# CENTRAL ELECTRICITY REGULATORY COMMISSION
# NEW DELHI

**Petition No. 02/SM/2017**

**Date of Order: 30$^{TH}$ March, 2017**

**Coram:**
**Shri Gireesh B. Pradhan, Chairperson**
**Shri A.K. Singhal, Member**
**Shri A.S. Bakshi, Member**
**Dr. M.K. Iyer, Member**

**IN THE MATTER OF**

Determination of Forbearance and Floor Price for the REC framework to be applicable from 1$^{st}$ April 2017.

## ORDER

## A. BACKGROUND

1. In exercise of the power under section 66 and 178 of the Electricity Act, 2003 the Commission has notified the Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) Regulations, 2010 (hereafter REC Regulations).

2. As per the first proviso to clause (1) of Regulation 9 of the REC Regulations, the Commission may in consultation with the Central Agency (Power System Operation Corporation Limited) and Forum of Regulators from time to time provide for floor price and forbearance price separately for Solar and Non-solar Renewable Energy Certificates.

3. Further, Clause (2) of Regulation 9 of the REC Regulations provides for the guiding principles for determining the forbearance and floor price for Solar and Non-solar Certificates. The relevant provisions are extracted as under:

*"**9. Pricing of Certificate:***

*(1) The price of Certificate shall be as discovered in the Power Exchange:*

*Provided that the Commission may, in consultation with the Central Agency and Forum of Regulators from time to time provide for the floor price and forbearance price separately for solar and non-solar Certificates.*

*(2) The Commission while determining the floor price and forbearance price shall be guided inter- alia by the following principles:*

*(a) Variation in cost of generation of different renewable energy technologies falling under solar and non-solar category, across States in the country;*

*(b) Variation in the Pooled Cost of Purchase across States in the country;*

*(c) Expected electricity generation from renewable energy sources including:-*

*i. expected renewable energy capacity under preferential tariff*

*ii. expected renewable energy capacity under mechanism of certificates;*

*(d) Renewable Purchase obligation targets set by State Commissions"*

4. In pursuance of the powers vested under proviso to the Regulation 9 (1) of REC Regulations, the Commission came out with an Order dated 1st June, 2010 for 'Determination of Forbearance and Floor Price for the REC framework' (Suo Motu Petition No.99/2010) and prescribed forbearance price and floor price for dealing in Certificates under the REC Regulations:

| | **Non Solar REC (Rs / MWh)** | **Solar REC (Rs/ MWh)** |
|---|---|---|
| **Forbearance Price** | 3,900 | 17,000 |
| **Floor Price** | 1,500 | 12,000 |

5. Above determined forbearance price and floor price were valid for the control period upto 31.03.2012.

6. Accordingly, based on the guiding principles specified in Para 3, the Commission vide its suo-motu Order (No 142/2011) dated 23.08.2011 determined the following forbearance and floor prices for the control period from 01.04.2012 to 31.03.2017:

| | **Non Solar REC (Rs/ MWh)** | **Solar REC (Rs/ MWh)** |
|---|---|---|
| **Forbearance Price** | 3,300 | 13,400 |
| **Floor Price** | 1,500 | 9,300 |

7. Subsequently, based on review of solar PV tariff, the Commission vide its suo-motu Order (No. SM/016/2014 dated 30.12.2014) determined the following forbearance and floor price for Solar REC for the remaining period of the control period i.e. up to 31.03.2017. The forbearance and floor price for Non Solar REC were left unchanged.

| | **Solar REC (Rs/ MWh)** |
|---|---|
| **Forbearance Price** | 5,800 |
| **Floor Price** | 3,500 |

Further, Clauses (7) & (8) of Regulation 7 of the REC Regulations provide for the guiding principles for quantum of Certificate to be issued to the eligible entities being the solar generating companies registered under REC framework prior to 01.01.2015. The relevant provisions are extracted as under:

“***7 Denomination and Issuance of Certificates***

*….*

*(7) The Commission shall determine through a separate order, the quantum of Certificate to be issued to the eligible entities being the solar generating companies registered under REC framework prior to 1st January 2015, for one Megawatt hour of electricity generated and injected into the grid or deemed to be injected (in case of self-consumption by eligible CGP) into the grid as per the following formula:*

*Vintage Multiplier=Floor Price of Base Year / Current Year Floor Price*

*Where,*

*i. "Base year" means the year 2012-13 being the year in which the floor price was determined for solar REC for a period of five years"*

*(8) The vintage multiplier as specified in clause (7) of this Regulation shall be provided to the solar generating companies registered under REC framework prior 1st January 2015 and shall be applicable for the existing and future solar RECs for the period from 1st January 2015 up to 31st March 2017, after which such projects shall be eligible for one REC for one megawatt hour of electricity generated.”*

Based on the above, a vintage multiplier of 2.66 was provided to solar generating companies registered under REC framework prior to 1$^{st}$ January 2015. The vintage multiplier is valid up to 31$^{st}$ March 2017.

8. The Commission proposed the following forbearance and floor price for dealing in Certificates under the REC Regulations with effect from 1st April 2017 vide Suo-Motu Order dated 28.02.2017 (Petition No. 02/SM/2017):

| | **Non Solar REC (Rs/ MWh)** | **Solar REC (Rs/ MWh)** |
|---|---|---|
| **Forbearance Price** | 2,900 | 2,500 |
| **Floor Price** | 1,000 | 1,000 |

*The above stated forbearance and floor prices shall be effective from 01.04.2017 and shall remain valid until further orders by the Commission.*

*No vintage multiplier has been proposed for any technology and the existing vintage multiplier for solar generating technologies registered in REC framework prior to 01.01.2015 shall expire after 31.03.2017.*

9. Comments / suggestions of the stakeholders on the above proposal were invited by 20.03.2017. In response to above, 108 stakeholders submitted their comments/suggestions. The list of such stakeholders is attached as Annexure-A. A public hearing was held on 22.03.2017 where 14 stakeholders made written or oral presentations.

## B. CONSIDERATION OF VIEWS OF THE STAKEHOLDERS AND ANALYSIS & FINDINGS OF THE COMMISSION ON IMPORTANT ISSUES

### I. Impact on Existing Inventory due to decrease in REC price

***Stakeholder Comments***

- **Modi Group (Jai Mangal Infra Powers Pvt. Ltd.)** has suggested that the efforts for clearing REC backlog are minimal, however the price of REC is in favor of industries/Discoms who have not followed the RPO.

- **Omega Renk Bearings Pvt. Ltd.** has submitted that the projects commissioned earlier were much costlier and they thought that the Govt. would seek to offset the investment through REC scheme for generating green power. Less than 1.27% of RECs are getting traded in power exchanges. Low Floor Price on unsold accumulated RECs and no vintage multiplier will lead to considerable financial loss. They have suggested to maintain the existing floor price for the unsold REC or to add multiplier to bring it in line with new price. They have also suggested to increase the proposed floor price from Rs 1000 to Rs 3000/REC.

- **DCM Shriram Industries Limited, IWPA, IBPA, Orient Green Power Company Ltd. and UP Sugar Mills Cogen Association** have submitted that significant loss would have to be borne by RECs projects on existing inventory calculated even on the floor price. The existing inventory is the result of lack of demand of RECs, which has been caused due to lack of RPO enforcement by the States. This represents a significant failure on the part of State Regulators, the burden of which will have to be borne by RE projects for no fault of theirs. RE projects had been set-up by various power generators assuming the floor prices & forbearance price at a particular level. Now drastically reducing these prices will have significant adverse impact on the viability of these projects.

The benefit of the price reduction will primarily go to those obligated entities that have not followed the requirement of law so far and have not fulfilled their RPO obligations. Such obligated entities will benefit as they can meet their past obligations at much lower cost. They have requested that if reduction in rates is to be implemented as proposed, it should be prospective i.e. w.e.f. 01.04.2017 and the RECs issued after April 2017 should be used only for compliance of RPO pertaining to FY 2017-18 and onwards. While, existing RECs should continue to be traded at the existing floor and forbearance price, and obligated entities should be required to meet their obligations pertaining to FY 2016-17 and earlier through the existing RECs only.

- **AA Energy Ltd.** has submitted that they will face a loss of Rs 1.28 crores upon implementation of proposed revision of REC prices. They have suggested to protect the value of the inventory of RECs accumulated by the RE projects by providing an appropriate vintage multiplier on the inventory. In addition they have request that the obligated entities which have been in default should be asked to meet past RPO compliance on the basis of the value of RECs traded in the past. This shall be in addition to the appropriate penal measures as per the RPO regulations. Without this measure the price reduction will have the effect of rewarding the defaulter.

- **JVS Export, Shri Dhanalakshmi Spinntex Pvt. Ltd., Chiranji Lal Spinners Pvt. Ltd. and Shiny Knitwear** have commented that in Tamil Nadu, each unit of energy generated through a REC windmill will get the APPC price which is tabulated below from time to time (APPC range from 2012-13 till 2016-17 are referred). By the sale of REC, a unit of electricity generated through REC windmill would fetch a price of Rs.1.50 gross. By adding this with the APPC price, the net rate will be Rs.2.65 + Rs.1.50 = Rs.4.15 / Unit. If it is reduced to Re. 1 per unit, it will fetch only a price of Rs.2.65 + Re. 1.00 = Rs.3.65. Hence, the proposal brought for finalization to reduce the Floor price of Non-Solar REC from Rs.1500 to Rs.1000, would result in to a price of Re. 1 only for every unit of energy which will be 2/3 of the price presently available. Factors like high delay in payment of money by the Utility, TANGEDCO to generators of wind energy were not factored. In addition, REC windmills, when captively consuming their own energy, have to pay an extra cost of Rs.0.65/Unit when compared to the Non REC windmills that continue to exist in preferential tariff. They have requested to withdraw the proposal and accordingly to continue with the existing Floor price or to increase the same considerably to ensure proper RoI.

- **IWPA and Oswal Woollen Mills Ltd. Nahar** commented that if the said generators would not have participated in the REC mechanism and would have chosen to supply power at preferential tariff, it would have recovered the entire preferential tariff with the guaranteed return on equity. In the event of delay in payment of preferential tariff, the generator would have been entitled to late / delayed payment surcharge from the distribution licensees. However, generators who have opted for REC mechanism have not been able to recover a part of the tariff component for last three years and have also lost earnings by way of interest on such money due to which in any case the floor price of 1500 has come down for them to much lower level. They have request not to reduce the floor price of the RECs and keep it aligned in such a manner that the total recovery of the generator from APPC and the floor price of REC is equivalent to the preferential tariff of such State.

- **Indian Energy Exchange** has submitted that continuous reduction in Forbearance and Floor Price of REC is incentive to defaulting obligated entities.

- **IL&FS** has emphasized that it is imperative that the Commission should clarify its stand on the unsold stock of RECs in the market and a clear roadmap for backlog of unsold RECs should be made and communicated to restore the investor's interest in this mechanism.

- **Indian Sugar Mills Association** has submitted that proposed reduction in floor and forbearance price for REC framework for Non-Solar projects especially the cogenerating plants of sugar mills will only worsen situation as with 5th Amendment to REC Regulations, co-gen plants were made ineligible for RECs and the plants already have a huge inventory of RECs lying with them. It is requested that present rate must be continued for at-least next 3 years for reassuring viability of projects established.

- **Indian Paper Manufacturer's Association, JK Paper Limited** has submitted that Paper Mills have incurred huge expenditure in installation of plant and equipment in the last few years to avail of the REC mechanism based on the floor price of Non-Solar REC of INR 1,500. Some new projects were conceptualised and undertaken keeping the floor price of REC benefit in view. The entire project investment undertaken by Paper Mills will become unviable if the floor price of Non-Solar REC is reduced by 33% to INR 1,000 from 1st April 2017 as their revenue model will be impacted significantly.

  All Paper Mills have significant unsold stock of Non-Solar RECs, which in their book of accounts is valued at the floor price of INR 1,500 per REC. Reduction in the floor price will result in significant loss.

  In addition to the above stakeholders, **Kanchanjunga Power Company Private Limited and Himalaya Power Producers Association** also have have requested that the floor price of Non-Solar RECs should not be revised downwards and should be retained at INR 1,500.

- **Orient Green Power Company Limited and IBPA** have submitted that the carrying cost of existing stock of RECs shall be taken into consideration and the present Non-Solar floor rate of Rs 1500/REC shall be continued beyond 31.03.2017 for the next 5 years. They also agree for revision in forbearance price of RECs.

- **Prayas Energy Group** has submitted that the provision in Clause 8 of the draft Order "The following forbearance and floor price shall be valid until further orders by the Commission" would allow the Commission to revise these bands in a more timely manner depending on market dynamics) and may be more appropriate going forward rather than having a lock in for a certain fixed number of years.

- **The KCP Limited** has submitted that their Solar REC inventory as on March 2017 is 12100 which is worth Rs 4.235 crores considering the existing floor price of Rs 3500 and Rs 1.21 crores considering the proposed floor price of Rs 1000. Their Solar project shall face a loss of Rs 3.025 crores due to the proposed reduction in prices.

- **REConnect Energy Solutions Pvt. Ltd., Bansal Wind Mill Pvt. Ltd., Sri Sivajothi Spinning Mills (P) Ltd., Fab Colors, Baroda Moulds & Dies, Electrical Controls & Systems, Kaizen Switchgear Products, Kasturi & Sons Ltd., SRG Apparels Pvt. Ltd., Karur K.C.P Packagings Ltd., Manidhari Gums & Chemicals, ETA Power Gen Pvt. Ltd., Rane TRW Steering Systems Pvt Ltd, Armstrong Power Systems Pvt. Ltd., Bonafide Himachalies Hydro Power Developers Association, Jindal ITF Urban Infrastructure Limited, Naga Limited, Sanjiv Prakashan, Kasturi Estates Pvt. Ltd.** have submitted REC projects will see loss of Rs 1,866 crore due to reduction in the REC prices on existing inventory.

  All these stakeholders along with **IWPA, UP Sugar Mills Cogen Association, Jindal ITF Urban Infrastructure Limited, Power & Energy Consultants and Ujaas Energy Limited** have submitted that the benefit of the price reduction will primarily go to those obligated entities that have not followed the requirement of law so far and have not fulfilled their RPO obligations as they can meet their past obligations at much lower cost.

They have suggested that RECs issued after April 2017 should be used only for compliance of RPO pertaining to FY 2017-18 and onwards. (Referred to as ‘REC17’). This shall split the RECs markets into to two parts - RECs representing RE generation prior to March 2017 and after April 2017.

Advantages of the approach:-

- RE projects will not have to incur a loss of their inventory and shall not render as NPAs

- It will avoid the windfall gain accruing to defaulting Obligated Entities

- If a significant amount of vintage multipliers are issued then the market will register a huge increase in inventory without the consequent commitment of increase in demand, However, if a REC2017 market is created, it will continue to have high clearing ratios and better balance between demand and supply.

