate in low wind areas with better plant load factor. TANGEDCO has stated that high generating capacities of 34% to 40% have been validated by developers themselves and developers who participated in the bidding process have filed petitions to relax the CUF limit specified as 27.15% in the tender, and they have suggested to adopt a CUF of 34%.

6.3.2 Commission has also observed in many of the reports and journals that the present machines are capable of high generation at low speeds of wind and this has also resulted in scaling down of costs. To reflect increased performance

of wind turbines, advancements in technology, Commission has decided to adopt a CUF of 29.15%.

6.4 Operation and maintenance cost

6.4.1 Commission in its previous orders of 2009,2012 and 2016 adopted per annum O&M expenses of 1.1% on 85% of the capital investment and 0.22% on 15% of the capital investment and escalation factor of 5% from second year onwards. The 85% of the capital cost refers to the plant and machinery cost and 15% refers to the land and civil works.

6.4.2 Some of the stakeholders have requested for adoption of 2% to 3% of capital cost as O&M cost. Some of them have requested flat rates of Rs.9 to 12 Lakhs per MW. The issue of operation and maintenance cost has been dealt in the order of Hon'ble APTEL in Appeal No.197,198 etc of 2012 wherein the Commission's methodology has been upheld. Further, the Central Electricity Regulatory Commission's Regulations on Terms and Conditions of determination of Tariff from Renewable Energy Sources, 2017 specify determination of O&M expenses in a Project specific case based on prevailing market information. Commission decides to adopt an O&M expense of 1.1% on 85% of Capital investment (plant and machinery cost) and 0.22% on 15% of the Capital investment (land and civil works) with an escalation of 5% from second year onwards as adopted in its earlier orders.

6.5 Insurance

6.5.1 Commission decides to adopt an insurance cost of 0.75% on the plant and machinery which is 85% of the Capital Cost for the first year and to reduce by 0.5% of previous years insurance cost every year as adopted in the Wind Order issued in 2016.

6.6 Debt and Equity

6.6.1 The Tariff Policy lays down a debt equity ratio of 70: 30 for power projects. The Commission decides to adopt this ratio as specified in its Tariff Regulations 2005 and as adopted in the earlier Orders on new and renewable power.

6.7 Term of loan and Rate of interest

6.7.1 Stakeholders have requested to adopt a term of loan of 13 years and interest rates as adopted by CERC. TANGEDCO has requested for an interest rate of 8.75% due to falling interest rates.

6.7.2 Commission proposed term of loan of 10 years plus one year moratorium as adopted in the previous orders of wind energy in the consultative paper. CERC and other State Electricity Regulatory Commissions adopted interest rates ranging from 9.23% to 12.30 %. CERC in its RE Tariff regulations 2017 has specified a normative interest rate of two hundred basis points above the average State Bank of India Marginal Cost of Funds based Lending Rate (MCLR one year tenor) prevalent during the last available six months and has considered a rate of interest of 9.97% in its generic tariff RE order of

2018-2019. Commission decides to adopt the latest MCLR (Marginal Cost of funds based Lending Rate) of 1 year of 7.95% notified by the State Bank of India in February 2018 plus 200 basis points which is 9.95%.

6.8 Life of Plant and Machinery

6.8.1 Commission considers a life period of 25 years as in the earlier order for wind energy issued in 2016.

6.9 Return on Equity (RoE)

6.9.1 CERC in its RE Tariff regulations dt.17.4.2017 has specified Return on Equity of 14% to be grossed up with prevailing MAT of 1st of April of previous year and in its RE tariff order of 2018-2019 has considered RoE of 17.56% after grossing up with average MAT of 20.26% prevailing on 1st of April 2017.

6.9.2 Commission decides to adopt Return on equity of 17.56% as adopted by CERC in its RE Tariff regulations and in its RE tariff order of 2018-19.

6.10 Depreciation

6.10.1 CERC in the RE Tariff Regulations 2017 has specified depreciation of 5.28% per annum for first 13 years and the balance depreciation to be spread over the remaining useful life of the project considering salvage value as 10% of project cost. Stakeholders have sought for differential depreciation for the term of loan with the balance spread over the useful life as followed by other State Electricity Regulatory Commissions.

6.10.2 The Commission in its Orders on Wind, Bio-mass and Bagasse based energy issued during the year 2012, 2016 has depreciated the value of plant and

machinery to 90% of the initial value for the life period using the straight line method. This translates into a rate of 3.6% per annum. The depreciation was calculated on 85% of the capital investment. The Commission decides to adopt the same method in this order for the life period of 25 years.

6.11 Interest and Components of Working Capital

6.11.1 In the Order on Renewables by the CERC, the components of working capital have been taken as O&M expenses for one month, receivables for two months and maintenance of spares at 15% of the O&M expenses. In the regulations on determination of tariffs for renewable energy of CERC, interest on working capital has been specified at 300 basis points above the average State Bank of India MCLR(one year tenor) prevalent during the last available six months. The distribution licensee, Tamil Nadu Generation and Distribution Corporation Ltd.(TANGEDCO) has suggested an interest rate of 9.45% by adding 150 basis points to the 1 year tenor of State Bank of India's MCLR of 7.95%. Some of the stakeholders have sought for higher rates of interest on working capital of 13 to 13.5%.

6.11.2 As these interest rates vary depending on the credit history of companies and differs from one lender to another, the exercise being for a generic tariff, Commission decides to adopt an interest rate of 10.95% as proposed in the consultative paper. As to the components of working capital, the Commission decides to adopt one month operation and maintenance cost and

two months receivables for the wind power projects as followed in the previous orders of the Commission on wind energy.

6.12 Discount factor

6.12.1 A discount factor of 8.75% equal to the post tax weighted average cost of the capital on the basis of normative debt: equity ratio (70:30) is adopted for the purpose of levellised tariff computation.

7.0 Tariff Determinants

7.1 . The financial and operational parameters in respect of Wind Power projects proposed in the paper are tabulated below:

Tariff Components	Values
Capital cost	Rs. 5.25 Crores/MW
CUF	29.15%
Operation and maintenance expenses	1.1% on 85% of Capital investment and 0.22% on 15% of the Capital investment with an escalation of 5%
Insurance	0.75% on 85% of the Capital Cost for the first year and to be reduced by 0.5% every year
Debt-Equity ratio	70:30
Life of plant and machinery	25 years
Return on Equity	17.56%(pre-tax)
Term of Loan	10 years with 1 year moratorium period
Interest on loan	9.95%
Depreciation	3.6% p.a
Working Capital components	one month O&M cost and two months

	receivables
Interest on working capital	10.95%
Discount factor	8.75%
Levellised Tariff without Accelerated Depreciation	Rs.2.86
Levellised tariff with Accelerated Depreciation	Rs.2.80

8.0 Wind Power Tariff

8.1 Wind power tariff is computed with reference to the determinants listed in para 7.1 above. The tariff works out to Rs. 2.86 per unit without accelerated depreciation and Rs.2.80 per unit with Accelerated Depreciation(AD). The working sheet is enclosed as Annexure I.

