



ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड  
(भारत सरकार का उद्यम)  
GRID CONTROLLER OF INDIA LIMITED  
(A Government of India Enterprise)



[formerly Power System Operation Corporation Limited (POSOCO)]  
राष्ट्रीय भार प्रेषण केन्द्र / National Load Despatch Centre

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Ref: GRID-INDIA/NLDC/CERC/ ९1

Date: 15<sup>th</sup> July 2024

सेवा में,  
सचिव,  
केन्द्रीय विद्युत विनियामक आयोग  
6<sup>th</sup>, 7<sup>th</sup> एवं 8<sup>th</sup> फ्लोर, टावर बी, वर्ल्ड ट्रेड सेंटर  
नौरोजी नगर, नयी दिल्ली, 110029

**विषय:** Suggestions on the Draft Central Electricity Regulatory Commission (Indian Electricity Grid Code) (First Amendment) Regulations, 2024

महोदय,

The Hon'ble Commission has notified the Draft Central Electricity Regulatory Commission (Indian Electricity Grid Code) (First Amendment) Regulations, 2024 on dated 12.06.2024.

The suggestions on behalf of Regional Load Despatch Centres (RLDCs) and National Load Despatch Centre (NLDC) on Draft Central Electricity Regulatory Commission (Indian Electricity Grid Code) (First Amendment) Regulations, 2024 are enclosed herewith for kind perusal and consideration of the Hon'ble Commission.

Thanking You,  
Yours Sincerely,

(S.C Saxena)

ED, NLDC

Copy to:

1. CMD, Grid-India
2. Director (SO), Grid-India
3. Heads of RLDCs



**Grid Controller of India Limited**  
**(A Govt. of India Enterprise)**  
**(Formerly Power System Operation Corporation Limited)**

**Suggestions on behalf of Regional Load Despatch Centres(RLDCs) and National Load Despatch Centre(NLDC) on Draft CERC IEGC (First Amendment) Regulations, 2024**

The Grid Code is notified by the Hon'ble Central Electricity Regulatory Commission as per the section 79(1)(h) of the Electricity Act 2003. The Indian Electricity Grid Code (IEGC) Regulations 2023 was notified by the Hon'ble Commission in May 2023 by repealing the existing Grid Code (IEGC 2010), keeping in view the emerging requirements of grid security, resource adequacy, and a robust market framework to facilitate smooth transition to a renewable rich system. The provisions of the new Indian Electricity Grid Code, 2023 (the new Grid Code), came into force on 1st October 2023, marking the beginning of a new era.

The new Grid Code stood out by providing for reliability and adequacy of reserves through Security Constrained Unit Commitment (SCUC) and for system and cost optimization through Security Constrained Economic Despatch (SCED). Furthermore, as more renewable energy (RE) resources are being integrated into the grid, the new Grid Code included enabling provisions like Qualified Coordinating Agency (QCA) and aggregation to ensure better forecasting and scheduling of RE generators.

Following the notification of the new Grid Code, several difficulties and implementation challenges were highlighted to the Hon'ble Commission by Grid-India and other stakeholders. Subsequently, in line with the provisions of 'Power to Relax' and/or 'Power to Remove Difficulties' in the new Grid Code, the Hon'ble Commission addressed some of these difficulties through two suo-motu orders in Petition No. 14/SM/2023 and 18/SM/2023.

Hon'ble Commission has notified Draft CERC IEGC (First Amendment) Regulations, 2024 on 12<sup>th</sup> June 2024. The suggestions on behalf of Regional Load Despatch Centres(RLDCs) and National Load Despatch Centre(NLDC) on the Draft CERC IEGC (First Amendment) Regulations, 2024 are as follows –

**1. Accommodating supply obligation through SCED**

**Clause - 6(2) of the Draft CERC IEGC (First Amendment) Regulation-2024** deals with inclusion of generating stations under Section 62 of the Act under SCED for minimum turndown level support. The draft mentions the following –

Quote -

.....

