GUJARAT ELECTRICITY REGULATORY COMMISSION

Ahmedabad

Order No.2 of 2012

In the matter of: Determination of Tariff for Procurement of Power by the Distribution Licensees and Others from Wind Power Projects.

In exercise of the powers conferred under Sections 61(h), 62(1)(a) and 86(1)(e) of the Electricity Act, 2003 and all other powers enabling it on this behalf, the Gujarat Electricity Regulatory Commission (hereinafter referred to as "the Commission") determines the tariff for procurement of power by Distribution Licensees and Others in Gujarat from wind power projects.

This order is the third order on wind energy and is the culmination of an elaborate consultative process after considering the suggestions received from various stakeholders.

1. BACKGROUND

1.1 Potential for Wind Power

The Centre for Wind Energy Technology (C-WET), Government of India, had earlier assessed the installable wind power potential of Gujarat state as 10,609 MW at 50 m level by considering 9 km^2/MW land requirement with an assumption that only 2% of available land will be brought under wind power project installation. Further, C-WET has revised the wind power potential of India and assessed the wind power potential of Gujarat state as 35,071 MW at 80 m hub height. Apart from this official study, the potential of Gujarat has been assessed by the Lawrence and Berkeley National Laboratory (LBNL) of USA, under a study titled "Reassessing Wind Potential Estimates for India: Economic and Policy Implications" published in March 2012. As per this report, the wind power potential of Gujarat is assessed as 80 GW at 80 m hub height.

1.2 Government of Gujarat Wind Power Policy 2007

The Government of Gujarat had notified the 'Wind Power Policy 2007' on 13 June 2007 for development of wind power projects in the state. This policy was further amended on 7 January 2009 as 'Wind Power Policy (First Amendment 2007)'. This policy was valid up to 30 June 2012

which is further extended up to 10 August 2012 vide Government of Gujarat letter No. EDA/10/2001/3054/B dated 14 Jun 2012.

Some important provisions of this Policy are listed below:

- Electricity generated from WEGs is exempted from payment of Electricity Duty, except in the case of third-party sale.
- The project developers are required to furnish Bank Guarantee of Rs.5 Lakh/MW to GETCO. In order to ensure the timely completion of wind power projects and to ensure the timely utilisation of infrastructure created by GETCO, the bank guarantee will be forfeited after the due date.
- Concessional transmission and wheeling losses in case the energy is wheeled below 66 kV voltage level or in case of single WTG owner.
- The evacuation facility from the wind farm substation to GETCO substation within the range of 100 km shall be erected by the developer at his own cost and beyond this limit, GETCO shall erect the evacuation facility.
- The voltage level of evacuation of wind power in the grid shall be at 66 kV and above.

The Commission has considered the techno-commercial aspects of the above policy while determining the tariff for this control period.

1.3 GERC Multi Year Tariff Regulations, 2011

The Commission had notified Regulation No. 1 of 2011 titled 'Multi Year Tariff Regulations, 2011' on 22 March, 2011, which is applicable for determination of tariff to all existing and future Generating Companies, Transmission Licensees, Distribution Licensees, and their successors, if any. It is through the framework of this Regulation that the Commission shall determine tariffs for various cases including supply of electricity by a Generating Company to a Distribution Company, intra-state transmission of electricity, intra-state wheeling of electricity, retail supply of electricity, etc. Further, it is within the norms of this regulation and broad principles given in the Tariff Policy notified by GoI, the tariff for procurement of power from wind energy projects by the Distribution Licensees and others under discussion is determined.

1.4 Renewable Purchase Obligation in Gujarat

The 'Gujarat Electricity Regulatory Commission (Procurement of Energy from Renewable Sources) Regulations, 2010', (Notification No. 3 of 2010) dated 17 April 2010 has specified the minimum renewable power purchase obligation (RPO) by the obligated entities for the financial year 2012-13 at 7%. Out of this obligation, 5% RPO is to be met through energy generated from wind energy projects.

This renewable purchase obligation applies to Distribution Licensees as well Captive and Open-Access Users consuming electricity (i) generated from conventional Captive Generating Plant having capacity of 5 MW and above for his own use and/or (ii) procured from conventional generation through open access and third party sale. Based on this regulation, all obligated entities shall purchase electricity (in kWh) from renewable energy sources at a minimum percentage of the total consumption of their consumers including transmission and distribution (T&D) losses during a year.

Further, this regulation recognises the Renewable Energy Certificates (RECs) issued within the scope of Central Electricity Regulatory Commission's (CERC) Notification No. L-1/12/2010-CERC dated 14 January 2010 as a valid instrument for the discharge of the mandatory RPO set out in this regulation for the obligated entities.

1.5 GERC Wind Tariff Order 2010

The Gujarat Electricity Regulatory Commission (GERC), in its Order No. 1 of 2010 dated 30 January 2010, determined the tariff for procurement of power by the Distribution Licensees and others from wind power projects for the state of Gujarat. After due public consultation and regulatory process, GERC determined a single-part levellized tariff of Rs. 3.56 per kWh for procurement of wind power by the distribution licensees in the state. This tariff order was made applicable for the wind power projects commissioned on or after 11 August 2009. The control period of this tariff order is up to 10 August 2012. Along with the rate for sale of electricity to Distribution Licensees, the Commission in this order has also addressed commercial issues associated with third-party sale and captive use.

1.6 GERC Discussion Paper on Wind Tariff Determination

The Commission prepared a discussion paper on "Determination of Tariff for Procurement of Power by Distribution Licensees and others from Wind Power Projects for the state of Gujarat" during the new control period starting from 11 August 2012, which was placed on the website

of the Commission on 2 July 2012 for inviting comments and suggestions. The list of stakeholders who have filed their objections and suggestions is given in Annexure-I.

1.7 Public Hearing

A public hearing was held on 31 July 2012 to hear the stakeholder's views/suggestions/objections on the discussion paper. The list of those who participated in the hearing and expressed their views is given in Annexure-II.

2. DETERMINATION OF TARIFF FOR PROCUREMENT OF POWER FROM WIND POWER PROJECTS

2.1 Tariff Determination Methodology

The Commission has determined the wind power tariff based on the broad principles contained in the (i) GERC (Multi Year Tariff) Regulations, 2011, (ii) GERC (Procurement of Energy from Renewable Sources) Regulations, 2010 and (iii) CERC (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2012.

2.2 Process of Determination of Tariff

The Tariff Policy notified by the Central Government in pursuance of Section 3 of the Electricity Act, 2003 stipulates that the appropriate Commission may determine preferential tariff for procurement of power by distribution licensees from non-conventional sources of energy. The relevant extract of para 6.4 of the tariff policy is given 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 1 April 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".

The Commission noted that the 'Report on Policies on Renewable' prepared by the Working Group constituted by the Forum of Regulators consisting of chairpersons of some State Electricity Regulatory Commissions and external experts, including a representative from the

MNRE has recommended preferential tariff for renewable sources at least during their loan tenure. The report urges the Ministry of Power, Government of India, to frame guidelines and standard bid documents for competitive bidding for renewables under Section 63 of the Act.

The Commission also noted that the Ministry of Power has constituted a committee in February 2012 to accelerate development of renewable energy through legislative changes and to evolve competitive bidding guidelines for procurement of power from renewable energy under Section 63 of the Act. The Committee at present is in a consultation process with the stakeholders.

In view of the above, and on the basis of the written comments/suggestions received from the stakeholders on the discussion paper on "Determination of Tariff for Procurement of Power by Distribution Licensee and Others from Wind Power Projects for the State of Gujarat" published by the Commission, as well as those received during the public hearing held on 31 July 2012, the Commission decides to continue with the cost-plus methodology adopted in the previous tariff orders issued by the Commission during the years 2006 and 2010 for determination of tariff for procurement of electricity from wind power projects by the distribution licensees in the state during the next control period starting from 11 August 2012.

2.3 Preferential Tariff

Clauses 6.4(1) and 6.4(2) of the Tariff Policy provide that the State Electricity Regulatory Commissions shall fix minimum percentage of power purchase from non-conventional energy sources, taking into account availability of such resources in the region and determine the preferential tariff for non-conventional energy sources. Distribution companies may procure such energy at preferential tariff determined by the State Commission or through competitive bidding process for future requirements. The Working Group constituted by the Forum of Regulators (FOR) for Policies on Renewable has in its recommendations suggested that a cost-plus tariff based on reasonable norms should be adopted for renewable energy (RE). Keeping in view provisions of the Tariff Policy, the recommendations of the Working Group of FOR, and larger objectives with reference to climate change and global warming, the Commission has adopted an approach of determination of 'preferential tariff' on cost-plus basis for procurement of wind power by Distribution Licensees and others .

