



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

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No. CEA/PIg/RES-35/2017/234

Dated: 31-10-2017

विषय: नवीकरणीय ऊर्जा उत्पादन प्रतिदिन) के हिसाब से( तथा वास्तविक समयानुसार नवीकरणीय ऊर्जा स्रोतों से सूचना के प्रवाह के बारे में केन्द्रीय विद्युत प्राधिकरण में 11-09-2017 को संपन्न बैठक का कार्यवृत्त

Subject: **Minutes of the Meeting** regarding 'furnishing real time/Daily Renewable energy generation data to CEA', held in New Delhi on 11-09-2017 at 11 AM.

महोदय/Sir,

**Minutes of the Meeting** regarding 'furnishing real time/Daily Renewable energy generation data to CEA', held in New Delhi on 11-09-2017 at 11 AM., under the Chairmanship of Member (Planning), CEA are enclosed herewith for your kind information and further necessary action.

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

  
for Chief Engineer (RES Dev.)  
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3. Sh. B.B. Mehta, Chief Engineer, State Load Despatch Centre, Gujarat
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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
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20. Secretary, CERC, New Delhi.
21. Member-Secretary (NRPC, WRPC, SRPC, ERPC & NERPC)

**Copy for kind information to:**

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- 2) PPS to Secretary (MNRE), New Delhi
- 3) PPS to Joint Secretary (Trans), 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
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**Minutes of the Meeting regarding renewable energy generation data availability at SLDCs, RLDCs, NLDCs and CEA, held in New Delhi on 11-09-2017 at 11 AM.**

**Director (RES), CEA** welcomed the participants and gave a brief account about the Meeting. List of the Participants is at **Annex-I**

**Chief (RES), CEA** welcomed the participants and informed that Member (Planning), CEA who was to Chair the Meeting, in an urgency had to proceed to Ministry of Power. CE (RES) also conveyed that respected Member (Planning) has conveyed for conduction of the Meeting as per the Agenda. The participants were requested to deliberate the issues on the subject.

**CE (RES), CEA** impressed upon all the participants that availability of Real Time Operational Data at SLDCs, RLDCs and NLDCs is an essential system requirement for safe and stable system operation. This is also mandatory as per the appropriate regulations and standards in place (The relevant extract of Appropriate Regulations/Standards is placed at **Annex-II**).

In addition to this, the renewable energy generation data is certified by respective SLDCs for commercial arrangements as well as for the purpose of renewable energy certification. Thus, all stake holders have to ensure proper functioning of the telemetry and communication system at the requisite locations all the time. He also impressed upon the need of sharing the best practices being followed by the different utilities.

**MS (NRPC), CEA** suggested that there should be a common format for receipt of data from all RE generators. He assured that connectivity issue and availability of real time system operation data has been included in regular agenda in the OCC meetings of NRPC. Other RPCs should also emulate the same.

**CE(IT), CEA** while informing the group about the National Power Portal(NPP), mentioned that the first objective is to get daily generation data from renewable energy(RE) sources, statewise.

**Indian Wind Turbines Manufacturers Association (IWTMA)** informed that they are having their presence in various states and in association with **M/s REConnect Pvt Ltd.**, they are helping various states in making available the requisite data to the respective SLDCs from various pooling stations. He cited the example that Rajasthan, which has about 4290 MW of Wind Turbine installations at present, the operational data of about 3650 MW is being made available at the portal developed by them. The remaining installations belong to Government of Rajasthan and Government of Rajasthan has to take necessary action to streamline the flow of data to the SLDCs.

Though the data so arranged is available at the portal of REConnect/IWTMA placed in Rajasthan SLDC, its interfacing to the Rajasthan SLDC in the SCADA Compatible format is yet to be done. It was agreed by the officials of Rajasthan SLDCs, Renewable Energy Management Centre (REMC) and REConnect/IWTMA that efforts would be made for successful integration of the data. It was decided that a meeting would be held at Rajasthan SLDC with

the participation from NRPC, NRLDC, NLDC, SLDC (Rajasthan) and CEA at Jaipur. Rajasthan SLDC may make arrangements for the Meeting.

Representative of **IWTMA** informed that ABT Meters and RTU's are installed at all the pooling stations of Rajasthan. The real time generation and day ahead forecast, with all the revisions, are being submitted to SLDC, Rajasthan where a gateway has been installed for the purpose, by IWTMA and Reconnect pvt. Ltd. They informed that 100% visibility will be achieved by October, 2017 for real time generation. In Rajasthan, they have installed ABT meter, with dual sim modem sets, at 23 polling stations. GPRS communication is used to transmit data to a gateway at SLDC, and from this gateway, data is converted to IEC 104 protocol to be fed/integrated into SCADA of SLDC.

Representative of **REMC Rajasthan** stated that in case of Rajasthan, General Packet Radio Service (GPRS) is being used for data connectivity. Further he informed that establishment of Renewable Energy Management Centre (REMC) control room is under process.

