

Shram Shakti Bhawan, Rafi Marg,  
New Delhi, 16<sup>th</sup> December, 2019

**OFFICE ORDER**

**Subject: Establishment of Renewable Energy Management Centre (REMC) at  
Telangana and Energy Management Centre (EMC) at South Andaman.**

In continuation of this Ministry's Office Memorandum No.11/66/2014-PG dated 11.09.2017 (**Annexure-I**), sanction of the President is hereby conveyed for Establishment of Renewable Energy Management Centre (REMC) at Telangana and Energy Management Centre (EMC) at South Andaman from the cost saving of earlier approved scheme of 11 REMCs in Southern Region, Western region and Northern Region including NLDC as part of Green Energy Corridor Scheme.

2. The awarded estimated cost of earlier sanctioned 11 Nos. of REMC project and the estimated cost for establishment of REMC at Telangana and EMC at South Andaman, are Rs.140 crore & Rs.41.1crore respectively. The detailed breakup of cost is at **Annexure-II & III respectively**. The other contents of the earlier Sanction order dated 11.9.2017, in respect of establishment of 11 Nos. of REMCs shall remain unchanged. Further, considering increasing RE penetration in other states, in case of cost savings out of original allocation of Rs. 409 crore, establishment of more REMCs in other RE resource rich States may be under taken.
3. REMC's main function as brought out in earlier sanction dated 11.9.2017, shall remain unchanged. The same shall be forecasting & Scheduling and real time tracking of RE generation. REMC shall closely coordinate with respective Load Despatch Center and shall be integrated with existing Supervisory Control & Data Acquisition System (SCADA) for RE generation dispatch. REMC shall provide forecasting system to help system operators to better manage grid operation so as to ensure power system security and stability.
4. EMC's main function shall be monitoring, operation and management of conventional generation as well as solar generation through deployment of State-of – art monitoring, forecasting and resource management system. This will help grid operator/Electricity Deptt. of Andman & Nicobar Island to effectively manage power system operations with economy, reliability & security.
5. Power Grid Corporation of India Ltd. (PGCIL) shall be the implementing agency for EMC in South Andaman and REMC in Telangana. Upon commissioning, EMC/REMC shall be handed over to the respective owners i.e. Electricity Department (ED), Andaman & Nicobar and SLDC, Telangana respectively. The commissioning schedule is 15 months from the date of placement of award/contract.



6. The scheme also includes Annual Maintenance, forecasting and communication services as under:-

- i. **South Andaman EMC:-** Annual Maintenance (5 years after 1 year of warranty), Forecasting Service (2 years), communication services (2 yrs internet & 6 yrs local intra net).
- ii. **REMC, Telangana:-** Annual Maintenance (6 years after 1 year of warranty) and Forecasting & Weather Service (4 years).

7. The expected life cycle of the control centre infrastructure is generally 6-7 years, therefore, after lapse of contract period i.e. 6-7 years, fresh investment of capital cost may be required. However, provision for extension of AMC for further 2 years on same terms & conditions may also be kept in the contract.

8. REMC System shall mainly cover Hardware and Software components. Hardware components broadly include Servers (SCADA, Forecasting & Scheduling, Web and Storage), Network devices (Routers, Firewall and Switches), Video Projection system etc. Software component includes SCADA & HMI, Forecasting & Scheduling, Historian, web server application softwares etc. Project also covers services for forecasting & weather, Annual maintenance charges, project management consultancy charges and applicable taxes & duties etc. However, additional Scope in EMC at South Andaman as Compared to REMC is as under:

- i. RTU for Data Acquisition
- ii. Communication system
- iii. DMS- Application Software
- iv. Auxiliary power supply design
- v. Air-conditioning system including Precision ACs etc.
- vi. Civil work for EMC establishment.

9. The activities related to training like designing of training modules for REMC operation, System software, Application software (including RE forecasting & scheduling) & System hardware, its detailed contents, defining detailed learning objective, hands-on training etc. shall be coordinated by PGCIL so as to ensure owner(s) to get substantial and in depth knowledge about REMC system & operations. Based on approved technical specification, provision of 600 mandays training is kept for each REMC-Telangana and EMC at South Andaman in the contract.

10. The Project Management Consultancy (PMC) being paid to PGCIL in respect of 11 REMCs sanctioned on 11.9.2017 is 10%. Therefore PMC for establishment of REMC at Telangana is kept as 10%. However, for establishment of EMC at South Andaman, it is kept as 12%. The PMC is applicable on hardware & software components along with installation & commissioning and training.