With regard to the structure and design of the tariff, the following two approaches are possible for the tariff determined on cost-plus basis.

i) 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 which rotates the turbine and produces energy, there is no fuel requirement and hence the variable generation cost is nil. Therefore, the Commission has adopted single-part tariff for wind energy generation.

ii) Project Specific Tariff Vs Generic Tariff

A generic tariff mechanism would provide incentives to the investors for use of most efficient equipment to maximize returns and for selecting the most efficient site, while a project-specific tariff would provide each investor, irrespective of the machine type and the site selected, the stipulated return on equity and it would shield the investor from the uncertainties involved in capacity utilization due to machine choice and site location. Considering the small capacities and diverse ownership of the wind power projects, the Commission decides to determine the generic wind power tariff, rather than go for a project specific tariff on case-to-case basis.

Tariff Design

The generic tariff in this order is determined on levellized basis. Levellization shall be carried out over the useful life of the wind power plant, whereas tariff is specified for the period equivalent to tariff period defined in this order. For the purpose of computation of levellized tariff, discount rate as notified by Central Electricity Regulatory Commission has been considered.

2.4 Computation of Tariff

2.4.1 General Principles

a. Control Period

The Commission in the discussion paper has proposed the control period from 11 August 2012 to 31 March 2016.

Suggestions of the Objectors

No suggestions were received from the stakeholders about the duration (3 ½ years) of the control period.

Commission's Decision

For long-term regulatory certainty to the investors, and in order to make the control period coterminous with the financial Year, the Commission decides to retain the control period as proposed in the discussion paper from 11 August 2012 to 31 March 2016.

b. Useful life of Plant

The Commission in the discussion paper has proposed useful life of 25 years for the wind power projects to be commissioned during the new control period starting from 11 August 2012.

Suggestions of the Objectors

Some of the objectors, particularly the wind associations, have suggested to specify the useful life of the wind power projects as 20 years on the basis of Type Approval Certificates issued by certifying agencies.

Commission's Decision

The CERC under 'RE Tariff Regulations 2012' has recommended 25 years as useful life of wind power project, including the evacuation line for tariff determination purpose. The Commission had also considered 25 years as useful life of wind power project in its wind power tariff order issued in 2010. In view of the above, the Commission decides to retain the useful life of wind power project as 25 years.

c. Tariff period

The Commission in the discussion paper has specified tariff period of 25 years for procurement of electricity from wind power projects to be commissioned during the new control period starting from 11 August 2012.

In view of the useful life of wind power project as discussed in the previous para 2.4.1 (b), the Commission decides to keep the tariff period as 25 years for wind power projects to be commissioned during the control period starting from 11 August 2012.

d. Eligibility Criteria

The Commission in its discussion paper has specified that the wind power projects using new wind turbine generators will be eligible to sell power to distribution licensees of Gujarat at the tariff determined by the Commission.

Suggestions of the Objectors

Gujarat Urja Vikas Nigam Ltd (GUVNL) suggested modifying the eligibility criteria by incorporating a condition that the wind power projects using MW-class WTG will only become eligible for sale of power to the distribution utilities at the tariff determined by the Commission.

Commission's Decision

The Commission has noted that the list of WTG manufacturers and models, approved by the MNRE and C-WET consists of MW scale as well as sub-MW scale wind turbines. Further, the Commission intends to enable developers to choose from MW scale as well as sub-MW scale wind turbines for their projects. In other words, the idea is not to put any constraint regarding choice of turbines and to leave it to the developers to select the size and technology of wind power generators. Therefore, the Commission decides to retain the eligibility criteria as proposed in the discussion paper. Further, it is clarified that the wind power projects commissioned using new wind turbine generators after the date of notification of this tariff order shall only be considered as eligible for sale of electricity at the tariff determined by the Commission in this order.

e. Applicability of Merit Order Dispatch Principle

The wind power plants irrespective of plant capacity shall be treated as 'MUST RUN' power plants and shall not be subjected to merit order dispatch principles.

2.4.2 Operational and Financial Parameters

The following operational and financial parameters have been considered while determining wind power tariff under the cost-plus approach.

a. Capital cost

b. Power Evacuation System cost

c. Capacity Utilization Factor (CUF)

d. Debt-Equity Ratio

e. Loan Tenure and Rate of Interest on Term Loan

f. Depreciation

g. Return on Equity

h. Operations & Maintenance Charges

i. Interest on Working Capital

j. Discount Rate

a. Capital Cost

Capital cost is the most critical component while determining tariff in a regulated environment. The capital cost of wind power projects comprise the cost of (i) tower and its base, (ii) turbine generators, (iii) blades, (iv) controllers, (v) power and control cabinets, (vi) distribution structure, (vii) transformer and associated equipments, (viii) land and its development cost, (ix) processing fee of Gujarat Energy Development Agency, (x) erection and commissioning charges, (xi) financing charges and interest during construction and (xi) creation of evacuation system up to the interconnection point .

The Commission had in its earlier Wind Tariff Order 1 of 2010 dated 30.01.2010, considered the capital cost of Rs 4.62 Cr/MW (excluding the power evacuation cost from wind farm substation to STU substation).

In order to arrive at a benchmark capital cost for wind power projects to be commissioned in the new control period starting from August 2012, the Commission has examined the wind power capital cost trends in the national and international markets during the last control period, WTG components generally imported by the WTG manufacturers in India, currency exchange rate variation, and the commodity price increases during the last control period. Along with this, the Commission has also analyzed the wind power capital cost data of the projects commissioned in Gujarat during the control period of the GERC Wind Tariff Order dated 30 January 2010 as well as the approach followed by the Central Electricity Regulatory Commission (CERC) while fixing benchmark wind power capital cost under RE Tariff Regulations 2012**.**

On the basis of the above exercise, the Commission had proposed a base capital cost of Rs. 5.41 Cr/MW for FY 2012-13 and worked out the benchmark capital cost of Rs. 5.68 Cr/MW by considering appropriate growth rate factor during subsequent years of control period. Accordingly, the Commission proposed to fix the benchmark capital cost of Rs. 5.68 Cr/MW (excluding the power evacuation cost from wind farm substation to STU substation) for the new control period starting from 11 August 2012 for tariff determination purpose.

Suggestions of the Objectors

Most of the objectors including the wind association/developer have suggested to fix the benchmark capital cost as Rs 5.75 Cr/MW as specified by the Central Electricity Regulatory Commission under its RE Tariff Regulations 2012. Some of the objectors have suggested a higher capital cost benchmark in the range of 6.25 Cr/MW to Rs 6.50 Cr/MW on the basis of present market conditions, whereas, GUVNL pointed out that the capital cost benchmark fixed by other SERCs like MERC, RERC are lower than the capital cost benchmark proposed by the Commission.

Most of the objectors suggested introducing capital cost indexation mechanism during the control period for revision of capital cost during subsequent years of the control period.

Commission's Decision

In order to arrive at the capital cost benchmark for the new control period starting from 11 August 2012, the Commission has carried out its own exercise and examined the trends of wind power capital cost in national and international markets during the last control period. Similarly the Commission has studied the capital cost benchmark fixed by CERC in its RE Tariff Regulations 2012. Moreover, the Commission has analyzed the wind power capital cost data of the projects commissioned in Gujarat during the last control period. The analysis was based on the state specific data submitted by IREDA (390 MW), PSUs (295 MW), and projects registered with UNFCCC (145 MW). The state specific data submitted by various agencies captures state-specific capital costs and therefore the average capital cost of IREDA, PSUs and UNFCCC has been considered as base capital cost for FY 2012-13. The benchmark capital cost of Rs 5.68 Cr/MW for the control period is derived by considering an appropriate escalation factor over the control period. The escalation factor considered is based on the weighted average of growth rates of WPI of steel, cement and Electrical Machinery for year 2010-2012.

In view of above, the Commission decides to adopt the benchmark capital cost of Rs 5.68 Cr/MW (excluding the power evacuation cost from wind farm substation to STU substation) for determination of tariff for the wind power projects to be commissioned in the control period starting from 11 August 2012. Instead of revising the capital cost for each year of the control period, the Commission preferred to arrive at the above benchmark capital cost by considering an appropriate escalation factor for the entire control period.

b. Power Evacuation System Cost

In case of power evacuation arrangement, the discussion paper envisages two options.

