

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Petition No. 5/SM/2020**

**Date of Order: 31<sup>st</sup> March, 2020**

**Coram:  
Shri P.K. Pujari, Chairperson  
Shri I.S. Jha, Member**

**IN THE MATTER OF**

Determination of Forbearance and Floor Price for the REC framework.

**ORDER**

**A. BACKGROUND**

1. In exercise of the powers conferred under sections 66 and 178 of the Electricity Act, 2003 (hereinafter referred to as the "Act"), 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 referred to as the "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 (RECs).

3. Further, Clause (2) of Regulation 9 of the REC Regulations provides for the guiding principles for determining the forbearance price and floor price for RECs. The relevant provision of the REC Regulations is 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 clause (1) of Regulation 9 of the REC Regulations, the Commission issued an Order dated 1<sup>st</sup> 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 RECs as under:

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

5. Above determined forbearance price and floor price were valid for the period up to 31.03.2012.

6. Thereafter, the Commission vide suo-motu Order (No. 142/2011) dated 23.08.2011 determined the following forbearance price and floor price for the period from 01.04.2012 to 31.03.2017:

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

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

	<b>Solar REC (Rs./ MWh)</b>
<b>Forbearance Price</b>	5,800
<b>Floor Price</b>	3,500

8. After end of the control period 2012-17 of the Central Electricity Regulatory Commission (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2012 (hereinafter referred to as the 2012 RE Tariff Regulations), the Commission vide suo-motu Order in Petition No. 02/SM/2017 dated 30.03.2017 (hereinafter referred as the 2017 REC Price Order) determined the following forbearance price and floor price for Solar and Non-solar RECs applicable from 01.04.2017 onwards:

	<b>Solar REC (Rs./ MWh)</b>	<b>Non-Solar REC (Rs./MWh)</b>
<b>Forbearance Price</b>	2,400	3,000
<b>Floor Price</b>	1,000	1,000

9. In the said Order, the Commission had also directed the staff of the Commission as under:

*“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.”*

## **B. LEGAL PROCEEDINGS ON THE 2017 REC PRICE ORDER**

10. Indian Wind Energy Association (IWEA) and Green Energy Association (GEA) filed Appeal No. 105 of 2017 and Appeal No. 95 of 2017 respectively before the Appellate Tribunal for Electricity (APTEL) challenging the 2017 REC Price Order. However, vide Order dated 25<sup>th</sup> April 2017, APTEL declined to stay the said 2017 REC Price Order. Relevant extracts of the Order of APTEL are quoted as under:

“ ...

*Having heard learned counsel for the parties, prima facie, we are of the opinion that the prayers for the stay of the impugned order or suspension of sale of all RECs till the disposal of the present appeal, cannot be granted. Prima facie, we appreciate the contention of Mr. Nayyar that the Appellants have no vested rights de-hors the statutory regulations. The **Central Commission’s order prima facie appears to be in line with the statutory regulations. Any order of stay or suspension of sale of all RECs would not be proper because it will not be in the general interest of the industry.** Applications are disposed of. Needless to say that this order will abide by the final order that will be passed in these appeals.” (emphasis added)*

11. IWEA and GEA filed Civil Appeal No. 6083 of 2017 and Civil Appeal No. 6334 of 2017 respectively before the Hon’ble Supreme Court challenging the aforesaid order of APTEL. By an Order dated 8<sup>th</sup> May 2017, the Hon’ble Supreme Court stayed the 2017 REC Price Order. Relevant extracts of the Order are quoted as under:

*“Heard the learned Senior counsel appearing for the appellants in both the Civil Appeals and the learned counsel appearing for the Commission.  
Let notice be issued in the matters, returnable after eight weeks.  
In the meantime, there shall be stay of the order of the Central Electricity Regulatory Commission.”*

In compliance of order of the Hon’ble Supreme Court, the Commission vide letter dated 24<sup>th</sup> May, 2017, issued directions to Central Agency and Power Exchanges to suspend trading of Solar and Non-solar RECs until the stay was vacated by the Hon’ble Supreme Court.

12. Later, an I.A. No. 42496/2017 was filed by M/s Global Energy Pvt. Ltd. in Civil Appeal No. 6083 of 2017 that was filed by IWEA before the Hon'ble Supreme Court. The Hon'ble Supreme Court disposed of the I.A. No. 42496/2017 and Civil Appeal No. 6083 of 2017 by Order dated 14<sup>th</sup> July 2017. Relevant extracts of the Order are quoted as under:

*"5) That being the case, we now substitute our order dated 08.05.2017 by granting prayer (c) instead of staying the Appellate Tribunal's order."*

*Wherein prayer (c) made by the appellants was:*

*"(c) In the alternative, direct the Respondents to ensure that any obligated entity purchasing RECs at the floor price determined vide the order dated 30.03.2017 shall deposit the difference between the earlier floor price and the present Floor Price with the Respondent No.1, Central Commission during the pendency of the Appeal No. 105 of 2017 before the Appellate Tribunal;"*

13. In compliance with the aforesaid directions of the Hon'ble Supreme Court, the Commission vide letter dated 20<sup>th</sup> July 2017 directed the Central Agency and Power Exchanges as under:

*"Obligated Entities/Power Exchanges any obligated entity purchasing RECs at the floor price determined vide the said the Commission's Order dated 30.3.2017 shall deposit the difference between floor price prevalent earlier (i.e. Rs 1500/Mwh) and floor price determined vide Order dated 30.03.2017 (i.e. Rs 1000/Mwh) with the Commission.*

*...*

*Deposit of the differential amount shall be subject to the outcome of the Appeal No. 105 of 2017 by the Appellate Tribunal for Electricity and further orders of the Commission in this regard.*

*Trading in Solar RECs shall remain suspended until further orders, since stay order dated 08.05.2017 in Civil Appeal No. 6334 of 2017 filed by Green Energy Association in case of Solar REC is still in operation."*

14. Further, an I.A. No. 82970/2017 was filed by the Commission in Civil Appeal 6334 of 2017. The Hon'ble Supreme Court disposed of the I.A. and Civil Appeal No. 6334 of 2017 by Order dated 20<sup>th</sup> September 2017. Relevant extracts of the Order are quoted as under:

*"The limited prayer sought in the present I.A. No. 82970 of 2017 is that our Order dated 08.05.2017 be clarified only to a limited extent, namely that the respondent be allowed*

*to extend RECs until 31.03.2018. Accordingly, we modify our order to this limited extent.*

*The civil appeal also stands disposed of. This order to continue until the Appellate Tribunal finally decides the appeal."*

15. Later, by Order dated 12<sup>th</sup> April 2018, APTEL dismissed the Appeal No. 95 of 2017, Appeal No. 105 of 2017 and Appeal No. 173 of 2017 *inter alia* observing that the 2017 REC Price Order does not suffer any legal infirmity and ambiguity. The relevant extract of the Order is quoted as under:

“ ...

