

effective and reliable and guarantees that no export of power takes place to the grid under any circumstances.

- (6) During the deliberations of the subject matter, the Electrical Inspector, on behalf of Chief Electrical Inspector to Government of Kerala stated that, Chief Electrical Inspector has issued scheme approvals and energisation order for the solar plants after proper scrutiny of the scheme, onsite inspection and field testing of all safety features. Further, the interlocking facility using PLC installed by M/s Hindalco Industries Limited to limit the export of power from the 1MWp Solar Power Plant is a tariff related matter and it does not attract any of the relevant provisions of Central Electricity Authority (Measures Relating to Safety and Electric Supply) Regulations 2010. It is learned that, there is no deviation from the electric schematic diagram/ power & safety related installations approved by Electrical Inspectorate. As such, safety issues are not involved in the low voltage PLC controlled system with interlocking facility for limiting the solar generation from 1MWp Solar Power Plant to grid.

Electrical Inspector further submitted that, as per the petitioner Hindalco, the PLC system will drive the 1 MW plant to stop generation under three conditions, viz, (i) when demand is less than 1MW, (ii) at the instances of grid failure (iii) at the instance of communication failure. Anti-islanding is found to be working and hence safety is ensured.

- (7) Regarding the interlocking facility installed by the petitioner, KSEB Ltd submitted that, it cannot ensure the reliable working of the interlocking system which is owned and controlled by the petitioner.

22. The Commission examined the deliberations on interlocking facility provided by the petitioner to stop power flow from the 1 MW Solar plant when the factory consumption is less than 1 MW. The Commission noted that, two experts, Dr. K.N. Pavithran, Prof (Rtd) and Sri. Rajan Babu, Chief Electrical Inspector, have certified the effective and reliable working of the interlocking facility provided by the petitioner. The Electrical Inspector also submitted that, the anti islanding is found to be working and hence safety of the system is ensured. ***Based on the deliberations on the subject issue, the Commission is of the considered view that, the Programmable Logic Controller (PLC) based interlocking system installed by the petitioner can stop the power flow from the 1 MW Solar Plant into the grid when the factory consumption is less than 1 MW. Hence, the 1 MW plant with REC facility can be treated as a separate unit, since it has no interference with the State grid under normal circumstances.***

However, it is the responsibility of the petitioner to ensure the safe and reliable working of the PLC based interlocking facility throughout the life of the system. In order to ensure the same, a joint team of the Petitioner, Electrical Inspectorate and the licensee KSEB Ltd may periodically (at least once every year) visit the PLC based interlocking system and ascertain its reliable and safe working.

With the above directions and observations, the Commission hereby orders treating the 1 MW Solar Plant installed by the petitioner in the year 2016 for self consumption with REC facility and 2 MW Solar Plant installed by the petitioner in 2020 with banking facility as two separate plants in the same premise, subject to the following conditions.

- (1) The petitioner shall ensure the safe and reliable working of the PLC based interlocking system during the entire life of the plant, so as to avoid the power flow from the 1 MW Solar Plant into the grid under any circumstances.
- (2) The petitioner shall abide by the accounting procedure approved by the Commission in the subsequent paragraphs.

Issue No.2

23. The respondent KSEB Ltd during the deliberations of the subject petitions submitted that, the petitioner has been meeting their power requirement at the factory through three sources of power (a) supply from KSEB Ltd, (b) Self generation from the 1 MW & 2MW Solar plant owned by the petitioner, and (c) by availing power through open access. KSEB Ltd further submitted that, there is possibility of banking of open access power on the pretext of banking of power generated from the solar plants. KSEB Ltd explained the following five scenarios in this regard.

