TAMIL NADU ELECTRICITY REGULATORY COMMISSION

Comprehensive Tariff Order on WIND ENERGY

Order No 6 of 2012 dated 31- 07- 2012

BEFORE THE TAMIL NADU ELECTRICITY REGULATORY COMMISSION

PRESENT: **Thiru. K.Venugopal - Member**
Thiru. S.Nagalsamy - Member

Order No.6/2012, dated 31-07-2012

In the matter of : a comprehensive tariff order on wind energy

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In exercise of the powers conferred by Sections 181, 61 (h) and 86 (1) (e) of the Electricity Act 2003, (Act 36 of 2003), read with the National Electricity Policy, the Tariff Policy and the Power Procurement from New and Renewable Energy Sources Regulations, 2008 of the Commission after issuing public notices on 27-04-2011 and 08-09-2011, after examining the comments received from the stakeholders, after consulting the State Advisory Committee as per Section 88 on 29-03-2012, after examining the comments received from the stakeholders in the hearing held on 08-06-2012 and after considering the views of all the stakeholders, the Commission passes this suo motu comprehensive tariff order on wind energy.

This order shall take effect on and from the 1st August, 2012.

Sd/-	Sd/-
(S. Nagalsamy) **Member**	**(K.Venugopal)** **Member**

(By Order of the Commission)

Sd/-

S.Gunasekaran
Secretary

Contents

Para	Description	Page
1	Introduction	1
1.1	The importance of Renewable Energy Sources	1
1.2	Power Procurement from New and Renewable sources of energy Regulations 2008.	1
1.3	Order No.1 dated 20-03-2009	2
1.4	Commission's initiative on tariff revision for wind energy	2
2	Provisions of the Electricity Act 2003, National Electricity Policy and National Tariff Policy on NCS	3
3.	Wind power scenario	5
3.3	Generation – Demand gap in Tamil Nadu	6
4	Applicability of this Order	7
5	Tariff determination process	8
6	Tariff / Pricing Methodology	8
6.1	Preferential tariff vs. bidding	9
6.2	Single Part tariff vs. Two Part tariff	11
6.3	Cost plus, single part, average tariff	11
7.	Components of tariff	12
7.2	Capital investment	12
7.3	Capacity utilization factor	12
7.4	Derating of machines	114
7.5	Debt - equity ratio	14
7.6	Term of loan	15
7.7	Rate of interest	15
7.8	Return on equity	16
7.9	Life period	16
7.10	Rate of depreciation	16
7.11	Operation and maintenance expenses	17
8.	Related issues	17
8.2	Banking	18
8.3	Transmission charges, Wheeling Charges and line losses	26
8.4	Cross subsidy surcharge	27
8.5	CDM benefits	28
8.6	Reactive power charges	28
8.7	Grid availability charges	28
8.7.1	Start up power	28

Para	Description	Page
8.7.2	Standby power	29
8.7.2.1	Energy Charges	29
8.7.2.2	Demand Charges	29
8.8	Adjustment of generated energy	30
8.9	Scheduling and system operation charges	30
8.10	Application fees and agreement fees	31
8.11	Billing and payment	31
8.12	Payment Security and Security Deposit	32
8.13	Power Factor disincentive	32
8.14	Metering	33
8.15	Connectivity and Evacuation of wind energy	33
8.16	Energy Purchase Agreement	33
8.17	Energy Wheeling Agreement	33
8.18	Control period	33
8.19	Repowering of the existing wind machines	34
9	Wind Energy Tariff	34
10	Directions	34
11	Acknowledgement	35
	Annexures	
I	Public notices	36
II	Summary of the Comments received from the stakeholders on the public notices	39
III	Minutes of the State Advisory Committee meeting held on 29-03-2012.	78
IV	Summary of the Comments received from the stakeholders in the stakeholders hearing held on 8.6.2012	94
V	Components of tariff	136
VI	Working sheet for tariff computation	137
VII	Average Purchase cost through bilateral trading segment (All India)	138

1. Introduction

This Tariff Order is the third on wind energy. This order is a culmination of a consultative process spread over one year beginning in April, 2011. Tamil Nadu being a pioneer in wind energy generation, the Commission has analysed the connected issues in great depth before finalising this comprehensive tariff order.

1.1 The importance of Renewable Energy Sources

Global concern over pollution and several environmental issues caused by the increase in green house gas emission and consequent changes in climate have resulted in a paradigm shift in the approach towards development of the energy sector in many countries. The need for adoption of clean technology, improving end use efficiency and diversifying energy bases etc., have all been seriously considered by the Government of India since the Sixth Five Year Plan and the country is poised for a considerable increase in the use of renewable energy sources in its transition to a sustainable energy base. Renewable energy sources such as wind, solar, hydro and biomass not only augment energy generation but also contribute to improvement in the quality of the environment, drought control, energy conservation, employment generation, upgrading of health and hygiene, social welfare, security of drinking water etc., The pace of development has been accelerated by the Government through promotional policies along with fiscal and tax incentives.

1.2 Power Procurement from New and Renewable Energy Sources of Energy Regulations 2008

Section 61 of the Electricity Act 2003 (Central Act 36 of 2003) stipulates that the State Electricity Regulatory Commission shall specify the terms and conditions for the determination of tariff. In accordance with the above stipulation, the Commission notified the “Power Procurement from New and Renewable Sources of Energy Regulations 2008” on 8-2-2008. It has been specified in the above Regulation that the tariff determined by the Commission shall be applicable for a period as specified by the Commission in the tariff order.

1.3 Order No.1 dated 20-03-2009

The Commission's "comprehensive tariff order on wind energy" was last issued on 20.03.2009. In the said order the Commission adopted a control period of two years. The next tariff revision would have normally been due on 01-04-2011. The Commission could not issue new tariff order effective from 01-04-2011 since the appeal filed by the Tamil Nadu Electricity Board (TNEB) against the wind tariff order of the Commission was pending before the Hon'ble Appellate Tribunal for Electricity. The validity of the said order was extended by the Commission up to 31-12-2011 vide Commission's Tariff Order No.1 of 2011 dated 8-4-2011. During the control period many new developments such as discussions on scheduling of wind energy, Renewable Energy Certificate (REC) mechanisms etc. have taken place, which required a deeper study of their implications on the wind energy tariff. Further, the Commission had to take congruous decisions on certain matters like banking of wind energy, concessional transmission and wheeling charges for wind energy etc. Hence, the validity of the said order was again extended up to 30-06-2012 by Tariff Order No.4 of 2011 dated 15-12-2011. Validity of the said order was further extended upto 31-07-2012 vide Tariff Order No.3 of 2012 dated 30-06-2012.

1.4. Commission's initiative on tariff revision for wind energy

1.4.1 Commission issued public notice on 27-04-2011 inviting comments / suggestions from various stakeholders on various parameters related to determination of wind energy tariff to be furnished on or before 31-05-2011. Taking into account the recent developments in wind energy sector, Commission again issued another public notice on 08-09-2011 inviting comments / suggestions from various stakeholders on specific issues of banking, competitive bidding and scheduling of wind energy to be furnished to the Commission on or before 30-09-2011. The public notices are placed in Annexure-I. The summary of the comments received from the stake holders on public notices is placed in Annexure-II.

1.4.2 Further, the issue on revising the wind energy tariff was discussed in the State Advisory Committee meeting held on 29-03-2012. The minutes of SAC meeting is placed in Annexure-III. A Stakeholders hearing was also conducted on 08-06-2012. Summary of the comments / views received from the stake holders in the said hearing is placed in Annexure –IV. Based on the views of the various stakeholders, the Commission decided to issue new tariff order on wind energy.

2. Provisions of the Electricity Act 2003, National Electricity Policy and National Tariff Policy on Non-Conventional Energy Source (NCES).

2.1 Preamble of the Electricity Act 2003 reads as follows:

"An Act to consolidate the laws relating to generation, transmission, distribution, trading and use of electricity and generally for taking measures conducive to development of electricity industry, promoting competition therein, protecting interest of consumers and supply of electricity to all areas, rationalization of electricity tariff, ensuring transparent policies regarding subsidies, promotion of efficient and environmentally benign policies constitution of Central Electricity Authority, Regulatory Commissions and establishment of Appellate Tribunal and for matters connected therewith or incidental thereto."

2.2 Section 86 (1) (e) of the Electricity Act 2003 states that *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.*

2.3 Section 61 (h) of the Electricity Act 2003 states that *the Appropriate Commission shall, subject to the provisions of this Act, specify the terms and conditions for 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.

2.4 Related provisions of the National Electricity Policy are quoted below.

"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."

"5.12.2 The Electricity Act 2003 provides that co-generation and generation of electricity from non-conventional sources would be promoted by the State Electricity Regulatory Commissions (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."

2.5 Para 6.4 of the National Tariff Policy states as below:

"(1) Pursuant to provisions of section 86(1)(e) of the Act, the Appropriate Commission shall fix a minimum percentage for purchase of energy from such sources taking into account availability of such resources in the region and its impact on retail tariffs. Such percentage for purchase of energy should be made applicable for the tariffs to be determined by the SERCs latest by April 1, 2006. It will take some time before non-conventional technologies can compete with conventional sources in terms of cost of electricity. Therefore, procurement by distribution companies shall be done at preferential tariffs determined by the Appropriate Commission.

(2) Such procurement by Distribution Licensees for future requirements shall be done, as far as possible, through competitive bidding process under Section 63 of the Act within suppliers offering energy from same type of non-conventional sources. In the long-term, these technologies would need to compete with other sources in terms of full costs.

(3) The Central Commission should lay down guidelines within three months for pricing non-firm power, especially from non–conventional sources, to be followed in cases where such procurement is not through competitive bidding."

2.6 A reading of the National Tariff Policy, National Electricity Policy and the Electricity Act 2003 establishes the overwhelming emphasis on environmental friendly renewable sources of energy such as wind, hydel, solar and biomass. Tamil Nadu has been a pioneer in harnessing wind power, which has enabled the State to capture 6,971 MW as on 31-03-2012. During 2010-11, 997 MW of WEGs have been installed in Tamil Nadu. The same trend continued during the year 2011-12 also, which accounts for 1,083 MW. Further, it is understood that applications for installation of another 10,000 MW wind machines are pending with the Tamil Nadu Generation and Distribution Corporation (TANGEDCO).

3. Wind Power Scenario

3.1 Total installed capacity of power generation in the country is 1, 99,877 MW as on 31-03-2012 out of which the contribution of NCES power to the country's installed capacity is around 24,503 MW. As on 31-03-2012, the total installed capacity of wind power in Tamil Nadu is 6,971 MW. As on 31-07-2011, the wind power represents 14706 MW in the country. The installed capacity of wind power in different States as on 31-07-2011 is furnished below:

Source: MNRE **As on 31-07-2011**

State	Potential (MW)	Installed Capacity (MW)	Percentage to the total installed capacity
Andhra Pradesh	8968	198	1.35%
Gujarat	10645	2284	15.53%
Karnataka	11531	1765	12.00%
Kerala	1171	35	0.24%
Madhya Pradesh	1019	276	1.88%
Maharashtra	4584	2358	16.03%
Rajasthan	4858	1643	11.17%
Tamil Nadu *	5530	6143	41.77%
Others	705	4	0.03%
TOTAL	**49011**	**14706**	**100%**

* *The wind energy installed capacity in Tamil Nadu was 6971 MW as on 31-03-2012*

3.2 Tamil Nadu accounts for 41.77% of the wind energy over the country's installed capacity of around 14,706 MW as on 31-07-2011. The following locations are endowed with favourable wind flow:-

Name of the Passes/Districts	Area
Palghat	Coimbatore, Erode and Dindigul
Shencottah	Tirunelveli and Tuticorin
Aralvoimozhi	Kanyakumari, Radhapuram and Muppandal
Theni District	Theni, Cumbum and Andipatty
Sea coast	Uvari, Tuticorin, Rameswaram, Poompuhar and Ennore

The year wise capacity addition in Tamil Nadu over the past 10 years is furnished below:

Year	Capacity addition (MW)
Up to1998-99	728
1999-00	46
2000-01	42
2001-02	45
2002-03	133
2003-04	371
2004-05	675
2005-06	858
2006-07	577
2007-08	381
2008-09	431
2009-10	602
2010-11	997
2011-12	1083
Total as on 31-03-2012	**6971**

(Source: TEDA & TANGEDCO)

The steady increase in capacity addition of wind power generation in Tamil Nadu is mainly attributed to the favourable meteorological and topographical conditions as well as the pro-active policies of the Government of Tamil Nadu.

3.3 Generation – Demand gap in Tamil Nadu

3.3.1 As on 31.03.2012, the installed capacity of TANGEDCO is 10,237 MW comprising 2,970 MW from TANGEDCO's four thermal stations, 516 MW from four gas turbine stations, 2,191 MW from hydro stations, 1180MW from private sector power projects who have power purchase agreements with TANGEDCO, 214 MW as contribution to Tamil Nadu grid by sale of electricity from captive generating plants, 2,861 MW as Tamil Nadu's share from central generating stations and 305 MW from external assistance.

3.3.2 Besides this installed capacity of 10,237MW, a generating capacity of 7,768MW is also connected to the Tamil Nadu grid comprising 6954 MW from privately owned wind farms, 637 MW from cogeneration plants of sugar mills, 169 MW from biomass power plants and 7 MW from solar power plants.

3.3.3 The average power availability during 2011-12 has been around 8,000 MW, while the peak demand has been about 11,000 MW, which leaves a deficit of about 3,000 MW. The infirm wind power generation contributes to about 30% of the peak demand during wind season. As TANGEDCO has no balancing capacity to take care of this infirm power during unexpected meteorological changes, the deficit rises to 3,000 to 3,500 MW.

4. Applicability of this Order

The control period of the Commission's order No. 1 of 2009 ended on 31-03-2011. But, the validity of the said order was first extended by the Commission up to 31-12-2011 vide Order No.1 of 2011 dated 08-04-2011 and again extended up to 30-06-2012 vide Order No.4 of 2011 dated 15-12-2011. Validity of the said order was further extended up to 31-07-2012 vide Tariff Order No.3 of 2012 dated 30-06-2012. Many stakeholders have requested for retrospective implementation of this order from 01-04-2011. This order contains many provisions not only relating to tariff but also relating to other terms and conditions. Since changes are made in various provisions of the previous order, the Commission considers it appropriate to give effect to all the provisions contained in this tariff order only prospectively. This order, therefore, shall come into effect from 01-08-2012.

4.1 For the existing Energy Purchase Agreements (EPA) signed before 01-08-2012 between the wind energy generators and the distribution licensee, the respective tariff rates agreed in the EPA shall continue to be valid. The agreements between the wind energy generators and the distribution licensee in relation to all wind machines commissioned on or after the date of this order shall be in conformity with this order.

5. Tariff Determination Process

5.1 Clause 4 of the Power Procurement from New and Renewable Sources of Energy Regulation, 2008 reads as follows:-

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

Pursuant to the above regulations, the Commission issues this order.

6. Tariff / Pricing Methodology

The Tariff / Pricing Methodology specified in Clause 4 of the Commission's above said Regulation 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………..

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."

6.1 Preferential Tariff vs. Bidding

6.1.1 At this juncture it is relevant to discuss the following stipulations of National Tariff Policy, which are reproduced below:

Section 6.4(1): *Pursuant to provisions of section 86(1)(e) of the Act, the appropriate Commission shall fix a minimum percentage for purchase of energy from such sources taking into account availability of such resources in the region and its impact on retail tariffs. Such percentage for purchase of energy should be made applicable for the tariffs to be determined by the SERCs latest by April 1, 2006. It will take some time before non-conventional technologies can compete with conventional sources in terms of cost of electricity. Therefore, procurement by distribution companies shall be done at preferential tariffs determined by the appropriate Commission.*

Section 6.4(2): *Such procurement by distribution licensees for future requirements shall be done, as far as possible, through competitive bidding process under Section 63 of the Act within suppliers offering energy from same type of non-conventional sources. In the long-term, these technologies would need to compete with other sources in terms of full costs.*

6.1.2 Most of the wind generators have stated that the Commission should go ahead with preferential tariff till the wind energy generation become competitive with other conventional sources. They also stated that for the purpose of competitive bidding, the buyers and sellers should have wide choice to opt for their seller and buyer, but in case of Tamil Nadu, TANGEDCO is the only buyer and third party selling is not possible here. They have added that tariff determination based on competitive bidding is not desirable and justifiable on any account in Tamil Nadu since wind energy is infirm in nature. The Commission would like to observe here that to promote open access, by an amendment on 17-02-2010, the Commission had enabled all HT consumers to avail open access. Therefore, sale to third party is a clear possibility in the state of Tamil Nadu even below 1 MW consumers.

6.1.3 The Ministry of New and Renewable Energy (MNRE) in its comments has stated that TNERC/ State may consider developing standard bidding document and other associated processes for making a smooth transition. From 01-04-2012, the State may invite tender for procurement of wind power and give at least 2 years time for delivery of actual power. For the intervening period, the existing practice of feed-in-tariff may be continued.

6.1.4 The TANGEDCO in their letter dated 02-06-2012 have expressed the following on the competitive bidding process:

It is true that wind energy has been harnessed to a maximum level in Tamil Nadu in last two decades and there is further growth in this sector. However the need to introduce tariff determination in this sector by competitive bidding at this juncture may not be appropriate for the following, among other, reasons:-

(1) Unlike conventional sources, the tariff for wind energy is not so far determined based on fixed parameters.

(2) While so, without determining the tariff taking into the account the provisions of the EA 2003, TANGEDCO is of the view that the wind developers and generators may form a group and claim tariff at an inflated rate which will be against the interest of the Distribution Licensee and against the public interest.

(3) Before such introduction, the actual tariff should be fixed in right perspective by considering the cost involved and all financial benefits availed by the Generators/Developers. And such tariff should be in force at least for a few years so as to consider to go for competitive bidding rate.

(4) On the one hand regulation/orders obligate the Licensee to buy a huge percentage of wind energy almost equal to actual generation. If competitive bidding resulted in higher tariff the Distribution Licensee may not be in a position to purchase energy from them due to such unreasonable cost on account of adverse financial position of TANGEDCO. Besides, for shortfall in meeting of Renewable Purchase Obligation (RPO), the Distribution Licensee may have to purchase the REC certificate to satisfy the RPO. In that case also the Distribution Licensee will be further burdened thereby would subserve the objective of quality power under affordable rate embodied in EA 2003.

(5) Fortunately (or) unfortunately, the wind energy season correlates with summer season. As such, the Distribution Licensee naturally put to disadvantage position of experiencing power shortage during summer season. By taking this natural advantage by Wind Energy Generators (WEG's), to the experience of the TNEB/TANGEDCO had so far, in all probabilities, may quote uniformly an unreasonable rate not commensurate with the fixed and variable cost thereby leading to unjust enrichment.

(6) In view of unequal placement of the Distribution Licensee and WEG and as the WEGs are allowed to supply to its captive users and third party sale in addition to sale to TANGEDCO, the WEGs by virtue of their upper hand position may inflate the tariff during summer/wind season, thereby affecting end consumer.

Therefore, TANGEDCO is of the view that the competitive bidding route may not be viable in wind sector as of now.

6.1.5 As on date, installed capacity of the WEGs is around 70% of the total installed capacity of the TANGEDCO. Wind energy contributes around 30% in terms of demand share during the peak wind season. The comparison of wind energy tariff and that of the conventional power in the state clearly shows that the wind energy in the state is in a position to compete with power from conventional sources as specified in section 6.4 of the tariff policy. However the GoI has not issued any guidelines for the bidding for NCES power procurement as on date as specified in section 63 of the Electricity Act 2003.

6.1.6 Hon'ble APTEL's order on the subject of competitive bidding for procurement of power from 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. Hence, the Commission decides to continue the present system of preferential tariff for determination of wind tariff for this control period.

6.2 Single Part Tariff vs. Two Part Tariff

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. Reduction in capacity utilization and variation in operation, maintenance and insurance cost could be taken care of by adopting suitable parameters. Therefore, the Commission proposes to continue with the single-part tariff for wind energy generation in accordance with Clause 4.6 of Power Procurement from New and Renewable Energy Sources Regulations 2008.

6.3 Cost plus, single part, average tariff

The Commission's earlier orders have adopted "cost plus single part average tariff". This tariff order was challenged by Wind Power Producers Association before the Hon'ble Appellate Tribunal for Electricity (ATE). The ATE in its order dated 18-12-2007 against the appeal No 205/2006 and 235/2006 have directed the Commission that "the tariff for the wind power producers be re-determined within the next two months by taking into consideration the time value of money".

The order of the ATE has been challenged by the Commission and the then TNEB before the Hon'ble Supreme Court and the Hon'ble Supreme Court had granted stay of ATE's order in its order dated 03-03-2008. Therefore, the Commission decides to continue with the present methodology of cost plus, single part, average tariff.

7. Components of tariff

7.1 The following are the components of tariff for wind energy:-

1. Capital investment
2. Capacity utilization factor
3. Derating factor
4. Debt-equity ratio
5. Term of the loan
6. Interest rate
7. Return on equity
8. Life of plant and machinery
9. Depreciation of plant and machinery
10. Operation and maintenance expenditure

7.2 Capital Investment

7.2.1 The estimates of capital investment show wide variation. The Centre for Wind Energy Technology (CWET), Government of India reported in their website at the time of preparation of this order that the capital cost ranges from *Rs.*4.5 to Rs.6.85 Crores per MW depending upon the type of turbine, technology, size and location of wind electric generator. The Indian Wind Power Association suggested the Commission to adopt 6 Crores/MW due to escalation in the land cost by 3 to 4 times and the machine cost to the tune of 20 to 30%. The Indian Wind Turbine Manufacturers Association suggested a capital cost of Rs.6 Crores/MW. The Indian Wind Energy Association suggested that the capital cost may be linked with indexation mechanism and fix it to Rs.5.88 Crores/MW (excluding IDC) for the year 2011-12. The Tamilnadu Spinning Mills Association suggested a capital cost of Rs.6.90 Crores/MW. The Southern India Mills'

Association suggested to revise the capital cost to Rs.6.5 to 7 Crores/MW. Many other private players have also suggested various range for the capital Cost.

7.2.2 The TANGEDCO suggested a capital cost of Rs.4.50 Crores/MW. The Indian Renewable Energy Development Agency (IREDA - a public sector undertaking of the Government of India) has reported that the average capital cost is in the range of Rs. 5 to 6.5 Crores/MW. It is seen that there are wide variations in the capital cost estimates. The Commission has sent the public notices to the Ministry of New and Renewable Energy (MNRE). But, the MNRE has not responded to the Commission's letter. The Central Electricity Regulatory Commission (CERC) in its Terms and Conditions for Tariff determination from Renewable Energy Sources Regulations, 2012 has adopted a capital cost of Rs. 5.75 Crores/MW for the year 2012-13, which includes evacuation cost up to inter-connection point.

7.2.3 In the stakeholders meeting held on 08-06-2012, the Commission requested Indian Wind Energy Association (InWEA) to furnish break up details of capital cost. In response, InWEA has furnished Rs. 5.83 Crs./MW as the total capital cost.

7.2.4 The capital cost mentioned by CERC is nearer to the average cost arrived from the capital cost range reported by IREDA. The Commission considers that the views of the IREDA based on the recent applications is a reliable indicator of cost and therefore estimates that Rs.5.75 Crores per MW is a reasonable figure.

7.2.5 Based on the recommendations of MNRE, Commission in its last tariff order No. 1 of 2009 had adopted that 85% of the capital cost is attributable to machinery cost, 10% for civil works and 5% for land cost. Commission decides to adopt the same percentage in this order also.

7.3 Capacity utilization factor

7.3.1 The capacity utilization factor (CUF) of a wind turbine is a function of wind velocity, air density, power law index, mechanical efficiency of the machine, age of the machine, height of the hub and length of the blade. The Commission adopted a CUF of 27.15% in order No.1 of 2009 dated 20-03-2009. This CUF has been determined by the Commission as the weighted average of the assessed generation of new machines in the Muppanthal, Shenkota, Palghat and Cumbum passes.

7.3.2 The assessment of CUF has widely varied from a figure of 25% suggested by Indian Wind Power Association, 25% suggested by Indian Wind Turbine Manufacturers Association, 24.26% suggested by Tamil Nadu Spinning Mills Association and 25% suggested by The Southern India Mills' Association. IREDA suggested CUF in the range of 22 – 30%. TANGEDCO stated that the higher size wind machines may even run at low wind speed. Commission observes that the new wind machines are technically advanced, more efficient, can run even at low speed and are with higher hub heights. Therefore, the Commission decides to retain the present CUF of 27.15% for the new machines also for this control period.

7.4 De-rating of machines

7.4.1. The Commission fixed the derating at 1% per annum after the first 10 years in the earlier orders. Many stakeholders suggested the Commission to adopt the existing de-rating factor. TANGEDCO in its additional comments has suggested to waive the de-rating factor.

