

CENTRAL ELECTRICITY REGULATORY COMMISSION
3rd & 4th Floor, Chanderlok Building, 36 Janpath, New Delhi 110 001
(Tele No.23353503 FAX No.23753923)

No. L-1/12/2010-CERC

Dated: 30th September, 2014

PUBLIC NOTICE

Subject: Draft Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) (Third Amendment) Regulations, 2014 and Order on determination of Forbearance and Floor Price for the Solar REC

In exercise of powers conferred under Section 178 of Electricity Act, 2003 (the Act), the Commission has made draft Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) (Third Amendment) Regulations, 2014. The Commission has also issued a Suo-Motu Order dated 30.09.2014 (Petition No. SM/016/2014) on the determination of Forbearance and Floor Price for the Solar REC. The draft regulations along with an explanatory memorandum and Suo-Motu Order are annexed to this notice and can also be downloaded.

2. Notice is hereby given under sub-section (3) of Section 178 of the Act read with Section 23 of the General Clauses Act, 1897 that comments/suggestions/objections on the draft Regulations and on the Suo-Motu Order may be sent to the undersigned latest by 30.10.2014.

3. The comments/suggestions/objections received after the stipulated date in the Commission's office may not be considered while finalizing these regulations.

4. Public hearing on the above subject will be held on 4th November, 2014 as per the details given below:-

Date	Venue	Timing	Invitees
4.11.2014 (Tuesday)	"CERC COURT ROOM" (Fourth Floor) Chanderlok Building, 36, Janpath, New Delhi	From 15:00 Hrs.	Representatives of Central / State Governments/State Utilities/CPSUs/ Trading Licensees/Power Exchanges/ Individual Experts/NGOs/IPPs/Financial Institutions/Consultancy Firms/ Developers/ Association related with Renewable Energy.

3. The Commission values your views and firmly believes that your participation/participation of your organization in the public hearing will be of immense assistance in arriving at just and fair conclusions on

the different issues at stake. I would, therefore, request you to attend the hearing on 4th November, 2014 or designate a responsible officer (one/two only) of your organization fully conversant with the subject matter.

4. To enable proper arrangements for the hearing, it is requested that the name of proposed participant(s) from your organization may please be communicated to the undersigned latest by 30th October, 2014. Please also let us know if you/your organization propose to make a presentation during the hearing. The presentation may please be planned to be limited to duration of 5-10 minutes and be covered in not more than 8-10 slides. A line in confirmation about participation in the hearing would be highly appreciated.

Yours faithfully,

Sd/-

(Shubha Sarma)
Secretary

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Dated: 30th September, 2014

DRAFT NOTIFICATION

No.L- 1/12/2010- CERC: In exercise of powers conferred under section 178 of the Electricity Act, 2003 (36 of 2003) and all other powers enabling it in this behalf, and after previous publication, the Central Electricity Regulatory Commission hereby makes the following regulations to amend the Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) Regulations, 2010 (hereinafter referred to as “the Principal Regulations”), namely:

1. Short title and commencement:

- (i) These regulations may be called the Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) (Third Amendment) Regulations, 2014.
- (ii) These regulations shall come into force with effect from the date of their publication in the Official Gazette.

2. Amendment of Regulation 5 of principal regulations:

- (i) A new clause (1A) shall be added after clause (1) of Regulation 5 of the Principal Regulations as under:

"(1A) A distribution licensee shall be eligible to apply for registration with the Central Agency for issuance of and dealing in Certificates if it fulfills the following conditions:

- (a) It has procured renewable energy, in the previous financial year, at a tariff determined under Section 62 or adopted under Section 63 of the Act, in excess of the renewable purchase obligation as may be specified by the

Appropriate Commission or in the National Action Plan on Climate Change or in the Tariff Policy, whichever is higher:

Provided that the renewable purchase obligation as may be specified for a year, by the Appropriate Commission should not be lower than that for the previous financial year.

(b) It has obtained a certification of procurement of renewable energy as provided in sub-clause (a) of this regulation, from the Appropriate Commission."

(ii) In clause (2) of Regulation 5, the words "or the distribution licensee, as the case may be" shall be added after the words "The generating company".

3. Amendment of Regulation 7 of the Principal Regulations:

(i) The words "other than distribution licensee" shall be added after the words "eligible entity" in the clause (1) of Regulation 7.

(ii) The following new clause shall be added under clause (1) of Regulation 7 of the Principal Regulations as under:

"(1 A) The eligible distribution licensees shall apply to the Central Agency for Certificates within three months from the date of obtaining the certification, as provided in clause (1A) of the Regulation 5, from the concerned Appropriate Commission.

(iii) The following new clauses shall be added under Regulation 7 of the Principal Regulations as under:

"(7) An eligible entity that sells the electricity generated to the distribution licensee of the area in which the eligible entity is located, at the pooled cost of power purchase of such distribution licensee as determined by the Appropriate Commission or sells electricity at the rate discovered at the power Exchange, shall be issued one Certificate for one Megawatt hour of electricity generated from renewable energy source and injected into the grid.

(8) An eligible entity that sells the electricity generated to any other licensee or to an open access consumer at a mutually agreed price, shall be issued Half Certificate for one Megawatt hour of electricity generated from renewable energy source and injected into the grid.

(9) An eligible entity which is a CGP based on renewable energy sources shall be issued Half Certificate for self consumption of one Megawatt hour electricity generated from renewable energy source.

(10) The Commission shall determine through separate order, the quantum of Certificate to be issued to the eligible entities being solar generating company, for one Megawatt hour of electricity generated from the renewable energy source and injected into the grid or deemed to be injected (in case of self consumption by eligible CGP) into the grid, with due regard to the conditions stipulated in clauses (7), (8) and (9) of this Regulation and after considering vintage of such projects with reference to the year of their commissioning as per the following formula:

Vintage Multiplier =

Maximum difference [Minimum Requirement in of Base Year – APPC of Current Year (state wise)] / Maximum Difference [Min Requirement in Current Year – APPC of Current Year (state wise)]

Where,

- i. “APPC” means Average Pooled Cost of Purchase of State;
- ii. “Minimum requirement” means minimum levelised tariff required for viability of project to meet interest expenses, loan repayment and operation & Maintenance Expenses for various renewable energy technologies in the commissioning year and current year based on tariff determined by the Commission in respective years;
- iii. “Base year” means the year of commissioning.”

(11) Vintage multiplier shall be provided for a period of 12 years, from the year of commissioning.”

4. **Amendment to Regulation 10 of the Principal Regulations:** The following proviso shall be added after second proviso to Clause (1) of Regulation 10 of the Principal Regulations as under:

“Provided that the validity of Certificates, which are likely to expire in the next one year from the notification of this amendment shall be increased by another three hundred and sixty five days.”

Sd/-
(Shubha Sarma)
Secretary

Note: The principal regulations were published on 18.1.2010 in Gazette of India Extraordinary Part-III Section-4, Sr. No. 26 and first amendment was published on 1.10.2010 in Gazette of India Extraordinary Part-III Section-4, Sr. No.249 and second amendment was published on 11.7.2013 in Gazette of India Extraordinary Part-III Section-4, Sr. No.192.

