

# REMCL

## RAILWAY ENERGY MANAGEMENT COMPANY LIMITED

(A Joint venture of Indian Railways and RITES Limited)

CIN(U93000DL2013GOI256661)

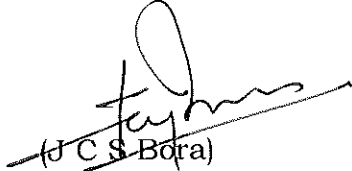
**No. REMCL/Rene/Dev/2017/1 dt. 24.10.17**

**To,  
All Prospective Renewable Power Developers**

**Sub: Renewable Power Developers Meet for Supply of Chopped  
Renewable Power to Indian Railway.**

Indian Railways is contemplating to enter into long term Power Purchase agreement (PPA) with Renewable Power Developers for supplying Solar/Wind/hybrid power to Indian Railways for its traction use in various states primarily to meet its Renewable Power Obligations as Deemed Licensee through Tariff Based Bidding routes initially in few states like Maharashtra and MP. A concept note giving details of the requirement is enclosed.

It has been proposed to hold a meeting with the prospective renewable power developers 2<sup>nd</sup> November 2017 from 10:30 hrs at RITES Ltd, Gurgaon, to discuss the requirement and various modalities pertaining to the above scheme. Interested Renewable Power Developers may attend above meeting and offer their comments on workability of the proposed scheme from the perspective of present Industry scenario and regulatory provisions.



(J C S Bora)  
General Manager/REMCL

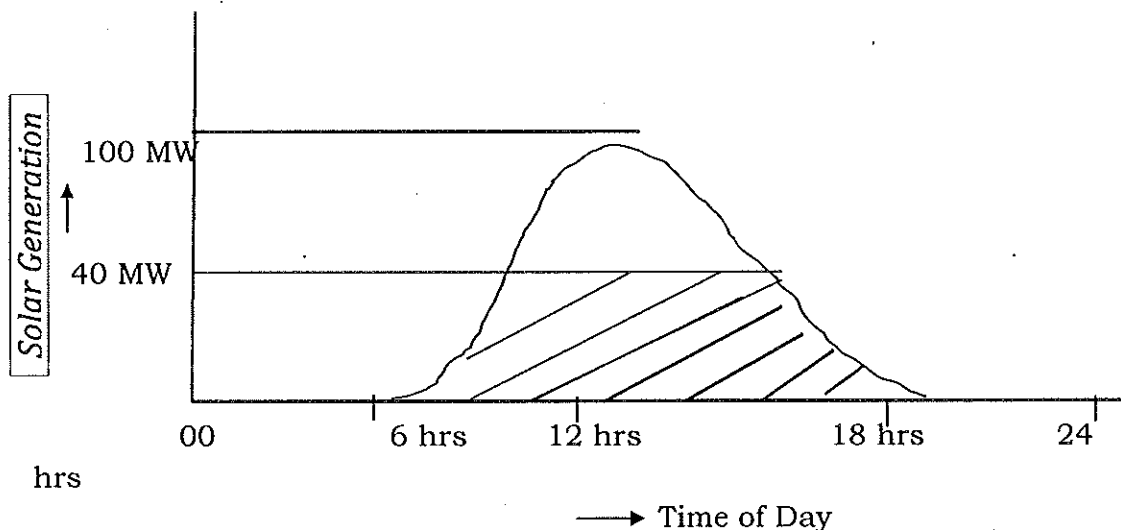
## Annexure

### Concept Note

- i. Indian Railway is consuming 15.5 Billion Unit of electric energy annually for traction purpose for traction purpose.
- ii. Annual energy consumption in various states and the estimated SPO and Non Solar RPO of Indian Railways as Deemed Licensee is given in Table below.
- iii. Indian Railway is planning to purchase Solar/wind/hybrid energy from solar/wind/hybrid power generators to meet SPO/RPO requirement for next 12/25 years.
- iv. However, due to constraints in scheduling Solar/Wind/Hybrid power is proposed to be procured with chopped peak as described in following example for Maharashtra.
- v. Developer shall quote fixed tariff for entire contract period.