*Keeping all the facts associated with the case in view, we are of the firm opinion that the impugned order passed by the Central Commission does not suffer from any legal infirmity or ambiguity.*

*In view of the above, we are of the considered opinion that issues raised in the present Appeals bearing Nos. 95 of 2017, 105 of 2017 & 173 of 2017 are devoid of merit.*

*Hence, these appeals are dismissed.”*

16. Consequent upon dismissal of the Appeals by APTEL, the Commission issued directions vide letter dated 23<sup>rd</sup> April 2018 to Central Agency and Power Exchanges as under:

*“In view of the Hon'ble APTEL 's Order dated 12.04.2018 in above mentioned Appeal is read with the Hon'ble Supreme Court Orders dated 20.9.2017 in I.A. No. 82970 of 2017 in Civil Appeal No. 6334 of 2017 and Order dated 14.7.2017 in Civil Appeal No. 6083 of 2017 with I.A. Nos. 42490 and 42496 of 2017, the Commission has decided as under:-*

*(a) Trading of RECs (Solar and Non-Solar) shall be carried out henceforth in accordance with the Commission's Order dated 30.03.2017 in Petition No. 2/SM/2017.*

*(b) Deposit of the differential amount of Rs .500/- per REC with the Commission shall be discontinued.”*

17. Again, IWEA filed Civil Appeal No. 4801 of 2018 before the Hon'ble Supreme Court. By Order dated 14<sup>th</sup> May 2018, the Hon'ble Supreme Court admitted the Civil Appeal and directed as under:

*"Appeal admitted.*

*Interim orders dated 08.05.2017 and 14.07.2017 to continue*

*However, we clarify that this interim order will not apply to RECs issued on or after 01.04.2017.”*

18. Pursuant to this Order of the Hon'ble Supreme Court, the Commission, vide letter dated 28<sup>th</sup> May 2018 issued the following directions:

“...

- *Trading in Non-Solar REC issued prior to 1.4.2017 shall be carried out at the floor price of Rs.1500/MWh. The obligated entities/ Power Exchanges shall deposit Rs.500/- i.e. the difference between the floor price prevailing earlier, i.e. Rs.1500/MWh and the floor price as determined vide order dated 30.3.2017 in Petition No. 2/SM/2017 (i.e. Rs.1000/MWh) with the Commission in the Account number notified vide letter dated 23<sup>rd</sup> August, 2017. The issue related to GST on Rs.500/- deposited with CERC shall continue to be governed in line with letter No. L-1/230/2017/CERC dated 26.2.2018 of CERC.*
- *Arrangement as mentioned in (b) above shall be subject to the outcome of the Civil Appeal No. 4801/2018 in the Supreme Court.*
- *Non-Solar RECs issued on or after 1.4.2017 shall continue to be traded in accordance with the floor price (i.e. Rs.1000/MWh) determined in the order dated 30.3.2017 in 2/SM/2017.”*

19. Non-solar RECs issued before and after 01.04.2017 are being traded accordingly since May 2018.

### **C. PROPOSAL**

20. During the period between April 2017 and March 2020, the renewable energy landscape in the country has undergone a massive change. The renewable energy tariff of solar and wind projects has declined substantially between April 2017 and March 2020. Further, demand and supply of renewable energy has undergone changes. In addition to solar projects, wind energy projects are also being awarded on the basis of competitive bidding conducted at National and State level. There has been a decline in the tariff discovered through competitive bidding for both solar and wind projects. In view of the prevalent market conditions, REC prices necessitate a review in order to balance the interests of eligible and obligated entities.

21. Accordingly, in pursuance of the guiding principles for determining the forbearance price and floor price for Solar and Non-solar RECs enshrined in Clause

(2) of Regulation 9 of the REC Regulations, forbearance price and floor price of REC have been reviewed. The detailed computations are at Annexure-1 and Annexure-2.

22. The Commission now proposes the following forbearance price and floor price for Solar and Non-Solar RECs under the REC Regulations with effect from a date to be notified by the Commission subsequently as per the proposal enclosed as Appendix-1.

	<b>Solar REC (Rs./ MWh)</b>	<b>Non-Solar REC (Rs./MWh)</b>
<b>Forbearance Price</b>	1,000	1,000
<b>Floor Price</b>	0	0

23. It is also proposed that the forbearance price and floor price shall be applicable to RECs issued after 01.04.2017. For Solar RECs issued before 01.04.2017, the eligible entities shall have an option to adopt the above forbearance price and floor price or to continue with the Order dated 30.03.2017 in Petition No. 02/SM/2017. For Non-solar RECs issued prior to 01.04.2017, the trading shall take place in accordance with Commission's letter dated 28.05.2018 which shall be subject to the final decision of the Hon'ble Supreme Court in Civil Appeal No. 4801/2018.

24. Comments/ suggestions of the stakeholders on the above proposal are invited by 20.04.2020 before the Commission takes a final decision.

**Sd/-**  
**(I. S. Jha)**  
**Member**

**Sd/-**  
**(P. K. Pujari)**  
**Chairperson**



**Proposal for Determination of Forbearance Price and Floor Price of RECs****1. Need for review of Forbearance Price and Floor Price of RECs**

A. The current forbearance price and floor price of Non-solar and Solar RECs as determined by the Commission vide Order dated 30.3.2017 are as under:

	Non-Solar REC (Rs./ MWh)	Solar REC (Rs./ MWh)
<b>Forbearance Price</b>	3,000	2,400
<b>Floor Price</b>	1,000	1,000

The above forbearance price and floor price of Non-solar RECs were based on generic tariff for non-solar RE Technologies for FY 2016-17 notified by SERCs or the tariff order prevalent at the time of notification of the Order. On the other hand, forbearance price and floor price of Solar RECs were based on solar PV tariff discovered through competitive bidding route and published by MNRE up to February 2017.

B. The recent trend of the results of competitive bidding for solar projects reveal that the average bid tariff discovered in auctions during the period from January 2019 to March 2020<sup>1</sup> is Rs 2.74 /kWh.

Name of Projects and Bidding Agency	Year	Capacity offered (MW)	Highest Bid won (Rs./KWh)	Lowest Bid won (Rs./KWh)	Weighted Avg. Price (Rs./KWh)
UPNEDA 500 MW Solar Tender	2019	72	3.05	3.02	3.03
Odisha 200MW Solar Tender	2019	75	2.79	2.79	2.79
SECI 750 MW (Rajasthan) Solar Tender	2019	620	2.49	2.48	2.48
SECI 1200 MW ISTS Connected Solar Phase-III	2019	1200	2.55	2.61	2.59
SECI 250 MW Maharashtra Dondaicha Solar Park	2019	250	2.87	2.91	2.89
SECI 1200 MW ISTS Connected	2019	1200	2.54	2.55	2.54

