



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.uldceaptransco.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.Ramianeyulu	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, TANTRANSCO, 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

<p>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,</p>	<p>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,</p>	<p>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,</p>
---	---	---

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

<p>secy-power@nic.in, secy-mnre@nic.in, chair@nic.in, singhvi.cea@gmail.com, kk.arya58@gov.in, kkarya_2001@rediffmail.com, m_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, sanjaysharmacea@gmail.com, m_cepomcea@yahoo.com, ceitcea@gmail.com, menghanivijay@yahoo.com,</p>	<p>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,</p>	<p>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,</p>
--	---	--

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



Receipt of online operational data in real time mode at SLDC

Karnataka Status



Agenda

- Status of real time online operational data communication from renewable generating sources / pooling stations to respective SLDCs.
- Percentage of data being received state-wise.
- Mode of communication of data.
- If operational data communication in real time mode is not 100%, then action plan to achieve the same.



Status of real time online operational data communication from renewable generating sources / pooling stations to respective SLDCs.

- KPTCL has provided SCADA RTUs at all sub-stations, Receiving stations and Generating stations :33 kV to 400 kV
- All Grid connected Generations, injecting at 11 kV and above are connected to the KPTCL SCADA system
- Real time data at 11 kV and above is available at SLDC and the Control Centres of the ESCOMs.
- Control of all breakers of 11 kV and above is possible from SLDC.
- Real time data of all Renewable generation injecting at pooling stations are available at Karnataka SLDC.
- As per KERC regulations, the Generators have to provide Generator level data. This has been communicated to all the Generators.

Percentage of data being received state-wise.

Real time data

Renewable	Grid connected	Real time data available	%tage
➤ Wind	3595.23 MW	3595.23 MW	100%
➤ Solar	1086.4 MW	1086.4 MW	100%

Energy meter data

KPTCL is procuring DLMS meters for replacement of the existing meters at all Interface points and 11 kV feeders in the State.

Meters are procured under IPDS and DDUGY schemes

Tendering is in progress. Last date for bid submission is 5th July 2017.

Mode of communication of data.

- KPTCL has established a Closed User Group satellite network
- VSATs are provided to every sub-station, Receiving station and Generating station in the State from 33 kV to 400 kV
- KPTCL has established its own Hub : A Main VSAT Hub and a Back up VSAT Hub
- Bandwidth on Extended C band is availed on GSAT 16 satellite
- Both voice and data connectivity on SCADA, is on VSAT communication
- KPTCL has submitted DPR to provide fibre connectivity on OPGW to all 220 kV, 400 kV and Major Generating stations in the State. Once established this network will be utilised for redundancy of communication



If operational data communication in real time mode is not 100%, then action plan to achieve the same.

- At present, all injections are available on real time through KPTCL SCADA network
- Any new injection of renewable at the KPTCL or ESCOM stations will be connected to the existing SCADA RTU, thus ensuring real time visibility and control at SLDC.
- New stations coming up will be provided with RTU and VSAT and will be integrated to the KPTCL SCADA system.
- All renewable generation data at pooling stations will be integrated to the proposed REMC, thus ensuring real time availability of data at the REMC when it comes up

PRESENT STATUS OF RE GENERATORS

INTEGRATED TO SLDC RAJASTHAN

STATUS OF RE GENERATORS CONNECTED TO SLDC RAJASTHAN

TYPE OF RE GENERATOR	NO. OF RE GENERATORS INTEGRATED	NO. OF REPORTING RE GENERATORS	% REPORTING	MODE OF DATA RECEIVED/ TO BE RECEIVED
SOLAR	40	24	60	GPRS
WIND	7	1	14	
TOTAL	47	25	53	

ACTION PLAN

We are continuously pursuing the RE Generators to provide their data at SLDC Rajasthan uninterruptedly by e-mails, letters etc., so that 100% data availability may be achieved.

APSLDC SCADA SYSTEM

- All the AP SLDC operations are being carried out from the APSLDC Main Control Centre at Vijayawada since April'17.
- At present about **205 RTUs/Gateways** are integrated with SCADA system and APSLDC is acquiring data from generators viz. state Owned, IPPs, RE generators, 400kV, 220kV and 132kV Substations on IEC-60870-5-101/104 protocol.
- There is further requirement of around 175 RTUs to cover up to all 132kV SS and will be completed in phased manner. Administrative Approval was already given for erection of OFC along with RTUs under reliable Communication project of MoP, in which 50% cost will be a grant under PSDF funding.
- AP is newly formed state with backward districts. As such, 50% grant is not sufficient. APSLDC requests this Hon'ble Forum to recommend for enhancement of grant up to 90%.
- In the present SCADA system, APSLDC is acquiring real time Analog data for every 4 sec., status of isolator, breaker for every 10 minutes and change of status by exception.

25-Jun-2017 23:45:00

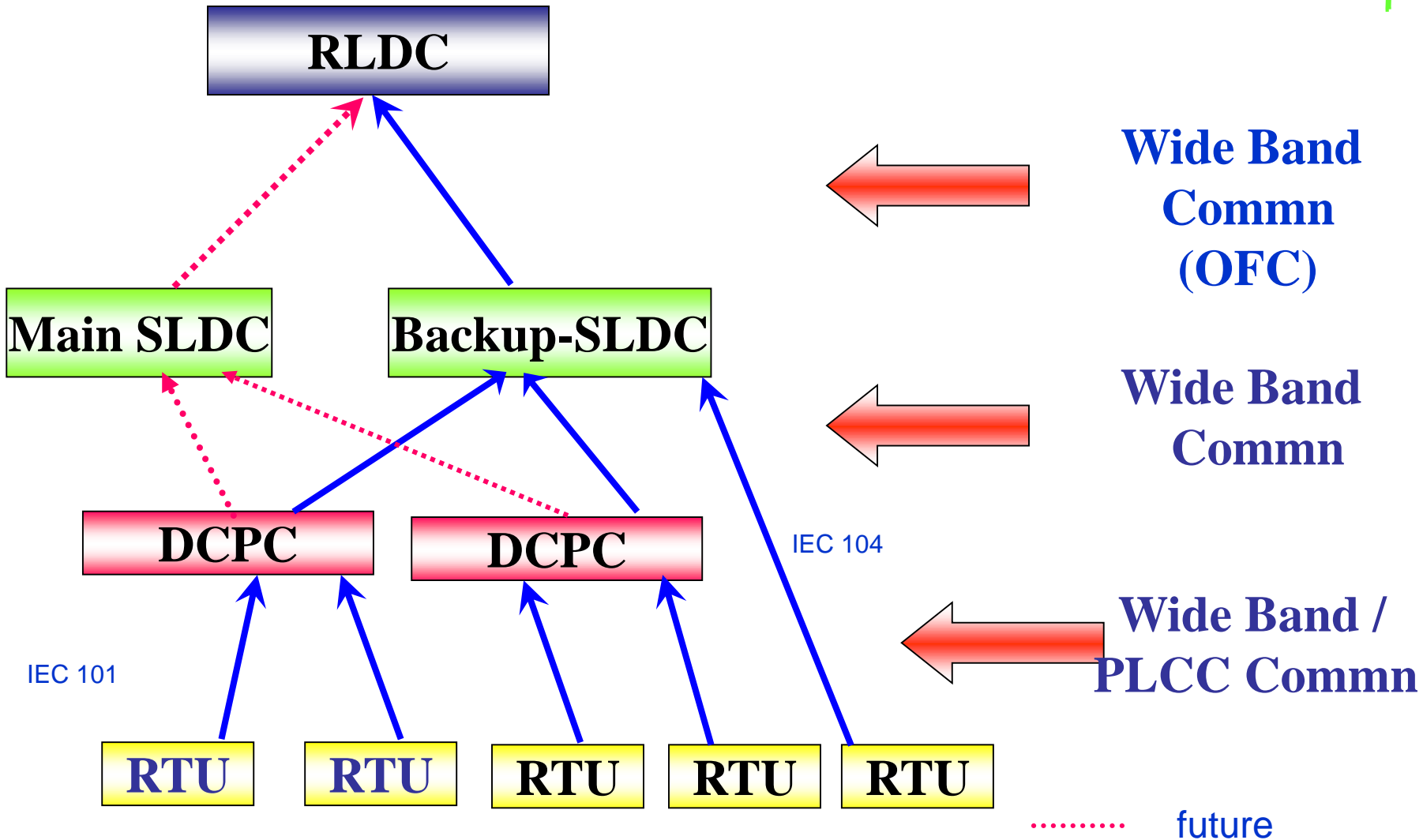
TELEMETERED SUBSTATION LIST

NEXTPAGE

VSS	BOMMURU	VTPS	NUNNA	CKPALLY	GOOTY	SRISAILAM	KURNOOL
ANBAK ALUMINIUM	BHIMAVARAM 220	ANDHRA SUGARS	BHIMADOLE	ANANIPALLE	KRISHNAPATNAM	ADONI	RACHERLA
BO PALEM	BOMMURU 220	CHILLAKALLU	GR. BARGE	BALAPANUR	KUPPAM	RENEW ADONI	FRIYA CEMENTS
SOSBILI	BLURU	JP CEMENTS	GAUTHI	BALAPANUR (WELSPN)	HELIL-NAGALAPURAM	ALUR	DRONE 132
BRANDIX	GIRIJA	KAMAVARA PUROTA	GRD NAGA	BHARATI CEMENTS	HYDUR	ANKIREDDYPALLI	SIRURAM
CHILAKAPALEM	GRD	LARCO	GRINDALA	CHINAKONPALLI	PALMARESE	BOYAREDDYPALLY	TADIPATRI
DAIRY FARM	GRV	N'SAGAR BCPH	KONIMOU	CHITTOOR 220	POLY SOLAR	DHARMARAM	THUMUKUNTA 132KV
GAJWAKA	KAMAVARA PUROTA	MSG TAIL POND	KCP CEMENTS	CHITTOOR 400	POORANI LLA	PENNA CEMENTS	ULIBATHUR
GNI GAVANAPUR T	JEGURUPADI	NELLORE 220	KONASERDA	SCREEN POOLING	PULIVENDULA	GAMESA I I	URAVAKONDA
GARNIDI	KARUNAGA	NELLORE 400	KONDAPALLI	FIRST SOLAR	PUNGANUR	GOOTY BS	SUB LOM (VORAKUR)
HINDUDA	LOWER SILURU	WIDANDIGU	KV BETA 400	GAMESA TAGGUPA	RACHAGUNNERI	GOOTY SWS	AARONI HINDUPUR
KALAPAKA	PALLANTLA	ONGOLE	KARASARAPET	GNI INIOTA	RAJAMPET	GUNTAKAL	SHANTI PURAM
MACHKUND	PATTI SEETA	PACHURU	NEENA	GURRAMKONDA	RAMGIRI	GUOIPADI	YEMMIGUNUR
NAVAL YARRAF	PRATAPNAGAR	PIDUGURALLA	SATYANADALY 400	COULAPURAM	RAYALA WIND	RAJACHOTY	PATRIKONDA
NAKKAVANI PALEM	RAMPACHODIVARAM	PODILI	VIJESWARAM	HETROTIRUMAPALLY	RENIGUNTA	EDSBI	RAYACHOTY
PARAVADA	RELIANCE (BSES)	RENTACHINTALA	VTP 5 TH STAGE	HINDUPUR	RTPP	ANIHALA WIND	EDSBI
PBUDURTHY	RVK	SBQ STEELS		JANMALASANDA	SULURUPETA	AVI S WIND FARM	ANIHALA WIND
PIDIBHIMAVARAM	SAMARAKOTA	TADEPALLI		KADAPA	TRIMMAPURAM	SALURAM WIND	AVI S WIND FARM
PCL	SPECTRUM	TADIKONDA		KALATEERI	TRIMMAPURAM I I	SUGLOW (MIDYALA)	SALURAM WIND
SANVIRA	UPPER SILURU	TANGEDA		KALYANDURG	WANESP SOLAR	SUGLOW (MIDYALA)	SUGLOW (MIDYALA)
SARDA ALLOYS	VENKATESI	VTPS OLD STAGE		KODURU	VINIESHA WIND	GAMESA 4	SUGLOW (MIDYALA)
SIRURI BORN STD				KONDA PURAM	YERRAGUNTALA	BBSDR POOLING SS	SUGLOW (MIDYALA)
SIRURILAM				POTAPARTHY		NEW SIBALA	SUGLOW (MIDYALA)
T.B.VARA						HELIOS POOLING	SUGLOW (MIDYALA)
TEKKALI						VVVU URU A	SUGLOW (MIDYALA)
VISAG SW STATION						THANAGALLU	SUGLOW (MIDYALA)
ALICB LINDO PIRMI						KOMATIKUNTALA	SUGLOW (MIDYALA)
						SETTYPALLY	SUGLOW (MIDYALA)
						KRISHNABILI	SUGLOW (MIDYALA)
						RTPP 400KV	SUGLOW (MIDYALA)

