Before the Chhattisgarh State Electricity Regulatory Commission

In the matter of:

Draft Chhattisgarh State Electricity Regulatory Commission (Renewable Purchase Obligation, its compliance and Renewable Energy Certificate framework Implementation) Regulations, 2021

Submission by Prayas (Energy Group), Pune *8th April, 2021*

The Chhattisgarh Electricity Regulatory Commission (CSERC) issued draft RPO-REC regulations on 26th February, 2021 along with an Explanatory Memorandum and invited public comments on the same.

Firstly, we welcome the publication of these draft RPO regulations which remain the bedrock of RE growth in the country. The important points in our submission are

a. RPO should be levied on co-generation from fossil fuel plants
b. Total consumption for DISCOMs should be redefined as the total procurement of electricity from all sources instead of total sales alone.
c. CSERC to specify targets of ~25-26% by 2025-26 rather than just rely on GoI to give guidance on this issue.
d. CSERC should specify one composite RPO and merge solar/non-solar RPOs.
e. Considering all the economic, social and environmental risks of large hydro-power, large hydropower should not be considered as a renewable energy resource for the purpose of the RPO and, hence, should not be made part of the non-solar RPO.
f. CSERC should notify a much lower price for power (~ Rs 2.5/kWh) under the REC route.

Prayas (Energy Group)'s detailed comments and suggestions are listed below:

1. RPO on cogeneration from fossil fuel plants

One of the conditions mentioned in regulation 3 is,

Obligated entities consuming power in any year to the extent of total RPO specified under Regulation 4 from fossil fuel based co-generation power plant shall be exempted from the RPO. In case of consumption of obligated entities from such cogeneration power plant is less than the total RPO specified under Regulation 4.3, such obligated entities shall be required to fulfil the RPO to the extent of shortfall.

The CSERC is proposing to continue completely waiving the RPO requirement for consumption based from fossil fuel based co-generation power plants. The RPO regulations deriving out of section 86(1)(e) of the EA, 2003 are primarily for the promotion of renewable energy. Thus we do not believe that this is a step which will encourage the growth of renewable energy in the state. Further various recent orders from MERC[1], JSERC[2] and WBERC[3] have also concluded that cogeneration from fossil fuel based plants

[1] https://mercomindia.com/merc-fossil-fuel-cogeneration-projects/; https://mercomindia.com/maharashtra-commission-clarifies-rpo/
[2] https://mercomindia.com/fossil-fuel-renewable-purchase-obligation/
[3] https://mercomindia.com/power-fossil-fuel-rpo-compliance/

cannot and should not be counted towards RPO compliance and that obligated entities consuming power from such plants do have to meet the RPO targets.

CSERC should amend this existing provision such that, '*Obligated entities consuming power in any year to the extent of total RPO specified under Regulation 4 from fossil fuel based co-generation power plant shall not be exempted from the RPO'*.

2. Calculation of total consumption for estimating Renewable Purchase Obligation (RPO)

Regulation 4 notes that computation of total consumption for DISCOMs would be the sum of LV, HV plus EHV sales. This means that the RPO percentage would apply only to total sales and not to total consumption of the DISCOMs, i.e. their procurement before transmission and distribution losses (~22%).

Further in definitions, "*Quantum of purchase*" *means the share of electricity from renewable sources required to be purchased by obligated entity(s), expressed on a percentage of its total consumption (for distribution licensee, consumption means energy input at 33 KV or below level plus EHV sales), as specified in these regulations. The quantum would be the sum of all direct purchase from generating stations based on renewable sources;*

Here consumption is noted to mean – energy input at 33 kV or below which is not exactly the same as LV sales but rightly includes distribution losses. Thus, CSERC should may amend this definition and regulation such that, computation of total consumption for DISCOMs would mean the total procurement of electricity from all sources. Similarly, for OA and CPP consumers, the RPO percentage should apply to total procurement (incl. any losses if any) and just to final consumption after losses.