- **Mytrah Energy (India) Pvt. Ltd.** has submitted that over the last 6 years, all previous trades have been concluded and settled only on floor price, any further reduction in the price might dent investor’s confidence and will make the project unviable.

- **Klassic Wheels Pvt. Ltd.**, **Uma Corporation, Gaurav Agro Pipes, Bothara Agro Equipments Pvt. Ltd., Paras PVC Pipes & Fittings Pvt. Ltd., Pooja Renewable Energy Pvt. Ltd., Kasturi Foundry Pvt. Ltd. and Advik Hitech Pvt. Ltd.** have submitted that reduction in floor price shall make their project unviable and will run the risk of project being regarded as NPA by banks as the REC trading is already very low. They have submitted details of their expected loss to the tune of Rs 24.95 – 41.60 lacs/year due to reduction in floor price of Solar REC.

- **Lohia Developers India Pvt. Ltd., Lohia Gramin Vikas Pvt. Ltd. and DesignCo** have submitted that they have setup Solar plants in 2013-14, at that time, the companies have infused a capital investment Rs. 17 Crore, Rs 13 crores and Rs 43.18 crores respectively Out of the total capital investment of Rs. 17.00 Crore, the companies have taken a term loan of Rs.9.38 Crore, Rs 4.10 crore and Rs 16.25 crores from Punjab National Bank. In FY 2013-14 & 2014-15, when Solar power plant was set-up, the cost per MW was approx Rs. 6.5 - 7 crores/MW which is much higher than current cost of Rs. 4.50 crore/MW. Thus, expecting old projects to be assessed at current rates and thereby taking a significant loss is unjustified.

  REC based Solar power projects contribute approx 15% of total installations in India. The investments made for these projects were considering the project viability based on revenue realization from REC sale in the price band of INR 3,500-5,800 per REC. The project Capex per MW during 2011-12, 2012-13 & 2013-14 were approx. Rs 14Cr, Rs 10 Cr & Rs 7 Cr. respectively. Hence, reducing REC prices will have severe adverse effect on project viability for projects already commissioned in REC route and thus compelling the commissioned Solar projects to become NPA and the viability of existing projects will be endangered.

- **Prodigy Hydro Power Pvt. Ltd.** has submitted that there is a reduction in capital cost or solar projects, however the capital cost of Small Hydro Power (SHP) projects is increasing and the present capital cost is more than Rs 10 crores/MW. They recommend a separate RPO for SHP Projects and increase in REC price commensurate with increase in capital cost.

- **Power and Energy Consultants , Saidpur Jute Co. Ltd`, Triveni Sangam Holdings &Trading Co. Pvt Ltd, New Patel Saw Mill, New Patel Saw Mill, Dr. DH Patel,Patel Wood Syndicate,Govindram Shobhram & Co.,Agrawal Minerals (Goa) Pvt Ltd, Suma Shilp Limited, Daksha Infrastructure Pvt. Ltd.,Gangadhar Narsinghdas Agrawal Saraswati Industries** have commented that a huge number of RECs are lying unsold with developers, the prices of RECs issued prior to 31.03.2017 will also reduce and this will result in to companies going under NPA due to non-payment.

- **Shri S P Garg** suggested that if the proposed pricing mechanism is implemented w.e.f. April 01, 2017; instead of providing for a vintage multiplier especially for Non-Solar technologies (as they have been kept at constant prices since the 2011 Order by Commission) allow them to be traded along with Solar RECs which are issued till March 31, 2017 at existing level of Forbearance and Floor prices. The proposed prices shall be applicable for REC projects registered and RECs issued from 01.04.2017 onwards.

***<u>Analysis & Decision</u>***

10. Many stakeholders have objected to the loss of value of existing inventory. Losses to the tune of INR 1866 crores have been estimated. They have highlighted that the benefit of the price reduction will primarily go to those obligated entities that have not followed the requirement of law so far and have not fulfilled their RPO obligations.

Few stakeholders have also suggested that this floor price should be applicable to future inventory only. Alternatively, others have suggested to protect the value of the inventory of RECs accumulated by the RE projects by providing an appropriate vintage multiplier on the inventory. Some generators have argued that they are unable to recover a component of their tariff and have also lost earnings by way of interest on such money, while those RE generators that have PPAs are able to recover full RoE as well. Many developers have pleaded that their projects will become unviable.

11. The Commission has analyzed the demand supply situation of REC market. Currently, REC inventory to the tune of 1.85 crores is pending for trade at the power exchange, of which 1.37 crores are non-solar RECs while 48 lakhs are solar RECs. This has historically been due to lack of RPO enforcement. However, over the past few months, the demand for RECs has increased, and is showing a positive trend. Specifically, months of January and February have seen several Discoms purchase RECs from the market, pushing up the volume of RECs sold to over four times the preceding months:

| **Month, Year** | **Opening Balance** | **RECs Redeemed** | **%age Redemption of RECs wrt Monthly Opening Balance** |
|---|---|---|---|
| April, 2016 | 165,91,968 | 3,16,110 | 1.91% |
| May, 2016 | 165,90,757 | 1,81,941 | 1.10% |
| June, 2016 | 170,66,299 | 4,68,441 | 2.74% |

| | | | |
|---|---|---|---|
| July, 2016 | 171,04,540 | 2,72,980 | 1.60% |
| August, 2016 | 169,57,554 | 2,98,869 | 1.76% |
| September, 2016 | 167,39,712 | 2,07,249 | 1.24% |
| October, 2016 | 171,60,163 | 2,90,929 | 1.70% |
| November, 2016 | 172,60,009 | 3,02,886 | 1.75% |
| December, 2016 | 182,45,881 | 4,54,038 | 2.49% |
| January, 2017 | 185,84,063 | 15,68,192 | 8.44% |
| February, 2017 | 176,57,449 | 10,93,779 | 6.19% |

12. The Commission is of the view that the price of trading must also reflect the current market situation. If the green component is unreasonably priced, the obligated entities would get further disinterested from the REC market, and the REC inventory will continue to pile up. Hence, the REC price must move with the market price of renewable power.

13. In this context, the Commission had specified in Regulation 9(1) of Central Electricity Regulatory Commission (Terms and Conditions for Recognition and Issuance of Renewable Energy Certificate for Renewable Energy Generation) Regulations, 2010, hereafter referred to as 'REC Regulations' that the floor and forbearance price would be determined from time to time. The said regulation is extracted as under:

*"The price of Certificate shall be as discovered in the Power Exchange:*

*Provided that the Commission may, in consultation with the Central Agency and Forum of Regulators from time to time provide for the floor price and forbearance price separately for solar and non-solar Certificates."*

14. Accordingly, the Commission has decided to align the REC floor and forbearance prices with the prevailing market conditions, in terms of tariffs, APPC, etc.

## II. Computation of Solar and Non-Solar Forbearance and Floor Price

***Commission's Proposal***

- To summarize, proposed principles for computation of forbearance and floor price are as follows:

  *Forbearance Price:* The forbearance price has been derived based on the highest difference between cost of generation of RE Technologies / RE tariff and the average power purchase cost of 2015-16 for the respective states.

  *Floor Price:* The floor price has been determined keeping in view the basic minimum requirements for ensuring the viability of RE projects set up to meet the RE targets. This viability requirement has been observed as approx. 70% of the levellised tariff prescribed for each non solar RE technology or 70% of average bid discovered tariff for solar auctions.

***Stakeholder Comments***

- **POSOCO** has submitted that revision in REC Forbearance and Floor Price is a much awaited step to increase the redemption of RECs by the buyers.

Pursuant to the Fourth Amendment in REC Regulations, the Central Agency had informed the RE generators to submit revised declarations and check-list of concerned State Agencies. As on 20.03.2017, Central Agency has received details of 839 RE Generators under REC mechanism out of which 89 projects were ineligible as per amendments in REC Regulations. Details of 338 RE projects are yet to be received from State Agency.

87 projects have been revoked and remaining 2 are under process of revocation. The detailed matrix of registered projects is as follows.

| S. No. | Source | No. of Projects | Registered Capacity | %age Capacity Share |
|---|---|---|---|---|
| 1 | Wind | 559 | 2,306 | 52.52 |
| 2 | Solar PV | 353 | 720 | 16.40 |
| 3 | Small Hydro | 32 | 252 | 5.74 |
| 4 | Biomass | 65 | 583 | 13.28 |
| 5 | Bio fuel cogeneration | 77 | 529 | 12.05 |
| 6 | Bio Gas | 1 | 2 | 0.05 |
| | TOTAL | **1,087** | **4,391** | |

Based on the above, the weighted average forbearance and floor price for Non-Solar REC calculated on the basis of registered capacity may likely change.

- **Mytrah Energy (India) Pvt. Ltd.** has submitted a similar matrix of projects registered under REC framework as on 20.03.2017

- **MSEDCL** has submitted that the reduction in Forbearance and Floor Price is a right move considering the sharp fall in the prices for RE technologies. The proposed REC price is in line with the current RE technology market trend. It shall give a boost to Discoms, obligated entities to fulfil the RPO requirement and reduce the financial burden. Further it shall reduce the power procurement cost of the Discom which will get passes on to the consumers in form of lower tariff.

- **Vedanta Limited** has submitted that it is imperative that the reduction in prices of solar and non-solar generation equipment be passed on to the consumer in a timely manner and the Draft Order is in line with such principle. They have submitted views on the methodology for calculation of Solar and Non-Solar REC Price.

  For Computation of Technology Specific Floor Price (for Non-Solar Technologies), Minimum of (Project Viability Tariff – APPC) should be considered instead of Maximum of (Project Viability Tariff – APPC)

  Similarly for Computation of Solar REC Floor Price, Minimum of (Project Viability Tariff – APPC) should be considered instead of Maximum of (Project Viability Tariff – APPC).

Based on the calculations using the above assumptions and taking average of all scenarios for computing the Non-Solar and Solar REC Price, the floor price of Solar and Non-Solar REC should be made zero. It is submitted that this move shall attract more number of utilities and other eligible entities to participate in the market actively. The floor price may be hampering the liquidity and cash flow for many RE generators at lower price than Floor price subject to the volume of RECs comparing to present scenario where REC is sold on pro-rata basis at floor price.

- **REConnect Energy Solutions Pvt. Ltd., Rane TRW Steering Systems Pvt Ltd ,AA Energy Ltd., Bansal Wind Mill Pvt. Ltd., Bonafide Himachalies Hydro Power Developers Association, Sri Sivajothi Spinning Mills (P) Ltd., Fab Colors, Baroda Moulds & Dies, Electrical Controls & Systems, Kaizen Switchgear Products, Kasturi & Sons Ltd., SRG Apparels Pvt. Ltd., Karur K.C.P Packagings Ltd., Manidhari Gums & Chemicals, The KCP Limited, ETA Power Gen Pvt. Ltd., UP Sugar Mills Cogen Association, Armstrong Power Systems Pvt. Ltd., Naga Limited, Sanjiv Prakashan, Kasturi Estates Pvt. Ltd.** have appreciated that a detailed description and data of the method followed to determine the floor and forbearance price has been provided.

They have submitted that Solar prices discovered in reverse auctions need to be carefully differentiated as these include several projects which have different terms and conditions attached. For example, the REWA Ultra Mega Solar Park has been provided a guarantee by the State government. Further, the land and evacuation infrastructure will be provided by the State in this project. This alters the risk profile of a project significantly, resulting in prices that may not reflect the actual market price of Solar power. Such projects should not be considered when calculating the average tariffs for REC price determination.

They have suggested that Non-Solar REC price determination should not include data from single wind bidding. While in the case of Solar, several bid prices are available, in the case of wind only one bid has taken place, and that too just last week. As a result, wind price determination may not be representative as it is based on a single bid data.

They have suggested that Solar REC price determination should only include prices from projects that received no State guarantees or incentives to enable a better comparison.

- **Prayas Energy Group** has submitted that in terms of methodology and data used in these calculations, the APPC used is for the year 2015-16, while projects under the revised mechanism would be become operational in 2017-18 and beyond. Even while APPC data for 2017-18 is certainly not available, it could have been estimated based on past growth rates. This would further reduce the proposed floor and forbearance prices.

They have also submitted that section 4.1.2 of the Draft Order notes that “The Commission, however, directs the staff to examine the need of determining the floor price of REC and whether going forward the floor price can be removed”. Hence it is amply clear that there is still further downward pressure on floor prices.

No concrete reasons are given for choosing Non-Solar REC prices as per scenario 1 vs those in scenario 2 (which has more realistic wind prices discovered through competitive bidding). If one were to go with the more likely second scenario, forbearance and floor price for Non-Solar RECs would be Rs 1.9/kWh and Rs 0.4/kWh respectively. In fact even with this much lower floor, if one were to put up wind power projects at prices close to the bid price of Rs 3.46/kWh, the who basis for the floor price is taken away.

- **Adani Green Energy Limited** has suggested that Average bid tariff of Rs. 4.65/kWh does not correct for VGF in SECI bids tariff. Base tariff of Rs. 4.43 per unit has been considered for calculation. Average bid tariff is determined based on tariff determined through competitive bidding in RE rich States i.e. UP, Rajasthan, Maharashtra, AP, CG, KA, Jh, TLG & RUMS. Average tariff in RE rich State (9 States) is not representative of Average Solar tariff of the nation. Solar tariff in each State shall be considered instead of few States. Last bid or SERC Solar tariff shall be considered in case competitive bidding in current year is not available. Bid results of all the tenders are not considered.

They have requested to re-determine the Forbearance and Floor Price based on above suggested parameters. In addition, In addition they have submitted that Floor & Forbearance price in each State shall be determined based on the difference between respective Solar tariff (Bid tariff or SERC tariff) and APPC of respective States, instead of difference between average Solar tariff of current RE bids in few States and APPC.

- **IWTMA and InWEA** have requested to keep the floor price of Non-Solar RECs at the present level of Rs 1500 per REC at-least for a period till 2020 in order to allow the REC market to take off and achieve the stated objectives of the mechanism.

  They have also submitted that removal of floor price would adversely impact the bankability of REC projects. Already investors have low interest in the REC based projects (only 9% of total RE Installed capacity registered under REC), year on year registration of wind projects with REC are also falling down and removal of floor price would not be prudent as floor price ensures certainty of returns to the investors, without any floor price, the return would be difficult to quantify, making it difficult to secure loans for the project.

  It is submitted that the Forbearance Price of RECs should be prescribed as the penalty amount or separate fund to be created by defaulting obligated entity is linked to the forbearance price. Thus in order to operationalize this provision of the RPO-REC Regulations, there is a need that forbearance price exist. Further, this would be more relevant in the context of stringent RPO enforcement expected from SERCs through operationalizing such provisions of the respective State RPO-REC Regulations.

  The data on REC Projects (MW Capacity share, Number of Projects) is required to be updated as the data available on the REC Registry Website as on date is different which is required to be factored in at the time of finalisation of the Order.