WIND-SOLAR & 104 RTU

Communication Channel for Information flow



Communication Medium:

- As per APTransco approved policy, Generator/Substation data for 132kV and above will be communicated either through PLCC or OFC.
- For the generators connected at 33kV and below have to transfer data through Leased line over MPLS.

RE Generation (Solar & Wind) (Projections Up to 2022)

Description	Installed Capacity as on 31-3-2017 (MW)	PROPOSED CAPACITY ADDITION (MW)						Total Expected (MW)
		2017-18	2018-19	2019-20	2020-21	2021-22	Total Projection (MW)	
Wind	3604	1223	1600	1600	1500	485	6408	10012
Solar	1875	2500	1500				4000	5875
Total	5479	3723	3100	1600	1500	485	10408	15887

- Implementation of Data Acquisition System, providing protective systems like LVRT, HVRT is mandatory as per IEGC and orders of Hon'ble CERC before APSLDC gives synchronization permission to the RE Generator.

APSLDC is receiving data from almost every RE Generator.

- At present APSLDC is receiving data from about 3450 MW out of 3604 MW Wind Generation (95.5%) and from about 1800 MW out of 1875 MW Solar Generation (96%).

- However, Forecasting is received for about 1400 MW out of total 3600 MW of wind Generation and 335 MW out of 1875 MW Solar Generation.

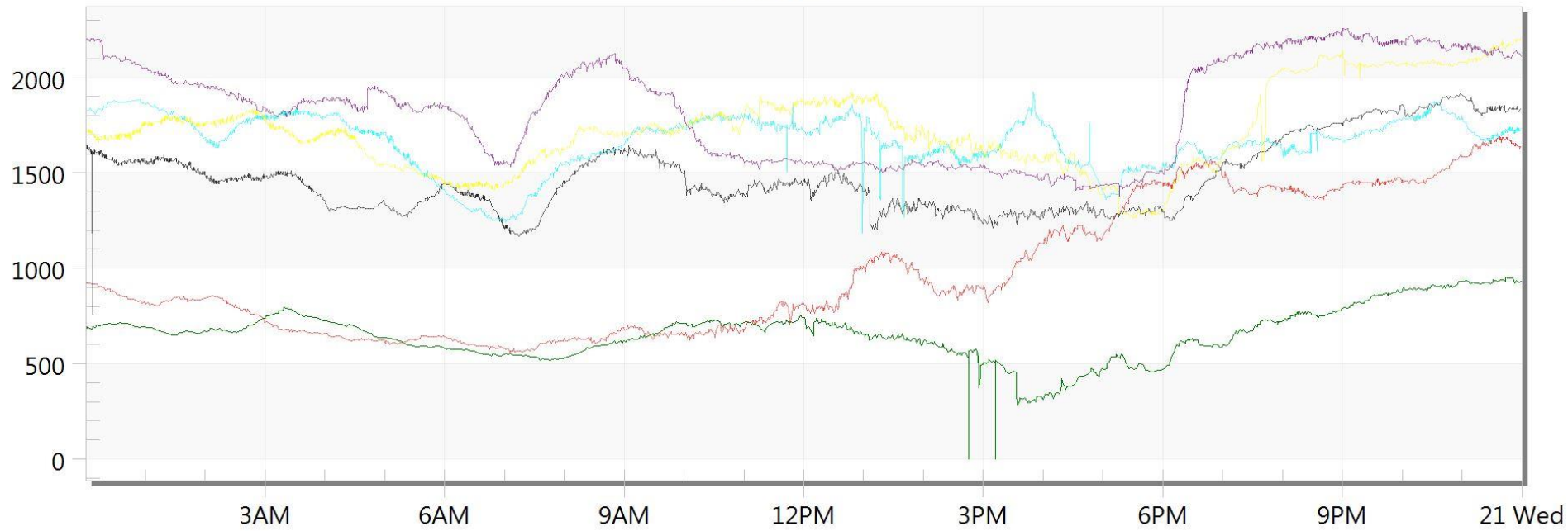
Wind and Solar power & issues in Power System

- Wind generation which commences in May and tapers off from September typically varies from 0 to 2300 MW against 3600 MW installed.
- On 23-6-17, AP has recently met 38% of it's grid consumption from RE sources, and is meeting RPO obligations to the extent of 17.85% against 9% as per regulation.
- Challenge to system operator increases when full 3200MW contemplated injection is realized in a small system of around 8000MW
- With the must Run Status of RE Generators, Intermittency and dynamic nature of Wind and Solar, Grid operators challenge is to maintain LGBR, system security on continuous basis.
- Intermittency of wind generation resulting in frequent variation of power delivery at thermal stations

Wind and Solar power & issues in Power System

- Harnessing full potential of wind and Solar power & consuming all the power generated is not possible by host state alone due to intermittency Issues.

WIND



Jun 20 Tue 2017

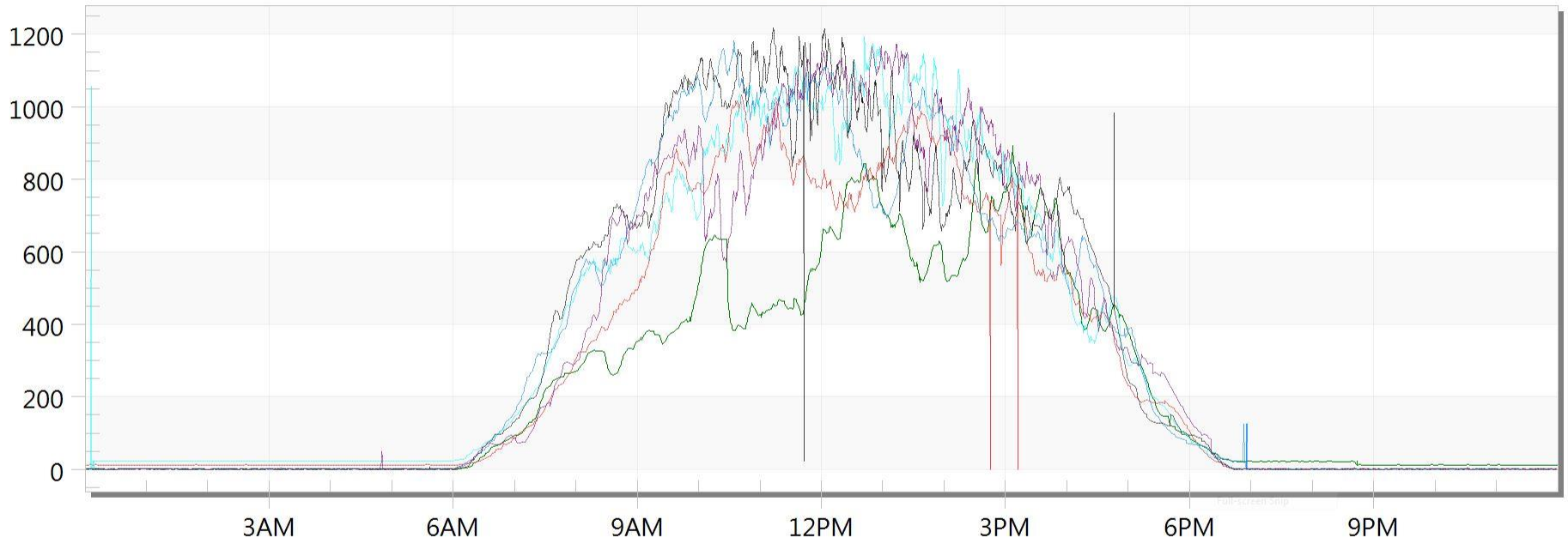
- APB_M.SCADA1.A0010751 - 6/20/2017 12:00 AM
- APB_M.SCADA1.A0010751 - 6/21/2017 12:00 AM
- APB_M.SCADA1.A0010751 - 6/22/2017 12:00 AM
- APB_M.SCADA1.A0010751 - 6/23/2017 12:00 AM
- APB_M.SCADA1.A0010751 - 6/24/2017 12:00 AM
- APB_M.SCADA1.A0010751 - 6/25/2017 12:00 AM

eDNA Trend - [SOLAR]

File Home Window Points Customize Graph

New Trend New Bar Graph New Chart Recorder New Pie Chart New Polar Chart New Scatter Plot New 3D Chart

SOLAR



Jun 19 Mon 2017

- █ APB_M.SCADA1.A0010749 - 6/19/2017 12:00 AM
- █ APB_M.SCADA1.A0010749 - 6/20/2017 12:00 AM
- █ APB_M.SCADA1.A0010749 - 6/21/2017 12:00 AM
- █ APB_M.SCADA1.A0010749 - 6/22/2017 12:00 AM
- █ APB_M.SCADA1.A0010749 - 6/23/2017 12:00 AM

Wind and Solar power & issues in Power System

- With the lack of adequate absorption of RE Generation in the own state itself, AP is under drawing at a frequency >50 .
- Request the Hon'ble forum to address the issue to exempt penalties for Andhra Pradesh for under drawing Power up to grid frequency of 50.10 Hz., since APDISCOMs are loosing financially towards penalties.
- There should be a cap for RE additions in each State depending on the demand and balancing resources.
- Pumped storage schemes are very essential in the present scenario and they are to be utilized at national level. Feasible locations for Pumped Storage Scheme s may be explored and they have to be taken up as national project
- AP is preparing DPR for Pumped Storage Scheme at Upper Sileru.

Thank You

Data Communication System

The real time operational data communication from renewable energy sources to SLDC is categorised as

- i) Generators connecting at 132kV Voltage Level and above
- ii) Generators connecting at 33kV Voltage level and below

Generators connecting at 132kV Voltage Level and above

- The data acquisition of generators connecting at 132 KV Voltage level and above is being done through PLCC / fibre on IEC 101 and 104 protocols necessitating Substation Automation System (SAS) at the plant end.
- It is made mandatory for all the generators to establish data connectivity to SLDC before synchronising of the plant. Further, the generator is made to transmit data up to the nearest data collection point from where data is communicated to SLDC over existing communication network.
- Presently telemetry is established with 23 no of RE generators with a capacity 1044 MW connecting at 220 & 132 KV voltage levels.