Under **Option 1,** it was proposed to define the interconnection point at wind farm substation as specified in Para 4.4 of Order No 1 of 2012 on Determination of Tariff for Procurement of Power by the Distribution Licensees and others from Solar Power Projects. It was proposed that the Gujarat Electricity Transmission Corporation Ltd. (GETCO) would be made responsible for laying the transmission lines from the switchyard of the generator to the GETCO substation. The cost for the same shall also be borne by GETCO. The cost of evacuation line from generating station to interconnection point (pooling substation) has been considered in the project capital cost. Under Option 1, the metering point as well as interconnection point for grid connectivity is defined at the 66kV pooling substation located at wind farm site.

Under Option 2, in the discussion paper it was proposed to continue the practice as followed under GERC Order No 2 of 2006, dated 11 August 2006, and Order No 1 of 2010 dated 30 January 2010, on 'Determination of Tariff for Procurement of Power by Distribution Licensees from Wind power projects and other Commercial Issues'. Under Option 2, the developers were required to construct the power evacuation line from wind farm switchyard to GETCO substation. The Commission proposed to fix Rs. 41 Lakh/MW towards constructing the evacuation line up to 100 km length. Under Option 2, the metering point will be at the 66kV pooling substation located at the wind farm site, whereas the interconnection point will be the nearest GETCO substation.

The interconnection point referred to above is defined as interface point of wind generating facility with the transmission system or the distribution system, as the case may be.

Suggestions of the Objectors

Almost all the objectors suggested for continuing Option 2 for making the power evacuation arrangement for evacuation of wind power. The stakeholders opined that this arrangement would be beneficial for STU and developers as it ensures timely completion of work. Some of the objectors particularly the developers had suggested increasing the proposed cost of Rs.41 Lakh/MW for construction of power evacuation line up to 100 km.

INWEA suggested defining the interconnection point as recommended by CERC and FOR while suggesting Option 2 for power evacuation arrangement for evacuation of wind power. GUVNL, while agreeing for Option 2 for power evacuation arrangement pointed out that the cost of

Rs.41 Lakh/MW proposed for evacuation line is on the higher side, as most of the wind power projects do not require constructing 100 km length of evacuation line. GETCO in its submission has mentioned that the evacuation cost proposed by the Commission is on general basis regardless of the length of evacuation line usually constructed and has endorsed the observation of the Commission that most of the wind projects do not required to construct 100 km length of evacuation line. GETCO further proposed that wherever construction of evacuation line requires less than 100 km, the difference of evacuation cost approved and the cost required to construct lesser length of line should be passed on to GETCO for strengthening of network.

Commission's Decision

The Commission noted the submission of the stakeholders and the fact that the present arrangement of laying of the evacuation line by the developers has worked well during the last control period and all stakeholders have supported the same. Therefore, the Commission decides that the developers of wind power projects shall be responsible to construct the power evacuation line from wind farm switchyard to GETCO substation. However, in view of the submission made by GUVNL and GETCO with regard to the length and cost of evacuation line, the Commission decided to consider Rs. 38 Lakh/MW towards constructing the evacuation line up to 100 km length. Evacuation facility beyond this limit shall be the responsibility of GETCO. This expenditure will be considered over and above the capital cost approved by the Commission under Para 2.4.2 (a) above.

So far the proposal of GETCO for recovery of amount from developers having lines shorter than 100 Kms is concerned, it requires evaluation of the cost of each line created for evacuation purpose by the developers. The Commission has determined the tariff on a general basis. Hence, it is unfair to re-evaluate the evacuation cost on a case-to-case basis , therefore the suggestion of GETCO on this issue is not accepted.

The metering point and interconnection point will be as given below:

Metering Point: The metering point will be at the 66kV pooling substation located at the wind farm site.

Interconnection Point: The interconnection point will be the point of connection at the nearest GETCO substation. In case of any dispute on interconnection point, provisions of the Grid Code shall prevail.

c. Capacity Utilization Factor (CUF)

The Commission has elaborated the rationale for specifying the CUF of 24% in the discussion paper. The Commission had noted that wind power density, which is a function of wind velocity and air density presents a better indicator for determination of normative CUF, and CUF at a given location predominantly depends upon (i) site-specific parameters, in a broad sense state-specific parameters and (ii) machine-specific parameters.

The Commission noted that during the last control period (2009-2012), about 67% of the wind power projects (i.e. 880 MW out of 1332 MW) commissioned in the state have used MW-class WTGs. The Commission has also noticed that, over the period, with improvement in WTG technology, higher hub height, and larger rotor diameter, the CUF achieved by the commissioned wind power projects in the state has increased considerably.

The Commission has noted that as per the wind resource assessment study conducted by C-WET and LBNL, most of the wind power potential areas in the state fall under 200-375 W/m^2 wind power density zone at 80m hub height. The Commission has further noted that the Central Electricity Regulatory Commission, under CERC RE Tariff Regulations 2012, has recommended a normative CUF in the range of 22%-30% for the 200-400 W/m^2 wind power density zone.

The Commission has examined the actual CUF achieved by the wind power projects installed during FY 2009-10 and FY 2010-11 which have used MW-class WTGs in the state, and noted that the CUF of the wind power plants commissioned during 2009-10 varies from 17.64% to 25.82% during 2010-11 and 2011-12; while the CUF of wind power plants commissioned during 2010-11 was in the range of 15.29% to 31.62% during 2011-12.

In the light of the above, and considering the fact that with advancement in WTG technology during the next control period (August 2012-March 2016), the CUF of future wind power projects is expected to further increase, the Commission in the discussion paper had proposed normative CUF of 24 % for tariff determination purpose.

Suggestions of the Objectors

Most of the stakeholders suggested retaining the CUF at 23% or reducing it to 22% for the new control period. The justification was supported by the data on 64 potential sites given in Table 3.5 of the discussion paper, which shows that 70% of the potential sites fall under WPD of less

than 250 Watt/m^2. Some of the stakeholders suggested for specifying CUF based on WPD zone and zone-based tariff based on the zones as recommended by CERC under RE Tariff Regulations 2012. Some stakeholders have also suggested considering the auxiliary consumption and de-rating of the WTG while specifying normative CUF.

Commission's Decision

The Commission clarifies that the data pertaining to 64 wind monitoring locations (potential sites) given in the discussion paper do not represent the availability of wind resource in the state of Gujarat as a whole, as wind monitoring is a continuous process which is going on at various locations through GEDA and independently by private investors.

As mentioned earlier, the WPD at preferred hub height will be a better indicator of CUF. In order to arrive at normative CUF, the Commission therefore extensively studied the machine-specific and site specific characteristics for the state of Gujarat. The Commission relied upon the wind power density map developed by C-WET and LBNL, which shows that most of the wind power potential areas in Gujarat lie in 200-375 Watt/m^2 wind power density zone at 80 m hub height. The CERC in RE Tariff Regulations 2012 has recommended normative CUF of 22-30% for wind power density zone between 200-400 Watt/m^2.

The Commission has examined the actual CUF achieved by the wind power projects installed during FY 2009-10 and FY 2010-11 which have used MW-class WTGs in the state and noted that the CUF of the wind power plants commissioned during 2009-10 varies from 17.64% to 25.82% during 2010-11 and 2011-12; while the wind power plants commissioned during 2010-11 have achieved CUF of 15.29% to 31.62% during 2011-12.

The Commission has considered the time-span of the new control period starting from 11 August 2012 and the fact that with advancement in technology during the control period the CUF of the new WTGs will also increase.

Also, with increase in hub height, performance of WTG in terms of CUF should improve. The Commission is of the view that the preferential tariff should encourage deployment of better technology and optimum site selection. Accordingly, the Commission does not find any reason to consider the suggestion of lowering of CUF. Therefore the Commission decides to specify a normative CUF of 24% for determination of tariff during the new control period starting from 11 August 2012.

d. Debt Equity Ratio

GERC Multi Year Tariff (MYT) Regulations 2011 provide for the normative debt-equity ratio of 70:30 for Generating Company/Licensees. Clause 5.3 (b) of the Tariff Policy notified by Government of India stipulates a debt-equity ratio of 70:30. Also, the recent CERC RE Regulations 2012 have considered the same debt-equity ratio for wind power projects. The Commission proposed the debt equity ratio as 70:30 in the discussion paper as considered in the previous wind tariff orders.