<sup>1</sup> Details upto 20.3.2020

Name of Projects and Bidding Agency	Year	Capacity offered (MW)	Highest Bid won (Rs./KWh)	Lowest Bid won (Rs./KWh)	Weighted Avg. Price (Rs./KWh)
(ISTS-IV)					
SECI 750 MW Rajasthan	2019	680	2.5	2.5	2.5
GUVNL 250 MW Dholera Solar Park (Phase V)	2019	250	2.75	2.75	2.75
GUVNL 500 MW Raghanesda Solar Park -Phase III-R	2019	500	2.65	2.7	2.67
GUVNL 500 MW Phase-IV	2019	500	2.55	2.68	2.66
MSEDCL 1000 MW Tender	2019	1000	2.74	2.75	2.75
Rajasthan Tranche-II 750-MW solar tender	2019	680	2.5	2.5	2.50
SECI :1.2 GW ISTS-VI	Oct, 2019	960	2.71	2.71	2.71
MSEDCL 500 MW ISTS Phase IV	Dec, 2019	500	2.9	2.89	2.90
UPNEDA 500 MW Solar Tender	Jan, 2020	232	3.25	3.25	3.25
SECI 7 GW ISTS Solar Projects linked with 2 GW Solar Module Manufacturing Facility	Jan, 2020	5000	2.92	2.92	2.92
SECI: ISTS T-VII -1.2 GW RE Peak Power Supply	Jan, 2020	1620	2.7	2.7	2.70
NHPC: ISTS T-1-2 GW Solar Projects	Jan, 2020	3780	2.78	2.78	2.78
UPNEDA 500 MW Solar Tender:184 GW	Feb, 2020	184	3.18	3.17	3.18
SECI 1.2 GW ISTS Tranche VIII	Feb, 2020	1200	2.51	2.5	2.51
GUVNL: Phase-VIII 500 MW Solar Projects	Mar, 2020	430	2.65	2.65	2.65
MSEDCL: Phase -V 500 MW Intra State Solar Projects	Mar, 2020	350	2.9	2.9	2.90
GUVNL: Phase-VIII 350 MW of Solar Projects	Mar, 2020	350	2.64	2.61	2.63
<b><u>AVERAGE</u></b>					<b>2.74</b>

(Source: Infraline database and Infra live)

C. The tariffs for wind projects have also declined considerably after 2017. The recent trends of the results of competitive bidding as observed by the Commission reveal that the average bid tariff discovered in auctions for wind projects is Rs 2.51 per kWh during 2018-19 and Rs 2.85 per kWh during 2019-20.

2018-19

Name of Projects and Bidding Agency	Year	Capacity offered (MW)	Highest Bid won (Rs./KWh)	Lowest Bid won (Rs./KWh)	Weighted Avg. Price (Rs./KWh)
GUVNL :500 MW	Jan, 2018	500	2.45	2.43	2.44
SECI	Feb, 2018	2199.8	2.45	2.44	2.44
MSEDCL: 500 MW	Jun, 2018	500.1	2.87	2.85	2.86
MSEDCL	Sep,2018	87	2.52	2.51	2.51
<b><u>AVERAGE</u></b>					<b>2.51</b>

2019-20

Name of Projects and Bidding Agency	Year	Capacity offered (MW)	Highest Bid won (Rs./KWh)	Lowest Bid won (Rs./KWh)	Weighted Avg. Price (Rs./KWh)
SECI: 1800 MW ISTS T-VIII	2019	439.5	2.84	2.83	2.84
SECI: 1800 MW ISTS T-VII	2019	480	2.83	2.79	2.81
GUVNL:1000 MW PHASE 11-R	2019	744.2	2.95	2.8	2.88
SECI: 1200 MW	2019	1200	2.83	2.82	2.83
SECI: 1200 MW T-VI	2019	2525	2.85	2.85	2.85
<b><u>AVERAGE</u></b>					<b>2.85</b>

(Source: Infra live)

D. Aforesaid developments indicate that the tariff of solar and wind projects have declined considerably due to prevalent market forces and change in project cost. These developments underscore the need to review forbearance price and floor price for the RECs.

**2. Capacity Share of Various RE Technologies in REC framework:** The REC framework has been in force for about ten years. As on 27.03.2020, total 989 projects (Solar and Non-solar technologies) have been registered under REC

framework. The share of each non-solar RE technology in the REC framework has been analysed for the purpose of determination of the forbearance price and floor price of Non-solar RECs. It is expected that the projects coming up for registration under REC framework shall be on similar lines. The detailed break-up of the capacity and number of projects registered as on 27.3.2020 are as under:

Non-solar Technology	No. of Projects	Capacity (MW)	%age Capacity share
Small Hydro	37	250.48	6.81%
Biomass	40	420.19	11.43%
Biofuel Cogeneration	54	378.08	10.29%
Wind	479	2627.27	71.47%
<b>Total Capacity</b>	<b>610</b>	<b>3676.02</b>	

Source: REC Registry (<https://www.recregistryindia.nic.in>)

### 3. Key Parameters for computation of forbearance price and floor price: -

3.1 *Cost of generation/ RE tariff*: Costs of generation/ RE tariff for different technologies have varied over a large range during 2017-2020. RECs are a market instrument and a source of revenue for projects registered under the REC framework. Hence, alignment of REC prices with the market is required. Various SERCs have prescribed generic tariff for non-solar RE technologies and wind projects have been awarded based on competitive bidding during this period. These reflect the market scenario prevailing in different States and have been considered to determine the Non-solar REC forbearance price and floor price. The average bid tariff discovered (during January 2017 and March 2020) has been considered to determine the Solar REC forbearance price and floor price.

3.2 *Average Power Purchase Cost (APPC)*: APPC is the weighted average pooled price at which the distribution licensee has purchased 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 (without transmission charges) in the State during the financial year 2018-19.

3.3 *Minimum Project Viability Requirement*: 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 co-generation projects). Based on review of generic tariff orders, the Commission has observed that the viability parameters as outlined above constitute 70% of the total levelled tariff.

3.4 *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 2018-19 for the respective States.

3.5 *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 levelled tariff prescribed for each non-solar RE technology or 70% of average bid discovered tariff for solar auctions.

#### 4. Principles for computation of forbearance price and floor price: -

In pursuance of the guidelines specified in the Regulation 9(2) of the REC Regulations, the forbearance price and floor price for Solar and Non-solar REC have been evolved based on the following assumptions:

##### 4.1 Computation of Forbearance Price and Floor Price for Non-Solar REC

The Commission has followed a two-way approach for determination of forbearance price and floor price of Non-solar RECs. The approach included the following scenarios.

**Scenario 1:** Determine Forbearance Price and Floor Price using APPC and SERC notified tariff for all non-solar RE technologies (detailed computation may be perused at Annexure-1A).

Scenario 1 (based on Tariff Orders by SERCs) (in Rs/kWh)				
	SHP*	Biomass*	Bagasse	Wind*
<b>Technology Specific Forbearance Price</b>	3.07	4.38	3.45	1.95
<b>Technology Specific Floor Price</b>	1.30	1.86	1.56	0.51

\* Considered average of the various categories of tariff notified by SERCs, if any

Total Projects registered under REC mechanism (as on 27.3.2020) Source: REC Registry					
Technology	No. of Projects	Capacity	%age Capacity share	Weighted Average Forbearance Price (Rs/kWh)	Weighted Average Floor Price (Rs/kWh)
Small Hydro	37	250.48	6.81%	0.21	0.09
Biomass	40	420.19	11.43%	0.50	0.21
Biofuel Cogeneration	54	378.08	10.29%	0.35	0.16
Wind	479	2627.27	71.47%	1.39	0.37
<b>Total Capacity</b>	<b>610</b>	<b>3676.02</b>		<b>2.45</b>	<b>0.83</b>

It is evident from the above table that sum of weightage average forbearance price based on the highest difference between SERC notified tariff and APPC and relative share of technologies in the projects registered in REC framework is Rs 2.45/kWh.

Similarly, sum of weightage average floor price based on the highest difference between Minimum Project Viability and APPC and relative share of technologies in the projects registered in REC framework is Rs 0.83/kWh.