7.4.2. The Commission follows the same methodology adopted in the earlier wind tariff orders, inview of the fact that the Hon'ble Supreme Court of India had stayed the operation of the order of ATE vide order dated 03-03-2008 in Civil Appeal Nos. 1361-1362 of 2008 filed by the Commission and TNEB.

7.5 Debt Equity Ratio

The Tariff Policy lays down a debt equity ratio of 70 : 30 for power projects. The Commission has adopted this ratio in the Tariff Regulations 2005 as well as in the earlier orders on NCES. The Commission decides to retain the same ratio for this order.

7.6 Term of Loan

The Commission fixed the tenure of term loan as ten years with moratorium of one year in the earlier NCES orders on the consideration that term loans sanctioned by IREDA stipulated this tenure. The Commission proposes to retain the same tenure.

7.7 Rate of interest

7.7.1. Commission considered 12% interest rate in the previous order. The IREDA, which is a major financier of renewable energy projects, has stated in its letter addressed to the Commission that State Bank of India base rate plus 3 to 5 % may be considered. But, IREDA in its website has tabulated the interest rate applicable from 16-08-2011 to various sectors. As per the above report, the interest rate applicable to the wind sector is between 11.75% and 12.50%. The Indian Wind Power Association suggested to adopt the prevailing interest rate of 12-13%. The Indian Wind Turbine Manufacturers Association suggested an interest rate of 13.25%. The Indian Wind Energy Association suggested to adopt average SBI PLR for the previous year plus 150 basis point. The Tamilnadu Spinning Mills Association suggested 14% interest rate. The Southern India Mills' Association suggested to adopt interest rate of 13-14%. The TANGEDCO stated that Interest rate of 9% - 10% may be considered since the public financial institutions are offering concessional interest rate for renewable energy generators.

7.7.2. In the Stake holders meeting held on 08-06-2012, M/s VESTAS has requested to allow an interest rate of 12.3% as per CERC norms. M/s Gamesa has requested to consider SBI average PLR (Now average base rate for last six months) and IREDA lending rates. M/s Orient Green Power Company Limited has requested to fix the rate of interest at 15%.

7.7.3. The Utter Pradesh (UP) and Karnataka ERCs have considered the interest rate of 10.25% and 11% respectively. The CERC in its Terms and Conditions for Tariff determination from Renewable Energy Sources Regulations, 2012 has adopted average State Bank of India (SBI) base rate prevalent during the first six months of the previous year plus 300 basis points. Commission feels that the current interest rate of 11.75% to 12.50% as mentioned by IREDA in its website is reasonable and considered an interest rate of 12.25% in this order.

7.8 Return on equity

7.8.1 Commission in its previous order No. 1 dated 20-03-2009 allowed 19.85% pre-tax return on equity. TANGEDCO in its comments has stated that return on equity of 19.85% is high when compared to the return on equity allowed by other State Electricity Regulatory Commissions such as Madhya Pradesh (16% pre-tax), Karnataka (16%) and Andhra Pradesh (AP) (15.5% pre-tax). TANGEDCO suggested a RoE of 15.5% pre-tax. Commission decides to allow 19.85% pre-tax return on equity in this order as adopted in the previous tariff order.

7.9 Life period

The Commission in its previous orders has considered a plant life of 20 years for wind machines. The Commission proposes to retain the same life period in this order.

7.10 Rate of Depreciation

It is proposed to depreciate the value of the plant and machinery to 90% of the initial value during the life period of 20 years. This translates to a rate of 4.5% per annum in the straight line method. As adopted in the Commission's order No. 1 of 2009 dated 20-03-2009, the Commission proposes to retain the rate of 4.5% per annum and the depreciation shall be calculated on 85% of the capital investment, which represents the cost of plant and machinery.

7.11 Operation and Maintenance expenses

7.11.1 Commission in its order No. 1 of 2009 dated 20-03-2009 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. Commission decides to adopt the same in this order also.

7.11.2. Normally the insurance expenditure will form part of the operation and maintenance expenses. Other Commissions have also clubbed the insurance expenditure with O&M expenses. Therefore, the Commission decides to club the insurance expenditure with O&M expenses at the rate specified above. The O&M expenses allowed at 1.1% on plant machinery and 0.22% on land and civil works are reasonable enough to take care of the insurance cost.

8. Related issues

8.1 The following are the issues related to wind energy generation, transmission and wheeling and consumption.

1. Banking
2. Transmission and wheeling charges
3. Cross subsidy surcharge
4. CDM benefits
5. Reactive power charges
6. Grid availability charges
7. Adjustment of energy generated
8. Scheduling and system operation charges
9. Application fees and Agreement fees
10. Billing and payments
11. Payment security and Security deposit
12. Power factor disincentive
13. Metering

14. Evacuation of wind energy
15. Energy purchase agreement
16. Energy wheeling agreement
17. Control period
18. Repowering of the existing wind machines

The above charges / terms are applicable to all wind energy generators irrespective of their year of installation. These are discussed in detail in the following paragraphs.

8.2 Banking

8.2.1. Banking of power from captive generating sets was initially introduced by the then TNEB in October 1983. The banking period was for a period of nine months. This was further refined in December 1983. The banking period was modified to one month. In March 1986 banking for wind energy was considered with 2% banking charges. Banking was restricted for a period of three months. In September 1986, banking was linked to a period of one year for captive generating sets duly taking into account the hydro reservoir levels in Nilgris. Banking charges were fixed at 2% in kind and the line losses were also charged at 2%. The banked energy was considered as lapsed, if not redrawn within one year of banking period. Banking was not applicable to cogeneration. Banking period was considered as two years in November 1989. A detailed Board proceeding was issued in April 2000 with regard to wind energy development. The banking and utilization period was to run concurrently for a period of one year starting from April. The outstanding energy unutilized as on 31st March of every year was deemed to be lapsed and could not be encashed. Banking charges were fixed at 2%. This was further reviewed in March 2001 wherein the banking period was reduced to one month and after one month the unused surplus energy was to lapse. Reactive power was fixed at Re 1/- per unit. In September 2001 the terms and conditions were changed to increase the banking period from one month to two months. The banking and wheeling charges were increased to 5% from 2%. In March 2002, TNEB revised the banking period to one year commencing from 1st April and the balance unadjusted energy was treated as lapsed. Thereafter the Commission had issued two tariff orders one in

2006 and another in 2009 wherein the banking period was considered as 12 months from April to March. In Commission's Orders of 2006 and 2009 the untillized energy was allowed to be encashed at 75% of the preferential tariff rate.

8.2.2. From the above discussion, it could be observed that the concept of banking had been undergoing changes from time to time and the investment has also been coming from time to time. Some of the stake holders have argued that a promise was extended to them with regard to banking and therefore it cannot be changed. Since the concept of banking itself has been undergoing change at regular intervals question raises as to against which particular promise estoppel would apply. The Commission is therefore of the considered view that estoppels cannot be invoked with regard to banking. Regulation 8 of "Power Procurement from new and renewable sources of energy regulations, 2008" enables the Commission to consider appropriate charges for banking. The matter was also discussed in the State Advisory Committee Meeting held on 29th March 2012 wherein TANGEDCO, Tamil Nadu Energy Development Agency as well as the Government of Tamil Nadu have objected to continuation of banking for wind energy. This is stated to be in view of the fact that when the banked energy is redrawn by the wind generators, power has to be procured from the market at higher rates and therefore the licensee is losing money. The Commission has observed in its recent exercise of the Tariff Order that the wind energy for captive use has been on the increase year after year. Quantum of wind energy wheeled for captive use is about 6000 MUs during 2011–12. It is quite possible that excess capacity has been created by some of the consumers so that they can meet all their requirements only through captive wind generation. Wind season being limited, during the balance months energy is being drawn from the banked energy. Even during a day, the concept of time of the day metering is considered. If we look at the prevailing price in power exchanges, rate varies not only during the day but also during the seasons. When the development of wind farm was at its infant stage in the Country, the banking provision was introduced by erstwhile TNEB way back in 1986. Now, wind energy has reached to a level where it can compete with the conventional power generation in this state. With the available technology, Electricity cannot be stored economically in large quantity. This constraint has made electricity price, time tagged. Introduction of ABT and UI Mechanism for maintaining the grid discipline and trading of electricity in the country are also pointers to this. In addition, capacity is also getting added within the Tamil Nadu system. All these factors will have to be kept in mind while discussing the issue of banking. In the light of the above, the detailed comments given by various stake holders are discussed below.

8.2.3 With regard to banking provision, all the WEGs have stated that banking should be continued and some of the WEGs have suggested to change the banking period from April – March to June – May.

8.2.4 In response to the public notice dated 27-04-2011, the TANGEDCO in its letter dated 13-06-2011 has stated the following.

> *"Extending the concessional promotional benefit of banking will hinder the financial position of the TANGEDCO and hence the concessional / promotional benefit of banking facility may be dispensed with. The surplus energy after adjustment on every month may be paid at 75% of the applicable power purchase cost. Further, the Electricity Act, 2003 does not speak about banking. However, if at all, the Commission think fit the provision of banking facility, the banking period may be fixed from 1st January to 31st December of every year instead of 1st April to 31st March. The TANGEDCO may settle the unutilized energy at the end of the banking period (31st December) at 75% of the normal purchase rate with increased banking charges of 20%".*

8.2.5 In their letter dated 07-12-2011, the TANGEDCO have stated that the cash outflow for payment of unutilized banked units is increasing every year and the full Board of TANGEDCO is in favour of dispensing with the banking provision and requested the Commission to dispense with the banking provision not only to future projects but also to the existing projects commissioned before and after 15-05-2006.

8.2.6 In their additional comments furnished in their letter dated 02-06-2012, the TANGEDCO has stated the following on banking.

(1) As stated already, the WEGs are allowed to supply power to captive user and third party consumers in addition to sale to TANGEDCO, as has been allowed to conventional generators. Hence, there is no need to continue banking facility to wind sector. In fact, provision of banking is alien to the EA 2003 and on this ground alone banking of wind energy need to be dispensed with.

(2) As has been stated already, wind energy generators by virtue of natural consequences and, fortunately, for the WEG's the wind blows during summer season, in TANGEDCO's experience, it is seen that the WEG generates energy, during May to September, without putting any effort but encashes by adjustment at a later time by virtue of banking that too when the Distribution Licensee is experiencing power deficit due to high demand. It is an open secret that the power deficit is prevailing in most of the States in India and of late, experiencing shortage of coal & gas, difficulties in transportation of coal for various reasons, etc. Therefore, it is a right time to dispense with the banking facility. In fact, while the Wind Energy Generators withdrawing the banked energy, the Distribution Licensee is forced to make purchase of power from open market at much higher cost. Thereby also, the Distribution Licensee is made to suffer financially.

(3) In addition to dispensing with the banking system, the existing requirement on the part of Distribution Licensee to make payment for any excess energy left over after adjustment also requires to be dispensed with, in view of the position that WEG have been provided with all adequate options of distributing their energy through captive use and third party consumer in addition to Sale to TANGEDCO.

(4) Further provision of encashment of unutilized banked energy, leads to additional financial burden to TANGEDCO. The quantum of unutilized banked energy increasing every year exponentially. In 10/2008 it was 315 MU, in 31.03.2009 it was 251.3 MU and in 31.03.2010 it was 350.658 MU. Hence cash outflow for payment of unutilized banked units is high every year. Such dispensing with may be made applicable to the existing WEGs and to prospective WEGs from the date of such tariff order irrespective of the category to which it belongs.

(5) Further as per CERC and TNERC REC Regulations, for wheeling of wind energy for captive consumption under REC scheme, they have to forego banking. Since TANGEDCO proposed to purchase the future wind power from REC projects only, the banking may be dispensed with. Further based on the recommendation of the TANGEDCO full Board meeting held on 15.11.2011, a petition MP No. 1 of 2012 filed at Hon'ble TNERC to dispense the banking. However, TNERC on 16.02.2012 directed the TNAGEDCO to file a fresh petition by impleading the affected parties. Filing fresh petition is in the process.

Under the circumstances, it is suggested that the banking provision for wind energy shall be dispensed with not only to the future projects but also to the existing projects commissioned before and after 15.05.2006 irrespective of the tariff order to which WEG is covered and *for which necessary amendments maybe effected in the existing Energy Wheeling Agreement."*

8.2.7 The Principal Secretary, Energy department, Government of Tamil Nadu vide letter No. 10369/C2/2011-3, dated 28-03-2012 addressed to the Commission has stated that the banking provision of wind energy shall be dispensed with not only to the future projects, but also to the existing projects commissioned before and after 15-05-2006.

8.2.8 In Gujarat, banking is allowed for one month for captive use. Surplus energy by Wind power producer for every month is payable at 85% of applicable tariff. In Karnataka banking is allowed, subject to payment of difference of UI charges between the time of injection and time of drawl and also on payment of banking charges @ 2% of input energy. In Rajasthan banking shall be on 6 monthly basis from April to September and October to March. Utilization of banked energy will be settled at 60% of energy charges including fuel charges applicable to large industrial power tariff. In AP, the Wind Power Projects are not eligible for Banking of Energy. The Energy generated by captive generating plants, if not consumed during the billing month, would be deemed to have been sold to respective DISCOM and the DISCOM may pay for such unutilized energy at the rate of 85% of the tariff. The banking provision as ordered by the MERC is reproduced below.

"Banking of energy delivered to the grid for self-use and or sale to third party shall be allowed any time of the day and night subject to the condition that surplus energy (energy delivered into the grid but not consumed) at the end of the financial year shall not be carried over to the next year. Surplus energy at the end of the year, limited to 10% of the net energy delivered by the developer to the grid during the year shall be purchased by the Utility at the lowest TOD slab rate for HT energy tariff applicable on the 31st March of the financial year in which the power was generated. In the event of unforeseen and force majeure conditions, surplus energy at the end of the year in excess of the 10% limit specified above shall be purchased by the Utility at a rate equivalent to the weighted average fuel cost for the year as determined by the Commission in the Tariff Order. The payment of surplus energy shall be made to the developer/owner and not to consumer in case of third party sale."

8.2.9 The installed capacity of wind power is higher in Tamil Nadu at 6971 MW. This has to be compared with its total capacity of 10,237MW. Hence Tamil Nadu cannot be exactly compared with other states. The banking of wind power in other states is meager and it does not have considerable impact on the finances of the distribution utilities whereas in Tamil Nadu due to its high installed capacity, the impact is more. However for the purpose of this order, these states have been considered for comparison. As discussed in Para 8.2.8, states of Gujarat, Maharashtra, Rajasthan and Karnataka which have considerable installed capacity of wind power have retained the banking mechanism for wind power in some form or other.

8.2.10. The views of various stake holders have been considered by the Commission. While the generators / consumers are of the view that banking should be continued, the licensee Viz., TANGEDCO, the Government of Tamil Nadu and Tamil Nadu Energy Development Agency are of the view that banking should not only be dispensed with for the new wind generators but also for the earlier wind generators. Yet another view was that banking is not envisaged in the Electricity Act 2003. This issue needs to be examined. As already discussed, Electricity rates can change not only during the day but also during different seasons. The issue, therefore, is whether banking should be totally dispensed with or it should be continued with certain adjustments for the differential rates which exist during the wind season and during non wind season. Intra-day and inter-day adjustments are already provided for by the provision of slot to slot adjustments. The only issue therefore is to examine whether a banking system can be introduced with adjustments in prices for the period in which energy is banked and the period in which energy is redrawn from the bank to take care of price fluctuations over the seasons.

8.2.11. Next issue is with regard to banking not specifically provided for in the Electricity Act 2003. The Electricity Act 2003 does not have a specific provision regarding banking but at the same time Section 86 (1) (e) of the Act as well as Section 61 of the Electricity Act mandates the Appropriate Commission to promote co-generation and generation of electricity from renewable sources of energy. The Commission has also issued the Regulation for Renewable energy, providing for banking. The issue of banking was contested by the TNEB in Appeal No. 98 / 2010 which was finally disposed off by the Appellate Tribunal for Electricity. Para 19 of the said APTEL order is reproduced below:

"The state Commission is empowered to make provisions for banking of energy of energy generated by Renewable Sources of Energy under the Power Procurement from New and Renewable Sources of Energy Regulations, 2008. The said regulation is 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."

In addition, a writ petition WP 311 / 2010 was filed by Thiru S. Gandhi challenging the concept of banking of wind energy and this writ petition was dismissed by the Hon'ble High Court of Madras on 24th April 2012. Keeping in view all these developments, the Commission could continue the banking in pursuant to section 86(1) (e) of the Electricity Act 2003 to promote the renewable energy in the state, subject to the adjustment of energy rates between the two periods relating to banking of energy and drawal of energy from the banking. This in the Commission's view, should be equitable to both the generators / consumers on one hand and the licensee on the other. In the light of this, the Commission would now like to discuss the rate at which energy will be banked and the rate at which energy will be redrawn from the bank.

8.2.12 For reasonably compensating the loss to the Distribution Licensee on account of banking of wind energy, the Commission has examined different alternatives.

8.2.12.1 UI rates

UI rates are for short term transactions. UI adjustment takes place every week. Southern region UI charges are different from UI charges of the rest of the country. In view of this, the same was not considered for adoption.

8.2.12.2 Rates prevailing in the energy exchanges:

The energy exchange mainly operates on day – ahead basis and therefore is a short term phenomena. Hence, this method was also not preferred.

8.2.12.3 Transactions through traders

CERC has approved a large number of traders for inter state trading in Electricity. These inter state traders can also trade intra state. The trading activities are monitored by CERC regularly. The CERC also publishes the market monitoring report every month. This information is available in public domain. The Commission had examined the details available for the period April 2010 to March 2012 for the sake of better approximation of traded prices. The volume of purchases through bilateral trading in MUs and the total cost for the same are available and tabulated. This exercise, when done for the period April 2010 to March 2012 indicates the average cost of Rs.4.45 per kWhr as per annexure VII. This is taken as a bench mark for adjustment for the purpose of banking. The banking charges would be the difference between the average power purchase cost of Rs.4.45 per kWhr, as arrived above, and the maximum preferential tariff for wind energy as contained in this Order. As per this Order, this amount would work out to Rs.4.45 (-) Rs.3.51 which is equal to Rs.0.94 per kWhr. This banking charge would be levied on all the units drawn from the bank in the month in which it is drawn and would continue till 31st March 2013. For arriving at the average power purchase cost applicable for the financial year 1st April 2013 to 31st March 2014, the details pertaining to the period April 2011 to March 2013 shall be considered and the revised average power purchase cost through bilateral trading would be worked out based on the details available in the CERC's market monitoring report for the relevant period. In this type of calculation there is no need for any prior approval of the Commission in deciding the banking charges. TANGEDCO shall work out these details and publish the same in its website for the period 1-4-2013 onwards. A copy of the same shall also be submitted to the Commission.

8.2.13 The banking period commences on 1st April and ends on 31st March of the following year. 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.

8.2.14 Unutilized energy as on 31st March every year may be encashed at the rate of 75% of the relevant purchase tariff. As and when the distribution licensee enforces restriction and control measures and such measures restrict the WEGs to consume their power in any manner, the unutilized energy at the end of the banking period may be encashed at full value of the relevant tariff as sale to the licensee.

8.2.15 With regard to WEGs availing REC, one month adjustment period is allowed as permitted for conventional power. The unutilized energy will get lapsed as in the case of conventional power.

8.2.16 As and when the Commission's ABT order comes into force, the adjustment will be regulated by the said order.

8.3 Transmission charges, wheeling charges and line losses

8.3.1 The transmission and wheeling charges were initially fixed by the TNEB at 2% in 1986. The charges were enhanced to 5% by the TNEB in September 2001. They remained at that level till 2006. The Commission adopted the same rate of 5% towards the transmission and wheeling charges including line losses in order No.3 dated 15-5-2006. In the last order, Commission retained the wheeling and transmission charges including line losses at 5% uniformly for captive use and third party sale of wind energy in the case of HT / EHT consumption. With regard to captive use and third party sale in LT services, it was fixed at 7.5%.

8.3.2 The TANGEDCO has now requested that for wheeling of wind power at 110 kV and above, the transmission charges and losses may be fixed as those applicable to normal open access consumers. For wheeling of wind power below 110 kV, wheeling charges and losses may be made as applicable to normal open access consumers depending upon the voltage of injection and drawal. Further the TANGEDCO has requested the Commission to permit wheeling of wind power only for two locations. If wheeling was required for more than two locations additional charge of 5 paise per unit on energy fed into the grid shall be paid as in the case of Gujarat.

8.3.3 Commission in its order No. 1 of 2012 and 2 of 2012 has fixed Transmission Charges of Rs.6483/MW/day and wheeling charges of 23.27 paise/kWh. Now that the TNEB has been unbundled, charging a single charge in kind as transmission and wheeling charges is not implementable. Therefore it has been decided to fix transmission and wheeling charges in terms of rupees/paise as in the case of conventional power. As a promotional measure, under section 86(1) (e) of the Act, the Commission has decided to fix 40% of the transmission charges and 40% of the wheeling charges as applicable to the conventional power to the Wind power. Apart from these charges, the WEGs shall have to bear the actual line losses in kind as specified in the respective orders of the Commission and amended from time to time.

8.3.4 For the WEGs availing RECs, normal transmission charges, wheeling charges and line losses shall apply.

8.4 Cross subsidy surcharge

The TANGEDCO has stated that cross subsidy surcharge may be levied as applicable to normal open access consumers. As specified in the Act, Cross subsidy surcharge shall not be leviable in case of open access provided to captive generating plants. The Commission in its last tariff order has ordered to levy 50% of the cross subsidy surcharge for third party open access consumers. Commission decides to adopt the same in this tariff order also.

8.5 Clean Development Mechanism (CDM) benefits

Undoubtedly, a promoter of wind energy is required to put in considerable efforts to secure the benefits of CDM. The Forum of Regulators has considered this issue and has recommended that 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. The Commission accepted the formula recommended by the Forum of Regulators in its earlier order No. 1 of 2009 dated 20-03-2009. The Commission proposes to adopt the same formula in this order also. The distribution licensee shall account for the CDM receipts in the next ARR filing.

8.6 Reactive power charges

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 to about 30% of the grid demand and in such a situation grid stability will be jeopardized, if the wind energy generators are allowed to draw reactive power from the grid. Therefore, the Commission decides to retain the charges proposed in Order No.1 dated 20-03-2009. Thus, 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.

8.7 Grid availability charges

8.7.1. Start up power

Provision of start up power by the distribution licensee and outage of wind energy generation are common and frequent in the wind energy sector. The drawal of energy by the generator during the start up from the distribution licensee shall be adjusted against the generated energy.

8.7.2 Stand by power

If adequate generation does not materialize or if drawal by the captive / third party consumer exceeds generation, the energy charges and demand charges shall be regulated as follows:

8.7.2.1 Energy charges

As on date there is only one Distribution Licensee in this State. If the captive user or the third party user is a consumer of the Distribution Licensee, the captive or third party consumer shall be liable to pay the Distribution Licensee the tariff applicable to that category of the consumer for the net energy consumption subject to the terms and conditions of supply. If the captive user/third party user is not a consumer of the distribution licensee, the user shall pay the charges as applicable to the temporary supply of that voltage category.

8.7.2.2 Demand charges

8.7.2.2.1 Demand charges are governed by the provisions of Supply Code, Distribution Code and the applicable Tariff Order issued by the Commission from time to time. Sections 9 and 42 of the Electricity Act enable consumption of electricity from the captive generating plant. Proviso to Section 42 envisages that surcharge shall not be leviable in case open access is provided to a person who has established captive generation plant for carrying the electricity to the destination of his own use. This is also reflected in the note to Regulation 9 (2) which is reproduced below:-

> *"Provided that such surcharge shall not be levied in case transmission access is provided to a person who has established a captive generation plant carrying the electricity to the destination of his own use."*

8.7.2.2.2 In the Tariff Order issued by the Commission in 2006 and 2009 the concept of deemed demand was introduced with a view to reduce the demand charges. This is opposed by the TANGEDCO as they are unable to recover the full demand charges relating to providing all the infrastructure facilities as well as tying up of the generation capacity. This matter was examined in detail. The Commission observes that

a) When the captive power plant is not generating power, the licensee is obliged to provide power supply to the captive consumer. During this period no wheeling charge is recoverable as the captive generator is not injecting any power. The fixed charges payable to other generating stations or procurement of power from the market to meet such contingency will devolve on the licensee.
b) If the captive generator is generating through out the year, he could always reduce the sanctioned demand and control his demand charges for the supply to be made by the licensee.
c) Since the open access regulation cast a duty on the licensee to provide electricity to all open access customers whether captive or otherwise, the fixed charge is getting shifted to the licensee.

