From: anshumanswain007@gmail.com
To: Harpreet Singh Pruthi <secy@cercind.gov.in>, Shilpa Agarwal <shilpa@cercind.gov.in>
Cc: Anshuman Swain <anshuman007@nic.in>
Sent: Fri, 21 Oct 2022 17:52:31 +0530 (IST)
Subject: Re: Comments/suggestions on Draft Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2022

Sir/Madam,

Kindly ignore the contents of the previous mail and consider the inputs attached herewith.

On Tue, Oct 18, 2022 at 6:00 PM Anshuman Swain <anshumanswain007@gmail.com> wrote:

> Sir/Madam,
>
> Please find attached the comments/suggestions on Draft Central Electricity
> Regulatory Commission (Indian Electricity Grid Code) Regulations, 2022.
>
> --
> With Regards
> Anshuman Swain

Clause of IEGC	Statement in draft IEGC	Comments
PREAMBLE		
	The term "Grid" has been defined in sub-section 32 of Section 2 of the Electricity Act, 2003 (the Act) to mean the high voltage backbone system of inter-connected transmission lines, substations and generating plants. The Central Commission has been vested with the functions under clauses (h) of sub-section (1) of Section 79 of the Act to specify the Grid Code having regard to the Grid Standards. Clause (d) of Section 73 of the Act mandates the Central Electricity Authority to specify the Grid Standards for operation and maintenance of the transmission lines. Further, clause (i) of sub-section (1) of Section 79 of the Act enjoins upon the Central Commission to specify and enforce the standards with respect to the quality, continuity and reliability of services by the licensees. Sub-Section 2 of Section 28 of the Act provides that the Regional Load Despatch Centre shall comply with such principles, guidelines and methodologies in respect of wheeling and optimum scheduling and despatch of electricity as the Central Commission may specify in the Grid Code. Clause (e) of sub-section (3) of Section 28 of the Act provides that the Regional Load Despatch Centre shall be responsible for carrying out real time operations for grid control and despatch of electricity within the region through secure and economic operation of the regional grid in accordance with the Grid Standards and the Grid Code. Sub-Section (1) of Section 26 of the Act provides that National Load Despatch Centre shall be established at the national level for optimum scheduling and despatch of electricity among the Regional Load Despatch Centres. Sub-Section (1) of Section29 of the Act provides that the Regional Load Despatch Centre shall give	The preamble describes the functions of Central Commission under clause (h) of subsection (1) of Section 79, **however it does not mention the clause (g) of sub-section (2) of Section 178 of the Act, with which clause (h) of subsection (1) of Section 79 is read with, vide which the Central Commission draws its power from the Act, to prepare the IEGC**. Instead, the preamble goes into the functions of the RLDCs mentioned in sub-Section 2 of Section 28 of the Act, Clause (e) of sub-section (3) of Section 28 of the Act. Besides that the functions of the NLDC, SLDC, RPC and the powers of the RLDC has been mentioned in the preamble along with the relevant clauses of the Act. Also the relevant sections of the Act regarding the functions and duties of CTU and STU have been mentioned. The Preamble appears to go beyond the scope of the Central Commission as mentioned in the Electricity Act, and is trying to interfere in the roles, functions and duties of other stakeholders in the power system. This is **directly against the spirit of the Act and the mandate of the Act**.