CENTRAL ELECTRICITY REGULATORY COMMISSION

NEW DELHI

Explanatory Memorandum for the “Draft Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) (Third Amendment) Regulations, 2014”

Explanatory Memorandum

1.0 INTRODUCTION

1.1 The Commission had notified the CERC (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) Regulations, 2010 (hereinafter Principal REC Regulations) vide notification dated 14th January, 2010. As mentioned in the Statement of Reasons issued along with the regulations, the concept of renewable energy certificate seeks to address the mismatch between availability of renewable energy sources and the requirement of obligated entities to meet their renewable purchase obligations. The Commission had further clarified that the REC mechanism aimed at promoting investment in the renewable energy projects and to provide an alternative mode to the RE generators for recovery of their costs.

1.2 Subsequently, the Commission made two amendments in the Regulations (notifications dated 1.10.2010 and 11.07.2013) to provide clarity on applicability of the regulations to eligible entities and bring in certain essential checks and balances in the REC related processes.

1.3 The Commission also approved the procedures for accreditation, registration, issuance and redemption of RECs. Further, the Commission approved the rules/bye laws and mechanism for REC price discovery on power exchanges. The Forum of Regulators (FOR) approved the Model Regulations on Renewable Purchase Obligation, its compliance and Implementation of REC Framework for the State Electricity Regulatory Commissions (SERCs).

1.4 The REC trading on the power exchanges started during the month of March 2011. Ever since, the non-solar REC and solar REC trading sessions have been taking place regularly.

2.0 REC market trends

2.1 The volume of the RECs available in the market has been increasing overtime whereas the demand for RECs has been very low. This has resulted in REC trading at floor price for the past few months. The same is shown in the figure 1 below:

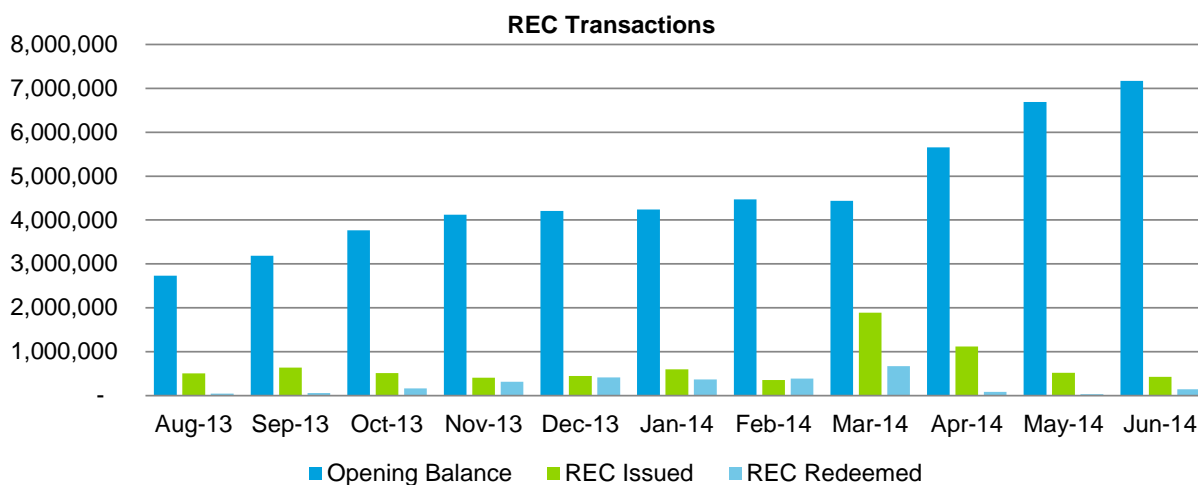


Figure 1: REC inventory status (Source: REC registry of India)

2.2 There is huge unsold inventory of around 8.9 million RECs (as on end July 2014) in the market. The RPO target setting and enforcement is perceived to be weak thereby leading to non-compliance by the obligated entities in meeting their annual RPO targets. While this remains a fundamental challenge in not just implementing the REC mechanism but also the development of renewable energy in the country, there are several other factors in the REC framework, which need to be reviewed in order to improve the efficacy of the REC framework. It is felt that certain features of the REC mechanism such as enabling framework for eligibility of distribution licensee for REC, long term visibility of floor and forbearance price, validity of RECs issued, frequency of trading sessions, etc. need to be reviewed in order to accelerate the RE capacity addition.

2.3 In the backdrop of the above, the Forum of Regulators commissioned a study to review the current REC framework. Based on the findings of the report and subsequent recommendation of the FOR as approved in its 42nd meeting held at New Delhi on

27.8.2014, the following issues are proposed to be addressed through the present amendment:-

3. Issue of eligibility for certificates to the distribution licensee for procurement of renewable energy beyond their renewable energy purchase obligation target

3.1 CERC received representations that the distribution licensees who are purchasing renewable energy over and above their minimum purchase obligation at preferential tariff should be made "Eligible Entities for Renewable Energy Certificates" for such excess energy. As per Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) Regulations, 2010, only the renewable energy generators are eligible for issuance of Renewable Energy Certificates (RECs). The Ministry of New and Renewable Energy Sources also submitted that in order to encourage procurement of renewable energy at preferential tariff beyond the RPO, the distribution licensee should be made eligible for issuance of RECs for such additional procurement. Further, the Commission in its Order dated 2.12.2013 in the Petition No.128/MP/2013 dated 25.06.2013 directed staff to examine the issue and submit a proposal to address the problems, if any, for the consideration of the Commission.

3.2 This aspect has been examined in the Commission and in the FOR and it is felt if the distribution utilities are made eligible for REC, they (especially the distribution utilities from resource rich states) would be encouraged to accommodate more renewable energy in the system by procuring renewable energy beyond the RPO target fixed by the appropriate Commission. This is in conformity with the national objective of promotion of RE. This suggestion can provide the right incentive structure for promotion of Renewable energy in States which are naturally endowed in this respect and are ready to implement progressive policy in the larger interest of the nation. It also helps in reducing project financing risk of Project Developer under REC mechanism. Bankability of a project selling electricity component and REC in bundled form would increase. However, the following issues, as highlighted in the FOR Report in the context need to be addressed:-

Issues need to be addressed in implementation

3.3 The caveat is that it should be ensured that the renewable energy generators are not forced to sell energy under preferential tariff only, thereby restricting their choice.

3.4 Further, it cannot be implemented only for procurement of solar power by distribution licensees beyond Solar Purchase Obligation (SPO). It is required to be implemented for non-solar purchase obligation as well.

3.5 There is a wide divergence in RPO levels (solar and non-solar) amongst states. For the year 2013-14, this ranges from as low as 3.1% for Haryana to 10.25% in Karnataka. Further, most of the State Electricity Regulatory Commissions have not declared long-term RPO trajectories. The absence of national level long-term RPO trajectories (solar and non-solar) might act as a barrier in implementing the suggestion of issuance of RECs for procurement of RE power beyond RPO target.

Proposal

3.6 Considering the above, it is proposed that the obligated entities should be made eligible for RECs, upon approval of the concerned State Commission, only for procuring renewable power beyond the RPO target set by the State Commission or the RPO target as may be stipulated in the Tariff Policy or in the National Action Plan on Climate Change, whichever is higher, subject to the condition that the RPO target as may be specified, by the concerned State Commission should not be lower than that for the previous financial year. In view of the above it is proposed to add, a new Regulation after Regulation 5 of the Principal Regulations as under:

(i) A new clause (1A) shall be added after clause (1) of Regulation 5 of the Principal Regulations as under:

"(1A) A distribution licensee shall be eligible to apply for registration with the Central Agency for issuance of and dealing in Certificates if it fulfills the following conditions:

(a) It has procured renewable energy, in the previous financial year, at a tariff determined under Section 62 or adopted under Section 63 of the

Act, in excess of the renewable purchase obligation as may be specified by the Appropriate Commission or in the National Action Plan on Climate Change or in the Tariff Policy, whichever is higher:

Provided that the renewable purchase obligation as may be specified for a year, by the Appropriate Commission should not be lower than that for the previous financial year.

