

**THE HIMACHAL PRADESH ELECTRICITY REGULATORY COMMISSION,
SHIMLA**

In the matter of draft Regulations of the Himachal Pradesh Electricity Regulatory Commission (Rooftop Solar PV Grid Interactive System based on Net Metering) Regulations, 2015.

CORAM
Subhash. C. Negi
Chairman

ORDER

1. Introduction

The Himachal Pradesh Electricity Regulatory Commission (hereinafter referred as “the Commission” or “the HPERC”), published the draft HPERC (Rooftop Solar PV Grid Interactive System based on Net Metering) Regulations, 2015 on 24th January, 2015 in Rajpatra Himachal Pradesh in exercise of the power conferred under section 61, 66 and 86 (1)(e) of the Electricity Act, 2003(hereinafter referred as “the Act”).

As required vide sub-section (3) of section 181 of the Act, the Commission invited public objections and suggestions by way of insertions in two News papers having circulation in the State i.e. “The Tribune” and “Amar Ujala” on 25th January, 2015 under Rule (3) of Electricity (Procedure for Previous Publication) Rules, 2005 and the full text of the draft Regulations, alongwith explanatory memorandum thereon, was made available on the Commission’s website www.hperc.org. A time of 30 days was allowed for filing objections and suggestions in relation to the said draft regulations. The Commission further extended the time for submission of the comments/objections/suggestions till upto 16th March, 2015 by way of insertions of Public Notice in News papers i.e. “The Tribune” and “Amar Ujala” on 3rd March, 2015, on the request of the Himachal Pradesh State Electricity Board Ltd. (hereinafter referred as “HPSEB Ltd.”).

The Commission received comments/suggestions on the aforesaid draft regulations from the following stakeholders:-

1. Sh. P.N. Bhardwaj, Consumers Representative, Arcadia, Vill. Ghat-ki-Ber, P.O. Dharmapur, Distt. Solan (HP).
2. Himachal Pradesh State Electricity Board Ltd., Vidyut Bhawan, Shimla-171004.

3. H.P. Govt. Energy Development Agency (HIMURJA), URJA Bhawan, SDA Complex, Kasumpti, Shimla-09.
4. The Himachal Pradesh Power Corporation Ltd., Shanti Kutir, Kamna Nagar, Chakkar, Shimla-05.

2. CONSIDERATION OF THE VIEWS OF THE STAKEHOLDER AND ANALYSIS AND COMMISSION'S VIEWS ON IMPORTANT ISSUES:

The Commission now proceeds to discuss/consider the Comments/Suggestions of HPSEBL, HIMURJA, Consumers Representative and HPPCL, received by it as under:-

- (i) **HPSEBL:** - 'Solar Generation Meter' may also be defined under the clause 2 "definitions" as the phrase is used in sub regulation 9(1).

Commission Views:-

The Commission accepts the suggestion to define 'Solar Meter' under regulations.

- (ii) **HPSEBL:** - Where ever a phrase 'Solar PV System' or 'Solar Rooftop Net Metering' is used in different clauses, the phrase 'Grid Interactive' be prefixed to the existing phrase so as to read as 'Grid Interactive Solar PV System' or 'Grid Interactive Rooftop Net Metering'.

Commission Views:-

The definition of term 'rooftop solar system' shall be modified to specify the same as grid interactive solar PV system.

- (iii) **HPSEBL:** - Existing word 'Consumer' required to be replaced with 'Eligible Consumer' as the same has been defined under the Regulation 2(9).

Commission Views:-

The word "Consumer" shall be replaced with the words "Eligible Consumer" wherever the context so permits.

- (iv) **HIMURJA 2(9):-**It is requested that in the category of eligible customers, the LT consumer of electricity in the area of supply of the distribution licensee should also be included for the installation of Rooftop Solar PV System in his premises under the net metering scheme.

Consumers Representative 2(9):- The "eligible consumers" definition should be expanded to include domestic, commercial and other consumers of the licensee. Such an enlargement will extend the benefit of continuous power supply to these consumers as well as help to meet the objectives of providing clean energy.

HPPCL 2(9):- “eligible consumer” means such LT, HT or EHT consumer of electricity in the area of supply of the distribution licensee, whotime to time.

Commission Views:-

The term eligible consumer shall be modified to include all consumers getting supply of electricity from the distribution licensee who use or intend to use a rooftop solar system to offset their own electrical requirements as per the provision of these regulations. In this context, the Commission now also finds it appropriate to specify the maximum capacity of rooftop solar PV system in respect of the consumers getting supply at various voltages. These limits shall be included as under:

Sr. No.	Voltage at which consumer getting supply	Maximum Capacity of rooftop solar PV system
1	LT (1 ϕ)	5 kWp
2	LT (3 ϕ)	15kWp
3	HT/EHT	1 MWp

- (v) **HIMURJA 2(12):** The interconnection means the interface of solar power generation facility with the network of the distribution licensee at the premises of the consumer.