- **Himachal Small Hydro Power Association** has requested not to reduce the floor price and maintain the same at Rupees 1500 / REC for Non-Solar projects.

- **IL&FS** has commented that decreasing the price of RECs shall impact the financial viability of such projects.

- **L&T** has commented that in Appendix -1 Clause 1 B, For Solar, the SECI bids mentioned in the table are VGF based, hence the calculation of weighted tariff calculation should be done after adding the portion of VGF effect on fixed tariff of Rs 4.43. It is suggested that every Rs 1 Lac VGF increases the tariff to approx. Rs 0.93 Paise. Hence, corresponding changes to be incorporated.

- **GAIL** has commented the proposed reduction of Non-Solar REC Floor price Rs 1000/- will severely affect the envisaged return of the projects. Hence implementation with retrospective effect owing to existing REC inventory would not be a fair pricing mechanism. Further reducing the Floor price of REC will aggravate the situation, where the present REC inventory value and revenue from future REC sale will reduce by 33.33% and put the existing projects in distress, as already the cash flows are stuck up due to delayed payment by DISCOMs and even due to non-receipt of the interest on delayed payment. These projects have already been suffering from problem of backing down during peak generation seasons. On the other part, this will give the undue advantage to the entities that are not adhering to the RPO compliance, which needs to be discouraged for sustainable renewable power economy.

It has also been suggested to keep the Floor Price for both Solar & Non-Solar Segment to protect the returns / investment in renewable energy sector.

- **Captive Power Producers Association** has submitted that for Non-Solar Floor price, in case of small hydro and Wind except one State, all other States have negative price difference between Project Viability Tariff and APPC cost, whereas for Biomass and biofuel many States representing large portion of the specific technology have difference above floor price. Technology wise weighted average Floor price for small hydro and wind under both scenarios 1 and 2 works out to be less than Rs.0.50/kWh.

  The proposed floor price of Rs 1000/- favours Wind (58%) and Small Hydro Generators (6.15%) who will earn additional income over and above specified in the tariff guidelines above project viability requirement at the cost of REC buyers (RPO obligators) and at the same time other technologies are getting discouraged to opt for REC mechanism. It is requested to consider a vintage multiplier for such cases and reduce the floor price to below Rs1000/MWh which can be calculated considering the State-wise accredited capacity of REC for Wind and Hydro projects.

  It is also suggested to reconsider further reduction of Solar REC Floor price to less than Rs.1000/MW.

- **Rays Power Experts Pvt. Ltd** has commented that it must be considered that projects under REC Mechanism are mostly <10 MW so project cost is high and limited facility provided by State Governments before finalizing REC prices for Solar Projects we have to consider this thing and keep Solar REC prices on higher side as compare with Wind Project.

RPO set by every State increases on yearly by respective SERC’s in their various respective orders but there is no increase in demand of REC clearing ratio so backlog of non-traded REC increases continuously on yearly basis.

- **Sir Kasturchand Daga Solaire Inc** commented that in addition to the factors listed out in the Principal Regulation 9 for determination of "Pricing of Certificate", should also look into the market condition of REC's transactions. This is of importance in order to implement Government policy and intent in its true spirit. REC is one of the instruments to generate revenue which is not in addition to any other source of revenue but is necessary to ensure a minimum support earning. Keeping in view the trends of percentage clearance in each trading cycle any downward revision in floor price shall shake belief of small investor like me. It may also be noted that Floor and Forbearance price determination and factors listed in Regulation 9 assumes that a perfect market would influence the pricing. However, no such perfect market is there in REC trading and therefore, including REC NON-LIQUIDITY as a relevant factor while deciding the floor and forbearance price of certificates is of utmost importance.

- **Sai Saburi Urja Pvt. Ltd.** has requested to increase the existing stock by a factor of 3.50 to equate the proposal to bring down the floor price from Rs 3. 50 to Rs 1 /unit and continue it for next three financial years. The company has also submitted that they lack funds and will be declared NPA due to failure on part of Government of India to liquidate REC. They have requested to have this provision for at least 2017-18, 2018-19 and 2019-20.

- **Power and Energy Consultants** has submitted that in calculation of the tariff in Annexure 1-A, the tariff of seven wind stations should only be considered and States like J&K, Manipur and Mizoram should not be considered. Also, in case of Maharashtra, the rates considered are for zone -4, however most of the wind projects are coming only in zone-2 and therefore tariff of zone-2 should be considered.

- **Bajaj Finserv Limited** has submitted that 2nd largest wind installations under REC mechanism are installed in Maharashtra (Capacity 562.75 MW). All projects are registered for sale under third party and no projects is registered under sale of RE to Discom at APPC as MSEDCL is not purchasing wind energy at APPPC rate. Therefore, the consideration of APPC rate for computation of forbearance and floor price of REC is contradictory.

  They have also submitted that MERC has increased the cross subsidy surcharge and imposed additional surcharge on OA transactions of RE which has resulted in 4 times increase in OA Tariff

  Further, Govt. of Maharashtra has given tariff concession to industrial consumers (restricted to those consumers who are not using open access power) situated in major part of Maharashtra such as Vidharbha and Marathwada for 3 years from Q2 FY 2017-18. Existing OA consumers have stopped use of contracted RE to avail the concession offered by the Govt.

Accumulated RECs for some generators will start lapsing from April 2017 onwards which shall give an additional impact. They have requested to consider the difficulties mentioned above before reducing the floor price of REC.

- **Apeiron Renewable Energy Pvt. Ltd.** has stated that during last two years the Central Government to bring prices of power generated through Solar power down have proposed to providing Viability gap funding / performance incentive. This performance incentive going presently is 1.875 crore per MW DC it was Rs. 2.2 crore few months back. This is 33% cost of setting up Solar power plant per MW DC as per CERC own calculations and benchmark cost suggested by CERC for last year. The discounted value of this incentive is Rs 1.87 per unit of expected generation . Hence the appropriate base price, based on already undertaken tender process is suggested price + discounted value of Incentive which is 1.03+ 1.87 = Rs 2.

- **SB Solar Services Pvt. Ltd.** has submitted that the proposed Solar REC Floor price is arrived at based on tariffs identified in recent bids. Many of the bids were awarded under NSM by SECI with VGF to the tune of Rs 10 mn /MW. The VGF quantum has been ignored. In addition many of the bids were awarded under NSM by SECI/NTPC with better credit rating than Discoms and the tariff discovered is discounted for all these factors. The bids awarded under State schemes and outside the Solar parks have higher tariffs, hence fixing a uniform Solar REC price for all projects is not advisable

- **Ginni Global Pvt. Ltd.**_has submitted that Floor Price is the difference between Minimum Project Viability Requirement and APPC rate.

Projects, opting for REC Mechanism, need to incur following additional expenses

i. Issuing and selling cost of REC

ii. Holding cost of REC (presently holding period of REC is 24-30 months)

iii. Price fluctuation risk

They have suggested that cost of issuing & selling REC, holding cost of REC and some contingency may be factored into the Floor price to make REC Mechanism a viable option

In addition, they have also submitted that the Forbearance Price has been calculated as the difference between SERC tariff and APPC price. In this respect, it is submitted that main purpose of REC mechanism was to provide viable tariff to renewable Energy projects as levellised tariff, being fixed by SERC were generally not found viable, as SERC usually did not factor actual capital cost & O&M expenses in tariff calculation. Further, any capital cost incurred, subsequent to the implementation of the project, is also not being considered in fixing levellised tariff.

Therefore, keeping the forbearance price equal to levellised tariff - APPC cost will kill the REC mechanism and there will be no incentive for projects for opting REC mechanism where REC sale remain uncertain.

They have suggested that Forbearance Price should be higher than the difference between levellised tariff - APPC cost so that project may get viable tariff.

- **Ranga Raju Warehousing Pvt. Ltd. / Greenko Group** has submitted that the data provided in the aforesaid order for determination of technology specific Floor price for Small Hydro Power projects suggests that except for one State (Madhya Pradesh) the determined minimum project viability tariff is lesser than the APPC for the respective State. It suggests that either the minimum Project Viability Tariff determination does not provide an appropriate representation of Small Hydro project viability or the determined SERC generic tariff is does not provide for optimal risk adjusted return on equity invested in the Small hydro project. This is also reflected in the continuously declining trend in small hydro capacity addition in the country over the last 5-6 years.

  They have requested that REC for Small hydro projects should be determined only at Forbearance Price level in order to ensure future investment in Small hydro sector.

- **Klassic Wheels Pvt. Ltd.**, **Giriraj Enterprises, Uma Corporation, Gaurav Agro Pipes, Bothara Agro Equipments Pvt. Ltd., Paras PVC Pipes & Fittings Pvt. Ltd., Saidpur Jute Co. Ltd, Triveni Sangam Holdings &Trading Co. Pvt Ltd, Triveni Sangam Holdings &Trading Co. Pvt Ltd, New Patel Saw Mill, New Patel Saw Mill, Dr. DH Patel, Suma Shilp Limited, Daksha Infrastructure Pvt. Ltd., Patel Wood Syndicate, Govindram Shobhram & Co., Agrawal Minerals (Goa) Pvt Ltd,Gangadhar Narsinghdas Agrawal Saraswati Industries Pooja Renewable Energy Pvt. Ltd., Kasturi Foundry Pvt. Ltd. and Advik Hitech Pvt. Ltd.** have submitted that the following factors are critical for the operation of their plants registered under REC Mechanism and request them to be considered while determining the Forbearance and Floor Price.

Revenue realisation in Captive/Third Party Sale Adjustment

The Investment made for this project was considering the project viability based on revenue realisation from captive/Third party sale adjustment & REC sale. We would like to inform you that in State of Maharashtra due to strict guidelines implemented by MSEDCL for Captive / OA such as :-

1. 15 Min time block adjustment similar to conventional power trading across India despite Solar being Renewable power project
2. Reduction in contract demand to the extent of PLF penalty at temporary tariff
3. 100% Cross subsidy for OA Third Party Sale
4. Highest OA charges & losses. Hence, reducing the floor price the eligibility of Solar power projects for REC will have a severe adverse effect on project viability and thus our project shall become Non Performing Asset (NPA).

Following Risk factors in State of Maharashtra are not considered:-

1. Demand Penalty @ Rs. 330/KVA & Rs.15 /unit is applicable due to effect of Contract demand reduction.
2. Maximum demand penalty (2 Times of wheeling charges)
3. Unit consumption at temporary tariff if unit consumed beyond contract demand.
4. Levy of Regulatory charges Viz. Electricity duty, Additional surcharges, Tax on Sale.
5. Energy accounting in 15 Min time slot leads to remain more units unadjusted.

They have requested to look into the facts & figures and do not reduce the floor prices for those companies who have invested post launch of REC implementation and not enjoying any sort of concessional benefits.

- **Lohia Developers India Pvt. Ltd., Lohia Gramin Vikas Pvt. Ltd. and DesignCo** have submitted that the tariff is taken from installations at Solar park by the government which has:

a. Nil Land Cost and

b. Nil power Evacuation Cost.

c. Apart from this other facilities like assured power off take.

d. No wheeling and transmission charges and losses.

Whereas all other plants including those under REC mechanism have these components and cost built-up in them. If the cost of land and transmission is added as per the calculations of CERC itself it will have a material impact on the tariff per KWh.

- **Green Energy Association** have submitted that in using the SERC Tariff and MNRE Bid discovered tariff for computation of Forbearance and Floor Price, certain factors need to be considered

The average project size per bidder is 75 MW per Bidder whereas under REC mechanism average project size is 2 MW per project.

On adding the cost of land and transmission as per the calculations, it will have an impact of Rs.0.52 per KWh on the tariff. It will be Rs 5.17 instead of Rs 4.65 as in the proposed order.

On using the CERC benchmark Tariff for Solar PV for FY 16-17 i.e. Rs 5.68, the floor price of the Solar RECs derived using both the scenarios shall be between Re.1 to Rs.2 which should be close to Rs.1.5 per KWh. (relevant computations have been submitted)

- **Hindalco Industries (Aditya Birla Group)** have submitted that the average of Scenario 1 & 2 (all technologies) used in the computations for Non-Solar REC Price leads to Forbearance and Floor Price of Rs 2.40 and Rs 0.71 per kWh basis respectively

Small Hydro, Biomass and Biofuel co-generation projects are relatively less infirm in nature compared to wind. It is unlikely that the developers of Hydro, Biomass, Biofuel co-generation had undertaken the projects on the basis of REC benefit. Further, there is no reason why an obligated entity should bear the cost of an inefficient technology. The REC prices in this category should be derived based on Wind project only.

They have also submitted that States without Solar Projects / viability should not be considered in the computation of Solar REC Prices. In place of using arithmetic average, weighted average of existing Solar capacity under REC framework should be used.

Proposed Solar & Non-Solar REC Price

| | Forbearance Price | Floor Price |
|---|---|---|
| Non Solar | 600 | 200 |
| Solar | 1500 | 500 |

- **IWPA and Shri S.P. Garg** commented that the earlier approach of considering tariffs based on CERC RE Tariff Regulations for the sake of uniformity and consistency. While computing RE tariff, the different SERC use different parameters, methodology and therefore might not work in case of a national level mechanism like REC. It has also been pointed out that the targets set under NAPCC have not been considered although these targets were part of the earlier methodology for determination of REC prices.

- **Ranga Raju Warehousing Pvt. Ltd. / Greenko Group** have submitted the following

| | | **2014** | **2015** | **2016** |
|---|---|---|---|---|
| **Solar** | REC offered (Nos) | 19,64,592 | 1,88,74,807 | 2,81,23,532 |
| | REC cleared (Nos) | 24,444 | 3,70,574 | 3,98,094 |
| | **REC clearance %** | **1.2%** | **2.0%** | **1.4%** |
| | **REC traded at floor price (%)** | **100%** | **100%** | **100%** |
| **Non-Solar** | REC offered (Nos) | 4,47,34,718 | 8,56,36,055 | 9,16,52,179 |
| | REC cleared (Nos) | 10,46,397 | 26,93,510 | 25,75,976 |
| | **REC clearance %** | **2.3%** | **3.1%** | **2.8%** |
| | **REC traded at floor price (%)** | **100%** | **100%** | **100%** |

Only a fraction of RECs offered are being off-taken at exchanges and also RECs are traded only at the Floor Price at the exchange ever since the advent of REC trading, the revenue receipt from sale of RECs at the exchange have fallen short of ensuring at-least recovery of minimum project viability tariff for RE projects under the REC mechanism. Thus, as has been highlighted in the draft order itself to examine the need for floor price of REC, it is requested that determination of Floor Price of REC may be discontinued and only the Forbearance Price of REC may be determined and issued going forward.