The participants deliberated that the two issues should be dealt separately:

- i) Real Time generation data availability should be ensured in a hierarchical fashion from the pooling stations to SLDCs, from SLDCs to RLDCs and from RLDCs to NLDCs. This needs to be ensured in all respect with 100% accuracy and reliability, as it is a must for safe and secure real time system operations.
- ii) The daily generation data, separately from various renewable energy sources such as wind, solar, biomass and small hydro power generating stations should be made available in hierarchical fashion as described at (i) above, as well as to CEA.

It was suggested that a portal may be developed on the website of CEA, where the daily generation data by each state could be updated on a daily basis **by 10 am each day** for the quantum of generation of the preceding day (00:00 hours to 24:00 hours cycle). Till the time National Power Portal (**NPP**) is fully equipped for receiving this type of data, the above arrangement may be followed. This generation data would be an indicative one for assessing the quantum of generation on a day ahead basis from various renewable energy generation sources.

- iii) The stake holders deliberated that **aggregated monthly generation data** from various renewable energy sources are being submitted by the respective states (SLDCs) and Electricity Departments (EDs) etc to CEA through email on a regular basis and it is being received in CEA starting from the first week and continues till last week of the month for the preceding month. As to a query to the Chair why it took so long, the stake holders clarified that the reconciliation of the data and submission thereof takes time because from various locations from where the metered data is taken and figures are reconciled for billing purpose. Stakeholders were of the opinion that keeping in view the widespread locations of the renewable energy sources in the country, as well as the vastness of the country, and involvement of various agencies, the present method of collection of monthly generation data be followed till the appropriate arrangement at National Power Portal gets institutionalized and made fully functional.

- iv) The System Operator (i.e. RLDCs/SLDCs) were of the opinion that day ahead and intra-day forecasting of renewable energy generation should be made compulsory so that resources could be utilized in an optimum way and system operation could be carried out in a more reliable manner. Some of the states like Gujarat, already does the scheduling and forecasting exercise and intra-day revisions are also being carried out by them through the help of service providers like M/s REConnect Private Limited. Madhya Pradesh has also started day ahead forecasting exercise, however, the revision of schedules is still to be implemented in Madhya Pradesh.
- v) WRLDC made a presentation and informed that the Regional Power Committee (RPC) has taken "Availability of Real time operational data at SLDC/RLDC" as regular agenda point in their regular Operational Coordination Committee (OCC) Meetings, because of which an appreciable improvement in availability of the data has been observed. WRLDC representatives cited an example that out of 4769 MW of Wind Turbine generation capacity in Maharashtra, data of 2837 MW Wind Generation Capacity is being received through a combination of SCADA and File Transfer Protocol (FTP). Representative of **WRLDC** expressed concern about forecasting errors, as it becomes difficult in managing the sudden reduction/overdrawal of power from grid due to variation in RE generation.

Representative of **WRLDC** informed that in the case of Madhya Pradesh some of the 33 KV substations from old installations (about 860 MW Wind power installations) are in remote areas and not having proper communication services, for such RE generating capacity communication issue need to be taken care of. It was suggested that MP can also interact with Tamilnadu and Gujarat for installation of Radio Modems at such locations for availability of requisite data at desired locations.

Representative of **WRLDC** stated that MSETCL has to provide RTU in some of their substations, for which a phase wise program has been undertaken by Maharashtra.

Representative of **Tamil Nadu** made a presentation and mentioned that data from Availability Based Tariff (ABT) meters, which have been provided with communicable modems, is being sent from the respective pooling stations to Renewable Energy Management Centers (REMC) over MPLS and GPRS; however, there are some wind turbine locations where ABT meters are yet to be installed and these would be completed within two months. 100% data communication is available for 132 kV and above and 75% for below 33 kV. They stated that around 150 MW from 33 generators at 33 kV level are not giving data to SLDC and Tamil Nadu SLDC is pursuing them to establish *Data acquisition* systems (DAS) in time bound manner. They informed that in case of Tamilnadu, feeders have been provided with Availability Based Tariff (ABT) meter.

Representative of **National Load Despatch Centre (NLDC)** stated that at present data of renewable generation is being received by them only from 10 states namely Andhra Pradesh, Tamil Nadu, Maharashtra, Gujarat, Karnataka, Rajasthan, Madhya Pradesh, Punjab, Telangana and Chhattisgarh

out of which only the first seven states are providing plant wise generation details. They expressed that RE source wise real time generation data should be made available at NLDC.

Representative of **NTPC** informed that they are using PLCC and OPGW for data communication. They have achieved about 73% communication with the generators; three renewables generating stations of NTPC are yet to be provided communication links, tentative completion is by December, 2017.

Representative of **SRLDC** informed that they are getting RE data from SLDCs over Inter Control Center Protocol (*ICCP*). All the data which has been integrated at SLDCs, is available at SRLDC also and as soon as SLDCs start getting data from the remaining locations, the same will be extended to SRLDC.