Commission Views:

The commercial settlements are required to be made on the basis of the net meter which shall be installed at the point as considered appropriate by the distribution licensee as per the practice followed by it for locating the meters for supply of energy to the various categories of consumers and the same need not necessarily be at the consumer’s premises.

- (vi) **HPSEBL- Regulation 5(a):** The eligible consumers have been defined as HT or EHT consumers of electricity in the area of supply of the Distribution Licensee. The capacity of such individual consumers shall not exceed 1.00 MWp provided that the cumulative capacity to be allowed from a transformer shall not exceed 30%.

- a) Such consumers shall generate the power on LT and also use the same at their premises but since such consumers are connected to the distribution network of the Licensee at HT or EHT, how the excess solar power so generated by them, if any, shall be interfaced with HPSEBL’s distribution network? The Regulation is not specific on this issue.

HPSEBL- Regulation 9: since the Consumer shall generate power on LT and consume also but the Licensee's Distribution System is connected and metered at HT or EHT, how the net metering is possible without proper interface if the consumer is directly connected with the LT Distribution System of the Licensee. The Regulation is not explicit about this aspect.

Commission Views:

The term eligible consumer shall be modified to include all categories of consumers. The interface with the distribution system shall essentially have to be through the net meter irrespective of the voltage at which solar energy is generated.

(vii) HPSEBL- Regulation 5(b): Since the LT Distribution Transformer shall be of such consumers in their premises wherein they will interface the solar power generated and full load may not be met through that DTR (installed capacity being limited to 80% of the sanctioned contract demand), then the 30% capacity ceiling of Distribution Licensee's feeding transformer is not relevant.

Commission Views:

The distribution transformer essentially belongs to the distribution licensee and not to the consumer. The secondary side of distribution transformer need not always be at LT. This will vary depending upon the supply voltage for the consumer. The limit of 30% may facilitate the consumption of most of the surplus energy injected by an eligible consumer into the distribution system at any given time, in surrounding areas itself.

(viii) Consumers Representative -Regulation (5): Capacity of Rooftop SPV system: Such a provision to restrict the installed capacity of SPV to 80% of sanctioned contract demand is counter-productive. Alternatively, it will be helpful if the choice of SPV capacity be left on the eligible consumer. Provision has also been made in this proviso that the overall capacity of SPV sanctioned shall not exceed 30% of the transformer capacity. Such a proviso is against the objective of achieving the desired capacity installation of SPV.

Commission Views:-

The intention of the net metering scheme is to facilitate consumption of most of the generation by the consumer himself. Accordingly, it is necessary to have some relationship with the sanctioned contract demand of the consumer. Moreover, since the LT consumers are also now being covered in this scheme, the Commission shall specify such limit as 30% of the sanctioned connected load in case of consumers covered by single part tariff. With these limits being in place, the grant of connectivity of solar PV

system would, more or less, be automatic. The Commission has included LT consumers also in the definition of eligible consumer which may facilitate participation of more and more consumers in the scheme.

- (ix) HPPCL- Regulation (5):** Provided that the capacity of Rooftop Solar System to be installed, an eligible consumer shall not exceed 100 KWp.

Explanation: - Area required for 245 Wp PV panel (1.7 mtr.x1 mtr.) i.e. 1.7 mtr. X 1 mtr. = 1.7 Sq. mtr. = 18.2 Sq feet.

Area required for 1 KWp = (18.2 Sq feet x 4 = 72 Sq feet).

Approximate 100 sq feet rooftop area required for 1 KWp (including shading area).

Average Household area 1500 sq. feet, 1500 sq feet/100 sq. feet= 15KWp.

2. Provided that the capacity of Rooftop Solar System to be installed, an eligible single/multiple consumer(s) with single application in the same area shall not exceed 500 KWp.

Explanation: - Imagine if, in a village there is 10 households and all are interested to install Rooftop Solar PV System but due to codal formalities, they are not able to do so. In that case, anyone consumer can file the application to fulfill codal formalities for a particular area.

Commission Views:

As mentioned above, the maximum capacity of rooftop solar PV system shall be fixed voltage wise. The proposed limit of 100kWp may be inadequate for HT/EHT consumers but may be too high for the LT consumers. Moreover, the maximum capacity of solar generation to be allowed has essentially to be linked with distribution transformer capacity. Most of the DTRs (LT) may not have adequate capacity to provide connectivity to 500 kWp capacity in the area.

- (x) HPSEBL- Regulation 7:** Under clause 7, procedure for making application and registration, fee structure, time lines for submission of application for the grant of interconnectivity/ interconnection point and schedule for commissioning is also required to be defined as in case of Punjab State Electricity Regulatory Commission (Grid Interactive Rooftop Solar Photo Voltaic Systems based on Net Metering) Regulations, 2015.