Case No	Load in MW (contract demand)	Solar 3MW	OA drawal	KSEB Ltd supply	Net meter reading	Deemed Injection on account of OA
1	5.0	3.0	0.0	2 (5-3)	2 MW draw al	
2	5.0	3.0	3.0	0	2 MW draw al (OA)	1.00MW
3	5.0	3.0	4.5	0	2 MW draw al (OA)	2.50 MW
4	5.0	3.0	5.0	0	2 MW draw al (OA)	3.00 MW
5	0.5	2.0 (1 MW sw itched off)	5.0	0	1 MW	6.51 W

KSEB Ltd submitted that, at present, block wise energy accounting is not followed by SLDC. So, the entire deemed injection due to availing Open Access (OA) will be get banked on the pretext of injection from the Solar plants. KSEB Ltd further submitted that, under case-2, case-3 and case-4, deemed injection may include the generation from 1 MW Solar plant also. Banking of deemed generation causes financial loss to KSEB Ltd, which is

passed on to consumers of the State. The present RE Regulation also does not envisages banking of power availed through OA.

KSEB Ltd further submitted that, since HINDALCO is an open access consumer, whenever the factory consumption through open access becomes less than the scheduled open access, there will be deemed injection to the grid. This situation can occur due to reduction in the factory load which was not anticipated at the time of scheduling open access which is scheduled on day ahead basis or due to the increase in solar generation which is infirm. Moreover, there can also be situations of purposeful under drawal of scheduled open access in certain time blocks and over drawal in other time blocks to make use of the market price economy. Since there is no time block wise energy accounting, the deemed injection gets banked.

24. In reply to the above issues raised by KSEB Ltd, the petitioner submitted the following.

- (1) The petitioner is not intended for any gaming as alleged by KSEB Ltd.
- (2) If 15 minute energy accounting is followed for open access consumers as in other States, it will resolve the purported issues of under drawal and deemed injection.
- (3) The petitioner also submitted its remarks on the five different scenarios on the deemed injection raised by the KSEB Ltd, as detailed below.

KSEB Ltd submission							HINDACO submission
Case No	Load in MW (contract demand)	Solar 3MW	OA drawal	KSEB Ltd supply	Net meter reading	Deemed Injection on account of OA	Eligibility for banking
1	5	3	0	2 (5-3)	2 MW drawal		0
2	5	3	3	0	2 MW drawal (OA)	1.00MW	0
3	5	3	4.5	0	2 MW drawal (OA)	2.50 MW	0
4	5	3	5	0	2 MW drawal (OA)	3.00 MW	0
5	0.5	2.0 (1 MW switched off)	5	0	0 MW	6.5 MW	1.5 MW (Export solar)

According to the petitioner, they are not eligible for banking under the first three scenarios raised by KSEB Ltd. Under case-5, they may claim banking only for the power generated from the 2MW plant and do not propose to claim banking for the open access power or for power generated from the 1MW Solar plant.

Further, as detailed under paragraph 16(3) above, the petitioner presented a tabular representation of energy accounting covering all scenarios, especially under drawal of Open Access Power and

Banking eligibility of Solar Power. The petitioner submitted that, they shall not claim banking for deemed injection, if any, due to open access drawal and also due to injection of power to the grid from the 1 MW solar plant.

25. The Commission examined the argument of the petitioner that, if 15 minute block wise energy accounting is being adopted by SLDC, the issues raised by KSEB Ltd regarding deemed injection will not be there. KSEB Ltd also submitted that, since there is no time block wise energy accounting, the deemed injection gets banked into the system. KSEB Ltd also submitted that, they have no objection in going for 15 minute block wise energy accounting.

SLDC Kerala, the agency authorised for energy accounting of intra-state open access submitted that, SLDC is capable of energy accounting of all open access consumers. Moreover, the open access consumers also giving schedule for 15 minute time blocks, i.e., for 96 time blocks during a day.

26. The Commission noted the submission of the petitioner M/s HINDALCO, respondent KSEB Ltd and SLDC in this regard. As per the KSERC (Connectivity and Intra-State Open Access) Regulations, 2013, and also as per the Detailed Procedure approved by the Commission as per Regulation 55(3) of KSERC (Connectivity and Intra-state Open Access) Regulations, 2013, SLDC is the authorised agency for the energy accounting of all open access transactions. SLDC submitted that, they are capable of accounting the 15 minute time block wise energy transactions of all open access consumers as per the KSERC (Connectivity and Intra-State Open Access) Regulations, 2013. The Commission has no objection to proceed with 15 minute time block wise energy accounting of open access consumers, if the SLDC is capable of doing so. **However, the billing of electricity charges for all the embedded HT&EHT open consumers shall be done as per the prevailing ToD tariff on monthly basis, as per the Tariff orders issued by the Commission from time to time.**