11. The terms & procedure of payment for REMC/EMC is scheduled in three parts i.e. initial advance, progressive payment upto commissioning and post commissioning (services & AMC). Payment towards civil works for EMC Andaman shall be based on Andaman, Administration requirement.



- I. **Initial advance:** 1<sup>st</sup> installment of 10% of the awarded cost, (except AMC, forecasting and communication services) shall be released on placement of LOA & submission of demand/ invoice by PGCIL along with PMC charges and prevailing applicable taxes.
- II. **Progressive Payments:**
- a. 2<sup>nd</sup> installment 75% of the awarded cost, (except AMC, forecasting and communication services), shall be released on & submission of demand/ invoice by PGCIL along with PMC charges and prevailing applicable taxes. This request to be raised by PGCIL one month before the anticipated date of FAT.
  - b. 3<sup>rd</sup> installment of 10% of the awarded, (except AMC, forecasting and communication services), cost shall be released on submission of demand/ invoice by PGCIL along with PMC charges and prevailing applicable taxes. This request to be raised one month before the anticipated date of SAT.
  - c. 4<sup>th</sup> installment of 5% of the awarded cost, (except AMC, forecasting and communication services) including any adjustment due to contract amendments, if any, shall be released on submission of demand/ invoice by PGCIL along with PMC charges and prevailing applicable taxes. This request to be raised one month before the anticipated date of Operational Acceptance (Successful completion).
- III. **Post Commissioning:** It shall include payments for Annual Maintenance (AMC), Forecasting and Communication services etc., which shall be released on submission of demand/ invoice by PGCIL.
12. Detail of Annual fund flow requirement for the scheme is enclosed at **Annexure-IV**.
13. PGCIL, the Implementing Agency for REMC at Telangana and EMC at Andaman & Nicobar will submit progress report indicating both financial and physical progress on "Establishment of REMC" on monthly basis.
14. CEA will closely monitor implementation of scheme and performance after commissioning of REMC/EMC. PGCIL will furnish periodical reports to CEA. The report/MIS would be listed by respective SLDC and ED Andaman & Nicobar. The progress of the scheme will also be monitored by MoP.
15. This issues with the concurrence of I.F. Division, MoP vide their Diary No.285/Fin./2019 dated 16/12/2019.



(Sanjeev Jain)  
Under Secretary to the Govt. of India  
Tele: 011-23730264



**To**

1. Chief Secretaries of all States/UTs
2. Energy/Power Secretaries of all the State Governments/UTs
3. Chairmen of State Electricity Boards / CMDs of State Power Utilities
4. CMD, PGCIL, Gurgaon

**Copy forwarded to:**

1. Secretary, Department of Expenditure, Ministry of Finance, North Block, New Delhi
2. Secretary, MNRE, Block-14, CGO Complex, Lodhi Road, New Delhi – 03
3. CEO, NITI Aayog, New Delhi
4. Secretary, Department of Public Enterprises, CGO Complex, New Delhi
5. Secretary, Department of Disinvestment, Ministry of Finance, , New Delhi
6. The Secretary, Department of Legal Affairs, Ministry of Law and Justice,
7. Secretary, Ministry of Corporate Affairs, Shashtri Bhavan, New Delhi
8. Chairperson, Central Electricity Authority, New Delhi
9. Secretary, CERC, New Delhi
10. CMD, POSOCO, New Delhi
11. Chief Controller of Accounts, Ministry of Power, Sewa Bhavan, R.K Puram, New Delhi.
12. Pay & Accounts office, Ministry of Power, R.K Puram, New Delhi.
13. Principal Director of Audit, Economic & Service Ministry, AGCR Building, New ITO, New Delhi – 110002.
14. NIC Cell, Ministry of Power with the request to upload the Office Order in the Ministry's website.



No.11/66/2014-PG  
Government of India  
Ministry of Power

Shram Shakti Bhawan, Rafi Marg,  
New Delhi, 11<sup>th</sup> September, 2017

**OFFICE MEMORANDUM**

Subject: Establishment of Renewable Energy Management Centre (REMC)

Sanction of the President is hereby conveyed for "Establishment of Renewable Energy Management Centre (REMC) at 11 locations" viz. Southern Region (Tamil Nadu, Andhra Pradesh, Karnataka SLDCs & SRLDC), Western Region (Gujarat, Maharashtra, Madhya Pradesh SLDCs & WRLDC), Northern Region (Rajasthan SLDC & NRLDC) and NLDC as part of Green Energy Corridor Scheme, at an estimated cost of Rs 409 Cr. Breakup of cost is at ***Annexure-I***. Further, considering increasing RE penetration in other states, in case of cost savings out of above allocation (Rs 409 Cr), establishment of two (2) more REMCs in other RE resource rich states may be under taken.