8.7.2.2.3 Keeping in view the above, the Commission decides to withdraw the deemed demand concept followed so far. The Commission also observes that such deemed demand concept is not prevalent in many other states in India.

8.8 Adjustment of generated energy

Section 9 (2) of the Electricity Act 2003 confers on the captive generator the right to open access for the purpose of carrying electricity from the captive plant to the destination of his use. Adjustment of generated energy shall be done as per the Commission's open access regulation in force.

8.9 Scheduling and system operation charges

In Tariff Order No. 2 of 2012, Commission has considered Scheduling and system operation charges of Rs.2,000 per day for conventional power. To fix this charge for WEGs, the Commission took into account the fact that the capacity utilization factor in wind energy generators is about 27% as against the average of 85% in conventional power plants and that in actuality large size wind mills are generally available in capacities of around 2 MW. Accordingly, if the generator capacity is 2 MW and above, a scheduling and system operation charge of

Rs.600/- per day would apply. If the generator capacity is less than 2 MW, the charges shall be proportionate.

8.10 Application fees and agreement fees

8.10.1 Application fees and agreement fees for Energy Purchase and Energy wheeling Agreements shall be as specified in the Commission's Intra State Open Access Regulations and Fees and Fines Regulations in force. The fees for EPA shall be collected by the licensee and passed on to the Commission. Whenever the Commission changes the above fees, the revised fees shall be payable by the WEGs.

8.10.2 Whenever there is a change in the usage of the wind energy or a change in the drawal point, there will be extra work to the licensee. Therefore, an additional charge equivalent to the application fees and agreement fees shall be leviable by the licensee on the generator.

8.11 Billing and payment

8.11.1 When a wind generator sells power to the distribution licensee, the generator shall raise a bill every month for the net energy sold after deducting the charges for start up power and reactive power. The distribution licensee shall make payment to the generator within 30 days of receipt of the bill. Any delayed payment beyond 30 days is liable for interest at the rate of 1% per month.

8.11.2 If a wind 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 month for the net energy supplied. The licensee should record the slot wise monthly generation and monthly consumption as far as possible on a same day. While preparing the bill, peak hour generation shall be adjusted against peak hour consumption of the billing months. Off peak generation shall be adjusted against off peak consumption of the billing months. Normal generation shall be adjusted against normal consumption of the billing months. Peak hour generation and normal hour generation can be adjusted against lower slot consumption of the billing months.

8.11.3 Clause 11 (2) of the Terms and Conditions for determination of Tariff Regulations, 2005 defines peak hours as “the time between 0600 hrs and 0900 hrs and between 1800 hrs and 2100 hours.” Clause 11 (3) of the Terms and Conditions for determination of Tariff Regulations, 2005 define off-peak hours as “the duration between 2200 hours and 0500 hours.”

8.11.4. Excess consumption will be charged at the tariff applicable to the consumer subject to the terms and conditions of supply. Transmission and wheeling charges, scheduling and system operation charges and cross subsidy surcharge as applicable, shall be recovered from the open access customer T&D loss shall be adjusted in kind as per Para 8.3. The net amount recoverable from the consumer shall be raised in the bill.

8.12 Payment security and security deposit

8.12.1 The National Tariff Policy calls for adequate and bankable security arrangements to the generating companies. There are large numbers of WEGs and the monolith distribution licensee cannot offer security for such a large number of WEGs. Delayed payments shall be dealt with as per para 8.11.1 of this order.

8.12.2 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.

8.13 Power Factor disincentive

As per the retail Tariff Order in force, power factor disincentive is applicable to a consumer as a percentage of current consumption charges. The average power factor recorded by the meter shall be the reference for calculation of the disincentive. On the same analogy, captive/third party consumers of wind energy shall also be liable for disincentive based on the average power factor recorded by the meter.

8.14 Metering

8.14.1 The Commission decides that metering and communication shall be in accordance with the following:

(1) Central Electricity Authority (Installation and Operation of Meters) Regulations 2006

(2) Tamil Nadu Electricity Distribution Code 2004

(3) Tamil Nadu Electricity Grid Code 2004

(4) Tamil Nadu Electricity Intra State Open Access Regulations in force.

8.15 Connectivity and Evacuation of Wind Energy

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

8.16 Energy purchase agreement (EPA)

The format for Energy Purchase Agreement (EPA) shall be evolved as specified in the Commission’s regulation in force. The agreement shall be valid for a minimum period of 20 years. The distribution licensee shall execute the Energy Purchase Agreement within a month of receipt of application from the generator. The parties to the agreement may be given the option of exiting in case of violation after serving a three months notice to the other party.

8.17 Energy wheeling agreement (EWA)

The format for Energy Wheeling Agreement (EWA) shall be evolved as specified in the Commission’s regulation in force. The period of agreement and other terms and conditions shall be as per the terms of open access regulations in force issued by the Commission.

8.18. Control period / Tariff Review Period.

Clause 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. Hence, the Commission decides the control period of this order shall be for two years from 1.8.2012 and tariff period is 20 years.

8.19. Repowering of the existing wind machines

The TANGEDCO in its comments has stated that lot of enquires have been received with regard to the incentives to be provided for repowering of existing small size wind machines with higher size wind machines. Since repowering involves the determination of tariff for new machines where infrastructure is already available and adjustment for the old machines which have not completed their useful life, the subject of repowering involves in-depth study. This will be taken up as when the interested parties file a petition with the Commission.

9. Wind energy tariff

9.1 Wind energy tariff is computed with reference to the determinants listed in para (7) of this order. The tariff works out to Rs. 3.51 per unit for the period up to 31-07-2014. The wind mills commissioned on or after the date of issue of this order shall be eligible for this tariff. The wind mills commissioned prior to 15-5-2006 shall be eligible for a tariff of Rs.2.75 per unit. The wind mills commissioned between 15-5-2006 and 18-9-2008 shall be eligible for a tariff of Rs.2.90 per unit. The wind mills commissioned between 19-09-2008 to the date of this order shall be eligible for a tariff of Rs.3.39 per unit.

9.2 Other related charges and terms and conditions specified in the order shall be applicable to all the wind energy generators, irrespective of the date of commissioning.

10. Directions

10.1 Similar concern was expressed on the reactive power absorption by the WEGs and its effect on the voltage profile of the grid. Both the active power and reactive power of the WEGs are being recorded by the TANTRANSCO / TANGEDCO for billing purposes. The TANTRANSCO / TANGEDCO are directed to furnish a month wise total generation of active power and total absorption of reactive power by the WEGs for the previous month before the end of next month to the Commission starting from 01-09-2012.

10.2 Similar report on the quantum of energy wheeled by TANTRANSCO from the WEGs for captive consumption and third party sale and the quantum of energy purchased by the TANGEDCO from WEGs shall be furnished separately by the respective entity every month to the Commission starting from 01-09-2012.

11. Acknowledgement

The Commission acknowledges with gratitude the contribution of the officers and staff of the Commission, the valuable guidance provided by experts, the active participation and advice of the Members of the State Advisory Committee and the pains taken by the Members of the public in offering their suggestions. The Commission particularly is indebted to the valuable input of the Tamil Nadu Generation and Distribution Corporation Ltd., Indian Renewable Energy Development Agency and the Ministry of New and Renewable Energy Sources, Government of India.

Sd/-	Sd/-
(S. Nagalsamy)	**(K.Venugopal)**
Member	**Member**

(By Order of the Commission)

Sd/-

S.Gunasekaran
Secretary

<u>Annexure - I</u>

PUBILC NOTICES

Annexure – I

TAMIL NADU ELECTRICITY REGULATORY COMMISSION

No. 19A, Rukmini Lakshmipathy Road, (TIDCO Complex),

Egmore, Chennai 600 008

Phone: ++91-44-28411376 / 28411378 / 28411379 Fax: ++91-44-2841137

email: tnerc@nic**.in** **Website:** www.tnerc.gov.in

Public Notice dated 27-04-2011

The Commission proposes to revise the Comprehensive Tariff Order on wind energy Order No. 1 of 2009 dated 20-03-2009. The Commission invites the views / suggestions of stakeholders on the following parameters:-

1. Capital Cost per MW
2. Capacity Utilization Factor
3. De-rating of wind machine
4. Debt-Equity ratio
5. Term of Loan
6. Interest on Loan
7. Return on Equity
8. Life of Plant and Machinery
9. Depreciation
10. O&M expenses per annum
11. Insurance expenditure per annum
12. Components of working capital
13. Interest on working capital
14. Infrastructure Development Charges
15. Auxiliary Consumption
16. Banking mechanism
17. Transmission and Wheeling charges
18. Cross subsidy surcharge
19. CDM benefits
20. Reactive power charges
21. Grid availability charges
22. Adjustment of generated energy for captive use
23. Scheduling and system operation charges
24. Application and agreement fees
25. Billing and payment
26. Payment security and security deposit
27. Energy Purchase and Wheeling Agreement
28. Scheduling of wind energy / UI mechanism
29. Special treatments, if any, for wind farms beyond say 100 MW, 200 MW, etc.
30. Any other issues

The stakeholders are requested to furnish their views / suggestions by 31-05-2011.

S/d -

(R.V.RAJAH)

Secretary

TAMIL NADU ELECTRICITY REGULATORY COMMISSION
No. 19A, Rukmini Lakshmipathy Road, (TIDCO Complex),
Egmore, Chennai 600 008
Phone: ++91-44-28411376 / 28411378 / 28411379 Fax: ++91-44-2841137
email: tnerc@nic.in **Website: www.tnerc.gov.in**

Public Notice dated 08-09-2011

The Commission invites the views of all stakeholders on the following issues relating to Tariff Order for wind energy:-

a) Whether competitive bidding to be introduced and tariff determination by the Commission to be dispensed with for wind energy in view of the satisfactory growth of wind energy in this State and in accordance with the tariff policy of Government of India?

b) Whether banking period to be retained, reduced or dispensed with in view of the satisfactory growth in the installed capacity of wind generators?

c) CERC initially introduced scheduling of wind energy in accordance with Indian Electricity Grid Code, 2010 with effect from 1-1-2012. Accordingly the Commission proposes to introduce scheduling of wind energy and installation of ABT meters.

Views of the stakeholders may reach the Commission by 30th September 2011.

(By order of the Commission)

Sd/-
(S.Gunasekaran)
Secretary

Annexure – II

SUMMARY OF THE COMMENTS RECEIVED FROM THE STAKE HOLDERS ON THE PUBLIC NOTICES

Comments of various stake holders on the public notice dated 27-04-2011

1. Capital Cost / MW in Crores

M/s.Indian Renewable Energy Development Agency Ltd

Capital cost of 5 to 6.5 Crores/MW may be considered.

M/s.Indian Wind Power Association

6 Crores/MW may be adopted due to escalation in the land cost by 3 to 4 times and the machine cost to the tune of 20 to 30%

M/s.Indian Wind Turbine Manufactures Association

Capital Cost of Rs.6 Crores/MW may be considered due to increased hub heights, rotor diameter, cost of cement, electrical machineries and steel.

M/s. Indian Wind Energy Association

In line with CERC, Capital Cost may be linked with indexation mechanism and fix it to Rs.5.88 Crores/MW (excluding IDC) for the year 2011-12.

M/s. Tamilnadu Spinning Mills Association

The average cost / MW ranges from Rs.5-6.58 Crores and the Commission may consider the highest cost of Rs.6.58 Crores/MW. Hence, considering the cost on IDC, meter rent, etc., Commission may consider Rs.6.90 Crores/MW as the capital cost

M/s. The Southern India Mills' Association

The capital cost may be revised to Rs.6.5-7 Crores/MW including IDC due to increase in land and machinery cost

M/s. KSK Wind Energy Private Limited

Honourable commission may consider the capital cost of Rs.5.95 Crores/MW excluding IDC

M/s.NSL Renewable Power Pvt. Ltd

The Capital cost should be increased to Rs.6 Crores/MW due to increase in the cost of steel, copper, diesel, freight charges, land cost, and general inflation.

M/s.Krishna Poly Packs (P) LTD

Existing provision may be continued

M/s.ReGen Powertech Pvt. Ltd

Commission may consider a capital cost of Rs.6 Crores / MW taking into consideration of annual escalation of about 5% for 2 years.

M/s.TVS Energy Limited

Honourable commission may consider the capital cost of Rs.6.03 Crores/MW.

M/s. GE Energy

Commission may consider Rs.6.5 Crores/MW depending on the site conditions

Thiru P.Selvaraj, Erode

The capital cost must include interest during construction period till date of commercial production. Due to evacuation problem machines are not permitted to make commercial production. Average stoppage is around 1 year.

Tamil Nadu Generation and Distribution Corporation Ltd.

Commission may call for the official records from the wind mill developers for authenticated cost for manufacturing of wind mill. The Gujarat ERC has fixed the capital cost at Rs.4.62 Crores/MW in its order dated 30-01-2010. Since the land, labour and machinery costs in Gujarat are high when compared to Tamil Nadu, the Capital cost may be fixed at Rs.4.50 Crores/MW as fixed in the Commission's order No. 3 dated 15-05-2006.

<u>2. Capacity Utilization Factor</u>

M/s.Indian Renewable Energy Development Agency Ltd

22% to 30% of CUF may be considered

M/s.Indian Wind Power Association

25% may be considered since the wind potentiality in the upcoming regions is not as good in the previous occasions.

M/s.Indian Wind Turbine Manufactures Association

The capacity utilisation factor of 25% may be considered since the better windy sides are not available any more in the state

M/s. Indian Wind Energy Association

Hon'ble Commission may adopt wind zone based tariff determination in line with CERC.

M/s. Tamilnadu Spinning Mills Association

The average CUF works out to 24.26% and the Commission may consider this for tariff calculation purpose.

M/s. The Southern India Mills' Association

The capacity utilisation factor of 25% may be considered since the better windy sides are not available any more in the state

M/s. KSK Wind Energy Private Limited

Any future wind farm development in Tamil Nadu will be at new sites with lower wind potential which will not deliver the envisaged CUF of 27.15%. Therefore commission may consider a CUF of 25% for tariff determination.

M/s.NSL Renewable Power Pvt. Ltd

The CUF should be classified according to wind density in different zones. Four zones may be made as in the case of CERC regulations.

M/s.Krishna Poly Packs (P) LTD

The average of the past 5 years of CUF is only 22.9%.

M/s.ReGen Powertech Pvt. Ltd

The existing WEGs are installed in the higher wind power density sites and the available sites are in lower wind power density area. Considering the above commission may consider a CUF of around 25%

M/s.TVS Energy Limited

The CUF is lower in class 2 and class 3 sites that are available in Tamil Nadu now for installation for wind turbines. Further the wind developers have to establish power evacuation for interconnection with the grid. The loss in the evacuation line adversely impacts the net generation and consequently the CUF. Therefore the commission may consider a CUF of 23%

M/s. CLP Wind farms (India) Pvt. Ltd.

In Tamil Nadu metering is always done at the high voltage side of the turbine transformer. We understand that for projects developing the evacuation infrastructure on their own as per sec 10(1) of the Electricity Act, 2003, the utility has sought the metering point to be located on the LV side of the receiving end of the grid substation. This would essentially require the project to observe additional line losses to the extent of internal transmission lines, pooling station transformer losses and line losses up to the receiving end of the substation. In view of the above commission may consider of issuing separate tariff assuming a lower CUF to take into account the additional losses for projects where metering point has been moved to the receiving end of the grid station. Alternatively commission may specify suitable line losses compensation mechanism. RERC as allowed line losse compensation of 4% for metering at 132/220 KV system and 1% for metering at 33 KV system in case metering point is at receiving end of grid substation.

M/s. Narangs International Hotels Pvt. Ltd

Due to frequent stoppage of wind mills due to load shedding from TANGEDCO side we meet more power generation loss and also our CUF. The last CUF was around 17.18%

Thiru P.Selvaraj, Erode

The CUF in Tamil Nadu is 19.57%.

Tamil Nadu Generation and Distribution Corporation Ltd.

The higher size wind machines may even run at low wind speed. The wind mills are already installed in the windy areas. Therefore, to study the wind potential in the unexploited area, a small group may be formed with TANGEDCO, Wind Association and C-WET and CUF may be decided.

3. De-rating of wind machine

M/s.Indian Wind Power Association

Commission may fix the de-rating @ 1% per annum after 5 years since the existing statistics in all the wind mills in Tamil Nadu would clearly establish that the de-rating is taking place after 5 years.

M/s.Indian Wind Turbine Manufactures Association

Existing provision may be followed

M/s. Indian Wind Energy Association

Existing provision may be followed

M/s. Tamilnadu Spinning Mills Association

De-rating of 1% may be allowed from the sixth year onwards instead on eleventh year

M/s. The Southern India Mills' Association

Commission may fix the de-rating @ 1% per annum after 5 years since the existing statistics in all the wind mills in Tamil Nadu would clearly establish that the de-rating is taking place after 5 years.

M/s. KSK Wind Energy Private Limited

Commission may consider a De-rating factor of 1.5% from 6th year onwards like Rajasthan ERC considered a De-rating factor of 1.25% at a CUF of 20-21%

M/s.Krishna Poly Packs (P) Ltd.

Existing provision may be continued

M/s.ReGen Powertech Pvt. Ltd

Commission may fix the de-rating @ 1% per annum after 5 years Since the existing statistics in all the wind mills in Tamil Nadu would clear establish that the de-rating is taking place after 5 years.

Thiru P.Selvaraj, Erode

For the windmills owned by TANGEDCO the de-rating factor in 20 years comes around 3% and therefore commission may consider a de-rating factor of 3%.

4. Debt-Equity ratio

M/s.Indian Renewable Energy Development Agency Ltd

Existing provision may be followed

M/s.Indian Wind Power Association

Debt-Equity ratio of 75:25 may be considered instead of 70:30.

M/s.Indian Wind Turbine Manufactures Association

Existing provision may be followed

M/s. Indian Wind Energy Association

Commission may adopt the ratio in line with CERC

M/s. Tamilnadu Spinning Mills Association

Existing provision may be followed

M/s. The Southern India Mills' Association

Existing provision may be followed

M/s. KSK Wind Energy Private Limited

Existing provision may be followed

M/s.Krishna Poly Packs (P) LTD

Existing provision may be continued

M/s.ReGen Powertech Pvt. Ltd.

Existing provision may be continued

M/s. GE Energy

Existing provision may be followed

<u>5. Term of Loan</u>

M/s.Indian Renewable Energy Development Agency Ltd

10 Years with 1 year grace period after commissioning

M/s.Indian Wind Power Association

The term of loan may be changed to 5 to 8 years

M/s.Indian Wind Turbine Manufactures Association

Existing provision may be followed

M/s. Indian Wind Energy Association

10 years may be adopted

M/s. Tamilnadu Spinning Mills Association

Term loan of 7 years with 1 year moratorium period may be considered

M/s. The Southern India Mills' Association

IREDA norms may be followed

M/s. KSK Wind Energy Private Limited

Existing provision may be followed

M/s.Krishna Poly Packs (P) LTD

Existing provision may be continued

M/s.ReGen Powertech Pvt. Ltd.

Existing provision may be continued

6. Interest on Loan

M/s.Indian Renewable Energy Development Agency Ltd

SBI base rate plus 3 to 5 % may be considered

M/s.Indian Wind Power Association

Prevailing interest rate of 12 to 13% may be considered.

M/s.Indian Wind Turbine Manufactures Association

Interest rate of 13.25% per annum may be considered for term loan

M/s. Indian Wind Energy Association

Commission may adopt the interest on loan as average SBI PLR for previous financial year plus 150 basis points (13.75%)

M/s. Tamilnadu Spinning Mills Association

Most of the banks have increased the interest rate. Considering the loan processing fee and other incidental costs involved, Commission may consider 14% as interest on loan.

M/s. The Southern India Mills' Association

13-14% of interest rate may be followed

M/s. KSK Wind Energy Private Limited

It is not possible for IREDA to fund all wind power projects. Therefore wind power developers have no other option than approaching commercial banks. Therefore commission may consider a interest rate of 13%.

M/s.NSL Renewable Power Pvt. Ltd

Commission may allow interest rate of SBI PLR rate plus 250 basis points to enable small wind developers to secure required loan easily.

M/s.Krishna Poly Packs (P) LTD

Existing provision may be continued

M/s.ReGen Powertech Pvt. Ltd.

Financial Institutions are charging an interest rate of 13-14% and this rate of interest may be compared with SBI PLR rate of previous year plus 150 basis points. Therefore commission may consider an interest rate of 13.5%.

M/s.TVS Energy Limited

Over the past 1 year the RBI has raised REPO and reverse REPO rate to 7.25% and 6.25% respectively and as a consequence all the banks have raised the lending interest rate. Therefore commission may consider interest rate of 13.5%.

M/s. Vestas

In the prevailing scenario the commercial banks are increasing the lending rates in line with the monetary policy changes announced by RBI from time to time. Therefore commission may consider this issue and determine rate of interest for the purpose of tariff determination.

Thiru P.Selvaraj, Erode

Commission may consider PLR rate of Commercial bank of 14% or IREDA rate of interest plus 2% for processing fee/guarantee fees etc.

Tamil Nadu Generation and Distribution Corporation Ltd.

Interest rate of 9% - 10% may be considered since the public financial institutions are offering concessional interest rate for renewable energy generators. The UP and Karnataka ERCs have considered the interest rate of 10.25% and 11% respectively.

7. Return on Equity (RoE)

M/s.Indian Renewable Energy Development Agency Ltd

16% post tax may be considered

M/s.Indian Wind Power Association

16% post tax may be considered

M/s.Indian Wind Turbine Manufactures Association

Pre Tax of 19% per annum for the first ten years and 24% per annum from 11th year onwards may be considered

M/s. Indian Wind Energy Association

RoE of 19% for the first 10 years and 24% from the 11th year onwards may be considered in line with CERC

M/s. The Southern India Mills' Association

Existing provision may be followed

M/s. KSK Wind Energy Private Limited

RoE of 19.85% for the first 10 years and 24% from the 11th year onwards may be considered in line with CERC

M/s.NSL Renewable Power Pvt ltd

CERC allowed 24% return from 11th year onwards and the same may please be allowed by the commission.

M/s.Krishna Poly Packs (P) LTD

RoE of 16% post tax may be considered

M/s.ReGen Powertech Pvt. Ltd.

RoE of 19% for the first 10 years and 24% from the 11th year onwards may be considered.

M/s. CLP Wind farms (India) Pvt. Ld.

Commission may order the Income tax as pass through as done in KERC. Since the tax rates keep changing, the commission had considered 19.85% pre tax RoE which translates into 15.88% post tax RoE for the first ten years and 13.41% post tax RoE for the remaining years considering the present MAT and corporate tax. From the above it is seen that post 10 year RoE is lower than the post tax RoE offered to the conventional power projects. Therefore the commission may kindly consider higher post tax RoE higher than that offered to conventional power projects.

Tamil Nadu Generation and Distribution Corporation Ltd.

The RoE of 19.85% is high compared to other SERCs such as Madhya Pradesh (16% pre-tax), Karnataka (16%) and AP (15.5% pre-tax). Hence, RoE of 15.5% pre-tax may be considered.

8. Life of Plant and Machinery

M/s.Indian Renewable Energy Development Agency Ltd

20 years may be considered

M/s.Indian Wind Power Association

20 years may be considered

M/s.Indian Wind Turbine Manufactures Association

20 years may be considered

M/s. Tamilnadu Spinning Mills Association

Life period may be reduced to 15 years since the higher capacity machines breakdown due to grid problems and nature of wind.

M/s.The Southern India Mills' Association

The life period may be restricted to 15 years because of higher capacity, highly sensitive technology and increased wear & tear due to frequent shut down and due to evacuation constraints

M/s. KSK Wind Energy Private Limited

Existing provision may be followed

M/s.Krishna Poly Packs (P) LTD

Existing provision may be continued

M/s.ReGen Powertech Pvt. Ltd.

Existing provision may be continued

M/s. GE Energy

Existing provision may be followed

9. Depreciation

M/s.Indian Renewable Energy Development Agency Ltd

5.28% per annum (SLM)

M/s.Indian Wind Power Association

Straight line method may be followed for depreciation

M/s.Indian Wind Turbine Manufactures Association

Depreciation rate of 7% for the first 10 years and 2% after ten years may be considered

M/s. Indian Wind Energy Association

Depreciation rate of 7% for the first 10 years and 1.33% from 11th year onwards may be considered in line with CERC

M/s. Tamilnadu Spinning Mills Association

Present rate of 4.5% per annum may be retained

M/s. The Southern India Mills' Association

6% may be adopted

M/s. KSK Wind Energy Private Limited

Depreciation rate of 7% for the first 10 years and the balance over the period of next 10 years may be considered.

M/s.NSL Renewable Power Pvt Ltd

Higher depreciation should be allowed to enable servicing the debt and therefore commission may allow 7% depreciation for the 10 years as in the case of CERC regulations.5% of the capital cost may be allocated for land/civil works and 90% depreciation may be allowed on 95% of the capital cost.