Generators connecting at 33 KV voltage level and below

- For Discom embedded Renewable energy generators (except roof top solar) connecting at 33 KV Voltage level and below, the plant data is being transmitted to SLDC through Leased Line over MPLS on IEC-60870-5-101/104 protocol in secured VPN / DMVPN. This Leased Line over MPLS connecting is availed from service providers like BSNL, AIRTEL and RELIANCE etc. The equipment at Plant end must be KEMA certified for IEC 101 and 104 protocols.
- As of now 41 No's Generators with total capacity generators of 323.24MW is integrated with SLDC.

Parameters Monitored

- Generators connecting at 132kV and above, the parameters monitored are:
 - Analog values of feeders, Transformers, Bus Voltage, Frequency, Transformer Tap, Digital values like Breaker & isolator status, SOEs and control points on both HV side & LV side.
- Generators connecting at 33kV and below, the parameters monitored are:
 - Analog values of feeders, Transformers, Bus Voltage, Frequency, Transformer Tap(if available), Digital values like Breaker status, SOEs and control points (only on 33kV side)

VOLTAGE WISE SOLAR & WIND INSTALLED CAPACITY

Sl.No	Voltage level	Solar (MW)	Wind (MW)	Total (MW)	Integrated with SLDC	% Integrated with SLDC
1	220 KV	319.6	0	319.6	319.6	100
2	132 KV	622.5	100.8	723.3	723.3	100
3	33 KV	751.89	0	751.89	323.24	43
4	11 KV	4.75	0	4.75	0	0
Total		1698.74	0	1799.54	1366.14	75%

VOLTAGE WISE SOLAR & WIND CAPACITY
UNDER PROGRESS AS ON 24-06-2017

Sl.No	Voltage level	Solar(MW)	Wind(MW)	Total(MW)
1	220 KV	175.4		175.4
2	132 KV	834	100	934
3	33 KV	380.5		380.5
Total		1389.9	100	1489.9

Problems encountered in data integration

- Most of the times, the works pertaining to establishment of Data Acquisition System (DAS) were never in sync with plant synchronisation to the Grid.
- Propose to give undertakings and most of the times not meeting the dead lines mentioned in the undertakings.

THANK YOU



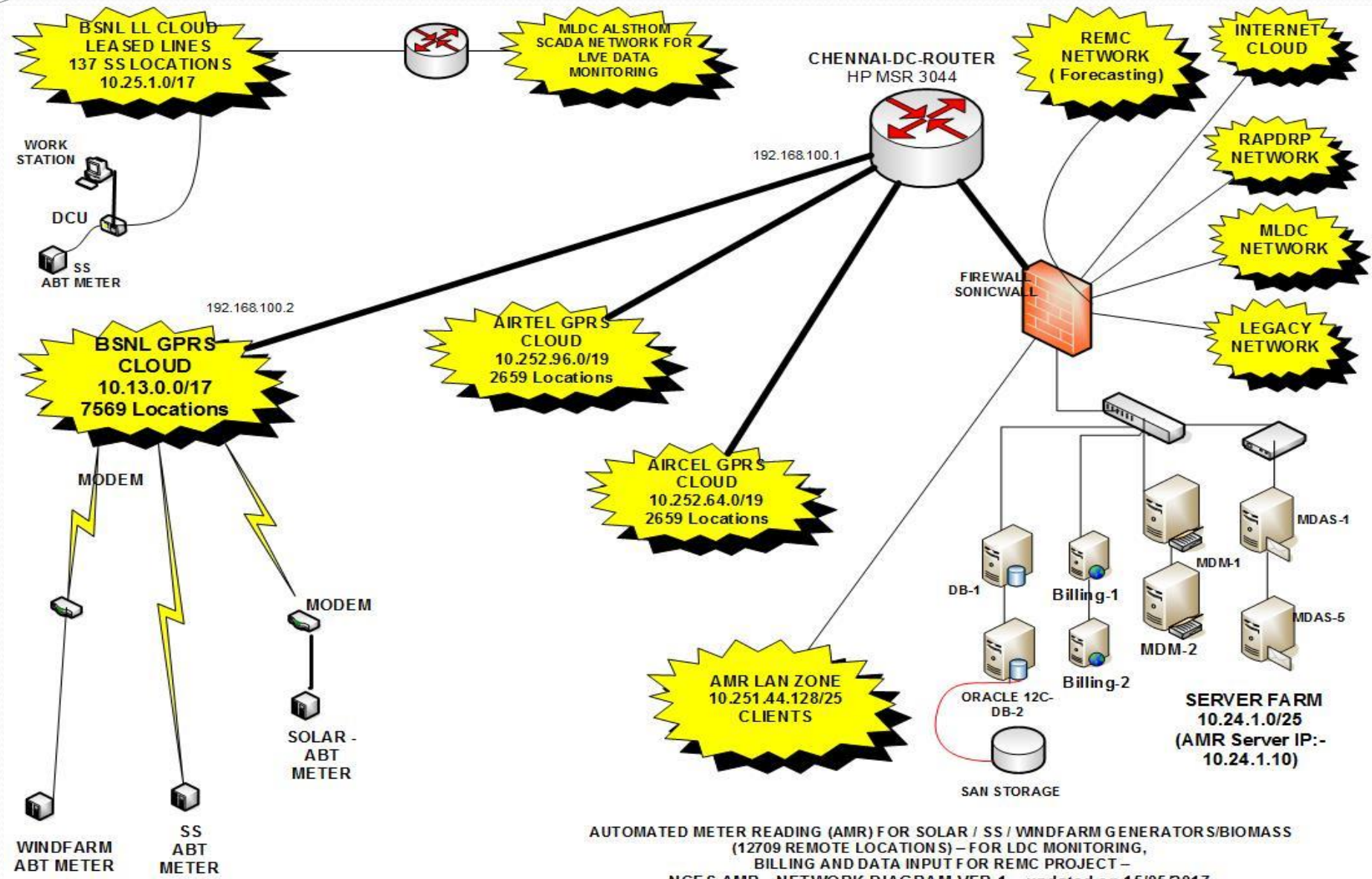
**RENEWABLE ENERGY
MANAGEMENT CENTRE –
STATUS UPDATE OF REAL TIME
DATA AS ON 27.06.2017**

REAL TIME DATA TO REMC

The Real time data for REMC will be received from the ABT meters through DCUs/Modems

- ❖ Wind farm Substations / Tirunelveli / Udumalpet areas
- ❖ Distribution Sub Stations / Tirunelveli / Udumalpet areas
- ❖ Solar Sub Stations
- ❖ ABT meters have been fixed in all the Wind farm Substations and fixing of ABT meters for Distribution SS is under progress
- ❖ Meter data from the modems installed in the WEGs of mixed feeders received in AMR server shall be integrated to REMC server.

Real time data – Architecture

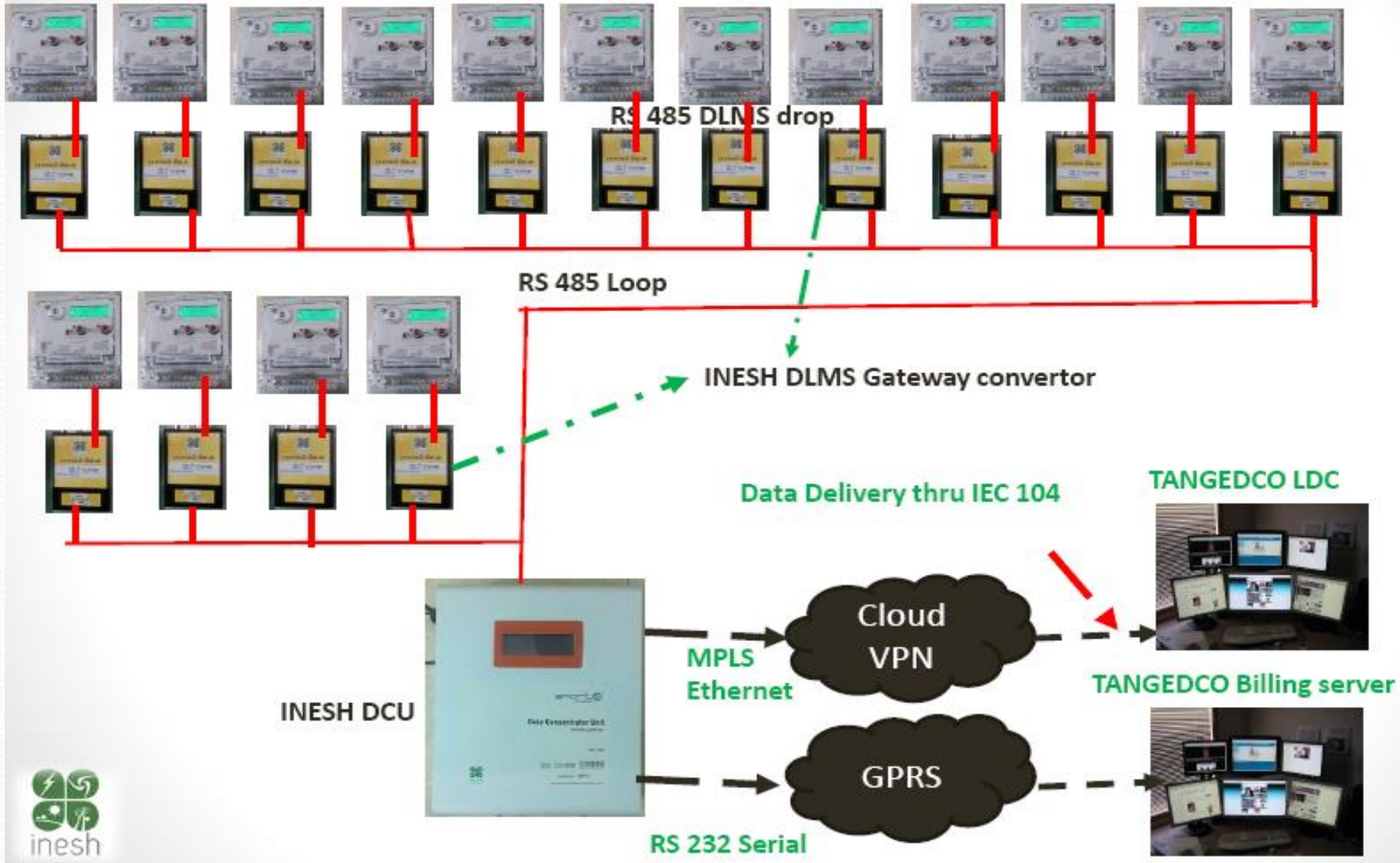


AUTOMATED METER READING (AMR) FOR SOLAR / SS / WINDFARM GENERATORS/BIOMASS
 (12709 REMOTE LOCATION S) – FOR LDC MONITORING,
 BILLING AND DATA INPUT FOR REMC PROJECT –
 NCE S AMR - NETWORK DIAGRAM VER.1 – updated on 15/05/2017

Implementation at 110/22-22 KV Kongal Nagaram SS

- Substation with 18 feeder links
- 2 Group controllers
- Each feeder is connected to independent ABT meters of 0.2 class with DLMS com over RS 485
- 16 feeders connected with Secure DLMS meters

