

**MADHYA PRADESH ELECTRICITY REGULATORY  
COMMISSION  
BHOPAL**

**Sub: In the matter of Petition filed under Section 86 of the Electricity Act 2003 read with MPERC (Conduct of Business) (Revision-I) Regulations, 2016 to adjudicate the dispute in applying unity power factor for Petitioner's on-site Captive solar power plants of 5 MW, 1.5 MW and 1 MW capacity each while claiming charges for grid support and paralleling charges.**

**ORDER**

**(Hearing through video conferencing)  
(Date of Order: 31.10.2023)**

**M/s Birla Corporation Limited,**  
Unit: Satna Cement Works,  
P.O. Birla Vikas, Satna (MP),  
485005

V/s

**1. Managing Director,**  
MP Power Transmission Co. Ltd.,  
Shakti Bhawan, PO Vidyut Nagar,  
Rampur, Jabalpur, 482008

**2. Managing Director,**  
MP Poorv Kshetra Vidyut Vitaran, Co. Ltd.,  
Shakti Bhawan, PO Vidyut Nagar,

- **Petitioner**

- **Respondent(s)**

Shri Ajay Porwal appeared on behalf of the Petitioner.

The subject petition is filed petition under Section 86 of the Electricity Act 2003 read with MPERC (Conduct of Business) (Revision-I) Regulations, 2016.

**2. By affidavit dated 04.08.2023, petitioner broadly submitted the following:**

- (1) That Petitioner has established 3 nos ON SITE solar Captive power plant of 1.5 MW (synchronized on 23/07/2013) and 1.0 MW (synchronized on dated 28/02/2020) and 5 MW (synchronized on dated 22.04.2023) respectively.
- (2) That petitioner is also a 132 KV consumer of the respondent.
- (3) The dispute is with regard to the assumption of 0.8 power factor while calculating the KVA capacity of these solar plants by the respondent for billing to the Petitioner generators towards grid support / parallel operation charges without any basis/measurement of power factor. The paralleling charges bill for the month of

June 2023 was for 1.2469 MVA capacity instead of 1 MW. Similarly, bill for 1.5 MW was raised for 1.8703 MVA and that for 5 MW, raised for 6.2344 MVA.

- (4) This Petitioner says that the power factor of all three captive solar plants is unity at all loads. In support of this Petitioner submits as under: -
- (i) 220 KW Inverters of Sungrow have a power factor setting range of 0.8 leading to 0.8 lagging as per manual, similarly, inverters of TMEIC and ABB make also has PF of 0.99.
  - (ii) Screenshots of all solar meters installed on these solar plants by Respondent show power factor as unity on 03.07.2023 as detailed below: -

S No	Solar Plant	Meter Make and No	Date And Time	Power Factor
1	1 and 1.5 MW solar CPP	SEMS, APEX 100, S No TN 904515	03/07/2023, 10.48.54 AM	L1-0.998 L2-0.998 L3-0.998
2	2 MW (5 MW)	SEMS, APEX 100, Sno Q0770803	03/07/2023, 10.49.02 AM	L1-0.998 L2-0.998 L3-0.998
3	3 MW (5 MW)	SEMS, APEX 100, Sno Q0770802	03/07/2023, 10.54. 52AM	L1-0.998 L2-0.998 L3-0.998

- (iii) It is further submitted that these meters were installed by Licensee at the time of the synchronization of solar plants. Synchronization permission for 1.5 MW, 1 MW, and 5 MW solar on-site CPP.
- (iv) Hon'ble Commission in its order dated 5<sup>th</sup> July 2022 in Petition no. 73/2021 in RCCPL v/s MPPTCL (Respondent) had directed for joint measurement of power factor. The same was done and the power factor was measured between 0.996 and 0.997. In the present case, Petitioner has already produced evidence through screenshots of the respondent's meter that the power factor of its solar plants is unity. Copy of the relevant pages of the report.
- (v) That Petitioner has written several letters to the respondent giving reference of the power factor measurement report.
- (vi) That Respondent has not given any attention to Petitioner's grievances hence this petition.

**GROUNDS**

- (5) As per CEA grid connectivity regulation dated 15<sup>th</sup> October 2013 Connectivity standards applicable to wind generating stations and generating stations using inverters, Part II-B/B-2 (1) “The generating stations shall be capable of supplying dynamically varying reactive power so as to support power factor within the **limits of 0.95 lagging to 0.95 leading**”

The relevant part of the regulation is reproduced below:

*B2. For generating station getting connected on or after completion of 6 months from date of publication of these Regulations in the Official Gazette.*

*(1) The generating station shall be capable of supplying dynamically varying reactive power support so as to maintain power factor within the limits of 0.95 lagging to 0.95 leading.*

- (6) As per Annexure P-5, P-6, P-7 all Inverters in all three solar plants comply with CEA grid connectivity regulations.