M/s.Krishna Poly Packs (P) Ltd

Existing provision may be continued

M/s.ReGen Powertech Pvt. Ltd.

Depreciation rate of 7% for the first 10 years and the balance over the period of next 10 years may be considered.

Tamil Nadu Generation and Distribution Corporation Ltd.

Tariff may be fixed separately for the WEGs, who are availing the benefits of accelerated depreciation as per the Income Tax Act as adopted by the Hon'ble Commission in order No. 1 of 2010 dated 27-05-2010 for Solar Power and CERC regulations for renewable energy, 2009.

10. O&M expenses per annum

M/s.Indian Renewable Energy Development Agency Ltd

1.5% to 2% per annum with 5 to 6% escalation per annum may be adopted.

M/s.Indian Wind Power Association

O&M expenses per annum may be fixed as 1.5% to 2.5% of the investment with annual escalation of 5%

M/s.Indian Wind Turbine Manufactures Association

Commission may consider 1.5% of the capital cost as O&M expenditure with annual escalation of 5.72%

M/s. Indian Wind Energy Association

O&M expenditures of 7.26 Lakhs/MW may be considered in line with CERC

M/s. Tamilnadu Spinning Mills Association

1.5% of the 85% of the capital cost with 5% escalation may be considered for machineries. Regarding civil works, 0.5% of the 15% may be considered.

M/s. The Southern India Mills' Association

Commission may consider O&M expenses as 1.78% in respect of plant & machinery and 0.64% for land & civil works.

M/s. KSK Wind Energy Private Limited

Commission may consider O & M expenses at a rate of 2.5% on the capital cost with 5.72% escalation per year.

M/s.Krishna Poly Packs (P) LTD

Currently the manufacturers of Wind Turbine are charging 1.9% of the Wind Turbine cost as O & M charge with annual escalation every year.

M/s.ReGen Powertech Pvt. Ltd.

Commission may consider an O & M rate of 1.5% of the capital cost per annum with 6% escalation there after.

M/s.TVS Energy Limited

Commission may enhance the O & M expenses to 1.75% of the capital cost with 5.72% annual escalation.

M/s. Vestas

The substation O & M charge of Rs.1.6 Lakhs per MW as charged by TANGEDCO/STU must also be accounted in O & M expenses. Therefore total O & M charges of about 7.26 Lakhs per MW should be considered in line with CERC.

M/s. Narangs International Hotels Pvt. Ltd

The O & M Cost is increasing day by day

M/s. GE Energy

Commission may consider O & M expenses of 1.6-1.8% of the project cost with an annual escalation of 8%.

Thiru P.Selvaraj, Erode

O&M expenses must be increased to 2% of the capital cost. Apart from the above substation maintenance cost demanded by TANGEDCO/STU should also be added

Tamil Nadu Generation and Distribution Corporation Ltd.

O&M charges at 1% for machinery on 85% of capital investment with 5% escalation from 5th year onwards may be considered. Regarding civil works, O&M charges at 0.20% on 15% of the capital investment with 5% escalation from 5th year onwards may be considered.

11. Insurance expenditure per annum

M/s.Indian Wind Power Association

Insurance rate of 0.75% of the 100% of the capital investment may be considered

M/s.Indian Wind Turbine Manufactures Association

Insurance rate of 1% of the capital cost with 5% reduction every year.

M/s. Tamilnadu Spinning Mills Association

The present rate of 0.75% may be increased to 0.8%

M/s. The Southern India Mills' Association

The amount incurred on maintenance is almost four times more than the normal break down insurance cost. Further, the maintenance cost on the plant and machinery should be linked with the insurance and accordingly the Commission may decide either on O&M value for the plant and machinery maintenance or at the insurance cost level.

M/s.Krishna Poly Packs (P) LTD

Existing provision may be continued

M/s.ReGen Powertech Pvt. Ltd.

Commission may consider insurance rate of 1% with reduction of 5% every year

M/s. Narangs International Hotels Pvt. Ltd

The cost of machine increases by 5% per annum. This will help to increase the insurance claim value after depreciation

Thiru P.Selvaraj, Erode

The insurance cost must be increased by 5% every year as the machine has to be insured for current replacement value. Discussion with insurance companies is must.

Tamil Nadu Generation and Distribution Corporation Ltd.

Insurance expenditure may be waived since most of the tariff orders of other SERCs have not included the insurance expenditure.

12. Components of working capital

M/s.Indian Wind Power Association

Receivables equivalent to 2 months of revenue and payables equivalent to 2 months of O & M expenses may be considered

M/s.Indian Wind Turbine Manufactures Association

O & M expenses for one and half month, receivables equivalent to 2 months of energy charges and maintenance spares at 15% of O&M expenses may be considered.

M/s. Indian Wind Energy Association

Receivables equivalent to 2-6 months of revenue (in order to overcome difficulties arising out of the delayed payment by TANGEDCO), O & M expenses for 1 month and spares for 15% of O&M expenses may be considered

M/s. The Southern India Mills' Association

The TANGEDCO is making delayed payment to the WEGs which leads to increased working capital. Under these circumstances, the WEGs are to be taken care taking into consideration of time and interest to protect the working capital.

M/s. KSK Wind Energy Private Limited

Commission may consider interest on working capital as a element in tariff determination which may include one month O & M expenses and receivables of two months.

M/s.Krishna Poly Packs (P) LTD

Existing provision may be continued

M/s.ReGen Powertech Pvt. Ltd.

Commission may consider one and half month O & M expenses, receivable equivalent to 2 months of energy charges and maintenance spares at 15% of O & M expenses

M/s.TVS Energy Limited

The Hon'ble commission may take cognizance of the delay in receipt of payments from TANGEDCO in its computation of the working capital requirement and the interest cost on the working capital.

13. Interest on working capital

M/s.Indian Wind Power Association

12% of interest may be considered on Working Capital

M/s.Indian Wind Turbine Manufactures Association

Interest rate of SBI PLR rate for the financial year 2011-12 (11.75%) plus 100 basis points(12.75%) may be considered.

M/s. Indian Wind Energy Association

Commission may consider average SBI PLR rate of the previous year plus 100 basis pints (13.25%) in line with CERC

M/s. KSK Wind Energy Private Limited

Interest on working capital may be 1% in excess of term loan interest rate.

M/s.Krishna Poly Packs (P) LTD

Existing provision may be continued

M/s.ReGen Powertech Pvt. Ltd.

Interest on working capital may be equal to the interest payable on loan.

14. Infrastructure Development Charges

M/s.Indian Wind Power Association

Infrastructure Development Charges of 29.16 Lakhs / MW which is the present rate may be considered

M/s.Indian Wind Turbine Manufactures Association

The actual IDC being charged by TANGEDCO should be considered as part of the capital cost. However as per section 39 of the Electricity Act 2003 the STU should develop the transmission system and hence IDC need not be payable.

M/s. Indian Wind Energy Association

In case the Wind Energy Generator is required to bear IDC or evacuation cost beyond the interconnection point, capital cost and the corresponding tariff may suitably be revised

M/s. The Southern India Mills' Association

The existing provision may be continued

M/s. KSK Wind Energy Private Limited

Commission may include IDC collected by TANGEDCO in the capital cost

M/s.Krishna Poly Packs (P) LTD

Existing provision may be continued

M/s.ReGen Powertech Pvt. Ltd.

As per section 39 of Electricity Act 2003 IDC shall be borne by the STU. The investment incurred by STU is factored in ARR. Therefore IDC need not be levied with the WEGs.

M/s. Vestas

The TANGEDCO presently charging IDC of Rs.30 Lakhs / MW and this should be added to the capital cost in determining the tariff.

Tamil Nadu Generation and Distribution Corporation Ltd.

The GERC has included Rs.38 Lakhs/MW in the capitals cost towards the evacuation arrangement charges from the generating point to the GETCO sub-stations. The wind energy association like Indian Wind Energy Association and other stake holders have requested the GERC to include the evacuation charge as Rs.45-60 Lakhs/MW. But, GERC has stick on to Rs.38 Lakhs/MW only. As of now, TANGEDCO collects Rs.30 Lakhs/MW as IDC from WEGs. Due to increase in cost of steel, aluminium, copper and other materials and other services, increase in IDC amount is necessary.

15. Auxiliary Consumption

M/s.Indian Wind Power Association

Auxiliary Consumption of 5% may be considered

M/s.Indian Wind Turbine Manufactures Association

Auxiliary Consumption shall not be included

M/s. KSK Wind Energy Private Limited

Commission may consider auxiliary consumption of 0.5% of the generation

M/s.Krishna Poly Packs (P) LTD

Existing provision may be continued

M/s.ReGen Powertech Pvt. Ltd.

Auxiliary Consumption of 1% may be considered

16. Banking mechanism

M/s.Indian Wind Power Association

In banking adjustment year may be changed from April-March to May-April since the wind season starts mostly at the end of April. Banking charges of 5% may be retained

M/s.Indian Wind Turbine Manufactures Association

Existing banking mechanism may be followed

M/s. Indian Wind Energy Association

Existing banking mechanism may be continued to promote wind energy

M/s. Tamilnadu Spinning Mills Association

Banking period may be modified from April-March to June-May considering the pattern of wind season and to avoid unnecessary litigations. If the captive consumer owns different wind mills installed in different years having different tariff rate, the units generated by old wind mills which came in to existence first, should be allowed for adjustment first and the windmills came later should be allowed for adjustment next.

M/s. The Southern India Mills' Association

The banking period may be modified to June-May.

M/s. KSK Wind Energy Private Limited

Commission may order encashment of unutilised energy at the end of the financial year at 90% of the relevant purchase tariff. Banking period may be modified from May to April

M/s.NSL Renewable Power Pvt. Ltd

The Hon'ble commission may consider 2% as banking charges to encourage wind projects. The banking charges in AP is only 2% for renewable energy projects and nil in case of Maharashtra

M/s.ReGen Powertech Pvt. Ltd.

Banking period may be revised to June - May and the banking charges revised to 2%. Tariff for unutilised banking energy at the end of the banking period may be fixed at 85% of normal tariff for that category.

Thiru P.Selvaraj, Erode

The banking period must be wind year (i.e) from June-May

Tamil Nadu Generation and Distribution Corporation Ltd.

Extending the concessional promotional benefit of banking will hinder the financial position of the TANGEDCO. Hence, the concessional / promotional benefit of banking facility may be withdrawn and dispensed with. The surplus energy after adjustment on every month may be paid at 75% of the concerned power purchase cost. Further, the Electricity Act, 2003 does not speaks about banking.

However, if at all, the Commission think fit the provision of banking facility, the banking period may be fixed from 1st January to 31st December of every year instead of 1st April to 31st March. The TANGEDCO may settle the unutilised energy at the end of the banking period (31st December) at 75% of the normal purchase rate with increased banking charges of 20%.

17. Transmission and Wheeling charges

M/s.Indian Wind Power Association

Commission may continue to have the same 5% in respect of transmission and wheeling charges

M/s.Indian Wind Turbine Manufactures Association

Commission may continue to have the same 5% in respect of transmission and wheeling charges

M/s. Indian Wind Energy Association

Commission may continue to have the same 5% in respect of transmission and wheeling charges

M/s. Tamilnadu Spinning Mills Association

The present rate of 5% may be retained. The Transmission and Wheeling charges should be collected only on the portion of energy wheeled and not on the portion of energy generated (i.e.) on net export.

M/s. The Southern India Mills' Association

The existing provision may be continued

M/s. KSK Wind Energy Private Limited

The existing provision may be continued

M/s.Krishna Poly Packs (P) LTD

Existing provision may be continued

M/s.ReGen Powertech Pvt. Ltd.

Existing provision may be continued

M/s.TVS Energy Limited

Commission may reduce Transmission and Wheeling charges to 3% in case of EHT/HT consumption and 5% in the case of LT consumption

M/s. Narangs International Hotels Pvt. Ltd

The Transmission and Wheeling charges may be reduced to 2-3%

M/s. GE Energy

The Transmission and Wheeling charges should be devised in such a way that it should progressively reduce with every additional MW to enable large wind energy project developments.

Tamil Nadu Generation and Distribution Corporation Ltd.

For Wheeling of Wind Power at 110 kV and above transmission charges and losses may please be made applicable as like to normal open access consumers as in case of Gujarat.

For Wheeling of Wind Power below 110 kV, transmission charges and losses may please be made applicable as like to normal open access consumers depending upon the voltage of injection and drawal as in case of Gujarat.

Further Wheeling of Wind Power is to be allowed only for two locations. If wheeling is required for more than two locations additional charge of 5 paise per unit on energy fed into the grid shall be paid as in case of Gujarat.

18. Cross subsidy surcharge

M/s.Indian Wind Power Association

Commission may remove the Cross subsidy surcharge for renewable energy as it is being phasing out in many states

M/s.Indian Wind Turbine Manufactures Association

No cross subsidy surcharge should be levied on wind energy

M/s. Indian Wind Energy Association

Hon'ble Commission may grant full exemption for wind energy sources in the State from payment of such cross subsidy surcharge as like in other States like Maharashtra, Gujarat, Karnataka, Rajasthan and AP

M/s. Tamilnadu Spinning Mills Association

As a matter of providing preferential treatment to WEGs, the cross subsidy surcharges may be waived.

M/s. The Southern India Mills' Association

The Commission may remove the cross subsidy charges like in other States.

M/s. KSK Wind Energy Private Limited

Hon'ble Commission may grant full exemption for wind energy sources in the State from payment of such cross subsidy surcharge as in other States like Maharashtra, Gujarat, Karnataka, Rajasthan and AP

M/s.NSL Renewable Power Pvt. Ltd

The Cross subsidy surcharge may totally be waived on the similar lines in other states like Karnataka,Maharashtra,etc.

M/s.Krishna Poly Packs (P) LTD

The Cross subsidy surcharge may totally be waived.

M/s.ReGen Powertech Pvt. Ltd.

The Cross subsidy surcharge may totally be waived.

M/s.TVS Energy Limited

Commission may abolish the cross subsidy surcharge on third party sale of all renewable energies including WEGs

Tamil Nadu Generation and Distribution Corporation Ltd.

Cross Subsidy Surcharge may be levied as applicable to normal open access consumers.

19. CDM benefits

M/s.Indian Wind Power Association

There should not be any sharing of CDM benefits as it is the investment made by wind mill owners and no investments or efforts or role were made by distribution licensee

M/s.Indian Wind Turbine Manufactures Association

There should not be any sharing mechanism since the entire risk is borne by the investor

M/s. Tamilnadu Spinning Mills Association

System of sharing CDM benefits may be dropped

M/s.The Southern India Mills' Association

The WEGs are making investment for availing CDM benefits and the concept of sharing CDM benefits should be avoided.

M/s. KSK Wind Energy Private Limited

The WEGs are making investment for availing CDM benefits and the concept of sharing CDM benefits should be avoided.

M/s.Krishna Poly Packs (P) LTD

The carbon credits has not materialised to the WEGs and on the other hand the WEGs have incurred substantial expenditure on registration, consultants etc.

M/s.ReGen Powertech Pvt. Ltd.

System of sharing CDM benefits may be dropped

M/s.TVS Energy Limited

WEGs have incurred considerable time and expenses for registration of the project with UNFCC. Therefore commission may abolish the sharing of CDM benefits with licensees.

M/s. Vestas

The commission may allow the WEGs to fully retain the CDM benefits as done in MERC.

M/s. CLP Wind farms (India) Pvt. Ld.

The commission may allow the WEGs to fully retain the CDM benefits as done in MERC.

Tamil Nadu Generation and Distribution Corporation Ltd.

The existing mechanism may be followed to the WEGs. But for the WEGs, who claim REC benefits, 80% of the CDM benefit may be shared with the TANGEDO and 20% may be retained by the WEGs. There is no procedural mechanism of sharing the CDM benefits with TANGEDO in terms of money value. Hence the TANGEDO's CDM benefits may be adjusted in the power purchase bill amount settled to the WEGs. The sharing of CDM benefits may be incorporated in the Power Purchase Agreement.

20. Reactive power charges

M/s.Indian Wind Power Association

Commission may retain the existing provision

M/s.Indian Wind Turbine Manufactures Association

Commission may retain the existing provision

M/s. Tamilnadu Spinning Mills Association

Commission may retain the existing provision

M/s. The Southern India Mills' Association

The existing provision may be continued

M/s.Krishna Poly Packs (P) LTD

Existing provision may be continued

M/s.ReGen Powertech Pvt. Ltd.

Reactive Energy charges of Rs.0.1/RkVAh may be considered.

Tamil Nadu Generation and Distribution Corporation Ltd.

The Reactive Power Charges may be fixed equal to the Generation cost of Wind Energy. It is to be noted that the existing rate of 25 paise and 50 paise is cost effective to the generator instead of installing reactive power control measures.

21. Grid availability charges

M/s.Indian Wind Power Association

As per Sec 86(1)(e) of the Electricity Act,2003 the honourable commission should promote the renewable energy in the state. To promote renewable energy generation in the state it is imperative that such grid be made available for the generating plants and all generation from such plants be injected in the grid on a must run basis

M/s.Indian Wind Turbine Manufactures Association

Commission may retain the existing provision

M/s. Tamilnadu Spinning Mills Association

For start-up power and standby power, the present system of recovering energy charges may be followed.

M/s.The Southern India Mills' Association

The existing provision may be continued

M/s.Krishna Poly Packs (P) LTD

Existing provision may be continued

M/s.ReGen Powertech Pvt. Ltd.

Grid availability charges need not be levied.

M/s.TVS Energy Limited

The Commission may treat captive wind energy on par with the farm power captive generating plants for the purpose of Deemed Demand calculation.

M/s. CLP Wind farms (India) Pvt. Ld.

Commission may consider 98% grid availability in a month so that WEGs will not back down their generation during load shedding and non availability of transmission corridor.

Tamil Nadu Generation and Distribution Corporation Ltd.

The energy plus energy equated demand charges applicable to HT commercial on par with open access consumer may be considered. The energy plus energy equated demand charges without deemed demand benefit may be considered.

22. Adjustment of generated energy for captive use

M/s.Indian Wind Power Association

100% billing value to be paid for the unutilised energy at the end of the normal year and during power cut years Rs.4 per unit which is the HT Tariff rate may be given.

M/s.Indian Wind Turbine Manufactures Association

Commission may retain the existing provision

M/s. Tamilnadu Spinning Mills Association

During R & C period the TANGEDCO should be advised to provide the supply both on demand and energy in suitable manner as declared by the Wind Energy Generator at the beginning of billing period. The Hon'ble Commission may announce a firm policy on adjustment of wind energy for captive consumers in addition to the wind tariff revision. Regarding adjustment of wind energy to the LT consumers, the TANGEDCO has not made any facility till today. In respect of sale of wind energy to the third parties, the TANGEDCO may allow the third party buyers to avail short term open access on a monthly basis for the units of energy contracted for adjustment.

M/s. The Southern India Mills' Association

The existing provision may be continued

M/s.Krishna Poly Packs (P) LTD

Existing provision may be continued

M/s.ReGen Powertech Pvt. Ltd.

Slot wise adjustment may be considered. Energy generated during higher slot may be allowed to be adjusted during the lower slot.

23. Scheduling and system operation charges

M/s.Indian Wind Power Association

Scheduling and system operation charges fixed in Order No.2-5 dated 11-10-2008 at Rs.300/day/1.65 MW and pro rata for each service connection to remain the same.

M/s.Indian Wind Turbine Manufactures Association

Commission may retain the existing provision

M/s. Tamilnadu Spinning Mills Association

Neither the Electricity Act, 2003 nor of the Regulations made thereunder permits levy of scheduling and system operation charges and therefore this charges may be discontinued for captive consumption.

M/s. The Southern India Mills' Association

The scheduling and system operation charges may be dispensed with under this proposal.

M/s.Krishna Poly Packs (P) LTD

Existing provision may be continued

M/s.ReGen Powertech Pvt. Ltd.

Existing provision may be continued

M/s.Vestas

The wind industry is in the process of testing the forecasting models of the third party service providers by undertaking pilot studies which will be available in July-August 2011. However intial indications reveal that it would be challenging to forecast with 70% accuracy as stipulated in IEGC. In addition there are constraints on the operation, IT connectivity etc. Further the commission needs to undertake measures to align TNEGC with IEGC.

Tamil Nadu Generation and Distribution Corporation Ltd.

Scheduling and System operation charges of Rs.2000 per day or part thereof for long term and short term open access consumers may be considered.

24. Application and agreement fees

M/s.Indian Wind Power Association

Existing provision may be continued

M/s.Indian Wind Turbine Manufactures Association

Commission may retain the existing provision

M/s. Tamilnadu Spinning Mills Association

The application fee may be withdrawn. However, the agreement fee may be collected as per Order No.1 of 2009 for vetting the EPA / EWA. For amendment of the existing agreements the present system of collecting the same fee may continue.

M/s. The Southern India Mills' Association

The existing provision may be continued

M/s.Krishna Poly Packs (P) LTD

Existing provision may be continued

M/s.ReGen Powertech Pvt. Ltd.

Existing provision may be continued

Tamil Nadu Generation and Distribution Corporation Ltd.

Application and agreement fee on par with the other conventional generators may be fixed for WEGs.

25. Billing and payment

M/s.Indian Wind Power Association

The invoices generated to be paid within 30 days by the distribution licensee and interest rate @ 18% may be given for any delayed payment

M/s.Indian Wind Turbine Manufactures Association

Commission may retain the existing provision. However for payment beyond the due date, interest may be paid at the rate of 1.5% per month

M/s. Indian Wind Energy Association

The Commission may consider any one or more of the following mechanisms as may be found suitable, to ensure timely payment to the WEG, apart from continuation of current provision of delayed payment charges:1. Revolving Quarterly Advance Payments: The TANGEDCO may pay the advance amount as fixed by the Commission at the beginning of each quarter of a financial year to the WEG and the same shall be adjusted based on the actual generation. 2. Renewable Regulatory Fund: The Hon'ble Commission may allow the TANGEDCO to create separate fund and the fund may be utilised for purchase of renewable power. 3. Higher interest rate for working capital: Commission may allow higher interest rate for working capital in the tariff calculation.

M/s. Tamilnadu Spinning Mills Association

The TANGEDCO makes the payment in the delay of 8 to 9 months. Hence, the delayed payment interest should be increased from 1% per month to 2% per month, so that the TANGEDCO would make the payments in time with priority.

M/s. The Southern India Mills' Association

The existing provision may be continued

M/s.Krishna Poly Packs (P) LTD

Existing provision may be continued

M/s.ReGen Powertech Pvt. Ltd.

Payment should be made by the licensee within 30 days. Delayed payment beyond 30 days will have to attract 1.5% interest per month

M/s.TVS Energy Limited

The TANGEDO makes the payment in delay resulting undue hardship to WEGs. Therefore commission may kindly address this issue suitably and effectively to mitigate the hardship of the wind energy generators.

M/s. Vestas

The TANGEDO makes the payment in delay resulting undue hardship to WEGs. Therefore commission may kindly take into account these aspects and enforce strict penalty framework for the defaulting entity.

M/s. CLP Wind farms (India) Pvt. Ld.

The TANGEDO makes the payment in delay resulting undue hardship to WEGs. The delay is about 6 months from the date of invoice. Therefore the commission may consider payment security mechanism such as revolving letter of credit or escrow mechanism at the cost of utility to ensure timely payment to the WEGs. Alternatively commission may consider 6 month working capital for working capital calculation.

M/s. Narangs International Hotels Pvt. Ltd

The TANGEDO makes the payment in delay for about 8 months.

Thiru P.Selvaraj, Erode

Delayed payment surcharge of 1.5% may be levied if not paid in 7 days.

Tamil Nadu Generation and Distribution Corporation Ltd.

The penalty clause may be waived or otherwise payment time may be extended from 30 days to 90 days considering the fact that Wind Power is infirm in nature and also taking into consideration of TANGEDCO's stringent financial condition.

26. Payment security and security deposit

M/s.Indian Renewable Energy Development Agency Ltd

Letter of credit may be proposed and the lenders may be given a lien on the same.

M/s.Indian Wind Power Association

Regarding payment security 2 months bank security may be given and regarding security deposit, existing provision may be continued

M/s.Indian Wind Turbine Manufactures Association

The licensee may be ordered to establish irrevocable bank guarantee in favour of generator equal to 3 times of generation in a month. Regarding security deposit existing provision may be continued

M/s. Tamilnadu Spinning Mills Association

The present system of paying the security deposit calculated on the two time of the cost of the maximum net energy supplied can be continued. At the same time, it should be reiterated that security deposit should be collected only on the basis of cost of net energy supplied and not on the whole of current consumption charges bill.