*"(v-a) In case a regional entity generating station, whose tariff is determined under Section 62 of the Act, gets a schedule below minimum turndown level for Off-Peak hours of the day, however, gets a schedule above minimum turndown level for Peak hours of the day, where*

Peak hours and Off-Peak hours shall be as declared by the concerned RLDC under the Tariff Regulations, the **schedule below the minimum turndown level may, on the request by such generating station to NLDC shall be adjusted** as follows:

- a. the **schedule below the minimum turndown level shall be adjusted under SCED** such that the **schedule in all time blocks of the day is at least at the minimum turndown level**. The schedule of the marginal generating station (s) ('A'), that is, the generating station with the highest energy charge in the stack prepared under and after completion of step at sub-clause (iv) of this clause, shall be reduced, subject to ramp up or ramp down rate, response time, transmission congestion and such other parameters as stipulated in the Detailed Procedure.
- b. In **case the SCED energy charge or SCED Compensation Charge**, as applicable, of such generating station ('A'), which was required to be issued SCED down, **is lower than the energy charge of the generating station ('B') whose schedule was increased** up to the minimum turndown level, the **difference** between the SCED energy charge or the SCED Compensation Charge (for 'A') and the energy charge (for 'B') **shall be payable by the entity which has caused the schedule of the generating station or unit thereof below minimum turndown level**.
- c. In case the SCED energy charge or SCED Compensation Charge, as applicable, of such generating station ('A') which was required to be issued SCED down, is higher than the energy charge of the generating station ('B') whose schedule was increased up to the minimum turndown level, the difference between the SCED energy charge or SCED Compensation Charge (for 'A') and the energy charge (for 'B') shall be adjusted in accordance with sub clauses (viii) to (x) of this clause.
- d. The above steps shall be carried out only after the **generating station furnishes to the RLDC the efforts made by such generating station to achieve a schedule of Minimum turndown level through the sale of power in the Power market (under bilateral or collective transactions)**.

Unquote.

### **Grid-India observations and suggestions**

#### **a) Request for manual intervention in the SCED Module**

#### **Draft Regulation 6(2): "On the request by such generating station"**

SCED is an automatic mechanism that is triggered every 15 minutes. Few sample scenarios of operator intervention are as below:

- i. To manage import/export transfer capability limits during forced outages or to manage congestion
- ii. To maintain Evacuation limits during forced outage of transmission lines
- iii. To exclude/include a generator during planned annual maintenance tests
- iv. To exclude/include a generator during reported emergencies

There is a very short lead time between RTM clearing and SCED run. It is neither practical nor desirable to entertain requests in the real-time from the generators as it could deviate the focus from grid security. It would become an undesirable obligation on NLDC to just jack up the schedules up to the minimum turndown level (MTL).

**b) Peak and Off-peak hours are region-wise to harness diversity**

**Draft Regulation 6(2): “Peak and off-peak hours”**

The differentiation between peak and off-peak hours might lead to scheduling below the MTL for a few blocks for some generators, even during peak hours. For example, WRLDC declared 0900 hrs – 1200 hrs and 1900 hrs – 2200 hrs as the peak hours for July. Gadawara power plant's schedule for 3rd July 2024 was below the MTL in 33–68 time blocks, i.e., during 0800 hrs – 1700 hrs. Interpreting the draft regulation would mean that Gadawara may not be considered for the MTL calculations (through SCED/SCUC) during 0900 hrs – 1200 hrs. Therefore, the peak and off-peak distinctions may be removed, as it may not serve the intended purpose of the regulation.