Suggestions of the Objectors

M/s CLP Wind Farm (India) Pvt. Ltd. and M/s Acciona Wind Energy Pvt. Ltd. have proposed that debt-equity ratio should be kept as 60:40.

Commission's Decision

The Tariff Policy formulated by the Ministry of Power, Govt. of India, under section 3 of the Electricity Act, 2003 stipulates debt-equity ratio of 70:30 for power projects. GERC Multi Year Tariff (MYT) Regulations 2011 notified by the Commission also provide that the debt-equity ratio should be kept at 70:30. Hence, the Commission decides to retain the debt-equity ratio as 70:30 for the new control period starting from 11 August 2012.

e. Loan Tenure and Rate of Interest on Term Loan

The Commission in its Wind Tariff Order dated 30 January 2010 and Solar Tariff Order dated 27 January 2012 stipulated loan tenure of 10 years.

While considering the interest rate of loan, the Commission observed that the weighted average Base Rate of SBI for the period 16 June 2011 to 15 June 2012 is 9.91%. It has also been observed that the current SBI base rate of 10.00% is constant since 13 August 2011. The data submitted by IREDA shows that the term loan sanctioned to the wind power projects in Gujarat in FY 2011-12 varies from 11.75% to 12.75%. In view of this, the Commission had proposed to use the current base rate of SBI with a spread of 200 basis points above the current SBI base rate for fixing the interest on loan for tariff determination purpose.

Suggestions of the Objectors

Most of the stakeholders suggested considering interest on term loan as 13%, which is 300 basis points on SBI current base rate of 10%. INWEA has pointed out that interest rate of PFC and REC are in the range of 12.5% to 14% and that of IREDA is in the range of 11.75% to 12.75%. INWEA further pointed out that the Commission has considered 300 basis point above SBI base rate while determining the solar tariff in its order dated 27 January 2012. Some of the stakeholders even requested for higher interest on term loan in the range of 13.5% to 14%. With regard to loan tenure, some of the developers requested for loan tenure of 12 to 13 years for repayment of term loan.

Commission's Decision

The Commission has noted that banks are now following the base rate system after the RBI guidelines. While all banks have their own base rates, the project financing interest rates are typically indicated by the SBI base rate. The Commission further noted that the SBI base rate is constant at 10% since 13 August 2011. Therefore the Commission had considered base rate of 10% while fixing the interest on term loan. Considering the submission made by most of the stakeholders and the interest rate allowed by the financial institution like PFC and REC while giving loans to power generating projects, the Commission decides to use the current base rate of SBI with a spread of 300 basis points above the current SBI base rate for fixing the interest on loan for the purpose of tariff determination.

The Commission decides to fix the normative interest on term loan as 13% and the loan tenure as 10 years for repayment of term loan for the purpose of tariff determination for the new control period starting from 11 August 2012.

f. Depreciation

CERC, in its CERC (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2012 considers the capital cost of the asset admitted by the Commission as value base for the purpose of determination of depreciation. Further, the salvage value of the asset is considered as 10% and depreciation is allowed up to a maximum of 90% of the capital cost of the asset. Depreciation per annum shall be based on 'Differential Depreciation Approach' over loan tenure and the depreciation beyond loan tenure shall be computed over useful life on 'Straight Line Method' (SLM).

GERC, in its Wind Tariff Order dated 30 January 2010 had considered a higher rate of depreciation than the SLM as a promotional measure during the loan tenure, and then the remaining depreciation is spread over the remaining useful life. In view of the above, the Commission had proposed depreciation rate of 6% per annum for the first 10 years, and 2% from 11th year to 25th year for tariff determination purpose.

Suggestions of the Objectors

Most of the stakeholders suggested considering the depreciation rate such that the annual depreciation can cover the loan repayment. The stakeholders requested to keep depreciation rate of 7% per annum during the first 10 years and the balance depreciation to be spread over the remaining useful life of the project. Some of the developers such as Greenergy Renewables Pvt. Ltd and Acciona Energy India Pvt. Ltd suggested considering the depreciation rate of 5.28% for tariff determination purpose as given in GERC Multi Year Tariff (MYT) Regulations 2011.

Commission's Decision

GERC Multi Year Tariff (MYT) Regulations 2011 notified by the Commission specifies that depreciation rate should be calculated based on the Straight Line Method with a depreciation rate of 5.28% per annum. The MYT regulation further lays down that asset is to be depreciated up to 90% of its initial value (considering residual value as 10% of its initial value) over the entire asset life. As a promotional measure and to facilitate the loan repayment, the Commission has considered higher depreciation rate at 6% per annum during the loan repayment period of 10 years. The Commission decided to keep the depreciation rate as 6% per annum for the first 10 years, and 2% from 11th year to 25th year for the purpose of tariff determination for the new control period starting from 11 August 2012.

g. Return on Equity (RoE)

The GERC Multi Year Tariff Regulations, 2011, notified by the Commission provide norms for the RoE as 14% per annum. Further, the Commission had allowed MAT at the rate of 20.008% per annum for first 10 years and corporate tax at the rate of 32.445% per annum for the next 15 years.

Suggestions from Objectors

Most of the objectors have suggested that the base RoE may be considered as 16%. INWEA suggested that considering the higher risk of RE projects RoE should be considered 3% to 4% higher than the cost of debt, and proposed that the RoE should be fixed at 15%-16%. One of the

objectors submitted that the CERC has considered pre-tax RoE of 20% for the first 10 years and 24% for the next 15 years, which amounts to post-tax RoE of 16%. RERC, KERC, and APERC also provide the post-tax ROE of 16%. Greenergy Renewables Pvt. Ltd submitted that while calculating the tariff, the grossed up RoE of 17.50% for the first ten years, and 20.72% for the next fifteen years be considered.

Commission's Decision:

GERC Multi Year Tariff (MYT) Regulations 2011 notified by the Commission specify the RoE of 14%; the same was specified by the Commission in its discussion paper. The Commission follows the principle of allowing 14% RoE plus the applicable tax payment for conventional and renewable power projects. The Commission decided to consider RoE of 14% and the tax payment of MAT at the rate of 20.008% per annum for first 10 years and corporate tax at the rate of 32.445% per annum for the next 15 years while computing the tariff for the new control period starting from 11 August 2012.

h. Operations & Maintenance Charges

The Commission had, in its earlier wind tariff order dated 30 January 2010 considered the O&M expenses at Rs. 6.5 Lakh/MW for the year 2009-10 with escalation of 5% from the second year onwards. These charges were as per the then CERC tariff order dated 3 December 2009.

The Commission has noted that the CERC RE Tariff Regulations 2012 specified the O&M cost to Rs.9 Lakh/MW with an annual escalation of 5.72%. In view of the above, the Commission had proposed the O&M charges of Rs. 9 Lakh/MW, with annual escalation of 5% for the control period under the discussion paper.

Suggestions from Objectors

Some of the objectors have suggested increasing the base O&M cost from Rs. 9 Lakh/MW to Rs 10 to Rs. 11 Lakh/MW due to increase in manpower cost and spare parts cost. IWPA suggested increasing the base O&M cost to cover the O&M cost of the transmission lines in case Option 2 is adopted.

Most of objectors have requested to increase the annual O&M escalation rate from 5% to 5.72% as the same is specified under GERC Multi Year Tariff (MYT) Regulations 2011 & CERC RE Tariff Regulations 2012. GUVNL opined that the proposed O&M cost in the discussion paper is on higher side considering the fact that the maintenance of wind farm is carried out through Centralized Maintenance System which results in reduced employee, administrative and

general expenses and overall O&M cost. GUVNL further pointed out that the TNERC, MERC, KERC and RERC have specified O&M cost of Rs 6.00 Lakh/MW, 7.68 Lakh/MW, 6.80 Lakh/MW and 6.94 Lakh/MW respectively and suggested to fix the O&M cost as Rs 7.00 Lakh/MW for tariff determination purpose for the new control period.

Commission's Decision:

The Commission has carefully gone through the approach followed by the CERC and other SERCs while fixing the O&M cost for the purpose of wind power tariff determination. The O&M cost of 6.5 Lakh/MW considered by the Commission in its wind tariff order dated 30 January 2010 , if escalated by 5% annually comes to 7.5 Lakh/MW for FY 2012-13. Considering the wind forecasting requirements in future, the Commission decides to fix O&M cost as Rs 8.00 Lakh/ MW for the new control period. In view of the suggestion of the objectors and the provision under MYT Regulations 2011, the Commission decides to fix the annual O&M escalation at the rate of 5.72% over the tariff period in the new control period starting from 11 August 2012.

i. Interest on Working Capital

The Commission in its Wind Tariff Order dated 30 January 2010 had considered the interest rate on working capital at 11.75% which was equivalent to the SBI PLR at that time. In the discussion paper, the Commission had considered interest on working capital equal to 50 basis points lower than that of interest on long term loan considering that the working capital is recurring and is required for a shorter time period. In the discussion paper, interest rate on working capital was considered as 11.50%.

