



**Southern Power Distribution Company of Telangana Limited**

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TGERC HYDERABAD INWARD

- 1 MAR 2025

No.

Sign

From

Chief Engineer (IPC),  
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To

The Commission Secretary,  
TGERC, Sy No. 145-P,  
Vidyut Niyantran Bhavan,  
Kalyan Nagar, G.T.S Colony,  
Hyderabad 500 045.

Lr.No.CE/IPC/DE(IPC)/ADE/F.PM KUSUM/D.No.1768 /24-25,Dt: 01.03.2025

Sir,

Sub:- TGSPDCL - IPC Wing - Petition filed by TGSPDCL on behalf of TGDISCOMs seeking consent for draft EOI, model PPA & Model Lease Agreement for procurement of 4000 MW decentralized ground mounted Grid-Connected solar power for a period of 25 years from the COD for a period of 25 years under PM KUSUM Scheme Component-A – Information sought for – Submission - Regarding.

Ref:- Lr. No. Secy/Tariff/No.263300/D.No.153/2025 dated:28.02.2025.

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Pursuant to the directions vide reference cited, justification for procurement of 4000 MW decentralized ground mounted Grid-Connected solar power for a period of 25 years from the COD by TGDISCOMs under Component-A of PM KUSUM Scheme is herewith submitted for placing before the Hon'ble Commission.

Encl: As stated.

Yours faithfully,

**V. Prabhakar**

**Chief Engineer (IPC)**

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**Copy Submitted to:**

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

# **Justification for Procurement of 4000 MW**

## **Solar Power under Component-A of**

### **PM-KUSUM Scheme**

#### **I. TG Discoms to justify that the proposal is in line with the power procurement guidelines issued by the Commission in Clause 16.3 of the Regulation No. 2 of 2023**

As per the guidelines issued by the Commission in Clause 16.3 of the Regulation No.2 of 2023 –

*“All future procurement of short-term or medium-term or long-term power shall be undertaken only through tariff based competitive bidding in accordance with Guidelines notified by the Government of India under Section 63 of the Act”*

The Hon'ble Commission has taken up Suo-Moto determination of pre-fixed levelised tariff under Component-A of Pradhan Mantri Kisan Urja Suraksha Evam Utthan Mahabhiyan (PM-KUSUM) Scheme and passed an order dated 02.01.2021 in O.P.No.24 of 2020 wherein at Para 8 and Para 70 of the said order the pre-fixed levelized tariff is fixed as Rs. 3.13 /kwh for solar plants of capacity 500 kW to 2 MW under KUSUM Component-A.

*“8. Based on the above norms, the Commission has proposed the pre-fixed levelised tariff of Rs.3.13/kWh for solar plants of capacity 500 kW to 2 MW under Component-A.*

*70. This pre-fixed levelised tariff of Rs.3.13/kWh shall be applicable for the solar projects of capacity 500 kW to 2 MW commissioned under Component-A of the PM-KUSUM Scheme, subject to the terms and conditions of the Scheme”*

It is to submit that MNRE launched the Pradhan Mantri Kisan Urja Suraksha Evam Utthaan Mahabhiyan (PM KUSUM) in the year 2019, with the objective of providing financial and water security to farmers and also issued the Comprehensive guidelines for implementation of scheme along with standard power purchase agreement and lease agreement. Extract of Guidelines are:

*“i. DISCOM may invite applications for Expression of Interest (EOI) from prospective RPGs, through their online portal.*

*iv. In case the total aggregate capacity of eligible applications received for a particular sub-station is less than or equal to the capacity notified for connectivity at the sub-station, Letter of Award (LoA) will be awarded to all eligible applicants for procurement of*



*renewable power at a pre-fixed levelized tariff on first come first serve basis within one month from the receipt of application*

*v. In case the total aggregate capacity of eligible application received for a particular sub-station is more than the capacity notified for connectivity at the sub-station, then DISCOM or any agency authorized by the DISCOM shall invite Bids from all these applicants.*

*vi. Selection of bidders will be based on the lowest tariff offered in the ascending order as quoted by the bidders in the closed bid or e-reverse auction. In such cases, the pre-fixed levelised tariff will be the ceiling tariff for bidders.*