### Workability of the Concept – An Example of Maharashtra

In Maharashtra Indian Railways plans to purchase 90 MU of solar/wind/hybrid power annually, with peak supply (maximum Contracted MW) restricted to 40 MW. This Power can be supplied to Railway from a solar plant of 100 MW as shown in the fig. below-



- i. Total MU in shaded area to be supplied to Railway with CUF @ 20%= 90 MU.
- ii. Total MU generated by solar plant of 100MW with CUF @20%= 175 MU.
- iii. Total MU generated above 40MW peak to be sold by SPD to other purchase= 85 MU.

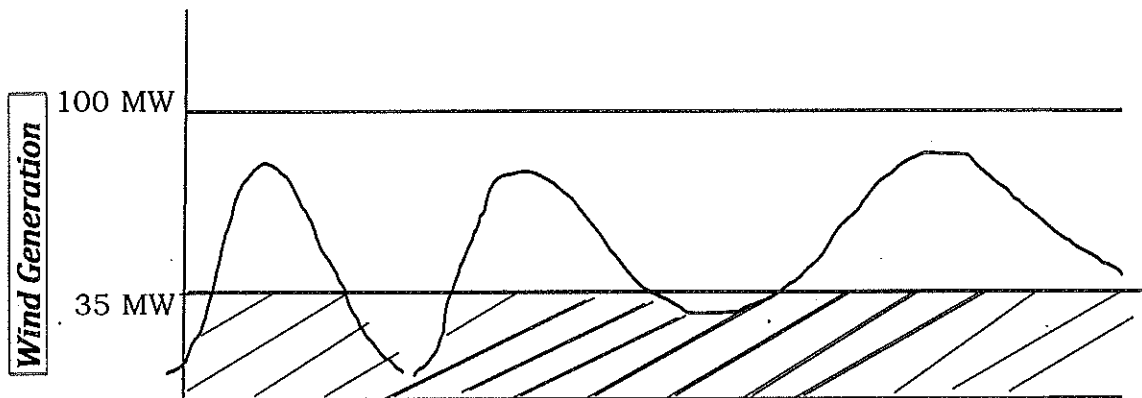
**Summary:**

- i. To supply 90MU of solar power to Railway within 40 MW contracted power peak, SPD may have to install a solar plant of minimum 100MW Capacity.
- ii. Full power generated from the 100 MW plant from 0-40MW (shown as shaded portion in the above shown generation curve) may be scheduled to Railway.
- iii. Generation above 40MW (shown as un-shaded portion in the above curve) shall be supplied by the SPD to other purchaser/DISCOM.

**WIND/HYBRID MODEL:**

Developer may supply clipped wind/hybrid power in similar model, as shown in the following fig.

This model may be termed as ***"SUPPLY OF CLIPPED RENEWABLE POWER' TO RAILWAY TSS's"***.



**Major issue for Discussion**

1. Connectivity level of solar plant
2. Centralized or state wise distributed.
3. Duration of PPA- 12 yrs./25 yrs.
4. Tariff structure.
5. Regulatory provision.

table

State	Ann. Cons. (MU)	RPO Req. @ 12% (MU)	RPO Req. @ 15% (MU)	RPO Req. @ 18% (MU)
Maharashtra	2579	309	387	464
Gujarat	710	85	107	128
MP	1796	216	269	323
Chattisgarh	896	108	134	161
WB	1130	136	170	203
Kolkata Metro	115	14	17	21
DVC	902	108	135	162
Jharkhand	503	60	75	91
Bihar	686	82	103	123
Odisha	966	116	145	174
UP CTU	805	97	121	145
UP(STU)	757	91	114	136
Rajasthan	403	48	60	73
Punjab	173	21	26	31
Haryana	270	32	41	49
Delhi	88	11	13	16
Karnataka	69	8	10	12
TN	784	94	118	141
Telangana	387	46	58	70
Kerala	201	24	30	36
AP	1524	183	229	274