(b) It has obtained a certification of procurement of renewable energy as provided in sub-clause (a) of this regulation, from the Appropriate Commission."

(ii) In clause (2) of Regulation 5, the words "or the distribution licensee, as the case may be" shall be added after the words "The generating company".

4.0 Eligibility of issuance of Certificates to the renewable energy generators selling electricity component to third party through open access at mutually decided rate

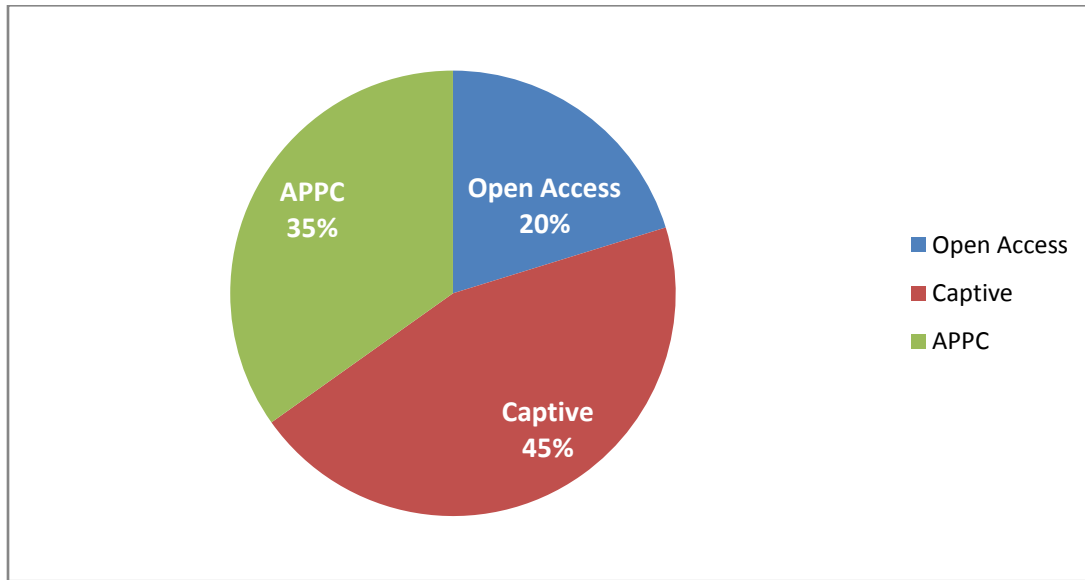
4.1 As per the CERC REC Regulations, the eligible RE generators mainly fall under three categories:

- i. RE generator selling electricity to a distribution utility at Average Pool Purchase Cost determined by the respective SERCs (can be termed as APPC route);
- ii. Captive Generation Plant for meeting captive electricity requirement (CGP route);
- iii. RE generator selling electricity to an open access consumer (OA route).

Dominance of CGP & OA route in REC market

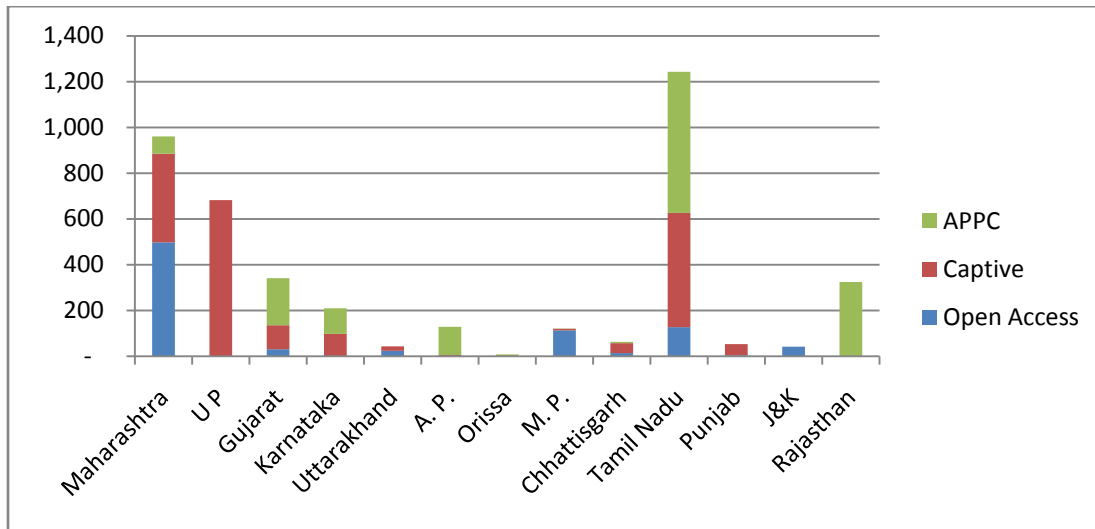
4.2 As on July 2014, a capacity of around 4,897 MW has been accredited for RE Generators under REC framework. However, the information related to segregation of this entire capacity based on the type of contractual route (APPC/OA/CGP) adopted by RE generator for selling electricity component is not available at the central level. Based on the inputs of state agencies, FOR has collated information from states aggregating to around 4,223 MW of accredited capacity. The following Figure 2 shows the breakup of projects accredited under APPC route, open access and captive route. The results clearly indicate that the REC capacity is currently dominated by RE generators operating under **CGP or OA route**.

Figure 2: Projects accredited under APPC route, open access and captive route



4.3 The state wise distribution of this capacity (4,223 MW) is shown in the figure 3 below:

Figure 3: State wise distribution of REC capacity (in MW)



4.4 The above figure indicates that three states viz., Tamil Nadu, Maharashtra and Uttar Pradesh have the maximum REC accredited capacity. Tamil Nadu has around 50% capacity under OA and Captive route. Uttar Pradesh has 100% capacity under Bagasse based CGP route whereas for Maharashtra around 95% of capacity is through OA & CGP route.

Differential level of pricing for electricity component

4.5 One of the key reasons attributed to the dominance of CGP or OA route in the REC market can be related to the different level of pricing framework for electricity component under different routes – APPC, CGP and OA. Under APPC route, the RE generator is eligible only for APPC price determined by respective SERC which is reported to be lower than the electricity reference price levels under CGP or OA route.

4.6 The issue of higher realization by sale/consumption of electricity under OA/CGP route has been raised by different stakeholders. For example, the Statement of Reasons for Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) (Second Amendment) Regulations, 2013 has detailed some of the concerns raised by stakeholders:

“16.10 Regarding, CGP, the KERC submitted that such plants are set up by industrial and other large consumers including bagasse based sugar factories to meet their own need of electricity and sale of surplus power generated in their units. Self-consumption by such units being replacement of the consumption of power from distribution utilities at retail tariff applicable to them and cost of generation is usually lower than utility’s retail tariff applicable to them. It is therefore not justified that such units get the additional benefit of the value of RECs for the power consumed by them out of their own generation. It is further submitted that the proposed amendments relating to CGP if notified, will make it more difficult for Forum of Regulators (FOR) to take-up such a review in the near future. (KERC)

16.11 Regarding , eligibility of RE generators selling power to third parties by open access at mutually decided rate, the KERC submitted that in State like Karnataka, it is found that RE generators are able to sell power to consumers at prices comparable to higher slabs of applicable retail tariffs fixed by the SERC. Even after deducting the open access charges and the cross subsidy charge, the generators are able to realize prices higher than the PPA rates available to similar generators. (KERC).”