***Analysis & Decision***

15. The Commission would like to clarify that the State level APPCs used in the proposed computation were taken from the Tariff Orders of SERCs for FY 2015-16. However, the exercise of determining floor and forbearance prices has now been revised, with reference to APPCs of all States for FY 2016-17. This is in alignment with the definition in Regulation 5(c) of REC Regulations:

*"**Explanation.** - for the purpose of these regulations 'Pooled Cost of Purchase' means the weighted average pooled price at which the distribution licensee has purchased the electricity including cost of self generation, if any, in the previous year from all the energy suppliers long-term and short-term, but excluding those based on renewable energy sources, as the case may be."*

16. POSOCO has commented that the technology mix of registered projects has changed. The Commission takes note and has used the latest data as available. The detailed break-up of the capacity and number of projects registered is as under:

| Technology | No. of Projects | Capacity (MW) | %age Capacity share |
|---|---|---|---|
| Small Hydro | 32 | 252 | 6.70% |
| Biomass | 65 | 583 | 15.49% |
| Biofuel Cogeneration | 77 | 529 | 14.06% |
| Wind | 560 | 2399 | 63.75% |
| **Total Capacity** | **734** | **3763** | |

Source: REC Registry (as on 23.03.2017)

17. IWPA has commented that the earlier approach of considering tariffs based on CERC RE Tariff Regulations should be used for the sake of uniformity and consistency. The Commission clarifies that the REC Regulations provide for incorporating state level variations, as the developers would compare the total revenue under REC framework vis-à-vis the FIT prevalent in the respective state. Particularly, Regulation 9(2) clause (a) and (b) are as below:

*"The Commission while determining the floor price and forbearance price, shall be guided inter alia by the following principles:*

*(a) Variation in cost of generation of different renewable energy technologies falling under solar and non - solar category, across States in the country:*

*(b) Variation in the Pooled Cost of Purchase across States in the country;"*

**Computation of Non Solar Forbearance and Floor Price**

18. Several stakeholders have objected to the computation that includes single bid tariff for wind. It should be appreciated that this particular calculation has not been used for arriving at the floor price. But it illustrates that wind tariffs are expected to decrease over the next couple of years.

19. Secondly, it has also been commented that upcoming wind projects are expected to be at lower CUF sites, as high resource sites have been utilized. Therefore, the tariff considered should account for lower CUF zone. The Commission is not convinced with the argument in the impending era of tariffs discovered under reverse auctions. Moreover, with trend of use of higher hub height, larger rotor size, and advancement in technology etc, the cost of generation in lower wind zones is not expected to be higher any more. Rather, the cost could decline because of improved CUF.

20. In so far as REC forbearance and floor prices for wind are concerned, an analysis has been undertaken for 9 wind-rich states. Tariffs of multiple CUF zones have been averaged out for the States where they are available. As wind capacity has major share of non-solar REC project capacity, this translates to weighted average floor price of Rs.1.14/unit.

Additionally, SHP tariffs for both <5 MW projects and 5-25 MW projects have been considered, and an average tariff number has been used.

Detailed computations may be found in Annexure 1A.

| **1A: Technology specific prices (based on Tariff Orders by SERCs) (in Rs/kWh), average wind tariff** | | | | |
|---|---|---|---|---|
| | **SHP** | **Biomass** | **Bagasse** | **Wind** |
| **Technology Specific Forbearance Price** | 3.50 | 4.64 | 3.46 | 2.51 |
| **Technology Specific Floor Price** | 1.60 | 2.18 | 1.58 | 0.74 |

| 1A: Capacity weighted non-solar forbearance and floor price, average wind tariff | | | | | |
|---|---|---|---|---|---|
| **Technology** | **No. of Projects** | **Capacity** | **%age Capacity share** | **Weighted Average Forbearance Price (Rs/kWh)** | **Weighted Average Floor Price (Rs/kWh)** |
| Small Hydro | 32 | 252 | 6.70% | 0.23 | 0.11 |
| Biomass | 65 | 583 | 15.49% | 0.72 | 0.34 |
| Biofuel Cogeneration | 77 | 529 | 14.06% | 0.49 | 0.22 |
| Wind | 560 | 2399 | 63.75% | 1.60 | 0.47 |
| **Total Capacity** | **734** | **3763** | | **3.04** | **1.14** |

21. It is evident from the analyses above that floor price for wind projects has already gone below Re1 mark.

In fact, if in place of SERCs tariff for wind, the recently discovered bid tariff is considered as a case in point, the floor price for wind projects goes negative, thereby pushing the weighted floor price even below Rs.0.50 (Annexure 1B).

| 1B: Technology specific prices (based on Tariff Orders by SERCs): bid discovered tariff for Wind | | | | |
|---|---|---|---|---|
| | **SHP** | **Biomass** | **Bagasse** | **Wind** |
| **Technology Specific Forbearance Price** | 3.50 | 4.64 | 3.46 | 0.64 |
| **Technology Specific Floor Price** | 1.60 | 2.18 | 1.58 | -0.40 |

| 1B: Capacity weighted non-solar forbearance and floor price, bid discovered tariff for Wind | | | | | |
|---|---|---|---|---|---|
| **Technology** | **No. of Projects** | **Capacity** | **%age Capacity share** | **Weighted Average Forbearance Price (Rs/kWh)** | **Weighted Average Floor Price (Rs/kWh)** |
| Small Hydro | 32 | 252 | 6.70% | 0.23 | 0.11 |
| Biomass | 65 | 583 | 15.49% | 0.72 | 0.34 |
| Biofuel Cogeneration | 77 | 529 | 14.06% | 0.49 | 0.22 |
| Wind | 560 | 2399 | 63.75% | 0.41 | -0.26 |
| **Total Capacity** | **734** | **3763** | | **1.85** | **0.41** |

22. Thus, the Commission feels that the proposed floor price of Rs.1000/MWh presumes the correct ground realities and price trends. Consequently, the floor and forbearance price of non-solar RECs starting 01.04.2017 shall be as follows:

| Non Solar REC | (Rs/ MWh) |
|---|---|
| **Forbearance Price** | 3,000 |
| **Floor Price** | 1,000 |

**Computation of Solar Forbearance and Floor Price**

23. It has been highlighted by stakeholders that for computation of solar REC prices, Viability Gap Funding (VGF) has not been considered, as the bid tariff excludes that component. Translating a VGF component into impact on tariff depends on financial

assumptions of the bidder. The average bid tariff discovered in auctions from the period January 2016 to February 2017 has been Rs 4.65/kWh:

| Auction | Year | Capacity on Offer (MW) | Highest Bid (Rs./KWh) | Lowest Bid (Rs./KWh) | Weighted Avg. Price (Rs./KWh) |
|---|---|---|---|---|---|
| Rajasthan-420 MW Bundling | Jan'2016 | 420 | 4.36 | 4.34 | 4.351 |
| UP-100 MW Bundling | Jan'2016 | 100 | 4.78 | 4.78 | 4.78 |
| Rajasthan-100 MW Bundling (DCR) | March'16 | 100 | 5.07 | 5.06 | 5.068 |
| Telangana-50 MW Bundling (DCR) | March'16 | 50 | 5.19 | 5.19 | 5.19 |
| Jharkhand-200 | March'16 | 102 | 5.59 | 5.2 | 5.464 |
| Jharkhand-1000 | March'16 | 999 | 5.48 | 5.08 | 5.356 |
| Telangana-350 MW Bundling | May'16 | 350 | 4.67 | 4.66 | 4.667 |
| Karnataka-500 MW Bundling | May'16 | 500 | 4.8 | 4.78 | 4.79 |
| MH-50 MW (VGF-DCR)$ | June'16 | 50 | 4.43 | 4.43 | 4.43 |
| AP-400 MW(VGF)$$ | June'16 | 400 | 4.43 | 4.43 | 4.43 |
| Karnataka-920 MW(VGF)$$$ | June'16 | 920 | 4.43 | 4.43 | 4.43 |
| Karnataka-50 MW(VGF-DCR)$$$$ | June'16 | 50 | 4.43 | 4.43 | 4.43 |
| CG-100(VGF) $$$$$ | June'16 | 50 | 4.43 | 4.43 | 4.43 |
| REWA Ultra Mega Solar Park# | Feb' 17 | 750 | 2.979 | 2.97 | 3.30 |
| **AVERAGE** | | | | | **4.65** |

* Results for the lowest bid for 500 and 1500 MW respectively

$ Highest VGF required is 130 Lacs/MW with weighted average VGF is 91.14 Lacs

$$ Highest VGF required is 74.49 Lacs/MW with weighted average VGF is 59.56 Lacs

$$$ Highest VGF required is 73.5 Lacs/MW with weighted average VGF is 72.3 Lacs

$$$$ Highest VGF required is 130 Lacs/MW with weighted average VGF is 130 Lacs

$$$$$ Highest VGF required is 59 Lacs/MW with weighted average VGF is 59 Lacs

# Escalation of 5 paise per unit every year till first 15 years, Levellised tariff Rs 3.30/unit

Source: Ministry of New and Renewable Energy

The table above is an indicator of future trends, as the cost of generation is expected to be more in line with recently discovered tariffs, or reduce further.

24. The Commission has examined the viability of solar projects in 17 states, by comparing the average bid tariff (as determined above) with the respective state APPC.

Accordingly, the states may be classified into various ranges of forbearance and floor price as in the table below.

| State | APPC (2016-17) as estimated based on SERC Tariff Orders for 2016-17 (Rs/kWh) | Bid Discovered Tariff for Solar Project based on MNRE Data (Jan 2016 till Date) (Rs/kWh) | Difference b/w Bid Discovered Tariff and APPC (Rs/kWh) | Project Viability Tariff based on Bid Discovered Tariff (Rs/kWh) | Difference b/w Project Viability Tariff and APPC (Rs/kWh) |
|---|---|---|---|---|---|
| Andhra Pradesh | 3.61 | 4.65 | 1.04 | 3.26 | -0.36 |
| Arunachal Pradesh | 3.20 | 4.65 | 1.45 | 3.26 | 0.05 |
| Chhattisgarh | 2.80 | 4.65 | 1.85 | 3.26 | 0.46 |
| Gujarat* | 3.39 | 4.65 | 1.26 | 3.26 | -0.14 |
| Haryana | 3.59 | 4.65 | 1.06 | 3.26 | 0.34 |
| **Himachal Pradesh** | **2.29** | 4.65 | **2.36** | 3.26 | **0.97** |
| Karnataka | 3.23 | 4.65 | 1.42 | 3.26 | 0.02 |

| | | | | | |
|---|---|---|---|---|---|
| Kerala # | 2.99 | 4.65 | 1.66 | 3.26 | 0.27 |
| Madhya Pradesh | 2.82 | 4.65 | 1.83 | 3.26 | 0.44 |
| Maharashtra* | 3.56 | 4.65 | 1.09 | 3.26 | -0.31 |
| Punjab | 3.56 | 4.65 | 1.09 | 3.26 | -0.31 |
| Rajasthan $# | 3.39 | 4.65 | 1.26 | 3.26 | -0.14 |
| Tamil Nadu # | 3.55 | 4.65 | 1.10 | 3.26 | -0.30 |
| Telangana | 3.88 | 4.65 | 0.77 | 3.26 | -0.63 |
| Uttar Pradesh | 3.78 | 4.65 | 0.87 | 3.26 | -0.53 |
| Uttarakhand | 2.63 | 4.65 | 2.02 | 3.26 | 0.63 |
| West Bengal | 3.62 | 4.65 | 1.03 | 3.26 | -0.37 |

**Determination of Forbearance Price**

| Price Range (Rs /kWh) | No. of States | % of States |
|---|---|---|
| < 1 | 2 | 11.8% |
| 1 - 2 | 13 | 76.5% |
| Above 2 | 2 | 11.8% |

**Determination of Floor Price**

| Price Range (Rs/kWh) | No. of States | % of States |
|---|---|---|
| < 1 | 17 | 100% |
| 1 - 2 | 0 | 0.0% |
| Above 2 | 0 | 0.0% |

**APPC Data**
*GERC, MERC – APPC derived using escalation @3% over 2015-16 values
# TERC, TNERC Tariff Order issued in 2014-15, escalated at 6%
$# DERC, AERC, RERC Tariff Order issued in 2015-16, escalated at 3%

This analysis yields a floor price of Rs.0.97/unit and a forbearance price of Rs.2.36/unit. These numbers are rounded off to yield Rs.1000/MWh and Rs.2400/MWh respectively.

25. To sum up, the Commission notifies the following forbearance and floor price for solar certificates, effective from 01.04.2017:

| Solar REC | (Rs/ MWh) |
|---|---|
| **Forbearance Price** | 2,400 |
| **Floor Price** | 1,000 |

26. This approach for floor price is considered necessary given the current state of demand supply of REC market. The Commission, however, directs the staff to examine the need of determining the floor price of REC and whether going forward the floor price can be removed.

## III. Vintage Multiplier

***Commission's Proposal***

- No vintage multiplier has been proposed for any technology and the existing vintage multiplier for solar generating technologies registered in REC framework prior to 01.01.2015 shall expire after 31.03.2017.

***Stakeholder Comments***

- **SJVN Limited** has requested that the provision of vintage multiplier as per the present regulation may be kept in the determination of forbearance and floor price of REC for projects registered under REC mechanism upto 31st March 2017. They have submitted that a 5 MW Solar PV Projects is being executed at Charanka Solar Park, Distt. Patan, Gujarat with a cost of more than Rs 6 crores /MW and has been registered under REC mechanism in the current financial year. With the revised forbearance and floor prices, vintage multiplier support is required to recover the cost of project.

- **Tata Power Company Limited and Oswal Woollen Mills Ltd. Nahar** has suggested that a onetime vintage multiplier may be provided to the unsold RECs available in the portal as on 1st April 2017. Thereafter no vintage multiplier shall be available for the generation occurred post 31st March 2017. Currently, available RECs in the market are approximately 1.78 Crores including 47 lakh Solar RECs, therefore by revising the Floor price to Rs. 1000 per REC (from existing Rs. 3500 & Rs. 1,500 in case of Solar and Non-Solar) the viability of the projects will be severely affected.

- **Modi Group (Jai Mangal Infra Powers Pvt. Ltd.), Tirupati Microtech P.Ltd., Shri Giriraj Energy Pvt. Ltd., Omega Renk Bearings Pvt. Ltd., Laxmi Publications (P) Ltd., R.H. Prasad & Company Pvt. Ltd., Raj Overseas and Bharat Power Inc** have suggested that Vintage multiplier should be given for the backlog and valid RECs. Such vintage multiplier should be applicable for at-least next 5 years for project viability as REC sales have declined in last years and has resulted in a backlog of previous year RECs.

- **IL&FS** has requested that a vintage multiplier of minimum 1.5, as was provided to Solar projects while revision of Solar REC price was undertaken by the Commission, should be provided to the Non-Solar projects installed under APPC + REC mechanism and commissioned prior to 31.03.2017. It is submitted that APPCs of the State licensee's are expected to see a downward trend in view of the decreasing coal prices and procurements shall be majorly through competitive bidding, leading to lower cost of procurements.

