

**KERALA STATE ELECTRICITY REGULATORY COMMISSION**  
**THIRUVANANTHAPURAM**

**Present : Shri. T.M. Manoharan, Chairman**  
**Shri. Mathew George, Member**

**Suo motu proceedings In the Matter of Generation Based Incentive (GBI)**  
**for Off Grid Captive Solar Power Plants**

**Order dated 30.09.2014**

1. The Commission vide the notification No. 909/Comp-Ex/KSERC/2003 dated 24-06-2014 had notified the draft discussion paper on 'Incentive for Off-grid Captive Solar Energy Systems'. In the discussion paper it was stated that as more and more solar generating units come up in the State, the dependence of KSEB Ltd on costly power during day time will reduce. KSEB Ltd would be able to back down hydro power stations during day time to the extent of solar generation available. Distributed solar electricity generation by individual consumer initiatives will come up in large numbers only if appropriate enabling environment is created and sufficient incentives are offered. Hydro-electric resources can be saved by way of enhancing the solar generation. There will be reduction in distribution losses since the distributed solar energy systems generate electricity at consumption points. If the licensees are allowed to account the solar electricity generated by the distributed solar energy systems towards their Renewable Purchase Obligations (RPO), they will get considerable savings until their RPOs are met. It was further stated that, considering the above factors, Commission proposes to introduce a Generation Based Incentive (GBI) of one rupee per unit for the electricity generated by the off-grid solar energy system, for all consumers from the FY 2014-15 onwards. The incentive will be available for a period of five years from the date on which metering of solar generation has commenced. The incentives on the solar generation in the State shall be reviewed by the Commission when such generation exceeds 75 MU per annum. The licensee can meet the expenditure for providing GBI to the off-grid solar generation from the provisions for meeting solar RPO in the ARR for the year concerned.

2. Public hearings on the discussion paper were conducted on 30.06.2014 at Kozhikode, 02.07.2014 at Ernakulam and on 04.07.2014 at Thiruvananthapuram along with the public hearings on the tariff petition for 2014-15. Many consumers during the public hearings of the ARR/ERC and tariff petition responded to the discussion paper on 'Incentive for Off-grid Captive Solar Energy Systems' and stated that encouragement shall be given to off-grid captive solar systems by giving more incentive by way of generation based incentive. Advocate Punchakkary G.Raveendran Nair stated that he at present has a 2 kW solar off grid power plant in his premises and wishes to increase the capacity of his plant provided encouragement is given by way of incentives for generation. Engineer K.S.Suresh Babu, KSEBoard Engineers Association stated that more incentives shall be extended to captive off grid solar plants. The AT&C loss of KSEB Ltd is estimated at about 15%. Therefore if consumer is generating and consuming power at home, KSEB stands to gain 15% of the energy so consumed by the consumer. If 10% of this gain is shared with the consumer by way of incentive, then solar power generation can be promoted. The consumer is assured of a monthly return on his investment. It is suggested that 10% of the energy produced by the consumer and consumed by him shall be given as incentive at the average cost of supply, ie. Rs.6.27/Unit and KSEB Ltd can meet their solar renewable purchase obligation by this. Sri V.Unnikrishnan suggested that a discount of Rs.500 in every bi-monthly bill would be a reasonable incentive for every consumer installing a captive solar off grid solar plant Sri S.P Ravi of Chalakudy Puzha Samrakshna Samithi stated that at present the difference between the cost of supply and realization through tariff for domestic consumers using up to 150 units/month is more than Rs.3/- per unit. Hence any reduction in consumption in this category from the grid should be beneficial to KSEB Ltd. Other benefits by way of reduced T&D loss, reduced capital expenditure etc would also follow once the spread of distributed solar plants increase. Domestic consumers using up to 150 Units/month may be provided GBI of at least Rs.3/Unit.(If they have not received capital subsidy). Solar .systems of smaller dimensions (100 wp to 500 wp) will be suitable for these consumers. For domestic consumers using up to 200 Units/Month, the GBI may be Rs 2./Unit and for domestic consumers using more than 200 units/month incentive of Rs 1/Unit may be provided. The incentive period may be enhanced to seven years. Sri A.P.Gopalkrishnan stated that he is a consumer having one kW solar captive off grid plant. But the daily generation is only

1 Unit per day. Investment in battery is the major share of investment for the plant and hence he prefers to connect his plant to the grid. M/s R.V Engineering Services, pointed out that cost of solar power produced should be much lower than the cost of power supplied by KSEB to the customer. For this KSEB Ltd should increase the price of each unit of power until it reached a comparable level. Also Government should bring down the cost of solar plant to a minimum level by bringing down the price of solar plant materials (not by providing subsidy direct to the customer). Sri S. Ayyappan Pillai pointed out that from his plant of 1 kW capacity he is getting 6 to 8 Units per day but during rainy season he gets only 3 to 4 Units per day and he is hopeful of getting the incentive of Rs.1/Unit proposed by the Commission.