It is to be noted that the Karnataka Electricity Regulatory Commission (KERC) notified the KERC (Power procurement from Renewable Sources by Distribution licensee and renewable Energy certificate Framework) Regulations, 2011 as amended on 16.03.2011 and 20.12.2011, that recognize only those renewable energy generators eligible for issuance of Certificates that sell the electricity generated by it to the distribution licensee of the state at the pooled cost of power purchase. Aggrieved by the inconsistency in the eligibility criteria as specified in the Central and State Regulations, some of the stakeholders filed Writ Petition before the Hon'ble High Court of Karnataka (W.P. Nos. 7603-04-05/2012). The Hon'ble High Court vide its Order dated 2.4.2014 dismissed the Writ Petitions. The Hon'ble High Court also observed that "the renewable energy generator who chooses to sell his power in open access to consumers in preference to power purchase agreement makes a fair amount of profit".

4.7 The table below provides details of the APPC & retail tariff for the relevant consumer categories applicable across states for year 2014. The Table 1 below also captures the Net Electricity Component under both the cases (i.e. the net realization for an RE generator by way of sale of electricity component under different routes).

Table 1: APPC, Energy Charge and Net Electricity Component (Rs per kWh)

States	APPC**	Energy Charge (2014)*			Applicable OA charges**		Net Electricity Component Case 1 : EC- OA charge		Net Electricity Component Case 2: 90% of EC - OA charge	
		Comml.	Industry	Av. (Comml. & Ind.)	Captive	Third party	Captive	Third party	Captive	Third party
Andhra Pradesh	3.28	9.13	5.73	7.43	1.37	1.32	4.36	4.41	3.79	3.84
Gujarat	2.94	4.6	4.45	4.53	1.3	1.7	3.15	2.75	2.71	2.31
Haryana	3.29	5.85	5.3	5.58	0.96	1.49	4.34	3.81	3.81	3.28
HP	2.17	4.75	4.75	4.75	1.43	1.56	3.33	3.2	2.85	2.72
Karnataka	3.07	7.45	5.45	6.45	1.73	2.04	3.72	3.41	3.18	2.87
Maharashtra	3.45	10.91	6.33	8.62	1.77	2.07	4.56	4.27	3.93	3.63
MP	2.53	5.2	4.6	4.9	0.81	1.6	3.79	3	3.33	2.54
Punjab	3.59	6.58	6.26	6.42	1.32	2.39	4.94	3.87	4.31	3.24
Rajasthan	3.13	6.6	5.25	5.93	1.44	1.5	3.81	3.75	3.29	3.23
Tamil Nadu	3.11	7	5.5	6.25	1.21	2.93	4.29	2.57	3.74	2.02
UP	3.53	6.1	5.9	6	1.14	1.14	4.76	4.76	4.17	4.17
Average	3.1	6.74	5.41	6.08	1.32	1.79	4.76	4.28	4.15	3.68

* CEA report, **SERC orders

4.8 In the above table, two options of complete or partial recovery of energy charge have been considered for the computation of electricity component for CGP/OA as shown below:

Case	Definition of electricity Component
Case 1	Electricity Component for OA/CGP = [100% Energy Charge of consumer category] – OA charge
Case 2	Electricity Component for OA/CGP = [90% Energy Charge of consumer category] – OA charge

4.9 Under case 2, 90% energy charge is considered for computation of the net electricity component before the deduction of applicable OA charge. This is based on the assumption that under OA route, the OA consumer will expect discount over the consumer category tariff, for purchase of electricity component from an RE generator.

Introduction of Multipliers for the non-APPC based REC projects

4.10 The aspect of differential pricing of electricity component under APPC route based RE projects vis-à-vis non-APPC (CGP /OA route) based RE projects can be addressed by providing a differential multiplier based on the type of contracting framework entered into by the REC project. The multiplier would be applicable to the Open Access (OA) and Captive Generation Plants (CGP) only and calculated based on the level variation in the electricity component of CGP/OA based projects vis-à-vis the APPC price. The proposed OA/CGP Multiplier is based on the following formula:

$$\text{OA/CGP Multiplier} = \frac{\text{APPC}}{\text{Electricity Component for OA/ CGP}^*}$$

*Electricity Component for OA/ CGP = [100% or 90% Energy Charge of consumer category] – Open Access charges

4.11 The OA/ CGP multiplier would be dependent on the retail tariff category considered and can vary from state to state and across categories. The following three scenarios have been considered for sensitivity analysis on the proposed OA/CGP Multiplier for the above two cases:

- Scenario 1: Commercial category consumer tariff
- Scenario 2: Industrial category consumer tariff
- Scenario 3: Average of commercial and industrial category consumer tariff (Annexure-1)

4.12 Based on the analysis, the following is proposed:

- A separate multiplier for non-APPC based projects should be provided to bring parity for the electricity component for both APPC and non-APPC based projects.
- The net electricity component computed at 90% of Energy charge and after deducting the Open Access Charges can be considered for determining the multiplier for OA consumers and Captive Generators
- A multiplier of 0.50 for non-APPC based REC projects (Open Access and Captive Generators) is proposed. It means that an eligible entity sells the electricity generated to any other licensee or to an open access consumer at a mutually agreed price or self consume, shall be issued a half Certificate for one Megawatt hour of electricity generated from renewable energy source and injected into the grid or deemed to be injected in case of self consumption. Given that the objective of Multiplier is only to rationalize the revenue recovery in the instant case, this differentiation (by way of Multiplier) will have relevance and applicability limited to issuance of REC. Once issued, RECs will have no differentiation for the purpose of trading.

5.0 Long Term REC Pricing: Vintage Multiplier for solar projects

5.1 REC Regulations, inter alia, provide that each certificate shall represent 1 MW hour of electricity generated from renewable energy source and injected into the grid. The REC Regulations provide for minimum and maximum price of the REC to avoid price volatility as well as ensure certain level of revenue certainty. These are called the 'floor price' and 'forbearance price', defined in the REC Regulations as follows:-

"2. Definitions and Interpretation:

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

.....

- (f) 'floor price' means the minimum price as determined by the Central Commission in accordance with these regulations at and above which the certificate can be dealt in the power exchange;
- (g) 'forbearance price' means the ceiling price as determined by the Central Commission in accordance with these regulations within which only the certificates can be dealt in the power exchange;"

5.2 As per the first proviso to clause (1) of Regulation 9 of the REC Regulations, the Central Commission may in consultation with the Central Agency (National Load Despatch Centre) and Forum of Regulators (FOR) from time to time provide for floor price and forbearance price separately for Solar and Non-solar Renewable Energy Certificates. 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:

"Regulation 9 of REC Regulations Pricing of Certificate:"

1. The price of Certificate shall be as discovered in the Power Exchange:

Provided that the Central 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 Central 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 Central Commissions"*

5.3 Based on the above referred guiding principles, the Commission earlier came out with an Order dated 1.06.2010 in the matter of 'Determination of Forbearance and Floor

Price for the REC framework' (suo motu Petition No.99/2010) and determined forbearance price and floor price for dealing in Certificates under the REC Regulations:

Table 2: Floor and Forbearance price

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

5.4 Above determined forbearance price and floor price were valid for the control period up to 31.03.2012. Subsequently, based on the guiding principles specified in Para 3, the Central Commission vide its suo motu Order (No.142 / 2011) dated 13.06.2011 determined the following forbearance and floor for the control period from 1.04.2012 to 31.03.2017:

Table 3: Forbearance and Floor price

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

Concerns raised by stakeholders

5.5 Based on the experience so far, various stakeholders raised concerns regarding the floor and the forbearance Price determined by the Commission. They are elaborated as under:

Significant mismatch between Solar Certificate Floor price and Solar PV tariff

5.6 The present notified solar certificate price range is Rs. 9,300-13,400 (Rs. 9.3/kWh –Rs.13.40/kWh) for the period 2012-2017. Meanwhile, solar PV tariff has come down drastically in the last three years and the latest price bids for large scale solar PV projects are around Rs. 6.50/kWh. The CERC determined solar PV tariffs are also set at Rs 7.72/kWh for FY 2014-15, without accelerated depreciation benefit. It is expected that prices will continue to decline. The Solar PV projects coming in later years (with lower costs) may get much higher profits if the market clearing price for solar RECs is dictated

by the older projects. It has been suggested that CERC should immediately revise solar floor and forbearance price downwards, else it will result in windfall profit for the solar PV project developers and will adversely impact the retail consumers. It has been argued that higher priced solar certificate price would not be sustainable for the solar sector in the long run.

Vintage based multiplier for solar certificates

5.7 As the floor and forbearance prices reduce in future with the emergence of low cost renewable energy technologies, REC mechanism doesn't offer a viable alternative for the investor who made investment earlier. This is particularly true in the case of Solar where all the investment is made up front and the project has negligible operational costs. Some of the stakeholders suggested that the REC Regulations should recognize that the investments already made in renewable energy projects, particularly in Solar PV projects, cannot take advantage of the low cost technologies. Therefore, it has been suggested that the Central Commission should introduce the concept of multiplier to the REC certificate recognizing the vintage of a project as and when floor price is reduced. The project set up in initial years should be entitled to higher number of certificates for same value of electricity generated than the project coming later and this valuation would have to be carried out every year based on the viability tariff required for each year.

5.8 In order to safeguard the interests of the RE generators and the obligated entities, the concept of floor price and forbearance price has been in place since its inception. The prevailing floor price is applicable upto FY 2017. This has been on account of the state specific variations in APPC and FIT which results in some states becoming attractive destination for REC projects. However, any changes in the floor price framework during the current control period or in future can have adverse impact on the REC market which is already facing challenges.

5.9 In case of solar REC, which is dominated by solar PV technologies, the tariff as determined by the Commission for FY 2014-15, has been reduced due to decline in capital costs and is currently lower than the prevailing solar floor price (Rs. 9.3 per kWh). The solar REC floor price thus requires to be aligned with the current solar tariff. This would also result in a reduction in the solar floor & forbearance price. Such change puts already

registered solar PV projects at a disadvantage since the cost of generation for new projects is likely to be less than vintage projects. Therefore, a vintage multiplier mechanism has been proposed to reasonably safeguard the existing solar generators registered under REC from future floor price adjustments by issuing higher quantum of RECs in case of future reduction in tariff or lower quantum of RECs in case of future increase in tariff . The methodology proposed for computing vintage multiplier for solar RECs is based on the difference of the minimum requirement (actual linked with year of commissioning of plant) and the current APPC. This approach ensures that the recovery of amount for the REC project developer is close to the minimum project viability linked with the tariff applicable during the year of commissioning. It is also proposed to provide the vintage multiplier for a period of 12 years, which corresponds to the period of debt repayment, and shall be applicable from the year of commissioning of the solar project. Given that the objective of Multiplier is only to rationalize the revenue recovery in the instant case, this differentiation (by way of Multiplier) will have relevance and applicability limited to issuance of REC. Once issued, RECs will have no differentiation for the purpose of trading. In view of the above it is proposed to amend Regulation 7 of the Principal Regulations as under:

“Amendment of Regulation 7 of the Principal Regulations:

(i) *The words “other than distribution licensee” shall be added after the words “eligible entity” in the clause (1) of Regulation 7.*

(ii) *The following new clause shall be added under clause (1) of Regulation 7 of the Principal Regulations as under:*

“(1 A) The eligible distribution licensees shall apply to the Central Agency for Certificates within three months after obtaining the certification, as provided in clause (1A) of the Regulation 5, from the concerned Appropriate Commission.

(iii) *The following new clauses shall be added under Regulation 7 of the Principal Regulations as under:*

“(7) An eligible entity that sells the electricity generated to the distribution licensee of the area in which the eligible entity is located, at the pooled cost of power purchase of such distribution licensee as determined by the Appropriate

Commission or sells electricity at the power Exchange at the market determined rate, shall be issued one Certificate for one Megawatt hour of electricity generated from renewable energy source and injected into the grid.

(8) An eligible entity that sells the electricity generated to any other licensee or to an open access consumer at a mutually agreed price, shall be issued Half Certificate for one Megawatt hour of electricity generated from renewable energy source and injected into the grid.

(9) An eligible entity which is a CGP based on renewable energy sources shall be issued Half Certificate for self consumption of one Megawatt hour electricity generated from renewable energy source.

(10) The Commission shall determine through separate order, the quantum of Certificate to be issued to the eligible entities being solar generating company, for one Megawatt hour of electricity generated from the renewable energy source and injected into the grid or deemed to be injected (in case of self consumption by eligible CGP) into the grid, with due regard to the conditions stipulated in clauses (7), (8) and (9) of this Regulation and after considering vintage of such projects with reference to the year of their commissioning as per the following formula:

Vintage Multiplier =

Maximum difference [Minimum Requirement in of Base Year – APPC of Current Year (state wise)] / Maximum Difference [Min Requirement in Current Year – APPC of Current Year (state wise)]

Where,

- i. “APPC” means Average Pooled Cost of Purchase of State;*
- ii. “Minimum requirement” means minimum levelised tariff required for viability of project to meet interest expenses, loan repayment and operation & Maintenance Expenses for various renewable energy technologies in the commissioning year and current year based on tariff determined by the Commission in respective years;*

iii. “Base year” means the year of commissioning.

(11) Vintage multiplier shall be provided for a period of 12 years, from the year of commissioning.”

6.0 Validity period for RECs

6.1 The CERC in its order dated 19.12.2012, in Petition No. 266/SM/2012, took cognizance of the lapsing of RECs arising out of the non-redemption within the permissible timeline, apparently due to reluctance of the distribution licensees to purchase the RECs to meet their RPO. Keeping in view the objective of promotion of energy through renewable sources, the Commission considered it necessary to extend the validity period of RECs in order to give further opportunity to the RE generators to trade RECs at the Power Exchanges.

“.....relax the provisions of Regulation 10(1) of the said regulation and Provide that the RECs issued on and after 1.11.2011 shall remain valid for a period of 730 days from the date of issuance. The relaxed period of validity shall be applicable to the RECs which have been issued or shall be issued till the date amendment to Regulation 10(1) of the REC Regulations is notified by this Commission. The Central Agency is directed to modify/adjust the period of validity of the RECs in terms of our directions above.”

6.2 Subsequently, the Commission amended the REC Regulations. The REC market has remained sluggish even after the increase of validity period and RECs still face the risk of extinction without getting traded. The table 4 below details the quantum of RECs facing the risk of expiry in case the REC trading remains sluggish.