- **Apeiron Renewable Energy Pvt. Ltd., Sir Kasturchand Daga Solaire Inc and Hasya Enterprises Pvt. Ltd.** has suggested that as the base prices of RECs are proposed to be changed, kindly ensure all REC in stock or to be applied for all the power to be produced till 31st March 2017 and billed subsequently the numbers of REC are multiplied by a factor of Old Base price divided by new base price.

- **Indian Paper Manufacturer's Association** has submitted that in case the floor price is revised downwards from INR 1,500 to INR 1,000, then the number of unsold Non-Solar RECs should be revised upwards on a pro rata basis so that the book of accounts is not adversely impacted.

- **Klassic Wheels Pvt. Ltd.**, **Giriraj Enterprises, Uma Corporation, Gaurav Agro Pipes, Bothara Agro Equipments Pvt. Ltd., Saidpur Jute Co. Ltd`, Triveni Sangam Holdings &Trading Co. Pvt Ltd, New Patel Saw Mill, New Patel Saw Mill, Dr. DH Patel, Patel Wood Syndicate,Govindram Shobhram & Co., Agrawal Minerals (Goa) Pvt Ltd, Suma Shilp Limited, Daksha Infrastructure Pvt. Ltd. Gangadhar Narsinghdas Agrawal Saraswati Industries, Paras PVC Pipes & Fittings Pvt. Ltd., Pooja Renewable Energy Pvt. Ltd., Advik Hitech Pvt. Ltd. and Kasturi Foundry Pvt. Ltd.** has submitted that Vintage Multiplying factor to be continued after 31.03.2017 at 9.3 in order to ensure REC revenue realization considered at investment.

- **Ranga Raju Warehousing Pvt. Ltd. / Greenko Group** has submitted that since formulation of Solar and Non-Solar RECs Forbearance and Floor price, they have been trading at Floor Price at the power exchanges. Accordingly, the project developers consider the project floor price in revenue receipt from sale of RECs. The RE projects are under obligation to repay their term loans post COD of the project. A drastic reduction in Floor Price of RECs post Control Period would lead to economic unviability of RE projects during the control period under REC scheme.

They have requested to consider providing Vintage Multiplier to the projects developed during the control period for sustenance of forecasted REC revenue for at-least 10 years post COD so as to enable RE developer service its obligation to repay its term loan. The Vintage Multiplier may consider the change in Floor price at the time of project COD and post COD.

- **Ujaas Energy Ltd.** has proposed that all Solar power plant under REC mechanism which are been commissioned before December 2014 should continue getting vintage multiplier of 2.66 for the REC generated from 1st April 2017 to March 31st 2019.

  They have also requested to provide a multiplier for all the REC been generated till 31st March 2017 and remain unsold. The formula for Vintage multiplier is given as Rs 5800 (Current Forbearance Price)/New Floor Price.

- **Rays Power Experts Pvt. Ltd.** has requested to continue vintage factor for all projects on the basis of date of commissioning and similar formula will be used for calculation of vintage multiplier and applicable of vintage factor for at least five years from date of commissioning or date of registration. Some new projects are also in pipeline and these projects expected to be commission with in a time interval of 2-3 months. All these projects commercial viability based on current REC prices so please provide an extension of 3 months on existing REC prices or provide vintage multiplier based as per existing REC Certificate value.

- **Autobat Batteries Pvt Ltd.** has commented on the Principle of Estoppel of Promise, made by the Commission in the past, Revised Vintage Factor for Old Generating Plants which were commissioned before the issue of Revised REC Rates should be provided, so that Old Plants which have made Heavy Investments in the Olden Days are do not suffer losses merely because of Failure of Obligated Entities' duty to buy their share of RPOs.

Also, legally, it is imperative to honour own committed Value of RECs in the past when old plants committed huge investments based on guaranteed REC values at that time. Otherwise, Old Plants will turn into NPAs (Non Performing Assets) and liability on Banks (Lenders). Old plants should be given Revised Vintage Factor as done in the past, along with Extended Validity of their Old / Unsold RECs. Thus, CERC order Dated 28/02/2017 needs revision by insertion of New Clause for REC Rates for Old Plants by providing once again Vintage Factor, (9300 / 1000 = 9.3 New Vintage Factor for Solar REC) as done in the past.

- **Alliance Land Developers Pvt. Ltd., Power and Energy Consultants and Rajasthan Patrika Pvt. Ltd.** have submitted that capital / Investment of installation of plants are decline rapidly in last two years whereas developers installed on or before 01/04/2015 were incurred more cost, therefore to compensate them and to maintain viability of the project, vintage advantage should be provided for the lifetime of the projects by the base rate of policy 2014 i e 9300 per REC. Also, it is requested to provide vintage advantage on the REC stock in hands as on 31/03/2017 to all developers.

- **Wind Independent Power Producers Association, Tata Power Trading Company Ltd, Green Energy Association** have submitted that has requested to introduce the concept of vintage multiplier for the REC remaining unsold and to be issued to the entities already registered. Introduction of vintage multiplier will ensure smooth transition from the existing price range while securing the rights of the RE generators.

It is suggested to introduce the concept of vintage multiplier as follows:

I. Non Solar REC:

Vintage Multiplier = (Floor Price in the base year (FY 2012-13)/Proposed Floor Price)

= 1500/1000

II. Solar REC:

To secure the revenue rights associated with the REC certificates we request to adopt the vintage multiplier derived through the formula mentioned as below:

Vintage Multiplier = (Floor Price in the base year (FY 2014-15)/Proposed Floor Price)

= 3500/1000

The above mentioned vintage multiplier will be applied to all RECs remaining unsold and to be issued to the entities already registered under the scheme. Same will safeguard the revenue projections associated with such RECs and ensure a smooth transition to new price band.

- **Fluidcon Engineers**, **Apex Coco and Solar Energy Ltd** have sought for vintage multiplier.

- **Lohia Developers India Pvt. Ltd., Lohia Gramin Vikas Pvt. Ltd. and DesignCo** have submitted that as per proposal of CERC in the above order, no vintage multiplier has been proposed for any technology and the existing vintage multiplier for Solar generating technologies registered in REC framework prior to 01.01.2015 shall expire after 31.03.2017.

In effect, this shall result the old RECs (high priced) to remain unsold thus making older projects unviable. We would like to draw your attention that as an investor we have invested in the project in FY 2013-14 on the basis of REC benefits (Rs. 9300 per REC) available to Solar power projects and at present value of inventory of our unsold REC is Rs. 8.30 crore. In case the above said order will be implemented, this will result in an immediate net loss of Rs. 8.30 crore (Rs. 3.32 crore/ MW). This will make the projects unviable.

While the effort to correct the dysfunctional market is commendable, the net result of the draft regulations is that the existing Solar investors will have to take a huge loss. This will create significant problems for existing investors, as they will struggle to meet their debt repayments, let alone get any return on their equity.

They have requested to prevent injustice of the REC developers for their accumulated RECs till 31-03-2017 by providing a multiplier of 9.3 for project setup before 31.12.2014 and multiplier of 3.5 for project setup on or after 01.01.2015.

In their case the minimum multiplier of 9.30 should be given to the projects for future REC as the project set-up in FY 2013-14 so that the value of 1 MWh of energy generated remains at Rs. 9,300.

***Analysis & Decision***

27. Several stakeholders have demanded extension of vintage multiplier for backlog of RECs, as well as for future RECs for projects that invested early on. IL&FS & WIPPA

have specifically suggested to provide a multiplier of 1.5 for non-solar RECs. Ujaas has suggested continuation of multiplier till March 31, 2019, at a value of 5.8 (current forbearance price/new floor price). Additionally, Autobat Batteries, Power & Energy Consultants, etc have said that unless a multiplier of 9.3 is provided to old projects, they will end up as NPAs.

28. The Commission has considered the suggestions and feels that if at this juncture, a multiplier is provided, there would be sudden surge in stock of RECs on the exchange and this shall imply that the existing inventory shall face even greater difficulty in getting cleared.

29. It is also understood that investing in a market comes with its own risks and the Commission believes that such risks are accounted for by investors. The Commission feels that the market must reflect the current ground realities.

30. The previously notified floor and forbearance prices for non-solar projects, vide Order dated 23rd August 2011, in the matter of Petition No. 142/2011 (Suo-Motu), were valid till end of control period, i.e. till 31st March 2017.

Clause 19 of the aforementioned order is extracted as under:

*"19. The above stated forbearance and floor prices shall remain valid for the control period upto financial year 2016-17. "*

31. At the time of providing the vintage multiplier for solar projects, vide Third Amendment to REC Regulations, the following clauses were added to Regulation 7:

*"(7) The Commission shall determine through a separate order, the quantum of Certificate to be issued to the eligible entities being the solar generating companies registered under REC framework prior to 1st January 2015, for one Megawatt hour of electricity generated and*

*injected into the grid or deemed to be injected (in case of self consumption by eligible CGP) into the grid as per the following formula:*

*Vintage Multiplier = Floor Price of Base Year / Current Year Floor Price*

*Where, i . "Base year" means the year 2012-13 being the year in which the floor price was determined for solar REC for a period of five years"*

*(8) The vintage multiplier as specified in clause (7) of this regulation shall be provided to the solar generating companies registered under REC framework prior 1st January 2015 and shall be applicable for the period from 1st January 2015 upto 31st March 2017, after which such projects shall be eligible for one REC for one megawatt hour of electricity generated."*

Additionally, in the Order on Petition No. SM/016/2014 (Suo Motu) on 30/12/2014, the Commission had clearly specified:

*"The above vintage multiplier shall be provided to the solar generating companies registered under REC framework prior to the date of effect of the Third REC Amendment Regulations, for the period upto 31st March, 2017 after which such projects shall be eligible for one REC for one megawatt hour of electricity generated."*

32. Thus, discontinuation of vintage multiplier with effect from 1.4.2017 was statutorily provided. Hence the Commission has decided not to grant any multiplier to non-solar or solar RECs beyond 31.03.2017.

## IV. Date of Applicability of new REC prices

***<u>Commission's Proposal</u>***

| | Non Solar REC (Rs/ MWh) | Solar REC (Rs/ MWh) |
|---|---|---|
| **Forbearance Price** | 2,900 | 2,500 |
| **Floor Price** | 1,000 | 1,000 |

*The above stated forbearance and floor prices shall be effective from 01.04.2017 and shall remain valid until further orders by the Commission.*

***Stakeholder Comments***

- **Ginni Global Pvt. Ltd.** has submitted that most of the Projects, opting for REC Mechanism, have been able to sell only 50% of the REC and balance are still being held as inventory. To manage their Cash Flow, many Developers have taken finance on the security of the REC inventory. Banks have valued REC at Floor price for the purpose of calculating security value, for making available finance against the same. Any sudden drastic reduction in Floor price of REC will have following repercussions:-

    i. Banks' Security will be affected and banks will demand immediate payment of unsecured amount

    ii. Developers will have to take severe hit in their Annual Accounts which will affect their ability to mobilise funds for future expansion.

  They have suggested that the Floor price may kindly be reduced after liquidation of REC inventory. Alternatively, Floor price can be reduced gradually.

- **ETA Power Gen Pvt. Ltd**. has submitted that majority of biomass projects have restructured their loan accounts based on REC revenue to show the viability statement to the banks and lenders to the projects. Most plants have recognised REC income in their financial statements and filings with Income Tax Department and Registrar of Companies.

  The proposed reduction in price shall shrink the revenue of existing RECs and shall impact on financial statements already filed and may lead to tax implications.

Most plants in Tamil Nadu were closed since June 2015 mainly due to complete withdrawal of R&C measures and levy of very high cross subsidy charges. All the plants are waiting for positive regulatory developments and have been maintaining the plant only out of REC revenue with no operational revenue in place.

They have suggested that the revised pricing regulations should apply only for future upcoming projects and not for already existing and operational projects.

- **Continuum Wind Energy India** has requested to make revised floor price applicable for projects which are going to get commissioned after April 2017. The projects which are already commissioned and invested based on REC Floor price of Rs 1.50, if the floor price is amended downward to Rs 1.00 will severely impact the viability of such projects.

- **Wind Independent Power Producers Association** has commented that in case the revised price bands for REC certificates is made applicable only to the capacity getting registered under REC scheme on or after 01.04.2017, it will create an ambiguity in the market by introducing two products serving the common purpose but with different price ranges. Under such a scenario there will be two set of REC certificates in the market which are as follows:

    I. Non-Solar REC price range 1,500 Rs./REC to 3,300 Rs./REC & Solar REC price range 3,500 Rs./REC to 5,800 Rs./REC.

    II. Non-Solar REC price range 1,000 Rs./REC to 2,900 Rs./REC & Solar REC price range 1,000 Rs./REC to 2,500 Rs./REC.

As both the products will be used for common purpose of RPO compliance, the REC issued to entities registered on and after 01.04.2017 will be more demanded due to their lower price range. Such amendment in the REC price range will discriminate the existing REC over the newly issued REC, which will ultimately affect the financial viability of projects already registered in the scheme.

It is suggested therefore to have a common Floor and Forbearance price all the RECs certificates. It is also worth noting that adopting the proposed price range for all the RECs will result in huge revenue losses to the projects which are already registered in the scheme.

- **Autobat Batteries Pvt. Ltd.** has commented that for new plants coming up after 31/03/2017, it is suggested to revise and allow new REC rates effective 01/04/2017.

- **Sir Kasturchand Daga Solaire Inc** has commented as per the draft order, there is no clarity whether same will be applicable to all the RE Generators irrespective of their date of registration under the scheme or same will only be applicable to RE generators getting registration on and after 1st April 2017.

  In case it is applicable to those generators who have been registered before the proposed date, it will make such generators cash flow so negative to the extent that they would not be able to pay even their debts leave alone recover their investment. Though the proposed floor price may be suitable for the generators getting commissioned and registered after 1st April 2017, same cannot be applied to the generators set up earlier.

***<u>Analysis & Decision</u>***

33. Several stakeholders have suggested that the new REC prices should be applicable to projects that will be registered after March 31st, 2017. However, that shall create two different types of RECs in the market, ones which are issued to projects registered before 1.04.2017 priced at Rs.3500 (Solar) and Rs.1500 (non-Solar), and to the newer projects at Rs.1000 (solar and non-solar). This juxtaposing of differently priced RECs will result in the more expensive RECs not getting sold. The futility of this measure has also been acknowledged by IWPA.

34. On the other hand, REConnect and several other developers suggested to split the market wherein the current outstanding RPO commitments may be met by older RECs only. This approach shall not be legally tenable for the Commission to undertake. All obligated entities are expected to take measures to comply with outstanding RPOs, which they shall undertake with the present inventory.