Participants were of the opinion that energization and *commercial operation date* (COD) of element by respective SLDCs should not be permitted till telemetry is provided and made fully functional.

Representative of **APTRANSCO** informed that they are using OFC, PLCC and leased line over MPLS for data communication. They have 96% availability of the data at present and 100% will be achieved within a year. They suggested that regulations should be such that synchronization or COD should not be declared without Supervisory control and data acquisition (**SCADA**) data of RE plant.

A brief presentation was made by the representative of **Gujarat SLDC** explaining the communication link used to achieve 100% communication of RE generators. They are using radio/ Global System for Mobile communication (GSM)/GPRS between Solar Power station and GETCO EHV substation and each substation is equipped with Remote Terminal Unit (RTU). They are using Radio Modems at frequency band between 2.412 GHz to 2.464 GHz, (unlicensed band). Repeaters are used in case of remote generators.

Summing up the discussions, **CE (RES), CEA**, requested the representatives of the States to submit the month-wise figures of RE generation within the timeframe (10<sup>th</sup> day of the current month for the preceding month's renewable energy generation data) and to ensure 100% communication of real time RE generators/pooling station data as early as possible so that cumulative generation figures on daily basis could be received at the NPP. He suggested that the states which are facing problems in achieving 100% communication of RE generators could emulate Gujarat model, as Gujarat has overcome all such issues and achieved 100% connectivity of RE generators. He also made a point that first of all focus should be on connecting the pooling stations through communication links.

#### **It was also concluded that:**

Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2017 which have come into force w.e.f. 1.7.2017 defines its "SCOPE and APPLICABILITY" as:

(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.

The above should be followed in letter and spirit.

The enforcement of Appropriate Regulations, Standards and clause of PPAs is the responsibility of the concerned stakeholders.

To start with, the daily generation data from RE sources be made available at a portal to be developed by CEA in which there is no manual intervention. The suggested format (indicative) is given below:

<b>Name of the State/UT/Entity/Sector/Installed Capacity</b>	
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Generation from RE sources (MU) 00:00 hrs to 24:00 hrs of date (dd/mm/yyyy)					
Wind	Solar	Biomass	Small Hydro Plant (up to 25 MW)	Any other (To be specified)	Total

Daily generation data by each state could be updated on a daily basis **by 10 am each day** for the quantum of generation of the preceding day (00:00 hours to 24:00 hours cycle).

The Meeting ended with a Vote of Thanks to the Chair.

**Indicative reference of Appropriate Standards and regulations as regard to Telemetry issues and renewable energy generation data availability at SLDCs, RLDCs and NLDC.**

1. Technical Standards for Connectivity to the Grid, (Amendment), regulations, 2012
2. Technical Standards for Connectivity of the Distributed Generation Resources
3. Technical Standards for Connectivity to the Grid, 2007

(ref: <http://www.cea.nic.in/connectivityreg.html>)

**Indian Electricity Grid Code ([www.cercind.gov.in/2016/regulation/9.pdf](http://www.cercind.gov.in/2016/regulation/9.pdf))**

Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2017. These regulations shall come into force w.e.f. 1.7.2017.

Central Electricity Authority (CEA) had in exercise of its power conferred by Section 7 and clause (b) of Section 73 read with Sub-section (2) of Section 177 of Electricity Act, 2003, notified the Central Electricity Authority (Technical Standards for Connectivity to Grid) Regulations 2007 on 21<sup>st</sup> Feb, 2007. These Regulations are inter-alia applicable to all the generating projects including the renewables, which are getting connected to the grid at voltage level of 33 kV and above. The pertinent **Clauses 6(3) and 6(4)(b) of General Connectivity Conditions** of the said Regulations are reproduced below for ease of reference:

*“ 6(3) – The requester and user shall provide necessary facilities for voice and data communication and transfer of on-line operational data, such as voltage, frequency, line flows, and status of breaker and isolator position and other parameters as prescribed by the Appropriate Load Despatch Centre.*

*6(4) – The requester and user shall cooperate with the Regional Power Committee, and Appropriate Load Despatch Centres in respect of the matters listed below, but not limited to :-*

*(b) agree to maintain meters and communication system in its jurisdiction in good condition; “*

Subsequently, CEA had also notified the Central Electricity Authority (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations, 2013 on 30<sup>th</sup> Sept, 2013. These Regulations are applicable for “distributed generation resource” which means a generating station feeding electricity into the system at voltage level of below 33 kV. Needless to mention that these Regulations also cover the renewable projects connected to the distribution licensee system at voltage level of below 33 kV. The relevant **Clause 4(4) of General Connectivity Conditions** of the said CEA Regulations is reproduced below for ready reference :

*“ 4(4) – The applicant and the user shall provide necessary facilities in the distributed generation resource for communication and storage of data and other parameters as may be stipulated by the appropriate licensee in a non-discriminatory manner.”*

## Annex-II

Meeting regarding Furnishing Real Time/Daily energy generation data to CEA to be held in New Delhi on 11.09.2017 at 11:00 AM

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