M/s. The Southern India Mills' Association

The existing provision may be continued

M/s.Krishna Poly Packs (P) LTD

Existing provision may be continued

M/s.ReGen Powertech Pvt. Ltd.

The licensee may be ordered to establish irrevocable bank guarantee in favour of generator equal to 3 times of generation in a month.

27. Energy Purchase and Wheeling Agreement

M/s.Indian Wind Power Association

Existing provision may be continued

M/s.Indian Wind Turbine Manufactures Association

The agreement may be terminated on request for those who opt for availing REC benefit

M/s. The Southern India Mills' Association

The existing provision may be continued

M/s. KSK Wind Energy Private Limited

The current format of the wheeling agreement doesn't provide for the option for the WEG to avail renewable energy certificates by opting for payment for normal wheeling and transmission charges. Commission may kindly the adopt the same.

M/s.Krishna Poly Packs (P) LTD

Existing provision may be continued

M/s.ReGen Powertech Pvt. Ltd.

The agreement may be terminated on request for those who opt for availing REC benefit

M/s. GE Energy

Stronger mechanism should be put in place to enable sale and purchase of wind energy. This could be done through a power exchange where power can be sold to highest bidder on spot or long term contract can be signed to ensure a base load.

Tamil Nadu Generation and Distribution Corporation Ltd.

The energy purchase agreement may be extended up to the life period of the plant in which provision for reactive power charges at the rate of power purchase cost, CDM benefits sharing, scheduling and UI mechanism may be included. Commission may approve the format of EPA for purchase of Wind energy under REC scheme.

The above provisions may also be included in the EWA also.

28. Scheduling of wind energy / UI mechanism

M/s.Indian Wind Power Association

Forecasting of wind energy should be obtained by the utility. No scheduling and UI should be made applicable for wind farms having capacity less than 10 MW.

M/s.Indian Wind Turbine Manufactures Association

As per IEGC the scheduling of wing energy is to become operational only from 1-1-2012 and therefore commission need not insist on special energy meters till such time scheduling is to become operational. Commercial mechanism of levying UI charges may be deferred by a year or two. UI charges may be levied on mean average error basis and not on absolute error basis.

M/s. The Southern India Mills' Association

Should be made applicable only to large wind farms having capacity more than 10 MW.

M/s.Krishna Poly Packs (P) LTD

Existing provision may be continued

M/s.ReGen Powertech Pvt. Ltd.

Scheduling and UI Mechanism may be postponed till end of the control period.

M/s.Tamil Nadu Newsprint and Papers Limited

The procurement and testing of ABT meters by the individual developer will become costly affair and also warrant unnecessary procedures. Instead the licensee may procure and test the meters which will be less cost to the licensees considering the bulk quantity.

M/s. CLP Wind farms (India) Pvt. Ld.

Wind projects are typically located at remote locations where availability of telecommunication infrastructure to transfer data and employ super computers to forecast wind is a challenge. Given the nature of the climatic condition and topographic differences across various sites and geographies there is no one "fit for all" solution yet to assure the investors about their ability to forecast accurately. The requirement of scheduling and penal provisions would enhance the risk to the investors without any compensation towards the same. Therefore the commission may kindly exclude the wind projects from the purview of scheduling and despatch provisions.

M/s. GE Energy

It should be as per IEGC standards and it should reward reliability and availability of wind turbine technology encouraging better technology and proper O & M.

Tamil Nadu Generation and Distribution Corporation Ltd.

The CERC in its IEGC has included the scheduling provision for Wind Energy from 1-1-2012. The commission may also include the said provision in the agreement and the procedure for scheduling of wind energy may be explained.

29. Special treatments, if any, for wind farms beyond say 100 MW, 200 MW, etc.

M/s.Indian Wind Power Association

Project specific tariff may be considered for the renewable capacities exceeding 200 MW and such tariff should be made higher than the generalised tariff to compensate the higher risk and efforts taken for large projects

M/s.Indian Wind Turbine Manufactures Association

Project specific tariff could be considered for large wind farms.

M/s.ReGen Powertech Pvt. Ltd.

Project Specific tariff may be given to the WEGs of 100 MW and above. The project shall be completed within 1 year from the date of determination of project specific tariff by the Commission.

M/s. Vestas

TANGEDCO may provide single point facilitation on all the project development related issues, concessional transmission, wheeling charges and cross subsidy surcharge. TANGEDCO may also consider waiving several security charges during different phases of development and also have concessional IDC charges for large wind farm projects.

M/s. GE Energy

For wind farms above 100 MW capacity, a comprehensive review is needed to enable and incentivise large scale investment.

30. Any other issues

M/s.Indian Wind Power Association

The wind tariff should have yearly escalation to compensate for rising cost and falling value of money. The new tariff should also be made applicable to the existing wind mills who are supplying power to the utility at different rates like Rs.2.75, Rs.2.90 and 3.39

M/s.Indian Wind Turbine Manufactures Association

Honourable Commission may give effect to this new order for those wind energy generators commissioned on or after 1-4-2011. The tariff may be generalised cost plus single part levellised tariff for 20 years with a discount factor equivalent to Weighted Average Cost of Capital. Tariff may be determined separately for each year of the control period taking into account the changes in the financial and operational parameters. Regarding RPO at least the present level may be maintained. Incentive of 0.50 paise or 1 rupee more than the tariff may be considered for re-powering of existing wind machines.

M/s. Indian Wind Energy Association

The new tariff should be made applicable with effect from 01-04-2011. Commission may continue the same control period of 2 years. Commission may specify that the STU/Distribution Licensee shall be responsible for development or strengthening of transmission/distribution system beyond the inter-connection point. Commission may allow additional tariff incentive of Rs.0.50 - Rs.1 per unit for repowering projects. Commission may specify a levellised tariff of Rs.4.72/unit. Hon'ble Commission may direct the TANTRANSCO to provide sufficient evacuation facilities to WEGs on preferential basis and to restrain from performing grid curtailments so as to ensure maximum evacuation of wind energy generated.

M/s. Tamilnadu Spinning Mills Association

The power factor incentive may again be ordered to be provided to the consumers. TANGEDCO has not provided any meter cards to the wind mill generators as per the Regulation 8(1) of Supply Code. If the TANGEDCO finds that at a particular place, evacuation can not be made effectively, it should defer issuing NOCs for erection of new WEGs till the evacuation facilities are improved to the required extent. The TANGEDCO should not direct the WEGs to shut down their generation during evacuation constraint. If the TANGEDCO directs so, the WEGs should be compensated suitably at a fair compensation fixed by the Commission. Right proportion of RPO needs to be notified for the years to come as the REC mechanism is going to pick up shortly. The tariff to the existing WEGs should also be increased.

M/s. The Southern India Mills' Association

Unnecessary requirement like 5 slot meters and ABT meters are not to be insisted for the WEGs. The Commission may recommend the suitable methodology for the third party sale with simple procedure. The Commission may pass this tariff order to take effect from 1-4-2011 instead of making it from 1-1-2012.

M/s.Krishna Poly Packs (P) LTD

Annual increase may be allowed to the wind tariff and the rate paid by other states may be kept in view. An incentive must be given for protecting the environment and generating clean power. The new rates may be effective from 1-4-2011. The Commission may allow us to use the power for captive usage in Andhra Pradesh.

M/s. ReGen Powertech Pvt. Ltd.

The new rates may be effective from 1-4-2011. Provision may also be made for the existing agreement holders to mutually renegotiate to come into new order. The tariff may be generalised cost plus single part levellised tariff for 20 years with a discount factor equivalent to Weighted Average Cost of Capital on the basis of normative debt equity ratio. The RPO may be fixed at 16% for non-solar for this control period.

M/s. Vestas

The commission may adopt CERC methodology for wind tariff calculation like MERC, JERC.HERC, and CSERC. Applying CERC methodology the tariff for zone 3 CUF should be 4.56 / kWh.

M/s. Narangs International Hotels Pvt. Ltd

Commission may provide policy for modernisation or up gradation for higher capacity WEGs

Thiru P.Selvaraj, Erode

For the machines crossed 20 years, modernisation policy has to be worked out. MD charges for captive consumers based on injected current in full may be permitted instead of 19.27%. The current share of renewable energy in India is just 3.5 - 4% and therefore the RPO must be 1% more. This will reduce obligation of paying preferential tariff/securing REC in turn will reduce the financial burden of TANGEDCO. The Honourable Commission may insert a clause that preferential tariff must not be less than average pooled cost plus minimum REC for existing and future machine at present (Rs.2.51 + Rs.1.50) Rs.4.01.

Tamil Nadu Generation and Distribution Corporation Ltd.

As per Sec (9) of Electricity Act, 2003 read with Electricity Rules 2005, the captive generating plants and the companies who are willing to wheel the Wind Energy have to satisfy the 26% ownership and 51% self consumption. The Commission may adequately address this issue in the tariff order and agreement.

Commission may direct the Group-II generators to execute the EWA agreement in line with the commission's order no.3 dated 15-5-2006 and to pay the necessary charges retrospectively from 15-5-2006.

Lot of enquires have been received with regard to the incentives to the repowering of existing small size wind machines with higher size wind machines. In this regard, the MNRE and WISE have already made a study and stated that the incentive to be given. Commission may decide on this issue.

List of persons/organisations

1. M/s. Tamil Nadu Generation and Distribution Ltd.
2. M/s.Indian Renewable Energy Development Agency Ltd
3. M/s.Indian Wind Power Association
4. M/s.Indian Wind Turbine Manufactures Association
5. M/s. Indian Wind Energy Association
6. M/s. Tamilnadu Spinning Mills Association
7. M/s. The Southern India Mills' Association
8. M/s. KSK Wind Energy Private Limited
9. M/s.NSL Renewable Power Pvt ltd
10. M/s.Krishna Poly Packs (P) LTD
11. M/s.ReGen Powertech Pvt. Ltd.
12. M/s.Tamil Nadu Newsprint and Papers Limited
13. M/s.TVS Energy Limited
14. M/s. Vestas

15. M/s. CLP Wind farms (India) Pvt. Ld.
16. M/s. Narangs International Hotels Pvt. Ltd
17. M/s. GE Energy
18. Thiru P.Selvaraj, Erode

Comments of various stake holders on the public notice dated 08-09-2011

1. Whether competitive bidding to be introduced and tariff determination by the Commission to be dispensed with for wind energy in view of the satisfactory growth of wind energy in this State and in accordance with the tariff policy of Government of India?

Most of the wind generators (List enclosed) have stated that the Commission should go ahead with tariff determination till the wind energy generation become competitive with other conventional sources. They also stated that for the purpose of competitive bidding, the buyers and sellers should have wide choice to opt for their seller and buyer. But, in case Tamil Nadu, TANGEDCO is the only buyer and third party selling is not possible here. Tariff determination based on competitive bidding is not desirable and justifiable on any account in Tamil Nadu since wind energy is infirm in nature.

The Ministry of New and Renewable Energy (MNRE) in its comments has stated that TNERC/ State may consider developing standard bidding document and other associated processes for making a smooth transition. From 01-04-2012, the State may invite tender for procurement of wind power and give at least 2 years time for delivery of actual power. For the intervening period, the existing practice of feed-in-tariff may be continued.

The PESOT in its comment has suggested to adopt open bidding as stipulated in the National Tariff Policy. Regarding banking, the mechanism is to be decided between the licensee and the generators. Huge quantity of wind power affects the voltage profile of the grid and it should be taken care by the Commission with technical experts. Further, public hearing to be continued before deciding the tariff.

The TANGEDCO has stated that the wind developer may form a group and claim tariff at an inflated rate. The WEGs may quote uniformly an unreasonable rate not commensurate with the fixed and variable cost thereby in lead to unjust enrichment.

2. Whether banking period to be retained, reduced or dispensed with in view of the satisfactory growth in the installed capacity of wind generators?

Most of the wind energy generators have suggested retaining the existing banking mechanism. But the banking period may be changed from May to April every year. Further, they referred the order dated 21-09-2011 of ATE in appeal No. 53, 94 & 95 of 2010, wherein ATE has observed that it would be impossible to set-up the wind energy units without the banking facilities due to the very characteristics of wind power generation. Further, they stated that huge investments have taken place on the promise being made by the Government of Tamil Nadu. Therefore, at this juncture, the banking period cannot be reduced or dispensed with and rather to be retained.

TANGEDCO in its comments has stated that the banking provision for wind energy may be dispensed with not only to the future projects but also to the existing projects commissioned before and after 15-05-2006 irrespective of the tariff order to which WEG is covered. Further, the TANGEDCO has stated that the full Board of TANGEDCO is in favour of dispensing the banking provision.

3. CERC initially introduced scheduling of wind energy in accordance with Indian Electricity Grid Code, 2010 with effect from 1-1-2012. Accordingly the Commission proposes to introduce scheduling of wind energy and installation of ABT meters.

Most of the wind energy generators have agreed to install ABT meters at feeder level at sub-station since most of the wind energy generators are having small capacity and changing of all the meters are not feasible immediately.

TANGEDCO has stated that scheduling should be made to all the WEGs irrespective of their capacities. Formation of group may pose a problem and will lead to litigations such as who is going to give scheduling first, etc.

List of persons/organisations

S.No.	Company Name
1	M/s VXL Systems
2	M/s Green Infra
3	M/s Powerica Limited
4	S.Gandhi PESOT
5	M/s Indian Wind Trubine Manufacturers Association (IWTMA)
6	M/s Sri Shanmugavel Mills (P) Limited
7	S.Muthurajan Salem
8	M/s Needle Industries (India) Private Limited
9	M/s GTP Granites Limited
10	M/s Sri Venkateswara Pipes Ltd
11	M/s Ashok Granties Limited
12	M/s Tata Power
13	Gaurav Ambekar Tata Power Co limited
14	M/s Brilliant Bio Pharma Limited

15	M/s Hi-tech Arai Private Limited
16	P.Selvaraj Erode
17	M/s Tamil Nadu Newsprint and Papers Limited
18	M/s Tamil Nadu Spinning Mills Association
19	M/s Aquasub Engineering
20	M/s Roots Industries India Limited
21	M/s N.R.G.Tex
22	M/s Indowind Energy Limited
23	M/s Indeco Ventures Limited
24	M/s Tamilnadu Air Products Private Ltd
25	M/s TN Oxygen
26	M/s Hotel Maurya International
27	M/s Texmo Industries
28	M/s The West Coast Paper Mills Ltd
29	M/s Hotel Chandra Towers (P) Ltd
30	M/s Acc Limited
31	K.Srinivasan (AO)
32	M/s ITC Limited
33	M/s Elveety Industries Pvt Ltd
34	M/s Mid East Portfolio Management Ltd
35	M/s Chenniappa Wind mills
36	M/s Seyond Cotton Mills
37	M/s Shri Gowrishankarar and Co.
38	M/s Rajapalayam Mills Ltd
39	M/s Orient Green Power Company Limited
40	M/s Sri Ranganathar Industries Private Limited
41	M/s Asia Match Company Private Limited
42	M/s nagammal Mills(P) Limited
43	M/s Cape Flour Mills Private Limited
44	M/s Ashok Leyland

45	M/s K.U.Sodalamuthu And Co.Pvt Ltd
46	M/s Spike Power protection Systems & Technologies
47	M/s Emerald Jewel Industry India Ltd
48	M/s Seyath Beedi Company
49	M/s Naga Overseas P Limited
50	M/s Sholingur Textiles Limited
51	M/s Annai Power Private Limited
52	K.S.Kamalakannan
53	M/s Naga Limited
54	M/s Super Sales India Limited
55	M/s Kurian Abraham (P) Limited
56	M/s The Andhra Sugars Limited
57	M/s Cotton Blossom (India) Pvt Ltd
58	M/s SVS Projects Pvt Ltd
59	M/s Shalivahana Green Energy Limited
60	M/s Mefco Engineers Pvt Ltd
61	M/s Anishkumar Spinning Mills
62	M/s Archana Industries
63	M/s Sri Suguna Machine Works Pvt Ltd
64	M/s Pioneer Jellice India Private Limited
65	M/s The Southern India Mills Association
66	M/s Binaguri Tea Company Private Limited
67	M/s Narangs International Hotels Private Ltd
68	M/s Interocean Shipping Company
69	M/s Indian Wind Power Association
70	M/s Twowin Export
71	M/s Ram-nath & Co.pvt Ltd
72	M/s Pandian Chemicals Limited
73	M/s Best Engineers Pumps Pvt Ltd
74	M/s Anu Cashews

75	M/s Skill Lotto Solutions Pvt Ltd
76	M/s Shanthi Poultry Farm (Pvt) Ltd
77	M/s Sugavaneswara Spinning Mills Private Limited
78	M/s Century Flour Mills Limited
79	M/s Sri kaliswari Metal Powders Private Limited
80	M/s Sree Ayyanar Spinning And Weaving Mills Limited
81	M/s Sri Kaliswari Fireworks Private Limited
82	M/s Mohan Breweries And Distilleries Limited
83	M/s Tirupur Export Knitwear Industrial Complex
84	M/s Ram Conductors and Transformer Private Limited
85	M/s Agni Steels Private Limited
86	M/s KSK Wind Energy Private Limited
87	M/s TVS Energy Limited
88	M/s Ramesh Conductors Private Limited
89	M/s Jayashree Cables and Conductors Private Limited
90	M/s The Metal Powder Company Limited
91	Tamil Nadu Generation and Distribution Corporation (TANGEDCO)

<u>Annexure – III</u>

MINUTES OF THE STATE ADVISORY COMMITTEE MEETING HELD ON 29.03.2012

Annexure – III

MINUTES OF THE 24th STATE ADVISORY COMMITTEE MEETING HELD ON 29-03-2012

Members Present:

1. Thiru. K. Venugopal, Member, TNERC.
2. Thiru. S. Nagalsamy, Member, TNERC.
3. Thiru. S. Gunasekaran, Secretary, TNERC and Secretary, SAC
4. Thiru. Rajeev Ranjan, CMD, TNEB Ltd. & TANGEDCO Ltd. and Chairman, TANTRANSCO Ltd.
5. Thiru. Sudeep Jain, CMD, TEDA.
6. Tmt. M.P. Nirmala, Secretary to Government, Co-operation, Food & Consumer Protection Department, GoTN.
7. Thiru. M.C. Murali, Chief Electrical Engineer, Southern Railways.
8. Thiru. K.R. Thangaraj, Member, SAC.
9. Thiru. K. Kathirmathiyon, Member, SAC.
10. Thiru. N.K. Ranganath, Member, SAC.
11. Thiru. K. Alagu, Member, SAC.
12. Thiru. K. Kasthurirangaian, Member, SAC.
13. Thiru. R. Desikan, Member, SAC.

Special Invitee :

1. Thiru. Prashant M. Wadnere, Deputy Secretary to Government, Finance Department, GoTN.

Thiru K. Venugopal, Member, TNERC welcomed the participants for the discussion on Revision of Comprehensive Tariff on Wind Energy, Biogas and Biogasification based generation, Bagasse based co-generation and Biomass Power Plants. He, then, requested Thiru P. Muthusamy, Director (Engineering) to present the salient features on the Revision of Tariff on Wind Energy. Accordingly, Thiru P. Muthusamy presented the salient features of the proposed Order on Wind Energy.

Thiru. K. Venugopal, Member, TNERC then requested the SAC Members to offer their comment on the various parameters covered in the presentation. The views of the SAC Members are as under:

- **Tmt. M.P. Nirmala** stated that in Panchayats like Chinniyampalayam Village in Coimbatore District, the small capacity wind mills are used for pumping water, running the motor, illumination of street lights etc. She requested the Commission to encourage the small capacity wind mills. The Panchayats are not able to encourage renewable because they do not have any technical expertise. She suggested usage of rice husk for generation of energy from Biomass. She also suggested usage of human/animal wastes for generation of Biogas for running the power plants. The biomass unit near Tiruvallur with one Crore investment is a failure. They also approached IIT to sort out the issue.
- **Thiru S. Nagalsamy, Member, TNERC** stated that we are discussing the issues related with tariff and TEDA can be approached for technical assistance.

- **Thiru K.R. Thangaraj** stated that the existing practise of Banking for wind energy should be continued and also suggested for increasing the power purchase cost from wind energy to enable the Wind Energy Generators (WEG) to repay their loans obtained from Banks & Financial Institutions.

- **Thiru K. Kathirmathiyon** suggested for real time settlement for wind generators. When there is sufficient power, the Distribution Licensee supplies power to all consumers. But, during shortage conditions, industries draw power from banking and the common men do not get supply. He suggested to revisit the concept of banking. He also stated that reasonable price should be given for wind energy purchase.

- **Thiru S. Nagalsamy, Member, TNERC**, on the question of sale of wind energy stated that the WEG sell their surplus wind energy to TANGEDCO.

He also asked whether the Commission fix the rate or UI rate may be adopted for real time settlement.

- **Thiru K. Kathirmathiyon** stated that instead of banking the wind energy, amount can be settled to the generators. He also suggested that actual transmission loss should be collected from WEG for Transmission and Wheeling of Wind Energy. He further stated that TANGEDCO should not depend on wind energy since it is available only during the wind season.

- **Thiru R. Desikan** stated that a band should be fixed for purchase of wind energy from WEGs instead of single purchase price. He further stated that a floor price and ceiling price should be fixed by the Commission for purchase of wind power within which the licensee can operate depending on his requirement.

- **Thiru S. Nagalsamy, Member, TNERC** stated that if we have band, at what rate the distribution licensee will buy?

- **Thiru R. Desikan** stated that the Distribution Licensee may purchase the wind energy at competitive rate.

- **Thiru K. Venugopal, Member, TNERC** appreciated the point and stated that the bargaining ability of the Distribution Licensee will improve. He also stated that when wind energy availability is at its peak, the price in the Unscheduled Interchange (UI) Mechanism becomes low.

- **Thiru K. Alagu** stated that he supports the WEG on all aspects.

- **Thiru. N.K. Ranganath** stated that the insurance should be allowed on replacement value of machinery instead of a fixed percentage. He further stated that the working capital components should be reasonable. He also stated that the recovery of Infrastructure Development Charge (IDC) by TANGEDCO should be reasonable.

- **Thiru. M.C. Murali** stated that the Railways has fixed a target of 10% for purchase of energy from Non-Conventional Energy Sources (NCES) by the end of the year 2020. Of which, wind is the main source for power procurement from NCES. At present, Railways is having a wind energy power plant with a capacity of 10 MW. He questioned whether IDC should be incurred by the producer or by the buyer? He also suggested for payment of charges for extending the Banking facility, since wind energy is seasonally available.

- **Thiru. Prashant M. Wadnere** stated that CERC has fixed Rs.9 lakhs as O&M expenses and the escalation factor (5.72%) fixed by CERC is on higher side. Commission's methodology of fixing O&M is more flexible.

- **Thiru. K. Kasthurirangaian** stated that wind energy is available for 6 months in a year. The WEG produces energy required for one year in six months and the surplus is being sold to TANGEDCO. This surplus is saved in the form of Banking with TANGEDCO and is drawn at the time of requirement during non-wind season.

- **Thiru. K. Kathirmathiyon** stressed the need to pay for the surplus energy being sold to TANGEDCO within 30 days as against Banking.

- **Thiru. K. Kasthurirangaian** stated that MNRE stressed the need to utilise power generated through renewable energy sources. Like the case of reinsurance energy can be banked with other states which are in need during the wind season and can be taken back when our state requires the power during summer season. He requested that the Banking facility should continue. He further stated that bidding cannot be resorted by the

WEG since there is only one buyer (distribution licensee) in Tamil Nadu. Also, TANGEDCO has to pay the money in advance as against the present practise of delaying of payment for WEG.

- **Thiru. K. Venugopal, Member, TNERC** stated that during bidding other buyers (open access consumers) apart from TANGEDCO are also permitted to bid. Open access within the State has been allowed to all HT consumers with effect from 17-02-2010.

- **Thiru. Rajeev Ranjan** stated that Open Access is permitted by TNERC and it is in vogue at present in the State. Nobody is preventing the wind generator in selling their wind power to others. But, the WEGs are not in a position to sell particular quantity at particular time.

- **Thiru. K. Venugopal, Member, TNERC** stated that the problem is with regard to scheduling of wind energy.

- **Thiru. K. Kasthurirangaian** stated that while fixing the tariff the time value of money should be considered. The gold was sold cheaper in the yester years, which became costly now and therefore the tariff for wind energy should reflect and link to the time value of money.

- **Thiru. K. Kathirmathiyon** stated that linking of wind tariff to the time value of money will lead to problem to the end consumers.

- **Thiru. N.K. Ranganath** stated that escalation in cost should be there while fixing the wind tariff and it should not be indexed with gold.

- **Thiru. K. Kasthurirangaian** stated that the Banking period should be changed from June to May of every year. He further stated that forecasting and scheduling helps in regulating the Grid availability.