2. REMC's main function shall be forecasting & Scheduling and real time tracking of RE generation. REMC shall closely coordinate with respective Load Despatch Center and shall be integrated with existing Supervisory Control & Data Acquisition System (SCADA) for RE generation dispatch. REMC shall provide forecasting system to help system operators to better manage grid operation so as to ensure power system security and stability.

3. On the basis of DPR prepared by Consultant (E&Y) appointed by GIZ, Germany and approved by respective stakeholders' viz. SLDC/RLDC/NLDC, an estimated cost of Rs 409 Cr (Euro 55 million) including 10% Project Management Consultancy (PMC) charges has been sanctioned. Details of component wise cost as per DPR is enclosed at ***Annexure-II***.

4. PMC being paid to PGCIL in respect of NERPSIP, Srinagar-Leh 220 KV Transmission system, comprehensive scheme for improvement of T&D system in Arunachal Pradesh and Sikkim is 12%. Keeping in view the new technology involved in implementation of REMCs, PMC charges were kept as 10%.

5. REMC System shall mainly cover Hardware and Software components. Hardware components broadly include Servers (SCADA, Forecasting & Scheduling, Web and Storage), Network devices (Routers, Firewall and Switches), Video Projection system etc. Software component includes SCADA & HMI, Forecasting & Scheduling, Historian, web server application softwares etc. Project also covers services for forecasting & weather, Annual maintenance charges, project management consultancy charges and applicable taxes & duties etc.

6. As per the DPR, PMC is applicable on hardware & software components along with installation & commissioning and training. The activities related to training like designing of training modules for REMC operation, System software, Application software (including RE forecasting & scheduling) & System hardware, its detailed contents, defining detailed learning objective, hands-on training etc. shall be coordinated by PGCIL so as to ensure owner(s) to get substantial and in depth knowledge about REMC system & operations. Based on approved technical specification, provision of 600 mandays training is kept for each REMC-SLDC/RLDC/NLDC in the contract.

7. In the 3<sup>rd</sup> Joint Coordination Committee (JCC) meeting co-chaired by Secretary (Power) & Secretary (MNRE) held on 17.02.14, Committee emphasized funding arrangement of REMC through GBS allocation of Ministry of Power. PGCIL has been assigned as an implementation agency for REMCs by MOP.

*Anurag*

8. The installation & commissioning of the REMC project shall be completed within a period of 15 months from the date of award. REMCs (SR/WR/NR) shall be commissioned progressively in 2018-19. Further the scheme includes REMC Annual Maintenance (6 years after 1 year of warranty) and Forecasting & Weather Service (4 years) post operational acceptance. The expected life cycle of control centre infrastructure is generally 7 years therefore after the expiry of contract period i.e. 7 years, fresh investment of capital cost may be required. However, provision for extension of AMC & RE generation forecast services for further 2 years on same terms & conditions is also kept in the contract.

9. After commissioning of the REMC projects, the same shall be handed over to respective owners i.e. SLDC/RLDC/NLDC. 4 year service period has been kept for RE forecasting. However, provision exists for extension of RE generation forecast services for further 2 years on same terms & conditions in the contract.

10. The terms & procedure of payment for REMC(s) is scheduled in two parts i.e. upto commissioning and post commissioning (services & AMC). During commissioning, payment shall be made to contractor based on achievement of defined milestones i.e. 85% shall be paid on successful completion of FAT & SAT (for software: 30% on FAT & 55% on SAT and for Hardware: 70% after FAT on shipment & 15% on receipt of hardware at site). Remaining 15% payment shall be paid on Operational Acceptance (successful completion). Post commissioning, payment shall include quarterly payments for Annual maintenance, forecasting services etc. Accordingly, detail of annual fund flow requirement for the scheme is enclosed at **Annexure-III**.

11. PGCIL, the Implementing Agency for REMCs, will submit progress report indicating both financial and physical progress on "Establishment of REMC" from time to time.