Table 4: Expiry of RECs by December, 2014

RE Source	Number of RECs likely to expire by Dec 2014
Wind	46,174
Bio-fuel cogeneration	10,782
Biomass	3,110
Total	60,066

Source: Central Agency

6.3 The key considerations for determining validity period are to provide certainty to RE generators in the event of lean demand on one side and also prevent hoarding of RECs by RE generators in speculation of increasing REC prices in future. However, given the current context in the REC market, it is proposed to increase validity of RECs by one year which are facing extinction risk owing to lean demand in the REC market. This issue was discussed in Forty Second (42nd) meeting of FOR held on 27th August 2014 in New Delhi. Based on the consensus evolved during the meeting, the following is proposed to address this issue:

- The validity of RECs, which are likely to expire in next one year, can be increased on interim basis by another one year. This is with the expectation that the REC market will revive in long term.
- The overall validity of RECs should be retained at 2 years as per the current framework

In view of the above it is proposed to amend Regulation 10 of the Principal Regulations as under:

“Amendment to Regulation 10 of the Principal Regulations: The following proviso shall be added after second proviso to Clause (1) of Regulation 10 of the Principal Regulations as under:

“Provided that the validity of Certificates, which are likely to expire in the next one year from the notification of this amendment, shall be increased by another three hundred and sixty five days.”

Sd/-

**(A.S. Bakshi)
Member**

Sd/-

**(A. K. Singhal)
Member**

Sd/-

**(M. Deena Dayalan)
Member**

Sd/-

**(Gireesh B. Pradhan)
Chairperson**

Commercial category

Under this scenario the retail tariff (energy charge only) for commercial consumer category is considered. The OA/CGP multiplier has been computed based on the simple average of APPC and applicable energy charges for the commercial category consumers in respective states.

The key results under this scenario are detailed below:

Table: Scenario 1- OA/ CGP Multiplier

Scenario 1	OA/ CGP Multiplier				
	EC (Rs/kWh)	Case 1		Case 2	
States	Commercial	Captive	Third party	Captive	Third party
Andhra Pradesh	9.13	0.42	0.42	0.48	0.48
Gujarat	4.6	0.89	1.01	1.04	1.2
Haryana	5.85	0.67	0.75	0.76	0.87
HP	4.75	0.65	0.68	0.76	0.8
Karnataka	7.45	0.54	0.57	0.62	0.66
Maharashtra	10.91	0.38	0.39	0.43	0.44
MP	5.2	0.58	0.7	0.65	0.82
Punjab	6.58	0.68	0.86	0.78	1.02
Rajasthan	6.6	0.61	0.61	0.7	0.71
Tamil Nadu	7	0.54	0.76	0.61	0.92
UP	6.1	0.71	0.71	0.81	0.81
Average	6.74	0.61	0.68	0.69	0.79

For States like Gujarat the multiplier is greater than 1 as its APPC is higher than the electricity component (Electric charge – OA charges). The average multipliers for captive and Third party sale for Case 2 (90% of Electric charge – OA charges) come to 0.69 and 0.79 respectively. Thus these ratios signify that captive and OA route should get a small multiplier as compared to RE generators selling electricity to distribution consumer (APPC route).

Scenario 2 – Industrial category

Under this scenario the retail tariff for Industrial category consumers has been considered. For the calculation of ratios under this scenario the simple average of APPC across states is

taken to avoid inclination towards any particular state having high demand (MU). The key results under scenario are detailed below:

Table: Scenario 2 - OA/ CGP Multiplier

Scenario 2	EC (Rs/kWh)	OA/ CGP Multiplier			
		Case 1		Case 2	
States	Industrial	Captive	Third party	Captive	Third party
Andhra Pradesh	5.73	0.75	0.74	0.87	0.85
Gujarat	4.45	0.93	1.07	1.09	1.28
Haryana	5.3	0.76	0.86	0.86	1
HP	4.75	0.65	0.68	0.76	0.8
Karnataka	5.45	0.83	0.9	0.97	1.07
Maharashtra	6.33	0.76	0.81	0.88	0.95
MP	4.6	0.67	0.84	0.76	1
Punjab	6.26	0.73	0.93	0.83	1.11
Rajasthan	5.25	0.82	0.84	0.95	0.97
Tamil Nadu	5.5	0.72	1.21	0.83	1.54
UP	5.9	0.74	0.74	0.85	0.85
Average	5.53	0.77	0.89	0.89	1.06

The table above shows the OA/Captive multipliers considering the applicable energy charges for the Industrial category. The multiplier for States like Gujarat is greater than 1 as its APPC is higher than the electricity component (Electric charge – OA charges). The average multipliers for captive and Third party for case 2 (90% of Electric charge – OA charges) come at 0.89 and 1.06 respectively.

Under the industrial consumer category the multipliers are higher as the retail tariffs for commercial are greater than the corresponding tariff of industrial category. These ratios signify that captive and OA route should get a small multiplier as compared to RE generators selling electricity to distribution consumer (APPC route).

Scenario 3 – Average of Commercial and industrial categories

Under this scenario, the average energy charge of commercial and industrial is taken for the calculation of the multipliers. For the calculation of ratios under this scenario the simple average of APPC across states is taken to avoid inclination towards any particular state having high demand (MU).

The key results under scenario are detailed below:

Table: Scenario 3 - OA/ CGP Multiplier

Scenario 3	OA/ CGP Multiplier				
	Average EC	Case 1		Case 2	
States	Coml. & Ind.	Captive	Third party	Captive	Third party
Andhra Pradesh	7.43	0.54	0.54	0.62	0.61
Gujarat	4.53	0.91	1.04	1.06	1.24
Haryana	5.58	0.71	0.81	0.81	0.93
HP	4.75	0.65	0.68	0.76	0.8
Karnataka	6.45	0.65	0.7	0.75	0.82
Maharashtra	8.62	0.5	0.53	0.58	0.61
MP	4.9	0.62	0.77	0.7	0.9
Punjab	6.42	0.7	0.89	0.81	1.06
Rajasthan	5.93	0.7	0.71	0.8	0.82
Tamil Nadu	6.25	0.62	0.94	0.7	1.15
UP	6.00	0.73	0.73	0.83	0.83
Average	6.41	0.67	0.76	0.77	0.89

The table above shows the OA/Captive multipliers considering the average tariff of commercial and industrial categories. The average multipliers for Captive and Third party for Case 2 (90% of Electric charge – OA charges) come at 0.77 and 0.89 respectively. Thus, these ratios signify that captive and OA route should get a small multiplier as compared to RE generators selling electricity to distribution consumer (APPC route)

A detailed analysis on multiplier calculation for co-located plants under CGP category indicates that a lower multiplier is required (ranging from 0.50 to 0.64) under different cases.

Key Results

	Scenario 1 (Commercial)				Scenario 2 (Industrial)				Scenario 3 (Average of Commercial & Industrial)			
	Case 1		Case 2		Case 1		Case 2		Case 1		Case 2	
	CGP	OA	CGP	OA	CGP	OA	CGP	OA	CGP	OA	CGP	OA
OA/CGP Multiplier	0.61	0.68	0.69	0.79	0.77	0.89	0.89	1.06	0.67	0.76	0.77	0.89

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. SM/016/2014 (Suo Motu)

Date of order: 30th September, 2014

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

ORDER

IN THE MATTER OF

Determination of Forbearance and Floor Price for the Solar REC

1. The existing REC framework provides that each certificate (REC) shall represent 1 MW hour of electricity generated from renewable energy source and injected into the grid. There is a minimum and maximum price of REC within which REC transactions can be undertaken. This has been provided to avoid adverse impact of price volatility. These are called the 'floor price' and 'forbearance price.