3. RPO targets

While the CSERC has specified solar and non-solar targets for 2021-22, it has noted that for subsequent years, the targets will be *'As specified by Central Government from time to time'*. The SERC is mandated to specify RPO targets as per section 86(1)(e) and hence it would be appropriate for CSERC to actually specify targets upto 2025-26 rather than just rely on/wait for the GoI to give guidance on this issue. In any case, the CEA optimal mix report for 2030 suggests a RE share of ~ 32%, while the GoI has also committed to a 450 GW RE target by 2030.
Thus it may be appropriate for CSERC to consider an intermediate target of 25-26% by 2025-26.

A proviso in regulation 4.3 notes that, *'Provided further that the distribution licensees shall prepare a plan for procurement of power from RE sources under its long term power procurement plan so as to comply with minimum RPO target as stipulated above'*.
This is a welcome stipulation from the CSERC. CSERC should further add to this proviso such that the draft plan should include a rigorous assessment of demand and supply options and be put out for public comments and consultation prior to submitting it to the Commission.

Regulation 4.5 notes that, *'The distribution licensee(s) shall as far as possible shall source the proposed quantum of electricity from renewable sources within their respective areas of supply.'* While the intention of this suggestion may be to develop projects within the state, it may conflict with the purpose of least cost RE procurement. Should the DISCOM insist on procuring from projects developed only in their state or rather look out for the cheapest RE power available irrespective of location? This is also very restrictive for deemed distribution licensees (railways, SEZ) whose area of supply is small.

Thus, CSERC may drop this regulation 4.5 to avoid confusion.

Regulation 4.6 notes that, *'Every "Obligated Entity" may meet its RPO target by way of its own generation or procurement of power from RE developer or by way of power purchase from other licensee or by way of purchase of Renewable Energy Certificate (REC) or by way of combination of any of the above options.'* To include the possibility of green procurement from exchanges, this could be modified to *'Every "Obligated Entity" may meet its RPO target by way of its own generation or procurement of power from RE developer or by way of power purchase from other licensee or by way of purchase of Renewable Energy Certificate (REC) or through renewable energy procurement through exchanges (such as G-TAM) or by way of combination of any of the above options.'*

Regulation 4.7 notes that, *'Infirm power procured from renewable energy sources shall not be considered for meeting the RPO'*.
The regulations do not define 'infirm power'. Further this regulation is unclear and should be adequately clarified in the SoR or should be dropped from the final regulations.

4. Merging Solar and Non-Solar RPOs

A separate solar RPO was mandated at a time when solar prices were so high that no entity would have purchased it without a mandatory separate obligation. Now the situation is quite the reverse with solar being the cheapest generation source. Ideally DISCOMs should have the full freedom to procure a mix of RE which is best suited for their load profile.

As per the MoM taken by the Hon'ble MOSP (IC) for Power and MNRE regarding proposed amendments in the EA, 2003 dated 19th March, 2021, several states have made the demand for merging the solar and non-solar RPO and making them fungible. In fact, Chhattisgarh has also made the same demand.
Thus, CSERC may consider the pro-active and progressive step of actually merging the solar and non-solar RPO targets into a composite single RPO.

5. DISCOM RPO compliance

Regulation 7.4 notes that, *'If the distribution licensee fails to fulfil the minimum quantum of purchase from renewable energy sources i.e. RPO, it shall be liable for action as per clause 9 of these Regulations. Provided that, while monitoring the RPO compliance of the distribution licensees, the Commission shall consider its impact on the retail tariff of the consumers of the State.'*
The NTP (section 6.4) notes that the SERC should consider the impact on retail tariff due to RPO while fixing them. This is essentially from a time when costs of RE were higher than those of conventional power. The present situation where in new solar and wind projects have fixed and inflation proof 25 year tariffs of Rs 2.5/kWh, which was much lower than the APPC in Chhattisgarh should allay any fears of impacts on retail tariffs. A similar view was espoused by the MERC while fixing its RPO targets in 2020. To quote from its Explanatory Memorandum,