**Scenario 2:** Determine Forbearance Price and Floor Price using APPC and SERC notified tariff for all non-solar RE technologies including bid discovered tariff for Wind Projects during the period 2018-2020. Detailed computation may be perused as Annexure-1B.

Scenario 2 (based on Tariff Orders by SERCs and Bid Discovered tariff for Wind) (in Rs/kWh)				
	SHP*	Biomass*	Bagasse	Wind (Bids)
<b>Technology Specific Forbearance Price</b>	3.07	4.38	3.45	-0.15
<b>Technology Specific Floor Price</b>	1.30	1.86	1.56	-0.95

\* Considered average of the various categories of tariff notified by SERCs if any

Total Projects registered under REC mechanism (as on 27.03.2020) Source: REC Registry					
Technology	No. of Projects	Capacity	%age Capacity share	Weighted Average Forbearance Price (Rs/kWh)	Weighted Average Floor Price (Rs/kWh)
Small Hydro	37	250.48	6.81%	0.21	0.09
Biomass	40	420.19	11.43%	0.50	0.21
Biofuel Cogeneration	54	378.08	10.29%	0.35	0.16
Wind	479	2627.27	71.47%	-0.11	-0.68
<b>Total Capacity</b>	<b>610</b>	<b>3676.02</b>		<b>0.95</b>	<b>-0.22</b>

It is evident from the above table that the sum of weighted average forbearance price based on the highest difference between SERC notified tariff/ bid discovered tariff and APPC and relative share of technologies in the projects registered in REC framework is Rs 0.95 per kWh.

Similarly, sum of weighted average floor price based on the highest difference between Minimum Project Viability and APPC and relative share of technologies in the projects registered in REC framework is Rs -0.22 per kWh.

#### **4.1.1 Forbearance price for Non-solar REC**

i. The highest difference between the costs of generation/ RE Tariff as specified by various SERCs including a scenario with bid discovered tariff for Wind Projects and the State-wise APPC is computed as Technology Specific Forbearance Price for each non-solar RE technology. The Technology Specific Forbearance Price is mapped with the capacity share of each technology in the REC framework and weighted average Technology Specific Forbearance Price for each technology is determined. Considering the prevailing market conditions of awarding wind projects through competitive bidding, Scenario 2 has been considered for determination of Forbearance Price. The sum of the weighted average Technology Specific Forbearance Price for all non-solar RE technologies in unit price has been rounded off to the nearest ten's, to arrive at the forbearance price of Rs 1,000/MWh.

ii. Highest difference as forbearance price includes all the technologies and is based on the representative share of each technology in the registered project capacity. The forbearance price is considered necessary to take care of the risks involved for RE generators in opting for REC mechanism.

#### **4.1.2 Floor Price for Non-solar REC**

i. Floor price is determined based on the difference between the project viability requirement and APPC determined for different RE Technologies across states. The highest difference for each technology is the Technology Specific Floor Price for each non-solar RE technology. This Technology specific Floor Price is mapped with the respective capacity share of the technology to

arrive at the weighted average Technology Specific Floor Price for each technology.

ii. This approach for floor price is considered necessary given the current state of demand-supply of REC market. The Commission in its Order dated 30.03.2017, had directed the staff to examine the need of determining the floor price of REC and whether going forward the floor price can be removed. Based on the aforesaid analysis, it is evident that the market has matured and to encourage sale of RECs and promote trade, floor price is no longer required. Accordingly, the Commission has considered Scenario 2 and proposes to remove the floor price.

iii. Therefore, considering results of above analysis and relative share of the technologies therein, the Commission proposes following forbearance price and floor price for Non-solar RECs.

	Non-Solar REC (Rs./ MWh)
Forbearance Price	1,000
Floor Price	0

## 4.2 Computation of Forbearance price and Floor Price for Solar REC

4.2.1 The Commission has followed a three-pronged approach for determination of forbearance and floor price of Solar RECs. The approach includes the following scenarios.

**Scenario 1:** Determine Forbearance and Floor Price using APPC for all States and Union Territories (UTs) in India during the year 2018-19 and Bid Discovered Tariff for the year 2017 Detailed computation may be perused as Annexure – 2A.

Scenario 1 - Calculation for All States	
Avg. Bid Tariff - Rs. 3.18/kWh	Avg. Bid Tariff Based MPV - Rs. 2.23/kWh
Forbearance Price: Rs 0.90/kWh	Floor Price: Rs -0.05/kWh

It is evident from the above table that the forbearance price based on the highest difference between bid discovered tariff and APPC is Rs 0.90 /kWh.



Floor price based on the highest difference between Minimum Project Viability and APPC is Rs -0.05 /kWh.

**Scenario 2:** Determine Forbearance Price and Floor Price using APPC for all States and Union Territories (UTs) in India during the year 2018-19 and Bid Discovered Tariff for the year 2018. Detailed computation may be perused as Annexure-2B.

Scenario 2 - Calculation for All States	
Avg. Bid Tariff - Rs. 2.89/kWh	Avg. Bid Tariff Based MPV - Rs. 2.02 /kWh
Forbearance Price: Rs 0.61/kWh	Floor Price: Rs -0.26/kWh

It is evident from the above table that the forbearance price based on the highest difference between bid discovered tariff and APPC is Rs 0.61/kWh. Floor price based on the highest difference between Minimum Project Viability and APPC is Rs -0.26 /kWh.

**Scenario 3:** Determine Forbearance Price and Floor Price using APPC for all States and Union Territories (UTs) in India during the year 2018-19 and bid discovered tariff for the year 2019 upto March, 2020<sup>2</sup> (detailed computation may be perused at Annexure-2C).

Scenario 3 - Calculation for All States	
Avg. Bid Tariff - Rs. 2.74/kWh	Avg. Bid Tariff Based MPV - Rs. 1.92/kWh
Forbearance Price: Rs 0.46/kWh	Floor Price: Rs -0.36/kWh

It is evident from the above table that the forbearance price based on the highest difference between bid discovered tariff and APPC is Rs 0.46 per kWh. Floor price based on the highest difference between Minimum Project Viability and APPC is Rs -0.36 per /kWh.

#### 4.2.2 Forbearance price for Solar REC

- i. From analysis of the three scenarios as above, it is evident that the forbearance price is be in the range of Rs 0.46/kWh and Rs 0.90/kWh. Given that forbearance prices are ceiling prices, the Commission proposes the forbearance price as Rs 1,000 per MWh (by rounding off to the nearest ten's).

<sup>2</sup> Till 20.3.2020

ii. This approach is considered appropriate as it reflects the current market dynamics and the prices discovered through bidding processes.

#### 4.2.3 Floor price for Solar REC

- i. The floor price of solar RECs has been calculated based on the project viability approach. The project viability approach covers the cost required to meet viability parameters including O&M, interest on loan, interest on working capital and depreciation.
- ii. The highest difference between the minimum requirements for project viability i.e. 70% of the average bid discovered tariff and respective state APPC of 2018-19 has been considered as floor price.
- iii. In all the above three scenarios in para 4.2.1, the floor price ranges between Rs -0.05 and Rs -0.36 per kWh. Accordingly, the Commission proposes floor price as zero.
- iv. Considering the results of the above analysis, the Commission proposes the following forbearance price and floor price for Solar RECs.

