

**Submitted Before the Honourable Kerala State Regulatory Commission**  
**Comments on Renewable Energy & Net-metering Regulation 2019**

C. P. GEORGE

**2: Definitions**

- Need clarity between captive consumer & prosumer
  - (be) Hydro irrespective of the capacity need to be included in RES (as per GoI notification dated:8/3/2019
  - (bj) Solar meter: may be defined as in CEA metering regulation. Why it is being stated as integral part? As per CEA metering regulation same does not included in any meeting requirements.
  - (aj) & (cc): Net meter & Renewable energy meter definitions are confusing with different meaning with respect to CEA (2y) of metering regulation Amendment 2013.
  - (bf) Seller Licensee: Such a term is irrelevant, and every licensee is empowered as a trader and can sell electricity to another licensee.
3. Hydro generation, irrespective of capacity may be considered for meeting the Solar and Non-Solar RPO
4. RPO Distribution Licensee
- Please introduce hydro RPO and consider Hydro generation to meet Solar and Non-Solar RPO requirement.
5. RPO Captive Consumer: How to enforce the RPO for a captive consumer unless he maintains a metering system and the data monitored appropriately by appropriate authority? Hence an enforcement mechanism need to be considered.
7. Preferential Purchase of RE from within the state
- This is discriminatory and not in tune with the policy. We are importing more than 70% of energy from outside state and open access is allowed for the consumer irrespective of the availability of internal energy.

- GoI policy of bundled procurement of RES is in contradiction with this clause.

- Procurement of REC for RPO itself is in contradiction with preferential purchase from the state.

8. Procurement of REC for RPO: REC & Preferential purchase of RE from state may not go hand in hand

9. State agency: for accreditation and recommending renewable energy Projects. A procedure for the same may be considered.

11. RPO: permission to carry forward the short fall may be considered only under genuine reason and with a reasonable penalty and under non availability of REC.

**GI RES of Capacity\_ of and below 1MW installed by prosumer.**

**Issue of feasibility for allowing RES connectivity.**

*Feasibility need to be considered based on real time load and demand in the appropriate infrastructure. Allowing 100% RES against transformer capacity shall end up at safety issues and grid security issues. Average loading of a distribution transformers during the day is normally less than 60% without RES injection. Allowing 100% RES capacity may lead to the creation of local islands even when the feeder supply fails and can lead to safety issues. Moreover, the distribution transformers are not designed for import/export operation and can affects its useful life if used for exporting energy to the grid. As such, there shall be issues when generation exceeds load under a Distribution transformer at any point of time.*

*And we are not insisting a real time monitoring mechanism by installing appropriate metering infrastructure or other monitoring mechanism to ensure correct intervention at right time.*

*As such, the safety and grid security are compromised by the blind folded operation of the distribution grid with so many distributed generating sources without real time view and control.*

## 12. Scope & Application

- (1) the term net metering facility may be replaced with RE metering facility as in CEA metering regulation.

## 13. General conditions

- (1) Installation of meter and Metering need to be in tune with EA & CEA metering regulations.
- (2) a. 1kW to 1000kW but limited to connected load/contract demand.
- (3) Need to use the same service line
- (4) Capacity permissible as per the provisions of SC-2014

*Allowing RES up to the connected load/contract demand without network studies shall complicate distribution grid and compromise grid security and safety. Moreover, it can make the grid management difficult with so many unpredictable load/ generation components and at the same time without real time data for viewing or control.*

*We suggest introduction of appropriate SCADA mechanism to view the real time demand/load data of the network at feeder level and transformer level before introducing such drastic changes which may risk the grid security, safety and reduce the reliability and useful life of the distribution equipments.*

14. Net metering need to be replaced with RE meter as CEA specify metering system in tune with normal generator for connectivity above 440V LT. The metering system need to comply the CEA metering regulation.

15. Compliance with CEA standards and metering regulations need to be ensured.

16. (3) & (4) The provision of the testing fee needs to be clarified.