9.0 Issues related to power purchase by Distribution licensee:

1. Quantum of power purchase by the Distribution licensee
2. CDM benefits
3. Billing and Payments
4. Energy Purchase Agreement
5. Control Period /Tariff Review Period

9.1 Quantum of power purchase by the Distribution licensee

9.1.1 The distribution licensee can purchase wind power from the Wind Energy Generators(WEGs) to meet the Renewable Power purchase Obligations(RPO) requirement. If the rates obtained are comparable and below the variable cost of

power from conventional fuel based power sources, the licensee may procure over and above the limit of the RPO.

9.2 CDM benefits

9.2.1 In the earlier orders issued on renewable energy, the Commission adopted the following formula for sharing of CDM benefits as suggested by the Forum of Regulators (FOR):

"The CDM benefits should be shared on gross basis starting from 100% to developers in the first year and thereafter reducing by 10% every year till the sharing becomes equal (50:50) between the developer and the consumer in the sixth year. Thereafter, the sharing of CDM benefits will remain equal till such time the benefits accrue."

9.2.2 The Commission accepted the formula recommended by the Forum of Regulators in its earlier order. The Commission decides to adopt the same formula. The generators shall furnish details of receipts of CDM to the distribution licensee The distribution licensee shall account for the CDM receipts in the next ARR filing.

9.3 Billing and Payments

9.3.1 When a wind generator sells power to the distribution licensee, the generator shall raise the bill every month for the net energy sold after deducting the charges for power drawn from distribution licensee, reactive power charges etc. The distribution licensee shall make payment to the generator in 60 days of receipt of the bill. Any delayed payment beyond 60 days is liable for interest at

the rate of 1% per month. TANGEDCO has suggested for levy of interest at 0.75% per month. Some of the stakeholders have sought for interest of 1.5% to 2% for delayed payments beyond 60 days and some of them have requested for payment within 30 days. Having considered a receivables of two months, Commission decides to retain the duration for payment by the distribution licensee as 60 days as proposed and adopted in previous order and decides to adopt rate of interest of 1% per month for any delayed payment by the Distribution licensee beyond 60 days.

9.4 Energy Purchase Agreement (EPA)

9.4.1. The format for Energy Purchase Agreement (EPA) shall be evolved as specified in the Commission's "Power procurement from New and Renewable sources of energy Regulations 2008" and amended from time to time. The agreement shall be valid for 25 years or life of the plant specified in the respective tariff order. The distribution licensee shall execute the Energy Purchase Agreement or convey its decision in line with this order within a month of receipt of the proposal from the generator for selling his power. The agreement fees are governed by the Commission's Fees and Fines regulation.

9.5 Control Period /Tariff Review Period

9.5.1 Regulation 6 of the Power Procurement from New and Renewable Sources of Energy Regulations, 2008 of the Commission specifies that the tariff as determined by the Commission shall remain in force for such period as

specified by the Commission in such tariff orders and the control period may ordinarily be two years.

9.5.2 The Commission decides that the control period shall be two years from the date of this order and tariff period shall be 25 years.

10.0 Issues related to open access:

1. Banking
2. Open access charges – Transmission and Wheeling, and Line losses
3. Cross subsidy surcharge
4. Reactive power charges
5. Grid availability charges
6. Energy Accounting and Billing Procedure
7. Energy wheeling agreement and fees
8. Security Deposit
9. Power factor disincentive
10. Metering
11. Connectivity and evacuation of power
12. Harmonics

10.1 Banking :

10.1.1 The evolution of banking of wind energy generated from the captive generating plants and the losses stated to have been encountered by the distribution licensee on account of banking have been discussed in all the

tariff orders of wind energy issued by the Commission so far. The distribution licensee has been objecting to the provision of banking extended to the wind power which it says is extremely infirm compared to all other sources of renewable energy.

10.1.2 The erstwhile TNEB followed its rule of banking until 15.5.2006 the date of issue of the first tariff order for wind power by this Commission. After coming into force of the Electricity Act,2003, the Commission has begun to issue wind tariff orders in exercise of its power under section 61, 62 and 86(1)(e) and while issuing such orders, Commission also dealt with banking as an allied issue. In order to promote clean form of energy, several concessions were considered. Initially the wind energy generator was allowed to adjust in two HT industrial services. A banking charge of 2% was levied from March 1986. This was raised to 5% in March 2002. The banking period underwent changes many times from three months to one year, then to two years, again to three months etc. This shows that concept of banking has undergone changes in its application from time to time.

10.1.3 Banking has always remained a bone of contention between the licensee and Wind Energy Generators (WEGs). In the successive consultative processes undertaken by the Commission before issue of every tariff order, the Distribution licensee has always requested to remove the facility of banking provided to the wind energy generators. The wind energy generators on the other hand had

raised concerns on the investments made having banking provision in mind and cited principles of promissory estoppels.

10.1.4 In the order of 2012, the banking charges were fixed as the difference between the average power purchase cost through bilateral trading on all India basis taken for a period of two years and the maximum preferential tariff specified in the order which worked out to Rs.0.94 per kWhr. This order on banking charges was challenged by stakeholders before the Hon'ble Appellate Tribunal of Electricity (APTEL) vide Appeal Nos.197, 198 of 2013 etc. and Hon'ble APTEL remanded the issue to the Commission.

10.1.5 While disposing the remanded case in R.A No.6 of 2013 dt.31.3.2016, Commission observed that it is time that the promotional concessions are gradually withdrawn and however fixed the banking charges at 10% in kind. In the order No. 3 of 2016, Commission fixed the banking charges at 12% in kind.

10.1.6 Appeals have been filed against R.A No.6 of 2013 dt.31.3.2016 and Order No. 3 of 2016 dt.31.3.2016 by the distribution licensee as well as the wind generators and captive users before the Hon'ble Appellate Tribunal of Electricity vide Appeal Nos.176 of 2016 and 177 of 2016. Appeals have also been filed against the order of APTEL in Appeal Nos. 197,198 of 2013 etc. dt.24.5.2013, by the Distribution licensee and wind energy generators before the Hon'ble

Supreme Court of India. Licensee had filed petition before the Commission in M.P No.24 of 2016 praying for change in banking period from April to March to January to December to all wind generators commissioned prior to 31.10.2016 and to dispense with banking facility for all new WEGs commissioned from 01.11.2016. Before the Hon'ble APTEL in Appeal Nos.176 and 177 of 2016, the licensee has sought to dispense with the provision of banking of wind energy for all WEGs irrespective of date of commissioning i.e existing and for future projects. The petition filed in M.P No.24 of 2016 before the Commission has been disposed referring to the consultative paper floated for tariff for wind energy and related issues for the next control period commencing in 2018 that intended to analyse the issue of banking thoroughly to take a more appropriate decision and sought substantive response on the same. During the hearing in M.P No.24 of 2016 before this Commission for changing of banking period, the wind energy generators vehemently opposed the claim on the ground that a petition with such a prayer cannot be entertained by the Commission in the Miscellaneous Petition and it should be filed only as a tariff petition. Further, it was the contention of the wind energy generators that banking forms part of the wind energy tariff order and any amendment to the same can be made only by following the procedure which was followed while issuing the wind tariff order.

