CENTRAL ELECTRICITY REGULATORY COMMISSION

3rd & 4th Floor, Chanderlok Building, 36, Janpath, New Delhi-110001

Minutes of Meeting: Constitution of Expert Group to review "Indian Electricity Grid Code and other related issues"- 4th Meeting thereof.

- 1. Fourth meeting of Expert Group to review "Indian Electricity Grid Code and other related issues" was held on 4th July, 2019 at 2:30 pm in Upper Ground Floor, Conference Room, 36, Janpath, Chanderlok Building.
- 2. Shri Hemant Jain, Chief Engineer (Grid Management), CEA was nominated to be part of Expert Group from CEA and he was co-opted as Member to the Expert Group.
- 3. The minutes of second and third meeting were confirmed by the Group.
- 4. During the meeting, Chairman and Members of the Expert Group, representatives from NLDC, RLDCs, SLDC Gujarat, SLDC Telengana, SLDC Tamil Nadu, SLDC Rajasthan and SLDC Andhra Pradesh were present. List of participants is enclosed at *Annexure A*.
- 5. All SLDCs present in the meeting, presented their views before the group. RLDCs and NLDC submitted a combined presentation.
- 6. The Gujarat, SLDC representative proposed the following:
 - New Definitions to be added: Area Load Dispatch Center, Energy Storage Devices, National Power Committee, National reliability Council of Electricity, POSOCO, Ramp rate, Sub SLDC, Transmission Reliability Margin;
 - b. Role of National Power Committee and National Reliability Council of Electricity to be added;
 - c. Additional functions of RPC and CTU to be added;
 - d. Inclusion of reactors, communication system in Planning Code;
 - e. The representatives also discussed the issues related to forecasting:
 - i. Forecasting at SLDCs is xls based. SLDC Gujarat used 75 parameters while forecasting
 - ii. De-pooling issues related to QCA. Disputes associated with penalties
 - iii. Failure of forecasting on account of weather sensitivity

- iv. Pooling Station wise forecast essential due to transmission constraints
- f. Misuse of Technical Minimum provision: At low technical minimum, beneficiaries don't tend to participate. At higher PLFs, increased participation is witnessed;
- g. Allowing generating station to sell URS power in the market thereby allowing minor beneficiaries in the power plant to schedule power from generating units;
- h. Chapter on Cyber Security to be added;
- i. Inclusion of following in Operation Code:
 - i. Specifying DROOP according to unit size
 - ii. Penalty in absence of primary response
 - iii. UFLS settings details
 - iv. Tightening of frequency band to 49.95 to 50.05 Hz
- j. Mock drills for generating station to carry out full-fledged black start and partial mock drill
- 7. The Telangana, SLDC representative additionally submitted that:
 - a. Requirement of automation is essential
 - b. Incentivization of renewables in Reactive Power Management
 - c. Introducing Blockwise MVRh declaration
 - d. IEX gate closure time needs to be reduced
- 8. Additional Submission by SLDC AP
 - a. National Level Balancing to balance energy in state
- 9. Additional Submission by SLDC Rajasthan
 - a. Issues regarding receipt of SCADA Data from RE sources
- 10. The representatives of NLDC and all RLDCs submitted following Key issues in their Presentation:
 - a. Introduction of Chapters on Frequency Control, Cyber Security and Forecasting and Reserve Management
 - b. Following Definitions to be added: Control Center, Communication System, SCED, Reference Frequency, Frequency Continuum, Reference contingency, Minimum frequency, Quasi steady state frequency, Area Control Error(ACE), Automatic Generation Control, minimum nadir frequency, Frequency Response Obligation, Rate of change of

frequency(ROCOF), frequency bias, coefficient Inertia, Qualified coordinating Agency (QCA), Forecasting Service Provider (FSP), REMC