17. Wheeling of excess energy to another premise.

- (5): Need to bear the wheeling charge and distribution loss as approved. Since the prosumer is using the transmission & distribution system for injection and withdrawal, appropriate charges need to be collected and the amount need to be accounted appropriately to reduce the transmission/ distribution investment cost of the system in appropriate tariff.

#### 18. Feasibility for RES

- *Already commented*

#### 19. Grant of connectivity:

- Within 30 days of intimation of feasibility, register the RES scheme with appropriate doc

- Distribution licensee scrutinise within 7 days intimate defects and registration fee required.

- Register and valid for 1 year. And extent another 6 moths if no application is pending for feasibility: *The period may be limited to 6months plus 6 months*

- *Feasibility criterion need clarity and need to be evaluated based on system condition and infrastructure as remarked earlier.*

- *Sanction of EI is relevant for capacities above 10kW as per CEA safety & GO, Hence, need to be modified accordingly.*

- (7): *Testing of installation can never be the responsibility of the Licensee and it is the responsibility of the owner of the premise or prosumer/consumer. May be done through a third party. The licensee need not maintain such an expertise with investments. If at all done, same can be done only at a cost based on open quotation or tender.*

- (8): connection agreement and connecting the RES to the distribution system within 7 days of agreement.

#### 20. Banking facility:

- Period: Billing period

- 95% of the energy for banking and 5% as **grid support charge**

## **Grid Support Charge:**

**As per para 6.10.6 of National Electricity Plan 2018 Volume-I (Generation);** the Integration of variable RES involves two types of costs namely Grid Infrastructure Cost and System Operation Cost. Grid infrastructure costs include grid connection and grid upgrading costs.

1. Grid Infrastructure Cost
  - a. Grid connection Cost: include the cost of a new transmission line from the variable RES plant to the existing grid, which would be higher than those for a coal-based plant, due to lower CUF. This cost depends basically on the distance between the plant and the grid, the voltage level of the connection line, and the availability of standard equipment.
    - i. For Solar, the grid connection cost is estimated to be up to 5% of the project investment cost for Solar;
    - ii. For onshore wind farms, it ranges between 11% and 14% of the total capital cost
  - b. Grid upgradation Cost: include the cost of additional network equipment needed to strengthen the grid in order to integrate renewable power into the existing grids. They depend mostly on the amount of renewable capacity, the location of the power plants and the structure of the existing grid. This cost for a system with 20% to 30% Renewable energy share is estimated as Rs. 40/- to Rs.240 /- per MWh
2. System Operation Cost: Refer to extra costs incurred in the conventional part of the power system to accommodate the integration of RES in the grid.
  - a. Profile Cost: is a broad concept that captures all three impacts of the temporal mismatch between VRE generation and load profile: 1) capacity costs (adequacy costs) due to a low VRE capacity credit; 2) reduced average utilization of thermal power plants; and 3) curtailed VRE generation to maintain grid security when power supply exceeds demand.
    - i. For 30%–40% wind/solar penetration the cost is estimated in the range of Rs. 1200–2000/MWh

Short-term system balancing costs: Due to the variability and uncertainty properties of VRE generators, the reserve capacity needed for up-and down-regulation increases as compared to the case where the same energy is delivered by

conventional generation. The increased requirements for reserve power lead to the extra costs for the conventional part of the power system. These extra costs originate from the measures taken to ascertain increased reserve power, for example, by the operation of conventional plants at partial load, the start-up costs and contribution of conventional power plants with higher operating costs in the power system, increased wear-and-tear and maintenance costs of plants. Kindly note that a flexibility of 30% is allowed in scheduling of solar & wind in the prevailing ABT regime and at least that much reserve is required in the system to ensure grid security and stability.

*As such, the 5% grid support cost envisaged is not at all comparable with the actuals and hence need to be revised appropriately.*

- (2) Electricity generated from RES accounted as RPO? Normally, The energy injected to the grid only shall be considered for RPO.