*vii. In case of bidding, all eligible applicants will have to submit tariff bids within a prescribed time. Selection of bidders will be based on the lowest tariff offered in the ascending order as quoted by the bidders in the closed bid. LoA will be awarded to all successful bidders.”*

Clause 4.4. (i), (iv), (v), (vi), (vii) states that DISCOMs may invite EOI and if the aggregate capacity of eligible applications is less than notified substation capacity, LOA will be awarded to all applicants at pre-fixed tariff. If aggregate capacity is greater than notified substation capacity, DISCOM shall invite bids to discover lowest tariff with pre-fixed tariff as ceiling.

In view of this, TGREDCO has notified EoI for procurement of 4000 MW of solar power in a decentralized manner under PM KUSUM Component A at a pre-fixed levelized tariff as approved by Telangana Electricity Regulatory Commission (TGERC), duly mentioning the earlier determined levelized tariff of Rs. 3.13 /kwh as ceiling tariff and it was further mentioned that a fresh acceptance will be obtained from TGERC towards tariff determination.

## **II. Load-generation balance projections for the next 10 years**

As per TGERC Order dated 29.12.2023 in OP No 07 & 08 and 18 & 19 of 2023 in approving Resource Plan and Business Plan for TGDISCOMs for 5<sup>th</sup> control period and 6<sup>th</sup> control period, the following were the energy requirements.

	<b>FY 25</b>	<b>FY 26</b>	<b>FY 27</b>	<b>FY 28</b>	<b>FY 29</b>	<b>FY 30</b>
<b>Energy requirement (MUs)</b>	83,058	87,564	92,365	97,482	102,942	107,868

	<b>FY 31</b>	<b>FY 32</b>	<b>FY 33</b>	<b>FY 34</b>
<b>Energy requirement (MUs)</b>	113,095	118,632	124,488	130,711

The actual power purchase by the state in FY24 was 86,823 MUs, surpassing the projected requirement for FY25 as per the resource plan. The Central Electricity Authority (CEA) has projected the energy requirements from FY25 to FY35 based on the actuals of FY24 in the Report of Resource Adequacy Plan for the State of Telangana. Following table consists of the energy requirement and peak demand as per CEAs Resource Adequacy Study.

	<b>FY 25</b>	<b>FY 26</b>	<b>FY 27</b>	<b>FY 28</b>	<b>FY 29</b>
Energy requirement (MUs), As per CEA Projections	90,962	96,596	102,732	108,932	115,347
Energy Availability ( MUs)	95,753	106,637	106,157	105,506	102,784
Surplus/Deficit	4,791	10,041	3,425	<b>(3,426)</b>	<b>(12,563)</b>

	<b>FY 30</b>	<b>FY 31</b>	<b>FY 32</b>	<b>FY 33</b>	<b>FY 34</b>
Energy requirement (MUs), As per CEA Projections	122,627	128,032	133,211	138,600	144,206
Energy Availability ( MUs)	97,429	96,334	96,570	96,334	96,334
Surplus/Deficit	<b>(25,198)</b>	<b>(31,698)</b>	<b>(36,641)</b>	<b>(42,266)</b>	<b>(47,872)</b>

As evident from the abovementioned tables, TG Discoms are expected to have an energy deficit from FY 28 onwards and also in FY 25 and FY 26 showing the Surplus but it is evident that only certain blocks is having the surplus. During the agriculture months TGDISCOMs are depending on the short term market to meet the energy demands. The proposed distributed solar power plants will complement the energy demand during agriculture seasons.