3. KSEB Ltd in their response stated that, there is no provision in the Electricity Act-2003 or National Electricity Policy or Tariff policy empowering the State Commissions to promote energy generation from non-conventional sources including solar power by way of providing incentives. KSEB Ltd further stated that so far, no State Commission has notified regulations or order for providing incentive for solar generation at the cost of the distribution licensee and its consumers. The State Government has been providing incentives and subsidies to the solar generation through budgetary support. KSEB Ltd further stated that, as per the existing tariff structure, the tariff for domestic consumers in the lower slabs of consumption are heavily subsidized. If they use off-grid captive solar generators KSEB Ltd will be benefited in the sense that the consumption of subsidized consumers will be reduced. But when consumers who consume electricity in the higher slab utilize captive off-grid solar plants KSEB Ltd will be losing subsidizing category of consumers. Hence KSEB suggested differential incentive rates linked with consumption of the consumer with high incentive rates for consumers with low consumption and low incentive rates for high consumption . They have suggested zero incentive of generation for consumers having consumption above 500 Units / Month. KSEB Ltd proposed further conditions to ensure that they will not be required to pay such incentives in any year if they have already achieved the percentage of renewable purchase obligation by meeting the solar purchase through other sources that they have already committed.

4. The proposal of the Commission for giving generation based incentive for captive generators was only to encourage solar off grid captive generators as State Commission is bound to encourage generation of electricity from renewable energy sources. As per the section-86 (e) of the Electricity Act, 2003, one of the functions of the State Commission.

*(e) promote cogeneration and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person, and also specify, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee;*

5. Further no additional amount need to be spent by the licensees for this purpose since incentives can be paid from the fund created for the purpose of payment to meet the solar renewable purchase obligation for that year. In fact there is a saving for KSEB Ltd by accounting the solar energy from off-grid solar energy systems by paying incentive at a rate of Rs.1/Unit, when compared to buying solar energy from any other sources at the present rates in the range of Rs.6/Unit to Rs.7/Unit or buying REC from exchanges at the rates ranging from Rs.9.30 (floor price) to Rs.13.40 (forbearance price) fixed by CERC till 2016-17 in order to meet the solar energy purchase obligation. It is a riddle why KSEB Ltd has opposed this win-win proposal taking a ground that the Commission has got no jurisdiction to issue such order. The differential incentive as suggested by KSEB Ltd is not implementable due to the following reasons. The average cost of generation of solar off grid generators are in the range of Rs.6.00 /Unit to Rs.7.00 /Unit. Only those domestic consumers who consume more than 400 units/month will have to pay electricity charges at the rates of and above Rs.6.50 per unit as per the revised tariff order for the year 2014-15. Only such consumers who consume more than 400 Units/month will get benefit if they establish off grid solar plant in their premises. Hence most of the consumers who are in the lower slabs of consumption are not likely to establish off grid solar power plants. Therefore the differential incentive system as proposed by KSEB Ltd cannot be implemented as it will result in little or no incentive for those consumers who consume more than 400 Units/month and are likely to install off grid solar power generators. Further differential incentive rates will make the billing more complicated since the consumption of a consumer may vary month to month and the incentive will have to be changed depending upon the consumption of each consumer in each month. It is already stated in the discussion paper that the incentive system shall be reviewed by the Commission once the solar generation in the state exceeds 75 MU per annum. This will act as a protective clause if KSEB Ltd is able to meet its Solar Power Purchase Obligation through the solar energy procured or produced by KSEB Ltd by its own initiatives.

6. Based on the above analysis commission decides that all licensees shall provide generation based incentive (GBI) at the rate of Rs.1.00 / Unit for a period of five years from the date of this order or till KSEB Ltd meets its solar power purchase

obligation for any year by purchasing solar energy or producing solar energy by its initiatives whichever is earlier. The consumer who proposes to avail generation based incentive from the licensee shall apply for the same to the licensee with particulars such as make and capacity of the off grid solar energy system, consumer number, address of the premises where the off grid solar energy system is or proposed to be installed. Solar energy shall be separately metered for which a solar energy meter shall be installed at the cost of consumer. The licensee shall provide a list of makes and models of the meters which can be purchased by the consumer as specified in clause (c) of sub-regulation (2) of regulation 6 of the Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006. The solar energy meter shall be tested and sealed by the licensee before installation of the meter. The testing and installation of meter shall be completed by the licensee within 15 days from the date on which the consumer produces the meter to the licensee. The solar meter shall be installed adjacent to the consumer meter of the distribution licensee. Reading of solar meter shall be recorded by the licensee along with reading of the consumer meters installed by the licensee. Generation based incentive payable to the consumer for the solar energy generated by his off grid solar energy system during one billing cycle will be adjusted in the total amount of the electricity bill of the consumer pertaining to the same billing cycle. The energy for which incentive is paid by the licensee to the consumer shall be accounted towards the solar renewable power purchase obligation of each licensee. This scheme for generation based incentive shall be effective from 01.10.2014.

Dated the 30<sup>th</sup> day of September 2014

Sd/-  
Mathew George  
Member

Sd/-  
T.M.Manoharan  
Chairman

Approved for Issue,

SECRETARY