	Solar REC (Rs./ MWh)
<b>Forbearance Price</b>	1,000
<b>Floor Price</b>	0

#### 5. Proposal

Based on the above principles, the following forbearance price and floor price are prescribed for RECs:

	Non-Solar REC (Rs./ MWh)	Solar REC (Rs./ MWh)
<b>Forbearance Price</b>	1,000	1,000
<b>Floor Price</b>	0	0

The above forbearance price and floor price shall be effective from the date of notification of this Order and shall remain valid until further orders of the Commission.

**ANNEXURE-1A (FORBEARANCE PRICE AND FLOOR PRICE OF NON-SOLAR REC – BASED ON SERC TARIFF ORDERS)**

<b>(Small Hydro Power)</b>					
<b>State</b>	<b>APPC (2018-19) as estimated based on SERC Tariff Orders for 2018-19 (Rs/kWh)</b>	<b>SERC Tariff for (Average Tariff) based on SERC Orders(Rs/kWh)</b>	<b>Difference b/w Tariff and APPC (Rs/kWh)</b>	<b>Project Viability Tariff based on SERC Orders(Rs/kWh)</b>	<b>Difference b/w Project Viability Tariff and APPC (Rs/kWh)</b>
Gujarat **	3.98	3.98	0.00	2.79	-1.20
Himachal Pradesh	2.29	3.61	1.33	2.53	0.24
Karnataka	3.50	3.95	0.45	2.77	-0.74
Madhya Pradesh	2.83	5.9	<b>3.07</b>	4.13	<b>1.30</b>
Maharashtra	3.69	5.02	1.33	3.51	-0.18
Punjab	4.01	5.56	1.55	3.89	-0.12
<b>Technology Specific Forbearance Price (Small Hydro Power)</b>				<b>3.07</b>	
<b>Technology Specific Floor Price (Small Hydro Power)</b>				<b>1.30</b>	

<b>(Wind Energy)</b>					
<b>State</b>	<b>APPC (2018-19) as estimated based on SERC Tariff Orders for 2018-19 (Rs/kWh)</b>	<b>SERC Tariff (Average Tariff) based on SERC Orders(Rs/kWh)</b>	<b>Difference b/w Tariff and APPC (Rs/kWh)</b>	<b>Project Viability Tariff based on SERC Orders (Rs/kWh)</b>	<b>Difference b/w Project Viability Tariff and APPC (Rs/kWh)</b>
Andhra Pradesh	3.83	4.76	0.93	3.33	-0.50
Gujarat **	3.98	4.72	0.74	3.30	-0.68
Karnataka	3.50	3.26	-0.24	2.28	-1.22
Madhya Pradesh	2.83	4.78	<b>1.95</b>	3.25	<b>0.51</b>
Maharashtra	3.69	2.52	-1.17	1.76	-1.93
Rajasthan	3.47	5.39	1.92	3.77	0.31
Tamil Nadu #	3.73	2.86	-0.87	2.00	-1.73
<b>Technology Specific Forbearance Price (Wind Energy)</b>				<b>1.95</b>	
<b>Technology Specific Floor Price (Wind Energy)</b>				<b>0.51</b>	

**(Biomass)**

State	APPC (2018-19) as estimated based on SERC Tariff Orders for 2018-19 (Rs/kWh)	SERC Tariff (Average Tariff) based on SERC Orders (Rs/kWh)	Difference b/w Tariff and APPC (Rs/kWh)	Project Viability Tariff based on SERC Orders (Rs/kWh)	Difference b/w Project Viability Tariff and APPC (Rs/kWh)
Gujarat **	3.98	5.95	1.96	4.16	0.18
Karnataka	3.50	5.45	1.95	3.82	0.31
Madhya Pradesh	2.83	6.58	3.75	4.61	1.77
Maharashtra	3.69	7.83	4.14	5.48	1.79
Punjab	4.01	8.39	<b>4.38</b>	5.87	<b>1.86</b>
Rajasthan	3.47	7.12	3.65	4.98	1.52
Tamil Nadu #	3.73	6.11	2.38	4.28	0.55
<b>Technology Specific Forbearance Price (Biomass)</b>				<b>4.38</b>	
<b>Technology Specific Floor Price (Biomass)</b>				<b>1.86</b>	

**(Bagasse/Cogeneration)**

State	APPC (2018-19) as estimated based on SERC Tariff Orders for 2018-19 (Rs/kWh)	SERC Tariff (Average Tariff) based on SERC Orders (Rs/kWh)	Difference b/w Tariff and APPC (Rs/kWh)	Project Viability Tariff based on SERC Orders (Rs/kWh)	Difference b/w Project Viability Tariff and APPC (Rs/kWh)
<b>Gujarat **</b>	3.98	5.90	1.92	4.13	0.15
Karnataka	3.50	3.59	0.09	2.51	-0.99
Madhya Pradesh	2.83	6.28	<b>3.45</b>	4.40	<b>1.56</b>
Maharashtra	3.69	4.99	1.30	3.49	-0.20
Punjab	4.01	6.48	2.47	4.54	0.52
Rajasthan	3.47	5.53	2.06	3.87	0.40
Tamil Nadu #	3.73	5.53	1.80	3.87	0.14
<b>Technology Specific Forbearance Price (Bagasse / Cogeneration)</b>				<b>3.45</b>	
<b>Technology Specific Floor Price (Bagasse / Cogeneration)</b>				<b>1.56</b>	

APPC Data

\*\* Gujarat - Approved Power Purchase and Cost for 2018-19 from MYT Order for Control Period FY 2016-17 to FY 2019-20 considered

# Tamil Nadu - Approved Power Purchase and Cost for 2018-19 from Order dated 11th August 2017 considered

## Determination of Forbearance Price and Floor Price for Non-solar REC

Non-solar Technology	No. of Projects*	Capacity*	%age Capacity share	Technology Specific Forbearance Price (Rs/kWh)	Weighted Average Forbearance Price (Rs/kWh)	Technology Specific Floor Price (Rs/kWh)	Weighted Average Floor Price (Rs/kWh)
Small Hydro	37	250.48	6.81%	3.07	0.21	1.30	0.09
Biomass	40	420.19	11.43%	4.38	0.50	1.86	0.21
Biofuel Cogeneration	54	378.08	10.29%	3.45	0.35	1.56	0.16
Wind	479	2627.27	71.47%	1.95	1.39	0.51	0.37
<b>Total Capacity</b>	<b>610</b>	<b>3676.016</b>			<b>2.45</b>		<b>0.83</b>

\* Source: REC Registry

**ANNEXURE-1B (FORBEARANCE PRICE AND FLOOR PRICE OF NON-SOLAR REC- BASED ON SERC TARIFF ORDERS AND BID DISCOVERED TARIFF FOR WIND PROJECTS)**