For better illustration, the energy requirement approved by TGERC under Resource plan vis-à-vis CEA Resource Adequacy report is submitted as under –



<b>Energy Requirement of TGDISCOMs at State periphery in MU</b>			
<b>FY</b>	<b>As per TGERC approved Resource Plan</b>	<b>As per CEA Resource Adequacy report</b>	<b>Difference</b>
<b>2024-25</b>	83,058	90,962	7,904
<b>2025-26</b>	87,564	96,596	9,032
<b>2026-27</b>	92,365	1,02,732	10,367
<b>2027-28</b>	1,00,285	1,08,932	8,647
<b>2028-29</b>	1,02,942	1,15,347	12,405
<b>2029-30</b>	1,07,868	1,22,627	14,759
<b>2030-31</b>	1,13,095	1,28,032	14,937
<b>2031-32</b>	1,18,632	1,33,211	14,579
<b>2032-33</b>	1,24,488	1,38,600	14,112
<b>2033-34</b>	1,30,711	1,44,206	13,492
<b>2034-35</b>	-	1,50,040	-

Taking into consideration the CEA Resource adequacy report, revised energy availability projections are as under –

<b>FY</b>	<b>TGERC approved Surplus/ Deficit (MU)</b>	<b>Difference energy requirement as per CEA report (MU)</b>	<b>Revised Surplus/ Deficit (MU)</b>
<b>2024-25</b>	12,696	7,904	4792
<b>2025-26</b>	19,073	9,032	10041
<b>2026-27</b>	13,793	10,367	3426
<b>2027-28</b>	8,024	8,647	-623
<b>2028-29</b>	-158	12,405	-12563
<b>2029-30</b>	-10,440	14,759	-25199
<b>2030-31</b>	-16,761	14,937	-31,698
<b>2031-32</b>	-22,062	14,579	-36,641
<b>2032-33</b>	-28,153	14,112	-42,265
<b>2033-34</b>	-34,376	13,492	-47,868

The estimated energy requirement is expected to enhance further with the advent of new proposals/developments in the State such as –

- i. EV policy which requires extending reliable green power supply to EV Charging Stations, thereby promoting adoption of e-mobility in the State;
- ii. Establishment of Data Centers ;
- iii. Extension of Metro corridor;

It is further submitted that though there is energy surplus on an annual basis, there is power deficit during many blocks during the day which has to be met through market purchases.

Hence, proposed procurement of solar power under PM KUSUM scheme Component A, shall assist TG Discoms to mitigate the energy deficit in the ensuing years, and ensure TG Discom's Power supply commitments to the consumers of Telangana in a reliable manner.

### **III. Justification / requirement of the proposed power procurement in terms of Load Generation Balance (along with detailed explanation) financial conditions of the Discoms.**

As per the MOPs (Ministry of Power) Renewable Purchase Obligation (RPO) dated 20.10.2023, following are the RPO targets for the state DISCOMs –

<b>Year</b>	<b>Wind Renewable Energy</b>	<b>Hydro Renewable Energy</b>	<b>Distributed Renewable Energy*</b>	<b>Other Renewable Energy</b>	<b>Total Renewable Energy</b>
2024-25	0.67%	0.38%	1.50%	27.35%	29.91%
2025-26	1.45%	1.22%	2.10%	28.24%	33.01%
2026-27	1.97%	1.34%	2.70%	29.94%	35.95%
2027-28	2.45%	1.42%	3.30%	31.64%	38.81%
2028-29	2.95%	1.42%	3.90%	33.10%	41.36%
2029-30	3.48%	1.33%	4.50%	34.02%	43.33%

Telangana, with its current contracted renewable energy (RE) capacity, cannot meet the Renewable Purchase Obligation (RPO) targets set by the Ministry of Power (MOP). This shortfall could result in a significant **penalty of approximately Rs. 3.72 per kWh**. The following table outlines the year-wise RPO shortfall for Telangana, which could lead to penalties imposed by the MOP.



<b>Particulars</b>	<b>UOM</b>	<b>FY25</b>	<b>FY26</b>	<b>FY27</b>	<b>FY28</b>	<b>FY29</b>	<b>FY30</b>
Demand	MW	16,877	18,138	19,529	20,968	22,488	24,215
Energy requirement	MUs	90,962	96,596	102,732	108,932	115,347	122,627
RPO Target	%	29.91%	33.01%	35.95%	38.81%	41.36%	43.33%
	MUs	27,207	31,886	36,932	42,277	47,719	53,134
Existing Total RE Generation in Telangana	MUs	16,266	21,033	21,033	21,033	21,025	20,975
<b>RPO Shortfall (With contracted RE capacity)</b>	<b>MUs</b>	<b>10,941</b>	<b>10,853</b>	<b>15,899</b>	<b>21,244</b>	<b>26,694</b>	<b>32,159</b>
<b>RPO Penalty</b>	<b>Rs. Crores</b>	<b>4,041</b>	<b>5,920</b>	<b>7,909</b>	<b>9,934</b>	<b>11,973</b>	<b>4,041</b>