**c) Consistency with SCUC implementation needs to be ensured**

**Draft Regulation 6(2)(a): “the schedule below the minimum turndown level shall be adjusted under SCED”**

SCUC has been operationalized from 26th April, 2024. SCUC Cat#1 program is run daily at 1500 hrs based on the reserve requirement, current position of the power plant schedules and minimum turndown level. The results are published on the NLDC website for the stakeholders at [https://report.grid-india.in/scuc\\_report.php](https://report.grid-india.in/scuc_report.php). Typically based on the reserve requirement a few plants get “Yes” and a few plants get “No” for SCUC support. The plants given “Yes” would be assured a minimum turndown level schedule with SCUC Support.

The list of generators eligible to be scheduled up to the MTL is automatically decided by the SCUC algorithm with the objective to maintain reserves in the system in the time blocks when there is a likely reserve shortfall. CERC (IEGC), 2023 Regulations 46(1) provide that

*Quote*

*“(1) The objective of Security Constrained Unit Commitment (SCUC) is to commit a generating station or unit thereof, for the maximisation of reserves in the interest of grid security, without altering the entitlements and schedule of the buyers of the said generating station in the day ahead time horizon...”*

*Unquote*

A sample SCUC report on NLDC website for date 12<sup>th</sup> June 2024 is given below. The 36-55 time blocks reserves situation was expected to be comfortable for 12<sup>th</sup> June 2024, as observed from the beneficiary requisition pattern on 11<sup>th</sup> June 2024. This expectation was confirmed in the real-time wherein at least 13000 MW spinning reserves were available in the thermal ISGS in the 36-55 blocks on 12<sup>th</sup> June 2024. Simhadri-I was not selected in the Cat#1 list by the algorithm, as the reserve requirement in these time blocks was being compensated by other lower cost generators viz., Gadawara, and Telangana STPP, and sufficient reserves are there in the system. In the time

blocks (1-12, 93-96) when the reserve requirement existed, coal-based plants are already maximized and have no reserves, and hence gas plants get 'YES' in the SCUC list, as they contribute to the system reserves. Khargone contributed in reducing the reserve shortfall in the 16,32,33,60,61 blocks and boarded the SCUC list.

Format-2: NLDC SCUC for Date 'D': 12/Jun/2024 (Published on D-1 basis: 11/Jun/2024) at 1500 hrs

S.No.	Generator Name	Time Blocks	Schedule MW	ECR(paise/kWh)	SCUCYN
1	Anta_CRF	1-96	0	1263	YES
2	Auraiya_RF	1-96	0	1528	YES
3	Dadri_RF	1-96	0	1434	YES
4	Gadarwara-1	36-56	703.81	348.9	YES
5	NTPC-KHARGONE	16, 32-61	574.49	457.8	YES
6	Gandhar-RLNG	1-96	0	1321	YES
7	Kawas-RLNG	1-96	0	1327	YES
8	RGPPPL-LTRLNG	1-96	0	1134	YES
9	Simhadri -NTPC Stage -1	36-55	436.89	388.4	NO
10	TelanganaSTPP	36-57	219.35	358	YES

In real-time, 30 minutes before each delivery time block, power plants that have been guaranteed SCUC support will receive an increment in their schedule through SCUC-Up up to the MTL. The relatively costlier power plants are given commensurate SCUC-Down to balance the SCUC-Up. The output of SCUC is then passed on as input to the Security Constrained Economic Dispatch (SCED) for further optimization/scheduling activity. If SCED is also assigned the duty to adjust the schedules of the generators requisitioned below the MTL, it would render the SCUC Cat#1 exercise redundant and infructuous.

This is akin to giving all the plants a "Yes" in the SCUC Cat#1 exercise, because the units that are on bar are now guaranteed to reach the MTL. The very objective of SCUC is compromised.

