



Northern Power Distribution Company of Telangana Limited

Corporate Office, # 2-5-31/2, Vidyut Bhavan, Nakkalagutta, Hanamkonda, Warangal-506 001

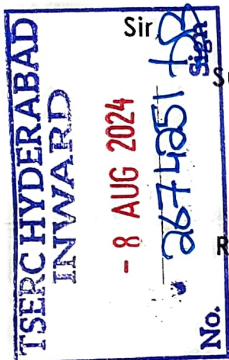
From

Chief Engineer,
IPC & RAC,
TGNPDCL, Warangal.

To

The Commission Secretary,
TGERC, 5th Floor,
Singareni Bhavan, Red Hills,
Hyderabad.

Lr.No.CE/IPC&RAC/NPDCL/GM/DE(IPC)/ADE/AAO/F.Solar/D.No.250/24,Dt:03.08.2024



Sir

Sub:- IPC Wing – Seeking approval of the Hon'ble Commission for amendment of the PPA to the billing of imported energy from grid by the Solar Power Developers - Justification –Submitted – Reg.

- Ref:-
- 1) Lr No.ED(Comml)/SE(IPC)/DE2/RE/F.66 Solar/D.No:136/23,Dt:16.03.2024.
 - 2) Lr.No.CGM/IPC&RAC/NPDCL/GM/DE(IPC)/ADE/AAO/F.Solar/D.No.70/24, Dt:15.05.2024
 - 3) Lr.No.TSERC/Secy/Tariff/F.No.E-699110/D.No.315/24, 31.05.2024

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It is to submit that, in the reference 2nd cited, the Hon'ble Commission was prayed to accord approval to allow the licensee to amend the PPA clause insofar as the billing of imported energy from grid by the Solar Power Developer during non-generation for auxiliary consumption. In this regard, the Hon'ble Commission has returned the above proposals with a direction to approach the Commission with proper justification.

In response to the directions of the Hon'ble TGERC, the detailed justifications in **Annexure-I** for amendment of the existing PPAs with SPDs for billing of imported energy from the grid along with draft Model amendment to PPA to be entered are herewith submitted for approval of the Hon'ble Commission. The amendment agreements will be made with all the Solar Power Developers after receipt of the approval.

Encl: As above.

Yours faithfully,


CHIEF ENGINEER
IPC & RAC/TGNPDCL/WGL

Copy to

The Chief Engineer (IPC)/TGSPDCL/Hyderabad

Copy Submitted to:

The Executive Director (Commercial), TGPC, Vidyut Soudha, Hyderabad.

AMENDMENT
to the PPA _____ *dated* _____
BETWEEN
NORTHERN POWER DISTRIBUTION COMPANY OF TELANGANA
LIMITED
AND

M/s. _____

This Amended Agreement executed on this the ____ day of _____ between Northern Power Distribution Company Of Telangana Limited, a company incorporated by the Government of Telangana in accordance with the Telangana Electricity Reform Act 1998 (Act No.30 of 1998) under the provisions of The Companies Act, 1956 having registered office at H.No. 2-5-31/2, Vidyut Bhavan, Nakkalagutta, Hanumakonda – 506001, represented by its Authorized signatory Chief Engineer (IPC&RAC) (hereinafter referred to individually, as 'TGNPDCL' or 'DISCOM', which

expression shall, unless repugnant to the context or meaning thereof, include its successors and assignees) as party of the first part.

AND

M/s. _____, a company incorporated under The Companies Act, 1956 having registered office at _____ (hereinafter referred to as the 'Company/solar power developer', which expression shall, unless repugnant to the context or meaning thereof, include its successors and assignees represented by its Authorized signatory _____ R/o _____ as party of the second part.

2) WHEREAS Power Purchase Agreement dated _____ entered between _____ & M/s. _____ for setting up _____ project with _____ capacity at _____, _____ (M), _____ District with a proposal for sale to DISCOM for a period of _____ years from COD.

Whereas, both parties are agreed for the amendment of the clause _____ of the PPA which pertains to the billing of imported energy from grid by the Solar Power Developer. In pursuance thereof the clause _____ of the PPA is amended. Amended clause is appended as ANNEXURE. The other clauses of Articles and Schedules of the Power Purchase Agreement dated _____ shall remain unaltered.

for and behalf of

for and behalf

NORTHERN POWER DISTRIBUTION COMPANY OF TELANGANA LIMITED

M/s. _____

Witness by
1.