It is also submitted that some of the Commercial & Industrial (C & I) consumers are voluntarily opting for green power, and they have approached TGDISCOMs for availing green power. Apart from meeting the RPO, procurement of solar power is expected to reduce the power purchase cost of the discoms. Since the proposed procurement of solar power at INR 3.13/kWh is lower than the estimated average power purchase cost of INR 5.15 kWh (FY 2025-26). Further, the solar tariff is single part levelized tariff fixed for 25 years, unlike thermal power tariff being two parts with increasing Variable Cost component.

Considering the above points submitted, the proposed procurement of RE power will enable in complying with RPO and in reducing the power purchase cost. This will enable the discoms in reducing the PP cost and the consequent financial burden on the consumers.

In addition to the above, it is submitted that as this proposed solar power plants are to be installed near load centre i.e., injection at 11 KV level in 33 /11 KV Substation, it will reduce the Transmission & Distribution losses. At the same time energy pumped at 11 KV level will also avoid Transmission charges and investment towards transmission infrastructure.

#### **IV. Details of other new power procurement proposals including Renewable Energy & Battery Energy storage systems.**

TGGENCO has floated the 250 MW 2 hours Energy Storage tender, details are as below -

- TGGENCO issued Battery Energy Storage RFS No. 16/HPC&HP/BESS/TGGENCO /2024-25 on 22.01.2025. This request is for the development of 250 MW/500 MWh standalone Battery Energy Storage Systems in Telangana.
- The project will be executed under the Tariff-Based Competitive Bidding with Viability Gap Funding Support, following the "Build, Own, Operate" (BOO) model.
- Pre-bid meeting for the same was done on 10.02.2025.

TGDISCOMs have filed petitions seeking consent for procurement of power from following power plants

- 1X800 MW thermal power from Telangana Super Thermal Power Station Stage II for a period of 25 years and the commissioning of the plant will take 50 months
- 1X800 MW thermal power from Singareni Thermal Power Project Stage II for a period of 25 years and the commissioning of the plant will take 50 months
- 200 MW Solar Power from NLCIL under CPSU scheme Phase – II Tranche-III for a period of 25 years

#### **V. A strategic plan for integrating the proposed renewable energy capacity while ensuring grid stability. This should include steps to minimize thermal power generation to base load operations and strategy for managing ramp-up and ramp-down of thermal units to accommodate variable renewable energy in accordance with CEA guidelines.**

The inconsistency and intermittency of solar & wind power has to be managed by flexible power from other sources in order to ensure security, reliability and stability of electricity grids. Coal-fired power plants are capable to provide comparatively cheaper flexible power in the grid. Thus, flexible operation of coal fired unit is essential for handling the instability of renewable generation by tuning of control system or few retrofitting. Central Electricity Authority (CEA) has outlined the relevant requirements of flexible operation of thermal plant in Flexible Operation of Coal based Thermal Power Generating Units Regulations 2022,



The key clauses from the above regulation are outlined below-

- **Clause 6 - Minimum power level capabilities of coal based thermal power generating units for flexible operation.**- The coal based thermal power generating units shall have flexible operation capability with minimum power level of forty percent.

Provided that the generating units which are not capable of achieving **minimum power level of fifty-five percent**, shall achieve the same within one year of the notification of these regulations.

Provided further that the generating units which are not capable of achieving minimum power level of forty percent, shall achieve the same as per phasing plan mentioned in the sub-regulation (2) of regulation 5 of these regulations

- **Clause 7:** Ramp rates capabilities of coal based thermal power generating units for flexible operation -

The coal based thermal power generating units shall have ramp rate capability of minimum three percent per minute for their operation between seventy percent to hundred percent of maximum continuous power rating and shall have ramp rate capability of minimum two percent per minute for their operation between fifty-five percent to seventy percent of maximum continuous power rating.