10.1.7 Number of developments have taken place in the recent years. The State has attained a near power surplus situation. Restriction and control measures on supply of electricity have been lifted and the G.O issued by the

Government of Tamil Nadu invoking section 11 of the Electricity Act, 2003 with directions to all generators to supply power within the State has been rescinded. Much higher targets of wind power capacity are sought to be achieved in the State. Prices of wind energy are seen to be falling and in the process reached levels comparable to that of conventional fuels.

10.1.8 In the light of the above, the following options were mentioned in the consultative paper in order to evoke wider and substantive responses from the stake holders and to arrive at conclusion balancing the interests of all concerned by choosing the most appropriate option:

i) To dispense the facility of banking of wind energy but with deemed purchase of excess generation.(OR)

ii) Banking facility of one month with time block wise adjustments on implementation of DSM regulations and purchase of unutilized energy at the end of each month.(OR)

iii) Banking facility for 12 months from January to December with time block wise adjustments on implementation of DSM regulations and banking charges of 14% in kind and purchase of unutilized energy at the end of the year. (OR)

iv) Banking facility for 12 months from April to March with time block wise adjustments on implementation of DSM regulations and banking

charges of 14% in kind and purchase of unutilized energy at the end of the year.

10.1.9 Most of the stakeholders who comprise the captive users have requested to retain the banking period of April to March. Some of the stakeholders have even sought to reduce the banking charges with retention of banking period from April to March. Some of the stakeholders have requested to categorically remove the banking facility stating that the captive users are enjoying the facility at the cost of the general public. Some of them have stated that they are ready to pay the banking charges of 12% and requested to retain the banking facility. However, a few associations have furnished claims to prove that the present form of banking is not a loss to the licensee and is actually a gain. They have come up with calculations showing a gain of Rs.2.18 per unit and profits of Rs.436 crores, Rs.487 crores due to the banking mechanism. The calculations of TANGEDCO indicate a net loss of Rs. 0.73 per unit after accounting for the revenue from banking charges, transmission, wheeling and deduction of losses and revenue realized per unit and cost of resupply per unit.

10.1.10 TANGEDCO has further stated that their loss on resupplying the banked energy at subsidized rates which otherwise could have been sold at higher industrial and commercial tariffs and that has been worked out as Rs.1429 crores. They have also added their cost of backing down of other generating stations in accommodating wind power which is Rs.476 crores. Yet

another point raised by the distribution licensee, is that a subsidized category is existing within the subsidising category and this would make it difficult for them to achieve the roadmap of cross subsidy notified in the Commission's Tariff order of 2017. They have also stated that at no point of time has the Commission promised to provide banking for a lifetime. Captive users and generators are bound by their bilateral agreements and licensee provides non discriminatory open access by virtue of provisions of the Act. The licensee has in every proposal of determination of tariff for wind power requested to dispense with banking and in the present proposal, the licensee has stated that if at all the Commission wishes to extend banking facility it should be to the existing WEGs and not to the future WEGs and for the existing WEGs the period of accounting of banking may be fixed from 1st January to 31st December with certain restrictions i.e. no banking during 1st April to 30th June and purchase of unutilized banked energy may be at 50% of tariff.

10.1.11 As per Regulation 3 (4) of Commission's Power Procurement from New and Renewable Sources of Energy Regulations 2008, Commission may consider appropriate banking mechanism depending on the inherent characteristics of such source. The said provision reads as follows:

"3. Promotion of new and renewable sources of energy.....

(4) The Commission may consider appropriate banking mechanism for generation of power from a particular kind of renewable source depending upon the inherent characteristics of such source."

10.1.12 Banking is a provision that is covered in the Energy Wheeling Agreement between the generator and the licensee based on the policies of the Government and the orders of the Commission that facilitates wheeling of generated units. The distribution licensee signs Energy Purchase Agreement(EPA) with the generators who sell the power to the licensee at the tariff determined by the Commission. The distribution licensee signs an Energy Wheeling Agreement(EWA) with the Captive generators who desire to wheel the energy taking into cognizance the energy wheeling principles elaborated in the general or special tariff order. Regulation 7 of Commission's Power Procurement from New and Renewable Sources of Energy Regulations 2008 provides as follows:

"*7……The distribution licensee/STU shall sign an Energy Wheeling Agreement taking cognizance of the energy wheeling principles elaborated in the general or special tariff order*."

10.1.13 Most of the stake holders wanted the provision of banking continued for the WEGs commissioned already with the banking charges retained at the present level of 12% as the investments were made based on banking facility provided. Some of them have agreed to bear any additional charge to continue with the facility of banking. There is no big opposition to introduce more restrictions on or even removal of banking facility for the fresh projects. In the State Advisory Committee meeting, CMD/TANGEDCO stated that though they have been praying for completely dispensing with banking facility many times, in

case the Commission finds it difficult to immediately withdraw the banking facility for all categories, at least for future projects banking facility may be withdrawn altogether and with respect to existing projects the banking period may be reconsidered. He further stated that the banking period has been changing from time to time and therefore requested that it may be changed to January to December and within this period there shall not be any banking during the summer months from March to June.

10.1.14 As can be seen from para 10.1.9, both the parties i.e the WEGs and the distribution licensee have taken extreme positions. There is also a difference in the data furnished by the WEGs and the distribution licensee. In the absence of any robust data, Commission is unable to verify the correctness or otherwise of the claims and counter claims made by them. Further, the decision of the Commission on banking in R.A No.6 of 2013 itself has been contested by both the developers and the utility. In view of the above, the Commission decides not to disturb the current position in this order and decides to continue with the present banking period of 12 months from the 1st of April to 31st of March of the succeeding year for the WEG machines commissioned on or before 31.3.2018 under captive wheeling in the case of normal and REC scheme (for REC as provided in Order No.3 of 2016 and R.A No.6 of 2013) with increase in the banking charges from 12% to 14% as proposed in the consultative paper.

10.1.15 The energy generated during April shall be adjusted against consumption in April and the balance if any shall be reckoned as the banked energy. The generation in May shall be first adjusted against the consumption in May. If the consumption exceeds the generation during May, the energy available in the banking shall be drawn to the required extent. If the consumption during May is less than the generation during May, the balance shall be added to the banked energy. This procedure shall be repeated every month.

10.1.16 Unutilized energy as on 31st March every year may be encashed at the rate of 75% of the applicable wind energy tariff rate fixed by the Commission for existing normal wind energy captive users and 75% of Pooled cost of power purchase as notified in the orders of the Commission from time to time for existing captive generators under REC scheme. The banking charges shall be 14% in kind.