Witness by
1.

2.

2.

ANNEXURE

S No	Article	Existing	Amended as (NEW)
1	2.6	<p>The Solar Power Developer is entitled to draw the power from the DISCOM for its auxiliary consumption, subject to limit as specified in Schedule-1. The energy supplied by the DISCOM to the solar power developer through a bilateral arrangement, to maintain the auxiliaries of the power plant in situations of non-generation of power, in any billing month shall be adjusted from the delivered energy, as indicated below:</p> <p>Net Energy = Delivered energy by the project at interconnection point - Energy drawl from DISCOM for auxiliaries.</p> <p>Provided that where there is NO Delivered Energy by the SPD at the Interconnection Point in any month, then Energy drawl from the DISCOM shall be billed at the applicable tariff of HT-1 category consumers as notified by the TSERC for the relevant financial year.</p> <p>Provided further that during the plant shut down or non-generation periods, the project shall draw the energy from the DISCOM only for the essential loads not exceeding the auxiliary consumption. Auxiliary consumption allowed for the purpose of the PPA is as specified in Schedule 1 of this Agreement.</p>	<p>The Solar Power Developer is entitled to draw the power from the DISCOM for its auxiliary consumption, subject to limit as specified in Schedule-1. The energy supplied by the DISCOM to the solar power developer through a bilateral arrangement, to maintain the auxiliaries of the power plant in situations of non-generation of power, shall be treated as indicated below:</p> <p>Net Energy = Delivered energy by the project at interconnection point - Energy drawl from DISCOM for auxiliaries*</p> <p>*Here, Energy drawl from DISCOM for auxiliaries is restricted up to Auxiliary consumption as specified in Schedule 1 of this Agreement.</p> <p>Provided that where the consumption drawn from the DISCOM is over and above the auxiliary limit specified in Schedule 1 of this Agreement, such excess consumption shall be billed on KVAh basis at the applicable tariff of HT-1 category consumers as notified by the TSERC for the relevant financial year.</p> <p>Provided further that during the plant shut down or non-generation periods, the project shall draw the energy from the DISCOM only for the essential loads not exceeding</p>

S No	Article	Existing	Amended as (NEW)
			<p>the auxiliary consumption limit as specified in Schedule 1 of this Agreement.</p> <p>Provided that where there is NO Delivered Energy by the SPD at the Interconnection Point in any month, then Energy drawl from the DISCOM shall be billed on KVAh basis at the applicable tariff of HT-1 category consumers as notified by the TSERC for the relevant financial year.</p>

Justification

- a. The provisions in the existing PPAs with SPDs enable them for drawl of energy from DISCOM grid to maintain their auxiliaries without separate HT connection even in the event of non-generation.
- b. However, the Article 2.6 clearly stipulates that such import energy from the DISCOM shall be restricted to Auxiliary consumption limit as specified in Schedule 1 of the agreement i.e., 0.1% of installed capacity.
- c. The generation of power from these solar power projects is available in day time only and thus these SPDs draw their energy requirement for auxiliaries from the Grid during non-generation hours (night time) and also during maintenance /shutdown periods.
- d. Solar projects require stand-by supply for plant lighting, air-conditioning, control room & office, control panels etc., during the period when Solar plant is not generating power.
- e. During the sunlight hours when the Solar power plant generates power, such loads are met from the power generated by the plant. Only when the plant is not generating, stand-by power is needed to be drawn from grid for meeting the demand of these internal loads.
- f. When the Solar plant is not operating during night time or during when radiation is not available (cloudy days), they import energy from the grid and the same is metered.
- ~~g.~~ The power factor is near to unity and there is no reactive power during the export of energy. However, power factor varies in respect of energy imported from grid.