Provided that the generating units which are not capable to comply with this regulation, shall comply with the same within one year of the notification of these regulations.

The coal based thermal power generating units shall achieve ramp rate capability of minimum **one percent per minute for their operation between forty percent to fifty-five percent of maximum continuous power rating as per phasing plan mentioned in the sub-regulation (2) of regulation 5 of these regulations**

In accordance with the above requirements outlined in CEA regulation, TG GENCO stations are having the capability of functioning at a technical minimum of 55%. TG GENCO stations are also taking steps for achieving the technical minimum of 40% as per the requirement.

With regard to ramp-up/ ramp -down requirements, TG GENCO stations have the capability of **achieving one percent per minute**. Necessary steps are under implementation for **achieving three percent per minute**.

In addition to the above, TG GENCO has also floated tender for procurement of 250 MW, 2 hours of energy storage from Battery Energy Storage Sources. This step is also expected to support the TG Discoms in integrating renewable energy from upcoming RE sources.



The approach adopted by TG DISCOMS to add solar capacities in a decentralized manner closer to load centers at 11kV, 33 kV voltages is also expected to support grid stability.

**VI. TG Discoms are already meeting the RPPO targets as per the RPPO (Compliance by Purchase of Renewable Energy/Renewable Energy Certificates) Regulation, 2022. A detailed justification for referencing RPPO compliance should be submitted.**

As per Clause 3 of Regulation No 7 of 2022 (TGERC Renewable Power purchase Obligation (Compliance by purchase of Renewable Energy/Renewable Energy Certificates) Regulation, 2022) for compliance of RPPO by obligated entities for FY 2022-23 to FY 2026-27, following are the RPPO targets for the Telangana state

Year/RPPO	2022-23	2023-24	2024-25	2025-26	2026-27
Solar	7.5%	8%	9%	10%	11%
Non-Solar	1%	1.25%	1.5%	1.75%	2%
Total	8.5%	9.25%	10.5%	11.75%	13%

As against the RPPO requirement of 9.25% as per TGERC, TGDISCOMs have achieved RPPO of ~ 14% during FY 2023-24. However, while entering the PPAs for purchase of RE power, TGDISCOMs have examined the RPPO targets in vogue both at State level & National level. Going further RPPO targets of the state are further likely to be enhanced as the targeted RE capacity addition at India level has been revised to 450 GW by 2030 (350 GW Solar and 100 GW Non-Solar).

State DISCOMs to comply with the MoP notified RPPO trajectory, it is likely that the State RPPOs may be directed to align with the MoP RPPO; It is to submit that, the MoP, Govt of India vide Gazette dated 20.10.2023 has specified the following minimum share of consumption of renewable energy by the electricity distribution licensee as a percentage of total share of energy consumption for different designated consumers (including DISCOMs as a percentage of their total share of energy consumption) under the Energy Conservation Act, 2001:

Year	Wind (%)	Hydro (%)	Distributed renewable energy (%)	Other renewable energy(%)	Total renewable energy (%)
<b>2024-25</b>	0.67	0.38	1.50	27.35	29.91
<b>2025-26</b>	1.45	1.22	2.10	28.24	33.01
<b>2026-27</b>	1.97	1.34	2.70	29.94	35.95
<b>2027-28</b>	2.45	1.42	3.30	31.64	38.81
<b>2028-29</b>	2.95	1.42	3.90	33.10	41.36
<b>2029-30</b>	3.48	1.33	4.50	34.02	43.33

*\*Above targets are effective from 01.04.2024*



Further, it was stipulated that any shortfall in above specified RE consumption targets shall be treated as non compliance and penalty shall be imposed as such rate specified under sub section(3) of section 26 of the said act.