Suggestions from Objectors

One of the objectors submitted that as per the GERC MYT Regulations the interest on working capital shall be allowed at a rate equal to the State Bank Advance Rate (SBAR). The weighted average SBAR during the period August 2009 to 20 July 2012 comes to 13.14% and hence the same may be considered for determination of tariff for wind power projects. Some objectors have proposed to consider interest on working capital above the interest on long term loan. Some have proposed interest on working capital equal to the interest on long term loan, and some have proposed the interest rate on working capital at 12% to 13.5%.

Commission's Decision

Keeping in view the Commission's decision to increase the interest on long term loan from 12% to 13% and keeping in view the suggestions from stakeholders, the Commission decides to consider the interest on working capital at 12% for the determination of tariff for the new control period starting from 11 August, 2012.

j. Discount Rate

The Commission in its Discussion paper had calculated the annual levellized tariff based on the discount rate of 11.08% over 25 year life of the wind power project.

Suggestions from Objectors:

Some of the objectors have suggested that the discount rate should be equal to the weighted average cost of capital (WACC). Renew Power Ventures Pvt. Ltd suggested considering the interest on debt as 13.5 % and WACC as 13.65%.

Commission's Decision

The CERC has considered the weighted average cost of capital (WACC) as a discount rate, while specifying the discount rate for bid evaluation. WACC is the addition of cost of debt and cost of equity. The cost of debt is calculated based on market interest rate and corporate tax rate, while the cost of the equity is calculated based on the risk free rate, beta, and equity market risk premium. The 10 year GOI securities rate for the previous year was being considered as the risk free rate. The market risk premium has been derived by subtracting the risk free rate from the rate of return on market portfolio over the past ten years. Sensex values for the past eleven years have been used to arrive at rate of return (CAGR) on the market portfolio for the past ten years. The beta value has been computed based on the data on Bombay Stock Exchange (BSE) Indices for Power Sector and Sensex for the year 2011.

The Commission has also gone through the discount factor methodology given in CERC RE tariff Regulations 2012 and noted that the CERC has recommended a discount rate based on post-tax weighted average cost of capital (WACC) for determination of levellized tariff for the control period starting from April 2012.

In view of the above, the Commission prefers to retain the discount rate of 11.08%, as specified by CERC in the notification number No. Eco 1/2012-CERC dated 03.04.2012, for calculation of levellized tariff over the 25 year life of the plant.

2.4.3 Subsidy and Incentive by the Central/State Government

Benefit due to Accelerated Depreciation: The Commission noted that the accelerated depreciation available under Section 32 Rule 5 of the Income Tax Act for wind power projects is discontinued from 1 April 2012 by Government of India**.** Wind power projects are now allowed to avail 15% normal depreciation as per Income Tax (4th amendment) Rules 2012, Notification No. 15/2012 [F.No.149/21/2010-SO (TPL)] S.O.694 (E), dated 30-3-2012.

In addition to the above 15% depreciation, the recent amendment in the Finance Act had allowed an additional depreciation of 20% to the wind power projects during the first year of commissioning. With this, wind power projects can avail 35% depreciation in the first year of commissioning. The Commission while calculating the tariff had factored in 35% depreciation during first year and 15% thereafter and proposed the same to be passed on to the utility through reduced tariff .

Suggestions from Objectors:

Some of the objectors have suggested that two separate tariffs with and without depreciation benefit may be specified since an IPP may not be able to avail the benefit. Some of the objectors suggested using the MAT rate during the first 10 year instead of corporate tax rate.

Commission's Decision

The Commission has noted that the benefit of 20% depreciation is available during the first year only; thereafter the 15% depreciation is available to both IPP as well as balance sheet financed projects. The Commission also noted that the Regulation 22 of the CERC RE tariff Regulations 2012 states that

"…….(i) Assessment of benefit shall be based on normative capital cost, accelerated depreciation rate as per relevant provisions under Income Tax Act and ***corporate income tax rate……"***

The Commission decides to calculate per unit benefit due to depreciation as per the above method. Further, the Commission decides to factor in the benefit of depreciation while calculating the tariff and specify a single generic levellized tariff for the new control period starting from 11 August 2012.

Benefit due to Generation based Incentive: The Commission noted that the Generation based Incentive (GBI) GBI scheme is discontinued from 31 March 2012. There are no further guidelines on the

extension of this incentive beyond 1 April 2012 from the Government of India. If the Government of India announces the GBI scheme during the new control period starting from 11 August 2012, the Commission shall take a view on GBI after studying the features of the scheme.

3. Tariff Determination

Based on the foregoing discussion, the operational and financial parameters considered by the Commission for determination of wind power tariff are given in the table below:

Parameters for the new control period starting from 11th August 2012	
Project Cost	
Land + Plant & Machinery + Erection Cost (Rs. Lakh/MW)	568
Evacuation Infrastructure Cost (Rs. Lakh/MW)	38
Total Project cost (Rs. Lakh/MW)	606
Normative O&M cost for first year (Rs. Lakh/MW)	8
Escalation in O & M (per annum from 2nd year)	5.72%
Performance Parameters	
CUF	24%
Project life in Years	25
Financial Parameters	
Debt-Equity ratio	70:30
Term of Loan in Years	10
Interest on Term Loan	13%
Interest on Working Capital	12%
Depreciation	6% (for the first 10 years) 2% (from 11 to 25 years)
Minimum Alternate Tax	20.008%
Corporate Income Tax	32.445%
Return on Equity	14% MAT of 20.008% allowed for first 10 years and Corporate tax at 32.445%

Parameters for the new control period starting from 11th August 2012	
Gross Tariff	Rs. 4.61 per kWh
Depreciation Benefit	Rs. 0.38 per kWh
Net Tariff	Rs. 4.23 per kWh

4. Other Commercial Issues

4.1 Transmission and Wheeling Charges

The Commission in its discussion paper had proposed to adopt the transmission and wheeling charges for the wind power projects availing open access (OA) in the new control period as per its Wind Tariff Order dated 30 January 2010. As per the earlier order, concessional transmission and wheeling losses were allowed for wind power projects wheeling wind energy below 66 kV level.

However, during the control period of the above Wind Tariff Order, the Renewable Energy Certificate (REC) mechanism was introduced in India in January 2010. As per the provisions of the CERC REC Regulations, wind power projects installed for captive use are allowed to avail RECs on total generation including self-consumption, provided such projects forego the concessional transmission and wheeling charges/losses and other benefits offered by the state Government/SERCs. In view of the above development, the Commission while proposing to retain the transmission and wheeling charges and concessions as specified in its Wind Tariff Order dated 30 January 2010, had further clarified that the wind power projects wheeling power for captive use and opting for RECs will have to pay normal open access charges.

Suggestions from Objectors

The utilities have submitted that the concessional transmission and wheeling charges be extended to captive wind power projects only and not for third-party sale. As these concessional charges will be cross-subsidised by other OA consumers, the utilities have proposed that such wheeling of energy shall be considered as part of their RPO fulfilment. One of the objectors submitted that the OA charges be considered in unit terms instead of connected capacity, due to the lower PLF of wind power projects. Further, under the concessional OA charges, there was a provision to levy 5 paise per unit for wind energy generators who desire to wheel power to more than two locations. In view of this, one of the objectors requested for clarification as to whether these charges are to be levied for power wheeled to more than two locations from one WTG or whether it will be levied on wind farm basis.

Commission's Decision

The transmission lines are designed so as to carry the rated connected capacity of wind power project and therefore it should have the capacity to carry full rated generation. Any generation lower than the full rated capacity will lead to under-utilisation of the transmission line. Therefore the Commission decides that the Wind Power Projects availing Open Access for third-party sale shall be liable to pay Open Access charges and losses as applicable to normal Open Access Consumers.

However, in case of the wind energy Generators opting for wheeling of power for own use, the Commission decides to allow lower transmission and wheeling charges and losses in line with the Govt. of Gujarat Amended Wind Power Policy dated 13 January 2009. Accordingly, the transmission and wheeling charges applicable to the captive consumers shall be as under:

a) Wheeling of power to consumption site at 66 KV voltage level and above.