2. The Central Commission in consultation with the Central Agency (National Load Despatch Centre) and Forum of Regulators (FOR) from time to time provides for floor price and forbearance price separately for Solar and Non-solar Renewable Energy Certificates. The REC Regulations provide for the guiding principles for determining the forbearance and floor price for solar and non-solar Certificates. The relevant provisions are extracted as under:

"Regulation 9 of REC Regulations Pricing of Certificate:

1. *The price of Certificate shall be as discovered in the Power Exchange:
 Provided that the Central 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 Central 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 Central Commissions”*

3. Based on the above referred guiding principles, the Commission earlier came out with an Order dated 1.06.2010 in the matter of ‘Determination of Forbearance and Floor Price for the REC framework’ (suo motu Petition No.99/2010) and determined forbearance price and floor price for dealing in Certificates under the REC Regulations:

Table : Floor and Forbearance price

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

4. The above determined forbearance price and floor price were valid for the control period up to 31.03.2012.

5. Subsequently, based on the guiding principles specified in Para 3, the Commission vide its suo motu Order (No.142 / 2011) dated 13.06.2011 determined the following forbearance and floor prices for the control period from 1.04.2012 to 31.03.2017:

Table : Forbearance and Floor price

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

6. The Commission now proposes the following forbearance price and floor price for the Solar REC :

- i. Solar REC Floor price for the Solar projects commissioned on and after 1.4.2014: Rs. 3500/ Certificate
- ii. Solar REC Forbearance price for the Solar projects commissioned on and after 1.4.2014: Rs. 5800/ Certificate
- iii. Solar projects that sell the electricity generated to the distribution licensee of the area in which the eligible entity is located, at the pooled cost of power purchase of such distribution

licensee as determined by the Appropriate Commission, shall be issued Certificates, for one Megawatt hour of electricity injected into the grid, considering following Vintage Multiplier (VM) :

Year of Commissioning	Multiplier
2013	1.47
2014	1.19
2015	1.00

- iv. Solar projects that sell the electricity generated to any other licensee or to an open access consumer at a mutually agreed price, shall be issued Certificates for one Megawatt hour of electricity injected into the grid, considering following Vintage Multiplier (VM) :

Year of Commissioning	Multiplier
2013	0.74
2014	0.60
2015	0.50

- v. Solar projects which are CGP shall be issued Certificates for self consumption of one Megawatt hour electricity generated and self consumed. considering following Vintage Multiplier (VM) :

Year of Commissioning	Multiplier
2013	0.74
2014	0.60
2015	0.50

- vi. The Vintage multiplier based on the above shall be provided for a period of 12 years, from the year of commissioning.

- vii. The proposed Vintage Multipliers are derived based on the formulation as provided in the Regulation 7 of the Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) (Third Amendment) Regulations, 2014. This will be reviewed every year and on such review the revised multiplier shall apply for projects commissioned in the respective years.

7. Detailed working of the proposal is attached as Annexure-1. Comments / suggestions/ objections of the stakeholders on the above proposal are invited by 30.10.2014. We direct that the matter be notified for hearing on 4.11.2014 before taking a final decision regarding the Forbearance and Floor Price for the Solar REC framework.

Sd/-
(A.S. Bakshi)
Member

Sd/-
(A. K. Singhal)
Member

Sd/-
(M. Deena Dayalan)
Member

Sd/-
(Gireesh B. Pradhan)
Chairperson

Proposal for review of Floor and Forbearance prices for solar projects

Background

Concerns raised by stakeholders

1. Based on the experience so far, stakeholders have raised some concerns regarding the floor and the forbearance Price for Solar RECs as under:

Bankability and Longer term visibility of Floor and Forbearance price

2. Various stakeholders have raised concern about the bankability of renewable energy project under REC mechanism because of high risk perceived by the bankers/ financial institutions. The key constraint identified by them was the lack of visibility of revenue under the REC mechanism as the floor and forbearance price band had been announced for 5 years upto 31.03.2017 and beyond which there was no clarity on the evolution of the price band. The stakeholders were aware that in all likelihood this would be revised downwards as was done once, but the magnitude of the decline was not known. They requested for clarity in this regard which was essential for investment certainty in this mechanism.

3. Under REC mechanism there are two sources of revenue for a generator, one from the sale of electricity component and another from sale of certificates. Revenue from the sale of electricity could be at the rate of average pooled purchase cost of local distribution licensee in case of sale of electricity to such local distribution licensee or it could be at the mutually decided rate in case of sale of electricity component to any open access user and at market determined rate in case of sale of electricity component through a power exchange. Revenue from sale of electricity can be visualized for the future years. Revenue from the sale of certificates entirely depends upon demand and supply. The floor and the forbearance prices have been defined for a particular control period. At present, they are defined upto 2017. It means that investors putting their renewable energy generation projects today have visibility of revenue from sale of certificates upto 31.03.2017 only.

4. From the point of view of the investors and bankers/financial institutions, the floor and forbearance price set by the Commission should be at least up to loan period i.e. 10 to 12 years to facilitate easier availability of loan for renewable energy projects under REC mechanism.

Significant mismatch between Solar Certificate Floor prices and Solar PV tariff

5. The present notified solar certificate price range is Rs. 9,300-13,400 (Rs. 9.3/kWh – Rs.13.40/kWh) for the period of 2012-2017. At the same time, solar PV tariff has come down drastically in the last three years and the latest price bids for large scale solar PV projects are around Rs. 6.50/kWh. The CERC determined solar PV tariffs are also set at Rs 6.91/kWh and Rs.7.72/kWh with and without accelerated depreciation benefit respectively for the FY 2014-15. It is expected that prices will continue to decline. The Solar PV projects coming in later years (with lower costs) may get much higher profits if the market clearing price for solar RECs is dictated by the older projects. It has been suggested that CERC should revise solar floor and forbearance price downwards otherwise it will result in windfall profit to the solar PV project developer and will adversely impact the retail consumers. It is argued that higher priced solar certificate would not be sustainable for the solar sector in the long run.

Vintage based multiplier for solar certificates

6. As the floor and forbearance price reduces in future with the emergence of low cost renewable energy technologies, REC mechanism doesn't offer a viable alternative for the investor who made investment earlier. This is particularly true in the case of Solar where all the investment is made up front and the project has negligible operational costs. Some of the stakeholders suggested the REC Regulations should recognize that the investments already made in renewable energy projects, particularly in Solar PV projects, cannot take advantage of the low cost technologies. Therefore, it has been suggested that the Central Commission should introduce the concept of multiplier to the REC certificate recognizing the vintage of a project as and when floor price is reduced. The project set up in initial years should be entitled to higher number of certificates for the same value of electricity generated than the project coming later and this valuation would have to be carried out every year based on the viability tariff required for each year.

Issues for consideration

7. The following issues have been raised regarding the Floor and Forbearance prices of Solar Certificates:

- a) Need for review of solar REC Floor and Forbearance price;
- b) Need for introduction of vintage based multiplier concept to take care of older projects;
- c) Need for longer term visibility of revenue from the REC projects.