- c. Additional roles of RPCs, RLDC, NLDC and CTU
- d. Inclusion of NPC and REMC
- e. Planning code to consist of following:
 - i. Development of models,
 - ii. Validation studies by CTU
 - iii. CTU to perform Generating Plant Interconnection study
 - iv. Studies related to reduction in inertia
 - v. Sufficient active and reactive power reserves
 - vi. Studies related to large scale integration of invertor based sources
- f. Connection Code to consist of following:
 - i. Model data submission 6 months prior to interconnection
 - ii. A common communication protocol to be established
 - iii. Installation of high-resolution Phasor Measurement Unit at all outgoing feeders for all New substation, FACTS, generating station including Renewable Energy connected to ISTS be ensured.
 - iv. Responsibility of Redundant data channels to be entrusted to CTU, Users
- g. Operation Code to consist of following
 - i. Periodic third party testing for governor response/model validation/AVR/PSS and capability curve assessment.
 - ii. Third-party protection audit of all sub station
 - iii. SLDC Operating Procedures to be published on website
 - iv. All data related to any event shall be filed by users within 24 hours in portal managed by RLDC
 - v. Enforcing the time period of validity of any Operation code provided by SLDC/RLDC.
 - vi. Tripping of pumped storage plants due to under frequency
 - vii. SLDCs to furnish data regarding Transfer Capability
 - viii. Var and frequency Control provisions for RE
- h. Scheduling Code to consist of following
 - i. Inclusion of RE COD procedures
 - ii. Clause regarding scheduling of power after COD declaration to be reviewed
 - iii. Review of Trial Run procedure of generating Stations
 - iv. Scheduling Procedure and time line for SCED, FRAS, RRAS and secondary reserve need to be included

- v. Provision of GT Tap at generating stations
- vi. Harmonizing Technical Minimum across states
- vii. STOA revisions for RE similar to existing provisions
- viii. Time taken by unit to bring on load under different circumstances to be specified
- i. In addition, provisions with regards to Frequency Control were submitted. Main provisions were:
 - i. Each Control Area to work out Area Control Error
 - ii. Adequate participation of state generating stations in providing secondary reserves
 - iii. Frequency Bias setting at 4%
 - iv. Updating the ACE definition as being used by RLDCs. Currently, Frequency Bias is not being used while calculating ACE
 - v. Monitoring inertial response
 - vi. Compliance factors using ACE maybe formulated
 - vii. Phase out FGMO, have speed control with DROOP
- 11. Following the presentations, key decisions taken by the group are:
 - a. RLDCs to come up with formulation regarding issues related to weather forecasting. IMD to be approached for suitable weather forecast for the Power sector and suggested for formation of a separate specialized RE forecasting unit at SLDCs
 - b. Common Communication Protocol to be formulated by RLDCs
 - c. CTU to be called for discussion on upgradation of PLCC technology with Optical Fiber and status on REMC.
 - d. To write Chairman, CEA on review of CEA Transmission Planning Manual.
 - e. Chapters on Frequency Control, Cyber Security, Forecasting and reserve Requirement, Protection, testing and verification to be included
 - f. Grid Code not to cover PPA related issues
 - g. The sale of URS Power to the market to be looked into so that the generating stations can operate at their technical minimum
 - h. Artificial Intelligence to be looked into for the purpose of forecasting
 - i. Grid Code may specify that forecasting will be done via sophisticated methodologies

- j. SLDC Gujarat to share its forecasting methodology
- 12. The Group decided on the following meeting schedule:
 - (a) Fifth meeting to be held on 16th July, 2019 at CERC. Agenda is presentation on Re-designing Real Time Electricity Markets.
 - (b) Sixth meeting on 17th July, 2019 at 11:30 AM at CERC. Agenda-Representatives from Power Exchanges, Traders and some RE generators will share their views before the Expert Group.
 - (c) Seventh meeting would be held on 22nd July, 2019 at 02:30 PM at CERC. Agenda- Representatives from ABB, Siemens and Discoms will share their views before the Expert Group.

The meeting ended with a vote of thanks to the chair.