The Section 26(3) of the Act stipulates as below about levy of penalty for non-compliance of prescribed RE consumption by distribution licensees:

*“If any person fails to comply with the directions issued under clauses (n) and (x) of section 14, he shall be liable to a penalty which shall not exceed ten lakh Rupees for each such failure. Provided that he shall be liable to an additional penalty which shall not exceed twice the price of every metric ton of oil of equivalent prescribed under this act, which is in excess of the prescribed norms”*

Further, MNRE vide its letter dated 01.02.2024 has communicated tentative penalty amount for each shortfall unit could amount up to Rs.3.72 per unit in not meeting the RE consumption norm, and advised DISCOMs to plan in advance to meet the aforesaid RE consumption norms specified under the Energy Conservation Act, 2001, instead of paying high penalty for non compliance.

As such, the proposed solar power purchase would facilitate TGDISCOMs to meet the aforesaid RPO Obligations in a sustainable manner.

**Hon’ble commission may also kindly consider the following points –**

- As per order dated 02.01.2021 in O.P.No.24 of 2020, the Hon’ble commission has notified the pre-fixed levelised tariff for Solar Projects under PM KUSUM Component A.TGREDCO has floated an EOI in line with the above tariff ceiling fixed by the Hon’ble commission. Before entering into PP, TGDISCOMs will approach Hon’ble TGERC for adoption of tariff.
- Procurement of solar power under decentralized model under KUSUM A brings in the following benefits –
  - **Saving in power purchase cost** : Procurement of solar power at 11 KV level will result in reducing the power purchase cost and the savings are illustrated below (for 500 MW plant) -

S.No	Particulars	Units	Value
1	<b>Annual Energy available from Solar (4000 MW @ 19% CUF) @ 11 kV</b>	<b>MU</b>	<b>6656</b>
2	Power Purchase Cost for Solar Power (@ 11 kV)	INR / kWh	3.13

<b>3 = 1 * 2</b>	Total Cost of Purchase from Solar Power	INR Cr.	2083
<b>4</b>	Average cost of market purchase in FY23-24	INR / kWh	5.56
<b>5 = 1 * 4</b>	Total Cost of Equivalent Purchase from Market	INR Cr.	3701
<b>6 = 5 - 3</b>	Savings accrued from Power Procurement from Solar	INR Cr.	1618

- **Network Investment Deferral:** Adding solar capacities at 11 KV level which are closer to load centers results in absorption of power locally. Hence, grid enhancements at higher voltages can be minimized / deferred. This results in saving in the capex of TGDISCOMs.
- **Reduction in Losses:** Generation and usage of power at 11 KV and below is expected to reduce the technical losses in the system, thereby improving the commercial viability of TGDISCOMs.
- **Improvement in Voltage Profile of Distribution Network:** Adding solar capacities in a decentralized manner across the 11 KV network is expected to improve the voltage profile of the network. This will result in lesser number of 'low-voltage' complaints.
- **Catalyst for Rural Empowerment:** The intention of the PM Kusum scheme is to motivate farmers in installing solar power plants which will enhance their earnings which in turn develop the rural areas thus catering the agricultural load during the day time through installation of decentralized solar power plants across the rural areas.
- **Ambition of Telangana State for RE integration:** Telangana Government also set target of 20,000 MW RE Power by FY 2029-30 and 26,374 MW RE Power by FY 2035 under Telangana clean and Green Energy Policy 2025.
- The TGDISCOMs are entrusted with the dual responsibility of not only to adhere to the various regulations/orders issued by TSERC/CERC/MNRE/MoP but also the bigger mandate enlisted in the Electricity Act 2003, to maintain reliable power supply with least cost principle and Solar power under PM KUSUM Component A shall be injected at 11 KV level. Hence, TG Discoms can avoid the CTU, STU, 33 kV losses alongside the CTU, STU charges, for the proposed procurement of solar power. in view of the above the said procurement of 4000 MW capacity of Distributed Solar power Proposed under KUSUM Scheme.



- In addition to the cost savings, based on the past experiences in installation of similar small scale solar power plants in Substations helped to meet the growing demand without adding the upstream network, addition of this solar power plants in 11 KV level helps TGDISCOMs to meet the load without augmenting the substation capacity.

In view of the above submissions, the Hon'ble Commission may be pleased to accord consent for procurement of 4000 MW decentralized ground mounted Grid-Connected solar power for a period of 25 years from the COD by TGDISCOMs under Component-A of PM KUSUM Scheme

  
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