> *"As far as impact on tariff on account of increased RPO target is concerned, the Commission notes that incremental RE energy being procured by Distribution Licensees through competitive bidding is at the rate comparable/marginally lower to/than the conventional power purchase rate. Hence, in the opinion of the Commission, if incremental energy consumption of Distribution Licensees is sourced from RE projects through competitive bidding at rate lower than Average Power Purchase Cost, then there would not be substantial impact on Tariff of end consumers. In fact, Distribution Licensee may plan procurement of RE as a measure to reduce average power purchase cost. Hence,*

with RE achieving grid parity, financial implication on account of higher procurement of RE is no longer an issue of concern, barring requirement of arranging balancing power and underutilisation of existing conventional capacities which might remain underutilised if enough demand is not there."

Once the RPO targets are decided by the CSERC, the question of impact on retail tariff should not arise since this has been taken into account by the Commission while fixing the RPO targets itself. Hence the proviso referring to this aspect should be deleted to avoid confusion in the future with regard to compliance.

6. No need for Hydro Purchase Obligation (HPO)

CSERC has introduced a new HPO in line with the GoI guidelines in this regard.

a. Cost over-runs and long gestation

Large hydropower is a well-established conventional generation technology, being in existence for over a century. While the social and environmental impacts of hydropower are already well known, it is increasingly not an economic resource as it is made out to be. In response to a Rajya Sabha question on stalled hydro projects, the Ministry of Power stated that: *'As on 01.07.2017, there are 14 under construction Hydro Power Projects (above 25 MW), totalling 5,055 MW, which are stalled due to various reasons. The cost overrun calculated by CEA due to these stalled projects is Rs. 25,593.78 cr.'*[4]

Thus, there is on average a Rs 5 Crore/MW cost overrun for these projects, which is in stark comparison to the total cost of new solar projects (Rs. 3.5-4 Crore/MW) and new wind projects (Rs. 6-7 Crore/MW). Further, the gestation period for hydro projects is significantly long, coupled with uncertainty due to various factors. The CEA quarterly review dated December 2019[5] notes the time delay for on-going projects.

The average time overrun for the 35 listed projects is a staggering 7.7 years (Prayas analysis). Finally, a suite of emerging technologies can now provide a variety of the flexibility characteristics, which made hydropower a valuable resource for balancing in the past. Further, these are increasingly becoming available at much lower prices and with significantly lower gestation periods. Thus, the entire value proposition for hydropower needs to be looked at afresh.

b. Multiple and increasing hazards of hydropower.

In response to the recent massive flash flood in Chamoli district which caused extensive damage to life and property, ICIMOD released an article[6], '*Understanding the Chamoli flood: Cause, process, impacts, and context of rapid infrastructure development*'. We reproduce their conclusion in full here,

Conclusion and recommendations: The rockslide-triggered flash flood in Chamoli is one of many possible hazards in the HKH mountains. Mountain hazards like glacial lake outburst floods, torrential floods, debris flows, landslides, and avalanches, especially caused by the coupling of avalanches, glacier movement, snow melt, and extreme precipitation are common in this region. While this event cannot be directly attributed to

[4] https://powermin.nic.in/sites/default/files/uploads/RS24072017_Eng.pdf

[5] http://www.cea.nic.in/reports/others/hydro/hpm/QUARTERLY%20REVIEW%20NO.%2099.pdf

