



भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority
नवीकरणीय ऊर्जा उद्भव विकास प्रभाग
Renewable Energy Source Development Division

*** ** ***

No. CEA/PIg/RES-30/2017

Dated: 14-07-2017

विषय: 28-06-2017 को (1430 बजे से 1700 बजे तक, एन आर पी सी) नई दिल्ली में नवीकरणीय ऊर्जा स्रोतों से एसएलडीसी में 'वास्तविक समय मोड में ऑनलाइन परिचालन डेटा' की प्राप्ति तथा अन्य संबंधित मुद्दों के बारे में बैठक का कार्यवृत्त (minutes).

Subject: Minutes of the Meeting regarding 'receipt of online operational data in real time mode at SLDC', from renewable energy generation sources (RES) and related issues held in New Delhi on 28-06-2017 (1430 hrs to 1700 hrs at NRPC).

महोदय/Sir,

Minutes of the Meeting of the Technical Committee on the subject held on 28-06-2017 (1430 hrs to 1700 hrs at NRPC) at New Delhi, under the Chairmanship of Member (Planning), CEA are enclosed herewith for your kind information and further necessary action.

उक्त विषय पर 28 जून, 2017 को नई दिल्ली में सदस्य (योजना), सी.ई.ए की अध्यक्षता में आयोजित तकनीकी समिति की बैठक के मिनट (कार्यवृत्त) आपकी जानकारी और आगे की आवश्यक कार्रवाई हेतु संलग्न हैं। बैठक के दौरान की गई प्रस्तुतियों की प्रतियां केवल ईमेल पर भेजी जा रही हैं।

कृपया पत्र की पावती दें/ Kindly acknowledge the receipt of the letter.

भवदीय/Yours faithfully

अशोक कुमार राजपूत/(Ashok Kumar Rajput)

Chief Engineer(RES Dev.)

Convener and Member Secretary

Email: ceaopmwind@gmail.com

Phone : 011-26714324 /26732257 (M) – 9868202176

To:

1. Sh. Hanumantharayappa, Chief Engineer, Elecyc, (Planning & Co- ordination), KPTCL
2. Sh. P. Suresh Babu, Chief Engineer, SLDC & Telecom, TSTRANSCO
3. Sh. B.B. Mehta, Chief Engineer, State Load Despatch Centre, Gujarat
4. Sh. A K V Bhaskar, SE, State Load Despatch Centre, A.P. Transco
5. Sh. P.A.R. Bende, Chief Engineer, SLDC, MPPTCL
6. Sh. Manoj Kumar, General Manager (BD&JV), NHPC Ltd.
7. Sh. Atulya Kumar Naik, AGM (Power Systems), SECI
8. Dr. P.C. Maithani, Adviser and Sh. J. K. Jethani, Scientist-D, MNRE
9. Dr. Subir Sen, COO (CTU-Plg & SG), CTU/Powergrid
10. Sh G. Chakraborty, DGM, NLDC (POSOCO)
11. Sh. S.S. Mishra, AGM (PE-Solar), and Sh. A.K. Sinha, AGM (OS-SIIS), NTPC Limited
12. Chief Engineer (IRP), CEA
13. Chief Engineer (PSP&A-I), CEA
14. Chief Engineer (PSP&A-II), CEA
15. Chief Engineer (HE&TD), CEA
16. Chief Engineer (TE&TD), CEA
17. Chief Engineer (GM), CEA
18. Chief Engineer (FM), CEA
19. Chief Engineer (F&CA), CEA
20. Secretary, CERC, New Delhi.
21. Member-Secretary (NRPC, WRPC, SRPC, ERPC & NERPC)

Copy for kind information to:

- 1) PPS to Secretary (Power), New Delhi
- 2) PPS to Secretary (MNRE), New Delhi
- 3) PPS to Joint Secretary (OM), Ministry of Power, New Delhi
- 4) Joint Secretary (Dist), MoP, New Delhi
- 5) SA to Chairperson, CEA,
- 6) SA to Member (Hydro), CEA
- 7) SA to Member (GO&D), CEA
- 8) SA to Member (Power System), CEA
- 9) SA to Member (E&C), CEA
- 10) SA to Member (Thermal), CEA
- 11) Sr.PPS to Member (Planning), CEA

Minutes of meeting regarding 'Receipt of online operational data in real time mode at SLDC', from Renewable Energy Generation Sources (RES) and related issues held in New Delhi on 28-06-2017 at NRPC.

