

**IN THE JHARKHAND STATE ELECTRICITY REGULATORY COMMISSION
AT RANCHI**

Case No. 18 of 2019

M/s Shree Cement Limited Petitioner

Versus

Jharkhand Bijli Vitran Nigam Limited and Ors. Respondents

**CORAM: HON'BLE MR. R.N. SINGH, MEMBER (ENGINEERING)
HON'BLE MR. P.K. SINGH, MEMBER (LEGAL)**

For the Petitioner : Mr. M. S. Mittal, Sr. Advocate
For the Respondents : Mr. Sachin Kumar (JUSNL), Mr. Manoj Kumar-
JBVNL, Advocates and, Mr. A. K. Singh -
representative for JUSNL

Date -9th January 2021

1. The Petitioner – Shree Cement Limited submitted an affidavited petition purported to be filed Under Regulation A18 of JSERC (Rooftop Solar PV Grid Interactive Systems and Net/Gross Metering) Regulations, 2015 for removal of difficulty in obtaining net metering facility at a connectivity level of 132 KV.
2. The Petitioner in its petition has prayed for following reliefs:-
 - (i) Hon'ble Commission may kindly clarify that net metering facility is available to a consumer irrespective of any voltage level be it 33 KV or 132 KV or even higher.
 - (ii) Hon'ble Commission may kindly direct the Respondent to favorably dispose the petitioner's net metering application.
 - (iii) Pass any other order that the Hon'ble Commission deems fit in the facts and circumstances.

The factual matrix of the petition may be appreciated in following manner:-

3. Petitioner has Commissioned a cement grinding unit and for its grinding unit, the Respondent – JBVNL has released a HT connection with a contract demand of 14 MVA at a voltage level of 132 KV as per the directions vide order dated 5th December, 2018 in case no. 33 of 2018.
4. It is submitted that the petitioner intends to establish captive Solar Power plant of 1.99 MWP under net metering under Regulation 5.2 of

JSERC (Rooftop Solar PV Grid Interactive Systems and Net/Gross Metering) (1st Amendment) Regulations, 2015.

5. Petitioner had filed for net metering application to the Respondent under Regulation 7.2 of the said Regulations of 2015 to which the Respondent communicated that there is no clarity regarding providing net metering facility at a connectivity level of 132 KV.
6. It is pointed out that Regulation 8.2 of the said Regulations provides connectivity for net metering at different voltage level but silent on connectivity of a Solar PV System above 1 MWp and upto 2 MWp at 132 KV voltage level.
7. In view of ambiguity for connectivity at 132 KV voltage level, the petitioner filed this petition for removal of difficulties to get approval for solar power plant under net metering facility.
8. It is submitted that the proposed 199 KW Solar captive Power Plant would be generating a voltage level of 480 volt that would be further stepped-up to 11 KV by Solar plant's step up transformer (2.5 MVA 11/0.48 KV). The generation at 11 KV would then be connected to the cement plant's 11 KV bus and 11 KV bus is connected with 132 KV JBVNL system through existing 11/132KV, 25 MVA step up power transformer.
9. It is stated that for metering system and energy accounting, petitioner has installed 2 bi-directional ABT meters (Main & check) available at 132 KV grid inter-connection point, which are capable of recording import of energy from the Grid as well as export of Solar energy to the Grid. It is also submitted that the petitioner has installed one solar meter at 11 KV internal connection point.
10. It is submitted that adequate protection system (which includes over current, Earth fault, solar Transformers, Buchholz Relay/PRV protection etc.) at solar plant connection point, with proper isolation through 1250 amp circuit breaker at 11 KV system is provided. Additionally, a circuit breaker with micro protection relay at 480 volt system is in place.
11. It is further submitted that the proposed solar plant is in line with and in compliance with relevant CEA safety Regulations for connectivity and it will never affect/damage any part of 132 KV grid systems & 11 KV internal systems in any situation.

12. The Respondent submitted feasibility report in compliance of Order dated 08.01.2020 containing several suggestions and also submitted that competent authority like Electrical Inspector shall be appropriate authorities to assess the safety aspects.
13. It is submitted that the committee constituted for inspection of the solar plant of the petitioner suggested that there must be provision of online Data transfer to SLDC, Ranchi for proper energy accounting.
14. It is submitted that the Electrical Inspector inspected the solar plant installation of the petitioner and several observations have been made by the Electrical Inspector which the petitioner had complied.
15. It is brought on record that Shri Shanti Prasad, Ex-Chairman, Rajasthan Electricity Regulatory Commission studied in detail all the safety and protection measures and concluded that adequate protection system is available at solar plant itself to ensure and to isolate faulty section only. It is also submitted that Shri Prasad has certified that protection system at solar plant complies with relevant CEA and JSERC Regulations for connectivity and would not adversely affect/damage any part of 132 KV Grid System and will protect any part of 132 KV line, the solar power plant, internal system and 11 KV cement Internal system in case of fault.
16. The Commission by its Order dated 25.06.2020 impleaded JUSNL and SLDC for assurance of protection of the transmission network.
17. It was submitted by the Respondent – SLDC that for proper communication and SCADA, certain requirements are to be fulfilled by the communication with the concerned control centres for successful integration with the communication system provided by CTU or STU for data communication as per guidelines issued by NLDC.
18. It is submitted by the Respondent – JUSNL that they need to undertake technical studies by expert consultants on protection aspects for solar PV integration to Grid Sub-station.
19. It is submitted that the proposal of the Respondent – JUSNL was accepted by the petitioner and in compliance thereof M/s power Research & Development consultants Pvt. Ltd. (PRDC) was appointed for technical study on protection system of JUSNL of M/s Shree Cement

