25th March 2022

To,
Shri Sanoj Kumar Jha
Secretary
Central Electricity Regulatory Commission
3rd & 4th Floor, Chanderlok Building,
36, Janpath, New Delhi-110001

Subject: - WIPPA Comments/Suggestions on Draft CERC (Terms and Conditions for Renewable Energy Certificates for Renewable Energy Generation) Regulations, 2022.

Respected Sir,

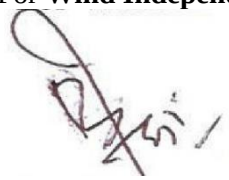
We wish to introduce Wind Independent Power Producers Association (WIPPA), a national level registered body having association of more than 30 Independent Power Producers (IPPs) of capacity around 12,000 MW with asset base of more than Rs. 60,000 Crores and a healthy pipeline in wind energy sector in India through policy advocacy and presenting independent views / suggestions / comments / analysis to various stakeholders at various forums to provide fillip to the sector.

This is with reference to the Draft Central Electricity Regulatory Commission (CERC) Terms and Conditions for Renewable Energy Certificates for Renewable Energy Generation, Regulations, 2022 dated 15th February 2022 published on website of Hon'ble Central Electricity Regulatory Commission for inviting comments.

Our observation on the Draft Regulation is mentioned in **Annexure I** enclosed herewith.

Thanking you

Yours's Sincerely
For **Wind Independent Power Producers Association**



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Enclosed: - **Annexure II - Holistic REC multiplier mechanism**

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ANNEXURE I - WIPPA Comments on CERC Draft REC Regulation 2022

Sr. No.	Existing Clause	Comments/Suggestion
1.	*Clause 2 (O) – "**'renewable energy sources'** means sources of renewable energy such as hydro, wind, solar including its integration with combined cycle, biomass, biofuel cogeneration, urban or municipal waste and such other sources as recognized or approved by the Central Government;"*	• *Request to include RE Hybrid Plants (Wind & Solar), storage (BESS and pumped hydro) for their role in grid stability for RE sources.* • *Request clarification that hydro would include all types (small, large, RoR) under this regulation*

2.	*Clause 4.2 (a) – "the tariff of such renewable energy generating station has not been either determined or adopted under section 62 or section 63 of the Act, or the electricity generated is not sold either through an electricity trader or in the Power Exchange, for RPO compliance by an obligated entity;"*	• *There could be several instances where energy from projects may not be for RPO purpose such as*
		  ○ *Competitive procurement (under sec 63) for short term or medium-term duration which is not for utility's RPO purpose*
		  ○ *Excess energy generated from the projects like RTC & Peak power projects*
		• *Request to include exemption in this clause for energy generated under such circumstances to ensure they receive RECs*

3.	*Clause 4.2 (b) - "such renewable energy generating station has not availed any (i) waiver or concessional transmission charges or (ii) waiver or concessional wheeling charges or (iii) facility of banking of electricity".*	• *The developer should be provided a choice between availing waivers and generating RECs for the project. Any waivers provided by states as part of promotional industrial policy should not be counted against the developer for generation of RECs. Provision of banking facility should not be counted against generating RECs due to the nature of RE generation. As part of the multiplier framework, technologies which are more stable can be provided higher RECs to compensate for their role in grid operations* • *Request to include an option with the developer to select between waiver and REC* • *For technologies with multiplier RECs, the generating stations should be eligible to receive the additional RECs even after availing the waiver. For instance, a hydro project should be eligible to receive 0.5 RECs even if that generating station is receiving waivers. The financial value of the waiver should be the same across technologies.* • *Request to include a clarification that technologies, even after availing waivers can still receive the multiplier portion of RECs* • *Alternatively, the generating stations should be eligible for RECs irrespective of the status of waivers*