Secure DLMS ABT meters



Connectivity plan

Secure DLMS ABT meters



RS 485 DLMS drop



INESH DLMS Gateway convertor

RS 485 Loop



INESH DCU

Data Delivery thru IEC 104

MPLS

Cloud VPN

GPRS

TANGEDCO LDC



TANGEDCO Billing server



- 16 INEHS DLMS gateway – installed one each for one meter
- One DCU
- One MPLS connectivity thru a router at Kongal Nagaram
- One MPLS connectivity at LDC Chennai
- One Server at LDC

Connection Details

- All the DLMS meters are connected with Gateway convertor through RS485. The meter data is download at 10 second latency through DLM to convertor and is collected through RS485 multi-drop connection in DCU. Then the data is transmitted through MPLS to LDC. The data is received at LDC in IEC 104. The data is displayed in a dedicated server in IEC104

Real time data from WIND ELECTRIC GENERATORS (WEGs)



REAL TIME DATA FROM WEGs

Weg | Live Instant | javascript - Record updat... | [FIXED] RowEditor Updat... | New Tab

192.168.10.199/tnebweg/WEGLiveInstant.aspx

Apps | Login | MDMS | PHP Database Related | TANGEDCO :: DIRECT | Left Half and Right Ha... | RSS feed widget free | How to Add a Slidesh... | Joomla Frontpage Co... | JE Accordion | JE Login (drop-down)

TANGEDCO | inesh Wind Energy Generation Monitoring System | digilog

Home | Welcome to TangedCo WEG

Live Data

Section : ALL | Substation : ALL | Status : ALL | Refresh

S.No	Substation	Weg Name	Weg Capacity	Service No	Owner	MF	KW	Last Updated	Status
1	ANNA NAGAR(110/33-KV)	11KV WIND FARM	33KV	2484/TIN	MM FORGING	800	(Export) 432.800	27/06/2017 16:29:37	●
2	ANNA NAGAR(110/33-KV)	ENERGON 1 ANNA	33KV	738/TIN	ARUN TEXTILES (P) LTD	1200	(Export) 298.800	27/06/2017 16:29:54	●
3	ANNA NAGAR(110/33-KV)	ENERGON 2	33KV	731/TIN	ARUN TEXTILES (P) LTD	1200	(Export) 406.800	27/06/2017 16:30:02	●
4	ANNA NAGAR(110/33-KV)	ENERGON3	33KV	968/TIN	CENTURY FLOWER MILLS	900	(Export) 44.774	27/06/2017 16:29:33	●
5	ANNA NAGAR(110/33-KV)	JAVAJOTHI	11KV	457/TIN	CLARION WIND FARM (P) LTD	6000	(Export) 2436.264	27/06/2017 16:32:27	●
6	ANNA NAGAR(110/33-KV)	MANOHARA	11KV	1035/TIN	MM FORGING	900	(Import) 2.700	26/06/2017 20:59:39	●
7	ANNA NAGAR(110/33-KV)	MANOHARA	11KV	2266/TIN	MM FORGING	900	(Export) 423.900	27/06/2017 16:30:53	●
8	ANNA NAGAR(110/33-KV)	MANOHARA	11KV	2267/TIN	MM FORGING	900	(Export) 121.500	26/06/2017 21:01:25	●
9	ANNA NAGAR(110/33-KV)	MANOHARA	11KV	2859/TIN	SRI DHANA LAKSHMI SIZING AND SPINNING MILLS	900	(Export) 193.500	27/06/2017 16:30:48	●
10	ANNA NAGAR(110/33-KV)	ROLLER	11KV	599/TIN	GURUVAYOR APPAN TEXTILES (P) LTD	800	(Export) 92.626	27/06/2017 16:29:58	●
11	ANNA NAGAR(110/33-KV)	WIND FARM	11KV	533/TIN	WHEELS INDIA 1	1000	(Export) 42.495	27/06/2017 16:29:57	●
12	ANNA NAGAR(110/33-KV)	WIND FARM	11KV	534/TIN	AXLES INDIA WIND FARM	1000	(Export) 190.951	27/06/2017 16:32:04	●
13	ARALVAIMOZHI (110/11KV)	MILL	11KV	176/KK	KLRF LTD	400	(Export) 72.742	27/06/2017 16:31:31	●
14	ARALVAIMOZHI (110/11KV)	MILL FEEDER	11KV	118/KK	CAPE POWER(P)LTD(I)	400	(Export) 58.233	26/06/2017 20:45:11	●
15	ARALVAIMOZHI (110/11KV)	PONNNIAN 1	11KV	121/KK	KLRF LTD	600	(Export) 141.780	27/06/2017 16:31:35	●
16	ARALVAIMOZHI (110/11KV)	PONNNIAN 1	11KV	97/KK	S.PONNAYAN ASSOCIATS	800	(Export) 202.980	27/06/2017 16:33:07	●
17	CHIDAMBARAPURAM(110/33-11KV)	NEG MICON 3	11KV	764/TIN	ANIRUTH GREEN INDIA (P) LTD	1000	(Export) 377.056	26/06/2017 21:00:45	●
18	CHIDAMBARAPURAM(110/33-11KV)	NEPC	33KV	678/TIN	ARUN WIND MILL INDIA (P) LTD	1000	(Export) 185.595	27/06/2017 16:31:15	●

● - Reporting(498/902) ● - Not Reporting(111/902) ● - No Data(293/902)

PDF | Chrome | File Explorer | Firefox | Internet Explorer | Taskbar | System Tray: ENG IN 16:46 27-06-2017

CURRENT STATUS OF REAL TIME WIND DATA FROM WEGs

- Real time data from 902 WEGs for a quantum of 2105 MW is received at REMC Centre.
- In the 902 numbers of WEGs 902 DLMS Meters and 902 MODEMs have been installed.

CURRENT STATUS OF REAL TIME WIND DATA

- Real time data from 79 numbers of substations for a quantum of 2105 MW is received at REMC Centre.
- In the 79 numbers of substations 607 DLMS Meters have been installed.

REAL TIME DATA FROM SS

Substation | Live Instant x SqWebMail - Copyright x

192.168.10.199/tnebweg/SSLiveInstant.aspx

Apps Login | MDMS PHP Database Related TANGEDCO :: DIRECT Left Half and Right Ha RSS feed widget free How to Add a Slides Joomla Frontpage Co JE Accordion JE Login (drop-down) »

TANGEDCO inesh Wind Energy Generation Monitoring System digilog

Home Welcome to TangedCo SS

Live Data

Section Name : ALL Refresh

S.No	Substation	Substation Type	No of Feeders	Generation			Last Updated	Status
				Exp MW	Imp MW	Net MW		
1	ALANGULAM(110/33-11KV)	110/33/11 KV	10/10	11.1082	4.7299 (Export)	6.378	27/06/2017 13:01:20	●
2	AMUTHAPURAM(230/33KV)	230/33 KV	13/13	101.7644	0.0000 (Export)	101.764	27/06/2017 13:01:28	●
3	ANNA NAGAR(110/33- KV)	110/33/11 KV	06/06	15.0641	0.0000 (Export)	15.064	27/06/2017 13:01:05	●
4	ANTHIYUR (110/22KV)	110/22 KV	10/11	57.2400	0.0000 (Export)	57.240	27/06/2017 13:01:03	●
5	ARALVAIMOZHI (110/11KV)	110/11 KV	16/16	6.9153	1.2555 (Export)	5.659	27/06/2017 13:02:09	●
6	CHIDAMBARAPURAM(110/33-11KV)	110/33/11 KV	08/08	12.5592	0.0000 (Export)	12.559	27/06/2017 13:00:29	●
7	CHINNAPUDUR (110/22 KV)	110/22 KV	16/16	97.2600	0.0000 (Export)	97.260	27/06/2017 13:00:58	●
8	EDAYARPALAYAM (110/33-11KV)	110/33/11 KV	11/11	50.0600	3.1600 (Export)	46.900	27/06/2017 13:02:50	●
9	ELAVANTHI (110/33-11KV)	110/33/11 KV	14/14	82.3700	3.6950 (Export)	78.675	27/06/2017 13:01:07	●
10	GANGAIKONDAN(110/33-11KV)	110/33/11 KV	01/03	0.8193	0.0000 (Export)	0.819	27/06/2017 13:03:03	●
11	GUDIMANGALAM (110/22 KV)	110/22 KV	12/12	61.2600	0.0000 (Export)	61.260	27/06/2017 13:03:18	●
12	IRUKKANDURAI(110/33KV)	110/33 KV	03/03	5.4247	0.0000 (Export)	5.424	27/06/2017 13:02:50	●
13	KADAMALAKUNDU (110/22KV)	110/22 KV	02/02	8.2800	0.0000 (Export)	8.280	27/06/2017 13:02:09	●

Total Generation

Export : 2054.5510 MW

Import : 165.6998

Reporting Status : 79/79

All Reporting(73/79) Partial Reporting(6/79) Non Reporting(0/79) No Data(0/79)

ENG 13:04
INTL 27-06-2017

REAL TIME DATA FROM SS

Substation | Live Instant x SqWebMail - Copyright x

192.168.10.199/tnebweg/SSLiveInstant.aspx

Apps Login | MDMS PHP Database Related TANGEDCO :: DIRECT Left Half and Right Ha RSS feed widget free How to Add a Slides Joomla Frontpage Co JE Accordion JE Login (drop-down)

TANGEDCO inesh Wind Energy Generation Monitoring System digilog

Home Welcome to TangedCo SS

Live Data

Section Name: ALL Refresh

Total Generation

Export : 2051.1905 MW

Import : 167.9484

Reporting Status : 79/79

S.No	Substation	Substation Type	No of Feeders	Generation			Last Updated	Status
				Exp MW	Imp MW	Net MW		
13	KADAMBARUNDU (110/22KV)	110/22 KV	02/02	0.0000	0.0000 (Export)	0.0000	27/06/2017 13:02:05	●
14	KADAYAM(110/11KV)	110/11 KV	01/02	0.0003	0.0000 (Export)	0.0000	27/06/2017 13:02:56	●
15	KADAYANALLUR(110/11KV)	110/11 KV	05/05	7.7359	0.0000 (Export)	7.7359	27/06/2017 13:02:01	●
16	KALIVELAMPATTY (110/33-11KV)	110/33/11 KV	01/01	0.0000	0.3200 (Import)	0.3200	27/06/2017 13:03:22	●
17	KALUGUMALI(110/33-11KV)	110/33/11 KV	06/06	5.3117	0.0000 (Export)	5.3117	27/06/2017 13:04:11	●
18	KAMATCHIPURAM (110/33-22KV)	110/33-22 KV	06/06	57.7200	0.0000 (Export)	57.7200	26/06/2017 20:41:47	●
19	KANDAMANUR(110/22KV)	110/22 KV	09/09	33.2400	0.0000 (Export)	33.2400	27/06/2017 13:02:39	●
20	KANNANALLUR(110/11KV)	110/11 KV	06/06	1.7846	0.0000 (Export)	1.7846	27/06/2017 13:02:33	●
21	KARADIVAVI (110/33-11KV)	110/33/11 KV	08/08	16.0900	2.7800 (Export)	13.3100	27/06/2017 13:03:59	●
22	KARUNGULAM (110/11KV)	110/11 KV	16/16	21.2281	0.1017 (Export)	21.1264	27/06/2017 13:01:35	●
23	KEELAVEERANAM(110/33-11KV)	110/33/11 KV	17/17	24.7625	0.0127 (Export)	24.7498	27/06/2017 13:02:13	●
24	KEETHANOOR (110/33-11KV)	110/33/11 KV	16/16	11.4800	2.5200 (Export)	8.9600	27/06/2017 13:03:24	●
25	KINATHUKADAVU(110/22KV)	110/22 KV	03/03	0.0000	0.0000 (Export)	0.0000	27/06/2017 13:01:51	●
26	KODIKURICHI(110/33-11KV)	110/33/11 KV	11/11	41.8377	0.0000 (Export)	41.8377	27/06/2017 13:03:41	●