- **Thiru. R. Desikan** stated that the pricing of wind energy should be considered taking into account the enormous subsidies and grants given by the Central Government, World Bank, etc.

- **Thiru. K. Venugopal, Member, TNERC** stated that at the time of introduction of generation of power from wind energy Government has given subsidies to encourage WEG. Subsequently, subsidies may be withdrawn.

- **Thiru. K. Kasthurirangaian** stated that WEG claims either accelerated depreciation or Generation Based Incentive (GBI).

- **Thiru. Sudeep Jain** stated that bidding route can be explored for fixing of wind tariff. This will lead to competition from all the WEG - either big or small. There are multiple sellers of wind energy. Bidding can be done after identifying the geographical location. He further stated that the concept of Banking is not practically possible since electricity cannot be stored; it can only be consumed at the time of generation.

- **Thiru. Rajeev Ranjan** stated that wind energy creates more problems than the benefits accruing to the State. The wind power is not reliable. It does not posses quality also. The grid stability is hampered due to non-scheduling of wind power and reactive power. TANGEDCO is paying a heavy price for allowing Banking facility to the WEGs. It buys power in bulk from wind generators during wind season and the same cannot be utilised fully due to transmission problem and as such the surplus power injected to the grid gets no price due to UI mechanism. The neighbouring States are drawing power at that time without much cost. At the same time, TANGEDCO buys costly power during summer season when the WEGs are utilising their banked power. So in both ways TANGEDCO is at a loss and hence he requested that Banking should be dispensed with. Moreover, TANGEDCO pays huge price for grid instability for its unscheduled injection of power during wind season. He apprehended that there may be cartelisation by the WEG. We may adopt bidding for purchase of wind power, if there is no cartel among the WEGs. At present, the WEG can sell their power to any buyers within the State.

- **Thiru. K. Venugopal, Member, TNERC** stated that since there are more than 2000 generators, cartelisation is rather difficult.

- **Thiru. Rajeev Ranjan** stated that safeguards should be put in place while exercising competitive bidding.

- **Thiru. K. Kasthurirangaian** stated that Banking through traders can be explored.

- **Thiru. Rajeev Ranjan** stated that the purchase price of power in the Southern States is 3 to 4 times costlier than rest of the country. At present, TANGEDCO is paying Rs.14/unit for purchase of power from the market. Therefore the Banking facility should be revisited and should be dispensed with. As regards scheduling it is high time to do it now since technological solution is available at present. Also, forecasting techniques are also available. Installation of ABT meters should be done. This gets rid of scheduling problem. For evacuation of energy huge investments are required. Huge investments are also required for transmission of energy. Therefore, a healthy mix between wind energy and reliable power in the grid should be maintained.

- **Thiru. K. Venugopal, Member, TNERC** stated that manoeuvrability of grid should be seen. In an interconnected system of 1 Lakh MW generation, injection of 1000 MW of wind energy will not create any problem. But, injection of 1000 MW of wind energy in the SR grid with 30,000 MW generation will create problem.

- **Thiru. Rajeev Ranjan** stated that Harmonics produced by wind machines should also be seen. There are solutions to get rid of this problem but there is a cost attached to it. Scheduling is one of the issues during power purchase from wind mills.

- **Thiru. K. Venugopal, Member, TNERC** stated that scheduling of wind energy should be actively pursued.

- **Thiru. K. Kasthurirangaian** stated that power trading can be explored during wind season.

- **Director, (Transmission Projects)/TANTRANSCO** stated that the Commission should go for break-up of the capital cost.

- **Thiru Nagalsamy, Member, TNERC** stated that the wind mill cost was Rs.2 crore /MW when the capital cost of thermal power plant was Rs.3 crore/MW. On what basis TANGEDCO says the cost of wind mill should not be more than Rs.4 crore/MW.

- **Thiru. M.C. Murali, Chief Electrical Engineer, Southern Railways** stated that the manufacturers refused to quote the rate of wind mills. Something is hidden.

- **Director, (Transmission Projects)/TANTRANSCO** stated that nobody knows the exact capital cost. We may go for repowering of wind machines. Incentive should be given to those generators who go for better CUF.

- **Thiru. K. Kasthurirangaian** stated that the wind generators who opt repowering will get old tariff rate of Rs.2.75/unit.

- **Director, (Transmission projects)/TANTRANSCO** stated that with the assistance of Commission we can have separate policy for repowering. The present rate of interest will not be constant for 25 years. Interest rate should be restated once in three years and therefore should be re-visited according to the RBI rate.

- **Thiru. K. Venugopal, Member, TNERC** stated that since there are more number of WEGs, re-visiting of interest rate is not possible. He added that projection of interest rate for 25 years is difficult and cannot be done.

- **Thiru Nagalsamy, Member, TNERC** stated that the interest rate is not a big component and questioned how the future rate of interest can be assessed?

- **Director, (Transmission projects)/TANTRANSCO** stated that RoE of 15.5% post tax is prevailing elsewhere. When the capital cost is not correct, the O&M rate fixed based on the capital cost may also be not correct.

- **Thiru. K. Venugopal, Member, TNERC** asked what kind of technical standards available to fix the O&M cost. Also asked will there be any reduction in cost if the machines are Indianised. Whether there any Indian Standards issued by BIS for wind mills.

- **Thiru. K. Kasthurirangaian** stated that the wind mills may run at a wind density of 200 Watts/sq. m. But, type-3 machines in India can run even at low velocity of wind. The wind mill cost has gone up in the last one year.

- **Director, (Transmission Projects)/TANTRANSCO** stated that the cost of wind mill should come down. Scheduling charges should be levied on wind mill for their injection of power into the grid.

- **Thiru. N.K. Ranganath** stated that cost of wind mill may be known from the P&L account and balance sheet of the manufacturing company.

- **Thiru. K. Kasthurirangaian** stated that the CERC guideline of scheduling is applicable only to the wind machines of more than 10 MW capacity.

- **Director, (Transmission Projects)/TANTRANSCO** stated that the CDM benefits availed by the NCES generators should be considered while arriving at the tariff.

- **Thiru. K. Venugopal, Member, TNERC** asked whether the TANGEDCO has taken any steps to collect the CDM benefits availed by the promoters.

- **Thiru. N.K. Ranganath** stated that it may take years to get the benefits of the CDM. One can get the information from the website about the persons registered for CDM benefit.

- **Thiru. M.C. Murali, Chief Electrical Engineer, Southern Railways** stated that getting CDM benefits is a complicated process and the small generators may not go for CDM benefits.

- **Thiru. K. Kasthurirangaian** stated that it is too hard to get the CDM benefits and it's a difficult process.

- **Thiru. K. Venugopal, Member, TNERC** stated that if the availing of CDM benefits is difficult, do we need forgo the benefits. Such benefits should be availed now if difficulties are encountered.

- **Thiru. Sudeep Jain, CMD, TEDA** stated that TEDA initiated dialogue with the industries on availing the CDM benefits. TEDA can be a consultant on this issue.

- **Director, (Transmission Projects)/TANTRANSCO** stated that the wind generators can at least do some mock exercise on scheduling.

- **Thiru Nagalsamy, Member, TNERC** queried whether the WEGs have taken any efforts on this issue.

- **Thiru. K. Kasthurirangaian** stated that no progress has been made by CERC in enforcing scheduling and forecasting. CERC asked the MNRE to constitute taskforce to find out the ways to implement scheduling and forecasting. He also stated that group scheduling is possible by installing the ABT meters in the feeder. CERC regulation also says the same. TANGEDCO and TANTRANSCO may install ABT meters in all the feeders.

- **Thiru. K. Venugopal, Member, TNERC** stated that all generators should be scheduled.

- **Thiru Nagalsamy, Member, TNERC** stated that the Commission should look in to the interests of all the stakeholders. Generating company expects good return, Distribution Licensee expects firm power and the consumer wants lower tariff. In the early days, managing the wind energy was easier. But, it is difficult with the installed capacity of 6000 MW. Unless the Southern Region Grid is connected with the rest of the grid in India, problems in wind power evacuation will not be solved. Managing 6000 MW infirm power with 10,000 MW firm power will be difficult. Whereas, it will be manageable with 2 Lakh MW.

- **Thiru. K. Kasthurirangaian** stated that they always stress the central leaders to provide assistance in terms of money to solve the wind power evacuation problem in Tamil Nadu.

- **Thiru Nagalsamy, Member, TNERC** stated that wind power is surplus during the Period from June to November. There is a cost mismatch when the time wind energy is purchased through banking and allowing drawal when the cost of power purchase is more. The TANGEDCO has already reached the RPO of 9%. There is no need for them to buy wind power now. If wind power is purchased through bidding both the generators and the consumers will be benefitted. The cost ratio between the thermal and wind power plant is same even now when compared with the early days. Like re-insurance, the concept of re-banking is not possible since it involves cost element like transmission and wheeling.
- **Thiru. K. Kasthurirangaian** stated that the Distribution Licensee can supply the surplus power to traders and take back from them at a later date or can adjust on unit to unit basis with other parts of the Country.

- **Thiru. K. Venugopal, Member, TNERC** stated that corridor for transfer of electricity to other parts of the Country may not always be available and this should be studied in detail. He also read out the abstract of the letter received from the Principal Secretary/Energy Dept./GoTN., which states that the banking should be dispensed with and scheduling should be done by all WEGs duly installing the ABT meters.

He asked the Director/Engineering and Director/Tariff to make presentation on Biogas and Biogasification based generation, Bagasse based co-generation and Biomass Power Plants and the same were presented by the Directors. After the presentations, discussions were held on those topics.

- **Thiru. Sudeep Jain, CMD, TEDA** stated that clearance was given to 17 biogas projects to the tune of 75 MW and 40 MW gasification projects. But, only 7 biogas projects have been commissioned. So far, 165 MW of biomass power projects have been commissioned. Due to non-availability of feedstock, some of the generators have gone for coal. Further consent was given to install new projects to the tune of 52 MW and recommended for around 256 MW. But none of them have signed PPA.

- **Thiru Nagalsamy, Member, TNERC** asked the experiences of the generator regarding the tariff.

- **Thiru. Sudeep Jain, CMD, TEDA** stated that feedback of the generators is that the present tariff for biomass is not viable..

- **Thiru. K. Venugopal, Member, TNERC** asked whether the generators object to variable cost or fixed cost.

- **Thiru. Sudeep Jain, CMD, TEDA** replied that the variable cost is not in line with the market term. We want to know the actual cost in the market.

- **Thiru. K. Kasthurirangaian** stated that the power from these kind of sources should be encouraged.

- **Thiru. K.R. Thangaraj** stated that this kind of generation should be encouraged and reasonable tariff should be given to the generators

- **Thiru. K. Kathirmathiyon** asked the percentage of contribution from these sources.

- **Thiru. Rajeev Ranjan, CMD, TNEB Ltd. & TANGEDCO Ltd. and Chairman, TANTRANSCO Ltd** stated that percentage is not much.

- **Thiru. K. Kathirmathiyon** stated that there is no encouragement from TANGEDCO. He also stated that the fuel cost recommended by different stakeholders vary much.

- **Thiru. K. Kasthurirangaian** stated that this should be promoted duly considering the fact that there would not be any coal in the near future.

- **Thiru. N.K. Ranganath** stated that capital costs for biomass and Bagasse based co-generation is reasonable. But, there is vast difference in the capital costs of the biogas and Biogasification based power projects. The corporations may give the fuel at free of cost instead of charging.

- **Thiru. K. Venugopal, Member, TNERC** stated that considering the importance of poultry waste biogas project, Commission impleaded the Secretaries of Environment and Energy.

- **Thiru. M.C. Murali** stated that whether the co-generation power is fed into the grid.

- **Thiru Nagalsamy, Member, TNERC** stated that the sugar mills thrive because of the co-generation in the past 15 years.

- **Thiru. Prashant M. Wadnere, Deputy Secretary to Government, Finance Department, GoTN** stated that it is desirable to promote this kind of projects. But, the fuel price should be checked and to what extent the power from this kind of project is used should also be assessed.

- **Thiru. Sudeep Jain, CMD, TEDA** stated that the biomass power in the grid is very small when compared to the total energy mix. But, it creates lot of employment in the rural area, which has multiple effect on the society.

- **Thiru. N.K. Ranganath** stated that we have little experience in this kind of projects. It is better to adopt the technology faster.

- **Thiru. Rajeev Ranjan, CMD, TNEB Ltd. & TANGEDCO Ltd. and Chairman, TANTRANSCO Ltd** stated waste disposal should also be considered. Nowadays demand for Bagasse is more and acute shortage prevails. Even TNPL is not getting enough Bagasse. TNERC should look in to usage of coal in these stations. TANGEDCO welcomes this. But, scarcity of the fuel is the important issue. Things change in time. For example, demand for fly ash is more now, which was given free of cost earlier.

- **Thiru Nagalsamy, Member, TNERC** asked whether it is possible to check up the type of fuel used to find out the variable cost. Co-generation runs for 8 months in a year and for rest of the months it is closed. Hence, alternative fuels can be used.

- **Thiru. K. Venugopal, Member, TNERC** concluded the meeting with vote of thanks.

Annexure-IV

SUMMARY OF THE COMMENTS RECEIVED FROM THE STAKE HOLDERS IN THE STAKE HOLDERS HEARING HELD ON 08.06.2012

Annexure-IV

PROCEEDINGS OF THE STAKE HOLDERS HEARING HELD ON 8TH JUNE 2012

The Secretary Tamil Nadu Electricity Regulatory Commission, at the outset welcomed all the Stake Holders and informed that the tariff order for Wind Energy Generation dated 20th March 2009 has been extended upto 30th June 2012. He also informed that although the stake holders have already given their written submissions, since some of the stake holders desired to present their views personally before the Commission, this Stake Holders hearing has been arranged. He requested the stake holders to present their views.

1. Dr. K. Venkatachalam, Chief Advisor, Tamil Nadu Spinning Mills Association

- The revision of tariff for Wind Energy Generators (WEGs) was long due. The order is due from 1st April 2011.
- Subsequent to the Wind Order of the Commission new expenses are being incurred by the WEGs. They are Infrastructure Development Charges (IDC) – which has been restored by the Appellate Tribunal for Electricity (APTEL), O&M Charges being levied by TANGEDCO, taxes levied by the Government of Tamil Nadu viz., Panchayat Taxes
- The WEGs have been divided into three groups:

  Group I: WEGs commissioned before 15.5.2006

  Group 2: WEGs commissioned after 15.05.2006

  Group 3: WEGs commissioned after 19.9.2008
- We have calculated the capital cost at Rs.700 lakhs per MW.
- We have also calculated the price per unit at Rs.5.32 for the WEGs commissioned after 1.1.2012.
- As there is no order in force, we request to fix the price from 1.1.2012.
- Banking facilities offered by the Commission has been reconfirmed by the APTEL and the High Court of Madras has dismissed the writ

petition filed in this regard. Therefore, we request the Commission to continue banking facilities which is an accrued legal rights of the WEGs not only for the present WEGs but also for the future WEGs that are going to be commissioned.

- Ministry of Finance, Government of India, has withdrawn the scheme of Accelerated Depreciation for WEGs with effect from 1.4.2012. Therefore, investment in this sector has begun to decrease. Therefore the Commission may consider to grant additional incentives for encouraging this sector.
- Even after the Order of the Commission dated 15-5-2006 which has been reiterated by the Commission in its Order dated 20-3-2009, there is lot of disputes between TANGEDCO and the captive consumers on adjustment between higher slot to lower slot.
- TANGEDCO is allowing adjustment only for the current generation and not for the banked energy in the banking account. Adjustment of higher slot for lower slot consumption may be allowed for current generation and also for the banked energy.
- Wind Energy tariff rates can be fixed on a yearly basis as some WEGs are missing out due to the cut off date change.
- To this, Member-I pointed out that even if cut off date is fixed on a yearly basis 31st March / 1st April will be the cut off date.
- Thiru. D. Venkatachalam stressed that investments in this sector happens at any time during the financial year during the year and hence a single date like 15th May is not helpful. Therefore, the Commission may consider on a yearly basis.
- Regarding renegotiation of agreements, except tariff, most areas remain the same. Therefore, there is no need to revise the agreement except particular clauses. Agreement can be signed for those WEGs who want changes in certain clauses.
- There are many delays by TANGEDCO to settle the payments for the unutilized / banked units. After 31st March 2011 no encashment has

been made by TANGEDCO. Therefore, he suggested that payments towards unutilized / banked units could be adjusted out of the CC bills payable by the respective captive consumers.

- He suggested that interest on delayed payments which has now been fixed by the Commission at 1% per month may be increased to 1.5% or 2% per month since TANGEDCO is collecting BPSC @ 1.5% on the CC bills.
- Even though the State is facing severe power crisis, most WEGs are being backed down inspite of lifting power holiday and reduction of load shedding. Therefore the Commission may order compensation to be paid by TANGEDCO whenever the WEGs are backed down.
- TANGEDCO is not providing timely statements on the unutilized / banked units by the WEGs. Hence, he requested the Commission to order TANGEDCO to provide monthly statements on the unutilized / banked units by the respective WEGs.
- The current banking period has been fixed by the Commission from the April of current year to March of the next year. He suggested that considering the wind season, the banking period may be changed to June of the current year to the May of the next year so that banked energy can be effectively adjusted and litigations may be avoided.
- As per Order No.3 dated 15.5.2006, the readings shall be taken on the same day both at the generating point and consumption point. However, this is not being followed by TANGEDCO.
- Inspite of the mandate of the Supply Code and the Orders of the Electricity Ombudsman that the statements to captive consumers have to be given on a monthly basis by TANGEDCO the same is not being received.
- As regards fixation of ABT meters he informed that during the meeting at TANGEDO it was agreed that considering the complexity of fixing the ABT meters the same shall be fixed at the sub-station level. The order of the High Court of Madras stipulates that ABT meters shall be

installed, Therefore TANGEDCO has to file a petition before the Commission in this regard.

- The CDM market has come down drastically in the Europe. Licencee has no role to play in enjoying the CDM benefits as they have not made any investments. So the Commission may withdraw its orders regarding sharing of CDM benefits as TANGEDCO is unjustly enriched with the current formula.
- TANGEDCO is currently issuing conditional NOCs for commissioning WEGs. There is no such provision in the Commission's order regarding conditional NOCs. Hence, TANGEDCO may be restrained from issuing such conditional NOCs.
- He concluded that WEGs may be paid a tariff of Rs.5.32 per unit from 1.1.2012.
- Member-I requested the Stake Holder to present his views on competitive bidding and scheduling of wind.
- Dr. Venkatachalam stated that wind being infirm in nature the tariff cannot be determined through competitive bidding but the same has to be fixed by way of tariff order of the Commission. By Order No.1 dated 20.3.2009 the Commission has permitted third party sale of wind energy. However, there has been no development in third party sale since wind being infirm in nature. There is also no guarantee for power injection like the thermal plants.
- Three factors viz., availability of wind, availability of machines and grid availability decides the CUF.
- The National Electricity Policy also stipulates that the time is not ripe for competitive bidding in NCES.
- Considering importance of the green power and RPO competitive bidding need not be insisted and the proposal may be dropped.
- Scheduling can happen only if we can predict the wind pattern based on new technologies. Whenever such technology is made available we will be able to schedule wind generation.

- Member-II remarked that since the installed capacity has reached 7000 MW in the State of Tamil Nadu, whether preferential tariff is still to be continued?
- Dr. Venkatachalam informed that growth rate alone cannot be taken as the yardstick for introducing competitive bidding. Although the quantum of NCES energy has explored to a large extent in Tamil Nadu there is much more potential to be explored. Further, since wind being infirm in nature and third party sale has not become a reality, preferential tariff has to be continued.

2. Thiru. Regurajan, Secretary, Southen India Mills Association (SIMA)

- He stated that the Commission in its earlier order had fixed the capital cost of WEGs at Rs.5.35 Crores per MW. Now since there is a considerable increase in the land cost, registration charges, panchayat taxes of Rs.10 lakhs per MW and IDC charges levied by TANGEDCO the capital cost may be increased to Rs.6.5. to 7 Crores per MW.

- CUF may be decreased to 25% from the present level 27.15%.

- Derating could be considered at the rate of 1% per annum after five years.

- Interest rate shall be at the market rates.

- Life of WEGs to be fixed at 15 years. MERC has fixed the life of WEGs at 13 years.

- Member-I informed that IEC specifies the life period of atleast 20 years. What is the rationale for reducing the life to 13 to 15 years?

- Thiru. Regurajan stated the Commission may fix the life period considering the rationale.

- Member-II informed that as there are criticisms on the cost of the WEG, the stake holders may give the break up details of the cost of various components of a WEG so as to arrive at the exact capital cost.

- To this, Thiru. Regurajan agreed to submit the break up details.

- O&M charges works out to 15% of the 85% of the capital cost. Land and civil works are computed at 1.1% of 15% of O&M charges. We have worked out the various components of cost for a particular industry and the same shall be submitted to the Commission.

- Based on the assurances given by the Government of Tamil Nadu and TANGEDCO on banking arrangements huge investments has been made by textile industry in wind sector. Therefore banking facilities should be continued.

- There is an apprehension amongst investors that banking is likely to be removed.

- The Hon'ble Commission in M.P. No.42 of 2008 has in fact appreciated that wind mill generation has helped TANGEDCO in the hours of power crisis.

- MERC has also allowed banking for self consumption in their order.

- Scheduling of wind generation is mentioned in the IEGC 2010.

- Some research organizations are exploring of possibility of developing technologies for scheduling of wind. Hence, scheduling may be considered in the next tariff order.

- There need not be any renegotiation of agreement. Draft Energy purchase and wheeling agreement can be prepared and circulated among the stake holders and subsequently be vetted by the Hon'ble Commission.

- Competitive bidding may be considered only after the problems such as availability of adequate evacuation facilities, lifting of R&C measures, connecting the southern grid to the national grid and lifting of restriction under Section 11 are solved.

- Though the wind year is considered by the Commission as from April of the current year to March of the next year and since there is no wind available in March we are not able to utilize the benefits of banking facilities. Hence, the banking period may be changed from June of the current year to May of next year.

- As regards adjustment between high slot in lower slot Order No.1 of 2009 dated 20-3-2009 seeks certain clarification for which the matter is still pending before the High Court. This time the Commission may explicitly clarify the same in the forthcoming order.

- Wind Tariff Order to be effective from 1.4.2011.
- The Commission may clarify as to whether the Security Deposit is calculated by taking into account only the monthly CC charges or the monthly CC charges together with penalty amount levied for excess demand and energy charges.

3. Thiru. A. Ponnambalam, General Manager, Orient Green Power Company Limited, Chennai.

- Transmission charges have been exorbitantly increased.
- WEG are being backed down even when the demand of energy is high in the State.
- WEG who opt for REC on paying normative charges should be exempted from backing down.
- CDM benefits should go to the developer in full.
- Tariff should be made effective from 1.4.2011.
- Banking should be continued without treating the concept as promotional.
- The Commission may recommend to the GoTN to exempt NCES developers from paying electricity tax as already pointed by the High Court on which orders are reserved.
- Average Power Purchase Cost for REC mechanism should be revised for the next year and notified.

4. Thiru. T.S. Jayachandran, Council Member, Indian Wind Power Association (IWPA)

- As all expenses are increasing cost of escalation has to be considered. Accordingly the rate of sale to TANGEDCO has also to be increased.
- There should be annual escalation irrespective of vintage of windmills.
- There is inordinate delay on the part of TANGEDCO in making payments as a result many WEG developers are in a state of bankruptcy. They are on the verge of becoming NPAs since timely payments are not received.

Hence there should be a time limit within which payments should be made.

- Banking facility to continue as investments in this sector have been made based on the assurances given by GoTN and TANGEDCO. If the same is withdrawn it amounts to promissory estoppel. Further new investments in this sector will not take place in future.
- As accelerated depreciation has also been withdrawn this facility of banking should not be stopped at any point of time since the State is heavily dependent on wind power.
- REC benefits should be made available to wind investors without the three year holiday period. There should not be any denial of REC even to captive users.
- Slot to slot adjustment is only a normal banking facility and it cannot be treated as concessional banking facility.
- Commission can decide and issue orders on the normative transmission and wheeling charges which is agreeable for them.

5. Thiru. R. Sivakumar, Sivasugam Consultancy, Chennai.

- He represented the consumers of the State and stressed on wind power for the socio economic development of the State.
- Although wind energy should be developed, wind energy is dependent on wind flow and hence the Government can develop solar energy wherein there is abundant sun shine.
- WEGs should utilize the vacant places in their farms to install solar panels.
- He questioned as to why there were different groups of WEGs with different tariffs. The rates should be fixed on a scientific approach.
- Agreement should be common for all the machines.
- After the introduction of Open Access Regulations 2005, the finances of the TANGEDCO has been severely affected.
- He questioned why there is a difference in treating slot wise adjustments.
- He questioned why the loss component is considered as 5%.