21. Net metering, Energy accounting, banking and settlement.

- Above 20kW: Time block wise RE generation & consumption
  - 80% of the energy allowed for peak and full in other time blocks
  - Excess energy can be carried forward to next billing cycle after 5%banking charge: *may be renamed as system operation charge or grid support charge as specified in NEP*
- 20kW & below: Total generation & consumption
  - Full energy allowed in other time blocks
  - Excess energy carried over to other billing cycle after 5% banking charge
  - If banking charge is paid during billing period, then there shall not be any banking charge for carry forward.
  - Settlement @ Average power purchase cost (APPC) and need to pay interest in case of delay beyond 30 days.
  - The RE generated by prosumer is qualified for RPO

### ***Settlement of Energy injected into the grid:***

*As the cost of energy is frequency dependent and time dependent, it is proposed that the energy injected into the system may be settled in cost basis rather than energy basis.*

*In case of RES at 20kW & below, the energy may settle based on its cost on time zone basis, that is peak zone, off peak zone and day zone.*

*In case of RES above 20kW, the energy may be settled based on its market cost for the 96 time blocks (15 minutes) in the day of injection.*

Appropriate metering infrastructure may be specified for the same.

## **Chapter VI**

### **Prosumers having Capacity more than 1MW**

Need to limit is specified above 1MW. Kindly limit the capacity to 5MW maximum.

*Prosumers having capacity more than 1MW may **submit 15 minutes time block injection schedule to appropriate authority** and make deviation settlement applicable to them.*

They need to comply the relevant CEA connectivity regulation based on their connectivity level.

*The prosumers with connectivity at of and below 33 kV need to comply CEA connectivity regulation 2013 for distributed generation*

*And those prosumers above 33kV level shall not be considered as distributed generation and need to comply CEA connectivity generation 2007*

## **22. Scope:**

- Captive consumer @ a different location but within the area of licensee

- RE generator as an independent power producer- for third party sale.

23. Connectivity.

- Penal action against licensee if delays connectivity.

24. Metering system.

- Special Energy Meters (SEM) as specified in CEA metering regulation

25. Open Access

- As per relevant regulations: Conflict between regulations need to be addressed

26. General Conditions for Prosumer with RE plant more than 1MW in his premise.

- **5% grid support charge: Already remarked**
- If the 95% energy is consumed during the same time block (need clarity as it should be actual) then no transmission/wheeling/ loss charges
- Consumption during different time block
  - **80% during the peak & full in other time block:**
- Excess energy is allowed to carry forward with 5% banking charge
- Final settlement based on Average pooled power purchase cost.
  - This should be based on block wise cost.
- Allowed towards RPO of the licensee.

***Remark: Settlement based on 15-minute time block wise market cost is requested.***

27. Captive RES at different location within the area of licensee.



- Need to pay transmission charges, wheeling charges, T&D loss etc. as approved by the Commission

- Net energy after loss is allowed in the same time block.

- For different time block

- 5% grid support charge

- 80% of the net during peak time: It is not encouraging grid discipline and shall burden normal consumers

- 100% of the net during other blocks..

- Carry forward allowed for excess energy

- 95% of the net.

- If 5% grid support charge is paid, then no further charge

- Final settlement based on Average pooled power purchase cost.

***Remark: Settlement based on 15-minute time block wise market cost is requested.***

- RPO allowed for captive consumer and balance for licensee.

- This type of accounting shall be valid till deviation settlement mechanisms.

28. Independent RE generator / OA consumer.

- Need to pay transmission charges, wheeling charges, cross-subsidy surcharges, T&D loss etc

- Need to comply OA regulations.

- No time block adjustment and banking facilities.

29. Accounting and settlement for producers (Reg 26 & 27)

- Billing information and sharing

○ Time block wise electricity consumption, RE generated and injected, net energy banked from previous period, net energy billed with calculation details, excess energy etc.

***Remark: Settlement based on 15-minute time block wise market cost is requested.***