   The wheeling of electricity generated from the Wind Power Generators, to the desired location(s) within the State, shall be allowed on payment of transmission charges and transmission losses applicable to normal Open Access Consumer.

b) Wheeling of power to consumption site below 66 KV voltage level.
   i. The wheeling of electricity generated from the Wind Power Generators, to the desired location(s) within the State, shall be allowed on payment of transmission charges, applicable to normal Open Access Consumer and transmission and wheeling losses @ 10% of the energy fed to the grid. The above loss is to be shared between the transmission and distribution licensee in the ratio of 4:6. This provision shall be applicable to the WEGs who are having more than one WEGs

   ii. The wheeling of electricity generated by smaller investors, having only one WEG in the State, to the desired location(s), shall be allowed on payment of transmission charges, applicable to normal open access consumer, and transmission and wheeling losses @ 7% of the energy fed to the grid. The above losses are to be shared between the transmission and distribution licensee in the ratio of 4:3.

Wind Energy Generator owner, who desires to wheel electricity to more than two locations, shall pay 5 paise per unit on energy fed into the grid to the Distribution Company concerned in whose area power is consumed in addition to the above mentioned transmission charges and losses, as applicable.

The wind power projects availing open access for captive use/third-party sale and willing to register under REC mechanism shall be governed as per CERC REC Regulations in force.

4.2 Cross Subsidy Surcharge

The Commission in its discussion paper had proposed to exempt from the cross subsidy surcharge third-party sale of wind energy along with the captive wind power projects in line with its earlier tariff order dated 30 January 2010. In order to promote renewable energy projects, the Commission proposed to continue the same practice during the new control period.

Suggestions from Objectors

One of the objectors requested to clarify if cross subsidy surcharge would also be applicable in case of captive consumption and third-party sale along with availing REC. Further, one of the licensees requested not to exempt from the cross-subsidy surcharge third party sale of power, as even after charging cross subsidy surcharge, a good margin will still be available to make it attractive for third parties to buy the renewable power. The licensee also submitted that Distribution Licensees may be empowered to recover cross subsidy surcharge from the parties who are opting for the REC Mechanism.

Commission's Decision

The Commission decides to continue the exemption from cross subsidy surcharge on OA transactions of wind energy not availing REC benefit as a promotional measure during the new control period starting from 11 August 2012.

The Commission clarifies that the cross subsidy surcharge will be applicable in the case of third-party sale availing REC benefit.

4.3 Energy Metering

In the discussion paper it was proposed to keep the wind power projects out of the purview of intra-state ABT. However, for the purpose of energy accounting, such projects will have to

provide ABT compliant meters at the interface point. Interface metering shall conform to the Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006. The electricity generated from the wind power generator shall be metered and readings shall be taken jointly by the wind power project developer with the Gujarat Energy Development Agency (GEDA), Gujarat Energy Transmission Company Ltd. (GETCO) or Distribution Company at the interconnection point of the generator bus-bar with the transmission or distribution system concerned, as the case may be.

Suggestions from Objectors

One of the objectors suggested that the metering point should also be the interconnection point of the wind power project and the requested to define the interconnection point.

Commission's Decision:

The Commission has discussed about the interconnection point and metering point in para 2.4.1 (b) of this order. The Commission directs that wind power project developers should install ABT compliant meters at the point of metering. The ABT meter shall conform to the Central Electricity Authority (Installation and Operation Meters) Regulations, 2006. The project developers will have to install Remote Transmitting Unit (RTU) for transferring the real time data to SLDC for its monitoring purpose. The electricity generated from the wind power generator shall be metered and readings shall be taken jointly by the wind power project developer with the Gujarat Energy Development Agency (GEDA), Gujarat Energy Transmission Company Ltd. (GETCO) or Distribution Company at the metering point.

4.4 Pricing of Reactive Power

Some of the wind energy generators require reactive power during initial start-up and their station transformers also continuously require reactive power from the grid. Hence, in order to maintain grid stability, it is necessary to limit such reactive power consumption from the grid by installation of suitable compensation devices. In order to restrain the wind power projects from consuming more reactive power from the grid and to encourage them to install suitable compensation devices to limit such reactive power consumption, the Commission in its discussion paper had proposed to continue the levy of reactive power charges as specified in its Wind Tariff Order dated 30 January 2010.

Suggestions from Objectors

One of the objectors requested to consider the pricing of reactive energy on a net basis i.e. the reactive power import minus export. Further, in the case of third party sale of wind power, such reactive energy charges should be added to the monthly bill of the third party purchaser, and not to the wind energy generator.One of the utilities suggested that by considering the all around price rise, the upward revision of reactive energy charges may be considered.

Commission's Decision

Export of reactive power does not always help the transmission network as it is linked with the level of voltage at the time of such export into the grid. Incremental impact of overall prices on reactive energy charges will be discussed in the Commission's transmission tariff order. Any change in the reactive energy charges for wind power projects if addressed in the Commission's transmission tariff order effective from time to time shall be made applicable to wind power projects. The Commission specifies the present rate of the reactive energy charges for wind power projects as follows:

"10 paise/kVARh – For the drawl of reactive energy at 10% or less of the net energy exported.

25 paise/kVARh – For the drawl of reactive energy at more than 10% of the net active energy exported".

4.5 Sharing of Clean Development Mechanism (CDM) Benefits

In the discussion paper, it was proposed to retain the provisions for sharing of CDM benefits as specified in Commission's Wind Tariff Order dated 30 January 2010 for the next control period. The provisions were as follows:

"The CDM benefits should be shared on a gross basis, starting from 100% to developers in the first year after commissioning, and thereafter reducing by 10% every year till the sharing becomes equal (50:50) between the developers and the consumers, in the sixth year. Thereafter, the sharing of CDM benefits should remain equal till the time that benefit accrues."

Suggestions from Objectors

One of the objectors had proposed allowing the investor to retain 100% CDM benefits. It was also pointed out that there is a wide gap in the date of project commissioning, date of CDM project registration with UNFCCC, issuance of CER and the actual receipt of revenue after

trading of CERs due to the various processes involved in the CDM project registration. Further, in sharing the CDM revenue, different views were put forth by the objectors. Some have proposed to consider sharing of net revenue after CDM project registration or after the receipt of revenue by the generator, or after five years of project registration etc. Further, one of the objectors suggested that 2% of the benefit from sale of carbon credits be invested for the development of local stakeholders where the wind project is located.

Commission's Decision

Considering the high initial cost of registering CDM projects, application of taxes on CDM benefits, the long time frame taken to realize the CDM benefits and the operational issues, the Commission decides that the sharing of net proceeds on account of CDM benefits realized through sale of CER generated from corresponding annual energy generation should be as follows:

- 100% of net proceeds through sale of CER generated from the energy generation in the first year after the date of commercial operation of the wind power project shall be retained by the wind power generating company.
- In the second year, the share of the beneficiary shall be 10% which shall be progressively increased by 10% every year till it reaches 50% in the sixth year; thereafter the proceeds shall be shared in equal proportion by the wind power generating company and the beneficiary.

Wind power projects availing CDM benefit shall share the net CDM proceeds annually as per above, by 31 March of every year with affidavit stating the annual energy generation (date of commissioning as starting point of the first year), CER generated, gross receipts, and net receipts.

4.6 Banking of Surplus Wind Energy

Considering the infirm nature of wind, as well as seeing the possible risk to utilities in changing electricity rates throughout the year based on the ABT mechanism, provision of one month banking was proposed for captive wind power projects in the discussion paper. The captive wind energy projects were allowed to set off captive consumption against the monthly energy generated during peak and normal hours. Banking facility was not offered to third-party sale of wind energy.

Suggestions from Objectors

One of the utilities submitted that allowing one month of banking will create financial burden on the utilities due to implementation of intra state ABT and UI mechanism. The utility, therefore, requested not to continue one month banking facility for the next control period. Utilities further submitted that if one month banking facility as proposed in the Discussion Paper is allowed, DISCOMs may be allowed to count this power for fulfilling their RPO.

One of the objectors submitted that, since 61% of the annual energy generation happens during six months i.e. April to Sept, the banking period should be considered for six months for generation between April to September and one month for rest of the year. Some of the objectors have proposed to allow the banking facility for third party sale also. IWPA suggested to consider consider TOD slot-wise banking for third party OA.