In the meeting of the Technical Committee (held on 13th June, 2017 at NRPC, New Delhi) constituted by CEA under the chairmanship of **Member (Planning), CEA** for study of optimal location of the various types of balancing energy sources / energy storage devices to facilitate grid integration of Renewable Energy Sources (RES) and associated issues, it was decided that a specific meeting on the issue of '**Receipt of online operational data from renewable energy sources in real time mode at SLDC**', would be held. Accordingly, this meeting was held on 28th June, 2017 (Wednesday) at NRPC, New Delhi, under the Chairmanship of **Shri Pankaj Batra, Member (Planning), CEA**.

The First meeting of the Technical Committee was held in New Delhi on 24th Feb, 2017. Thereafter, Region wise meetings of the Committee were held for the states having vast potential of Renewables particularly both Solar and Wind power. The second meeting of the Committee was held in Chennai on 09.05.2017 for Southern Region states. The third and fourth meetings of the Committee for the states of Western and Northern Region were held in Vadodara and New Delhi on 05.06.2017 and 13.06.2017 respectively.

The list of participants is given at **Annexure-1**.

Shri A K Rajput, Chief Engineer (RES), CEA and Member Secretary & Convener of the Committee welcomed Member (Planning), CEA and all the participants. He introduced the brief agenda and requested **Member (Planning), CEA** to address and guide the participants.

The Chair stated that along with the balancing power needs, 100% flow of operational data from renewables on real time basis is also a vital requirement for safe and secure grid operation. This meeting is to deliberate on how to ensure the communication of data in a reliable manner in real time between generation point/pooling stations and load despatch centers.

The Chair requested the participants to share details about status of real time online operational data communication from renewable generating sources/pooling stations to the State Load Despatch Centres (SLDCs) and also to deliberate on how to get 100% operational data communication in real time mode quickly. He stated that at present, various types of communication modes/techniques are being used by different stakeholders to collect data such as GSM/GPRS, Radio Modem, Leased Line, PLCC, V-Sat, optical fiber etc.

CE(PCD), CEA informed that Government of India is setting up National Optical Fiber Network (NOFN) to provide connectivity to 2.50 lakh Gram Panchayats (GPs) spread over 6600 Blocks and 641 Districts across the country. Minimum 100 Mbps band width at each Gram Panchayat is proposed. The NOFN Scheme is being implemented through BBNL (Bharat Broadband Network Limited), which has been set up as a Special Purpose Vehicle (SPV) by Government of India. The program has been divided in two phases, with a target to cover 1.0 lakh Gram Panchayats in First phase and 1.5 lakh Gram Panchayats(GPs) in Second phase. So far, work in Phase-I is almost complete. Phase-II of 1.5 lakh Gram Panchayats(GPs) are targeted for completion by Dec. 2018. The implementation of Phase-II of Bharat Net (erstwhile NOFN) is being envisaged through States Govts. participation. The State would prepare

DPR and accordingly fund would be released to the State Govt. It was also clarified that while laying fiber from a Block to GP, in case a substation is located somewhere in between, then the fiber can be routed through the substation. If while laying underground cable, ROW is an issue then poles can also be used for stringing aerial fiber. The example of State of Andhra Pradesh was given where they are planning to lay 61,000 KMs of fiber underground cable in association with NOFN using USOF (Universal Service Obligation Fund). The total estimated cost is Rs 4700 Cr (Rs 3800 Cr from Central + Rs 900 Cr from State).

The representative from **CERC** stated as follows:

- a. CERC has notified Communications Regulations 2017 on 15.5.2017, which are applicable for intrastate generators also. The same can be enforced to ensure that adequate communication is available.
- b. Sub-Committees have been formed under Member Secretaries of Regional Power Committees (RPCs) to devise a model of regional cooperation for the purpose of balancing of intermittency of renewables under Technical Committee of Forum of Regulators (FOR).

The Representative from **Karnataka SLDC** stated that as per KERC regulations, they are receiving 100% operational data in real time mode from all Wind and Solar power plants in the State with installed capacity of 3595.23 MW and 1086.4 MW respectively through Supervisory Control and Data Acquisition (SCADA) Remote terminal Units (RTUs) and Very Small Aperture Terminal (VSAT) communications. Real time data of all renewable generation injecting at pooling stations are available at Karnataka SLDC. He informed that the Tendering is in progress for procurement of Device Language Message Specification (DLMS) compliant meters for the replacement of the existing meters at all interface points and 11 kV feeders in the state.

KPTCL has also submitted DPR to provide fibre connectivity on OPGW to all 220 kV, 400 kV and major generating stations in the state. This fibre network will be utilized for redundancy of communication. The presentation made by KPTCL is at **Annex-A**.

Member (Planning), CEA requested other state SLDCs to emulate Karnataka in order to receive 100% operational data communication in real time mode.