	such directions and exercise such supervision and control as may be required for ensuring stability of the grid operation and for achieving the maximum economy and efficiency in the operation of the power system in the region under its control. Sub-section (2) of Section 29 of the Act mandates every licensee, generating company, generating station, sub-station and any other person connected with the operation of the power system shall comply with the directions issued by the Regional Load Despatch Centre under sub-section (1). Sub-Section (3) of Section 29 provides that all directions issued by the Regional Load Despatch Centres to the transmission licensee of State transmission lines or any other licensee of the State or generating company (other than those connected with inter-State transmission System) or sub-station in the State shall be issued through the State Load Despatch Centre who shall ensure compliance to such directions by the concerned generating company or the licensee or sub-station. Sub-Section (3) of Section 33 of the Act provides that the State Load Despatch Centre shall comply with the directions of the Regional Load Despatch Centre. Sub-section (4) of Section 29 of the Act provides that the Regional Power Committee in the region may, from time to time, agree on matters concerning the stability and smooth operation of the integrated grid and economy and efficiency of the power system within the region. While Section 38 and Section 39 deal with the functions of the Central Transmission Utility and State Transmission Utility respectively, Section 40 and Section 42 deal with the duties of the transmission licensees and distribution licensees respectively.	
	Therefore, the Act envisages and assigns specific roles and functions to Central Electricity Authority, Regional Power Committees, Central Transmission Utility, National Load Despatch Centre, Regional Load Despatch Centres, State Transmission	It may be seen that the in this portion the Regulatory Commissions have been excluded, whose role is also envisioned in the Act as can be seen from the first paragraph of the Act as mentioned below:

	Utilities, State Load Despatch Centres, generating companies and licensees and any other person connected with the operation of the power system in order to achieve real time operation and control of the grid within the regions and amongst the regions and also within the States for not only ensuring secure, economic and stable operation of the grid but also for achieving maximum economy and efficiency of the power system.	*"An Act to consolidate the laws relating to generation, transmission, distribution, trading and use of electricity and generally for taking measures conducive to development of electricity industry, promoting competition therein, protecting interest of consumers and supply of electricity to all areas, rationalization of electricity tariff, ensuring transparent policies regarding subsidies, promotion of efficient and environmentally benign policies, constitution of Central Electricity Authority, Regulatory Commissions and establishment of Appellate Tribunal and for matters connected therewith or incidental thereto."* Real time operation is carried out by the SLDCs, RLDCs and NLDC with CTU and STUs ensuring that the system is available for power flow. CEA and RPCs are not associated with the role of real time power flow operations. So mentioning **CEA and RPCs along with load dispatch centers with respect to real time operation in the Preamble is erroneous**. Rather it is the **Regulatory Commission** (i.e. Central Commission) that defines the principles, guidelines and methodologies in respect of the wheeling and optimum scheduling and despatch of electricity in the **Grid Code**, for the RLDCs to follow.
	Accordingly, the Grid Code hereinafter specified by the Central Commission contains the provisions regarding the roles, functions and responsibilities of the concerned statutory bodies, generating companies, licensees and any other person connected with the operation of the power systems within the statutory frameworks envisaged in the Act and the Rules and Notifications issued by the Central Government.	The roles, functions and responsibilities of the concerned statutory bodies including Central Commission generating companies, licensees and any other person connected with the operation of the power systems within the statutory frameworks envisaged in the Act and the Rules and Notifications issued by the Union Government are already clearly defined in the Electricity Act, passed by the Parliament and the Rules and Notifications passed by the Union Government. Thus trying to define the same in IEGC appears is redundant and tantamount to judicial over reach.
	Keeping in view the mandate and statutory framework as envisaged in the Act for stable, reliable and secure	In relation to the Grid Code, the Electricity Act, 2003 is very clear as can be seen from the following Clauses of the Act:

	grid operation in order to achieve maximum economy and efficiency of the power system, the Grid Code apart from the provisions relating to the role of various statutory bodies and organisations and their linkages, contain extensive provisions pertaining to (a) reliability and adequacy of resources; (b) technical and design criteria for connectivity to the grid including integration of new elements, trial operation and declaration of commercial operation of generating stations and inter-State transmission systems; (c) protection setting and performance monitoring of the protection systems including protection audit; (d) operational requirements and technical capabilities for secure and reliable grid operation including load generation balance, outage planning and system operation; (e) unit commitment, scheduling and despatch criteria for physical delivery of electricity; (f) integration of renewables; (g) ancillary services and reserves; and (h) cyber security etc.	**Section 2 (33)** – "**Grid Code**" means the Grid Code specified by the Central Commission under clause (h) of sub-section (l) of section 79; **Section 28 (2)** - The Regional Load Despatch Centre shall comply with such **principles, Guidelines and methodologies in respect of the wheeling and optimum scheduling and despatch of electricity as the Central Commission may specify in the Grid Code.** **Section 28 (3) (e) -** The Regional Load Despatch Centre shall be responsible for carrying out real time operations for grid control and despatch of electricity within the region through secure and economic operation of the regional grid in accordance with the **Grid Standards and the Grid Code.** **Section 79 (1) (h) -** The Central Commission shall to specify Grid Code having regard to Grid Standards; **Section 86 (1) (h) -** The State Commission shall specify **State Grid Code consistent with the Grid Code** specified under clause (h) of sub-section (1) of section 79; **Section 178 (2) (g) –** Central Commission has the power to specify regulations on Grid Code under sub-section (2) of section 28; From the above Clauses it is clear that the scope of Grid Code is focused on specifying the **principles, Guidelines and methodologies in respect of the wheeling and optimum scheduling and despatch of electricity.** Thus reliability and adequacy of resources should not be unnecessarily forced in the Grid Code as they have been mandated by the Electricity Act to be carried out by Central Electricity Authority through the following Clauses of the Act: **Section 3 (1)** - **The Central Government** shall, from time to time, prepare the **National Electricity Policy and tariff policy**, in consultation with the State Governments and

		the **Authority** for development of the power system based on **optimal utilisation of resources** such as coal, natural gas, nuclear substances or materials, hydro and renewable sources of energy. **Section 73 (a) -** The Authority shall advise the Central Government on the matters relating to the national electricity policy, formulate short-term and perspective plans for development of the electricity system and co-ordinate the activities of the planning agencies for the **optimal utilisation of resources** to subserve the interests of the national economy and to provide **reliable and affordable electricity** for all consumers**;** As mandated by the Electricity Act, 2003 the Hence the Preamble should be kept precise and concise and may be modified as below: "***The Indian Electricity Grid Code (IEGC) is a regulation made by the Central Commission in exercise of powers under clause (h) of subsection (1) of Section 79 read with clause (g) of sub-section (2) of Section 178 of the Act. The IEGC also lays down the rules, guidelines and standards to be followed by various persons and participants in the system to plan, develop, maintain and operate the power system, in the most secure, reliable, economic and efficient manner, while facilitating healthy competition in the generation and supply of electricity***."
CHAPTER 1 PRELIMINARY		
3 (1) (16)	'CEA Grid Standards'-means the Central Electricity Authority (Grid Standards) Regulations, 2010	Section 2 (34) of the Act defines the "**Grid Standards**" not "CEA Grid Standards". "Grid Standards" has also been defined in 3 (1) (62) as below: **"Grid Standards - the standards specified by the Authority under clause (d) of the Section 73 of the Act, i.e., the Central Electricity Authority (Grid Standards) Regulations, 2010 as amended from time to time."** Hence 3 (1) (16) may be deleted as the definition term "CEA Grid Standards" is not