All Reporting(73/79) Partial Reporting(6/79) Non Reporting(0/79) No Data(0/79)




ENG 13:05
INTL 27-06-2017

REAL TIME DATA FROM SS

Substation | Live Instant x SqWebMail - Copyright x

192.168.10.199/tnebweg/SSLiveInstant.aspx

Apps Login | MDMS PHP Database Related TANGEDCO :: DIRECT Left Half and Right Ha RSS feed widget free! How to Add a Slides Joomla Frontpage Co JE Accordion JE Login (drop-down) >>

Home Welcome to TangedCo SS

Live Data

Section Name : ALL Refresh

Total Generation

Export : 2051.1905 MW

Import : 167.9484

Reporting Status : 79/79

S.No	Substation	Substation Type	No of Feeders	Generation			Last Updated	Status	
				Exp MW	Imp MW	Net MW			
27	KOLATHUPALAYAM (110/22KV)	110/22 KV	02/02	8.4000	0.0000	(Export)	8.400	27/06/2017 13:03:23	●
28	KONGALNAGARAM(110/22KV)	110/22 KV	16/16	33.5138	54.7678	(Import)	21.253	27/06/2017 13:02:02	●
29	KOTTAMANGALAM(110/22KV)	110/22 KV	01/01	0.0000	0.8400	(Import)	0.840	27/06/2017 13:02:58	●
30	KUNDADAM (110/22KV)	110/22 KV	06/06	45.3600	0.0000	(Export)	45.360	27/06/2017 13:02:56	●
31	MADATHUKULAM (110/22KV)	110/22 KV	04/04	15.8000	0.0000	(Export)	15.800	27/06/2017 13:03:39	●
32	MAHARAJAPURAM(110/33KV)	110/33 KV	09/09	16.8618	0.0000	(Export)	16.861	27/06/2017 13:02:27	●
33	MALAYANKULAM(110/11KV)	110/11 KV	02/02	1.2072	0.0000	(Export)	1.207	27/06/2017 13:01:58	●
34	MANUR(110/33-11KV)	110/33/11 KV	06/06	18.6727	3.9728	(Export)	14.699	27/06/2017 13:03:30	●
35	MARKKEYANKOTTAI (110/22KV)	110/22 KV	01/01	0.0000	1.5600	(Import)	1.560	27/06/2017 13:03:02	●
36	MARUDUR (110/22KV)	110/22 KV	10/10	79.3200	0.0000	(Export)	79.320	27/06/2017 13:04:27	●
37	MELKARAI PATTI (110/22KV)	110/22 KV	14/14	62.8800	0.0000	(Export)	62.880	27/06/2017 13:01:26	●
38	MUPPANDAL (110/11KV)	110/11 KV	13/13	6.3782	0.0000	(Export)	6.378	27/06/2017 13:02:27	●
39	MUTHUNAICKENPATI(110/33KV)	110/33 KV	04/04	29.7000	0.0000	(Export)	29.700	27/06/2017 13:03:06	●

All Reporting(73/79) Partial Reporting(6/79) Non Reporting(0/79) No Data(0/79)

ENG 13:05
INTL 27-06-2017

REAL TIME DATA FROM SS

Substation | Live Instant x SqWebMail - Copyright x

192.168.10.199/tnebweg/SSLiveInstant.aspx

Apps Login | MDMS PHP Database Relate TANGEDCO :: DIRECT Left Half and Right Ha RSS feed widget free How to Add a Slides Joomla Frontpage Co JE Accordion JE Login (drop-down)

TANGEDCO inesh Wind Energy Generation Monitoring System digilog

Home Welcome to TangedCo SS

Live Data

Section Name : ALL Refresh

Total Generation

Export : 2051.1905 MW

Import : 167.9484

Reporting Status : 79/79

S.No	Substation	Substation Type	No of Feeders	Generation			Last Updated	Status	
				Exp MW	Imp MW	Net MW			
40	NEGAMAM (110/33-22KV)	110/33-22 KV	04/05	0.0000	24.0000	(Import)	24.000	26/06/2017 20:50:59	●
41	O.T.PATTY(110/11KV)	110/11 KV	01/01	0.0072	0.0000	(Export)	0.007	27/06/2017 13:02:53	●
42	PALANI (110/22KV)	110/22 KV	03/03	14.7000	0.0000	(Export)	14.700	27/06/2017 13:03:26	●
43	PALLADAM (110/11KV)	110/11 KV	06/06	6.4800	0.8000	(Export)	5.680	27/06/2017 13:03:36	●
44	PANAPATTY (110/33KV)	110/33 KV	06/06	59.5800	0.0000	(Export)	59.580	27/06/2017 13:02:37	●
45	PAZHAVOOR(110/11KV)	110/11 KV	16/16	11.9886	0.0931	(Export)	11.895	27/06/2017 13:03:29	●
46	PERUNGUDI(110/33KV)	110/22 KV	14/14	3.4962	0.1695	(Export)	3.326	27/06/2017 13:01:40	●
47	POIGAI(110/33KV)	110/33 KV	08/08	51.9183	0.0002	(Export)	51.918	27/06/2017 13:02:06	●
48	PONGALUR (110/33-11KV)	110/33/11 KV	02/02	8.7300	14.5800	(Import)	5.850	27/06/2017 13:03:33	●
49	PONNAPURAM (110/33-22 KV)	110/33-22 KV	15/15	89.5800	0.0000	(Export)	89.580	27/06/2017 13:02:32	●
50	POOLANKINAR (110/22KV)	110/22 KV	08/08	24.1800	0.0000	(Export)	24.180	27/06/2017 13:02:09	●
51	POOVALADI (110/22 KV)	110/22 KV	07/07	33.1400	0.0000	(Export)	33.140	27/06/2017 13:02:49	●
52	PULIYANGUDI(110/11KV)	110/11 KV	02/02	0.0001	0.0000	(Export)	0.000	27/06/2017 13:03:08	●

All Reporting(73/79) Partial Reporting(6/79) Non Reporting(0/79) No Data(0/79)



ENG 13:05
INTL 27-06-2017

REAL TIME DATA FROM SS

Substation | Live Instant x SqWebMail - Copyright x

192.168.10.199/tnebweg/SSLiveInstant.aspx

Apps Login | MDMS PHP Database Related TANGEDCO :: DIRECT * Left Half and Right Ha RSS feed widget free How to Add a Slides Joomla Frontpage Co JE Accordion JE Login (drop-down)

Home Welcome to TangedCo SS

Live Data

Section Name: ALL Refresh

Total Generation

Export : 2042.7955 MW

Import : 169.6094

Reporting Status : 79/79

S.No	Substation	Substation Type	No of Feeders	Generation			Last Updated	Status
				Exp MW	Imp MW	Net MW		
53	RASINGAPURAM (110/33-22KV)	110/33-22 KV	07/07	31.6200	0.0000	(Export) 31.620	27/06/2017 13:03:06	●
54	RASTHA(110/33KV)	110/33 KV	08/08	33.2099	0.0000	(Export) 33.209	27/06/2017 13:04:01	●
55	SADAYAPALAYAM (230/33 KV)	230/33 KV	11/11	93.0600	0.0000	(Export) 93.060	27/06/2017 13:04:18	●
56	SANKANER(230 KV)	110/33-22 KV	12/12	18.0156	10.1612	(Export) 7.854	27/06/2017 13:03:30	●
57	SENGOTTAI(110/11KV)	110/11 KV	03/03	0.0000	0.5987	(Import) 0.598	27/06/2017 13:02:38	●
58	SUDANKURUCHI(110/33-11KV)	110/33/11 KV	12/12	23.5597	10.8243	(Export) 12.735	27/06/2017 13:04:37	●
59	SULTANPET (110/33-11KV)	110/33/11 KV	12/12	23.0400	2.9200	(Export) 20.120	27/06/2017 13:02:32	●
60	SURANDAI(110/33-11KV)	110/33/11 KV	08/08	13.1966	1.0551	(Export) 12.141	27/06/2017 13:02:39	●
61	THALAYUTHU(110/22KV)	110/22 KV	08/08	22.3800	9.2400	(Export) 13.140	27/06/2017 13:03:32	●
62	THALAYUTHU(110/33K)	110/33 KV	01/01	3.0907	0.0000	(Export) 3.090	27/06/2017 13:03:27	●
63	THANDAYARKULAM(110/33-11KV)	110/33/11 KV	09/09	36.6584	0.0000	(Export) 36.658	27/06/2017 13:04:04	●
64	THENI (110/22KV)	110/22 KV	02/02	7.4400	0.0000	(Export) 7.440	27/06/2017 13:02:38	●
65	THENKASI(110/11KV)	110/11 KV	04/04	3.1750	1.7665	(Export) 1.408	27/06/2017 13:03:02	●

All Reporting(73/79) Partial Reporting(6/79) Non Reporting(0/79) No Data(0/79)

ENG 13:05
INTL 27-06-2017

REAL TIME DATA FROM SS

Substation | Live Instant x SqWebMail - Copyright x

192.168.10.199/tnebweg/SSLiveInstant.aspx

Apps Login | MDMS PHP Database Related TANGEDCO :: DIRECT Left Half and Right Ha RSS feed widget free How to Add a Slides Joomla Frontpage Co JE Accordion JE Login (drop-down)

TANGEDCO inesh Wind Energy Generation Monitoring System

Home Welcome to TangedCo SS

Live Data

Section Name : ALL Refresh

Total Generation

Export : 2042.7955 MW

Import : 169.6094

Reporting Status : 79/79

S.No	Substation	Substation Type	No of Feeders	Generation			Last Updated	Status
				Exp MW	Imp MW	Net MW		
67	THUNGAVI (110/22 KV)	110/22 KV	14/14	68.4800	1.3200	(Export) 67.160	27/06/2017 13:05:26	●
68	UDAYATHOOR(230KV)	110/33-22 KV	16/16	108.2677	0.0000	(Export) 108.267	27/06/2017 13:03:33	●
69	UDUMALPET (110/22KV)	110/22 KV	07/07	39.4200	0.7200	(Export) 38.700	27/06/2017 13:03:07	●
70	UTHAMAPALAYAM (110/22KV)	110/22 KV	02/02	0.0000	1.3200	(Import) 1.320	27/06/2017 13:04:15	●
71	UTHUMALAI(110/33-11KV)	110/33/11 KV	10/10	20.0663	1.6140	(Export) 18.452	27/06/2017 13:04:24	●
72	VADAGARAI(110/11KV)	110/11 KV	03/03	5.3553	0.0000	(Export) 5.355	27/06/2017 13:02:27	●
73	VADAKKANKULAM(110/33-11KV)	110/33/11 KV	11/12	9.4111	0.5609	(Export) 8.850	27/06/2017 13:04:38	●
74	VAGARAI (110/22KV)	110/22 KV	01/01	2.9400	0.0000	(Export) 2.940	27/06/2017 13:03:25	●
75	VAIG Aidam (110/22KV)	110/22 KV	01/01	1.7400	0.0000	(Export) 1.740	27/06/2017 13:03:45	●
76	VALAPPANPATTY (110/22KV)	110/22 KV	04/04	24.1200	0.0000	(Export) 24.120	27/06/2017 13:03:53	●
77	VANIKONANTHAL(110/11KV)	110/11 KV	03/03	1.1820	0.3678	(Export) 0.814	27/06/2017 13:03:07	●
78	VEERANAM(230KV/33KV)	230/33 KV	12/12	80.0754	0.0000	(Export) 80.075	27/06/2017 13:04:03	●
79	VEERASIGAMANI(110/33-11KV)	110/33/11 KV	11/12	25.3194	9.0694	(Export) 16.249	27/06/2017 13:04:06	●