Representative of Madhya Pradesh SLDC (**MPSLDC**) stated that though the infrastructure for data communication has been provided, they are facing problems in receiving the data as generators do not respond. On the advice of **Member (Planning), CEA**, to enforce penal provisions on such generators, he stated that they do not have Regulations for such enforcement. Representative of other SLDCs viz. Tamilnadu, Andhra Pradesh, Rajasthan, Gujarat, and Maharashtra also intervened and said that they also do not have Regulations for such enforcement.

The Chair stated that **Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2017** are in place and the same provides as:

“SCOPE and APPLICABILITY:

- (i) These regulations shall apply to the communication infrastructure to be used for data communication and tele -*

protection for the power system at National, Regional and inter-State level and shall also include the power system at the State level till appropriate regulation on Communication is framed by the respective State Electricity Regulatory Commissions.(ii) All Users, SLDCs, RLDCs, NLDC, CEA, CTU, STUs, RPCs, REMC, FSP and Power Exchanges shall abide by the principles and procedure as applicable to them in accordance with these regulations.”

CE(PCD), CEA stated that there are clear guidelines/Regulations of CERC regarding enforcing penal provision on the generators/aggregators which do not comply the condition of data communication. As per CERC guidelines/regulations, in case Intra-State Regulation is not framed/available in a state, then, Interstate Regulation of CERC can be applied.

Representative of **Rajasthan SLDC** stated that they have appointed one aggregator, which is responsible for collecting all the information and providing data to the concerned authorities. Out of 40 Grid integrated Solar RE generators, 24 (i.e. 60%) are reporting data and out of 7 Wind RE generators, only 1 (i.e. 14%) is reporting data. He further stated that they are continuously pursuing RE generators to ensure that 100% data availability may be achieved. The presentation made by Rajasthan is at **Annex-B**.

In this regard **Representative of IWPA** (Indian Wind Power Association) suggested that they have been appointed by Rajasthan for real time data communication to SLDC. They stated that they are doing it in coordination with a service provider REConnect Energy Solutions Pvt Ltd (REConnect).

The Representative of **APSLDC** informed that at present **APSLDC** is receiving data for 95.5% wind generation and 96% for solar generation. They are also installing Optical Fiber Communication (OFC) along with Remote Terminal Units (RTUs) under reliable communication project of Ministry of Power (MoP), 50% of cost would be a grant under Power System Development Fund (PSDF).

He stated that as per the Indian Electricity Grid Code (IEGC) and the orders of Hon'ble CERC, implementation of Data Acquisition System (DAS) and providing protection system is mandatory, before the APSLDC gives synchronization permission to the RE generator. This way APSLDC is able to receive data from almost every RE generator. The presentation made by APSLDC is at **Annex-C**.

Representative of **Telangana SLDC** stated that in their state it is mandatory for all the generators to establish data connectivity to SLDC before synchronizing the Plant. Further, the generator is made to transmit data upto the nearest data collection point from where data is communicated to SLDC over existing communication network. Presently, telemetry is established with all the 23 RE generators with a capacity of 1044 MW connected at 132 kV and above. Out of 60 RE generators (connected at 33 kV and below) with a capacity of 756 MW, telemetry is established with 41 RE generators having a capacity of 323.24 MW

For DISCOM embedded Renewable Energy generators, connecting at 33 kV and below, the plant data is being transmitted to SLDC through Leased line over Multiprotocol Label Switching (MPLS). The presentation made by Telangana is at **Annex-D**.

Representative of **Tamil Nadu SLDC** stated that real time data from 902 Wind Energy generators(WEGs) for a quantum of 2105 MW is received at Renewable Energy management Centre (REMC). At these locations DLMS compliant Meters with MODEMs (Modulator Demodulators) have been installed. Real time data from 79 numbers of substations for a quantum of 2105 MW is received at REMC Centre. The presentation made by TNSLDC is at **Annex-E**.

Representative of **Maharashtra SLDC** informed that at present, Maharashtra state has 60 Nos. of RE pooling substations. Real time data acquisition at MSLDC from these 60 locations is planned in phased manner which is as - 10 nos. are covered in existing SCADA system, 20 nos. data concentrators (DCs) at RE pooling station and 30 nos. DCs at RE pooling Stations through PSDF support. Maharashtra is part of unified REMC scheme under implementation by PGCIL. At present 56% operational data is being received in real time mode. Maharashtra has got wind and solar power plants of installed capacity of 4662 MW (Telemetered capacity 2442 MW) and 390 MW (Telemetered capacity 390 MW) respectively.

He stated that considering remote locations of RE Pooling S/Ss, various types of communication media i.e. MPLS/Leased line/VSATs etc. will be used for data transmission to SLDC. The presentation made by Maharashtra is at **Annex-F**.