		correct and the definition of Grid Standards has been given in 3 (1) (62)
3 (1) (17)	'CEA Technical Standards for Communication' - means the Central Electricity Authority (Technical Standards for Communication System in Power System Operation) Regulations, 2020	Section 73 (b) defines the function of the Authority to "*specify the technical standards for construction of electrical plants, electric lines and connectivity to the grid*." Hence the definition may be modified as below: "**Technical Standards for Communication – means the Central Electricity Authority (Technical Standards for Communication System in Power System Operation) Regulations, 2020 specified by the Authority under clause (b) of the Section 73 of the Act."**
3 (1) (18)	'CEA Technical Standards for Connectivity'- means the Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007;	Section 73 (b) defines the function of the Authority to "*specify the technical standards for construction of electrical plants, electric lines and connectivity to the grid*." Hence the definition may be modified as below: **"Technical Standards for Connectivity - means the Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007 specified by the Authority under clause (b) of the Section 73 of the Act."**
3 (1) (19)	'CEA Technical Standards for Construction' – means the Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2010	Section 177 sub-section 2 confers the powers to the Authority to make regulations regarding the "*technical standards for construction of electrical plants and electric lines and connectivity to the grid under clause (b) of section 73*." Hence the definition may be modified as below: **"Technical Standards for Construction – means the Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2010, specified by the Authority under sub section (2) of Section 177 of the Act."**
3 (1) (26)	'Connectivity Agreement' means an agreement between CTU and any other person setting out the terms relating to a connection to and/or use of the Inter-State Transmission System in terms of GNA Regulations;	The definition doesn't include inter-state transmission licensee other than CTU (if any). The same may be included and the definition may be modified as below: 'Connectivity Agreement' means an agreement between CTU**, inter-state transmission licensee other than CTU (if any)** and any other person setting out the terms relating to a connection to

		and/or use of the Inter-State Transmission System in terms of GNA Regulations;
3 (1) (32)	'Demand' means the demand of active power in MW;	In the Draft IEGC regulation in Clause 31 (2) 'Demand Estimation', it is stated that "***Demand estimation*** *by SLDC shall be for* ***both active power and reactive power*** *incident on the transmission system based on the details collected from distribution licensees, grid-connected distributed generation resources, captive power plants and other bulk consumers embedded within the State*." Further in 3 (1) (69) load has been defined as ***"'Load' means the active, reactive or apparent power consumed by a utility/installation of consumer".*** Thus load also includes both active and reactive power. Hence the definition of 'Demand should include both active and reactive power'. Hence the definition may be modified as below: **'Demand' means the demand of Active Power in MW and Reactive Power in MVAr of electricity unless otherwise specified.**
3 (1) (61)	'Grid Security' means the power system's capability to retain a normal state or to return to a normal state as soon as possible, and which is characterized by operational security limits;	The definition of grid security is not clear. There are two aspects to the grid security a) Physical security b) Cyber security. Physical security is related to securing the grid against physical attacks by individuals or groups intent on damaging, destroying, disrupting, or removing (e.g., copper theft) components of the electric infrastructure. The operational aspects of the grid can also be included in this as sustained violation of operational security limits may damage the infrastructure and cause failure of the local grids. Likewise cybersecurity involves securing the grid against cyber-attacks by individuals or groups intent on theft, loss, or corruption of data, or damage, destruction, or disruption of cyber infrastructure and/or grid equipment. **The definition may be discussed and rephrased properly.**
Besides the above, the following terms need to be defined in Section 3 of the draft IEGC regulations, as they have been used in the grid code, but no definition has been provided for them: 1. Entitlement 2. Generating Company 3. Cyber Security		

4. Independent Power Producer 5. Reactor 6. RPC Secretariat 7. SVC 8. Extreme Emergency State 9. Solar Park Developer 10. Wind park developer		
Virtual PPA		The concept of virtual PPA may be introduced, so that the large scale integration of renewable energy resources may be facilitated in a better manner. Virtual PPA may be defined as: "**A Virtual PPA is a multi-year bilateral renewable energy contract that does not involve the physical delivery of energy from the vendor to the customer, who thus does not need to change supplier**."
Despite the fact that the Grid Code is a voluminous regulation, the **structure of the Grid Code has not been included in the Grid Code**, which is a major hindrance for anyone trying to refer to the Grid Code. Hence after or before the "Definitions" Section, as may be considered suitable, the **structure of the Grid Code should be clearly defined**.		
CHAPTER 2 RESOURCE PLANNING CODE		
4 (1) & 4 (2)	This chapter covers the integrated resource planning including demand forecasting, generation resource adequacy planning and transmission resource adequacy assessment, required for secure grid operation. The planning of generation and transmission resources shall be for reliably meeting the projected demand in compliance with specified reliability standards for serving the load with optimum generation mix with a focus on integration of environmentally benign technologies after taking into account the need, inter alia, for flexible resources, storage systems for energy shift and demand response measures for managing the intermittency and variability of renewable energy sources.	The following clauses of the Electricity Act, categorically deal with generation and transmission planning and preparation of plans for optimal utilization of resources: **Section 3 (1)** - **The Central Government** shall, from time to time, prepare the **National Electricity Policy and tariff policy**, in consultation with the State Governments and the **Authority** for development of the power system based on **optimal utilisation of resources** such as coal, natural gas, nuclear substances or materials, hydro and renewable sources of energy. **Section 73 (a) -** The Authority shall advise the Central Government on the matters relating to the national electricity policy, formulate short-term and perspective plans for development of the electricity system and co-ordinate the activities of the planning agencies for the **optimal utilisation of resources** to subserve the interests of the national economy and to provide **reliable and affordable electricity** for all consumers**;**