<b>(Small Hydro Power)</b>					
<b>State</b>	<b>APPC (2018-19) as estimated based on SERC Tariff Orders for 2018-19 (Rs/kWh)</b>	<b>SERC Tariff for (Average Tariff) based on SERC Orders (Rs/kWh)</b>	<b>Difference b/w Tariff and APPC (Rs/kWh)</b>	<b>Project Viability Tariff based on SERC Orders (Rs/kWh)</b>	<b>Difference b/w Project Viability Tariff and APPC (Rs/kWh)</b>
Gujarat **	3.98	3.98	0.00	2.79	-1.20
Himachal Pradesh	2.29	3.61	1.33	2.53	0.24
Karnataka	3.50	3.95	0.45	2.77	-0.74
Madhya Pradesh	2.83	5.9	<b>3.07</b>	4.13	<b>1.30</b>
Maharashtra	3.69	5.02	1.33	3.51	-0.18
Punjab	4.01	5.56	1.55	3.89	-0.12
<b>Technology Specific Forbearance Price (Small Hydro Power)</b>			<b>3.07</b>		
<b>Technology Specific Floor Price (Small Hydro Power)</b>			<b>1.30</b>		

<b>(Wind Energy – Competitive Bids)</b>					
<b>State</b>	<b>APPC (2018-19) as estimated based on SERC Tariff Orders for 2018-19 (Rs/kWh)</b>	<b>Bid discovered Tariff (Rs/kWh) <sup>µ</sup></b>	<b>Difference b/w Tariff and APPC (Rs/kWh)</b>	<b>Project Viability Tariff based on Bid discovered Tariff (Rs/kWh)</b>	<b>Difference b/w Project Viability Tariff and APPC (Rs/kWh)</b>
Andhra Pradesh	3.83	2.68	-1.15	1.88	-1.95
Gujarat **	3.98	2.68	-1.30	1.88	-2.10
Karnataka	3.5	2.68	-0.82	1.88	-1.62
Madhya Pradesh	2.83	2.68	<b>-0.15</b>	1.88	<b>-0.95</b>
Maharashtra	3.69	2.68	-1.01	1.88	-1.81
Rajasthan	3.47	2.68	-0.79	1.88	-1.59
Tamil Nadu #	3.73	2.68	-1.05	1.88	-1.85
<b>Technology Specific Forbearance Price (Wind Energy)</b>			<b>-0.15</b>		
<b>Technology Specific Floor Price (Wind Energy)</b>			<b>-0.95</b>		

<sup>µ</sup>- Bid discovered tariff for wind projects auctioned during the period 2018-19 has been in the range of Rs 2.44-2.86 per kWh. Weighted average of the bid discovered tariff during the period 2018-19 has been computed as Rs 2.51 per kWh. Bid discovered tariff for wind projects auctioned during the period 2019-20 has been in the range of Rs 2.81 – 2.88 per kWh. Weighted average of the bid discovered tariff during the period 2019-20 has been computed as Rs 2.85 per kWh. Later average of the weighted averages of 2018-19 and 2019-20 as computed above has been considered.

<b>(Biomass)</b>					
<b>State</b>	<b>APPC (2018-19) as estimated based on SERC Tariff Orders for 2018-19 (Rs/kWh)</b>	<b>SERC Tariff (Average Tariff) based on SERC Orders (Rs/kWh)</b>	<b>Difference b/w Tariff and APPC (Rs/kWh)</b>	<b>Project Viability Tariff based on SERC Orders (Rs/kWh)</b>	<b>Difference b/w Project Viability Tariff and APPC (Rs/kWh)</b>
Gujarat **	3.98	5.95	1.96	4.16	0.18
Karnataka	3.50	5.45	1.95	3.82	0.31
Madhya Pradesh	2.83	6.58	3.75	4.61	1.77
Maharashtra	3.69	7.83	4.14	5.48	1.79
Punjab	4.01	8.39	<b>4.38</b>	5.87	<b>1.86</b>
Rajasthan	3.47	7.12	3.65	4.98	1.52
Tamil Nadu #	3.73	6.11	2.38	4.28	0.55
<b>Technology Specific Forbearance Price (Biomass)</b>				<b>4.38</b>	
<b>Technology Specific Floor Price (Biomass)</b>				<b>1.86</b>	

<b>(Bagasse/Cogeneration)</b>					
<b>State</b>	<b>APPC (2018-19) as estimated based on SERC Tariff Orders for 2018-19 (Rs/kWh)</b>	<b>SERC Tariff (Average Tariff) based on SERC Orders (Rs/kWh)</b>	<b>Difference b/w Tariff and APPC (Rs/kWh)</b>	<b>Project Viability Tariff based on SERC Orders (Rs/kWh)</b>	<b>Difference b/w Project Viability Tariff and APPC (Rs/kWh)</b>
<b>Gujarat **</b>	3.98	5.90	1.92	4.13	0.15
Karnataka	3.50	3.59	0.09	2.51	-0.99
Madhya Pradesh	2.83	6.28	<b>3.45</b>	4.40	<b>1.56</b>
Maharashtra	3.69	4.99	1.30	3.49	-0.20
Punjab	4.01	6.48	2.47	4.54	0.52
Rajasthan	3.47	5.53	2.06	3.87	0.40
Tamil Nadu #	3.73	5.53	1.80	3.87	0.14
<b>Technology Specific Forbearance Price (Bagasse / Cogeneration)</b>				<b>3.45</b>	
<b>Technology Specific Floor Price (Bagasse / Cogeneration)</b>				<b>1.56</b>	

APPC Data

\*\* Gujarat - Approved Power Purchase and Cost for 2018-19 from MYT Order for Control Period FY 2016-17 to FY 2019-20 considered

# Tamil Nadu - Approved Power Purchase and Cost for 2018-19 from Order dated 11th August 2017 considered

## Determination of Forbearance Price and Floor Price for Non-solar REC

Non-solar Technology	No. of Projects*	Capacity*	%age Capacity share	Technology Specific Forbearance Price (Rs/kWh)	Weighted Average Forbearance Price (Rs/kWh)	Technology Specific Floor Price (Rs/kWh)	Weighted Average Floor Price (Rs/kWh)
Small Hydro	37	250.48	6.81%	3.07	0.21	1.30	0.09
Biomass	40	420.19	11.43%	4.38	0.50	1.86	0.21
Biofuel Cogeneration	54	378.08	10.29%	3.45	0.35	1.56	0.16
Wind	479	2627.27	71.47%	-0.15	-0.11	-0.95	-0.62
<b>Total Capacity</b>	<b>610</b>	<b>3676.016</b>			<b>0.95</b>		<b>-0.22</b>

\* Source: REC Registry



**ANNEXURE-2A (FORBEARANCE PRICE AND FLOOR PRICE OF SOLAR REC- FOR ALL STATES BASED ON AVERAGE BID TARIFF FOR THE PERIOD JAN 2017– DEC 2017)**