- h. There are instances of certain Solar Power developers where the power factor recorded for the import energy is below 0.5.
- i. Thus the only way to reflect the true import energy is by taking power factor into consideration i.e., KVAh billing.
- j. PPAs with SPDs allow for netting- off energy imported by SPDs from grid from their exported energy. As such, assuming ideal condition where the SPD generate & draw power at unity power factor, the eligible import auxiliary consumption KWh is deducted from export Kwh and the rest of energy drawn from grid over & above this auxiliary consumption limit is billed.
- k. Since Article 2.6 of PPA imposes restriction on import energy drawl by the SPDs subject to their respective Auxiliary consumption limit, it is essential to bill the energy drawl from the grid which is over and above this limit. Also, the PPA provisions allow for billing of energy drawl from grid at the tariff applicable for HT category-I consumers, as determined by TGERC from time to time.
- l. As such, once the SPD's import consumption exceeds their auxiliary consumption limit, they should invariably be treated as HT-I category consumers.
- m. It is pertinent to submit here that the energy billing of HT consumers is approved by the Commission to be done on KVAh basis to factor in the power factor consumption. Further, either KVAh billing incentivises or levying of penalties are done according to the power factor. It also reduces harmonics, especially induced due to low power factor, which create disturbances in the system and harm equipment. It also helps to achieve loss reduction, improve voltage profile, power quality and system stability.

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- n. Also, it is submitted that had the SPD been granted a separate HT service connection for meeting their auxiliary requirements, their consumption from grid would have been invariably billed on KVAh basis.
- o. Under the provisions of PPA, the SPDs shall operate their project in such a manner so that fluctuation or disturbances to the TRANSCO/ DISCOM network due to parallel operation can be avoided and also the connectivity standards as per grid code are maintained.
- p. It is to submit that the Hon'ble TGERC issued Regulation No. 1 of 2021 amending Regulation No. 6 of 2016 with regard to billing aspect in the matter of net metering facility notifying that, "the quantum of electricity units exported by the eligible consumer shall be measured in KWh only. In case the applicable tariff provides for energy billing on KVAh basis and if during the billing period the eligible consumer delivers surplus electricity to DISCOM, for off-setting the quantum of electricity, the power factor shall be assumed equal to unity".
- q. In case of SPDs also, since the PPA provide for HT-I billing of import energy which is on KVAh basis, the same can be applied for reflecting the actual power drawn from grid.
- r. In light of the above, it is proposed to bill the excess import energy drawn by the SPDs (over & above auxiliary consumption limit) on KVAh basis, so as to avoid revenue loss to the DISCOMs. By doing so, SPDs shall be made accountable for not maintaining the power factor for the imported energy which results in excess reactive power draws affecting the system stability.
- s. The same can be illustrated with a case study as submitted below :

The JMR pertaining to 10 MW Solar power plant of M/s Talettutayi Solar Projects Six Private Limited located at Palavai (village), Maldakal (Mandal), Jogulamba Gadwal (Dist) for the month of May 2024 is extracted –

STATEMENT OF BILLING PARAMETERS
FOR THE MONTH OF MAY-JUNE- 2024 (04.05.2024 to 04.06.2024)

Name & Location of the Plant: M/s. Talathutayi Solar Projects Six PVT Ltd, Palaval (Village), Maldakal (Mandal) Jogulamba
Gadwal (Dist)

Location of Metering: 132/33KV Gadwal Sub-Station.