Representative of **Gujarat SLDC** stated the GPRS is being used for data communication. GPRS depends on height of cellular tower and if some tall building comes in between, the signal strength comes down. So reliable communication system like fibre optic cable is required. For **Solar power data Integration** - Radio Links between Solar Power Stations and GETCO EHV Sub-Stations, where RTUs are installed have been provided. Radio Modem is also provided for point to point speech communication between Solar Plant and RTU end of GETCO. The Radio Modem frequency band is 2.412 to 2.464 GHz which is Unlicensed Band. For **Wind data Integration** – Radio Modem (36 Nos.) GSM/GPRS (24 nos.), leased line (1 No.) and Power Line Carrier Communication (PLCC), 9 Nos. have been provided.

Representative of **SRLDC** made a brief presentation regarding the provisions of “**Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2017**” and its applicability to intra-state system. The presentation made by SRLDC is at **Annex-G**.

Representative from **SUZLON** expressed that they have installed disturbance recorder and power analyzer also at pooling stations in addition to SCADA RTU at different substations. The presentation made by SUZLON is at **Annex-H**.

Representative of **Kerala SLDC** informed that grid connected installed capacities of Wind, Solar and Hydro power are 65.475 MW, 71 MW and 194 MW out of which data is being received from 22 MW, 36 MW and 87.5 MW Wind, Solar and Hydro power capacities. He informed that the plant data is being transmitted to SLDC through MPLS and PLCC. The presentation provided by Kerala is at **Annex-I**.

M/s Orxa Grid made a presentation and highlighted that using the Internet of Things (IOT) they have developed devices which can be installed within 2 hours at a particular location and those would be ready for communication of data from individual RES generation point to the desired destination. The

arrangement is cloud based and does not require Data Concentrator Unit (DCU) or services of leased line for data communication. The data from the individual generation point is transferred in real time mode using the GPRS system to the Load Despatch Centre. GPS time stamping and Geo location tagging with in-built memory for data loss prevention are some of the features of the solution. Features of data security are also there. Data base provides the flexibility for different queries. There is a secured login, with two step certification of customer accounts and Cloud Enabled Access feature of data provides the flexibility of viewing the data from anywhere. The presentation made by **M/s Orxa Grid** is at **Annex-J**.

Conclusion:

1. Summing up the discussions, **Member (Planning), CEA**, stated that all states should have in place the urgent time bound plans to ensure the availability of 100% operational data in real time mode at the SLDC/RLDC/NLDC. ***It was decided that the respective states will submit weekly reports of data communication status to CEA as well as to respective RPC/RLDC and NLDC.***
2. Till the time, the State Regulations are not in place the Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2017” shall be followed.

Meeting ended with a vote of thanks to the chair.

Annex-1

List of participants for the meeting on "Receipt of online operational data in real time mode at SLDC" held in New Delhi (at NRPC) on 28-06-2017(AN)

S. No	Name	Designation	Organization	Ph.No/Fax No	Mobile No	Email Id.
1	Sh. Pankaj Batra	Member (Pgl)	CEA	011-26732202	9350981062	pan_batra@hotmail.com
2	A.K.Rajput	Chief Engineer	CEA	011-26732020	9868202176	rajput.ashok@gmail.com
3	Naresh Bandari	CE (Communication)	CEA			nbnareshbandari@gmail.com
4	C.P.Jain	Dir.	CEA	011-26732852	9871305009	cpj60@rediffmail.com
5	L.Satyanarayana	Dy.Director	CEA	011-26732256	9818327046	lsn262003@yahoo.co.uk
6	Sneha	AD	CEA	011-26732255	9013213867	snehabit@gmail.com
7	Hoshiyar Singh	D.E.O	CEA		9911118997	hoshiyarsingh393@gmail.com
8	Sumit Sinha	AD-1	CEA	011-27602236	9717484055	sumitsinha66@gmail.com
9	Upendra Kumar	Dir.	NRPC	011-26513265	9910180485	upendra0309@gmail.com
10	MAKP Singh	Member Sec.	NRPC		9425066437	makpsingh@yahoo.com
11	Apporva Anand	AD	CEA		7042157177	anand.apoorva@gmail.com
12	B.S Meena	EE (O) NRPC	NRPC		8750251805	bhanwarmeenamop@gmail.com
13	Ajay Bhatuagar	Consultnt (Tech)	NRPC		9910952459	ajaysb10@gmail.com
14	Sushuma Kumari	AGM	NTPC		9650990191	sushumakumari@ntpc.co.in
15	Uday Shankar	DGM(OS)	NTPC		9650990096	sunoday@gmail.com
16	Rajendra Kumar	A.Engineer(SCADA)	RVPV,Jaipur		9413383221	aenssdasldc@gmail.com
17	V.V Ramane Murty	DE	APTRANSCO		9490153120	de.scada.uldcaptransco.gov.in
18	Vasant. D. Pande		SLDC Maharashtra MSETCL	022-27601758	9820741941	vasant.pande@mahasldc.in
19	Neeraj Verma	DGM	THDC India Ltd, Rishikesh		9997999111	nvermathdc@gmail.com
20	G.Ramaniaeyulu	Asst. Engineer	CERC New Delhi		9811555001	ramcerc@gmail.com
21	M.M.Chaudhary	Dy Chief Engineer	CERC New Delhi		9953929114	mmc.cerc@gmail.com
22	K.K. Parbhakar	Chief Engineer	MP-SLDC		9425805267	kkparbhakar@yahoo.co.in
23	Shankar Chakraborty	EE	MPSLDC		9425805248	s.chakraborty.jbl@gmail.com