27. With the above observations, **the Commission hereby permits the SLDC for adopting 15 minute block wise energy accounting of all open access consumers including the petitioner so that the deemed injection by the open access consumers can be avoided. However, the billing of electricity charges for all the embedded HT&EHT open consumers shall be done as per the ToD tariff on monthly basis as per the Tariff Order issued by the Commission from time to time.**

28. There is an argument between the petitioner M/s HINDALCO and the respondent KSEB Ltd regarding the formulae suggested by the KSEB Ltd for accounting the energy banked at the time when surplus energy is injected into the grid from both the 1 MW and 2 MW solar plants.

The formulae suggested by KSEB Ltd is given below.

Energy allowed for banking = Surplus energy at the end of the billing period * $X2/(X1 + X2)$

X1: Solar meter reading 1MW

X2: Solar meter reading 2MW

The petitioner submitted that, there is shortcoming in the above formulae proposed by KSEB Ltd, since the formulae takes only 2/3rd of the export from the 2 MW plant even when there is no generation from the 1MW solar plant. The petitioner also submitted that, solar generation from 1 MW plant will happen whenever there is sun shine and, even if there is no export to grid, X1 value, i.e., the generation from the 1 MW plant will not be zero. Furthermore, the petitioner intends to limit the banking to actual 2 MW solar generation and hence there is no need to apply any ratio.

KSEB Ltd submitted that the argument of the petitioner is not correct. Whenever, there is no export of energy from the 1MW plant to the grid, $X1=0$, and as per the formulae, full surplus energy from the 2MW plant gets banked. The formulae suggested is to taken care of the extraordinary circumstances when the surplus energy from 1MW plant also gets injected into the grid.

Commission noted the argument of the petitioner and the respondent. As per the PLC based interlocking system installed by the petitioner, there will not be any injection of energy from the 1MW plant into the grid under normal circumstances. Further, even if, deemed injection happen from the 1MW under any circumstances, the petitioner vide their affidavit submitted that, they shall not claim banking for the energy injected into the grid from the 1MW plant. Hence, under normal circumstances, $X1=0$, as far as the banking of energy with KSEB Ltd is concerned, and hence the petitioner is also immune to the formulae suggested by KSEB Ltd for banking of power from the 2 MW plant is concerned. However, under extraordinary circumstances when the interlocking system become faulty and there is injection into the grid from both the 1MW and 2MW plants, the formulae suggested by the KSEB Ltd can be used for accounting the energy from the 2MW plant eligible for banking.

Order of the Commission

29. The Commission, after careful examination of the petition by M/s Hindalco Industries Limited, the arguments of the respondent KSEB Ltd, the remarks of the SLDC, Chief Electrical Inspectorate and ANERT, as per the provisions of the Electricity Act, 2003 and the various Regulations notified by the State and Central Commission related to renewable energy, hereby order the following.

- (1) Allow the petitioner HINDALCO Industries Ltd, to maintain the 1 MW Solar plant with REC benefits and 2 MW Solar plant with banking facilities in the same premises as two separate Solar plants, subject to the safe and reliable working of the Programmable Logic Controller (PLC) based interlocking system installed by the petitioner, and also subjected to the other conditions specified under paragraph 22 of this order.

- (2) As suggested by the petitioner HINDALCO Industries Ltd, and also as agreed by the SLDC Kerala, the SLDC shall adopt the 15minute energy accounting for the petitioner and similar open access consumers. However, the monthly bills of the petitioner and open access consumers shall be prepared for the accounted energy based on the ToD tariff on monthly basis as per the Tariff orders issued by the Commission from time to time.

The petition disposed of.

Sd/-
Adv. A J Wilson
Member (Law)

Sd/-
Preman Dinaraj
Chairman

Approved for issue

C R Satheeshchandran
Secretary(i/c)