10.1.17 Consistently, before issue of every order on wind energy, the distribution licensee has been requesting to dispense with the banking facility. In response to this consultative paper also they had made the same request. During the State Advisory Committee meeting, CMD/TANGEDCO stated that though they have been praying for completely dispensing with banking facility many times, in case the Commission finds it difficult to immediately withdraw the banking facility for all categories, at least for future projects banking facility may

be withdrawn altogether. There are also suggestions from stakeholders that dispensation of banking facility may be done prospectively to the new projects/installations. The Commission decides to extend banking facility of one month to the new WEG machines commissioned on or after 01.04.2018 both under normal and REC category, from 01.04.2018.

10.1.18 Any new WEG machines commissioned from the date of applicability of this order in the normal category or REC scheme shall have facility of banking of energy for a period of one month. There shall be no banking charges. The purchase of excess generation/ unutilized banked energy shall be at 75% of respective wind energy tariff for normal wind energy captive users and 75% of Pooled cost of power purchase as notified in the orders of the Commission from time to time for captive generators under REC scheme at the end of the month.

10.1.19 There shall be no facility of banking of energy for third party power purchase.

10.1.20 As and when the Commission's DSM regulations come into force, the adjustments of energy will be as per the said regulations/orders of the Commission.

10.2 Open access charges - Transmission, wheeling charges & scheduling and system operation charges and losses :

10.2.1 Transmission, Wheeling and Scheduling & System operation charges are generally regulated by the Commission's Tariff regulations, Grid Connectivity & Open access regulations and Commission's order on open access charges issued from time to time. However, as a promotional measure, under sections 61 and 86(1) (e) of the Act, Commission in the tariff orders of 2012 and 2016 fixed 40% of the charges applicable for conventional power for wind energy.

10.2.2 Wind power has adequately been promoted and the tariffs lower than that of conventional power plants. The concessions granted are being subsidized by other users of the network and ultimately borne by the consumers.

10.2.3 In the case of scheduling and system operation charges, the work done by SLDC is the same as in the case of conventional power. SLDC has to monitor the grid operations effectively on real time basis. The scheduling and system operation charges have to be determined in a non-discriminatory manner with reference to the functions of SLDC and there cannot be any concession.

10.2.4 Some of the stakeholders have requested to levy the proposed rate of 50% of charges applicable for conventional power for the new machines commissioned during the control period of the proposed order of 2018 and to levy rate of 40% of that applicable for conventional power prescribed in the previous orders of 2012 and 2016 for existing machines commissioned prior to this order. Some of the stakeholders have sought for retention of the charges and

few of them have drawn attention to the case pending on the issue of the applicability of these open access charges across all WEGs commissioned irrespective of date of commissioning. Some stakeholders have expressed views to levy higher charges or 100% charges as applicable for conventional power as these concessions weigh down on other users of the network

10.2.5 The issue on applicability of open access charges in the tariff orders of wind energy has been dealt by Hon'ble APTEL in the judgments in Appeal Nos.197,198 of 2012 etc. dt.24.5.2013 wherein APTEL has observed that there cannot be a differentiation in open access charges on the basis of date of signing of the wheeling agreement and the charges decided in the order are applicable for wind energy generators supplying for captive use or third party sale irrespective of the date of commissioning though an appeal is pending before the Apex court.

10.2.6 Determination of transmission charges based on allotted transmission capacity which shall be the installed capacity in the case of wind energy generators has been dealt in the order of Hon'ble APTEL in Appeal No.91 of 2012,No.45 of 2012 and No.102 of 2012, and the issue of payment of the transmission charges without the burden falling on other consumers and other open access consumers have been dealt in the order of APTEL in Appeal Nos. 197,198 of 2012.

10.2.7 Commission feels that it is time the concessions are withdrawn and relief granted to other users of the network gradually, and hence decides to fix each of the transmission, wheeling and scheduling and system operation charges at 50% of that applicable for conventional power as notified in the orders of the Commission from time to time. In respect of the WEGs availing Renewable Energy Certificates (REC), 100% of the respective charges as specified in the relevant orders shall apply.

10.2.8 Line losses :

The generators shall bear the actual line losses in kind as specified in the respective orders of the Commission issued from time to time.

10.3 Cross subsidy surcharge

10.3.1 The Commission in its previous tariff orders related to different renewable power, had ordered to levy 50% of the cross subsidy surcharge for third party open access consumers. Wind energy being in a position to compete with conventional power sources, Commission decides to levy 60% of cross subsidy surcharge of that applicable to conventional power.

10.4 Reactive Power Charges

10.4.1 Due to inherent characteristics, the induction type wind energy generators are prone to draw reactive power from the grid, if adequate power factor correction is not applied. During the wind season, wind energy generators

contribute around 25% of the grid demand and in such a situation grid stability will be jeopardized, if the wind energy generators are allowed to draw considerable reactive power from the grid. Therefore, the Commission decides to retain the charges fixed in Order No.3 dated 31-03-2016 i.e 25 paise per kVARh will be levied on wind energy generators, who draw reactive power up to 10% of the net active energy generated. Anyone drawing in excess of 10% of the net active energy generated will be liable to pay double the charge.

10.5 Grid Availability Charges

10.5.1 Start up power

10.5.1.1 Due to its infirm nature of the wind, stoppage of wind energy generation and frequent start up of WEGs are common in the wind energy sector. Therefore, the drawl of energy by the wind generators during the start up from the distribution licensee shall be adjusted against the generated energy.

10.5.2 Stand by charges

10.5.2.1 If adequate generation does not materialize or if drawl by the captive/ third party consumer exceeds generation, the energy charges and demand charges at the user end shall be regulated as per the Tamil Nadu Electricity Regulatory Commission Grid Connectivity and Intra-State Open Access Regulations,2014 and Commission's Regulations/Orders on Deviation Settlement Mechanism(DSM) and other relevant orders as may be applicable.

10.6 Energy Accounting and Billing Procedure

10.6.1 The energy accounting shall be regulated by the Commission's Regulations / Order on open access, Deviation Settlement Mechanism (DSM). Till such time the DSM is implemented in the State, if a renewable energy generator utilizes power for captive use or if he sells it to a third party, the distribution licensee shall raise the bill at the end of the billing period for the net energy supplied. The licensee shall record the slot wise generation and consumption during the billing period. Slot-wise adjustment shall be made for the billing period. However, peak hour generation can be adjusted to normal hour or off peak hour consumption of billing period. Normal hour generation can be adjusted to off peak hour consumption of the billing period. Excess consumption will be charged at the tariff applicable to the consumer subject to the terms and conditions of supply.

10.6.2 When DSM is implemented, the licensee shall record the time block wise generation and consumption during the billing period. Time block wise adjustment shall be made for the billing period. Excess consumption will be charged at the tariff applicable to the consumer subject to the terms and conditions of supply. Some of the stakeholders have requested for exemption from DSM. DSM is for the entire state and on issue of DSM Regulations/Orders by the Commission, the same would be applicable and time block wise energy accounting would take effect which is at present 15 minutes.