● - All Reporting(73/79) ● - Partial Reporting(6/79) ● - Non Reporting(0/79) ● - No Data(0/79)

© 2015 INESH SMART ENERGY, All Rights Reserved. Version 1.1 - Released on 15/06/2017 12:00

ENG 13:06
INTL 27-06-2017



THANK YOU

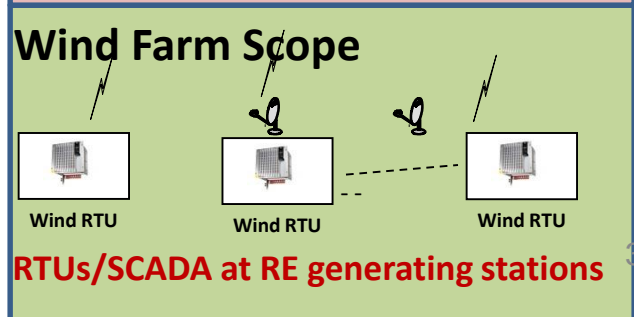
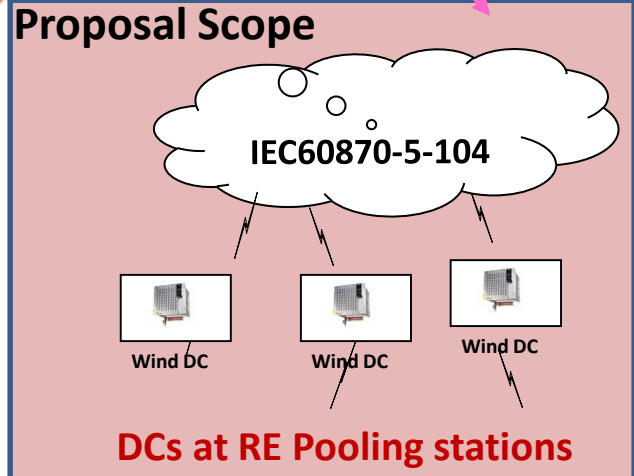
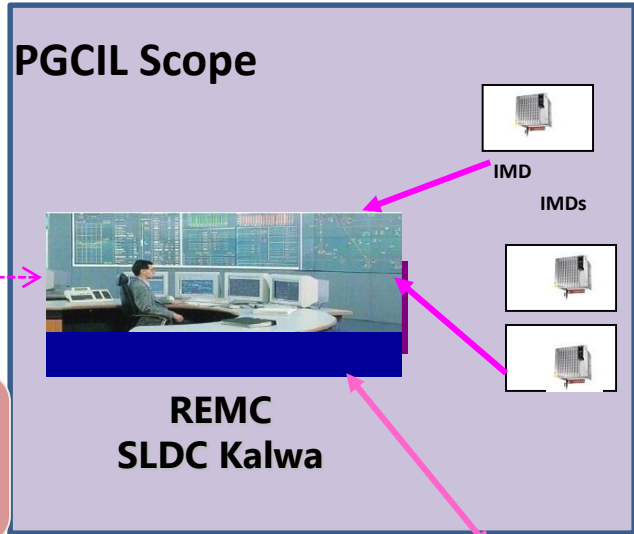
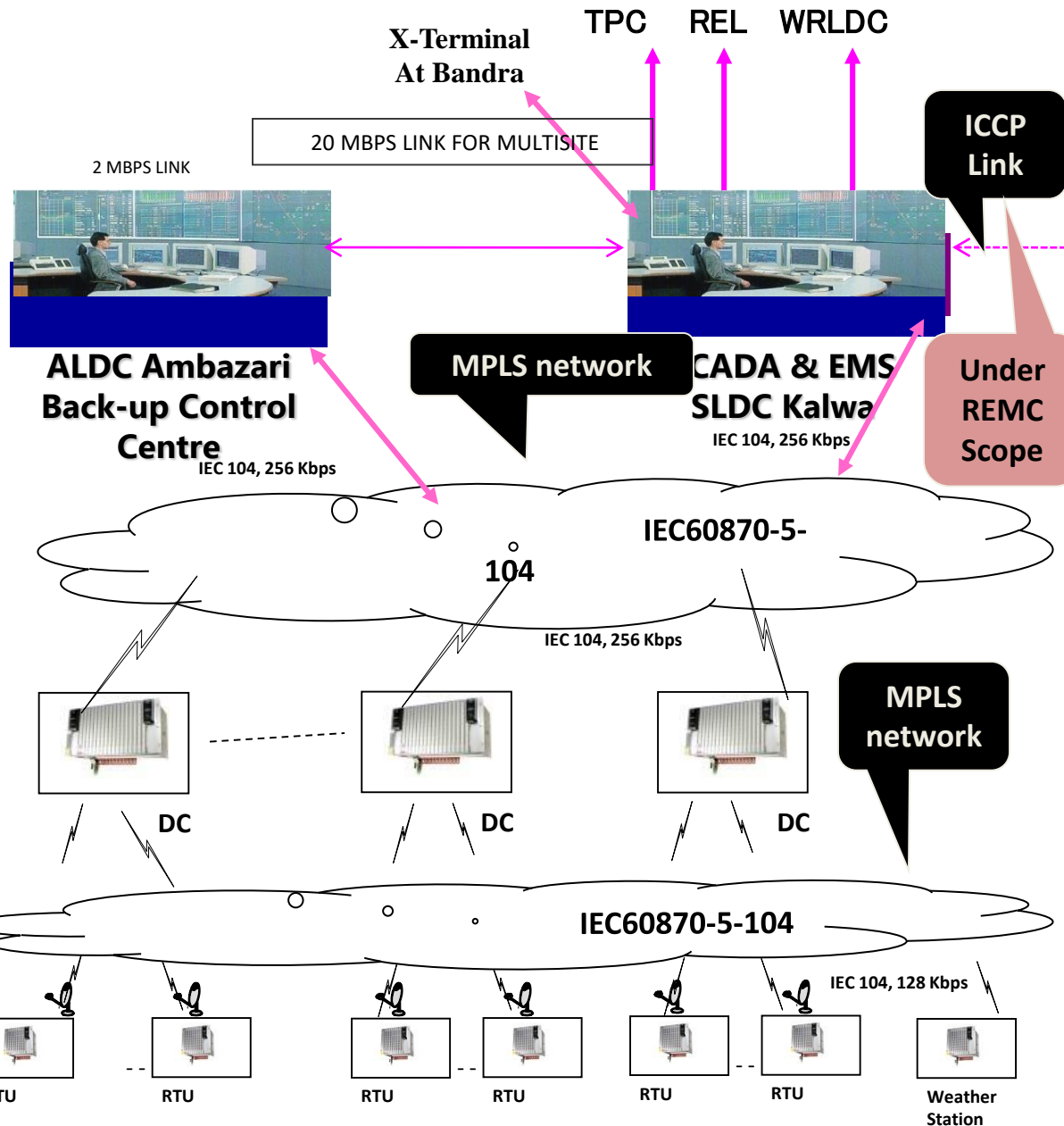


**Receipt of Online Operational Data In Real Time
Mode at
SLDC Maharashtra**

Presentation by
Maharashtra State Load Despatch Centre, Airoli
28th June 2017

- ❖ 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.
 - 1) 10 Nos. RTUs are covered in existing SCADA system
 - 2) 20 Nos. Data Concentrators at RE pooling stations
 - 3) 30 Nos. DCs at RE Pooling Stations through PSDF
- ❖ Maharashtra is part of unified REMC Scheme under implementation by PGCIL.
- ❖ Conceptual Diagram of SCADA & Proposed REMC Configuration at Maharashtra SLDC, Airoli, Navi Mumbai

SCADA & Proposed REMC Configuration



1) 10 Nos. Locations for which Data is available at SLDC

RE Pooling Substations for establishment of Real Time Data acquisition at SLDC Kalwa			
Sr. No.	S/s Name	Installed Capacity In MW	Remark
1	132KV Sakari	95	RTUs for 1348 MW capacity covered in Existing SCADA System
2	132KV Supa	35	
3	220KV Valve	166	
4	220KV Jamde	330	
5	220KV Vankuswadi	242.8	
6	220KV Ghatnandre	226.15	
7	220KV Satara MIDC	62.26	
8	220KV Vita	53.4	
9	220KV Malharpeth	96.85	
10	132KV Nandurbar	40	

2) 20Nos. DCs at RE pooling stations in Phase-I

Estimated Cost: Rs. 9.07 Crore (Including Centages & applicable taxes)

- Hon.CMD has accorded Administrative approval
- Detailed project Report (DPR) was submitted to MERC.
- The commission accorded “In principle approval” for SLDC portion an estimated cost of Rs. 1.06 Cr.(Including Centages and IDC). Regarding MSETCL portion of the scheme, the Commission remarked that since the expenditure is below 10 Cr., it does not require In-Principle approval of the Commission.
- Tender was published and Technical evaluation was completed and price bids were opened in March-17.
- Acceptance of tender by competent authority is in process.