- He said promotion of green power should not be a concern of TANGEDCO. It is wholly the responsibility of the Government to develop green power by giving adequate subsidies.

- Transmission, Wheeling charges and losses are to be merged.

- He informed that the concept of banking and the encashing of the unutilized energy were not introduced for the purposes of promoting NCES. He said that initially TNEB allocated funds for purchase of energy from WEG for the following month. This was termed as banking i.e. banking of funds. Consequently when the financial position of TNEB started deteriorating, TNEB instead of allocating funds for the purchase of energy from WEG for the following month, banked the unutilized energy in the form of units.

- While the facility of banking was given to WEGs, why was the same not given to biomss?

- Every year TANGEDCO incurs a loss of Rs.1200 to 1500 Crores on account of banking.

- When banking was introduced OA Regulations was not notified.

- The Commission is not creating competition in this sector on lines of the telecom sector. TANGEDCO, as a wholesale trader should purchase the entire amount of energy generated by WEGs and sell the same to the needy consumers.

- Banking period should be introduced from November of current year to October of next year or for a calendar year.

- The same agreements and same rates to continue.

6. Tmt. Shruti Bhatia, VESTAS, New Delhi.

- Already made written submission on 15th September 2011. As CERC regulations on the terms and conditions for determination of tariff for renewable energy for the period from 2012-17 have been notified in February 2012 she requested to be allowed to make changes in their present submissions.

- She requested to align the tariff with CERC regulations and expressed views on the following parameters.

(a) Capital Cost

- CERC regulations specified the capital cost at Rs.575 lakhs per MW. She recommended that since there is considerable increase in the cost of plant and machinery, cost of land, cost of registration, introduction of Panchayat Taxes and introduction of IDC charges by TANGEDCO (not incorporated in capital cost earlier), the capital cost for 2 MW machines may be fixed at Rs.6 – 6.5 Crores per MW. She said that they can submit the break up details of the cost which has also been submitted to the CERC.

(b) CUF

- She requested that the CUF may be decreased to 23 to 25% from the present level of 27.15 % for the class III and IV sites where generation is much lower.
- Derating 1% for every10 years.
- Commission may align the same O&M expenses as per CERC norms.
- Commission may align loan tenure at 12 years as per CERC norms.
- Commission may allow rate of interest of 12.3% as per CERC norms.
- Working capital components may also be allowed as per CERC norms.
- Interest on working capital may be allowed at 12.8% as per CERC norms.
- Depreciation may also be allowed as per CERC norms @ 5.83% for the first 12 years and 1.54% for the remaining years.
- Return on Equity may be allowed at 22.45% being the weighted average of the norms of CERC.
- Banking facility may be allowed as per earlier Tariff Order of TNERC which will bring more investments into this sector.
- While discussing Transmission and Wheeling Charges, she requested the Commission to remove the Cross Subsidy Surcharge and retain other charges.

- As regards payment security the existing procedures may be continued but the rate of interest on delayed payments may be raised to 1.5% per month as it is prevailing market rate.
- The tariff may be cost plus single part and levelized for 20 years. The same should be implemented from 1.4.2011.
- Control period of 2 years may be retained.
- VESTAS is fully supportive of scheduling and forecasting of wind. In fact we have undertaken trials in this field for the past two years. Our major concern is regarding the determination of error. In India the error is determined on Absolute Error basis, whereas worldwide it is determined on Mean Average Error Basis. Absolute Error Basis does not come within the limits of regulations and hence it is suggested that the Mean Average Error Basis may be considered for determination of error.
- Impact of UI mechanism on wind causes loss of revenue to WEGs.
- There are various operational challenges faced by WEGs due to which CERC has requested MNRE and accordingly a Task Force comprising NLDC, TRANSCO and WEGs etc. has been constituted to look into these issues.
- We have started scheduling of wind on mock basis and mock trials are being carried by submitting the data to SLDC manually eight times a day. This is a causing a lot of operational difficulties. The report by MNRE is expected by the end of June.
- With regard to introduction of competitive bidding we wish to inform that Rajasthan ERC has withdrawn their amendments to their RE Regulations. The matter is also subjudice in the Supreme Court.
- TNERC in their 20.3.2009 order observed that wind energy cannot compete with conventional generation on cost effective basis.
- MNRE in their presentation on 16th June 2011 before FOR stated the CERC norms are to be adopted for determination of RE tariff.

- Under Section 3 of Tariff Policy, there is a need for guidelines for competitive bidding to be notified by the Central Government. This has been noted by Rajasthan ERC.

- Wind being an infirm power cannot be assessed like conventional projects.

- If a Case 2 model is adopted for WEGs, it can be successful.

- Globally feed in tariffs are prevalent. Bidding offers low visibility and transparency with maximum risk. A study by Bloomberg states that there is 58% chances for failure in competitive bidding.

- Member-I sought for various classes of wind turbines in India and which class of Wind Turbines does VESTAS supply?

- In response it was clarified that VESTAS supplies class 3 turbine as per IEC 61400 standards.

- Member-I questioned if there are any corrections made to these turbines to suit Indian climatic condition and as a result the impact on cost?

- In response VESTAS replied that though the turbines have been localized there are no variations for the turbines when they are supplied to various States of the country. Configuration is required to be done separately.

- As regards impact on costs we can revert on this issue separately after taking inputs from their technical department.

7. Thiru. Satish Rawal, Simran Wind Project

- Commission to consider time value of money and link the tariff accordingly.

- Capital Cost: We are incurring extra IDC in Tamil Nadu and therefore Rs.30 lakhs per MW is to be added to the capital cost.

- O&M: Manufacturers charges Rs.10 lakhs per MW. TANGEDCO is charging Rs.1.60 lakhs per MW for maintenance. Therefore the Commission may consider to take the break up from the manufacturers so that charges can be fixed practically.

- The Commission may consider the same PLF as in its Order No.1 of 2009.

- Time of factor is to be considered while arriving at the rate of interest.

- Commission may give clear directives on the cooling period of 3 years for REC and also consider that those WEGs willing to pay normative charges may be covered under REC benefits.

- We recommend a tariff of Rs.6.40 ps as per CERC.

8 Thiru. S. Gandhi, PESOT

- Electricity Act stipulates that electricity should be sold on commercial basis.

- Ensure a reasonable cost burden to the consumers. Any additional cost burden should be compensated by way of tariff subsidy by the Government.

- We cannot compare the tariff rate available for wind energy of other States with that of Tamil Nadu since we have already reached the maximum possible generation.

- In a Grid of 10,000 MW, 7000 MW is accounted by wind. Therefore wind is being backed down to maintain voltage profile.

- A lot of concessions is being given by Government of India for WEGs. WEGs are also claiming the investments made as a deduction of Income Tax. Therefore TANGEDCO cannot support the WEGs.

- He also suggested that the Southern Grid can accommodate the excess wind power.

- Reactive power should be compensated at any cost.

- Wind rates should be affordable to the consumers. If not, WEGs can sell to third parties if the rate is not affordable. However, the tariff should not increase beyond Rs.3.39 per unit. Even the present rate of Rs.3.39 per unit is on the higher side.

- Go for bidding within the State.

- Banking is not a statute. The Act does not provide anywhere for banking because it is infirm power. TANGEDCO is losing Rs.650 Crores per year due to banking facility.
- Cheaper hydro power cannot be put into use as we are accommodating wind power
- Commission should not insist on TANGEDCO to procure more than 9% of power from WEGs.
- Let the licensee and WEGs decide on banking amongst themselves. If there are any disputes they can come to the Commission.
- Calculation of CUF should be based on working machines and not idle machines.
- Capital Cost of WEGs is less than Rs.4 Crores per MW. Therefore, the Commission may cap the capital cost at Rs.4 Crores per MW. The Commission has capped the cost of Cuddalore Project and hence the same can be done for the WEGs also.
- WEGs should not export VAR component on TANGEDCO.

9. Thiru. Michael Bonke, Varuna Energy and Water Private Limited

- He stressed on the importance of preserving the ecology and the environment by resorting to wide usage of NCES. If electricity market is liberalized the sector will yield good returns and also lead to a stabilized grid.
- As India has a big advantage in the field of NCES, if the sector is not regulated the economic will not improve.
- Backing down of wind is a hindrance to investment.
- Grid cost is under estimated.
- The inflation rate should be considered while arriving at the tariff.
- WEGs are not permitted to avail concessional wheeling charges and REC at the same time.
- Commission may fix the tariff by giving an additional 15% for non subsidized tariff.

10. Thiru. Manmathan, Project Manager, Premier Spinning Mills, Coimbatore.

- Their mills count for nearly 110 MW for their self consumption.
- Instead of 4 levels of tariff, the Commission may fix a uniform rate for all the WEGs irrespective of their date of commissioning.
- Revised order to be made applicable from 1.4.2011.
- Time value of money to be considered.
- Capital cost may include new taxes by the Government, IDC, O&M charges of 1.5 lakhs per MW charged by TANGEDCO.
- Commission has ordered interest on delayed payments in the previous tariff order. However, in reality no interest on delayed payments is being made by TANGEDCO. Therefore, as an alternate proposal as per wind order of 2009 it is suggested that electricity credit can be given and the generator can have an option to encash it as per their requirement.
- There is no purpose in redoing the Energy Wheeling Agreement (EWA). The existing EWA may be continued with all the benefits leading to lesser litigations.
- He requested that an annexure may be provided with the HT bill with details of all calculations so that it is self explanatory and avoids confusions among the officials of TANGEDCO, who are subject to frequent transfers.
- He requested the Commission to conduct workshops and training seminars on the tariff orders of the Commission.
- Banking facility was a promissory benefit extended by the Government of Tamil Nadu and TNEB. On this promise huge investments have been made in this sector. The Hon'ble APTEL also ruled that banking facility is a contractual obligation. Therefore banking may be continued so that generation of wind is maximized.
- Banking period may be considered from May of the current year to the April of next year.

- As regards scheduling we may await the report of the Task Force. We are agreeable to fix the ABT meters at the sub-station level as decided in the Co-ordination Meeting with the TANGEDCO. Later we may extend the ABT meters to individual generators.

- REC should be made applicable even to captive generators. There is no clarity.

- REC mechanism may be permitted without cooling period.

- RPO obligation should not be applicable to the captive WEGs.

- He suggested that the Commission may circulate the draft order, draft wheeling agreement and draft purchase agreement for seeking comments from the stake holders before finalizing.

- To this Member-I, remarked that there is no practice of issuing the draft order to the stake holders for their comments. Enough opportunity has been provided by way of inviting comments/views from the public, stake holders etc. Thereafter written submissions were invited and received and public hearing for stake holders is now conducted. Therefore finality will not be achieved if the draft order is circulated. There are plenty of cases in the ATE, High Court and Supreme Court and the matters are subjudice. Subject to these issues the Commission will come out with the final order.

11. Thiru. Mahesh Vipradas, Indian Wind Energy Association (InWEA), New Delhi.

- Competitive bidding has two aspects viz., Regulatory aspect and Legal Aspect

- As per Regulatory aspect the Commission has to only adopt the tariff.

- On the Legal Aspect, it is not the role of the Commission to prescribe Competitive Bidding. There is a requirement of having competitive bidding guidelines and the bidding documents which has to be notified by the GOI. These views were also presented to the Rajasthan ERC. We are not against competitive bidding per se. We want the bidding documents to be prescribed by the Government of India. In the absence of this and other incentives such as withdrawal of Accelerated Depreciation this is not the right time to introduce competitive bidding.

- Karnataka ERC wanted to go for competitive bidding as directed by the APTEL. This was stayed in the in the Supreme Court in the case of Karnataka ERC vs Renewable Energy Association. The matter has not yet been decided by the Supreme Court till now. We are attaching the copy of the stay order in our written submissions.
- Member-I remarked if suppose no document is issued by the GoI for the next five to ten years do we postpone the competitive bidding. If the Commission issues a general document, WEGs can take deviations and a revised document will emerge. Is this a valid argument?
- To this Mr. Mahesh responded that bidding documents have to be issued by the GOI. Now there is also a committee constituted by the GOI in this regard.
- To this Member-I stated that the Commission is not undermining the authority of any agency.
- Mr. Mahesh clarified that wind investors do not have any confidence in bidding.
- The Task Force has been given time till the end of June to come out with the report and accordingly scheduling of wind can be implemented. The same can be incorporated into the State Grid Code.
- As there is no statute for ABT and UI in the Act, there is no statute for banking. Commission in its order No.1 of 2009 continued and supported the banking. Hence, banking facility is to be continued.
- Delay in payments by TANGEDCO is increasing. The Commission had advised WEGs to raise invoices but no payment is forthcoming. Hence, we request that six months receivables may be included as a component of working capital.
- To this Member-I remarked that if the payments improve can the period of receivable be reduced.

- To this he requested for creation of a Regulatory Fund for the payments that are delayed for less than one year.

- The Regulations of the Commission stipulate a control period of two years therefore the new order is to be implemented with effect from 1.4.2011.

- The Commission may consider capital cost of Rs.5.75 Crores per MW.

- The cost of the WEG depends on the height of the turbines which is between 80 to 100 meters to capture more wind. Therefore as the costs have increased we may be permitted to submit revised figures by 15th June 2012.

- To this Member-I said that the submissions may be sent by 12th June 2012.

12. Thiru. S.Akshayakumar, Director (Transmission Projects)/ TANTRANSCO

- We share the concerns about safeguarding the environment and promoting green energy.

- TNEB had already started initiatives in this field in the 1980s

- 30% of the energy requirement of the State is met by wind which amounts to 70 to 75 million units per day.

- As we are a corporate body we need to run our business on commercial lines.

- The deficit in the State is 4000 MW. Therefore we have consumed the maximum of wind power.

- Next year since we are expecting more capacity additions we may not be able to consume the entire wind energy generation.

- CDM benefits should be used by the wind generator and built into the capital cost. TANGEDCO is not in need of the benefit of CDM.

- As per Section 10(1) of the Electricity Act we are requesting the investors to put up their own transmission infrastructure. Therefore we are not collecting IDC any more.

- Capital Cost of the WEGs is comparable with thermal power plants. Small capacity thermal plants where the capital cost is not more than 5 Crores per MW can be compared to the WEGs.
- The Commission may consider the life of machinery at 20 years for fixing the tariff.
- Member-II enquired to as whether TANGEDCO has made any efforts to find out the actual cost of the various components of WEG as TANGEDCO are having their own demonstration WEGs since there is considerable criticism on the cost of the WEG.
- To this TANGEDCO responded that they had not made any efforts to find out the break up details. WEG of TNEB were promoted years back and hence no specific details are available.
- The price for wind energy generation cannot be fixed at Rs.3.39 per unit as it is based on the usage. When there is grid instability TANGEDCO is not able to utilize power generated from WEG fully, as a result TANGEDCO is forced to offer this power to the neighbouring States at Zero price. On the other hand when there is a peak demand for power, wind power at that time is not available, as a result TANGEDCO is forced to buy costly power from other sources.
- When base load increases TANGEDCO finds it difficult to consume the entire power generated by WEGs. Therefore we need to devise ways to utilize and store such energy. Accordingly these costs have to be considered while fixing the tariff.
- Banking was basically introduced to manage cash management of TNEB. No other NCES generators are enjoying banking. TANGEDCO is resorting to load shedding for the general public to fulfill the obligation of supplying power to captive consumers as per banking. Therefore banking has to be withdrawn prospectively / retrospectively.
- As regards adjustment from higher slot to lower slot, TANGEDCO faces the similar problem as that of banking and is not acceptable. Hence the same has also to be withdrawn

- Regarding the views of TANGEDCO on scheduling TANGEDCO referred to a news item in Business Line wherein Mr. Kasturirangian, Chairman, IWPA, stated that wind power is no more an infirm power. Therefore, TANGEDCO feels that there should be no problem in scheduling wind. Scheduling should be made mandatory and it can begin with mock trials.
- Views on banking period do not arise as TANGEDCO does not support banking concept as such.
- Regarding conditional NOC TANGEDCO wanted to know whether the wind promoters share the same opinion.
- To this Member-I queried whether conditional NOC would be relevant if Accelerated Depreciation is withdrawn?
- In response TANGEDCO informed that they are not sure and they would not insist on conditional NOC if WEGs state that it is not required.
- On REC benefits TANGEDCO is of the opinion that two concessions cannot be given simultaneously. If the wheeling charges is reasonable , REC can be given.
- Member – I sought the views of TANGEDCO on voltage profile and VAR injection.
- In response, TANGEDCO stated that older WEGs may be consuming more VAR. Chennai is also facing load shedding due to voltage issues which is mainly due to over loading of sub-stations, backing down of generators etc. TANGEDCO expressed their willingness to work with the developers for conducting a study to enable TANGEDCO to maintain voltage levels.
- Member-I questioned what would happen if Southern Grid gets connected in 2014 to the NEW Grid? What are the changes expected then?
- TANGEDCO responded that though capacity addition to the tune of 4000 MW would be added to the grid, still there would be a power deficit beyond 2014. However, with the capacity of Andhra Pradesh can be utilized. One line of 2500 MW will be operationalized by February – March 2014.

- Now the tariffs are high. However, it is expected that the rates would stabilize by 2014.
- In North India investors are not able to sell power to the Southern States. This problem is expected to be solved after inter connection of the Southern Grid.

13. Thiru. G.Rajagopal, Director (Finance), TANGEDCO

- He stated that lots of facilities are being given to WEGs as they are Green Power whereas his organization is in deep red.
- TANGEDCO has huge accumulated losses.
- As TANGEDCO is registered under the Companies Act it can no longer be a service industry and it has to be necessarily run on commercial lines.
- The tariff determined by the Commission cannot compensate the accumulated losses for TANGEDCO.
- TANGEDCO is losing Rs.1000 Crores per annum on account of the various concessions such as lesser T&D loss, banking, penalities etc to WEGs.
- If the banking is continued by the Commission the consumption of WEGs should be adjusted on daily basis without carry forward as TANGEDCO is losing heavily due to banking.
- If banking is allowed it should not be permitted between January to May as power is not available.
- TANGEDCO gets a rebate from CGHS / IPPs when they make payment within 60 days. It is only after 60 days, penalty is being levied. Similarly TANGEDCO requested that 90 days time could be given for making payments to WEGs. As such if this is approved the interest on delayed payments may be dispensed with. Accordingly payment security mechanism also need not be considered.
- Since TANGEDCO is heavily losing on account of the Deemed Demand Concept the same may be dispensed with and they may be

permitted to collect Demand Charges based on the sanctioned demand.

- T&D loss of 5% cannot be accepted as the Commission in its tariff order had specified the T&D loss as 21.34%. Therefore the actual T&D losses should be specified in this wind tariff order for the transmission of power from the WEGs.
- Transmission and Wheeling Charges is to be considered not less than 50% as compared to the conventional producers.
- Some textile mills have already got a debt restructuring package from the Government, however TANGEDCO is in much more distress. Therefore the Commission should not consider any concessions for promoting green power.
- There is no logic in fixing the capital cost of WEGs at Rs.7 to 8 Crores per MW since four or five manufacturers have formed a cartel for jacking up the prices. Therefore the capital cost may be equated to conventional plants and fixed to Rs.4 to 4.5 Crores per MW.
- Competitive Bidding may be resorted to source equipments for the WEGs.
- The Commission may consider the time value of money while fixing the tariff.
- TANGEDCO finally expressed that if major concessions are continued to the WEGs, TANGEDCO would finally become a NPA.

Concluding the Stake Holders hearing, Member-I informed that there would be no further discussions or submissions from the stake holders in this regard and the Judgment is reserved.

WRITTEN COMMENTS OF THE STAKE HOLDERS WHO WERE NOT ABLE TO OFFER THEIR VIEWS IN THE HEARING HELD ON 8TH JUNE 2012

1. Prof.K.Kasthurirangaian. IWPA

- **Capital cost** : **Rs. 6.33 Crores/MW** may be considered due to increase in cost of wind turbines with larger rotor diameters and higher towers being introduced to suit low wind regimes which are efficient.
- **CUF**: **18% to 22%** since good wind zone has been utilized and the left over wind zone is only low wind zone.
- **De-rating of machines**: Based on generation of installed wind mills, the rate of de-rating has to be amended in view of crowding of WEGs, age and life. De-rating at **1.5% per annum after 10 years**.
- **Dept Equity Ratio**: **70:30**
- **Term of loan**: **Moratorium of 2 years** to be provided considering the delay in payments by TANGEDCO and the evacuation problems.
- **Rate of interest**: The present borrowing rate for obtaining term loans is not less than **14%** per annum and the same should be factored here.
- **RoE**: **19.85% pre-tax return**
- **Life period: 15 years** since technically upgraded machines are acpable of generating more units resulting in more wear & tear.
- **Depreciation rate: W**ithdrawal of Accelerated Depreciation by GoI and the increased wear and tear due to frequent baking down instructions requires increasing depreciation rate to **6%.**
- **O&M Expenses: 2.5%** due to escalation in overall cost
- **Insurance:** To be increased to **1%** due to increase in the cost of spares and cost of damages/breakdowns
- **Working Capital:** TANGEDCO's delayed payment and WEGs loan repayment are to be considered while deciding on this issue
- **IDC**: The existing provision may continue
- **Banking**: (i) Banking provision to be continued to encourage consumers' participation. It gives TANGEDCO a better management tool and is used

for immediate generation and sale during peak hours at a higher tariff and enabling to get immediate funds resulting in saving interest. TANGEDCO to be advised to do re-banking.

(ii) 5% to continue. Clarification may be provided as to what are concessional and normative charges.

(iii) Banking period from 1st may to 30th April.

(iv) Slot wise adjustment irrespective of date of installation to be permitted

- **Transmission and wheeling charges**: 5% to continue. Clarification may be provided as to what are concessional and normative charges.
- **Cross subsidy surcharge**: To be phased out as done in several states like Maharashtra, UP and AP
- **CDM Benefit**: All efforts and expenditure are undertaken by developer alone and therefore sharing of benefits should be avoided.
- **Reactive power charges**: Same provision to continue.
- **Grid Availabilty Charges**: Existing level of charges to continue
- **Adjustment of generated energy for captive use**: Can adjust as LT or HT consumer. Baking and wheeling provision to remain the same.
- **Scheduling and System Operation Charges**: Existing level of charges to continue
- **Billing and Payment**: Procedure with time limit to be evolved to clear old dues with interest. Current dues shall be paid with interest within 7 days. Interest rate to increase on time scale. Court orders shall be given due weightage.
- **Payment security and Security Deposit**: Same to continue
- **EPA & EWA**: Format, period and option to exit. Same to continue
- **Scheduling of wind energy**: Though infirm, It should be accepted but with guidelines from expert body of CERC and consideration in imposing penal provisions since we are in the developing stages regarding this technical aspect.
- **Other Issues:**

- **Must Run Status:** TANGEDCO should ensure 100% grid availability
- **Infrastructure:** TANGEDCO shall complete the infrastructure works on time bound basis through joint venture with private parties.
- **Tariff:** To reflect true value of money, uniform tariff is to be fixed for all WEGs irrespective of period of installation since the quality of energy is the same. It shall not be flat for 20 years. To compensate ever diminishing value of money, 5 to 10% annual escalation in tariff rate is to be provided.
- **Tariff Design:** Tariff for HT consumers has been increased by 57%. Wind energy tariff may be increased by the same percentage. Whenever revision of tariff to consumers is done, the same should be applied to wind energy tariff.

  Sction 11ban on export of energy to be removed

  Since State Utility is the only player, until more utilities operate in Tamil Nadu, competitive bidding not to be encouraged.
- **REC/RPO : C**aptive users of wind energy should not be directed to comply with RPO, as they consume RE.
- Since scheduling for WEGs with capacity below 10 MW is to be mutually decided by the utility and generators, clear instructions/ procedure in this regard may be provided.
- REC eligibility period of 3 years may be removed for existing PPAs which may be mutually cancelled to sell power to TANGEDCO at pooled price.
- Willing generators may be permitted to pay the arrears of normal charges of banking and wheeling 9if current rate is considered concessional) and participate in REC scheme with retrospective effect.
- **Third party sale of power within the state**: WEGs to be permitted for third party sale to TANGEDCO consumers without scheduling clause.
- **R&C Measures**: R&C measures which are against the utilisation of captively generated wind energy, should be implemented only after getting consensus from the generators or after deciding at co-ordination meeting.
- **ABT Meter: P**rovision to fix ABT meters in the feeders as against generating end and consuming end is to be made.

- **Windy year:** May be shifted to 1st May - 30th April
- **Delayed payment & generation shedding:** To evolve suitable formula in tariff to compensate these two disastrous effects followed by TANGEDCO.