[6] https://www.icimod.org/article/understanding-the-chamoli-flood-cause-process-impacts-and-context-of-rapid-infrastructure-development/

climate change, it is well known that climate change can lead to increase in the frequency and severity of mountain hazards (Krishnan et al. 2019; Vaidya et al. 2019; Hock et al. 2019). It is necessary to carry out quantitative studies on the status of mountains, understand their formation mechanism, and monitor dynamic processes in order to have advance knowledge of impending hazard events and improve preparedness. These should be done through ground based research, analysis of geospatial information, and modelling. All these need sustained investments from national agencies including establishment of environmental monitoring, analysis and information systems. Collaborative efforts between institutions within the region and with international institutions can help in building robust systems and capacity within the region. The HKH is a multi-hazard environment. Often these hazards are of a cascading nature with multiple hazards interconnected with a primary hazard trigger and a chain of secondary and tertiary hazards. Human interference in the mountain environment is rapidly increasing. Mountain settlements are increasing in size and land use patterns are changing. Infrastructure such as roads and hydropower projects are rapidly penetrating mountain landscapes. The interplay between natural hazards with human settlements and infrastructure is an important aspect, which can significantly escalate the impacts of event like the Chamoli flood (emphasis added). Disaster risk management therefore needs to incorporate a multi-hazard risk assessment approach. In the aftermath of recent disaster events, the role of infrastructure, especially hydropower and its interplay with natural hazards has emerged as a topic of strong debate. These events have raised the question: Is hydropower a boon or bane? With the need to green the energy sector and the challenges with solar and wind energy, hydropower seemed to be a viable option. However, hydropower development faces multiple challenges. Apart from financial and technical challenges, it faces strong environmental and social challenges. On the environmental front, hydropower development impacts environmental flows, water quality, and the health of aquatic and terrestrial ecosystems. At the same time the physical environment poses many challenges to hydropower development and sustainability. Climate change related flow variations, extreme events, erosion and sedimentation, and GLOF/LDOFs, are some of the environmental challenges to hydropower (emphasis added). A comprehensive sustainability framework considering financial, environmental and social sustainability can help make hydropower a viable energy option. Vaidya et al. (2021) argue that for the sustainability of hydropower in the HKH region, environmental threats need to be minimized by mitigating risk through both structural (e.g. erosion protection work) and non-structural measures (e.g. operating rules). Besides this, mitigating the risk of climate change and flow variability is of paramount importance for future energy security for which a better understanding of future climate projections and water availability is needed. That understanding can be reflected in the design and location consideration of future hydropower projects in the region'.

c. No alternative routes for procuring hydropower.

Unlike solar and non-solar RE which have alternative routes for RPO compliance procurement such as REC and G-TAM, there are no routes for HPO compliance apart from actually investing in new hydro power capacity addition. Considering the slow pace of hydro power development for obvious reasons of high costs and long gestation and its ever-increasing socio-environmental risk profile, availability of new hydro power is highly doubtful.

Considering all the aspects detailed above, large hydropower should not be considered as a renewable energy resource for the purpose of the RPO and, hence, should not be made part of the non-solar RPO. Large hydropower may be counted towards renewable energy in appropriate international comparisons since this is the practice in most countries. The proposed amendment should be redrafted so that there is no new separate HPO or a separate hydro obligation as part of the existing non-solar RPO.

7. Renewable Energy Pricing

a. Regulation 11.1 proviso notes that, *'Provided that such a renewable energy generating plant having entered into a long term power purchase agreement for sale of electricity at a preferential tariff shall not, in case of premature termination of the agreement, be eligible for participating in the Renewable Energy Certificate (REC) scheme for a period of three years from the date of termination of such agreement or till the scheduled date of expiry of power purchase agreement whichever is earlier, if any order or ruling is found to have been passed by an Appropriate Commission or a competent court against the generating company for material breach of the terms and conditions of the said power purchase agreement*.