Commission Views:-

The requisite procedure and the time lines shall be incorporated in the regulations. However, the Commission does not find it necessary to prescribe any fee structure at this initial stage.

- (xi) HIMURJA- Regulation 7:** It may also be incorporated under the clause that after the eligible consumer's application is approved by the distribution licensee for setting up of SPV Plant on net metering mode, "The consumer shall set up the plant and submit the work completion report of the SPV plant duly verified by HIMURJA with certification that the SPV Plant has been installed as per the approved standards and specifications". The Bi-directional Energy Meter installed for Net Metering shall be scaled in the presence of the Distribution licensee and the consumer, thereafter only.

Commission Views:-

The Commission does not find any necessity of getting the completion report verified from the HIMURJA for the purpose of these regulations. The necessary verification at site, after the receipt of the completion report, has to be carried out by the distribution licensee and if necessary by the Chief Electrical Inspector also. As regards the joint sealing of meters, necessary provision already exists in Regulation 9.

- (xii) HPSEBL- Regulation 8 (1):** The connectivity has been proposed presuming that the Rooftop Solar System output shall be interfaced at LT Distribution Network of the Licensee whereas such HT and EHT consumers are connected with HT or EHT network of the Licensee. The Regulation is not explicit about this aspect.

Commission Views:-

The connectivity has to be facilitated through net meter which shall be installed at the same voltage level at which the supply is to be given to the consumer. The supply voltage can be LT/HT/EHT, depending on the sanctioned contract demand and sanctioned connected load of a consumer.

- (xiii) HPSEBL- Regulation 8 (2):** The existing provision depicts isolation of system only in case of the eligible consumer prefers connectivity with battery backup. But the similar protection should be included in all the Grid Interactive Solar PV Systems irrespective of their connectivity with battery.

So another proviso can be added to the existing Regulation, providing consumer to install appropriate automatic protection for islanding of SPV System from the network of distribution licensee during grid failure.

Commission Views:-

The text of the regulations shall be suitably modified.

- (xiv) Consumers Representative- Regulation 9:** The net energy meters in such premises are to have recording facilities through wireless. I feel such a proviso may discourage prospective consumers such as domestic/commercial/SMI etc. However, where the SPV capacity is larger than 20 kWp, the need to have remote metering is productive and may be economically viable.

Commission Views:-

The meter reading through wireless has not been made mandatory.

The system followed by the distribution licensee for various categories of consumers in various areas shall be followed for this purpose also.

- (xv) HPSEBL- Regulation 10(4)(i)(B):** Since HT&EHT consumers are billed under two parts tariff with demand charges and energy charges at different tariff of normal, peak and night hours; the solar energy generated through Grid Interactive SPV Plant shall be adjusted only against the energy consumption during normal hours, without any adjustment in demand charges.

Commission Views:-

The adjustment has to be made on the basis of energy flows during respective periods of the day. However since most of the solar generation shall take place during normal day hours, the adjustment shall automatically be made against the consumption during the normal hours. As regards the demand charges, the same shall interalia be based on the actual demand of energy, on net basis, during any demand period.

- (xvi) HPSEBL- Regulation 10(4)(i)(B):** Since the capital cost for the installation of Grid Interactive Solar PV System is decreasing day by day, the validity of applicable tariff/rates of such power should be on long term basis, considering the life of SPV System in order to have assured returns on equity to the developer and as well as distribution licensee should know the cost of such power to them. Tariff applicable shall be as per HPERC regulations for the year, when the Grid Interactive SPV Plant is commissioned and synchronised with the grid. The sub regulation needs to be amended accordingly.

Commission Views:-

The Commission, after carefully balancing various related aspects, decides to make provisions for annual settlement and also to include the tariff provisions for energy charges as under :-

“ For the quantum of energy to be settled for any time of the day at the end of the settlement period in accordance with sub-regulation 5 and 8, the distribution licensee shall pay, by way of adjustment of amount in future electricity bills, at a fixed rate of Rs. 5.00 per kWh of the energy to be settled in case of consumer covered under single part tariff and at a fixed rate Rs. 4.50 per kVAh incase of consumer covered under two parts tariff:

Provided that if the amount of subsidy or grant or both, available to eligible consumer from Government agencies exceeds 50% of the capital cost of the rooftop solar PV system, the aforesaid rates of Rs. 5.00 per kWh and Rs. 4.50 per kVAh, as applicable, shall be reduced by 50%;

Provided further that the Commission may, by order, revise the aforesaid rates of Rs. 5.00 per kWh and Rs. 4.50 per kVAh, as and when it finds it expedient to do so;

Provided further that in the event of revision of such rates as per the second proviso to this sub-regulation, such revised rates shall be applicable only for such cases in which letter of approval is yet to be issued in accordance with the provisions contained in the regulation 7.”