24	Debasis De	AGM	NRLDC, POSOCO		9560665333	debasis.de@posoco.in
25	Kashish Bhambhani	Chief MGR	Power Grid		9971399117	kashish@powergridmd.com
26	Mithur Dubey		RE Connect Energy, Gurgoan		9910623960	mithur.dubey@reconnectenergy.com
27	O.P Taneja		IWTMA, New Delhi		9971096623	ad.delhi@indianwindpower.com
28	Rajiv Aggarwal		ICPPA, New Delhi		9871574111	icppassociation@gmail.com
29	Amit Angra		HEIDELBERG CEMENT		9873951700	amit.angra@heidelbergcement.com
30	P. Raja Gunanihi		TANTRANSCO		9445857186	eegrid@tnebn.org
31	T.R Ganesh	Sr. Manager	SRLDC POSOCO		9449599164	tr_ganesh@yahoo.com
32	Jairan K.V.	EE	KSEB Ltd. Kerala SLDC		9446008247	eeckly@gmail.com
33	N.Manjunatha	SE-SRPC,	CEA-SRPC, Bangalur		9448790396	n.manjunatha@gov.in
34	K. Mandhava Rao	DE (SCAOA)	TSTRANSCO		9490153119	cesldctelangana@gmail.com
35	Naresh Panchal	Head &VP - PE	Suzlon Energy Ltd.	020-67025034	9850829701	pnaresh@suzlon.com
36	NSM Rao		Suzlon Energy Ltd.	020-67025003	9922937701	nsm.rao@suzlon.com
37	Coc Vinay Gupta	RETD	Suzlon Energy Ltd.	020-67022507	9167991372	vinay.gupta@suzlon.com
38	A.D. Thirimoorthy	Chief Technical Advisor	Indian Wind Power Office		9965549894	adtmoothy@gmail.com
39	K. Thyagaraj		KPTCL Bengaluru		9448365432	secscada@gmail.com
40	Naresh Kumar		PCD/CEA		8860310642	celdntcea@gmail.com
41	Ajay Aggarwal		Scope T&M Pvt Ltd.		97177466224	ajay.agarwal@scopetnm.com
42	Siddharth Arora		CERC New Delhi		9766405417	sid.cerc@gmail.com

List of Addresses - Members of the Technical Committee and other concerned

Sl. No.	State/Utility	Name of the Nominated Officer	Designation, Address & Contact details	Mobile No.
1.	Karnataka	Sh. Hanumantharayappa	Chief Engineer, Elec, (Planning & Co- ordination),Karnataka Power Transmission Corporation Ltd. (KPTCL), Room No.209, 2 nd Floor, Kaveri Bhavan, Bengaluru-560009. Email: ceepnc@gmail.com, Fax.No.080-22292204. Ph.: 080-22210416	9448363092
2.	Telangana	Sh. P. Suresh Babu	Chief Engineer, SLDC & Telecom, Room No:611, A Block , TSTRANSCO, Vidyut Soudha, Khairatabad, Hyderabad- 500 082. Email : cesldctelangana@gmail.com, Ph. : 040-23317645	9440679432
3.	Gujarat	Sh. B.B. Mehta	Chief Engineer ,State Load Despatch Centre, Gujarat Energy Transmission Corporation Limited, 132 kV Gotri Sub Station Compound, Near T.B. Hospital, Gotri Road, Vadodara – 390 021 Email : celd@gebmail.com, Tel.No.0265-2353171	9879200736
4.	Andhra Pradesh	Sh. A K V Bhaskar.	SE, State Load Despatch Centre, A. P. TRANSCO, Hyderabad Email: akvbhaskar@gmail.com, Ph:040-66175195 Fax: 040-66175194	9490153116
5.	Madhya Pradesh	Sh. P.A. R. Bende	CHIEF ENGINEER (LD) STATE LOAD DESPATCH CENTRE, OFFICE OF MPPTCL, NAYAGAON, RAMPUR, JABALPUR – 482 008 (M.P.) (0761)2970089 Fax: (0761) 2664343/2970119 sldcmpjbp@gmail.com , parbende@gmail.com ,	9425805264
6.	Rajasthan	Sh. A.K. Sharma/Sh S K Gupta	Addl. Chief Engineer (LD), Rajasthan Rajya Vidyut Prasaran Nigam Ltd., Heerapura GSS, Ajmer Road, Jaipur Email: ce.ld@rvpn.co.in, aks40aks@gmail.com , se.sold@rvpn.co.in , se.remc@rvpn.co.in Tel. No. 0141-2251601	9414061519 9414063333
7.	Maharashtra	Dr. S.S. Kulkarni	Chief Engineer (SLDC), Maharashtra State Electricity Transmission Co. Ltd., Mumbai Email: cesldc@mahasldc.in, Tel. No. 022-27601931	9819363329
8.	Tamil Nadu	Er. A. Axilium Jayamary,	Director /Operation, TANTRANSCO directoropn@tnebnet.org ,	044-28521088