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4	*Clause 4.3 - "Captive generating stations based on renewable energy sources and meeting the conditions as specified under clause (2) of this Regulation in respect of renewable energy generating stations shall be eligible for issuance of Certificates: Provided that the Certificates issued to such captive generating stations to the extent of self-consumption, shall not be eligible for sale."*	• *Wherein a RE Generator is allowed to obtain credits of RECs against their captive consumption but not being allowed to sell off the credits of RECs, this will restrict the generators from recovering the expenses behind Accreditation/Registration/Issuance, etc. for obtaining these RECs.* • *Request to consider sale of RECs from captive units.*
5	*Clause 10.2 - "Application for issuance of Certificates shall be made to the Central Agency within six months from the corresponding generation by the eligible entity: Provided that no Certificate shall be issued for applications made beyond the period of six months from corresponding generation.*	• *A provision shall be made to issue certificates beyond six months with an additional charge along with reason for delay.*
6	*Clause 11 – "Exchange and Redemption of Certificates"*	• *Direct sale by entities and purchase by other entities for purpose other than redemption will help in creating liquidity for RECs, which can become a precursor for the domestic carbon market. The redemption of certificates can be managed through a central registry* • *Request to amend the clause to allow sale of RECs without any intermediaries and purchase of RECs without redemption*
7	*Clause 11.4 (a) –* "The *eligible entities shall inform, in advance, to the Central Agency about the number of Certificates intended to be sold through electricity traders;*	• *Periodicity may be stipulated by the Central Agency in the Detailed Procedure. The details to be furnished shall be limited to volumes and type of buyer & seller.* • *Trade price may be reported particularly in case of direct transactions between RE seller and obligated/voluntary entities or during retirement/exhaustion.*
8	*Clause 12.2 – "The Certificate Multiplier for the period of three years from the date of effect of these regulations or such other period as may be decided by the Commission, as determined in Appendix-1.*	• *The period of multiplier determination for fast changing technologies such as BESS can be shorter to ensure time-bound investment and to minimise the arbitrage between decrease in prices and higher no. of RECs to be determined* • *Request to include clause for reduction in multiplier determination period for fast changing technologies* • *An alternative and detailed multiplier framework has been provided as an annexure. The alternative multiplier framework considers the cost of technologies (tariff), environmental attribute, end of life cost, system stability and the maturity of the corresponding technology* • *Request to consider the additional factors while determining the multiplier factor. A sample has been provided as annexure*

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9	*Solar and wind to be separate in multiplier framework*	• *As detailed in the alternative mechanism, there is a difference in the value of solar and wind and hence the multiplier needs to consider the same and differentiate them on the same basis. Hence all technologies (solar and wind included) should be treated separately for the purpose of multipliers* • *Request to consider solar and wind separately for RECs and multipliers*
10	*Vintage to be considered in the multiplier framework*	• *Currently, the multiplier mechanism only considers those generating stations that start operations post the finalisation of these regulations. However, there have been several investments made in the past which would be adversely affected due to the change in the floor price of REC.* • *Request to consider a vintage multiplier for old projects commensurate to the REC floor price during the time of implementation for a duration of 15 years.*

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Annexure II – Holistic REC multiplier mechanism

Background

The proposed REC multiplier of CERC accounts for only the levelised cost of generation of selected technologies. In addition, to this parameter there are several other factors that would have important bearing on the harnessing of RE sources, which needs to be considered while devising REC Multiplier framework to fulfil the objectives of the MoP discussion paper as well as objective set out under draft Regulations for initiating re-design of REC framework.

To ensure holistic redesign, certain guiding principles should be set out while designing the multiplier framework for REC, such that it can fulfil the International/National commitments of India towards greening the grid and at the same time, in the near future the redesigned framework should encourage development of new RE technologies using REC framework.

Guiding principles for designing the REC multiplier

1. **Promote new RE technologies**: REC Multiplier framework shall be designed to promote new RE technologies in India and achieve RE targets set by GoI.
2. **Market development**: Mechanism should encourage RE developers for investment in RE technologies and plants, which are still at nascent stage of development as well as hence exploit potential of existing mature technologies through market mechanisms.
3. **Flexibility in REC multiplier mechanism**: Multiplier framework shall be flexible to enable incorporation of new RE technologies/resources without significant implications for already operational technologies and RE projects.
4. **Simplicity and transparency in framework**: Framework should be simple and easy to understand for RE Generators as well as Obligated Entities and data used for devising Multiplier should be readily available in public domain in transparent manner. Simplicity in data management and reporting is key for ease of operations.
5. **Dynamic operation**: Multiplier framework shall be dynamic considering long-term market trends and advancement in technology maturity.
6. **Environmental attribute**: RE technologies needs to be promoted considering environmental factors and its importance in coming future for sustainability.