As per MADHYA PRADESH ELECTRICITY REGULATORY COMMISSION (COGENERATION AND GENERATION OF ELECTRICITY FROM RENEWABLE SOURCES OF ENERGY) (REVISION-I) REGULATIONS, 2010, clause 7. Connectivity and Metering

*7.1. The Generation and Co-generation from Renewable Sources, except Roof-top Solar PV and Bio-gas Sources, shall be connected to the State Grid at a Voltage level of 132/33/11 kV based on technical suitability determined by the Licensee. For Roof-top Solar PV sources and bio-gas Plants, connectivity may be allowed at Low Voltage or 11/33 kV as considered technically suitable by the Distribution Licensee.*

*7.2. As per incentive policy for encouraging generation of power in Madhya Pradesh through Non-conventional Energy sources (solar, wind, bio-energy, etc.) issued vide notification dated 17.10.2006 by the Government Madhya Pradesh, the power evacuation will be an integral part of the project and all expenses for power evacuation facility shall be borne by the Developer. Such infrastructure laid, notwithstanding that cost of which has been paid for by the Developer, shall be the property of the concerned Licensee for all purposes. The Licensee shall maintain it at the cost of the Developer and shall have the right to use the same for evacuation of power from any other Developer subject to the condition that such arrangement shall not adversely affect the existing Developer(s).*

*7.3. The metering for measuring parameters required as per Tariff orders issued from time to time shall be installed at Generating Plant site as per the provisions in the incentive policy notified by the Government of Madhya Pradesh on 17.10.2006 for encouraging the generation of power in Madhya Pradesh through Non-conventional Energy Sources.*

*7.4. The meter reading will be carried out by the respective Distribution Licensee/Transmission Licensee, as the case may be. For the purpose of admitting the*

*bills for payment, MP Tradeco shall accept the certificate given by the Officer designated by the concerned Discom/Transmission Licensee in respect of units injected into the Grid.*

As per the above regulations, all three solar plants have been provided with the required meters capable of measuring the power factor, and meter readings are taken by the Transmission/ distribution licensee. Hence power factor shown by these meters shall be the basis for calculating the solar plant capacity and grid paralleling charges.

- (7) As per POLICY FOR IMPLEMENTATION OF SOLAR POWER-BASED PROJECTS IN MADHYA PRADESH, 2012, Para 16. Metering:

*Metering equipment, as may be stipulated by MPPTCL or by respective MP Discom, shall be installed at the interconnection point which shall be line isolator of the outgoing feeder on HV side of the pooling substation. Developers will install metering equipment at their own cost as per specifications and provisions of MPERC Regulations on metering and MP Electricity Supply Code, 2004. All officials of the MPPTCL/respective Distribution Company authorized for the purpose shall be allowed access by the Developer to inspect the same. Meters shall comply with the requirements of CEA regulation on 'Installation and Operation of meters.*

As per the above policy, all three solar plants have been provided with the required meters capable of measuring the power factor, and meter readings are taken by the Transmission/ distribution licensee. Hence power factor shown by these meters shall be the basis for calculating the solar plant capacity and grid paralleling charges.

**Prayer:**

- I. Admit the Present Petition;
  - II. Direct Respondent to apply unity PF while calculating paralleling charges in all future bills
  - III. Direct Respondent to correct all old bills charged with higher KW capacity and after mutual reconciliation arrange to refund excess paralleling charges from all three plants in future bills.
  - IV. Provide for other and further relief as the Commission may, in the facts and circumstances of the present case, may deem fit and proper.
3. At the motion hearing held on 05.09.2023, petition was admitted and the petitioner was directed to serve copy of petition to the respondents within 3 days. The respondents were directed to file their response within 15 days of receipt of copy of petition. Petitioner may file rejoinder, if any, within 7 days of receipt of response from respondents.
4. Respondent No. 1 did not file any written submission and prayed vide letter dated 04.10.2023 that they will submit their views during hearing on 10.10.2023. Respondent No. 2 vide his affidavit dated 09.10.2023 submitted that the entire dispute is related to Respondent No. 1 and no relief has been sought from Respondent No. 2.