State	APPC (2018-19) as estimated based on SERC Tariff Orders for 2018-19 (Rs/kWh)	Bid Discovered Tariff for Solar Project (Rs/kWh) <sup>μ</sup>	Difference b/w Bid Discovered Tariff and APPC (Rs/kWh)	Project Viability Tariff (Rs/kWh) based on Bid Discovered Tariff	Difference b/w Project Viability Tariff and APPC (Rs/kWh)
Andaman & Nicobar*	11.47	3.18	-8.29	2.23	-9.24
Andhra Pradesh	3.83	3.18	-0.65	2.23	-1.60
Arunachal Pradesh	2.62	3.18	0.56	2.23	-0.40
Assam	3.65	3.18	-0.47	2.23	-1.43
Bihar	4.12	3.18	-0.94	2.23	-1.89
Chandigarh	3.37	3.18	-0.19	2.23	-1.15
Chhattisgarh	2.9	3.18	0.28	2.23	-0.68
Dadra & Nagar Haveli	3.64	3.18	-0.46	2.23	-1.41
Daman & Diu	3.17	3.18	0.01	2.23	-0.94
Delhi	3.9	3.18	-0.72	2.23	-1.67
Goa	2.68	3.18	0.50	2.23	-0.45
Gujarat **	3.98	3.18	-0.80	2.23	-1.76
Haryana	3.72	3.18	-0.54	2.23	-1.49
Himachal Pradesh	2.29	3.18	0.89	2.23	-0.06
Jammu & Kashmir ^	2.88	3.18	0.30	2.23	-0.65
Jharkhand ^^	3.99	3.18	-0.81	2.23	-1.76
Karnataka	3.5	3.18	-0.32	2.23	-1.28
Kerala \$	2.95	3.18	0.23	2.23	-0.72
Lakshadweep \$\$	12.14	3.18	-8.96	2.23	-9.92
Madhya Pradesh	2.83	3.18	0.35	2.23	-0.61
Maharashtra	3.69	3.18	-0.51	2.23	-1.46
Manipur	3.55	3.18	-0.37	2.23	-1.33
Meghalaya	3.33	3.18	-0.15	2.23	-1.11
Mizoram	3.32	3.18	-0.14	2.23	-1.10

Nagaland	3.86	3.18	-0.68	2.23	-1.63
Orissa	2.77	3.18	0.41	2.23	-0.54
Puducherry	3.49	3.18	-0.31	2.23	-1.27
Punjab	4.01	3.18	-0.83	2.23	-1.79
Rajasthan	3.47	3.18	-0.29	2.23	-1.24
<b>Sikkim</b>	<b>2.28</b>	3.18	<b>0.90</b>	2.23	<b>-0.05</b>
Tamil Nadu #	3.73	3.18	-0.55	2.23	-1.50
Telangana	3.92	3.18	-0.74	2.23	-1.70
Tripura ##	2.8	3.18	0.38	2.23	-0.58
Uttar Pradesh	3.73	3.18	-0.55	2.23	-1.51
Uttarakhand	3.3	3.18	-0.12	2.23	-1.08
West Bengal ###	3.55	3.18	-0.37	2.23	-1.33
<b>Forbearance Price (Solar)</b>			<b>0.90</b>		
<b>Floor Price (Solar)</b>			<b>-0.05</b>		

µ- The bid discovered tariff for solar projects auctioned during the period Jan 2017 – Dec 2017 has been in the range of Rs 2.44 – 5.64 per kWh. Weighted average of the bid discovered tariff for each auction during the period Jan 2017 – Dec 2017 has been calculated. Thereafter an average of the weighted average bid tariff of respective auctions as computed above has been considered.

#### APPC Data

\* Andaman & Nicobar Islands - Approved Power Purchase and Cost for 2018-19 from MYT Order for FY 2016-17 to FY 2018-19 dated 6th Apr 2016 considered

\*\* Gujarat - Approved Power Purchase and Cost for 2018-19 from MYT Order for Control Period FY 2016-17 to FY 2019-20 considered

^ Jammu & Kashmir - Approved Power Purchase and Cost for 2018-19 from MYT Order for FY 2016-17 to FY 2020-21 dated 7th Oct 2016 considered

^^ Jharkhand - Approved Power Purchase and Cost for 2018-19 for JBVNL from Order dated 28th Feb 2019 considered

Approved Power Purchase and Cost for 2017-18 for JUSCO & TSL from respective Orders considered

\$ Kerala - Tariff Order issued in 2017-18 considered

\$\$ Lakshadweep - Approved Power Purchase and Cost for 2018-19 from MYT Order for FY 2016-17 to FY 2018-19 dated 31st March 2016 considered

# Tamil Nadu - Approved Power Purchase and Cost for 2018-19 from Order dated 11th August 2017 considered

## Tripura - Tariff Order issued in 2014-15 considered

### West Bengal - Tariff Order issued for WBSSEDCL and CESC for FY2017-18 considered. For DVC and DPL, latest available Tariff Orders considered

**ANNEXURE-2B (FORBEARANCE PRICE AND FLOOR PRICE OF SOLAR REC- FOR ALL STATES  
BASED ON AVERAGE BID TARIFF FOR THE PERIOD JAN 2018 – DEC 2018)**

State	APPC (2018-19) as estimated based on SERC Tariff Orders for 2018-19 (Rs/kWh)	Bid Discovered Tariff for Solar Project (Rs/kWh) <sup>μ</sup>	Difference b/w Bid Discovered Tariff and APPC (Rs/kWh)	Project Viability Tariff (Rs/kWh) based on Bid Discovered Tariff	Difference b/w Project Viability Tariff and APPC (Rs/kWh)
Andaman & Nicobar *	11.47	2.89	-8.58	2.02	-9.45
Andhra Pradesh	3.83	2.89	-0.94	2.02	-1.80
Arunachal Pradesh	2.62	2.89	0.27	2.02	-0.60
Assam	3.65	2.89	-0.76	2.02	-1.63
Bihar	4.12	2.89	-1.23	2.02	-2.09
Chandigarh	3.37	2.89	-0.48	2.02	-1.35
Chhattisgarh	2.9	2.89	-0.01	2.02	-0.88
Dadra & Nagar Haveli	3.64	2.89	-0.75	2.02	-1.61
Daman & Diu	3.17	2.89	-0.28	2.02	-1.14
Delhi	3.9	2.89	-1.01	2.02	-1.88
Goa	2.68	2.89	0.21	2.02	-0.66
Gujarat **	3.98	2.89	-1.09	2.02	-1.96
Haryana	3.72	2.89	-0.83	2.02	-1.70
Himachal Pradesh	2.29	2.89	0.60	2.02	-0.26
Jammu & Kashmir ^	2.88	2.89	0.01	2.02	-0.86
Jharkhand ^^	3.99	2.89	-1.10	2.02	-1.97
Karnataka	3.5	2.89	-0.61	2.02	-1.48
Kerala \$	2.95	2.89	-0.06	2.02	-0.92
Lakshadweep \$\$	12.14	2.89	-9.25	2.02	-10.12
Madhya Pradesh	2.83	2.89	0.06	2.02	-0.81
Maharashtra	3.69	2.89	-0.80	2.02	-1.67
Manipur	3.55	2.89	-0.66	2.02	-1.53
Meghalaya	3.33	2.89	-0.44	2.02	-1.31
Mizoram	3.32	2.89	-0.43	2.02	-1.30
Nagaland	3.86	2.89	-0.97	2.02	-1.83

Orissa	2.77	2.89	0.12	2.02	-0.74
Puducherry	3.49	2.89	-0.60	2.02	-1.47
Punjab	4.01	2.89	-1.12	2.02	-1.99
Rajasthan	3.47	2.89	-0.58	2.02	-1.44
<b>Sikkim</b>	<b>2.28</b>	2.89	<b>0.61</b>	2.02	<b>-0.26</b>
Tamil Nadu #	3.73	2.89	-0.84	2.02	-1.70
Telangana	3.92	2.89	-1.03	2.02	-1.90
Tripura ##	2.8	2.89	0.09	2.02	-0.78
Uttar Pradesh	3.73	2.89	-0.84	2.02	-1.71
Uttarakhand	3.3	2.89	-0.41	2.02	-1.28
West Bengal ###	3.55	2.89	-0.66	2.02	-1.53
<b>Forbearance Price (Solar)</b>				<b>0.61</b>	
<b>Floor Price (Solar)</b>				<b>-0.26</b>	

µ- The bid discovered tariff for solar projects auctioned during the period Jan 2018 – Dec 2018 has been in the range of Rs 2.44 – 3.55 per kWh Weighted average of the bid discovered tariff for each auction during the period Jan 2018 – Dec 2018 has been calculated. Thereafter, an average of the weighted average bid tariff of respective auctions as computed above has been considered.