Ltd. 1998.8 KW DC Solar rooftop power plant connectivity at 132/33 KV GSS, Rajkharsawan.

20. The expert – PRDC in its interim report for technical study on protection system of JUSNL with regard to integration of solar plant of the petitioner made certain observations for compliance. It has been said to be complied by the petitioner.
21. The expert PRDC in its final report has concluded as follows:-
- (i) *Addition of solar generation will not create any network congestions/over loading in the grid network. Inverter of solar generation is able to operate in between 0.8 p.f. lead to 0.8 p.f. lag. Required reactive power can be generated/absorbed to support the grid voltage.*
 - (ii) *For a dead short circuit at 132 kV bus of Rajkharswan additional 9.5 A fault current is increased with addition of Solar PV. Three phases to ground fault level at present network scenario is approximately 8kA on 132kV grid Rajkharswan S/s, would be negligible. Breaker rating at 132kV level is 31.5kA and hence it would be adequate to withstand the fault.*
 - (iii) *On occurrence of three phase to ground fault at 132kV S/c Adityapur – Rajkharswan line near to Rajkharswan S/s, it is observed maximum voltage observed 0.21pu at 132k/v bus of Rajkharswan Solar PV remain connected with the grid and supplying maximum reactive power of 1.8MVAR and able to ride through the fault.*
 - (iv) *To verify the high voltage condition sudden outage of 8MW CM Mill motors was performed. Results seen, maximum voltage rise observed 1.01at 132 kV bus of Rajharswan. Solar PV is connected with the grid and absorbing maximum reactive power of 048MVAR and able to ride through the fault.*
 - (v) *The Total voltage harmonic and current demand distortion are well within the IEEE 519 permissible limits during both maximum and minimum loading condition of the plant with and without solar Park. The individual voltage and current harmonic distortion are well within the IEEE 5199 permissible limits during both maximum and minimum loading condition of the plant with and without solar Park.*
 - (vi) *From the measurement, it is observed that at all the phases Short-term (Pst) and Long term (Plt) flicker are within the limits. No flickering is observed during the measurement period at 132kV incomer of Shree cement Plant with solar park in operation.*
 - (vii) *Relay settings modifications are suggested based on the operating philosophy of eastern region operating philosophy in general. However change in fault current in approx. 9.5 at 132kV of Shree Cement due to presence of solar grid. To accommodate the solar power overcurrent and earth fault settings will not be affected.”*

Further, for connectivity level at which the rooftop solar PV system shall be connected with the distribution system are detailed in clause 8.2 of the above said Regulations detailed below:-

“8.2 The connectivity levels at which the rooftop solar PV system shall be connected with the distribution system are as specified below:

S.No.	Connected Load / Contract Demand of Eligible Consumer	Connectivity Level
1	Up to 5 kW	Single phase at 230 V
2	5 kW and above up to 50 kW / 63 kVA	3 Phase, 4 wire at 415 V
3	Above 50 kW and up to 1 MW	3 Phase at 6.6kV, 3 Phase at 11 kV
4	Above 1 MW and up to 2 MW	3 Phase at 22kV, 3 Phase at 33 kV

The above Regulations provides connectivity of net metering at different voltage level but do not provide connectivity of a solar PV system above 1MWp and upto 2MW at 132 KV voltage level, as such the petitioner has prayed for removal of difficulties by way of relaxation for the connectivity of its solar plant under net metering system at 132 KV.

22. The Commission visited the site of the petitioner along with the Respondent – JUSNL and JBVNL on 04.01.2021. In response to the queries raised during the visit, the Respondent submitted that the all the observation and recommendation of the PRDC and proper metering arrangement have been carried by the petitioner. The Respondent – JUSNL submitted that all recommendation of PRDC with respect to network system protection have been complied with by the petitioner.

In view of the above submissions, expert report and no objection by both the respondents, we are inclined to relax the Regulations in the following manner and it is ordered;

ORDER

23. We allow net metering connectivity of the petitioner for Solar power plant of 1998.8kW at 132 KV voltage supply subject to fulfilment of requirements with regard to system protection, data communication and metering of JUSNL, SLDC and JBVNL respectively as well as complying standard norms of CEA.
24. Accordingly the petition of the petitioner is disposed of in terms of the above orders.

Sd/-
(P.K.Singh)
Member (Legal)

Sd/-
(R.N. Singh)
Member (Engg)