10.6.3 After the banking period, the balance energy may be sold at the rate of 75% of respective wind energy tariffs for normal wind energy captive users and 75% of Pooled cost of power purchase as notified in the orders of the Commission from time to time for captive generators under REC scheme, at the end of the month/as on 31st of March of every year as may be applicable.

10.7 Energy Wheeling Agreement and fees

10.7.1 The format for Energy Wheeling Agreement, application and agreement fees, procedure and terms & conditions are governed by Commission's following regulations in force.

(1) Tamil Nadu Electricity Regulatory Commission Grid Connectivity and Intra-State Open Access Regulations,2014.

(2) Power procurement from New and Renewable sources of energy Regulations 2008.

10.8 Security deposit

10.8.1 As regards the security deposit to be paid by captive /third party user, the Commission decides to retain the present arrangements i.e. charges corresponding to two times the maximum net energy supplied by the distribution licensee in any month in the preceding financial year shall be taken as the basis for the payment of security deposit.

10.9 Power Factor disincentive

10.9.1 Power factor disincentive may be regulated for the power factor recorded in the meter at the user end as specified in the relevant

Regulations/orders in force.

10.10 Metering

10.10.1 The Commission decides that metering and communication shall be in accordance with the following regulations in force:

(1) Central Electricity Authority (Installation and Operation of Meters) Regulations

(2) Tamil Nadu Electricity Distribution and Supply Codes

(3) Tamil Nadu Electricity Grid Code

(4) Tamil Nadu Electricity Regulatory Commission Grid Connectivity and Intra-State Open Access Regulations,2014.

10.11 Connectivity and Evacuation of power

10.11.1 The connectivity and power evacuation system shall be provided as per the Act / Codes/ Regulations/orders in force.

10.12 Harmonics

10.12.1 The WEGs shall follow the CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations, 2013 in respect of harmonics. It is the responsibility of the generator to provide adequate filtering mechanism to limit the harmonics within the stipulated norms. It shall be done before connecting the generator to the grid and the harmonics shall be measured by the respective distribution licensee during the commissioning. If the WEGs inject the harmonics beyond the stipulated limit, they shall pay a compensation of 15% of applicable generation tariff rate to the distribution licensee in whose area

the plant is located till such time it is reduced within the stipulated limit. The distribution licensee is responsible for measurement of harmonics with standard meters and issue notices for payment of compensation charges if the harmonics is beyond the stipulated limit. A minimum of 15 days notice period shall be given for payment of compensation charges.

11. Directions

11.1 TANGEDCO/TANTRANSCO shall furnish monthly report of generation of wind energy and units banked, unutilised units by WEGs, the quantum of energy wheeled from the WEGs for captive consumption and third party sale and the quantum of energy purchased from the WEGs by 10th of every month to the Commission.

11.2 TANGEDCO shall also send a monthly report by 10th of every month on the number and details of agreements signed with the wind energy generators during the previous month and the number and details of agreements that have expired or were terminated/modified during the previous month to the Commission.

12. Acknowledgment

The Commission acknowledges with gratitude the contribution of the officers and staff of the Commission, the valuable comments offered by the stakeholders,

the active participation and advice of the Members of the State Advisory Committee. The Commission is indebted to the valuable inputs offered by the Tamil Nadu Generation and Distribution Corporation Ltd.

Sd./-	Sd./-	Sd./-
(T.Prabhakara Rao)	(G.Rajagopal)	(S.Akshaya Kumar)
Member	Member	Chairman

(By order of Tamil Nadu Electricity Regulatory Commission)

Sd./-
(S.Chinnarajalu)
Secretary
Tamil Nadu Electricity Regulatory Commission

Capital cost	52500000
PLF	29.15%
Depreciation	3.60%
Interest	9.950% (10 + 1) yr.
Dt:Eq.	70 &30
O & M	1.1% on85%+0.22% on 15% with 5 % escl.
Insurance	0.75 % on 85% of capital cost to be reduced by 0.5% of previous year's value
Residual value	10%
ROE	17.56%
Life of Plant	25 Yr.
Aux.consump.	0%
W.Cap.	O&M 1m +Receivables 2m.
Inst. On W.Cap.	10.95%
Discount factor	8.75%

Annexure I

Wind Tariff

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Gross Gen	2553540	2553540	2553540	2553540	2553540	2553540	2553540	2553540	2553540	2553540
Years	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
ROE	2765700	2765700	2765700	2765700	2765700	2765700	2765700	2765700	2765700	2765700
Depreciation	1606500	1606500	1606500	1606500	1606500	1606500	1606500	1606500	1606500	1606500
Insurance cost	334688	333014	331349	329692	328044	326404	324772	323148	321532	319924
Interest on Loan	3656625	3656625	3290963	2925300	2559638	2193975	1828313	1462650	1096988	731325
O & M	508200	533610	560291	588305	617720	648606	681037	715088	750843	788385
IOWC	169642	170319	164235	158188	152180	146214	140290	134412	128582	122801
Total	**9041355**	**9065769**	**8719037**	**8373685**	**8029782**	**7687398**	**7346611**	**7007498**	**6670144**	**6334635**
	3.541	**3.550**	**3.414**	**3.279**	**3.145**	**3.010**	**2.877**	**2.744**	**2.612**	**2.481**
IOWC										
O & M	42350	44468	46691	49025	51477	54051	56753	59591	62570	65699
Receivables	1506892	1510961	1453173	1395614	1338297	1281233	1224435	1167916	1111691	1055773
Total	1549242	1555429	1499864	1444640	1389774	1335284	1281188	1227507	1174261	1121471
IOWC	169642	170319	164235	158188	152180	146214	140290	134412	128582	122801
Discount Factor	1	0.92	0.85	0.78	0.71	0.66	0.60	0.56	0.51	0.47
Present Value	**3.54**	**3.26**	**2.89**	**2.55**	**2.25**	**1.98**	**1.74**	**1.53**	**1.34**	**1.17**
Levelised tariff	**2.86**									

Determination of accelerated depreciation benefit

Depreciation amount	90%									
Book depreciation rate	5.28%									
Tax depreciation rate	40%									
Income Tax (Normal rate)	34.610%									
Capital Cost	52500000									
Years	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Book Depreciation	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%
Bk dep in lakhs	1386000	2772000	2772000	2772000	2772000	2772000	2772000	2772000	2772000	2772000
Accelerated Depreciation										
Opening	60%	30%	3%	0.60%	0.12%	0.02%	0.00%	0.00%	0.000%	
Allowed	30%	27%	2.40%	0.48%	0.10%	0.02%	0.00%	0.000%	0.00	0.00
Closing	30%	3%	0.60%	0.12%	0.02%	0.00%	0.00%	0.000%	0.00	0.00
Accelerated Depreciation	15750000	14175000	1260000	252000	50400	10080	0	0	0.00	0.00
Net dep benefit	14364000	11403000	-1512000	-2520000	-2721600	-2761920	-2772000	-2772000	-2772000	-2772000
Tax benefit	4971380	3946578	-523303	-872172	-941946	-955901	-959389	-959389	-959389	-959389
Discount factor	1.00	0.92	0.85	0.78	0.71	0.66	0.60	0.56	0.51	0.47
Average discount factor	1.00	0.96	0.88	0.81	0.75	0.69	0.63	0.58	0.53	0.49
Net Energy gen	1276770	2553540	2553540	2553540	2553540	2553540	2553540	2553540	2553540	2553540
Energy gen with DCF	1276770	2450811.38	2253619.66	2072293.94	1905557.65	1752236.92	1611252.34	1481611.34	1362401.24	1252782.75
Tax benft with DCF	4971380	3787808	-461840	-707800	-702919	-655938	-605363	-556655	-511867	-470682
AD benefit	0.06									
Levelised tariff with AD	2.80									