Commission's Decision

By considering the intermittent generation pattern of wind power projects and as a promotional measure the Commission decides to continue the present practice of settlement of excess generation after set off in case of captive wind power projects in the state. With intra-state ABT mechanism in place in the state, increase in time period for banking will have adverse financial impact on utilities. Further, surplus generation available after energy settlement, if any, shall be purchased by the utility. Hence, the Commission decides to continue the present practice of settlement of excess generation after set off in case of captive wind power projects in the state. In other words, WEGs opting for captive use of the energy generated shall be eligible to get set off against the energy generated during peak and normal hours as specified by the Commission in the tariff orders. The WEGs are eligible for one month banking for the electricity generated during the same calendar month. However, they are eligible to utilize the same during the month in proportion to the energy generated during peak and normal hour period. The banking facility shall not be available for third-party sale of wind energy.

4.7 Purchase of Surplus Power from Wind Power Projects opting for Captive use and Third Party Sale under Open Access.

In the discussion paper, it was proposed that in case of captive use of wind power, the surplus power after one month's banking be purchased by the distribution licensee at the rate of 85% of the tariff declared by the Commission. Also, in case of third-party sale of wind power, the power surplus after set off with open access consumer's consumption in the same 15 minutes

time block was proposed to be sold to the distribution licensee concerned at the rate of 85% of the tariff declared by the Commission.

Suggestions from Objectors

One of the utilities submitted that wind generators generally generate more during night hours when the system demand is low and the surplus power available after meeting the captive consumption shall not be treated as committed power to the DISCOM. Therefore, it is proposed that the rate for sale of surplus power may be kept at the rate of 85% of the tariff determined by the Commission till the fulfillment of RPO, and thereafter at the rate of 50% of the wind tariff determined by the Commission. Further, one of the utilities submitted that the distribution licensee shall not be mandated to purchase surplus power from the parties who are opting for the REC mechanism, as it would give additional undue gains to them at the cost of the end consumers. On the contrary, one of the developers stated that any surplus power after banking may be considered for purchase by the utility at the tariff determined for the respective RE technology. Some developers proposed to sell the surplus power at APPC to avail RECs.

Commission's Decision

Quantum of surplus power available after consuming under captive use or third-party sale is uncertain and this could lead to uncertainty in planning by utilities for utilization of the same. Further, linking the tariff for purchase of surplus power with the fulfilment of RPO by the utilities will lead to implementation issues, and hence, the Commission decides not to link the same with the RPO.

The Commission clarifies that in case of wind power projects availing OA for captive use / third-party sale but not opting for REC, the surplus power after set off will be purchased by the distribution licensee at the rate of 85% of the tariff determined by the Commission in this order.

In case of wind power projects availing OA for captive use / third-party sale and opting for REC, the surplus power after set off will be purchased by the distribution licensee at Average Power Procurement Cost (APPC) applicable for that year.

4.8 Renewable Energy Certificates for Third-Party Sale and Captive Use of Wind Energy

In the discussion paper, it was proposed that the power generated from wind power projects if wheeled to third party or for captive use will be eligible for availing the Renewable Energy Certificates under the CERC REC mechanism. Provided further that a Captive Power Producer (CPP) based on renewable energy sources shall be eligible for the entire energy generated from such plant including self consumption for participating in the REC scheme subject to the condition that such CPP has not availed or does not propose to avail any benefit in the form of concessional/promotional transmission or wheeling charges, banking facility benefit and waiver of electricity duty.

Suggestions from Objectors

One of the objectors requested to allow REC benefit in case banking, cross subsidy surcharge and concessional wheeling and transmission losses benefits are availed by the generator. Further, one objector submitted that the CPPs whose entire generation including self consumption is eligible for availing REC be allowed to retain RECs required to fulfill self RPO, if any. One of the objectors suggested that the Commission may decide the APPC and order the DISCOM to sign PPA with WTG owners for procurement of power at APPC as and when WTG owner approaches for the same.

Commission's Decision

The Commission has specified the concessional treatment available to the captive and third party wind power projects. However, the eligibility of wind power projects for registering in the REC mechanism is governed by the CERC REC Regulations and the same shall also be applicable to the wind power projects in Gujarat.

4.9 Security Deposit

In order to assure GETCO about their seriousness, the project developers are required to furnish bank guarantee of Rs 5 Lakh/MW as a security deposit to GETCO as per Clause 18 of the amendment to Wind Power Policy 2007 of the Government of Gujarat and Order No. 1 of 2010 issued by the Commission on 30 January 2010. In the discussion paper, it was proposed to continue with the same with additional provision that in case of delay in project commissioning beyond the prescribed period due to unforeseen reasons, GETCO may issue extensions on case-to-case basis.

Suggestions from Objectors

One of the objectors suggested that security deposit was specified by Govt. of Gujarat in wind power policy 2007 to avoid the holding of land and to ensure the seriousness of the developer. However, there is no prequalifying criterion for allotment of the evacuation capacity. One of the objectors proposed that no security deposit should be kept or alternatively the time limit for completion of the project should be increased to 1.5 times the existing time limit. Some objectors have requested to consider the expenses towards bank guarantee in the project capital cost. Further, GUVNL submitted that security deposit should be at least Rs. 25 Lakh/MW to demonstrate the sincerity in development of power project and to deliver power to power procurer as per the terms and conditions of PPA. GETCO submitted that considering the Right of Way (RoW) issue and delays in the project commissioning the prescribed period for commissioning the project from the date of allotment of transmission capacity may be increased further by six months. GETCO further submitted that developers complete the work of evacuation line but do not erect the WTGs. Charging of such evacuation line without any wind generation will generate reactive energy and also increase losses of transmission network. Hence the wind power project developer should be directed to commission at least 10% of the allotted capacity within one month of charging of evacuation line. Otherwise, the developer shall be liable to pay transmission charges for 10% of allotted capacity at location till such 10% capacity get commissioned.

Commission's Decision

The Commission has considered the suggestions offered by various stakeholders. The Commission recognizes the fact that it is the duty of GETCO to create necessary infrastructure for evacuation of power from the Wind Power Projects. At the same time, the Wind project developers have to show their commitments for utilization of infrastructure created by GETCO. As such, the Commission decides to retain the provision regarding furnishing of Bank Guarantee of Rs. 5 lakh/MW by the project developers to GETCO. Time periods allowed to the developers to complete their projects will be as under:

MW	Period for commissioning the entire capacity
1 MW to 100 MW	1.5 years from the date of allotment of transmission capacity
101 MW to 200 MW	2 years from the date of allotment of transmission capacity
201 MW to 400 MW	2.5 years from the date of allotment of transmission capacity
401 MW to 600 MW	3.5 years from the date of allotment of transmission capacity

Further, GETCO shall be entitled to encash the bank guarantee in case the developer fails to commission the project within the specified time period.

Provided that the GETCO may allow extension of time period in cases where the developer fails to commission the project within the prescribed period due to unforeseen reasons beyond the control of the project developer.

Provided further that the developer shall commission at least 10% of the allotted capacity within one month of charging of evacuation line. Failing this, the developer shall be liable to pay long term transmission charges for 10% of allotted capacity till such 10% of allotted capacity is commissioned.

Other Issues

Scheduling of Wind Power

The implementation issues of Indian Electricity Grid Code (IEGC) and Renewable Regulatory Fund (RRF) are under discussion with CERC. Hence, in the discussion paper it was proposed that, once the IEGC and RRF are implemented, scheduling of wind power will be introduced in Gujarat after suitably amending the state grid code. The Commission has considered capital cost and recurring expenses associated with the hardware and forecasting facilities while fixing the capital cost and O&M benchmark for computation of tariff.

Suggestions from Objectors

One of the objectors proposed that in the discussion paper wind power projects are proposed to be kept out of the ABT mechanism and hence it is not clear how the deviation to forecast is to be made applicable to the wind power projects. Further, one of the objectors submitted that most of the wind sites are located at remote places where internet facility or communication facility is not available and in such case the use of forecasting software and communicating the 15 minute time block schedule to the SLDC is an issue faced by the developers along with other implementation issues. The CERC has undertaken a study for implementation of the forecasting and scheduling mechanism for the wind power projects. Hence, it was requested not to include this issue in the present tariff order and it may be discussed separately after the CERC order on the same. SLDC submitted that during the monsoon season wind penetration in the grid reaches up to 20%. Hence, for proper grid management, day-ahead scheduling and RRF implementation is necessary.