35. Thus, the revised floor prices (Rs.1000/MWh for solar and non-solar) shall be applicable to all RECs in the market.

## V. Extension in Validity of RECs

***Stakeholder Comments***

- **Tata Power Company Limited, Himalaya Power Producers Association, DCM Shriram Industries Limited, Wind Independent Power Producers Association and Mytrah Energy (India) Pvt. Ltd. REConnect Energy Solutions Pvt. Ltd., Bonafide Himachalies Hydro Power Developers Association, Bansal Wind Mill Pvt. Ltd., Sri Sivajothi Spinning Mills (P) Ltd., Fab Colors, Baroda Moulds & Dies, Electrical Controls & Systems, Kaizen Switchgear Products, Kasturi &**

**Sons Ltd., AA Energy Ltd., SRG Apparels Pvt. Ltd., Karur K.C.P Packagings Ltd., Manidhari Gums & Chemicals, The KCP Limited, ETA Power Gen Pvt. Ltd., UP Sugar Mills Cogen Association, Armstrong Power Systems Pvt Ltd, Jindal ITF Urban Infra Ltd., Naga Limited, Finolex Cables Ltd, Sanjiv Prakashan, Kasturi Estates Pvt. Ltd., Orient Green Power Company Limited and IBPA** have requested that to extend the validity of RECs as without such an extension several RECs are will expire resulting in losses for the REC projects.

- **Ranga Raju Warehousing Pvt. Ltd. / Greenko Group** has submitted that in absence of any validity period of the determined REC prices, the RE project developers shall not be certain about the sustenance of revenue stream from sale of RECs. Accordingly, RE developers would not be able to secure Financial Closure of their respective RE projects. This would lead to RE developers refraining from development of RE projects under the REC mechanism.

  They have requested to provide certainty about the validity of the determined REC prices for at-least 10 years for enabling project financing and thus development of the same.

- **Autobat Batteries Pvt. Ltd.** has suggested to extend validity dates of old unsold RECs remaining with Old Plants (Before 31/03/2017) by at-least another five years due to failure of Discoms (Obligated Entities) to buy valid RECs and failure to penalise Discoms appropriately to fulfil their committed obligation of buying RECs in time.

- **Apex Coco and Solar Energy Ltd** has requested to increase the validity of existing RECs till 31.03.2022

- **Himachal Small Hydro Power Association** has requested to increase the validity of existing RECs till the time these are exhausted.

- **Ujaas Energy Ltd**. has requested to extend the validity of Solar RECs by 12 years.

- **GAIL** has commented that the proposal is silent on validity of RECs. The mitigation measures to be captured for avoiding the REC expiry

- **Indian Sugar Mills Association** has suggested extending the validity of RECs lying in inventory with the generators for another 12 months and ensuring strict enforcement of RPOs to avert endless extension of these RECs.

- **Sai Saburi Urja Pvt. Ltd.** has requested to extend the validity of existing REC by 20 % time i.e 153 as 80 % REC remain unsold. They have requested to have this provision for at least 2017-18, 2018-19 and 2019-20.

- **Renewable Energy Developers Association of Maharashtra (REDAM) and Green Energy Association** have submitted that have proposed to extend the validity of the RECs by at-least two years.

***<u>Analysis & Decision</u>***

36. Many stakeholders have requested to extend the validity of RECs that are expiring on 31.03.2017. Suggestions for duration of extension range between 2 years to 12 years.

37. Whereas the Commission had extended the validity of RECs expiring in FY 2014-15 by a period of three years vide Third Amendment to REC Regulations, the REC market has not seen the expected clearing ratio.

38. The numbers of RECs that are expiring during FY 2017-18 are as below:

| Month-wise Status | | |
|---|---|---|
| ***SN*** | ***REC Expiring in*** | ***No of RECs*** |
| 1 | Mar-17 | 1,61,855 |
| ***FY 2016-17*** | | ***1,61,855*** |
| 1 | Apr-17 | 28,295 |
| 2 | May-17 | 18,072 |
| 3 | Jun-17 | 35,880 |
| 4 | Jul-17 | 1,81,033 |
| 5 | Aug-17 | 1,79,801 |
| 6 | Sep-17 | 1,11,135 |
| 7 | Oct-17 | 3,73,127 |
| 8 | Nov-17 | 2,47,000 |
| 9 | Dec-17 | 3,68,009 |
| 10 | Jan-18 | 1,86,019 |
| 11 | Feb-18 | 2,93,955 |
| 12 | Mar-18 | 3,12,785 |
| ***FY 2017-18*** | | ***23,35,111*** |

39. The Commission appreciates the concerns of the REC Project Developers. The Commission in exercise of Power to Relax provisions under Regulation 15 of REC Regulations extends the validity of RECs which are expiring in the next six months up to 31$^{st}$ March 2018. That is, the RECs expiring between 31$^{st}$ March 2017 and 30$^{th}$ September 2017 shall now remain valid up to 31$^{st}$ March 2018.

40. The Commission also directs its staff to examine this issue of extension of the validity of RECs and initiate necessary process to amend the relevant provisions of the REC Regulations, if considered necessary.

## VI. Minimum Project Viability Requirement (MPVR)

***<u>Commission's Proposal</u>***

- The project viability approach covers the cost required to meet the viability parameters including O&M, Interest on Loan, Interest on Working Capital and Depreciation (and fuel expenses in case of Biomass and Cogeneration projects). Based on the review of generic tariff orders, the Commission has observed that the viability parameters as outlined above constitute 70% of the total levellised tariff.

***<u>Stakeholder Comments</u>***

- **Ginni Global Pvt. Ltd.** has submitted that the above-said paragraph defines Minimum Project Viability Requirement (MPVR) as the cost required to meet viability parameters including O&M, interest on loan, interest on working capital limit (WCL) and depreciation (fuel expenses in the case of Biomass and Co-generation Projects).

In other words, difference between levellised tariff and MPVR is the return on equity capital and tax expenses. Since, loan is repaid out of post-tax profit, and during repayment period, depreciation remains inadequate to meet repayment obligation, hence, necessity to allow advance depreciation in levellised tariff calculation, therefore, tax expense should also be considered as part of MPVR.

They have suggested that MPVR @ 85% of levellised tariff may be considered to determine Floor price.

- **L &T** has commented that in Appendix -1 clause 3-3.3, CERC has not mentioned the methodology and fact to decide upon the minimum project viability parameter of 70% of the total levellized tariff. For Solar, the developer while accounting the cost while bidding and reverse auction takes calculated risk for module prices at the time of delivery (generally 10 to 12 months after reverse auction), inverter technology and price and similarly for O&M for 25 yrs of plant life. Contingencies on the investments have also be factored for these specific risks.

It is requested to cross verify and declare the calculation for 70% as a result, i.e. Rs 3.26 per kWh. This should be different for each State and for the REC Solar plant owners.

They have also commented that in Appendix -1 clause 4.2.3, APPC price trend of previous years shows that every year there is an average increase of 8 paise to 22 paise per kWh in the APPC of the major States. Hence, the calculation of floor price by merely considering the one year data is not justified. It is requested to consider the past years data to arrive on the floor price, as this REC prices set are understood to be for a control period of 5 years.

- **IL&FS** has requested to consider using the APPCs and Feed-in-Tariffs for the latest year i.e. for FY 2016-17. It would be more precise and would reflect the correct resultant prices of the RECs.

- **Continuum Wind Energy India** has suggested increasing the threshold from 70% to 80% so that generator is able to recover its actual cost, considering that revenue realized from trading of REC is highly uncertain.

- **Ranga Raju Warehousing Pvt. Ltd. / Greenko Group** has suggested to consider 73% of the total levelized tariff as project viability cost for computation of Forbearance and Floor price as the review of generic tariff orders by different States suggest that the specified project viability cost parameters constitute about 72-74% of the total levelized tariff rather than 70% as specified in the CERC order in petition No.02/SM/2017 dated 28th Feb 2016.

They have submitted that REC Floor price has been computed considering minimum project viability requirement to meet RE targets. The minimum project viability requirement considers nil return to the project developer. However, no generator/developer shall ever intend to develop a power project providing nil return from the sale of power.

They have also submitted that the project developer shall have to bear higher expenses in the initial years on account of higher interest charges on term loan. Hence, the levelized tariff based on minimum project viability tariff shall not be able to recover even the minimum project cash-outflow expenses in the initial years leave aside the return on equity infused by the project developer. Since, levelized tariff considering minimum project viability tariff would commercially ruin the project developers.

They have requested that the determination of REC price based on the same should not be considered or if it has to be considered it should be at-least not less than the first year tariff based on minimum project viability tariff profile.

- **Adani Green Energy Limited** has suggested that Minimum Project viability (MPV) is assumed as 70% of Average Levelised tariff is not justifiable. MPV include O&M cost, Interest on loan, interest on working capital & depreciation. Does not consider land cost and return on equity. Land cost, salvage value and Pre-tax ROE will not be more than 20% of the tariff. Hence MPV shall be 80% of the tariff instead of 70% assumed.

They have requested to consider MPV as 80% of the tariff instead of 70% assumed.

***Analysis & Decision***

41. Stakeholders such as Greenko, Continuum Wind Energy, etc. have objected to the minimum project viability being taken as 70% of tariff. While Ginni global has suggested that tax should be accounted for in the MPVR, Adani has commented that RoE along with land cost and salvage value shall amount to 20% only.

42. The project viability approach covers the cost required to meet viability parameters including O&M, Interest, Principal Repayment (and fuel expenses in case of Biomass and Co-generation) etc. The principle has been followed for determining the forbearance and floor price of REC up to 2014.

43. It has been observed that the project viability tariff amount computed based on the above-said parameters is in the range of 65-73%. For the purpose of regulatory

certainty, a threshold value of 70% has been considered for the computation of Project Viability Tariff.

## VII. Enforcement of Renewable Purchase Obligation (RPO)

***<u>Stakeholder Comments</u>***

- **Modi Group (Jai Mangal Infra Powers Pvt. Ltd.), Tirupati Microtech P.Ltd. and Bharat Power Inc** have suggested strict enforcement of RPO for ensuring REC sales, penalty clauses for defaulting, strict instructions and guidelines for implementation to be issued to every SERC, Discom's and Obligated agencies**.** They have also suggested that in mean time, a warehousing scheme can be introduced where the Govt. buy’s/mortgage these REC’s and make payments to the investors so that projects will not get NPA.

- **IEX** has submitted that the said issue should be addressed, may be through the FOR, so that rolling over of RPO’s should be done by taking said fact into consideration and a multiplication factor on the defaulters in terms of unfulfilled RPO should be applied. It will encourage demand of REC in the market, thereby creating a balanced out REC market and also dissuade obligated entities to request for roll over of the obligation to subsequent years.

- **Bajaj Finserv Limited and DCM Shriram Industries Limited** have submitted that the solution to increase demand for RECs is by implementation of minimum green energy norms or REC purchase by Obligated entities and not reducing the price.

- **IWPA** has commented that the DISCOMs in majority of States have been refusing to purchase RECs for their RPO compliance. This practise has been further encouraged by the lack of serious punitive measures by respective State Commissions for continuous default by these DISCOMs. They have also submitted the details of RPOs non-compliance by few States viz. Assam, Chhattisgarh, MP, Punjab, UP, Rajasthan.

- **AA Energy Ltd.** has submitted that the obligated entities which have been in default should be asked to meet past RPO compliance on the basis of the value of RECs traded in the past. They have also submitted that Commission may advise Ministry of Power to buy out the unsold RECs and subsequently decide the forbearance and floor price. The mechanism should be implemented with whole new deliberations by enforcing RPO and getting the required recognition for Financial Institution to accept it.

- **Indian Paper Manufacturer's Association** has submitted that Lack of enforcement of the Renewable Purchase Obligation (RPO) has resulted in huge amount of RECs remaining unsold in the national inventory today, with low market clearance.

- **IWTMA** has suggested that the provisions for avoiding undue advantage to RPO obligated entities in few States (eg. Karnataka, Rajasthan) which provide extended time for annual RPO compliance beyond end of financial year are required in the REC Regulations

- **Rays Power Experts Pvt. Ltd., Laxmi Publications (P) Ltd, Apex Coco & Solar Energy Ltd, Saidpur Jute Co. Ltd, Triveni Sangam Holdings &Trading Co. Pvt**

**Ltd, Dr. DH Patel,Patel Wood Syndicate, Govindram Shobhram & Co.,Agrawal Minerals (Goa) Pvt Ltd,Gangadhar Narsinghdas Agrawal Saraswati Industries R.H. Prasad & Company Pvt. Ltd., Raj Overseas and Himalaya Power Producers Association,** have commented that guidelines should be issued for meeting RPO by State utilities, Open Access consumers and Captive consumers in various Sates. Instruction should be issue for strict implementation of penalty clauses on non-meeting of RPO by obligated entities.

- **REConnect Energy Solutions Pvt. Ltd., Bonafide Himachalies Hydro Power Developers Association,Bansal Wind Mill Pvt. Ltd., Sri Sivajothi Spinning Mills (P) Ltd., Fab Colors, Baroda Moulds & Dies, Electrical Controls & Systems, Kaizen Switchgear Products, Kasturi & Sons Ltd., AA Energy Ltd., SRG Apparels Pvt. Ltd., Karur K.C.P Packagings Ltd., Manidhari Gums & Chemicals, The KCP Limited, Rane TRW Steering Systems Pvt Ltd, ETA Power Gen Pvt. Ltd., UP Sugar Mills Cogen Association, Jindal ITF Urban Infra Ltd. Armstrong Power Systems Pvt. Ltd., Naga Limited, Sanjiv Prakashan, Kasturi Estates Pvt. Ltd.,** have submitted that the existing inventory is a result in lack of demand of RECs, which itself is caused by lack of RPO enforcement by the states. This represents a significant failure on the part of State Regulators, the burden of which will have to be borne by RE projects. They have referred to the Commission’s order in petition no. 266/SM/2012, dated 19.12.2012.

Further, Honourable ApTel has also held the following in respect of RPO enforcement in petition no. OP1 of 2013 dated 20/4/2015.

"The State Commissions are bound by their own Regulations and they must act strictly in terms of their Regulations."

Reference to Comptroller and Auditor General (CAG) report (no. 34 of 2015) has been also made, that states :-

"Of the 24 States, six States complied with the RPO targets set by the respective State Energy Regulatory Commissions."

They have submitted that RECs issued after April 2017 should be used only for compliance of RPO pertaining to FY 2017-18 and onwards. This is in addition to the appropriate penal measures that should be taken as required under the RPO regulations. Without this measure the price reduction will have the effect of rewarding the defaulter.

- **SB Solar Services Pvt. Ltd.** has submitted that fulfilment of RPO obligations through procurement of RECs should not be allowed in States where sufficient RE projects have been / are being developed. The objective of developing RE projects shall be defeated if RECs are permitted in lieu of procurement of RE power from projects in energy rich/ sufficient States.