Tariff Details--- Wind															
2553540	2553540	2553540	2553540	2553540	2553540	2553540	2553540	2553540	2553540	2553540	2553540	2553540	2553540	2553540	2553540
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
2765700	2765700	2765700	2765700	2765700	2765700	2765700	2765700	2765700	2765700	2765700	2765700	2765700	2765700	2765700
1606500	1606500	1606500	1606500	1606500	1606500	1606500	1606500	1606500	1606500	1606500	1606500	1606500	1606500	1606500
318325	316733	315149	313574	312006	310446	308894	307349	305812	304283	302762	301248	299742	298243	296752
365663														
827804	869194	912654	958287	1006201	1056511	1109337	1164804	1223044	1284196	1348406	1415826	1486617	1560948	1638996
117073	111400	112583	113826	115133	116507	117951	119469	121064	122741	124503	126355	128301	130345	132494
6001065	**5669528**	**5712586**	**5757886**	**5805540**	**5855664**	**5908381**	**5963821**	**6022120**	**6083420**	**6147871**	**6215629**	**6286860**	**6361737**	**6440442**
2.350	**2.220**	**2.237**	**2.255**	**2.274**	**2.293**	**2.314**	**2.336**	**2.358**	**2.382**	**2.408**	**2.434**	**2.462**	**2.491**	**2.522**
68984	72433	76055	79857	83850	88043	92445	97067	101920	107016	112367	117986	123885	130079	136583
1000177	944921	952098	959648	967590	975944	984730	993970	1003687	1013903	1024645	1035938	1047810	1060289	1073407
1069161	1017354	1028152	1039505	1051440	1063987	1077175	1091037	1105607	1120920	1137012	1153924	1171695	1190368	1209990
117073	111400	112583	113826	115133	116507	117951	119469	121064	122741	124503	126355	128301	130345	132494
0.43	0.40	0.37	0.34	0.31	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15	0.13
1.02	**0.88**	**0.82**	**0.76**	**0.70**	**0.65**	**0.60**	**0.56**	**0.52**	**0.48**	**0.45**	**0.42**	**0.39**	**0.36**	**0.34**

11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2772000	2772000	2772000	2772000	2772000	2772000	2772000	1512000	0	0	0	0	0	0	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-2772000	-2772000	-2772000	-2772000	-2772000	-2772000	-2772000	-1512000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-959389	-959389	-959389	-959389	-959389	-959389	-959389	-523303	0	0	0	0	0	0	0
0.43	0.40	0.37	0.34	0.31	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15	0.13
0.45	0.41	0.38	0.35	0.32	0.30	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15	0.14
2553540	2553540	2553540	2553540	2553540	2553540	2553540	2553540	2553540	2553540	2553540	2553540	2553540	2553540	2553540
1151984.13	1059295.75	974065.06	895692.01	823624.84	757356.17	696419.47	640385.72	588860.43	541480.86	497913.43	457851.43	421012.81	387138.22	355989.16
-432811	-397987	-365965	-336520	-309444	-284546	-261651	-131236	0	0	0	0	0	0	0

Annexure II

List of stakeholders who furnished comments

Sl.No.	Name/Organisation
1.	Narasu's Saarathy Enterprises Pvt. Ltd.
2.	Sreedevi Wind Farm India Private Limited
3.	Sri Chem
4.	Saravana Chem dyes
5.	Saravanaa Distributors
6.	Sree Karthik Traders
7.	Two Win Export
8.	Thiru T. Karthikeyan, Wind Energy Consultant,
9.	Super Springs Private Limited
10.	Cape Flour Mills Private Ltd.
11.	R.S. Yarns and Power Private Limited
12.	Coimbatore Pioneer Fertilizers Ltd.
13.	Lakshmi Narasimha Textiles Pvt. Ltd.
14.	Premier Cotton Textiles
15.	Scent Trans Pvt. Ltd.
16.	Ganpati Marine Enterprises Pvt. Ltd.
17.	KLRF Limited
18.	Pandian Chemicals Limited
19.	Atria Wind Private Limited

20.	OPG Power Generation Pvt. Ltd.
21.	RSM Brakes
22.	Spero Power Private Limited
23.	Rajinikanth Foundation
24.	RSM Autokast Ltd.
25.	Rangamma Steels and Malleables
26.	Yash Metal & Alloys
27.	Yash Metal Resources Pvt. Ltd.
28.	Shanthi Feeds Private Limited
29.	The Dharmapuri Roller Flour Mills
30.	Krishnaveni Carbon Products Private Limited
31.	Tamil Nadu Newsprint and Papers Limited
32.	Sheela Clinic
33.	Thiru P. Selvaraj
34.	Simran Wind Project Limited
35.	Jubilee Sea Trade Private Limited
36.	Thiru S. Narayanaswamy, Former Member (Generation)
37.	ARS Energy Pvt. Ltd.
38.	Indian Wind Energy Association
39.	Sembcorp Green Infra Limited
40.	Hero Future Energies Pvt. Ltd.
41.	Premier Spg & Wvg Mills Pvt. Ltd.

42.	Coimbatore Polytex Private Limited
43.	Premier Mills Pvt. Ltd.
44.	Sree Narasimha Textiles Pvt. Ltd.
45.	Indian Wind Turbine Manufacturers Association
46.	Orient Green Power Company Limited
47.	Tamil Nadu Spinning Mills Association
48.	Mytrah Energy (India) Private Limited
49.	Tamil Nadu Power Producers Association
50.	The Southern India Mills' Association
51.	TANGEDCO
52.	Indian Wind Power Association
53.	Tamil Nadu Electricity Consumer's Association
54.	NLC India Limited
55.	Prima Products Pvt. Ltd.
56.	Ultramarine & Pigments Ltd.
57.	Shri Gowrishankarar Agencies Private Ltd.,
58.	Vaayu (India) Power Corporation Pvt. Ltd.
59.	India Tax Payer
60.	Green Power Market Development Group

Annexure III

Summary of comments received from stakeholders

1. Need for feed in tariff

Mixed response has been received on determination of feed in tariff. Many stakeholders have requested to determine a cost plus levellised feed in tariff. Some of the stakeholders have requested to determine generic tariffs for capacities below 25 MW and to go for competitive bidding for higher capacities. TANGEDCO has stated that preferential tariff is not required as competitive rates can be obtained through bidding process.