(xvii) HPSEBL- Regulation 10 (4)(ii): In the opinion of the HPSEBL, the demand charges from such consumers should be charged as per tariff applicable for the present. As and when the system of the smart metering and consumer billing of such consumers is in place and stabilized, the Hon’ble Commission may consider applicability of demand charges at that stage by way of amendment to these regulations.

Commission Views:-

The demand charges shall be charged as per the applicable tariff. However the net demand during any demand period shall be considered as the actual demand of energy for the purposes of billing of demand charges.

(xviii) Consumers Representative-Regulation 10(4)(i)(B): This clause provides for adjustment of bills in the event of net export. A penal clause needs to be inserted to protect the consumer's interest, in case the licensee fails to carry out of the necessary adjustment.

Commission Views:-

The licensee is required to make adjustments in the bills based on the regulations. The consumers are always at liberty to dispute the bills and raise the claim(s) in case of non-adjustment of the amount, payable to the consumer as per the relevant regulations.

(xix) Consumers Representative-Regulation 10(4)(i)(B): Sub-clause (b) of this proviso needs to be deleted. The objective of the GOI is to encourage electricity consumers to make extensive use of solar energy and the idea to grant subsidy is to off-set the high cost of installation. Therefore, irrespective of the subsidy level received/granted by the Government(s), net energy tariff should not be linked to amount of subsidy received.

Commission Views:-

The subsidy is provided to make the technology economically viable and the benefit beyond a limit should be passed on to the consumers. This is also necessary to maintain parity between the eligible consumer, entitled to subsidy and those which may not be entitled for the same.

(xx) Consumers Representative- Regulation 10 (5) - This proviso protects the licensee. Such a proviso could be used by the licensee to delay/ becomes careless, to attend to any problems in their system. There needs to be a time frame provided so that defects in the system are attended to promptly by the licensee.

Commission Views:-

The distribution licensee is duty bound to maintain power supply to the consumers as per the standards of performance and is liable to pay compensation to the consumers in case of carelessness in maintaining the system. The provisions, contained in the draft regulations in this regard shall accordingly be retained. Moreover, the scheme basically envisages consumption of most of the generation by the consumer himself which can be done even in absence of grid.

(xxi) HPSEBL- Regulation 11 (i): At present, an eligible consumer who is having part of its load through an open access, is liable to pay wheeling charges and cross subsidy charges to the distribution licensee. In case such eligible consumer also opts to install Grid Interactive SPV Plant,

whether such eligible consumer will be eligible for exemption of wheeling, banking and cross subsidy, so it is required to be amended subsidy with the insertion of phrase 'except open access consumers'.

Commission Views:-

In case of consumers availing open access, the energy accounting has to be carried out separately for the time blocks in which open access is availed and the energy accounting has to be carried out after duly accounting for the transactions/deviations under the open access arrangements.

- (xxii) HPSEBL- Regulation 11 (ii):** In case developer intends to install Grid Interactive SPV Plant and to sell power outside the state as merchant power and gets its interconnection point with the network other than distribution licensee, whether such developer shall be eligible for such exemption. If so, who will provide the same whether the distribution licensee or the licensee with whom network it is connected. Required clarification.

Commission Views:-

Such cases shall not fall under the definition of the eligible consumer and as such shall not be covered in these regulations.

Additional Comments:-

- (xxiii) HPSEBL- In application on Form-1, Serial No. 8,** the 'Watts' should be substituted with 'Watts peak' or 'kWp'.

Commission Views:-

The Commission accepts the suggestion.

- (xxiv) HIMURJA-** HIMURJA, being the State Nodal Agency in the State is implementing the Renewable Energy Programme including the Rooftop Solar Programme. The role of the Nodal agency is to be defined in terms of installation and monitoring of the systems. Further, all the Central Financial Assistance to be given by MNRE will be disbursed through HIMURJA only as per the guidelines of MNRE.

Commission Views:-

The Commission feels that the role of HIMURJA viz-a-viz these regulations is very limited. However, provision shall be made in the regulations for registration with HIMURJA.

- (xxv) HPPCL-** Solar tree may be included as a part of Rooftop Solar PV System.
Explanation: - Where the space constraints are there on the roof of

consumer, we can use solar tree to promote awareness, understanding and adoption of renewable energy.

Commission Views:-

The term rooftop solar PV system would automatically cover the solar tree also if other conditions contained in the regulations are adhered to.

The draft regulations have been finalized by duly incorporating the views as expressed above in the preceding paragraphs and are approved for notification accordingly.

Place: Shimla
Date: 31.07.2015.

Sd/-
(Subhash C. Negi)
Chairman