Need for review of solar REC Floor and Forbearance prices

8. The current Floor price and Forbearance price of solar REC (as mentioned in para 5 above) were determined based on Solar PV and Solar Thermal Tariff for FY 2011-12. In order to give longer term visibility, such prices were specified for the control period of 5 years i.e. upto FY 2017. Due to reduction in the capital cost of Solar PV projects its tariff reduced drastically. Trend in reduction in capital cost of Solar PV and Solar Thermal Tariff is shown in the table below:

Table : Capital cost and Tariff for solar thermal and solar PV projects as determined by CERC

Particulars	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
Solar PV Capital Cost Rs. Cr/MW	17.00	16.90	14.42	10.00	8.00	6.91
Solar PV Tariff (Without AD) Rs./kWh	18.44	17.91	15.39	10.39	8.75	7.72
Solar Thermal Capital Cost Rs. Cr/MW	13.00	15.30	15.00	13.00	12.00	12.00
Solar Thermal Tariff Rs./kWh	13.45	15.31	15.04	12.46	11.90	11.88

9. The prevailing Floor price of Solar REC is Rs. 9.30/kWh. As against the same, today's levelled cost of generation of Solar PV projects as determined by the Commission is Rs. 7.72/kWh. Solar PV power procured through competitive bidding recently by various States has yielded PV tariff, around Rs. 6.50/kWh. This mismatch has resulted into distortion in the Solar REC market. The obligated entities are not comfortable buying Solar REC as Solar PV generation is available at much cheaper rate than Solar REC. There is at the same time an apprehension that Solar PV projects registered under REC mechanism are having windfall profit.

10. In the Solar REC market, unsold Solar RECs are piling up due to two main reasons. One, RPO is not being enforced at the State level and the other, solar power is now available at much cheaper rate. Therefore, there is an urgent need to review the existing solar Floor and Forbearance price.

Determination of Solar REC Floor Price for FY 2015

11. The floor price of solar RECs has been calculated based on the project viability approach which has been adopted under the current REC price framework as well. The project viability approach covers the cost required to meet viability parameters including O&M, interest, principal

repayment etc. The project viability of solar thermal has not been considered since there is no REC capacity under solar thermal. The table below provides state wise variations in the difference between minimum requirement and average pooled purchase cost of States, which forms the basis for determination for Floor price:

Table: Determination of solar REC floor price for FY 2015

State	APPC (Rs/kWh)	FIT (Rs/kWh)	Min. Project viability req.	Difference (Min. Req. - APPC)
Andhra Pradesh	3.38	7.72	5.50	2.12
Chhattisgarh	1.92	7.72	5.50	3.58
Gujarat	3.02	7.72	5.50	2.48
Haryana	3.60	7.72	5.50	1.90
HP	2.12	7.72	5.50	3.38
Karnataka	3.14	7.72	5.50	2.36
Kerala	3.50	7.72	5.50	2.00
Maharashtra	3.76	7.72	5.50	1.74
MP	2.66	7.72	5.50	2.84
Arunachal P.	3.39	7.72	5.50	2.11
Punjab	3.92	7.72	5.50	1.58
Rajasthan	3.13	7.72	5.50	2.37
Tamil Nadu	3.28	7.72	5.50	2.22
UP	3.88	7.72	5.50	1.62
Uttarakhand	2.52	7.72	5.50	2.98
West Bengal	3.46	7.72	5.50	2.04
Maximum difference				3.58

Proposal

12. The highest difference between the minimum requirement for project viability of solar PV and respective state APPC in FY 2015 is proposed as new solar REC floor price.

Table: Floor Price for FY 2015

Minimum Required for Project viability (Rs per kWh)	Min. APPC assumed (Rs per kWh)	Floor Price - Round off (Rs per kWh)
5.50	1.92	3.50

13. Accordingly, the new solar REC Floor price proposed from the date of issuance of the final order will be Rs. 3500 per MWh.

Forbearance Price

14. The forbearance price acts as a maximum price at which the REC can be sold in the REC market. This was introduced to protect the interests of the obligated entities. The current solar forbearance price is Rs. 13,400 per MWh. The current forbearance price is applicable till FY 2017. Solar projects have witnessed steep fall in the tariff over the years. This necessitates change in the forbearance price for solar REC. The table below details the difference between Tariff determined by the Commission and APPC across states for both solar PV technology. Table: Solar REC Forbearance Price

State	APPC	Solar PV FiT	[FIT - APPC] for Solar PV
Andhra Pradesh	3.38	7.72	4.34
Chhattisgarh	1.92	7.72	5.80
Gujarat	3.02	7.72	4.70
Haryana	3.60	7.72	4.12
HP	2.12	7.72	5.60
Karnataka	3.14	7.72	4.58
Kerala	3.50	7.72	4.22
Maharashtra	3.76	7.72	3.96
MP	2.66	7.72	5.06
Arunachal	3.39	7.72	4.33
Punjab	3.92	7.72	3.80
Rajasthan	3.13	7.72	4.59
Tamil Nadu	3.28	7.72	4.44
UP	3.88	7.72	3.84
Uttarakhand	2.52	7.72	5.20
West Bengal	3.46	7.72	4.26
		Maximum difference	5.80

Proposal

15. The highest difference between the Tariff determined by the Commission for Solar PV project and respective state APPC in FY 2015 is proposed as new Solar REC forbearance price.

- The new Solar REC Forbearance price proposed is Rs 5.80 per kWh.

Vintage based multiplier

16. The Vintage Multipliers are derived based on the following formulation as provided in the amended Regulation 7 of the Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) (Third Amendment) Regulations, 2014.

Vintage Multiplier =

Maximum difference [Minimum Requirement in of Base Year – APPC of Current Year (state wise)] / Maximum Difference [Min Requirement in Current Year – APPC of Current Year (state wise)]

Where,

- i. “APPC” means Average Pooled Cost of Purchase of State;
- ii. “Minimum requirement” means minimum evellised tariff required for viability of project to meet interest expenses, loan repayment and operation & Maintenance Expenses for various renewable energy technologies in the commissioning year and current year based on tariff determined by the Commission in respective years;
- iii. “Base year” means the year of commissioning.”

17. The variation in the minimum requirement assumed for calculating solar REC floor price and APPC variation over the years has been shown in the table below:

Table : Minimum requirement and REC solar price bands (Rs per kWh)

Financial Year	2013	2014	2015
Tariff determined by the Commission: Solar PV: Rs./kWh	10.39	8.75	7.72
Minimum Requirement: Rs./kWh	7.18	6.17	5.50
Minimum APPC across States: Rs./kWh	2.00	1.95	1.92
Difference between Minimum requirement and APPC: Rs./kWh	5.18	4.22	3.50

18. Based on the approach, the vintage multiplier for solar projects are proposed as under:

(i) Solar projects that sell the electricity generated to the distribution licensee of the area in which the eligible entity is located, at the pooled cost of power purchase of such distribution licensee as determined by the Appropriate Commission, shall be issued Certificates, for one Megawatt hour of electricity injected into the grid, considering following Vintage Multiplier (VM) :

Year of Commissioning	Multiplier
2013	1.47
2014	1.19
2015	1.00

(ii) Solar projects that sell the electricity generated to any other licensee or to an open access consumer at a mutually agreed price, shall be issued Certificates for one Megawatt hour of electricity injected into the grid, considering following Vintage Multiplier (VM) :

Year of Commissioning	Multiplier
2013	0.74
2014	0.60
2015	0.50

(iii) Solar projects which are CGP shall be issued Certificates for self consumption of one Megawatt hour electricity generated and self consumed. Considering following Vintage Multiplier (VM) :

Year of Commissioning	Multiplier
2013	0.74
2014	0.60
2015	0.50

19. The Vintage multiplier based on the above shall be provided for a period of 12 years, from the year of commissioning.

20. The proposed Vintage Multipliers are derived based on the formulation as provided in the Regulation 7 of the Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) (Third Amendment) Regulations, 2014. This will be reviewed every year and on such review the revised multiplier shall apply for projects commissioned in the respective years.