5. At the hearing held on 10.10.2023, Petitioner reiterated the grounds for relief and prayer. Respondent no. 1 during the hearing stated that this Commission has already dealt the issue involved in this case in Petition No. 73 of 2021 and it would be appropriate if Hon'ble Commission issues a general order by registering a suo-moto petition so that similar disputes with other solar based captive generating plants may be avoided. After hearing the parties at length, case was reserved for orders.

**Commission's observations and findings:**

6. Commission noted that parallel operation charges have been determined by it vide order dated 31.12.2012 passed in Suo-Moto Petition No. 73/2012. The parallel operation charges have been determined at Rs 20 per kVA of capacity of grid connected generating plants.
7. A similar dispute regarding applicability of 0.8 power factor for conversion of MW capacity of solar captive power plant to MVA capacity was brought before this Commission for adjudication in Petition no. 73/2021, RCCPL v/s MPPTCL. Commission vide order dated 05.07.2022 in said petition directed as under: -

*"Petitioner (M/s RCCPL) and Respondent No. 1 (MPPTCL) are directed to jointly appoint an expert agency to carry out study to ascertain correct power factor in this matter. The expenses towards this study shall be shared equally by the petitioner and Respondent No. 1. This study be carried out expeditiously and preferably within a period of three months. The outcome of aforesaid study shall be binding on all parties in this matter and billing shall be revised accordingly, if required. Till the outcome of the study, billing for Grid support/parallel operation charges shall be continued as per same power factor which is being considered by Respondent No. 1."*

8. Commission noted that in compliance of order dated 05.07.2022, expert agency namely National Power Training Institute (NPTI) was appointed jointly by RCCPL and MPPTCL on 14.10.2022 which after joint inspection of premises by MPPTCL, RCCPL and NPTI and due technical analysis, a certificate of joint measurement and study of power factor was furnished to the parties on 28.11.2022 in which it was stated that the power factor was found between 0.996 and 0.997. Respondent No. 1 i.e., MPPTCL has accordingly revised conversion of MW capacity to MVA capacity based on power factor recommended by expert agency prospectively i.e., from Dec 22 onwards.
9. Having implemented the decision of Commission in petition no. 73 of 2021, Respondent No. 1 was expected to take similar actions in respect of all other similar solar captive generating plants as the same issue with same technology was involved however no such action could be taken by respondent no. 1 i.e. MPPTCL. The counsel of respondent no. 1 has however now requested the Commission to issue a generalized direction in the matter after registering a suo-moto petition.

**10. Conclusion**

- (1) Commission has already decided similar matter in the past in petition no. 73/2021. Commission has noted that Petitioner has submitted snapshots of power factor readings of installed meter. Commission has observed that these are instantaneous readings and not cumulative readings. Commission would like to adopt approach similar to that in M/s RCCPL case. At the same time, Commission would also like to take necessary steps so that unnecessary and unwarranted litigations in similar matters are avoided in future.
- (2) As such, Commission directs Respondent No. 1 to consult all affected parties and based on their concurrence, take up similar study as already carried out in the case of M/s RCCPL in respect of few sample Solar Captive Power Plants including the petitioner (not more than 5) by appointing an expert agency in concurrence with selected solar captive power plants for study.
- (3) Based on the outcome of the study and recommendation of expert agency, Respondent No. 1 may apply power factor for conversion of MW capacity of solar based captive generating plants to MVA capacity, uniformly across all the solar based captive generating plants (including the petitioner's), for the purpose of recovery of parallel operation/ grid support charges. The expenses towards the study would be shared equally by Respondent No. 1 and all the solar based captive generating plants which are being billed for parallel operation charges on the basis of 0.8 power factor.
- (4) The outcome of aforesaid study shall be binding on all the parties in this matter and also on other solar captive power plants who provide concurrence for the study and billing shall be revised accordingly for the entire period from the date of parallel operation of plants.
- (5) The study should be carried out expeditiously and preferably within a period of two months. The study and analysis on applicability of power factor by expert agency should cover the entire period from the date of commissioning of solar based captive power plants and onwards.
- (6) Till the outcome of the study, billing for parallel operation charges shall be continued as per the power factor which is being considered by Respondent No. 1.

11. With the aforesaid directions, petition stands disposed of.

**(Prashant Chaturvedi)**  
**Member**

**(Gopal Srivastava)**  
**Member(Law)**

**(S.P.S. Parihar)**  
**Chairman**