Sr. No.	S/s Name	Installed Capacity In MW	Remark
11	220KV Dasgaon	100	2435 MW capacity covered 20 Nos. DCs Scheme
12	220KV Nerale	72	
13	220KV Hiwarwadi	250	
14	220KV Bothe	200	
15	132KV Walsang	150	
16	132KV Chavneswar	73.6	
17	100KV Andhralake	106.4	
18	132KV Vashpeth	168.7	
19	220KV Gangapur	230	
20	220KV Jath	125	
21	220KV Sadawaghapur	117.9	
22	132KV Shirala	110.8	
23	132KV Khandke	108	
24	110KV Mayani	100.5	
25	110KV Shankh	100	
26	110KV Jath	100	
27	220KV Nigade	97.1	
28	132KV Khaprle	81.6	
29	132KV Aranvihra	73.5	
30	132KV Aundh	70	

3) 30 DCs at RE Pooling Stations in Phase-II

Estimated Cost: Rs. 13.12 Crore (Including Centages & applicable taxes)

- Board of Directors has accorded Administrative approval for the Schemes and directed to forward the scheme to WRPC, Mumbai for submission to NLDC, Delhi for funding from PSDF.
- Accordingly, the proposal in prescribed PSDF format along with Detailed Project Report of the scheme have submitted to WRPC, Mumbai
- Appraisal Committee and concurrence by Central Electricity Regulatory Commission (CERC), **Ministry of Power, Govt. of India** vide their letter No. 10/1/2014-OM dated 16-05-2017 has sanctioned grant equivalent to **Rs. 9.37 Cr.** through the Power System Development Fund (PSDF).
- The above sanction is as per approved guidelines/procedures for funding from PSDF i.e. 90% of cost estimate of Rs. 10.41 Cr. (excluding VAT & Centages) which is equal to Rs. 9.37 Cr.
- The Revision in board resolution for balance amount i.e. 3.75 Cr. through internal resources is in process

Sr. No.	S/s Name	Installed Capacity In MW	Remark
31	220kV Kulakjai	200	<p>2173 MW capacity covered 30 DCs schemes through PSDF</p> <p>New proposed capacity addition for which STU has issued grid connectivity will be covered in complete scope.</p>
32	132 kV Lohara	125	
33	220 kV Tuljapur	115	
34	132kV Bhambarwadi	50	
35	220kV Mendhegiri	100	
36	220kV Palshi	100	
37	220kV Shedyal	100	
38	132kV Khanapur	100	
39	220 kV Phulambri	100	
40	132 kV Kavthemahankal	100	
41	132 kV Raimoha	100	
42	220 kV Kaudgaon	100	
43	132 kV Kharda	90	
44	132 kV Wagdari	85	
45	132kV Mirkala	80	
46	220 kV Bhoose	75	
47	132 kV Pachpatta	62.4	
48	220 kV Patoda	60	
49	132 kV Bambavde	50	
50	132 kV Nimboni	50	
51	132 kV Kumbalne	47.6	
52	132 kV Shrigonda	50	
53	110 kV Atit	40	
54	110 kV Borkhedi	31.75	
55	132 kV Mantha	30	
56	220kV Waiphale	28.5	
57	110 kV Kaledhone	28	
58	132 kV Dahiwadi	25	
59	110kV Palaswadi	25	
60	132 kV Hiwarkhed	25	

Percentage of RE Data received Real Time mode in Maharashtra

Installed Capacity		Telemetered RES Capacity		Total Visibility %
Wind	Solar	Wind	Solar	
4662	390	2442 *	390*	56%

* Including web-portal and existing SCADA

Mode of communication of data

The scope of schemes for 20DCs and 30DCs include provision of communication along with Supply and commissioning of data acquisition equipments. Considering remote locations of RE Pooling S/s, various types of communication media i.e. MPLS/Leased line/VSAT etc. will be used for data transmission to SLDC.

Wind Data through web-portal

[SLDC.MCC/ui6k-99 SINAUT Spectrum 4.5.1] Process/RealTime - MS RENEWABLE ENERGY

Display View Overlay Values Help

49.931 HZ 27.06.17 15:12 Maharashtra State Electricity Transmission Co. Ltd. State Load Dispatch Centre, Kalwa

Renewable Energy

WIND

STATION	MW	STATION	MW	STATION	MW	STATION	MW	STATION	MW
1	APAWITHIRA	56.1	32	ADITYA ENERGY	0.0				
2	BHOYARE PATHAR	5.8	33	MARUTI WIND	0.0				
3	BILLUR	8.7	34	VASPET	147.0				
4	BOTHE	104.4	35	ITC SANGLI	6.0				
5	GANGAPUR	48.3	36	REGEN	0.0				
6	GHATNANDRE	100.2	37	PANAMA-2 (BEED)	53.1				
7	JAMDE	40.4	38	VALSANG	0.0				
8	JAMSANDE	0.0	39	SUZLON (MNDGIRI)	0.0				
9	JATH	0.0	40	TS WIND	0.0				
10	KEDGON	43.5	41	REGEN FWR	-0.5				
11	KHAPPALE	0.8							
12	KUNDLAPUR	61.0							
13	MEDIA	4.1							
14	MENDIGIRI	0.0							
15	NANDURBAR	0.0							
16	NIGADE	26.1							
17	PACHHAPUR	11.8							
18	PANDURLI	40.6							
19	RANALA	8.7							
20	SADA WACHAPUR	6.2							
21	SARI	2.7							
22	SAVLAJ	84.9							
23	SHIRISHI	0.0							
24	UNDALE	0.0							
25	VALVE	94.0							
26	VANKUSAVADE	4.2							
27	VITA II	200.2							
28	VESTAS	182.6							
29	RENEW FWR	12.1							
30	PANAMA	56.4							
31	WIPPL	0.0							
TTL WIND									1429



MAHATRANSCO
Maharashtra State Electricity Transmission Co. Ltd.



Thank
YOU

**Central Electricity Regulatory
Commission (Communication
System for inter-State
transmission of
electricity) Regulations, 2017**

w.ef. 01-07-2017

OBJECTIVE:

These regulations provide for planning, implementation, operation and maintenance and up-gradation of reliable communication system for all communication requirements including exchange of data for integrated operation of National Grid.

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.

NODAL AGENCY

- ▶ (i) The nodal agency for planning, and coordination for development of communication system for inter-State transmission system user shall be the Central Transmission Utility.
- ▶ (ii) The nodal agency for planning, and coordination for development of communication system for intra - State transmission system user shall be the State Transmission Utility.
- ▶ (iii) The nodal agency for ensuring integration of communication system at regional level with SCADA, WAMS, Video Conferencing Systems(VCS), Automatic Meter Reading(AMR), EPABX, Tele-protection system shall be respective RLDC for ISGS, ISTS and SLDCs; and respective SLDC for State Generating Stations, distribution companies, Intra-State entities, intra-State transmission system, etc.

Role Of CTU

- ▶ CTU shall be the Nodal Agency for supervision of communication system in respect of inter-State communication system and will implement centralized supervision for quick fault detection and restoration. CTU shall prepare Procedure for same and submit to Commission for approval within 60 days of notification of these Regulations.
- ▶ The CTU shall extend the required support to Control Centres for integration of communication system at respective ends.

Role of National Power Committee (NPC) and Regional Power Committee (RPC)

- ▶ NPC shall be responsible for issuance of the guidelines with the approval of the Commission on “Availability of Communication System” in consultation with RPCs, RLDCs, CTU, CEA and other stakeholders *within a period of two months* from the date of notification of these regulations.
- ▶ The RPC Secretariat shall certify the availability of communication equipment for CTU, ISGS, RLDCs, NLDC, SLDCs based on the data furnished by RLDC.

Role of NLDC

- ▶ The National Load Despatch Centre (NLDC) shall be responsible for preparation and issuance guidelines with the approval of the Commission on the “Interfacing Requirements” in respect of terminal equipment, RTUs, SCADA, PMUs, Automatic Generation Control (AGC), Automatic Meter Reading (AMR) Advanced Metering Infrastructure (AMI), etc. and for data communication from the User's point to the respective control centre(s) based on technical standards issued by CEA *within 60 days* of issuance of technical standards.

Role Of Users

- ▶ The Users including renewable energy generators shall be responsible for provision of compatible equipment along with appropriate interface for uninterrupted communication with the concerned control centres and shall be responsible for successful integration with the communication system provided by CTU or STU for data communication as per guidelines issued by NLDC.
- ▶ The Users shall also be responsible for expansion /up-gradation as well as operation and maintenance of communication equipment owned by them.

Periodic testing of Communication System

- ▶ All users that have provided the communication systems shall facilitate for periodic testing of the communication system in accordance with procedure for maintenance and testing to be prepared by CTU within 60 days of notification of Regulations and approved by Commission.

COMMUNICATION SYSTEM AVAILABILITY

- ▶ All users of CTU, NLDC, RLDCs, SLDCs, STUs shall maintain the communication channel availability at 99.9% annually:
- ▶ Provided that with back up communication system, the availability of communication system should be 100%.

Thanks

RE sources in Kerala

Details of Renewable - Wind

Sl No	Name of Station	Installed capacity in MW	Real time online operational data	Mode of communication	Action plan
1	Agali Wind farm M/S.Suzlon	18.6	Not available		
2	Ramakkelmedu wind farm, M/s.Vestas	14.25	Not available		Agreed to provide
3	M/s.Ahalya Alternate wind Energy Pvt Lts M/S.Suzlon	8.4	Not available		Agreed to provide
4	Kanjikode wind farm(KSEBL), Palakkad	2.225	Not available		
5	M/s. Inox wind plant, Kanjikode kinfra park	22	Available (No PPA with KSEBL)	MPLS	
	Total	65.475			

Details of Renewable - Solar

Sl No	Name of Station	Installed capacity in MW	Real time online operational data	Mode of communication	Action plan
1	M/s.CIAL solar PV plant(CPP)	20.18	Not available		Agreed to provide
2	M/s. Hindalco Solar PV plant(CPP)	1	Not available		
3	M/s. Anert Solar PV plant, Kuzhalmandom(IPP)	2	Not available		
4	Kanjikode Solar PV plant	1	Not available		
4	Edayar SolarPV	1.25	Not available		
6	KollangodeSolarPV plant	1	Not available		
7	M/s.RPCKL solar park Ambalathara(IPP)	36	Available (COD not declared)	MPLS	
8	Barapole canal top& canal bank solar plant	4	Not available		
9	Solar plants below 1MW	4.606	Not available		
	Total	71.036			

Details of Renewable - Small Hydro

Sl. No.	Name	Installed capacity in MW	Real time online operational data	Mode of communication	Action plan
1	NES	25.00	Available	PLCC	
2	PLBE	16.00	Available	PLCC	
3	Kallada	15.00	Available	PLCC	
4	Peppara	3.00	Not Available		under processing
5	Madupetty	2.00	Not Available		under processing
6	Malampuzha	2.50	Not Available		under processing
7	Chembukadavu stage I & II	6.45	Not Available		under processing
8	Urumi stage I & II	6.15	Not Available		under processing
9	Malankara	10.50	Available for total generation	PLCC	

Details of Renewable - Small Hydro Contd.....

Sl.No	Name	Installed capacity in MW	Real time online operational data	Mode of communication	Action plan
10	Lower Meenmutty	3.500	Not Available		under processing
11	Kuttiady tail race	3.750	Not Available		under processing
12	Poozhithode	4.800	Not Available		under processing
13	Ranni-Perunad	4.000	Not Available		under processing
14	Peechi	1.250	Not Available		under processing
15	Vilangad	7.500	Not Available		under processing
16	Chimmini	2.500	Not Available		under processing
17	Adyampara	3.500	Not Available		under processing
18	Vellathuval	3.690	Not Available		under processing

Details of Renewable - Small Hydro Contd.....