		Sh. P.R. Muralidharan	Superintending Engineer, Renewable Energy Management Centre, SLDC, Chennai-260002 Email: seremc@tnebnet.org,	9445377059
		Sh. P. Rajagunanidhi	P.RAJAGUNANIDHI,, Executive Engineer, Grid, SLDC, TANTRANSOCO,CHENNAI. eegrid@tnebnet.org , rajaqunanidhi@yahoo.co.in , Chennai-260002	9445857186, 04428586433
		Ms. S. Gomathi	Executive Engineer, Renewable Energy Management Centre, SLDC, Chennai Email: aeceremc@tnebnet.org,	9444203708
9.	NHPC	Sh. Manoj Kumar	General Manager (BD&JV), NHPC Ltd., NHPC Office Complex, Sector-33, Faridabad-121003. Email : mkumar@nhpc.nic.in, Ph. : 0129-2278430	7579455850
10.	SECI	Sh. Atulya Kumar Naik	AGM(Power Systems) Email: aknaik@seci.co.in, Fax No.011-71989235 Ph.No. 011-71989214	9717954896
11.	MNRE	Dr P C Maithani, Adviser & Sh. J.K. Jethani, Scientist-D	Ministry of New and Renewable Energy, 14 th Block, CGO Complex, Lodhi Road, New Delhi-110001 pcmaithani@nic.in , jethani.jk@nic.in , Tel./Fax. 011-24368911	9891184867
12.	Power Grid/CTU	Dr. Subir Sen,	COO (CTU-Plg & SG) Power Grid Corporation of India Limited (PGCIL) Saudamini, Plot No.2, Sector 29, Near IFFCO Chowk, Gurgaon (Haryana) - 122001, INDIA Fax 0124-2571990 Tel: 0124-2571700-719 / 011-26560072 subir@powergridindia.com ,	9650293185
13.	POSOCO	Sh. G Chakraborty	DGM, National Load Despatch Centre (NLDC), B-9, Qutab Institutional Area, Katwaria Sarai, New Delhi-110016 gchakraborty@posoco.in , c.goutam62@gmail.com ,	9433041815
14.	NTPC	Sh. S.S. Mishra	AGM (PE-Solar), NTPC Limited, EOC, Sector-24, Noida ssmishra@ntpc.co.in ,	9650991145
		Sh. A.K. Sinha	AGM (OS-SIIS), NTPC Limited, Core-7, Scope Complex, Lodhi Road, New Delhi anjansinha01@ntpc.co.in ,	9650992971