12. This issues with the concurrence of I.F. Division, MoP vide their Diary No. 180/Fin/2017 dated 08.09.2017.

*Bharati*  
(Bharati) 11.09.17

Joint Secretary  
Tele:011-23714168

To

1. Chief Secretaries of all States
2. Energy/Power Secretaries of all the State Governments
3. Chairmen of State Electricity Boards / CMDs of State Power Utilities
4. CMD, PGCIL, Gurgaon

**Copy forwarded to :**

1. Secretary, Department of Expenditure, Ministry of Finance, North Block, New Delhi
2. Secretary, MNRE, Block-14, CGO Complex, Lodhi Road, New Delhi – 03
3. Secretary, NITI Aayog, New Delhi
4. Secretary, Department of Public Enterprises, CGO Complex, New Delhi
5. Secretary, Department of Disinvestment, Ministry of Finance, , New Delhi
6. The Secretary, Department of Legal Affairs, Ministry of Law and Justice,
7. Secretary, Ministry of Corporate Affairs, Shashtri Bhavan, New Delhi
8. Chairperson, Central Electricity Authority, New Delhi
9. Secretary, CERC, New Delhi
10. CEO, POSOCO, New Delhi
11. Controller of Accounts, Ministry of Power, Sewa Bhavan, R.K Puram, New Delhi.
12. Pay & Accounts office, Ministry of Power, R.K Puram, New Delhi,
13. Pincipal Director of Audit, Economic & Service Ministry, AGCR Building, New ITO, New Delhi – 110002.

### Annexure I: Detailed Cost Estimate

S.no.	REMC	Estimated Cost (₹ Cr)						
		H/W & S/W (SCADA, Forecasting & Scheduling etc.) and Contingency	Training	Forecasting & Weather Services (4 years)	REMC AMC (6 years)	PMC** cost	Taxes, duties and F&I**	Total
	<b>Southern Region</b>							
1	Tamil Nadu	17.9	3.0	13.4	3.0	2.2	6.0	45.4
2	Andhra Pradesh	18.6	3.0	4.5	3.0	2.2	5.2	36.5
3	Karnataka	19.4	3.0	7.5	3.7	2.2	5.2	41.0
4	SRLDC	17.1	3.0	1.5	3.0	1.5	4.5	30.5
	<b>Western Region</b>							
5	Gujarat	20.1	3.0	9.7	3.7	2.2	5.2	44.0
6	Madhya Pradesh	17.9	3.0	5.2	3.0	2.2	4.5	35.8
7	Maharashtra	19.4	3.0	6.0	3.7	2.2	5.2	39.5
8	WRLDC	20.1	3.0	1.5	3.7	2.2	4.5	35.0
	<b>Northern Region</b>							
9	Rajasthan	20.1	3.0	4.5	3.7	2.2	5.2	38.7
10	NRLDC	20.1	3.0	1.5	3.7	2.2	4.5	35.0
11	NLDC	16.4	3.0	0.0	3.0	1.5	3.7	27.6
	<b>Grand Total</b>	<b>207.1</b>	<b>32.8</b>	<b>55.1</b>	<b>37.3</b>	<b>23.1</b>	<b>53.6</b>	<b>409.0</b>

**@ As per the DPR estimates (considering currency conversion rate 1 Eur- 74.5 INR)**

**\*\*PMC = Project Management Consultancy Charges; F&I = Freight & Insurance**

**Detailed Cost Estimate (as per DPR)**

S.no.	REMC	Estimated Cost (Euro Million)						
		H/W & S/W (SCADA, Forecasting & Scheduling etc.) and Contingency	Training	Forecasting & Weather Services (4 years)	REMC AMC (6 years)	PMC** cost	Taxes, duties and F&I**	Total
	<b>Southern Region</b>							
1	Tamil Nadu	2.4	0.4	1.8	0.4	0.3	0.8	6.1
2	Andhra Pradesh	2.5	0.4	0.6	0.4	0.3	0.7	4.9
3	Karnataka	2.6	0.4	1	0.5	0.3	0.7	5.5
4	SRLDC	2.3	0.4	0.2	0.4	0.2	0.6	4.1
	<b>Western Region</b>							
5	Gujarat	2.7	0.4	1.3	0.5	0.3	0.7	5.9
6	Madhya Pradesh	2.4	0.4	0.7	0.4	0.3	0.6	4.8
7	Maharashtra	2.6	0.4	0.8	0.5	0.3	0.7	5.3
8	WRLDC	2.7	0.4	0.2	0.5	0.3	0.6	4.7
	<b>Northern Region</b>							
9	Rajasthan	2.7	0.4	0.6	0.5	0.3	0.7	5.2
10	NRLDC	2.7	0.4	0.2	0.5	0.3	0.6	4.7
11	NLDC	2.2	0.4	0	0.4	0.2	0.5	3.7
	<b>Grand Total</b>	<b>27.8</b>	<b>4.4</b>	<b>7.4</b>	<b>5</b>	<b>3.1</b>	<b>7.2</b>	<b>54.9</b>