They have also requested to mandate the Obligated entities to comply with RPO through RE projects, where there is abundant potential to develop RE projects including the States of AP, Gujarat, Rajasthan, J&K, Karnataka, Kerala, MP, Maharashtra, TN, Orissa, Telangana.

- **Mytrah Energy (India) Pvt. Ltd.** has submitted that in order to enforce the RPO and make REC Mechanism effective, the Discoms and Obligated entities of States should submit a quarterly report on Commission's website related to the fulfillment of

RPO and penalties imposed on those entities which are non-compliant. RPO should be enforced on quarterly basis to skewed trading in the last few months of the financial year.

- **L&T, Hasya Enterprises Pvt. Ltd., Klassic Wheels Pvt. Ltd.**, **Giriraj Enterprises, Uma Corporation, Gaurav Agro Pipes, Bothara Agro Equipments Pvt. Ltd., Paras PVC Pipes & Fittings Pvt. Ltd., Pooja Renewable Energy Pvt. Ltd., Advik Hitech Pvt. Ltd. and Kasturi Foundry Pvt. Ltd.** has submitted that RPO compliance should be made mandatory and penalty to be imposed on non-compliant entities. They have also requested that the Commission shall not allow any waiver or carry-forward of Solar RPO for any utilities till the Solar REC inventory is available.

- **Lohia Developers India Pvt. Ltd., Lohia Gramin Vikas Pvt. Ltd. and DesignCo** have submitted that with lack of enforcement of the RPO and continuous waiver and carry-forward of the RPO, the law of natural justice is reversed and defaulters are incentivized with the reduction of the price of RECsat first in 2014 and then again in the FY 2017.

On one side due to weak enforcement, orders of SERCs going against the provisions of the regulations and directions of APTEL, non-compliance of the orders and directions of the commissions and on top it misusing the provisions of the UDAY MOU most of the DISCOMs have shifted their RPO shortfall of 2012-2013 till FY 2015-2016.

They have suggested to RPO compliance mandatory and impose penalty for non-compliance, which will enhance the REC trade further. They have also suggested not allowing waiver or carry forward of Solar RPO compliance to any utilities by SERC's till Solar REC inventory is available.

***Analysis & Decision***

44. It has been pleaded by many stakeholders that strict enforcement of RPOs should be brought about, through penalty clauses for defaulting, or may be through the Forum of Regulators (FOR), so that rolling over of RPO’s should warrant a multiplication factor on the defaulters in terms of unfulfilled RPO.

45. While the Commission appreciates these concerns, it needs to be reiterated that RPO compliance is under the jurisdiction of State Commissions. The Commission has advised the SERCs on the issue of RPO compliance in the past. The Commission is committed to working with SERCs through FOR for resolution of this issue.

## VIII. Miscellaneous

***Stakeholder Comments***

- **Technology Multiplier for Non-Solar RECs**

**REConnect Energy Solutions Pvt. Ltd., AA Energy Ltd., Bansal Wind Mill Pvt. Ltd., Sri Sivajothi Spinning Mills (P) Ltd., Fab Colors, Baroda Moulds & Dies, Electrical Controls & Systems, Kaizen Switchgear Products, Kasturi & Sons Ltd., SRG Apparels Pvt. Ltd., Karur K.C.P Packagings Ltd., Manidhari Gums & Chemicals, Rane TRW Steering Systems Pvt Ltd, The KCP Limited, ETA Power Gen Pvt. Ltd., UP Sugar Mills Cogen Association, Jindal ITF Urban Infra Ltd.**

**Armstrong Power Systems Pvt. Ltd., Naga Limited, Sanjiv Prakashan, Kasturi Estates Pvt. Ltd.** have submitted that there is a wide variation in the floor price needed to achieve viability of different technologies. While biomass and bagasse based projects require Rs 1.9 and Rs 1.23 respectively, wind and SHP projects require less that Rs 1. The approach of taking a weighted average based on capacity is flawed as it will still result in biomass and bagasse projects becoming unviable. The data provided in the draft order makes for a strong case for technology based multiplier as without that some projects will not be able to function.

They have suggested providing a technology based multiplier as there is a wide variation in viability tariff requirement of different technologies.

- **Value Offset of REC**

**The KCP Limited** has submitted that the Solar RECs are accumulated worth Rs 4.2 crores due to poor clearing ratios. However they have to purchase Non-Solar RECs in order to comply with the Non-Solar RPO norms.

They have requested to consider the Non-Solar RPO with Solar RPO on value offset basis. This shall help the obligated entities who have Solar RECs and can fulfil Solar and Non-Solar RPO from the inventory of unsold RECs.

- **Bundling of Solar REC**

**Ujaas Energy Ltd.** commented that Commission should allow re-bundling of Solar REC with brown power so that instead of selling REC, solar power developer and other agencies can also get option to sell Solar power. The similar facility is already available for non REC via NVVN.

- **Discussion on Solar REC - RPO / Floor Price of REC**

  **SB Solar Services Pvt. Ltd.** has submitted that with capex for Solar projects declining rapidly, Solar tariffs are expected to become equal to or lower than APPC is various States, hence an option to eliminate Solar RECs together could be explored else implementation of new Solar capacity may be hampered

- **Vedanta Limited** has requested to introduce Over-the-Counter (OTC) trade by enabling bi-lateral trades in REC. In OTC trade, CERC may allow licensed electricity traders to participate in REC trade, in line with the electricity market. This move may give a major boost to REC market volume.

  Introduction of OTC trades of RECs will enable the traders and generators to promote the installation of RE generation as they are engaged in one to one negotiations with the utilities and obligated entities.

  Presently most of the utilities are inviting tenders for purchase of RE power in order to fulfil their renewable purchase obligation. Due to very limited participation in the tenders for supply RE power by RE generator, utilities are not able to achieve assigned targets.

  If OTC trade of REC is allowed then, utilities shall be able to float tenders for purchase of RECs, directly from Generators or traders. As we have witnessed in electricity market, tendering process lead towards lower prices, therefore, utilities shall be able to purchase RECs at lower price and resultantly lower net impact on end use consumer of Discoms.

- **Prayas Energy Group** has submitted the following:

a. The primary purpose of the REC was to overcome the geographical resource mismatch across the country to allow obligated entities in States with poor resource availability to comply with RPO obligations. It is important to note in this regard is that this holds true only for wind power and to some extent for SHP. Biomass and Solar resources are widely spread and available across the country.

b. Secondly, it is not a primary intent of the REC to promote all renewable energy deployment in general but to ease RPO compliance through another mechanism. REC is expected to only contribute marginally to RPO compliance (present REC capacity of 4,017 MW is only 8% of the total installed RE capacity of 50,744 MW in the country). This ratio is likely to further fall in the coming years.

c. Thirdly, with new large scale wind and Solar projects being connected to the ISTS, it is feasible to actually transmit power across States, unlike the situation few years ago. Competitive bidding has also ensured very low generation prices in such bids.

d. Finally, the IEX has already petitioned the CERC for the introduction of a green instrument (G-DAM) on the power exchange which will allow for transactions of physical renewable power.

The whole basis for the REC mechanism needs to be seen in this light and re-examined afresh. Unless the REC prices are truly reflective of the market prices, obligated entities are more likely to seek compliance through other means such as Open Access, Captive, Group Captive, Power Exchanges and rooftop Solar net metering. Future investments in REC mechanism will also dry up if there is a stark difference in REC and market pricing.

With regard to the Solar forbearance and floor prices, the similar issues with using APPC data for 2015-16 instead of for 2017-18 and beyond exists and floor and forbearance prices would be much lower than proposed. Considering APPC for 2015-16 for MP (Rs 3.54/kWh) would mean that a Solar or wind project there would possibly need no floor price.

With Solar PV prices crashing, the earlier price difference between Solar and wind/biomass has vanished. The very basis for the continued differentiation between Solar and Non-Solar RPOs and RECs is debatable and will need to be addressed soon. Obligated entities should be able to procure the cheapest form of renewables, subject to technical grid constraints and after considering the system value (distance from transmission lines, contribution to peak demand etc.) of those renewable energy projects beyond mere generation price.

They have requested the Commission to come out with a comprehensive white paper and initiate a discussion on need for the continued distinction between Solar and Non-Solar RPOs/RECs

- **Mytrah Energy (India) Pvt. Ltd.** has submitted that NLDC had floated a draft for consideration of bi-monthly trade of REC on power exchanges. They request that such proposals should be implemented as it shall help in frequent realization of revenue. Alternatively, bilateral trade transactions of RECs can also be included.

They have also submitted that the major States with projects under REC mechanism are Gujarat, MP, TN, Maharashtra, UP etc. with more than 80% of the projects. However, in States like Gujarat and Maharashtra, SERCs are yet to notify the APPC. The Discoms are reluctant and submit that any number without any basis for back-up calculation will result in fixing the APPC for 25 years.

They have requested to the safeguard the investments and implement the mechanism in an effective manner.

- **Apeiron Renewable Energy Pvt. Ltd.** has submitted that to bring REC market to life and to balance demand and supply of RECs in the market, RECs must be purchased by Clean Energy Mechanism or Renewable Energy Fund while States under UDAY scheme on timeline while meeting their renewable energy commitment since FY 2012. You would agree small MSME companies are being taken advantage by making it easy for States by not imposing penalty on them, which is travesty of justice. To compensate for one year loss the RECs in stock must be bought at Forbearance Price which is equivalent to Base price plus one year interest loss being presently suffered by MSME and providing basis of compensation for non-implementation of policy by CERC. (Tabulation is referred below)

Since REC policy has been a complete failure the commission instead of trying to ensure closure of companies to cover for failure should provide for alternate policy which facilitate reasonable return for companies going forward. One such mechanism can be to migrate companies from REC mechanism to prices discovered during tenders during the year the plants were put up.

Tabulation

Plants registered under REC mechanism – 351 (as per REC Registry website)

Contracted power under REC mechanism: 718MW

Estimated generation per year (@15 lakhs unit / MW) – 718*15 lakhs units = 10,770 lakh units

Unsold RECs on date: more than 47 lakhs (IEX and PXIL website – RECs offered for sale)

Base price of RECs – Rs 3500 / REC

Value of Solar RECs lying unsold ~1650 crores

Interest cost suffered per year due to unsold RECs (@11.5% / annum) ~190 crores / annum

Average loss on account of Interest only – Rs190*100 lakh/ 10,770 lakh units generated = Rs 1.7 / unit of power produced.

<u>COST of Non- Implementation of its Policy by CERC on RPO – Rs 1.7 / unit of power – Rs 1700 /REC – suffered by REC policy Solar Generators yearly.</u>

- **Sai Saburi Urja Pvt. Ltd.** has requested to purchase REC stocks of atleast 1 MW PV Solar non captive / Third party sale plants that have not availed appreciated depreciation enabling them to repay financial institution. They have requested to have this provision for at least 2017-18, 2018-19 and 2019-20.

- **Power and Energy Consultants** has commented that the wind energy should be separated from Non-Solar REC as a separate identity.

- **L&T** has requested to incorporate some factor of comfort (in terms of extra subsidy, REC price multiplier etc.) for the companies to invest in REC based plant in the states where Solar/Non-Solar plants are still not feasible in order to encourage the Indian REC market.

- **Green Energy Association** has submitted that the Solar RECs are receiving discriminatory treatment whereby, special treatment has been provided to the Non-Solar RECs. The bundled power supplied for every 40000 KWh of Solar Power, 1 Non-Solar REC is also bundled. However, no such provision has been provided for Solar RECs.

  To give an example under this scheme in one of the trading NVVN has procured 85000 Non-Solar RECs and has been continuously buying the same.

  It is therefore submitted that for every 40000 KWh of Solar power, 1 number of Solar RECs shall also be procured by NVVN / SECI / State and shall be bundled with conventional power.

- **Prodigy Hydro Power Pvt. Ltd.** has submitted that they should be allowed to enter into PPA with preferential tariff or allow third party/ inter-state sale instead of APPC. Further, upon completion of 5 year tariff period when projects should be allowed to sell energy to the Utility at preferential tariff, realistic consideration of capital cost of SHP projects should be done.

- **Shri S.P. Garg** has suggested several references for improving the implementation of the REC mechanism. These include international references of REC market like Forwards and Future Contracts in Australia, RE100 initiative for green energy procurement in Europe. It has also been submitted that REC purchase at discounted price (lower than floor price) shall be allowed. Increase in number of REC trading sessions and also allowing Govt. owned companies with huge cash-piles to purchase RECs.

***<u>Analysis & Decision</u>***

46. The Commission is of the view that by introducing Technology Specific Multiplier for Non-Solar RECs, it will inundate the market with various types of RECs. As such, introducing Technology Multiplier will not be a suitable approach. Prayas has suggested a deep dive into the design of REC market- whether floor price is still needed and whether the distinction between solar and non-solar RPO is still needed, etc. The Commission directs the staff to work on a White Paper examining these aspects.

47. Couple of stakeholders have suggested that the Government should make arrangements for purchase of RECs by government controlled funds. The Commission appreciates the suggestion and would advise the Government to consider suitable intervention in this direction.

48. A couple of stakeholders have requested to allow sale of RECs below the floor price, by enabling over-the-counter trade or otherwise. While the Commission appreciates the intent of this suggestion given the stock of RECs, the floor price is determined based on minimum viability requirement for an REC project, through which the Commission tries to balance the risks assumed by project developers vis-à-vis price of RECs. For now, it is felt that the floor price acts as a necessary safeguard. However, the Commission has already directed the staff to examine the need for

floor price going forward after duly factoring in the current and emerging market conditions.

49. The issue of Bundling of Solar RECs is beyond the scope of this Order.

50. The issue of project developers entering into PPA with preferential tariff or allow third party/ inter-state sale instead of APPC is beyond the scope of this Order.

51. **Summary of Decisions**

1) Validity of all solar and non-solar RECs that are expiring between 31.03.2017 and 30.09.2017 shall stand extended up to 31.03.2018.

2) Floor and forbearance price for non-solar RECs starting 01.04.2017 shall be as follows:

| Non Solar REC | (Rs/ MWh) |
|---|---|
| Forbearance Price | 3,000 |
| Floor Price | 1,000 |

3) Floor and forbearance price for solar RECs starting 01.04.2017 shall be as follows:

| Solar REC | (Rs/ MWh) |
|---|---|
| Forbearance Price | 2,400 |
| Floor Price | 1,000 |

4) The forbearance and floor prices of RECs as above shall remain valid until further orders of the Commission.