Sl.No	Name	Installed capacity in MW	Real time online operational data	mode of communication	Action plan
19	Maniyar (CPP)	12.000	Not Available		under processing
20	Kuthungal(CPP)	21.000	Available	MPLS	
21	Ullumkal (IPP)	7.000	Not Available		under processing
22	Iruttukanam(IPP)	4.500	Not Available		under processing
23	Kaarikayam(IPP)	10.500	Not Available		under processing
24	Meenvallam(IPP)	3.000	Not Available		under processing
Total		194.090			

Percentage of Data being received at SLDC Kerala

Sl. No.	RE Sources	Total IC-MW	Data recvd in MW	% of data received
1	Wind	65	22	33.70
2	Solar	71	36	50.68
3	Small Hydro	194	87.5	45.10

Thank you

Status of Real Time Data Transfer

CEA Meeting | 28th-June-17 | New Delhi



Status of Real Time Data Transfer : GJ

State	Particulars	KV	Status	SCADA at SS	GATEWAY	RTU at SS	Status of Real Time data transfer to SLDC	Remarks
GJ	Adodar	66/33	Completed	NO		YES	On line	in IEC 104 protocol - with redundancy
GJ	Baradia	66/33	Completed	NO		YES	On line	in IEC 104 protocol - with redundancy
GJ	Gunda (Bhomiavadar)	132/33	WIP	YES		YES	On line	in IEC 101 protocol -
GJ	Bitva Valadia - Sinoy	66/33	Completed	NO		YES	On line	in IEC 104 protocol - with redundancy
GJ	Changadai	66/33	Completed	NO		YES	On line	in IEC 104 protocol - with redundancy
GJ	Gorsar	66/33	Completed	NO		YES	On line	in IEC 104 protocol - with redundancy
GJ	Jamanwada	220/33	Completed	NO		YES	On line	in IEC 101 protocol -
GJ	Jangi	66/33	Completed	NO		YES	On line	in IEC 104 protocol - with redundancy
GJ	Balambha (Jodiya)	66/33	Completed	NO		YES	On line	in IEC 104 protocol - with redundancy
GJ	Parevada (Kamlapur)	66/33	Completed	NO		YES	On line	in IEC 104 protocol - with redundancy
GJ	Kuchadi	66/33	Completed	NO		YES	On line	in IEC 104 protocol - with redundancy
GJ	Laiza	66/33	Completed	NO		YES	On line	in IEC 104 protocol - with redundancy
GJ	Rajapara (Chotila)	66/33	Completed	NO		YES	On line	in IEC 104 protocol - with redundancy
GJ	Halenda (Mota Dadva)	66/33	Completed	NO		YES	On line	in IEC 104 protocol - with redundancy
GJ	Ukheda (Nakhatrana)	220/33	WIP	YES			On line	in IEC 101 protocol -
GJ	Nanisindhodi	220/33	Completed	NO		YES	On line	in IEC 101 protocol -
GJ	Rajpara (Sardhar)	66/33	Completed	NO		YES	On line	in IEC 104 protocol - with redundancy
GJ	Shikarpur	66/33	Completed	NO		YES	On line	in IEC 104 protocol - with redundancy
GJ	Suthari	220/33	Completed	NO		YES	On line	in IEC 101 protocol -
GJ	Vanku	66/33	Completed	NO		YES	On line	in IEC 104 protocol - with redundancy
GJ	Varshamedi	132/33	Completed	NO		YES	On line	in IEC 101 protocol -
GJ	Vasai - Elecon	66/33	Completed	NO		YES	On line	in IEC 104 protocol - with redundancy
GJ	Veer Vinjalpar	66/33	Completed	NO		YES	On line	in IEC 104 protocol - with redundancy
GJ	Kandorana	66/33	Completed	YES		YES	On line	SCADA not working & RTU is on IEC104 protocol
GJ	Khiri	66/33	Completed	YES		YES	On line	SCADA not working & RTU is on IEC104 protocol
GJ	Banugar	66/33	Completed	YES		YES	On line	SCADA not working & RTU is on IEC104 protocol
GJ	Vaghnager - KP Energy	66/33	Completed	NO		yes	On line	RTU is with redundant arrangement IEC104 protocol
GJ	Baradiya (Ratdi) KP Energy	66/33	Completed	NO		yes	On line	IEC 101
GJ	Degam (Kuchhadi) KP Energy	66/33	Completed	NO		yes	On line	IEC 101
GJ	Sherdivadar - KP energy	66/33	Completed	NO		yes	On line	IEC 101
GJ	Sanodar	66/33	Completed	NO		yes	On line	RTU is with redundant arrangement IC104 protocol
GJ	Khudhada - Veer	66/33	Completed	NO		yes	On line	RTU is with redundant arrangement IC104 protocol
GJ	Ukharla	66/33	Completed	NO		yes	On line	RTU is with redundant arrangement IC104 protocol
GJ	Gandhavi	66/33	Completed	NO		yes	On line	RTU is with redundant arrangement IC104 protocol

Status of Real Time Data Transfer : MP

State	Particulars	KV	Status	SCADA at SS	GATEWAY	RTU at SS	Status of Real Time data transfer to SLDC	Remarks
MP	Kod	132 /33kV		YES	YES		Online	Data is transferred through online telemetry system on IEC 104 protocol

Status of Real Time Data Transfer : MH

State	Particulars	KV	Status	SCADA at SS	GATEWAY	RTU at SS	Status of Real Time data transfer to SLDC	Remarks
MH	Dhalgaon (Ghatnnandre)	220/33	Completed	YES		YES	No	All the wind farm pooling SS are handed over to MSETCL as per the existing policy. 10 mins power generation data at each pooling sub stations being sent to SLDC and WRLDC on ftp server.
MH	Gudhepachagani	220/33	Completed	YES		NO	No	
MH	Jamde	220/33	Completed	YES		NO	No	
MH	Sadawaghapur	220/33	Completed	YES		NO	No	
MH	Sinnar	132/33	Completed	YES		NO	No	
MH	Valve	220/33	Completed	YES		NO	No	
MH	Gangapur	220/33	WIP	YES		NO	No	
MH	Jath	220/33	Completed	YES		NO	No	

Status of Real Time Data Transfer : AP

State	Particulars	KV	Status	SCADA at SS	GATEWAY	RTU at SS	Status of Real Time data transfer to SLDC	Remarks
AP	Gandikota	132/33	Completed	YES	YES		Online	
AP	Vajrakarur	220/33	Completed	YES	YES		Online	
AP	Belluguppa (WIP)	220/33	WIP	YES	YES		Online	
AP	Elutla(WIP)	220/33	WIP	YES	YES		Online	
AP	Amidyala	220/33		YES	YES		Online	
AP	Borampalli	220/33		YES	YES		Online	

Status of Real Time Data Transfer : KA

State	Particulars	KV	Status	SCADA at SS	GATEWAY	Status of Real Time data transfer to SLDC	Remarks
KN	Bagewadi	110/33	Completed	NO		YES	Infrastructure provided by KPTCL
KN	Erkunhalli	66/33	Completed	NO		YES	
KN	Gopalapura	220/33	Completed	YES		YES	
KN	Gujnur	66/33	Completed	NO		YES	
KN	Harogere	110/33	Completed	NO		YES	
KN	Herada	110/33	Completed	NO		YES	
KN	Jogimatti	66/33	Completed	NO		YES	
KN	Kallenahalli	66/33	Completed	NO		YES	
KN	Kalmangi	110/33	Completed	NO		YES	
KN	Kudre Konda	220/33	Completed	NO		YES	
KN	Kundur	66/33	Completed	NO		YES	
KN	Muddebihal	220/33	WIP	NO		YES	
KN	Nichapura	66/33	Completed	NO		YES	
KN	Nittur Sub Station	66/33	Completed	NO		YES	
KN	Sindhagiri	110/33	Completed	NO		YES	
KN	Siddhanur	110/33	Completed	NO		YES	
KN	Sogi	66/33	Completed	NO		YES	
KN	Thoraganallu	110/33	WIP	NO		YES	
KN	Minchery	110/33	WIP	NO		YES	
KN	Hanumanthappa	220/33	WIP	NO		YES	

Status of Real Time Data Transfer : TN

State	Particulars	KV	Status	SCADA at SS	GATEWAY	RTU at SS	Status of Real Time data transfer to SLDC	Remarks
TN	Amuthapuram	230/33	Completed	YES		YES	YES	SS handed over to TANTRANSCO as per the then existing policy of Government
TN	Elevanthy	110/33	Completed	YES		YES	YES	The Suzlon WTGs are connected at 33 kV at the SS of TANTRANSCO, where several other developers have also connected their WTGs
TN	Irukkandurai	110/33	Completed	NO		YES	NO	
TN	Keelaveeranam 110/33kV	110/33	Completed	NO		YES	NO	
TN	Koodankulam	110/33	Completed	YES		NO	NO	
TN	Kottai karunkulam	110/33	Completed	YES		NO	NO	
TN	Kundadam	110/33	Completed	YES		YES	YES	
TN	Muthunayakanpatti	110/33	Completed	YES		YES	YES	
TN	Negamam	110/22	Completed	YES		YES	YES	
TN	Nelali(10(1))	110/33	Completed	YES		YES	YES	SS owned by Suzlon
TN	Palappampatti	110/22	Completed	YES		YES	YES	The Suzlon WTGs are connected at 33 kV at the SS of TANTRANSCO, where several other developers have also connected their WTGs
TN	Panappatty	110/33	Completed	YES		YES	YES	
TN	Ponnapuram	110/22	Completed	YES		YES	YES	
TN	Radhapuram	110/33	Completed	YES		YES	NO	
TN	Rastha	110/33	Completed	NO		YES	NO	SS handed over to TANTRANSCO as per the then existing policy of Government
TN	Sadayapalayam	230/33	Completed	YES		YES	YES	SS handed over to TANTRANSCO as per the then existing policy of Government
TN	Samurarangapuram 10(1)	110/33	Completed	YES		NO	NO	SS owned by Suzlon. As PLCC is not available at 110 kV system in TN transmission network, communication could not be established.
TN	Sankaneri	230/33	Completed	YES		YES	YES	The Suzlon WTGs are connected at 33 kV at the SS of TANTRANSCO, where several other developers have also connected their WTGs
TN	Sundankuruchi 110/33kV	110/33	Completed	NO		YES	NO	
TN	Thalaiyuth	110/22	Completed	YES		YES	YES	
TN	Thandyarkulam	110/33	Completed	YES		NO	NO	
TN	Udhayathoor	230/33	Completed	YES		YES	YES	
TN	Uthumalai 110/33kV	110/33	Completed	NO		YES	NO	
TN	Vellapaneri(10(1))	230/33	Completed	NO		YES	YES	SS owned by Suzlon

Status of Real Time Data Transfer : RJ

State	Particulars	KV	Status	SCADA at SS	GATEWAY	RTU at SS	Status of Real Time data transfer to SLDC	Remarks
RJ	Akal	220/33	Completed	NO	YES	YES	Yes	DR installed for local data monitoring by PE at HO Pune
RJ	Baori - Own	132/33	NO	NO		NO	NO	
RJ	Bhesada	220/33	Completed	NO		YES	WIP	DR installed for local data monitoring by PE at HO Pune
RJ	Kaladungar	220/33	Completed	NO	YES	YES	Yes	
RJ	Mada	220/33	NO	NO		NO	NO	
RJ	Mulana	220/33	Completed	NO	YES	YES	Yes	DR installed for local data monitoring by PE at HO Pune
RJ	Ratan Ka Bas	220/33	Completed	NO		NO	NO	ABT meter installed
RJ	Rathkuriya	33 BAY	NO	NO		NO	NO	
RJ	Tejuwa	220/33	Completed	NO	YES	YES	Yes	DR installed for local data monitoring by PE at HO Pune
RJ	Tejuwa-II	220/33	Completed	NO	YES	YES	Yes	

Data Source:	Data Protocols:	Data Communication Medium:	Data Frequency	Utilisation
<ul style="list-style-type: none"> • Pooling Sub Stations • ABT Meters • Feeders • WTGs 	<ul style="list-style-type: none"> • IEC 104 • IEC 101 • GPRS/GSM 	<ul style="list-style-type: none"> • Fibre Optic • OPGW • Wireless • V-Sat • PLCC • Leased Line 	<ul style="list-style-type: none"> • Real time at every 5 sec • 10 mins • 24H 	<ul style="list-style-type: none"> • Power generation status • Real time monitoring • Forecasting & Scheduling • Remote Controls • Energy Audit

Thank you