Chief Engineers of CEA, {IRP, SP&PA – I &II, HETD, TETD, GM, FM, F&CA}

Co- opted Members from Regional Power Committees and CERC

<p>Representative from CERC C/o Secretary, CERC Central Electricity Regulatory Commission (CERC), Chanderlok Bldg., 3rd & 4th Floors, West Wing, 36, Janpath, New Delhi – 110 001 (Phone: 011-23753915) Fax No.011-23753923 secy@cercind.gov.in, cerc.ra@gmail.com,</p>	<p>Sh S R Bhatt Member Secretary Southern Regional Power Committee, No. 29 Race Course Cross Road Bangalore-560 009 Tel: 080-22269012 Mob.: 09620184649 Fax : 080-22259343/ 22352616 mssrpc@yahoo.com,</p>
<p>Sh M A K P Singh Member Secretary Northern Regional Power Committee 18-A, Qutab Institutional Area, Shaheed Jeet Singh Marg, Katwaria Sarai, New Delhi-110 016 Tel: 011-26511211 Mob.: 9968667741 PABX No. 26967842/26868681 Fax : 011-26865206 PABX No. 26967842/26868681 #101 Fax : 011-26865206 msnrpc1@yahoo.com, ms-nrpc@nic.in,</p>	<p>Sh P K Mishra Member Secretary North Eastern Regional Power Committee NERPC complex Dong Parmaw, Lapalang Shilling-793006 Meghalaya Ph: 0364-2534039 Fax:0364-2534040 Mob:9436163419 email: nerpc@ymail.com, b_lyngkhoi@yahoo.com,</p>
<p>Sh A Balan Member Secretary Western Regional Power Committee, F-3, MIDC Area, Marol, Opp. SEEPZ, Central Road, Andheri (East), Mumbai - 400 093 Mob.: 9483540528 Tel: 022-28221636 Epabx: 022-28200194-95-96#210 Fax:022-2837 0193 ms-wrpc@nic.in, ma_balan@hotmail.com,</p>	<p>Shri A.K. Bandopadhyay Member Secretary EASTERN REGIONAL POWER COMMITTEE 14, Golf Club Road, Kolkata -700 033 Tel: 033-24235016 (direct) Mob.: 9433068533 Fax: 033 24221802, 24171358 mserpc-power@nic.in,</p>

Addresses of SERCs/JERC

<p>Joint Chief (Regulatory Affairs), Forum of Regulators (FOR) C/O Central Electricity Regulatory Commission (CERC) 4th Floor, Chanderlok Building 36, Janpath, New Delhi 110 001 Tel: 91-11-23353503 Fax: 91-11-23753923 , dcra@cercind.gov.in,</p>	<p>Secretary, Gujarat Electricity Regulatory Commission, 6th Floor, GIFT ONE Road 5 C, Zone 5, GIFT City, Gandhinagar – 382355 (Phone: 079 23602000, /9909943568 Fax No.079-23602054/23602055 gerc@gercin.org, chairman@gercin.org,</p>
<p>Secretary, Madhya Pradesh Electricity Regulatory Commission 4th & 5th Floors, Metro Plaza, E-5, Arera Colony, Bittan Market, Bhopal 462 016 Ph: 0755-2464643/9425005834/2430158(fax) Secretary.mperc@gmail.com,</p>	<p>Secretary, Maharashtra Electricity Regulatory Commission 13th Floor, World Trade Centre No. 1 Cuffe Parade Colaba, Mumbai 400 005 Ph.:022-22163975 / 22163976 (Fax) secretary@mercindia.org.in,</p>

Secretary Power etc

secy-power@nic.in, secy-mnre@nic.in, pan-batra@hotmail.com,
i.arora@nic.in, arun.verma@nic.in, chair@nic.in, singhvi.cea@gmail.com, kkarya_2001@rediffmail.com, kk.arya58@gov.in,
balwan72@nic.in, ravi2658@yahoo.co.in, re_cea@rediffmail.com, psmhaske@yahoo.com, memberspscea@nic.in, somit.d@nic.in,
somit.d@gov.in, aruncea@nic.in, pdsiwal@yahoo.com, ashok1959@nic.in, ykashvap95@gmail.com,
gulshannarang786@yahoo.co.in, ceaopmwind@gmail.com, cermdcea@gmail.com, rstomer@nic.in, ceitcea@gmail.com, itcea@nic.in,
ddirpcea2015@yahoo.com,

Committee Members, MS RPCs

ceepnc@gmail.com , cesldctelangana@gmail.com , celd@gebmail.com , akvbhaskar@gmail.com , slcjmpjbp@gmail.com , parbende@gmail.com , ce.ld@rvpn.co.in , aks40aks@gmail.com , se.remc@rvpn.co.in , cesldc@mahasldc.in , directoropn@tnebnet.org ,	seremc@tnebnet.org , eegrid@tnebnet.org , rajaqunanidhi@yahoo.co.in , aeceremc@tnebnet.org , mkumar@nhpc.nic.in , aknaik@seci.co.in , pcmaithani@nic.in , jethani.jk@nic.in , subir@powergridindia.com , gchakraborty@posoco.in , c.goutam62@gmail.com , ssmishra@ntpc.co.in ,	mssrpc@yahoo.com , nerpc@ymail.com , b_lyngkhoi@yahoo.com , msnrpc1@yahoo.com , ms-nrpc@nic.in , ms-wrpc@nic.in , ma_balan@hotmail.com , mserpc-power@nic.in , anjansinha01@ntpc.co.in , secy@cercind.gov.in , cerc.ra@gmail.com , ms-wrpc@nic.in , ma_balan@hotmail.com ,
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CEs of CEA

ceirpcea@yahoo.com
skrmohapatra@rediffmail.com
Ravindergupta_cea@rediffmail.com
ravindergupta_cea@nic.in
prabhatkureel@yahoo.co.in
prabhat.kureel@gov.in
ldpapney@gmail.com
cegmccea1@gmail.com
pranika30@yahoo.com
ajay.talegaonkar@gmail.com
ajay.talegaonkar@nic.in
ceaopmwind@gmail.com
nbnareshbhandari@gmail.com