**@ As per the DPR estimates**

**\*\*PMC = Project Management Consultancy Charge; F&I = Freight & Insurance.**



**Annexure II: Detailed Cost Estimate (as per DPR)**

Estimated Cost (₹ Cr)						
Hardware & Software (SCADA, Forecasting & Scheduling etc.)	Forecasting & Weather Services (4 years)	SCADA AMC (6 years)	Project Management Consultancy cost	Training	Taxes, duties and F&I*	Total
207	55	37	23	33	54	409

**@ As per the DPR estimates** (considering currency conversion rate 1 Eur- 74.5 INR)

\*F&I = Freight & Insurance

**Annexure-III: Annual Fund flow requirements**

S.No.	Project	Annual Fund flow requirement (Rs Cr)**								
		2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26
1	REMC	144	167	17	24	23	17	7	7	3
	Grand Total (Rs Cr)	409								

*\*\* The fund flow requirement includes REMC Annual Maintenance Charges (for 6 years after 1 year of warranty) and Forecasting & Weather Service charges (4 years) post operational acceptance*

## Annexure II: Cost Estimate

Table-1: Awarded cost of 11 nos. of REMC

S.no.	REMC	Awarded Cost of REMC (11 nos) (₹ Cr)						
		H/W & S/W (SCADA, Forecasting & Scheduling etc.) and Contingency	Training	Forecasting & Weather Services (4 years)	REMC AMC (6 years)	PMC* cost	Taxes, duties and F&I**	Total
	<b>Southern Region</b>							
1	SRLDC	8.0	0.1	0.7	1.4	0.9	2.0	13.1
2	Karnataka	8.2	0.1	2.3	1.5	1.0	2.4	15.5
3	Andhra Pradesh	8.1	0.1	1.8	1.5	1.0	2.3	14.8
4	Tamil Nadu	7.9	0.1	3.1	1.6	0.9	2.5	16.1
	<b>Western Region</b>							
5	WRLDC	7.3	0.1	0.1	0.8	0.9	1.7	10.9
6	Madhya Pradesh	7.0	0.1	1.1	0.9	0.8	1.8	11.7
7	Maharashtra	7.2	0.1	1.2	0.9	0.9	1.9	12.2
8	Gujarat	7.3	0.1	1.9	0.9	0.9	2.1	13.2
	<b>Northern Region</b>							
9	NLDC	7.2	0.1	0.0	0.2	0.9	1.6	10
10	NRLDC	7.6	0.1	0.2	0.2	0.9	1.7	10.7
11	Rajasthan	7.4	0.1	0.9	0.2	0.9	1.8	11.3
	Grand Total	83.2	1.1	13.3	10.1	10	21.8	139.5
Approx Cost								140

\*PMC = Project Management Consultancy Charge; \*\*F&I = Freight & Insurance



# ANNEXURE-III

## Estimated Cost (inclusive of taxes):

S. No	REMC/ EMC Loca tion	Estimated Cost (₹ Cr)							
		H/W & S/w f or SCADA, F orecasting & Scheduling t ool and Conti ngency	Training	Forecasti ng Services e tc.\$	REMC/E MC AMC*	Civil Work	Communicatio n services	PMC cost#	Grand Total
1	EMC at South Andaman	14.4	0.1	0.6	1.6	2.0	3.3	1.5	23.5
2	REMC at Telangana	11.0	0.1	3.6	1.9	0.0	0.0	1.0	17.6
	Grand Total	25.4	0.2	4.2	3.5	2.0	3.3	2.5	41.1

\$ Forecasting & Weather services for 4 years for Telangana REMC and forecasting services for 2 years for EMC Andaman

\* 1+6 years AMC for Telangana REMC & 1+5 years AMC for EMC Andaman

#10% PMC for Telangana REMC and 12% PMC for EMC Andaman

## ANNEXURE-IV

## Annual Fund flow requirements

Sl. No	Project	Annual Fund Flow requirement (Rs.in crore)*								
		2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28
1	REMC Telangana & EMC Andaman	3.5	26.7	3.4	2.6	1.8	1.5	0.8	0.6	0.2
	Grand Total (Rs Cr.)	41.1								

\* The above fund flow is for Andaman EMC including Annual maintenance Charges (for 5 years after 1 year of warranty) & Forecasting (2 years) and for Telangana REMC, it includes, Annual Maintenance Charges (for 6 years after 1 year of warranty) & Forecasting & Weather Service charges (4 years) post operational acceptance.