#### APPC Data

\* Andaman & Nicobar Islands - Approved Power Purchase and Cost for 2018-19 from MYT Order for FY 2016-17 to FY 2018-19 dated 6th Apr 2016 considered

\*\* Gujarat - Approved Power Purchase and Cost for 2018-19 from MYT Order for Control Period FY 2016-17 to FY 2019-20 considered

^ Jammu & Kashmir - Approved Power Purchase and Cost for 2018-19 from MYT Order for FY 2016-17 to FY 2020-21 dated 7th Oct 2016 considered

^^ Jharkhand - Approved Power Purchase and Cost for 2018-19 for JBVNL from Order dated 28th Feb 2019 considered

Approved Power Purchase and Cost for 2017-18 for JUSCO & TSL from respective Orders considered

\$ Kerala - Tariff Order issued in 2017-18 considered

\$\$ Lakshadweep - Approved Power Purchase and Cost for 2018-19 from MYT Order for FY 2016-17 to FY 2018-19 dated 31st March 2016 considered

# Tamil Nadu - Approved Power Purchase and Cost for 2018-19 from Order dated 11th August 2017 considered

## Tripura - Tariff Order issued in 2014-15 considered

### West Bengal - Tariff Order issued for WBSSEDCL and CESC for FY2017-18 considered. For DVC and DPL, latest available Tariff Orders considered

**ANNEXURE-2C (FORBEARANCE PRICE AND FLOOR PRICE OF SOLAR REC- FOR ALL STATES  
BASED ON AVERAGE BID TARIFF FOR THE PERIOD JAN 2019 – MARCH 2020)**

State	APPC (2018-19) as estimated based on SERC Tariff Orders for 2018-19 (Rs/kWh)	Bid Discovered Tariff for Solar Project (Rs/kWh) <sup>u</sup>	Difference b/w Bid Discovered Tariff and APPC (Rs/kWh)	Project Viability Tariff (Rs/kWh) based on Bid Discovered Tariff	Difference b/w Project Viability Tariff and APPC (Rs/kWh)
Andaman & Nicobar *	11.47	2.74	-8.73	1.92	-9.55
Andhra Pradesh	3.83	2.74	-1.09	1.92	-1.91
Arunachal Pradesh	2.62	2.74	0.12	1.92	-0.71
Assam	3.65	2.74	-0.91	1.92	-1.74
Bihar	4.12	2.74	-1.38	1.92	-2.20
Chandigarh	3.37	2.74	-0.63	1.92	-1.46
Chhattisgarh	2.9	2.74	-0.16	1.92	-0.99
Dadra & Nagar Haveli	3.64	2.74	-0.90	1.92	-1.72
Daman & Diu	3.17	2.74	-0.43	1.92	-1.25
Delhi	3.9	2.74	-1.16	1.92	-1.98
Goa	2.68	2.74	0.06	1.92	-0.76
Gujarat **	3.98	2.74	-1.24	1.92	-2.06
Haryana	3.72	2.74	-0.98	1.92	-1.80
Himachal Pradesh	2.29	2.74	0.45	1.92	-0.37
Jammu & Kashmir ^	2.88	2.74	-0.14	1.92	-0.96
Jharkhand ^^	3.99	2.74	-1.25	1.92	-2.07
Karnataka	3.5	2.74	-0.76	1.92	-1.58
Kerala \$	2.95	2.74	-0.21	1.92	-1.03
Lakshadweep \$\$	12.14	2.74	-9.40	1.92	-10.23
Madhya Pradesh	2.83	2.74	-0.09	1.92	-0.92
Maharashtra	3.69	2.74	-0.95	1.92	-1.77
Manipur	3.55	2.74	-0.81	1.92	-1.63
Meghalaya	3.33	2.74	-0.59	1.92	-1.42
Mizoram	3.32	2.74	-0.58	1.92	-1.41
Nagaland	3.86	2.74	-1.12	1.92	-1.94

Orissa	2.77	2.74	-0.03	1.92	-0.85
Puducherry	3.49	2.74	-0.75	1.92	-1.58
Punjab	4.01	2.74	-1.27	1.92	-2.09
Rajasthan	3.47	2.74	-0.73	1.92	-1.55
<b>Sikkim</b>	<b>2.28</b>	2.74	<b>0.46</b>	1.92	<b>-0.36</b>
Tamil Nadu #	3.73	2.74	-0.99	1.92	-1.81
Telangana	3.92	2.74	-1.18	1.92	-2.01
Tripura ##	2.8	2.74	-0.06	1.92	-0.88
Uttar Pradesh	3.73	2.74	-0.99	1.92	-1.81
Uttarakhand	3.3	2.74	-0.56	1.92	-1.38
West Bengal ###	3.55	2.74	-0.81	1.92	-1.64
<b>Forbearance Price (Solar)</b>				<b>0.46</b>	
<b>Floor Price (Solar)</b>				<b>-0.36</b>	

µ- The bid discovered tariff for solar projects auctioned during the period Jan 2019 – March 2020 has been in the range of Rs 2.48 – 3.25 per kWh. Weighted average of the bid discovered tariff for each auction during the period Jan 2019 – March 2020 has been calculated. Thereafter an average of the weighted average bid tariff of respective auctions as computed above has been considered.

#### APPC Data

\* Andaman & Nicobar Islands - Approved Power Purchase and Cost for 2018-19 from MYT Order for FY 2016-17 to FY 2018-19 dated 6th Apr 2016 considered

\*\* Gujarat - Approved Power Purchase and Cost for 2018-19 from MYT Order for Control Period FY 2016-17 to FY 2019-20 considered

^ Jammu & Kashmir - Approved Power Purchase and Cost for 2018-19 from MYT Order for FY 2016-17 to FY 2020-21 dated 7th Oct 2016 considered

^^ Jharkhand - Approved Power Purchase and Cost for 2018-19 for JBVNL from Order dated 28th Feb 2019 considered

Approved Power Purchase and Cost for 2017-18 for JUSCO & TSL from respective Orders considered

\$ Kerala - Tariff Order issued in 2017-18 considered

\$\$ Lakshadweep - Approved Power Purchase and Cost for 2018-19 from MYT Order for FY 2016-17 to FY 2018-19 dated 31st March 2016 considered

# Tamil Nadu - Approved Power Purchase and Cost for 2018-19 from Order dated 11th August 2017 considered

## Tripura - Tariff Order issued in 2014-15 considered

### West Bengal - Tariff Order issued for WBSEDCL and CESC for FY2017-18 considered. For DVC and DPL, latest available Tariff Orders considered.