Considering the new G-TAM instrument, this should be modified to, *'Provided that such a renewable energy generating plant having entered into a long term power purchase agreement for sale of electricity at a preferential tariff shall not, in case of premature termination of the agreement, be eligible for participating in the Renewable Energy Certificate (REC) scheme or in the green market in the power exchanges (such as G-TAM) for a period of three years from the date of termination of such agreement or till the scheduled date of expiry of power purchase agreement whichever is earlier, if any order or ruling is found to have been passed by an Appropriate Commission or a competent court against the generating company for material breach of the terms and conditions of the said power purchase agreement*.

b. Regulation 11.2 notes that, '*For the purpose of the Operating Period from FY 2021-22 to FY 2025-26, the effective electricity component price for the year shall be equivalent to Pooled Cost of power purchase excluding renewable energy of the host Utility for the previous year in whose area of jurisdiction such RE generation project is situated, whereas, the price of RECs shall be as discovered in the Power Exchanges. Provided further that, with the progressive development of the electricity sector, the pricing methodologies for Electricity component and REC shall be reviewed at periodic intervals as may be considered by the Commission.*

As per the CERC's latest order, the APPC for Chhattisgarh is Rs 3.07/kWh in 2021-22[7]. Thus it is abundantly clear that for new RE projects (esp. wind and solar), this APPC price for power in addition to the price it would get from the sale of RECs would make it a burden for the consumers, since they would end up much higher prices for the cost of new wind and solar power (~Rs. 2.5/kWh). Thus CSERC should notify a much lower price for power (~ Rs 2.5/kWh, even assuming RECs being sold at close to zero price) under the REC route. It should not wait for the development of the sector to review the pricing policies in the future.

8. Other issues

a. Regulation 4.2 notes that 'For meeting the RPO, renewable power purchases made by the obligated entities under long term power purchase agreements with the biomass based generating plants shall only be considered. Purchases made by obligated entities from other renewable energy sources small hydel, wind, solar under long-term, medium-term and short-term arrangements, will be considered for meeting the RPO'.

It is unclear why only long term PPAs with biomass plants qualify for RPO while all duration PPAs from other sources qualify for RPO. The CSERC should clarify this aspect and explain it in the SoR.

[7] http://cercind.gov.in/2021/orders/01-SM-2021.pdf

b. Regulation 6 notes the duties of the State Agency. Specifically, 6.4 The summary statement of RE *procurement and RPO compliance by different Obligated Entities shall be published by the State Agency on cumulative basis quarterly by 15th of next month on its website.* For further transparency, this could be modified as *6.4 The summary statement of RE procurement and RPO compliance by different Obligated Entities in publicly accessible downloadable spreadsheet formats shall be published by the State Agency on cumulative basis quarterly by 15th of next month on its website.*

c. Regulation 9.1 notes that, '*If an obligated entity does not fulfil the renewable purchase obligation as provided in these Regulations during any financial year, the Commission may direct the Obligated Entity to maintain a separate fund for such amount as the Commission may determine on the basis of the shortfall in units of RPO and the forbearance price decided by the Central Commission'.*
To make this more effective, it may be modified to 'If an obligated entity does not fulfil the renewable purchase obligation as provided in these Regulations during any financial year, the Commission shall direct the Obligated Entity to maintain a separate fund for such amount as the Commission may determine on the basis of the shortfall in units of RPO and the forbearance price decided by the Central Commission'.

d. Regulation 10.1 notes that, '*Any person generating electricity from renewable energy sources, irrespective of installed capacity, shall have priority for open access, access, connectivity with distribution system or transmission system as the case may be'.*
While this regulation is certainly beneficial for renewables, it is unclear over whom such priority access would be granted. This should be clarified in the SoR and should be done while amending open access/supply code regulations so that relevant stakeholders can also voice their perspectives. Further, suitable directions to operationalise this would have to be given to the appropriate agency, namely SLDC or STU.

e. Regulation 11.4 notes that, '*The consumers procuring power from RE sources through open access route shall be required to pay cross-subsidy surcharge as per condition of the open access regulations as specified by the Commission. However, no banking facility shall be provided for supply (third party sale) from renewable energy sources through open access'.*
Issues related to Open Access charges and energy banking are best dealt with in the OA regulations and hence should be dealt with while amending those regulations with adequate explanation of the proposals in the Explanatory Memorandum.

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