Based on the above guiding principles, various factors and parameters can be selected which shall be considered for formulation of REC multiplier to make it more agile towards the country's long-term commitments.

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Parameters to be considered for designing multiplier and its importance

A. LCoE differential over APPC (Dt): [measure in terms of INR/kWh]

In the existing REC framework, the RE generator under REC mechanism can sell the power to the DISCOMs at APPC rate and recover the rest of the generation cost by selling the REC as the environmental attributes. However, due to technological advancement and policy thrust, the cost of generation from solar and wind has reached below APPC but only in some of the states such as Tamil Nadu and Karnataka.

Therefore, for determining the multiplier for a technology, the differential of levelised tariff over APPC will be important instead of taking only the levelised tariff as proposed by CERC in the Draft REC Regulation 2022. **A higher weightage to the multiplier is given to the RE technology whose levelised tariff is very high in comparison with the APPC.**

Source data references:

RE Technologies	LCOE (Rs./kWh)	APPC (Rs./kWh)	Difference LCOE vs APPC	Reference
Solar	2.74	3.85	-1.11	https://cercind.gov.in/2020/orders/5-SM-2020.pdf
Wind	2.85	3.85	-1.00	https://cercind.gov.in/2020/orders/5-SM-2020.pdf
Biomass	8.29	3.85	4.44	https://cercind.gov.in/2021/orders/2-SM-2021.pdf
SHP	5.68	3.85	1.83	https://cercind.gov.in/2021/orders/2-SM-2021.pdf
Pumped Hydro	3.06	3.85	-0.79	https://iea.blob.core.windows.net/assets/ae17da3d-e8a5-4163-a3ec-2e6fb0b5677d/Projected-Costs-of-Generating-Electricity-2020.pdf
Cogen	6.54	3.85	2.69	https://cercind.gov.in/2021/orders/2-SM-2021.pdf
Large Hydro	3.70	3.85	-0.15	https://iea.blob.core.windows.net/assets/ae17da3d-e8a5-4163-a3ec-2e6fb0b5677d/Projected-Costs-of-Generating-Electricity-2020.pdf
Offshore Wind	8.52	3.85	4.67	https://mnre.gov.in/img/documents/uploads/c7eec8372cf144d2b77e765047224326.pdf
MSW	7.22	3.85	3.37	
BESS(4 hous)	7.73	3.85	3.88	https://iea.blob.core.windows.net/assets/ae17da3d-e8a5-4163-a3ec-2e6fb0b5677d/Projected-Costs-of-Generating-Electricity-2020.pdf
RTPV	4.13	3.85	0.28	https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2021/Jun/IRENA_Power_Generation_Costs_2020.pdf
Hybrid RE	2.80	3.85	-1.06	
Repowering Wind	2.85	3.85	-1.00	

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B. Life Cycle Emission (Ct): [measure in terms of tCO2/kWh]

The power sector in India accounts for 49% of total CO2 emissions compared with global average of 41%. Considering Life Cycle Emission factor (Ct) in Multiplier design will ultimately show positive impact of RE technologies with lower life cycle emission factor on overall power sector and add benefit towards India's international commitment of reducing 1 billion tonnes cumulative emissions by 2030.

Source data references:

RE Technologies	CO2 Emission (g CO2e /kWh)	Remark	Reference
Solar	48	IPCC AR5 Climate Change 2014: Mitigation of Climate Change Report IPCC 2014 Report, Annexure 3(page 7)	Full Report: https://www.ipcc.ch/report/ar5/wg3/ Annexure 3: https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_annex-iii.pdf#page=7
Wind	11	IPCC 2014 Report, Annexure 3(page 7)	https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_annex-iii.pdf#page=7
Biomass	230	IPCC 2014 Report, Annexure 3(page 7)	https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_annex-iii.pdf#page=7
SHP	24	Assumed similar to Large Hydro	
Pumped Hydro	145	UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE_Life Cycle Assessment of Electricity Generation Options Report USECE Report 2021; Page 45	https://unece.org/sites/default/files/2021-10/LCA-2.pdf
Cogen	740	IPCC 2014 Report, Annexure 3(page 7)	https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_annex-iii.pdf#page=7
Large Hydro	24	IPCC 2014 Report, Annexure 3(page 7)	https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_annex-iii.pdf#page=7
Offshore Wind	12	IPCC 2014 Report, Annexure 3(page 7)	https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_annex-iii.pdf#page=7
MSW	230	Assumed as Biomass(it avoids Methane)	
BESS	175	USECE Report 2021; page 45	https://unece.org/sites/default/files/2021-10/LCA-2.pdf
RTPV	41	IPCC 2014 Report, Annexure 3(page 7)	https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_annex-iii.pdf#page=7
Hybrid RE	30	Assumed Solar and Wind Hybrid	
Repowering Wind	11	Assuemd similar to Wind	

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C. End life Disposal Cost (Et): [measure in terms of INR /MWh]

Sustainability is one of the key aspects for green planet and end life disposal process and cost associated with it of RE plants is one of the crucial parameters. Hence, higher weightage is given to RE technologies having low end life disposal cost as it has lower impact on environment. It will promote RE technologies which are easily disposable.

Source data references:

RE Generators	Endlife disposal cost in Rs. /MWh	Reference
Solar	32.55	https://www.iea.org/reports/projected-costs-of-generating-electricity-2020
Wind	30.46	https://www.iea.org/reports/projected-costs-of-generating-electricity-2021
Biomass	7.72	https://www.iea.org/reports/projected-costs-of-generating-electricity-2022
SHP	0.93	https://www.iea.org/reports/projected-costs-of-generating-electricity-2023
Pumped Hydro	1.52	https://www.iea.org/reports/projected-costs-of-generating-electricity-2024
Cogen	9.75	https://www.iea.org/reports/projected-costs-of-generating-electricity-2025
Large Hydro	0.83	https://www.iea.org/reports/projected-costs-of-generating-electricity-2026
Offshore Wind	29.71	https://www.iea.org/reports/projected-costs-of-generating-electricity-2027
MSW	7.72	
BESS	93.51	https://www.iea.org/reports/projected-costs-of-generating-electricity-2029
RTPV	61.94	https://www.iea.org/reports/projected-costs-of-generating-electricity-2030
Hybrid RE	31.51	
Repowering Wind	30.56	

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D. System Benefit (St): [combined measure factor in terms of dispatchability, seasonality, capacity credit factor, plant load factor, load centre]

Grid balancing and security with huge penetration of RE in electricity grid is one of the most important parameters considering RE Targets set by Government of India by 2030. RE projects can be developed near load centres which will reduce overall impact of grid balancing and losses associated. A higher weightage for multiplier should be given to RE plants which are installed near the load centres based on PLF/ CUF, dispatchability and load centre based RE technologies. This could help in integrating the storage technologies such as BESS and hybrid RE into the REC framework, as emphasised in the MoP discussion Paper.

Source data references:

RE Generator	CUF/PLF	Load center based resource	Dispatchability	Final Value (St)	Remarks	Reference
Solar	19%	30%	20%	22.25		Determination of levellised generic tariff for FY 2016-17 dated 29 april 2016; page 26 https://cercind.gov.in/2016/orders/SORE.pdf
Wind	30%	20%	20%	22.5	Taken as Wind zone - 4 (301 - 400 W/m2)	Page 26: CERC Generic tariff order 2016-17
Biomass	80%	40%	60%	60		Page 26: CERC Generic tariff order 2016-17
SHP	30%	20%	40%	32.5	CUF for orthers	Page 26: CERC Generic tariff order 2016-17
Pumped Hydro*	75%	20%	100%	73.75	Cycle effciency	
Cogen	60%	60%	60%	60	Considering 150 days (crushing) + 60 days (off-season) = 210 days	Page 27: CERC Generic tariff order 2016-17
Large Hydro	55%	40%	80%	63.75	CEA Report	
Offshore Wind	45%	20%	40%	36.25	MNRE Article	https://mnre.gov.in/img/documents/uploads/2e423892727a456e93a684f38d8622f7.pdf
MSW	80%	60%	60%	65	CERC approved order	Page 27: CERC Generic tariff order 2016-17
BESS*	88%	100%	100%	97	Cycle effciency	https://cea.nic.in/old/reports/others/planning/irp/Optimal_mix_report_2029-30_FINAL.pdf
RTPV	17%	60%	0%	19.25	Similar to Solar	
Hybrid RE	40%	30%	20%	27.5	MNRE Concept Note;Page 4	https://mnre.gov.in/img/documents/uploads/file_f-1605265655087.PDF
Repowering Wind	30%	20%	20%	22.5	Assumed similar to Wind	
* Cycle Efficiency is considered						