To whom Meeting Notice was sent

secy-power@nic.in , secy-mnre@nic.in , chair@nic.in , singhvi.cea@gmail.com , kk.arya58@gov.in , kkarya_2001@rediffmail.com , pan_batra@hotmail.com , balwan72@nic.in , re_cea@rediffmail.com , psmhaske@yahoo.com , ddirpcea2015@yahoo.com , awd.cea@gmail.com , ykashvap95@gmail.com , ashok1959@nic.in , gulshannarang786@yahoo.co.in , msnrpc1@yahoo.com , ms-nrpc@nic.in , makpsingh@yahoo.com , ms-wrpc@nic.in , ma_balan@hotmail.com , mssrpc@yahoo.com , celdntcea@gmail.com , nbnareshbhandari@gmail.com , sanjaysharmaceaa@gmail.com , m_cepomcea@yahoo.com , ceitcea@gmail.com , menghanivijay@yahoo.com ,	icppassociation@gmail.com , gchakraborty@posoco.in , c.goutam62@gmail.com , pcmaithani@nic.in , jethani.jk@nic.in , subir@powergridindia.com , kvsbaba@posoco.in , secycerc@gmail.com , secy@cercind.gov.in , cerc.ra@gmail.com , secycerc@gmail.com , sectt.cmd@sjvn.nic.in , biswas@bhel.in , vkbadoni@thdc.gov.in , cmd@ntpc.co.in , uckannaujia@thdc.co.in , Vibhav.nuwal@reconnectenergy.com , sanjay.kulkarni@scopetnm.com , nss5419@gmail.com , yash.kulkarni@scopetnm.com , akarora@powergridindia.com , iwpahq@windpro.org , secretary.general@windpro.org , askushwaha@powergridindia.com , pukhraj.singh@suzlon.com , msantosh@suzlon.com , cns@suzlon.com , ganesh.b@moserbaer.in ,	umesh.srivastava@moserbaer.in , dgnpti@npti.in , secycerc@gmail.com , sushanta_chat@yahoo.com , secy@cercind.gov.in , cerc.ra@gmail.com , shilpadce@yahoo.com , secy@cercind.gov.in , cerc.ra@gmail.com , anbunesang@gmail.com , wrldccr@posoco.in , gchakraborty@posoco.in , c.goutam62@gmail.com , kvsbaba@posoco.in , alok.kumar@posoco.in , alokkumar73@gmail.com , pkagarwal@gmail.com , ceepnc@gmail.com , eegrid@tnebnet.org , rajagunanidhi@yahoo.co.in , cesldctelangana@gmail.com , akvbhaskar@gmail.com , slcjmpjbp@gmail.com , parbende@gmail.com , cesldc@mahasldc.in , celd@gebmail.com , ce.ld@rvpn.co.in , aks40aks@gmail.com , se.remc@rvpn.co.in , anjansinha01@ntpc.co.in , info@sesi.in ,
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Participants Telemetry Meeting (28-06-2017)

pan_batra@hotmail.com
rajput.ashok@gmail.com
nbnareshbhandari@gmail.com
cpi60@rediffmail.com
lsn262003@yahoo.co.uk
snehabit@gmail.com
hoshiyarsingh393@gmail.com

sumitsinha66@gmail.com
upendra0309@gmail.com
makpsingh@yahoo.com , anand.apoorva@gmail.com
bhanwarmeenamop@gmail.com
ajaysb10@gmail.com
sushumakumari@ntpc.co.in
sunoday@gmail.com
aenssdasldc@gmail.com
de.scada.uldceaptransco.gov.in ,
vasant.pande@mahasldc.in
nvermathdc@gmail.com
ramcerc@gmail.com
mmc.cerc@gmail.com
kkparbhakar@yahoo.co.in
s.chakraborty.jbl@gmail.com
debasis.de@posoco.in
kashish@powergridmd.com
mithur.dubey@reconnectenergy.com
ad.delhi@indianwindpower.com
icppassociation@gmail.com
amit.angra@heidelbergcement.com
eegrid@tnebnet.org
tr_ganesh@yahoo.com
eeckly@gmail.com
n.manjunatha@gov.in
cesldctelangana@gmail.com
pnaresh@suzlon.com
nsm.rao@suzlon.com
vinay.gupta@suzlon.com
adtmoorthy@gmail.com
secscada@gmail.com
celdntcea@gmail.com
ajay.agarwal@scopetnm.com
sid.cerc@gmail.com