2. Tariff components

2.1 Capital cost

Many stakeholders have requested for a capital cost of Rs.6 crores per MW. Some of the stakeholders have sought for Rs.5.5 crores, Rs.5.82 crores, Rs.7 crores and Rs.7.5 crores per MW. Indian Wind Turbine Manufacturers Association(IWTMA) have stated that manufacturing costs have gone up and for latest technology and high efficiency turbines the cost per MW is Rs.7 to 7.5 crores. Other stakeholders have stated that though the land cost appears to have not increased in reality it remains the same as in the previous years, and with cost of evacuation, IDC, higher hub heights, the capital cost would be Rs.6 crores per MW. TANGEDCO has proposed a cost of Rs.5 crores per MW. Some of the stakeholders citing applicability of GST of 18% have requested to increase capital cost to Rs.6.14 crores per MW.

2.2 Capacity Utilisation Factor (CUF)

Many stakeholders have requested to retain the CUF of 27.15%. Tamil Nadu Spinning Mills Association has stated that the CUF of all these years works out to 18.15%. Indian Wind Power Association has stated that the average CUF for the last three years has been 25% but has requested to retain 27.15%. TANGEDCO has stated that high generating capacities of 34% to 40% have been validated by developers themselves and developers who participated in the bidding process have filed petitions to relax the CUF limit specified as 27.15% in the tender, and they have suggested to adopt a CUF of 34%.

2.3 Operation & Maintenance cost (O&M)

Stakeholders have requested to fix O&M cost at 2.17%, 2.5%to 3% of capital cost with escalation of 5% and 5.72%. Some of the stakeholders have requested to account for 18% GST and fix a rate of Rs.12 Lakhs per MW. Some of them have sought Rs.9.5 lakhs per MW with escalation of 5.72%. TANGEDCO has accepted the views of the Commission.

2.4 Insurance

Stakeholders have sought for 0.9% on 85% of capital cost to be fixed as insurance to be reduced by 0.5% every year. TANGEDCO has accepted the views of the Commission.

2.5 Debt and Equity

Stakeholders have accepted the proposed 70:30 debt equity. TANGEDCO has also accepted the ratio of 70:30.

2.6 Term of loan and rate of interest

Most of the stakeholders have not disputed on the proposed term of loan. IWTMA have requested to consider term of loan of 13 years. Some of the stakeholders have sought for an interest rate of 12% to 13%. TANGEDCO has suggested that RoE may be fixed at 7.95% plus 100 basis points i.e 8.95% due to prevailing reduced interest rates.

2.7 Life of Plant and machinery

Proposal of the Commission has been accepted by stakeholders.

2.8 Return on equity

IWTMA has requested an RoE of 17.80% pretax for 1st 10 years and 21.41% from 11th year. Many of the other stakeholders have not furnished views. TANGEDCO has accepted the proposal of the Commission.

2.9 Depreciation

Stakeholders have sought for differential depreciation of 5.28% for first 1 year and the balance to be spread over remaining useful life period. TANGEDCO has accepted the proposal of the Commission.

2.10 Interest on working capital and components

Stakeholders have requested for interest rates of 13 to 13.5%. Some of the stakeholders have stated that receivables are being delayed by 6 to 10 months. TANGEDCO has suggested interest on working capital at 9.45% i.e 7.95% MCLR of SBI plus 150 basis points.

2.11 Discount factor

Considering higher rates of interest, stakeholders have sought for higher discount factors. TANGEDCO has accepted Commission's proposal.

2.12 Tariff

Most stakeholders have agreed to the levellised tariff determination. Stakeholders have requested for higher tariffs considering high capital costs and low CUF. Tariffs of Rs. 3.42, Rs.4.50 per unit have been sought. TANGEDCO has requested for revision of tariff as per parameters suggested.

3. Quantum of power purchase by Distribution licensee

Stakeholders have said that the consultative paper provides restrictions on purchase of renewable power by the distribution licensee which goes against the Renewable Energy Power Purchase Obligations Regulations and against the spirit of the section 174 of the Act.

4. CDM benefits

Stakeholders have requested to drop the sharing of CDM benefits with the licensee. Some of them have stated that rates of CDM had crashed in the international market long ago. TANGEDCO has stated that the developers have so far not declared receipt of CDM benefits and has requested to include a suitable clause to verify CDM in the order.

5. Billing and Payment

Stakeholders have requested to limit the period of payment to 30 days from 60 days. Some of the stakeholders have requested for rates of interest of 1.5% to 2%. Stakeholders have also suggested for quarterly advance payments or to constitute Renewable Regulatory Fund or allow higher interest rates for working capital. TANGEDCO has requested to fix the interest rate at 0.75% for delayed payment to generators.

6. Energy Purchase Agreement (EPA)

Stakeholders have stated that provisions regarding EPA are available in the Regulations and the same need not be modified. TANGEDCO has accepted the proposal of the Commission.

7. Open access charges and line losses

Stakeholders have requested to retain the rate of transmission and wheeling charges at 40% of that applicable for conventional power as fixed in the previous order citing investments already made considering provisions of the Act for promotion of renewable power. Stakeholders have said that only if CUF increases the per unit cost will come down. Some of them have stated that they are paying additional O&M charges of about Rs.2 lakhs per MW and considering the same some concession may be granted. Some of the stakeholders have requested to fix per unit charge. They have requested to retain the rate of 40% for scheduling and system operation charges also. TANGEDCO has requested to levy 100% of wheeling and scheduling and system operation charges and 60% of charges applicable for conventional power towards transmission charges as wind energy sector.

8. Cross subsidy surcharge

Stakeholders have requested to retain the 50% applicability as in the previous order of wind energy bearing section 86(1)(e) of the Act for promotion of renewable power in mind. TANGEDCO has sought for 100% cross subsidy surcharge so as to compensate the loss of revenue due to third party consumption.

9. Grid availability charges

Start up power – TANGEDCO has requested a clause that if the drawal of energy is more than the generation in a billing cycle, the energy is to be billed under HT industrial Tariff IA.

Standby charges – TANGEDCO has accepted the proposal of the Commission.

10. Energy Accounting and Billing procedure

TANGEDCO has accepted Commission's proposal.

11. Energy Wheeling Agreement

TANGEDCO has accepted Commission's proposal.

12. Security Deposit

Stakeholders have requested for interest to be paid for the security deposit at SBIs MCLR rate.

13. Power Factor Disincentive

TANGEDCO has accepted Commission's proposal.

14. Metering

TANGEDCO has accepted Commission's proposal.

15. Harmonics

Some of the stakeholders have stated that TANGEDCO has framed a Committee to go into the aspects on measurement of harmonics and that on receipt of Committee's report, Commission may approve the methodology. As per the proposal, compensation charges have to be paid in 15 days. Stakeholders have sought a time of three months to be given. TANGEDCO has accepted the proposal of the Commission.