E. Technology Maturity (Tt):

In past decade, RE technologies such as Solar and Wind developed in structured manner in India in backdrop of conducive policy and effective regulatory regime. Similar push is necessary for promotion of RE technologies that have huge potential but still at nascent stage of development in India such as offshore wind, municipal solid waste, solar thermal, green hydrogen, hybrid renewables, repowering of wind etc. Technology maturity is defined based on local manufacturing capacity/capability, exploitable potential, availability of supply chain for the technology, policy support requirements, RE target of the country, and proven technologies. A higher weightage for multiplier should be given to technologies which are either in the R&D stage or nascent stage such that these technologies can be commercialised in the later years.

Considering above factors a higher multiplier would be given to a technology, which has high system benefit, low end life disposal cost, low emission factor, not yet matured completely and high generation cost.

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Determining REC Multiplier

Step 1 – Input parameters for the selected technologies

Particulars	LCOE (Rs./kWh)	APPC (Rs./kWh)	CO2 Emission (gCO2/kWh)	End life disposal Cost (Rs./MWh)	PLF/CUF	Despatch-ability (score)	Load Centre based resource (score)	Technology Maturity#
Solar	2.74	3.85	48	32.55	19%	20	30	FC but pot. still to be harnessed
Wind	2.85	3.85	11	30.46	30%	20	20	FC but pot. still to be harnessed
Biomass	8.29	3.85	230	7.72	80%	60	40	FC but pot. still to be harnessed
SHP	5.68	3.85	24	0.93	30%	40	20	LC in India
Pumped Hydro*	3.06	3.85	145	1.52	75%	100	20	Site specific potential exist
Cogen	6.54	3.85	740	9.75	60%	60	60	LC in India
Large Hydro	3.70	3.85	24	0.83	55%	80	40	FC & no support req.
Offshore Wind	8.52	3.85	12	29.71	45%	40	20	NS but pot. exists
MSW	7.22	3.85	230	7.72	80%	60	60	NS but pot. exists
BESS*	7.73	3.85	175	93.51	88%	100	100	R&D stage
RTPV	4.13	3.85	41	61.94	17%	0	60	LC in India
Hybrid RE	2.80	3.85	30	31.51	40%	20	30	Site specific Pot. exist
Repowering Wind	2.85	3.85	11	30.56	30%	20	20	NS but pot. Exists

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Step 2 – Define the rating scale for the various parameters

Rating	Difference LCoE vs APPC (Dt)		Life Cycle emission (g CO2/kWh) (Ct)		End life disposal cost (Et)		System Benefit attribute (St)		Technology Maturity (Tt)	
	Scale	Score	Scale	Score	Scale	Score	Scale	Score	Scale	Score
a	Dt<=-1	0	0<Ct<=20 (Nil)	50	Et<=1 (Nil)	50	St>90 (Very High)	100	Fully commercialised & no promotional support required	0
b	-1<Dt<=-0.5	20	20<Ct<=40 (Very Low)	40	1<Et<=10 (Very Low)	40	80<St<=90 (High)	80	Fully commercialised but potential still to be harnessed	20
c	-0.5<Dt<=0	40	40<Ct <=100 (Low)	30	10<Et<=30 (Low)	30	60<St<=80 (Medium)	60	Limited commercialised in India	40
d	0<Dt<=1	60	100< Ct <=200 (Medium)	20	30<Et<=50 (Medium)	20	40<St<=60 (Low)	40	Site specific potential exist	60
e	1<Dt<=2	80	200<Ct <=500 (High)	10	50<Et<=70 (High)	10	20<St<=40 (Very Low)	20	Nascent stage but potential exists	80
f	Lt>2	100	Ct>500 (Very high)	0	Et>70 (Very high)	0	St<=20 (Nil)	0	R&D stage	100