2. GE India Industrial Pvt. Ltd:

- RE being national resources, we recommend a minimum performance value (mpv) on equipment installed to optimize use of the use of resources. RE policy guidelines could lay down mpv based on CUF for wind energy based on certain site/zone conditions.
- GE strongly recommends implementation of CERC tariff norms in Tamil Nadu
- GE strongly recommends project specific tariff for repowering and off shore projects
- GE supports the revised Wind Power Density (WPD) characterization as we believe that this would spur additional development in wind energy sector
- GE strongly recommends levellised tariff design as established in CERC guidelines. GE recommends a review of capital cost assumptions for establishing tariff as the current higher efficiency MW class technology has an average CAPEX, significantly higher than kW class machines.
- The tariff level shall be Rs.4.83-5.28 per kWh for WPD range of 350-300 w/sq.m

3. Mohan Wind Mill Consultancy Service, Palladam:

- As per IEGC 2010, scheduling of wind power and settlement of accounts by considering frequency based UI tariff has to be implemented on or before 01-01-2012. What are the initiatives taken by the Commission and progress to implement scheduling of wind power?
- Whether Commission will derive specific UI tariff for wind power or the existing UI tariff for fossil fuel based power shall be adopted for wind

power or the specific UI tariff derived by CERC shall be used for settlement of accounts, if scheduling of wind power is implemented?

- Whether the Commission had initiated to implement Renewable Regulatory Fund (RRF) mechanism?
- If the WEGs voluntarily accept for scheduling the wind power by pooling 10 MW or more connected to 33 kV feeder and separate pooling connected to 22/11 kV feeders, whether such pooling has to be from single feeder or from various feeders with the same capacity?
- For comparing the actual meter data with scheduled wind power, AMR with online software has to be implemented to execute all the works automatically.

4. Gamesa wind Turbines Pvt. Ltd., Chennai-119

- Banking has been playing a vital role for the growth of wind power sector in the state as majority of the investments have been made by captive users. So, banking facility should be continued
- For tariff calculation, SBI average PLR (Now average base rate for last six months) and IREDA lending rates are to be considered. The same rates should be considered for calculating the interest on working capital and interest on term loan
- Capital cost should be considered as Rs. 575 Lakhs/MW
- O&M cost should be considered as Rs. 9 lakhs/MW with an annual escalation of 5.72% as per CERC guidelines
- Life of the project should be considered as 25 years as per CERC guidelines
- Existing OA charges of 5% to be continued
- The new tariff order shall be made applicable from 1st April 2011.

5. Sugavaneswara Spinning Mills (P) Ltd., salem

- We may be allowed to utilize maximum wind energy generated by us without any restrictions
- Allow slot to slot adjustment

6. Pandian Chemicals Limited, Madurai

- 5% banking charges to be continued for the wind power banked with TANGEDCO
- 5% wheeling charges to be continued for the wind power transmitted for captive consumption
- **RPO**: Wind Captive users should not be directed to comply RPO as they consume renewable energy. Alternatively, RE consumed shall be accounted for RPO. the so called concessions are the promotional incentives given by GoI and that should not be a bar to avail RPO. TNERC to consider this peculiar situation in Tamil Nadu and make necessary amendments to RPO Order.
- The proposal to permit consumption of wind energy by captive users based on hour wise scheduling should not be insisted and the present system of monthly adjustment is to be continued since wind energy reduces air pollution and valuable foreign exchange used for import of oil is saved.
- As Tamil Nadu is blessed with wind and other sources are meager, wind energy shall be fully utilized and any law/statute/instructions standing in the way shall be modified.
- Wind Energy tariff may be fixed as per the guidelines of CERC
- Evacuation:
- To attain self sufficiency in power, TANGEDCO should ensure 100% grid availability.
- To improve the infrastructure facilities in short period, TANGEDCO should enter into joint ventures with private parties.

7. Kaveri Gas Power Limited

- TANGEDCO must pay interest to the security deposit paid for transmission and wheeling charges. The same is not mentioned in the regulation.

- We request the Commission to consider 1 month deposit instead of the present case of 3 months deposit.
- These charges must be borne by the captive or third party users as like the power purchased through energy exchanges. If these charges are to be paid by the generators as in vogue, the licensee must not link allocation of power to captive or third party users to the payment of these charges.
- Commission must increase the fine to a very level for deliberate disobedience of regulation and order.

8. Naga Limited, Dindigul

- Renewal Energy vision statement and action plan needed for Tamil Nadu in line with national action plan on climate change and the Commission may direct TANGEDCO to come out with such a vision and action plan document for a period of three years with the objective to remove obstacles to growth of renewable energy and specifically wind energy.
- Unless the wind generators are paid the purpose of tariff determination is defeated.
- Requested to implement the electricity credit notes adjustable against any HT consumption bill automatically on completion of six months of non payment by TANGEDCO from date of invoice.
- Banking required to be continued as a legitimate expectation on promissory estoppel and as a contractual right.
- Wind energies seasonal and infirm and hence competitive bidding may not be enforced and the present scheme of tariff determination is followed.
- Each feeder and substation may be installed with ABT meters and the infrastructure to monitor in the feeder wise and substation wise generation, transmission and consumption of energy has to be effected.
- Forecasting and scheduling to be centralized and state owned.
- We need 6000 MW of ideal power to balance the wind mill off season.
- Action may be taken for southern grid constraint removal.

- Dynamic grid monitoring, online managing state grid for quality power and quality grid.
- R&D needed a transmission, distribution, metering, grid management, storage system etc.
- Action may be taken to solve the funding problem of TANGEDCO.
- Procedure for R&C enforcing may be submitted for a whole year for approval of TNERC and reviewed in advance quarterly. Compulsory advance intimation to stakeholders and penalty mechanism. However, wind energy generators to be allowed the consumption of wind energy generated including in power holidays.
- Higher slot to lower slot adjustment may be allowed irrespective of the date of Commissioning.
- The wheeling charges are to be paid only on the quantum of energy wheeled and not the energy generated.
- The TANGEDCO is not doing any scheduling and dispatching and hence there is no need to pay any system operation charges.
- Approval format of EWA may be hosted in the TNERC and TANGEDCO websites.
- Banking period may be changed to June to May.
- There should be some upward revision of tariff for the wind mills commissioned in Group I and Group II. Alternatively the tariff may be revised for all wind mills irrespective of date of commissioning.
- Forming energy exchange for trading of energy within the state may be considered if it is feasible.
- The Commission may look for suitable mechanism for third party wind energy sale.
- The current mechanism of REC allowed to captive generators is not beneficial to the investors as the cost of captive REC generators would be almost Rs.1.50 equivalent of floor price of non solar REC. Hence, the Commission may look into the same.

9.Orient Green Power Company Limited

- Project cost of Rs.6.75 crore per MW should be considered in view of higher tower height, high land cost, land development charges, long transmission lines and ROW issues involved in implementing the projects.
- Most of the wind projects today are financed by banks at the rates ranging between 14% and 16%. We request the Commission to fix the rate of interest at 15% for the term loan and working capital.
- Insurance cost at 1% of the project cost for the first five years to be considered.
- The prevailing O&M charges is Rs.11lakhs per MW + VAT + ST which is equivalent to Rs.13lakhs per PW should be considered by the Commission.
- WEGs may be given must run status by reducing the PLF of thermal and sources of generation so as to ensure continues operation of WEGs.
- TANGEDCO should be directed to strengthen the grid to ensure that entire wind energy generation is evacuated without any constraint.
- In view of the fact that good quality sites in Tamil Nadu have all been exhausted and only sides with relatively low wind potential are available, PLF of the project should be assumed at 19%.
- Tariff should be based on cost plus, single part average tariff.
- Sharing of CDM revenue should be withdrawn and the generator shall be entitled to entire CDM benefits.
- The policy should specifically say that the transmission charges should be recovered on MW our basis and not on installed capacity as the PLF of wind is very low. As the machine commissioned under REC scheme pay normative transmission charges, they should not be subjected to grid back down.

- The existing scheduling and system operation charges shall be retained.
- It is suggested that TNERC should allow banking facility for the WEGs Commissioned under REC scheme with condition on consider the same has not concessional / promotional benefit. TNERC is its regulation has specifically retained the eligibility criteria of CERC in toto for REC scheme and thus banking facility should be allowed for REC WEGs.
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10. Indian Wind Energy Association (InWEA), New Delhi

- Member- I advised InWEA to submit the breakup details of the capital cost of the WEG by 12th June 2012. The details furnished by InWEA is as follows

Cost break-up for 1 MW unit size wind energy project in lac Rs

No	Components	Prevailing Market Conditions
1	Nacelle	197
2	Hub	31
3	Blade	45
4	Power Panels	25
5	Hardware + Cables	26
	Sub-total (A)	**324**
6	Tower + Tower Logistics	79
7	Transformer (690 V / 33 KV)	12
8	Logistics / Transportation expenditure	30
	Sub-total (B)	**121**
9	Foundation	25
10	Electrical (33 KV + DP yard)	14
11	E&C	26
12	EHV + Road + Area Development	24

13	Land	25
14	State Nodal Agency Charges	2
15	FSP charges for forecasting (amortized for 3 years)	2
16	Associated expenditure for forecasting	2
17	Consulting fees	5
	Subtotal Total (C)	**125**
18	Service Tax at 10.33%	**12.91**
	Grant Total – A + B + C (rounded) (Rs lac/MW)	**583**

Capital Cost of Wind Energy Projects awarded through Public Sector Tendering process in FY 2011-12

Sl.No	Name of the Customer	Capacity (MW)	State	Project Cost(Rs.Lacs)	Cost / MW (Rs.Lacs)
1	National Aluminium company Ltd	50.4	Andhra Pradesh	27412	544
2	Indian Oil Corporation Ltd	48.3	Andhra Pradesh	26201	542
3	GAIL (India) Ltd	14.7	Gujarat	8384	570
4	GAIL (India) Ltd	25.5	karnataka	15840	621
5	GAIL (India) Ltd	12.6	Karnataka	6827	542
6	GAIL (India) Ltd	10.5	Tamilnadu	5690	542
7	Gujarat State Fertilizers Corpn	50.4	Gujarat	28065	557
8	Gujarat Alkalies & Chemicals Ltd	10.5	Gujarat	5852	557
9	Gujarat Power	10.5	Gujarat	5839	556

	Corporation Ltd				
10	Gujarat State Petroleum Corporation Ltd	18.9	Gujarat	10576	560
11	GAIL (India) Ltd	25.5	Tamilnadu	15572	611
12	GAIL (India) Ltd	25.5	Tamilnau	15100	592
13	BEML Ltd	18	Karnataka	10700	594
14	Oil India Ltd	13.6	Rajasthan	8560	629
				Average Cost	**573**

11. TANGEDCO:

The views of TANGEDCO relating to Tariff order on Wind Energy are submitted as follows:-

1. Derating of WEGs :

For new tariff order on wind energy, the TNERC has taken "the derating factor WEG's as one of the component for tariff determination. In this connection, it is stated that in Thermal generation, the installed capacity of the generating station is not allowed to be derated during the useful life of 25 years. There is no component in the wind energy generated whose performance would be affected due to passage of time within its useful life period. Hence derating factor for WEG need not be taken into consideration for one of the components for arriving the wind tariff. The CUF is based on the wind velocity of the wind prone area and it may vary from year to year due to the monsoon and metrological factors. Hence it is suggested that the derating factor for WEG may be waived.

2. Deemed Demand:-

In the "Consultative Paper 2008" for issuing Order No.1, dt: 20.03.2009, the TNERC has called for the comments on Deemed Demand concept and conducted a special meeting on 13.02.2009 to discuss the Deemed Demand. During the meeting, the TNEB requested the TNERC to delete the Deemed Demand concept, since the demand charges are meant to recover the fixed charges incurred by Board for creating the required facility towards capacity and meeting the demand of the consumers requiring power. In addition to the above, on 24.02.2009, the TNEB has given its additional comments and requested the TNERC to delete the Deemed Demand Concept. It is submitted that due to the Deemed Demand concept, the Board could not recover the demand charges fully from the Captive Consumers for the electricity demand supplied and further the implementation of R&C measures prevailing in the State, the realization of demand charges could not be achieved. Hence it is requested that the deemed demand concept may be deleted.

3. Real time adjustment for wheeling:-

The TNERC in Order No.3, Dt: 15.05.06, in Para 10.15 Billing & Payment to NCES Generator by Distribution Licensee, stated that 'the Meter reading should be taken on the same day at the NCES Generator end and Captive user/Third party purchaser end'.

Similarly the order No.1, dt: 20.03.2009 in Para 8.1.1 Billing & Payment for captive use, the TNERC stated that, 'the Licensee should record the generation and consumption simultaneously'.

Now as per CERC Guidelines of Indian Electricity Grid Code 2010, TNERC proposed to implement ABT meters and Scheduling of wind energy. The TANGEDCO in its additional comments issued on 07.12.2011 has recommended to introduce the above provision. If ABT mechanism is introduced, the ABT meter has to be installed both at generating end and consuming end. The generation and the consumption will be recorded at 15 minutes time interval in 96 slots. Since the provision has been given to record 24 hour generation and also consumption, in 15 minutes time interval, it is suggested that, the adjustment may be carried out on real time basis i.e. while preparing the bill, when there is a generation in a 15 minutes slot, the same has to be adjusted against the consumption of the same time slot. Similarly when there is no generation in 15 minutes slot but consumption is there, the units will be charged at appropriate HT Tariff.

After adjustment of a generation in a 15 minutes slot, the balance generation may be paid at the appropriate purchase rate, i.e 75% of the applicable tariff.

The group captive wheeling arrangement, Generators has to give allotment of generation to each captive user according to the % ownership held in the generating plant as 96 block day wise allotment for 30 days.

From single WEG generation, wheeling to more than two consuming ends, if it is 100% ownership, according to the % of request to each consuming end, the transaction has to be carried out at the corresponding consuming end.

From more than one WEG, if wheeling is opted, the 96 block generation of each WEG has to be summed up for each block and adjustment has to be made.

4. Tariff Determination.

It is true that wind energy has been harnessed to a maximum level in Tamil Nadu in last two decades and there is further growth in this sector. However the need to introduce tariff determination in this sector by competitive bidding at this juncture may not be appropriate for the following, among other, reasons:-

(1) Unlike conventional sources, the tariff for wind energy is not so far determined based fixed Parameters.

(2) While so, without determining the tariff taking into the account the provisions of the EA 2003, TANGEDCO is of the view that the wind developers and generators may form a group and claim tariff at an inflated rate which will be against the interest of the Distribution Licensee and against the public interest.

(3) Before such introduction, the actual tariff should be fixed in right perspective by considering the cost involved and all financial benefits availed by the Generators/Developers. And such tariff should be in force at least for a few years so as to consider to go for competitive bidding rate.

(4) On the one hand regulation/orders obligate the Licensee to buy a huge percentage of wind energy almost equal to actual generation. If competitive bidding resulted in higher tariff the Distribution Licensee may not be in a position to purchase energy from them due to such unreasonable cost on account of adverse financial position of TANGEDCO. Besides, for shortfall in meeting of RPO, the Distribution Licensee may have to purchase the REC certificate to satisfy the RPO. In that case also the Distribution Licensee will be further burdened thereby would subserve the objective of quality power under affordable rate embodied in EA 2003.

(5) Fortunately (or) unfortunately, the wind energy season correlates with summer season. As such, the Distribution Licensee naturally put to disadvantage position of experiencing power shortage during summer season. By taking this natural advantage by WEG's, to the experience of the TNEB/TANGEDCO had so far, in all probabilities, may quote uniformly an unreasonable rate not commensurate with the fixed and variable cost thereby in lead to unjust enrichment.

(6) In view of unequal placement of the Distribution Licensee and WEG and as the WEGs are allowed to supply to its captive users and third party sale in addition to sale to TANGEDCO, the WEG by virtue of their upper hand position may inflate the tariff during summer/wind season, thereby affecting end consumer.

Therefore, TANGEDCO is of the view that the competitive bidding route may not be viable in wind sector as of now.

5. Banking

(1). As stated already, the WEGs are allowed to supply power to captive user and third party consumers in addition to sale to TANGEDCO, as has been allowed to conventional generators. Hence, there is no need to continue banking facility to wind sector. In fact, provision of banking is alien to the EA 2003 and on this ground alone banking of wind energy need to be dispensed with.

(2). As has been stated already, wind energy generators by virtue of natural consequences and, fortunately, for the WEG's the wind blows during summer season, in TANGEDCO's experience, it is seen that the WEG generates energy, during May to September, without putting any effort but encashes by adjustment at a later time by virtue of banking that too when the Distribution Licensee is experiencing power deficit due to high demand. It is an open secret that the power deficit is prevailing in most of the States in India and, of late, experiencing shortage of coal & gas, difficulties in transportation of coal for various reasons, etc. Therefore, it is a right time to dispense with the banking facility. In fact, while the Wind Energy Generators withdrawing the banked energy the Distribution Licensee is forced to make purchase of power from open market at much higher cost. Thereby also, the Distribution Licensee is made to suffer financially.

(3). In addition to dispensing with the banking system, the existing requirement on the part of Distribution Licensee to make payment for any excess energy left over after adjustment also requires to be dispensed with, in view of the position that WEG have been provided with all adequate options of distributing their energy through captive use and third party consumer in addition to Sale to TANGEDCO.

(4). Further provision of encashment of unutilized banked energy, leads to additional financial burden to TANGEDCO. The quantum of unutilized banked energy is increasing every year exponentially. In 10/2008 it was 315 MU, in 31.03.2009 it was 251.13 MU and in 31.03.2010 it was 350.658 MU. Hence cash outflow for payment of unutilized banked units is high every year. Such dispensing may be made applicable to the existing WEGs and to prospective WEGs from the date of such tariff order irrespective of the category to which it belongs.

(5). Further as per CERC and TNERC REC Regulations, for wheeling of wind energy for captive consumption under REC scheme, they have to forego banking. Since TANGEDCO proposed to purchase the future wind power from REC projects only, the banking may be dispensed with. Further based on the recommendation of the TANGEDCO full Board meeting held on 15.11.2011, a petition MP No.1 of 2012 filed at Hon'ble TNERC to dispense the banking. However TNERC on 16.02.2012 directed the TANGEDCO to file a fresh petition by impleading the affected parties. Filing fresh petition is in the process.

Under the circumstances, it is suggested that the banking provision for wind energy shall be dispensed with not only to the future projects but also to the existing projects commissioned before and after 15.05.2006 irrespective of the tariff order to which on WEG is covered and for which necessary amendments may be effected in the existing Energy Wheeling Agreement.

6. Scheduling of wind energy and installation of ABT Meters.

TANGEDCO welcomes the proposal considering introduction of scheduling of wind energy for the very reasons that it will enable the Distribution Licensee to plan the power position in advance, and it will pave way for preventing grid disturbances thereby ensuring grid safety.

Considering that the WEG's in Tamil Nadu are mostly individual generators vastly having less capacity to generate such as 250 KW to 1 MW, the introduction of scheduling any higher loads such as, 1 MW, 5 MW, 10 MW and above alone may not serve any purpose. Having given all opportunities to the WEGs just to make use of the nature and as they have every opportunity in law to reschedule the committed energy on 8 times, it is the view of TANGEDCO that the scheduling should be made to all WEGs irrespective of their capacities. Since formation of group may pose a problem and it will lead to litigations such as who is going to give scheduling first and etc. restriction if any intended in terms of capacity such as 1 MW, 5 MW or 10 MW may be removed and it is suggested that each and every WEG has to give their scheduling and install their ABT meter individually/separately

Further it is seen from the public notice communicated in Secretary/TNERC letter dt: 27.04.2011 that the intention of Hon'ble Commission appears to be to revise the comprehensive tariff order issued in order No.1, dt: 20.03.2009 where as in the public notice communicated in Secretary / TNERC letter dt: 08.09.2011 that this Hon'ble Commission has invited views of all Stake Holders relating to tariff order for wind energy. Hence it is doubtful whether the Hon'ble Commission proposes to issue a new tariff order (or) revise the existing order No.1, dt: 20.03.2009 read with tariff order no.1 of 2011 dated 08.04.2011'

If the proposal is to revise the existing order, the TANGEDCO prays before the Hon'ble Commission not to consider such revision of order for the following, among other, reasons:-

(1) The WEG's, who have commissioned before 15.05.2006 (or) after 15.05.2006 but before 19.09.2008 (or) after 19.09.2008 but before the cut off date that may be fixed by the Hon'ble Commission, as the case may be, may also seek revision even though such of those WEGs have executed the agreement for a period of 20 years at the rate and other benefits already fixed by the Commission in the respective tariff orders. In that case, it may be an additional financial burden to TANGEDCO.

(2). While dispensing with the banking provision for wind energy not only to the future projects but also to the existing projects commissioned before and after 15.05.2006 irrespective of the tariff order, necessary amendments may be effected in the existing Energy Wheeling Agreement.

Hence it is requested that by considering the above points in addition to the other points already submitted in the reference (ii) above, a new tariff order may be issued to wind energy like TNERC order No.3, dt: 15.05.2006 and TNERC No.1, dt: 20.03.2009 with applicability of the order prospectively from the date of the new tariff order.

Annexure – V

Components of wind energy tariff

Sl.No	Parameters	Values
1	CUF	27.15%
2	De-rating factor	1% for every year after ten years
3	Life of the plant	20 Years
4	Capital investment	Rs. 5.75 Crores
5	Debt : Equity ratio	70:30
6	Interest on loan	12.25%
7	Loan repayment period	10 years with 1 year moratorium period
8	Return on equity	19.85% Pre-Tax
9	O&M charges for machinery on 85% of capital investment	1.10% with escalation of 5% from 2nd year
10	O&M Charges for civil works on 15% of capital investment	0.22% with escalation of 5% from 2nd year
11	Insurance charges	Clubbed with O&M charges
12	Depreciation on 85% of capital investment	4.5% SLM
13	Residual value	10%

Working sheet of tariff computation **Annexure – VI**

Years	O & M charges at 1.10% for machinery on 85% of capital investment and at 0.22% for civil works on 15% of capital investment with 5% escalation every year from 2nd year (Rs)	Interest on loan @ 12.25% (Rs)	Depreciation at 4.5% on 85% of capital investment (Rs)	Return on equity @19.85% Pre-Tax (Rs)	Total Cost (Rs)	Units generated for 1 MW (KWh)	Cost per unit (Rs)
1	556600	4930625	2199375	3424125	11110725	2378340	4.67
2	584430	4930625	2199375	3424125	11138555	2378340	4.68
3	613652	4437563	2199375	3424125	10674714	2378340	4.49
4	644334	3944500	2199375	3424125	10212334	2378340	4.29
5	676551	3451438	2199375	3424125	9751488	2378340	4.10
6	710378	2958375	2199375	3424125	9292253	2378340	3.91
7	745897	2465313	2199375	3424125	8834710	2378340	3.71
8	783192	1972250	2199375	3424125	8378942	2378340	3.52
9	822352	1479188	2199375	3424125	7925039	2378340	3.33
10	863469	986125	2199375	3424125	7473094	2378340	3.14
11	906643	493063	2199375	3424125	7023205	2354557	2.98
12	951975		2199375	3424125	6575475	2331011	2.82
13	999574		2199375	3424125	6623074	2307701	2.87
14	1049552		2199375	3424125	6673052	2284624	2.92
15	1102030		2199375	3424125	6725530	2261778	2.97
16	1157131		2199375	3424125	6780631	2239160	3.03
17	1214988		2199375	3424125	6838488	2216768	3.08
18	1275737		2199375	3424125	6899237	2194601	3.14
19	1339524		2199375	3424125	6963024	2172655	3.20
20	1406500		2199375	3424125	7030000	2150928	3.27
Average tariff for 20 years							**3.51**

Annexure – VII

Average purchase cost through bilateral trading segment (All India)

MONTH	QUANTUM (MU)	AMOUNT (Crs)	AVERAGE RATE (Rs/kwh)
2010-11			
April	2698.58	1548.98	5.74
May	3194.72	1971.14	6.17
June	3954.99	2210.84	5.59
July	4367.92	2175.22	4.98
August	4169.90	2051.59	4.92
September	3337.11	1578.45	4.73
October	2574.17	1029.67	4.00
November	2744.97	1073.28	3.91
December	2802.59	1107.02	3.95
January	3274.18	1309.67	4.00
February	3230.61	1369.78	4.24
March	3588.58	1675.87	4.67
2011-12			
April	3931.36	1871.33	4.76
May	3906.62	1754.07	4.49
June	4264.33	1628.97	3.82
July	6313.15	2462.13	3.90
August	6174.84	2395.84	3.88
September	4821.18	1904.37	3.95
October	3191.69	1346.89	4.22
November	3569.69	1531.40	4.29
December	4442.85	1852.67	4.17
January	4450.98	1971.78	4.43
February	3206.00	1426.67	4.45
March	3659.87	1621.32	4.43
AVERAGE OF 2010-11 & 2011-12	**91870.88**	**40868.97**	**4.45**