Fuel: Solar 10MW		PPA(V) / PWPA / PPWA / OA:					
Date of Reading: 04.05.2024		11:20					
Description	Main Meter		Check Meter		Standby Meter		
	Export from TSTRANSCO (*)	Import to TSTRANSCO (†)	Export from TSTRANSCO (‡)	Import to TSTRANSCO (‡)	Export from TSTRANSCO (‡)	Import to TSTRANSCO (‡)	
MWH Final Reading on Dt: 04.05.2024 ✓	31.2 ✓	4323.2 ✓	31	4323.4	30.8	4324.1	
MWH Final Reading on Dt: 04.05.2024 ✓	24.8 ✓	2862.7 ✓	24.6	2863.0	24.4	2865.4	
Difference in MWH (A)	6.4	1460.5	6.4	1459.6	6.4	1458.7	
MVAH Final Reading on Dt: 04.06.2024	52.3 ✓	4325.7	52.1	4325.9	51.9	4326.5	
MVAH Final Reading on Dt: 04.05.2024	38.8 ✓	2865.1	38.0	2865.2	38.3	2867.8	
Difference in MVAH (B)	13.5	1460.6	13.5	1459.7	13.6	1458.7	
MVARH (Lag) Final Reading on Dt: 04.06.2024	24.6	3.7	24.0	3.7	24.5	3.7	
MVARH (Lag) Final Reading on Dt: 04.05.2024	16.8	3.6	16.8	3.7	16.8	3.6	
Difference in MVARH (Lag) (C)	7.8	0.1	7.8	0	7.7	0.1	
MVARH (Lead) Final Reading on Dt: 04.06.2024	105.2	950	105.1	950	105.1	951.3	
MVARH (Lead) Final Reading on Dt: 04.05.2024	66.6	604.2	66.5	604.3	66.6	605.3	
Difference in MVARH (Lead) (D)	38.6	345.8	38.6	345.7	38.5	346.0	
Multiplication Factor (E)	1000	1000	1000	1000	1000	1000	
Billing Energy in KWH (A X E)	6400 ✓	1460500 ✓	6400	1459600	6400	1458700	
Billing Energy in KVAH (B X E)	13500 ✓	1460600	13500	1459700	13500	1458700	
Reactive Energy in KVARH (C X E)	7800	100	7800	0	7700	100	
Maximum Demand (MD) Reading (F)	0.5566	6.6699	0.5565	6.6529	0.5565	6.64	
Multiplication Factor (G)	1000	1000	1000	1000	1000	1000	
Billing MD in KVA (F X G)	556.6 ✓	6669.9	556.5	6652.9	556.5	6637.4	

DEE/Operations, Transco
VELTOOR

DEE/Operations
T.S.P.D.C.L
Gadwal

General Manager
M/s. Talathutayi Solar Projects Six PVT Ltd
Palaval(V) Jogulamba Gadwal (Dist)

From the above JMR, the export & import energy details are –

Import Energy		Export Energy	
Opening Mwh on 04.05.2024	24.8	Opening Kwh on 04.05.2024	2862.7
Closing Mwh on 04.06.2024	31.2	Closing Mwh on 04.06.2024	4323.2
Difference	6.4	Difference	1460.5
Import Kwh units	6400	Export Kwh units	1460500
Opening MVAh on 04.05.2024	38.8	Opening MVAh on 04.05.2024	2865.1
Closing MVAh on 04.06.2024	52.3	Closing MVAh on 04.06.2024	4325.7
Difference	13.5	Difference	1460.6
Import KVAh units	13500	Export KVAh units	1460600
Import energy power factor	0.47	Export energy power factor	0.999
RMD KVA	556.6	RMD KVA	6669.9
Capacity of solar plant – 10 MW			
Auxiliary consumption – 0.1% of 10 MW ie., 0.01 MW			
Auxiliary consumption units = $0.01 \times 1000 \times 24 \times \text{No. of days}(31)$			
Auxiliary Consumption (AC) units = 7440 Kwh units			
Equivalent AC KVAh units (unity power factor) = 7440 KVAh units			

As seen from the above import energy details, the SPD Kwh consumption (6400 Kwh units) is well within the Auxiliary consumption limit of 7440 Kwh units.

However, the energy drawn from the grid in terms of KVAh units is 13500 KVAh units, which is in excess of the Auxiliary consumption KVAh units (arrived with unity power factor viz., 7440 KVAh units).

$$\begin{aligned} \text{Excess KVAh consumption} &= 13500 - 7440 \text{ KVAh} \\ &= 6060 \text{ KVAh units} \end{aligned}$$

For any HT-I category consumer connected at 33 KV, drawing 6060 KVAh units, the HT billing would be –

Demand charges @ 475	=	10 x Rs <u>475</u>
	=	Rs 4750
Excess Demand charges (@ 2 times of normal charge)	=	(556.6-10) x Rs (<u>475</u> x 2)
	=	Rs 519270
Energy Charges	=	6060 x Rs <u>7.15</u> x 2
	=	Rs 51994.80
Electricity Duty	=	6060 x Rs 0.06
	=	Rs 363.60
Customer charges	=	Rs 3500
Total import charges	=	Rs 5,79,878

Thus, DISCOM will be incurring revenue loss of Rs 5,79,878/- if the excess import energy over and above the auxiliary consumption limit is not considered on KVAh basis

CHIEF ENGINEER
IPC & RAC/TGNPDCL/WGL