		Thus, the **Central Electricity Authority (Authority)** is responsible for preparation of perspective generation and transmission plans and for coordinating the activities of planning agencies as provided under Section 73(a) of the Electricity Act 2003. For resource planning the Authority already coordinates with all the stakeholders as per the mandate of the Electricity Act, 2003 and publishes the following reports 1. **The National Electricity Plan 1 (Generation Planning)** 2. **The National Electricity Plan 2 (Transmission Planning)** 3. **Electric Power Survey** 4. **Resource Adequacy Plan and Load Generation Balance Report** 5. **Transmission Planning Criteria** **From the above it can be seen that load forecasting, generation and transmission planning is already being carried out by the Authority as mandated by the Act.** Thus the mandate of the Act is very clear regarding resource planning and the responsibility lies with the Authority which is a statutory body. Thus directing the Authority to perform its functions by the Central Commission is improper. Thus this Chapter may be removed from the Grid Code. Further, venturing into the resource adequacy and planning is beyond the scope of the Central Commission as the function of the grid code is clearly specified in the Electricity Act, in **Section 28 (2)** – *"The Regional Load Despatch Centre shall comply with such **principles, Guidelines and methodologies in respect of the wheeling and optimum scheduling and despatch of electricity as the Central Commission may specify in the Grid Code."*** Thus the Grid code should solely focus on the principles, guidelines and methodologies in respect of the wheeling and optimum scheduling and dispatch of electricity, as mandated in the Electricity Act, 2003.
CHAPTER 3 CONNECTION CODE		

6 (2)	The connectivity to the ISTS shall be granted by CTU in accordance with the GNA Regulations.	**The Central Electricity Authority (Technical Standards for connectivity to the Grid) Regulations, 2007** are a compulsory pre-requisite for connectivity to the grid and is applicable to all the users, requesters, Central Transmission Utility and State Transmission Utility. It defines the technical parameters for connectivity to the grid which have to be complied with for the **safe and secure operation of the grid**, and have to be considered before the commercial aspects. Hence, the clause may be modified as below: ***"CTU, STU and Users connected to, or seeking connection to ISTS shall comply with Central Electricity Authority (Technical Standards for connectivity to the Grid) Regulations, 2007 which specifies the minimum technical and design criteria and GNA Regulations."***
CHAPTER 6 OPERATING CODE		
28 (1)	All entities such as NLDC, RLDCs, SLDCs, CTU, STUs, RPCs, power exchanges, QCAs, SNAs, licensees, generating stations and other grid connected entities shall at all times function in coordination to ensure stability and resilience of the grid and achieve maximum economy and efficiency in operation of power system.	The operating philosophy appears more of a directive than a vision or philosophy. It doesn't appear to be a philosophy. Hence, the same may be modified as below: **"The primary objective of operation of the integrated grid is to enhance the overall reliability and economy of the power system. All users including CTU, STU, licensee, power exchange, generating station, QCA, SNA, NLDC, RLDC, SLDC, RPC and others shall cooperate at all times to ensure reliable, resilient, economic and efficient grid operation."**