5) This order shall be effective from 1.4.2017.

| | | | |
|---|---|---|---|
| **Sd/-** | **Sd/-** | **Sd/-** | **Sd/-** |
| **(Dr. M. K. Iyer)**<br>**Member** | **(A.S. Bakshi)**<br>**Member** | **(A.K. Singhal)**<br>**Member** | **(Gireesh B. Pradhan)**<br>**Chairperson** |

**New Delhi**

**30th March, 2017**

## Annexure A: List of stakeholders who have submitted their comments

| S.No. | Stakeholder |
|---|---|
| 1 | AA Energy Limited |
| 2 | Adani Green Energy Ltd. |
| 3 | Advik Hitech Pvt. Ltd, |
| 4 | Agrawal Minerals (Goa) Pvt Ltd |
| 5 | Alliance Land Developers Pvt. Ltd. |
| 6 | Apeiron Renewable Energy Pvt. Ltd. |
| 7 | Apex Coco and Solar Energy Limited |
| 8 | Armstrong Power Systems Pvt. Ltd. |
| 9 | Autobat Batteries Pvt. Ltd. |
| 10 | Bajaj Finserv Limited |
| 11 | Bansal Windmills Pvt Ltd |
| 12 | Baroda Moulds & Dies |
| 13 | Bharat Power Inc. |
| 14 | Bonafide Himachalies Hydro Power Developers Association |
| 15 | Bothara Agro Equipments Pvt. Ltd. |
| 16 | Captive Power Producers Association |
| 17 | Chiranji Lal Spinners Pvt. Ltd. |
| 18 | Continuum Wind Energy India |
| 19 | Daksha Infrastructure Pvt. Ltd. |
| 20 | DCM Shiriram Industries Ltd. |
| 21 | DesignCo |
| 22 | Dr. DH Patel |
| 23 | Electrical Control & Systems |

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|---|---|
| 24 | ETA Power Gen Pvt. Ltd. |
| 25 | Fab Colors |
| 26 | Finolex Cables Limited |
| 27 | Fluidcon Engineers |
| 28 | GAIL |
| 29 | Gangadhar Narsinghdas Agrawal |
| 30 | Gaurav Agro Pipes |
| 31 | Ginni Global Pvt. Ltd. |
| 32 | Giriraj Enterprises |
| 33 | Govindram Shobhram & Co. |
| 34 | Green Energy Association |
| 35 | Hasya Enterprises Pvt Ltd |
| 36 | Himachal Small Hydro Power Association |
| 37 | Himalaya Power Producers Association |
| 38 | Hindalco Industries - Aditya Birla Group |
| 39 | IEX |
| 40 | ILFS Energy Development Co. Ltd. |
| 41 | Indian Biomass Power Association |
| 42 | Indian Paper Manufacturer's Association |
| 43 | Indian Sugar Mills Association (ISMA) |
| 44 | Indian Wind Power Association (NRC) |
| 45 | InWEA |
| 46 | IWTMA |
| 47 | Jindal ITF Urban Infra Ltd. |
| 48 | JK Paper Ltd. |

| | |
|---|---|
| 49 | JVS Export |
| 50 | Kaizen Switchgear Products |
| 51 | Kanchanjunga Power Company Private Limited |
| 52 | Karur KCP Packagings Ltd. |
| 53 | Kasturi & Sons Ltd. |
| 54 | Kasturi Estates Pvt. Ltd. |
| 55 | Kasturi Foundry Pvt. Ltd. |
| 56 | Klassic Wheels Pvt. Ltd. |
| 57 | L&T |
| 58 | Laxmi Publications (P) Ltd. |
| 59 | Lohia Developers India Pvt. Ltd. |
| 60 | Lohia Gramin Vikas Pvt. Ltd. |
| 61 | Maharashtra State Electricity Distribution Company Limited (MSEDCL) |
| 62 | Manidhari Gums & Chemicals |
| 63 | Modi Group |
| 64 | Mytrah Energy (India) Pvt. Ltd. |
| 65 | Naga Limited |
| 66 | New Patel Saw Mill |
| 67 | Omega Renk Bearings Pvt. Ltd. |
| 68 | Orient Green Power Company Limited |
| 69 | Oswal Woolen Mills Ltd. Nahar |
| 70 | Paras PVC Pipes & Fittings Pvt. Ltd. |
| 71 | Patel Wood Syndicate |
| 72 | Pooja Renewable Energy Pvt. Ltd. |
| 73 | POSOCO |

| | |
|---|---|
| 74 | Power & Energy Consultants |
| 75 | Prayas Energy Group |
| 76 | Prodigy Hydro Power Pvt. Ltd. |
| 77 | R.H. Prasad & Company Pvt. Ltd. |
| 78 | Raj Overseas |
| 79 | Rajasthan Patrika Pvt. Ltd. |
| 80 | Rane TRW Steering Systems Pvt Ltd |
| 81 | Ranga Raju Warehousing Pvt. Ltd. / Greenko Group |
| 82 | Rays Power Experts |
| 83 | RE Connect Energy Solutions Pvt. Ltd. |
| 84 | Renewable Energy Developers Association of Maharashtra (REDAM) |
| 85 | Sai Saburi Urja Pvt. Ltd. |
| 86 | Saidpur Jute Co. Ltd |
| 87 | Sanjiv Prakashan |
| 88 | Saraswati Industries |
| 89 | SB Solar Services Pvt. Ltd. |
| 90 | Shiny Knitwear |
| 91 | Shri Dhanalakshmi Spinntex Pvt. Ltd. |
| 92 | Shri Giriraj Energy Pvt. Ltd. |
| 93 | Sir Kasturchand Daga Solaire Inc |
| 94 | SJVN Limited |
| 95 | SP Garg (Individual) |
| 96 | SRG Apparel Pvt. Ltd. |
| 97 | Sri Sivajothi Spining Mills (P) Ltd. |
| 98 | Suma Shilp Limited |

| | |
|---|---|
| 99 | Tata Power Company |
| 100 | Tata Power Trading Company Ltd. |
| 101 | The KCP Limited |
| 102 | Tirupati Microtech Pvt. Ltd. |
| 103 | Triveni Sangam Holdings & Trading Co. Pvt Ltd |
| 104 | Ujaas |
| 105 | Uma Corporation |
| 106 | UP Sugar Mills Cogen Association |
| 107 | Vedanta Limited |
| 108 | WIPPA / Renew Power |

## ANNEXURE-1A (NON SOLAR REC FORBEARANCE AND FLOOR PRICE – CASE OF AVERAGE WIND TARIFF)

| Small Hydro Power (SHP)<br>State | APPC (2016-17) as estimated based on SERC Tariff Orders for 2016-17 (Rs/kWh) | SERC Tariff for Small Hydro Project (Average of <5 MW and 5-25 MW) based on SERC Orders (Rs/kWh) | Difference b/w Tariff and APPC (Rs/kWh) | Project Viability Tariff Small Hydro Project based on SERC Orders (Rs/kWh) | Difference b/w Project Viability Tariff and APPC (Rs/kWh) |
|---|---|---|---|---|---|
| Gujarat* | 3.39 | 3.98 | 0.59 | 2.79 | -0.60 |
| Himachal Pradesh | 2.29 | 3.22 | 0.93 | 2.25 | -0.04 |
| Jammu & Kashmir | 2.96 | 4.07 | 1.11 | 2.85 | -0.11 |
| Karnataka | 3.23 | 4.16 | 0.93 | 2.91 | -0.32 |
| **Madhya Pradesh** | 2.82 | 6.32 | **3.50** | 4.42 | **1.60** |
| Maharashtra* | 3.56 | 4.42 | 0.86 | 3.09 | -0.47 |
| Manipur | 2.86 | 4.13 | 1.27 | 2.89 | 0.03 |
| Mizoram | 2.94 | 4.13 | 1.19 | 2.89 | -0.05 |
| Punjab | 3.56 | 5.12 | 1.56 | 3.58 | 0.02 |
| Uttar Pradesh | 3.78 | 5.69 | 1.91 | 3.98 | 0.20 |
| Uttarakhand | 2.63 | 4.13 | 1.50 | 2.89 | 0.26 |
| West Bengal | 3.62 | 4.42 | 0.80 | 3.09 | -0.53 |
| **Technology Specific Forbearance Price (Small Hydro Power)** | | | **3.50** | | |
| **Technology Specific Floor Price (Small Hydro Power)** | | | **1.60** | | |

| Wind Energy<br><br>State | APPC (2016-17) as estimated based on SERC Tariff Orders for 2016-17 (Rs/kWh) | SERC Tariff for Wind Energy Project (Avg. Tariff of Zone (Rs/kWh) | Difference b/w Tariff and APPC (Rs/kWh) | Project Viability Tariff (70% of SERC Tariff) (Rs/kWh) | Difference b/w Project Viability Tariff and APPC (Rs/kWh) |
|---|---|---|---|---|---|
| Andhra Pradesh | 3.61 | 4.84 | 1.23 | 3.39 | -0.22 |
| Gujarat* | 3.39 | 4.72 | 1.33 | 3.30 | -0.09 |
| Jammu & Kashmir | 2.96 | 4.94 | 1.98 | 3.46 | 0.50 |
| Karnataka | 3.23 | 4.5 | 1.27 | 3.15 | -0.08 |
| Madhya Pradesh | 2.82 | 4.78 | 1.96 | 3.35 | 0.53 |
| Maharashtra* | 3.56 | 4.59 | 1.03 | 3.21 | -0.35 |
| **Rajasthan** $ | 3.39 | 5.90 | **2.51** | 4.13 | **0.74** |
| Tamil Nadu # | 3.55 | 4.16 | 0.61 | 2.91 | -0.64 |
| Haryana | 3.59 | 4.77 | 1.18 | 3.34 | -0.25 |
| **Technology Specific Forbearance Price (Wind Energy)** | | | **2.51** | | |
| **Technology Specific Floor Price (Wind Energy)** | | | **0.74** | | |

| Biomass<br>State | APPC (2016-17) as estimated based on SERC Tariff Orders for 2016-17 (Rs/kWh) | Average SERC Tariff for Biomass Project based on SERC Orders (Rs/kWh) | Difference b/w Tariff and APPC (Rs/kWh) | Project Viability Tariff (70% of SERC Tariff) (Rs/kWh) | Difference b/w Project Viability Tariff and APPC (Rs/kWh) |
|---|---|---|---|---|---|
| Bihar | 3.66 | 7.4 | 3.74 | 5.18 | 1.52 |
| Gujarat* | 3.39 | 5.64 | 2.25 | 3.94 | 0.55 |
| Karnataka | 3.23 | 5.53 | 2.30 | 3.87 | 0.64 |
| Maharashtra* | 3.56 | 7.66 | 4.10 | 5.36 | 1.80 |
| **Punjab** | 3.56 | 8.20 | **4.64** | 5.74 | **2.18** |
| Rajasthan $ | 3.39 | 6.79 | 3.40 | 4.75 | 1.36 |
| Tamil Nadu # | 3.55 | 6.07 | 2.52 | 4.25 | 0.70 |
| Uttar Pradesh | 3.78 | 6.88 | 3.10 | 4.82 | 1.04 |
| Madhya Pradesh | 2.82 | 5.64 | 2.82 | 3.95 | 1.13 |
| **Technology Specific Forbearance Price (Biomass)** | | | **4.64** | | |
| **Technology Specific Floor Price (Biomass)** | | | **2.18** | | |

| Bagasse/ Cogeneration<br><br>State | APPC (2016-17) as estimated based on SERC Tariff Orders for 2015-16 (Rs/kWh) | SERC Tariff for Bagasse/Cogeneration Project based on SERC Orders (Rs/kWh) | Difference b/w Tariff and APPC (Rs/kWh) | Project Viability Tariff (70% of SERC Tariff) (Rs/kWh) | Difference b/w Project Viability Tariff and APPC (Rs/kWh) |
|---|---|---|---|---|---|
| Bihar | 3.66 | 6.19 | 2.53 | 4.33 | 0.67 |
| Gujarat* | 3.39 | 5.17 | 1.78 | 3.62 | 0.23 |
| Haryana | 3.59 | 4.20 | 0.61 | 2.94 | -0.65 |
| Jammu & Kashmir | 2.96 | 5.7 | 2.74 | 3.99 | 1.03 |
| Karnataka | 3.23 | 5.16 | 1.93 | 3.61 | 0.38 |
| Maharashtra* | 3.56 | 6.7 | 3.14 | 4.69 | 1.13 |
| Punjab | 3.56 | 6.59 | 3.03 | 4.61 | 1.05 |
| Tamil Nadu # | 3.55 | 5.58 | 2.03 | 3.91 | 0.36 |
| Uttar Pradesh | 3.78 | 6.14 | 2.36 | 4.30 | 0.52 |
| **Madhya Pradesh** | 2.82 | 6.28 | **3.46** | 4.40 | **1.58** |
| **Technology Specific Forbearance Price (Bagasse / Cogeneration)** | | | **3.46** | | |
| **Technology Specific Floor Price (Bagasse / Cogeneration)** | | | **1.58** | | |

**APPC Data**
* GERC, MERC – APPC derived using escalation @3% over 2015-16 values
# KSERC, TERC, TNERC Tariff Order issued in 2014-15, escalated @6%
$ AERC, DERC, JSERC, RERC Tariff Order issued in 2015-16, escalated @3%

## ANNEXURE-1B (NON SOLAR REC FORBEARANCE AND FLOOR PRICE – CASE OF BID TARIFF FOR WIND)

| State | APPC (2016-17) as estimated based on SERC Tariff Orders for 2016-17 (Rs/kWh) | Bid Discovered Tariff for Wind Energy Project (Rs/kWh) | Difference b/w Tariff and APPC (Rs/kWh) | Project Viability Tariff based on Bid Discovered Tariff (Rs/kWh) | Difference b/w Project Viability Tariff and APPC (Rs/kWh) |
|---|---|---|---|---|---|
| Andhra Pradesh | 3.61 | 3.46 | -0.15 | 2.42 | -1.19 |
| Gujarat* | 3.39 | 3.46 | 0.07 | 2.42 | -0.97 |
| Jammu & Kashmir | 2.96 | 3.46 | 0.50 | 2.42 | -0.54 |
| Karnataka | 3.23 | 3.46 | 0.23 | 2.42 | -0.81 |
| **Madhya Pradesh** | 2.82 | 3.46 | **0.64** | 2.42 | **-0.40** |
| Maharashtra* | 3.56 | 3.46 | -0.10 | 2.42 | -1.14 |
| Rajasthan $ | 3.39 | 3.46 | 0.07 | 2.42 | -0.97 |
| Tamil Nadu # | 3.55 | 3.46 | -0.09 | 2.42 | -1.13 |
| Haryana | 3.59 | 3.46 | -0.13 | 2.42 | -1.17 |
| **Technology Specific Forbearance Price (Wind Energy)** | | | **0.64** | | |
| **Technology Specific Floor Price (Wind Energy)** | | | **-0.40** | | |

**APPC Data**
* GERC, MERC – APPC derived using escalation @3% over 2015-16 values
# KSERC, TERC, TNERC Tariff Order issued in 2014-15, escalated @6%
$ AERC, DERC, JSERC, RERC Tariff Order issued in 2015-16, escalated @3%