16. Banking

Most of the stakeholders have requested to retain the facility of banking of energy in its present form i.e one year period of April to March and purchase of unutilised banked energy at 75% of respective wind tariff. Some of the stakeholders have requested to reduce the banking charges to 5% while some of the stakeholders have stated that the banking charges of 12% may be fixed without dispensing banking facility and that dispensation of banking facility may be considered for new WEGs commissioned from the date of the new order. Some of the stakeholders have agreed to bear any additional charge on banking so as to continue with the facility of banking. Some of them have requested for a banking period from June to May.

Points raised by stakeholders on banking:

- Concept of banking was evolved by the State Commission which is in line with the provisions of the Act, provisions of National Electricity Policy and

Tariff Policy. It was only because of the promises made by the Government and licensee on the concept of banking, wind generators set up their facilities incurring huge expenditure. Principle of promissory estoppels cannot be violated.

- As per the APTEL's order in Appeal No.53 of 2010, banking is contractually and judicially recognized and therefore TNEB cannot be allowed to deny the benefit of banking.

- Banking of one year from April to March is a historical practice followed and attempting to alter the same is not legally valid, Energy Wheeling Agreement enjoys the status of subordinate legislation and the terms of the agreement cannot be altered.

- Conversion of banking period from April to May to January to December would be a loss to the captive users as no energy can be adjusted during the months of January to March. Even with the period of April to March, unutilized energy remains. If the banking period is changed from financial to calendar year, the WEGs would become financially sick. Further as per Rule 3 of Electricity Rules 2005, 51% of energy generated on an annual basis has to be self consumed where 'Annual basis' refers to the financial year.

- TANGEDCO is opposing banking with wrong presumptions that banking causes financial loss.

- As per the ARR in the latest tariff order, the average rate of reaiisation is Rs.5.70. Wind generators pay all open access charges including line losses.Net gain to TANGEDCO is the difference between the average rate of realization and the average power purchase cost at Rs.4.28. Additionally, there is a benefit from 12% banking charges and also from sale of unutilized banked energy. Considering banked units of 1672 MUs the per unit rate realized is Rs.6.38 inclusive of banking charges . At a per unit cost of power paid by TANGEDCO for unutilized energy, their total gain is Rs.487 crores. Yet another stakeholder has shown a loss of Rs.436 crores

- The 12% banking charges fixed in the earlier order itself enriches TANGEDCO. Increasing it further to 14% is not legally and logically justified.

- TANGEDCO has shown a net loss of 73 paise after accounting for the open access, banking charges and losses which amounts to 221 crores. They have also shown an opportunity cost loss of Rs. 1429 crores and cost of balancing of Rs.476 crores.

- Providing banking in the existing format is a win-win situation to both WEGs and TANGEDCO. On the other hand, if banking is not provided the very purpose of the Electricity Act,2003, Electricity Policies shall stand defeated.

- Many associations of textile mills have stated that investments have been made with banking in mind and sudden removal would cause financial loss and banking provision is the lifeline.

- Some of the stakeholders have requested to make the change in banking arrangement for new captive generators.

- Few stakeholders have requested to remove the banking facility due the fact that if the licensee is burdened the impact will fall on the consumers. They have also stated that the Commission has failed to take into consideration as to who will bear the effect of the concessions and the losses caused by banking. Further, they have said that by allowing one category of open access users a special dispensation, the other users are unfairly being loaded with higher charges. The Act provides non discriminatory open access to all users.

- The difference in captive user and third party power purchase is only cross subsidy surcharge and additional surcharge. The Act provides promotional measures to renewable power and therefore third party power purchaser should not be differentiated and banking provided.

- Some of the stakeholders have stated that banking is not required for third party power purchase.

- TANGEDCO has stated that consistently in the last several years the industry has received adequate boost in the State and it is time to withdraw the banking facility. TANGEDCO has been objecting to banking as compared to all other sources of renewable power wine energy is infirm. Universally 'electricity' is termed as a commodity. Wind Energy Generators are producers and wheel or sell it to consumers. TANGEDCO's role is a facilitator. The captive consumers with banking facility are being subsidized other category consumers. TANGEDCO has stated that at an average power purchase cost of Rs.4.55 per unit and average rate of realisation of Rs.4.91 per unit, after accounting for the charges paid by the captive consumers towards transmission, wheeling, banking and losses, the net loss is 73 paise per unit. The total losses furnished is 1626.21 crores. They have further stated that in the absence of any mechanism to make up for the losses, it would be difficult to meet the roadmap of cross subsidy specified in the tariff order of 2017. Payment at 50% of the applicable wind tariffs after verification of CGP status has been sought. Also, they have requested the Commission to specify a normative CUF to have a contracted demand ceiling at the time of granting open access.

- TANGEDCO has requested to dispense the banking facility permitted to WEGs under REC scheme prior to CERC's amendment of 2016 where certain restrictions were placed for the RE generators under captive scheme commissioned prior to 2010 and after the date of the amendment.

- Due to uncertainty of preferential tariffs, some of the stakeholders have sought for amendment to the RPO regulations on Pooled Cost of Power Purchase to enable RE generators to realize the APPC rate in full. They have requested that applicable APPC tariff shall be the lowest of the applicable actual APPC rate determined.

Captive restrictions proposed :

Some of the stakeholders have stated that Rule 3 of Electricity Rules 2005 by design has envisaged captive generating plants to generate in excess than what is required for self consumption i.e a minimum of 51% to be consumed and the balance sold. This clause is to enable higher capacities installation to avail benefits of economies of scale. Capacity restriction is not tenable. Some of the stakeholders have stated that such a proposal is a retrograde action in the face of promotion of wind energy and excess capacity is required to tide over breakdowns.

Annexure IV

State Advisory Meeting held on21.3.2018

Members present

Sl.No.	Name
1.	Thiru S.Akshayakumar, Chairman/TNERC
2.	Thiru G.Rajagopal, Member/TNERC
3.	Dr.T. Prabhakara Rao, I.A.S,(R), Member/TNERC
4.	Thiru Vikram Kapur, I.A.S, Chairman and Managing Director/TANGEDCO, Chairman/TANTRANSCO and Principal Secretary to Government, Energy Department
5.	Dr.Jagmohan Singh Raju, I.A.S,Chairman and Managing Director/Tamil Nadu Energy Development Agency
6.	Thiru S.Ramasubbu, Chief Electrical Engineer, Southern Railway
7.	Thiru K.Kathirmathiyon, Secretary, Coimbatore Consumer Cause
8.	Thiru G.S.Rajamani
9.	Thiru A.Gurunathan, Confederation of Indian Industry on behalf of Thiru M.Ponnuswamy
10.	Thiru K.Alagu, Vice President, Tamil Nadu Chamber of Commerce and Industry
11.	Dr.K.Selvaraj
12.	Thiru T.Vijayarangan, Secretary, Anna Labour Union
13.	Dr.P.Valsalal, Associate Professor, Anna University on behalf of Dr.G.Uma, Professor and Head of Department, Electrical and Electronics Engineering, Anna University
14.	Thiru M.R.Krishnan, Deputy Director, Consumer Association of India