Commission's Decision

The Commission decides that for proper functioning of the grid, all wind power projects including captive and third-party sale project should submit a day-ahead schedule to SLDC. Also, real time metering data should be shared with SLDC. However, Wind power projects are kept out of the preview of intra-state ABT mechanism.

The Commission further clarifies that RRF is a mechanism envisaged under IEGC for sharing the cost associated with RE purchase amongst all the states. IEGC specifies that the UI charges borne by the host State due to the wind generation shall be shared among all the States of the country in the ratio of their peak demands in the previous month based on the data published by CEA, in the form of a regulatory charge known as the Renewable Regulatory Charge operated through the Renewable Regulatory Fund (RRF). Therefore, as and when the RRF mechanism is made operational at national level, same will be made applicable at state level including the provisions for scheduling of wind power specified under IEGC.

In view of the above, the Commission decides that for the purpose of energy accounting and facilitating RRF mechanism, each WEG shall have to provide ABT compliant meters and GEDA shall confirm the same while issuing the commissioning certificate.

9. Applicability of the Order

This order shall come into force from 11 August, 2012. The tariff determined by the Commission in this order shall be applicable to all the wind energy generators commissioned on or after 11th August, 2012. The GUVNL/DISCOM shall revise PPA, if already signed with the wind power projects whose Schedule date of Commissioning is on or after 11 August 2012 in accordance with the provisions of this order.

Sd/-	Sd/-	Sd/-
Dr. M. K. Iyer	**Shri Pravinbhai Patel**	**Dr. P. K. Mishra**
Member	Member	Chairman

Place: Ahmedabad

Date: 08/08/2012.

Annexure I

List of Stakeholders who have submitted written suggestions/objections on the Discussion Paper.

Sr. No	Name of Stakeholder
1	Acciona Energy India Pvt. Ltd.
2	Ankur Scientific Energy Technologies Pvt. Ltd
3	CLP Wind Farms (India) Pvt. Ltd.
4	Dakshin Gujarat Vij Co. Ltd
5	Gamesa Wind Turbines Pvt. Ltd
6	Gondal Chamber of Commerce and Industry
7	Greenergy Renewables Pvt. Ltd.
8	Gujarat Energy Development Agency
9	Gujarat Energy Transmission Corporation Ltd.
10	Gujarat Florochemicals Ltd.
11	Gujarat Forum on CDM
12	Gujarat Urja Vikas Nigam Ltd.
13	Indian Wind Energy Association
14	Indian Wind Power Association
15	Indian Wind Turbine Manufacturers Association
16	Inox Renewables Ltd.
17	Madhya Gujarat Vij Company Ltd
18	Moser Bear Projects Private Ltd.
19	Mytrah Energy (India) Ltd.
20	Orient Green Power Company Ltd.
21	Paryavaran Mitra
22	Paschim Gujarat Vij Company Ltd.
23	Prayas Energy Group
24	Renew Power Ventures Pvt. Ltd.
25	Uttar Gujarat Vij Company Ltd.
26	Vaayu (India) Power Corporation Pvt. Ltd.
27	Vestas Wind Technology India Pvt. Ltd.
28	Welspun Renewables Energy Ltd.

Annexure II

List of stakeholders, who have attended the public hearing on 31 July 2012.

Sr. No	Name of Stakeholder
1	CLP Wind Farms (India) Pvt. Ltd.
2	Dakshin Gujarat Vij Co. Ltd
3	Gamesa Wind Turbines Pvt. Ltd
4	Gujarat Energy Development Agency
5	Gujarat Energy Transmission Corporation Ltd.
6	Gujarat Florochemicals Ltd.
7	Gujarat Urja Vikas Nigam Ltd.
8	Indian Wind Energy Association
9	Indian Wind Power Association
10	Indian Wind Turbine Manufacturers Association
11	Inox Renewables Ltd.
12	Madhya Gujarat Vij Company Ltd
13	Moser Bear Projects Private Ltd.
14	MPSEZ Utilities Ltd.
15	Mytrah Energy (India) Ltd.
16	Paschim Gujarat Vij Company Ltd.
17	ReNew Power Ventures Pvt. Ltd.
18	State Load Dispatch Centre
19	Torrent Energy Ltd.
20	Torrent Power Ltd. Ahmedabad
21	Torrent Power Ltd. Surat
22	Uttar Gujarat Vij Company Ltd.
23	Vaayu (India) Power Corporation Pvt. Ltd.
24	Vestas Wind Technology India Pvt. Ltd.
25	Welspun Renewables Energy Ltd.

Annexure III

Tariff Sheet

Tariff Calculation

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Net Energy sold (lakh kWh)	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02
Costs																									
O&M	8.00	8.46	8.94	9.45	9.99	10.57	11.17	11.81	12.48	13.20	13.95	14.75	15.59	16.49	17.43	18.43	19.48	20.59	21.77	23.02	24.34	25.73	27.20	28.75	30.40
Depreciation	36.36	36.36	36.36	36.36	36.36	36.36	36.36	36.36	36.36	36.36	12.12	12.12	12.12	12.12	12.12	12.12	12.12	12.12	12.12	12.12	12.12	12.12	12.12	12.12	12.12
Interest on term loan	52.39	46.87	41.36	35.84	30.33	24.82	19.30	13.79	8.27	2.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working capital	1.37	1.32	1.27	1.23	1.18	1.14	1.10	1.05	1.01	0.97	0.74	0.76	0.78	0.80	0.82	0.84	0.86	0.88	0.90	0.93	0.95	0.98	1.01	1.04	1.08
Return on Equity	25.45	25.45	25.45	25.45	25.45	25.45	25.45	25.45	25.45	25.45	25.45	25.45	25.45	25.45	25.45	25.45	25.45	25.45	25.45	25.45	25.45	25.45	25.45	25.45	25.45
Tax on RoE	5.09	5.09	5.09	5.09	5.09	5.09	5.09	5.09	5.09	5.09	8.26	8.26	8.26	8.26	8.26	8.26	8.26	8.26	8.26	8.26	8.26	8.26	8.26	8.26	8.26
Total Cost (Rs lakh)	128.66	123.56	118.48	113.43	108.41	103.43	98.47	93.55	88.67	83.83	60.53	61.34	62.20	63.11	64.07	65.09	66.17	67.30	68.51	69.78	71.12	72.54	74.04	75.63	77.31
Tariff (Rs/kWh)	6.12	5.88	5.64	5.40	5.16	4.92	4.68	4.45	4.22	3.99	2.88	2.92	2.96	3.00	3.05	3.10	3.15	3.20	3.26	3.32	3.38	3.45	3.52	3.60	3.68
Levellised Tariff Calculations																									

Discount Rate	11.08%
Levelized Tariff (Rs / kWh)	**4.61**

Depreciation Benefit Calculations

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Amount of book depreciation (Rs lakh)	16.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	32.00	17.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Amount of accelerated depreciation (Rs lakh)	106.05	74.99	63.74	54.18	46.05	39.15	33.27	28.28	24.04	20.43	17.37	14.76	12.55	10.67	9.07	7.71	6.55	5.57	4.73	4.02	3.42	2.91	2.47	2.10	1.79
Net depreciation benefit (Rs lakh)	90.05	43.00	31.75	22.19	14.06	7.15	1.28	-3.71	-7.96	-11.56	-14.63	-17.23	-19.45	-21.33	-22.93	-24.29	-25.45	-11.88	4.73	4.02	3.42	2.91	2.47	2.10	1.79
Tax Benefit (Rs lakh)	29.22	13.95	10.30	7.20	4.56	2.32	0.41	-1.20	-2.58	-3.75	-4.75	-5.59	-6.31	-6.92	-7.44	-7.88	-8.26	-3.86	1.54	1.31	1.11	0.94	0.80	0.68	0.58
Net energy Generation (lakh Units)	10.512	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02	21.02
Accelerated depreciation benefit per unit (Rs / kWh)	2.78	0.66	0.49	0.34	0.22	0.11	0.02	-0.06	-0.12	-0.18	-0.23	-0.27	-0.30	-0.33	-0.35	-0.37	-0.39	-0.18	0.07	0.06	0.05	0.04	0.04	0.03	0.03
Levellised benefit of accelerated depreciation (Rs / kWh)	**0.38**																								

Net Tariff Levellised for 25 years = Gross tariff – Depreciation Benefits

= 4.61 – 0.38

Net Tariff Levellised for 25 years = 4.23 Rs/kWh