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Step 3 - Based on the above rating scale, for the selected technologies, the following scores are obtained for the selected technologies

Technology	Difference LCoE vs APPC		Life Cycle emission (g CO2/kWh)		End-life disposal cost		System Benefit attribute		Technology Maturity	
	Value	Score	Value	Score	Value	Score	Value	Score	Rating	Score
Solar	-1.11	0	Low	30	Medium	20	22.25	20	b	20
Wind	-1.00	0	Nil	50	Medium	20	22.50	20	b	20
Biomass	4.44	100	High	10	Very Low	40	60.00	40	b	20
SHP	1.83	80	Very Low	40	Nil	50	32.50	20	c	40
Pumped Hydro	-0.79	20	Medium	20	Very Low	40	73.75	80	d	60
Cogen	2.69	100	Very high	0	Very Low	40	60.00	40	c	40
Large Hydro	-0.15	40	Very Low	40	Nil	50	63.75	60	a	0
Offshore Wind	4.67	100	Nil	50	Low	30	36.25	20	e	80
MSW	3.37	100	High	10	Very Low	40	65.00	60	e	80
BESS (4 hours)	3.88	100	Medium	20	Very high	0	97.00	100	f	100
RTPV	0.28	60	Low	30	High	10	19.25	0	c	40
Hybrid RE	-1.06	0	Very Low	40	Medium	20	27.50	20	d	60
Repowering Wind	-1.00	0	Nil	50	Medium	20	22.50	20	e	80

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Step 4 – Determine the REC multiplier based on weightage for each parameter and the scores

Technology	Difference LCoE vs APPC	Life Cycle emission (g co2/kWh)	Sustainability attribute	System Benefit	Technology Maturity	SUM	REC Multiplier (Normalised based on Minimum tech. score)
Weightage ---- >>	**35%**	**10%**	**10%**	**20%**	**25%**		
Solar	0	30	20	20	20	14.00	1.0
Wind	0	50	20	20	20	18.75	1.3
Biomass	100	10	40	40	20	46.25	3.3
SHP	80	40	50	20	40	46.25	3.3
Pumped Hydro	20	20	40	80	60	47.5	3.4
Cogen	100	0	40	40	40	50	3.6
Large Hydro	40	40	50	60	0	36.25	2.6
Offshore Wind	100	50	30	20	80	60	4.3
MSW	100	10	40	60	80	66.25	4.7
BESS (4 hours)	100	20	0	100	100	77.5	5.5
RTPV	60	30	10	0	40	30	2.1
Hybrid RE	0	40	20	20	60	27.5	2.0
Repowering Wind	0	50	20	20	80	33.75	2.4
					Min Tech Score	**14.00**	

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Conclusion

REC Multipliers for following technologies may be stipulated as part of CERC REC Regulations 2022, for control period of 3 years as under:

RE Technology	REC Multiplier
Solar	1.0
Wind	1.3
Biomass	3.3
SHP	3.3
Pumped Hydro	3.4
Cogen	3.6
Large Hydro	2.6
Offshore Wind	4.3
MSW	4.7
BESS (4 hours) *	5.5
RTPV	2.1
Hybrid RE	2.0
Repowering Wind	2.4

*This could be for a shorter duration (1.5 years)

REC Multiplier framework shall be developed considering factors such as RE Targets by 2030, promotion of new RE technologies, potential available for RE, investment required, maturity of technologies and environmental impact of technology.

Impact assessment shall be done while reviewing the current multipliers after 3 years to also ascertain the overall supply of RECs vs RPO. In the above multiplier framework, higher multiplier is derived for less mature technologies but high system benefit and lower environmental impact in terms of CO2 emission and end life disposal cost.