#### **d) Ensuring consistency with existing market-based initiatives**

If SCED is also assigned the duty to adjust the schedules below the minimum turndown level, then

- i. The primary aim of SCED is to promote economic efficiency. The technical minimum is better managed during the scheduling process by the beneficiaries or through market trades. When SCED was introduced, it was based on the premise that there would be no commercial impact on the states. Reference is invited to CERC Order in 02/SM/2019 dated 31/01/2019 regarding the matter of SCED pilot implementation, clause 20 (d) of the said order reads as under:

*Quote*

*“d. Schedules of the States/beneficiaries shall not be changed and the beneficiaries shall continue to pay the charges for the scheduled energy directly to the generator as per the existing practices.”*

*Unquote*

Further, savings caused by SCED are a public good, whereas guaranteeing MTL to select generators is facilitating private good. It is not desirable to mix the two.

- ii. The potential savings from the National SCED Pool will be used to facilitate the MTL of individual stations in an out-of-merit dispatch. A compensation mechanism has been proposed in the draft regulations, but there would be an overall cost to the system due to distortions considering all constraints, such as ramp rate, transfer capability, and load-generation balance.
- iii. This may lead to states depending on NLDC to ensure the MTL for the ISGS plants in which the respective DISCOMs have shares. This would discourage the spirit of decentralized scheduling, where all stakeholders are expected to actively participate in the scheduling process, and the power plants and DISCOMs arrive at a consensus on operationally reasonable schedules.
- iv. Plants may become reliant on SCED support, and Market based mechanisms may not be explored by the power plants to meet the minimum turndown level even for a few (1-2) time blocks. As a result, the price signals may get distorted.
- v. When the power plants don't receive SCUC support due to lack of reserve requirement in the system, it is expected that the power plants proactively participate in all available market based mechanisms to achieve the MTL. This is how the need for any improvement in market design is identified. Therefore, MTL support through SCED would eventually inhibit such natural signals for market design improvement needs.
- vi. Displaying flexible operation attributes by the thermal power plants is also the need of the hour. IEGC-2023 and the CERC Approved Procedure for SCUC **emphasize the basic concept that the SCUC mechanism is a last resort to maintain reserves in the system after the market-based mechanisms have been tried.**

CERC (IEGC), 2023 Regulations 46(3) provides that:

*Quote*

*(3) SCUC shall be undertaken if the NLDC, in coordination with RLDCs and based on an assessment of the power system condition, anticipates that there is likely to be a shortage of reserves despite efforts made to procure such reserves in accordance with the Ancillary Services Regulations...*

*Unquote*

If MTL is guaranteed, all incentives for flexibilization are lost. Going forward, reducing MTL, and two shift operations are the requirements.

#### **e) Reserves required for ensuring MTL through SCED and grid security aspects**

##### **Draft Regulation 6(2)(a):**

**“The schedule of the marginal generating stations ... shall be reduced ....”**

The above provision assumes a priori that the marginal generating stations in SCED would always have ramp-limited down reserves, which is not the case as seen in actual operation. Sometimes, there may not be any down reserves in the system. In such cases, MTL cannot be guaranteed for all the generating stations in full, and enforcing the technical minimum constraint would make the SCED formulation infeasible. It is also difficult to identify the marginal generator “A”, as SCED-Up could be due to natural merit order, maintaining MTL or both. There are several occasions where the entire thermal ISGS fleet is backed down to MTL. Since May 2024, there have been at least 5 days when the entire thermal ISGS have been backed down to MTL and available down reserves were inadequate/NIL to meet the dispatch requirement. The figure below shows the down reserves availability and dispatch requirement under TRAS-Shortfall mechanism, along with the quantum of additional MTL support requirement from SCED for these 5 days.

On each of these days, all available down reserves were dispatched and the dispatch requirement remained partly unmet. Ensuring support till MTL to all plants through SCED without any consideration of reserves availability would further deplete down reserves, exacerbating this shortfall. Taking the example of 14<sup>th</sup> June 2024, the TRAS down dispatch requirement was around 9 GW while the available down reserves were only 6 GW. In the same time blocks, MTL support of more than 1.5GW would have been needed from SCED, which would further deplete the down reserves, had this support been provided. With increasing renewable penetration, the frequency of such occurrences of depleted down reserves would only go up.

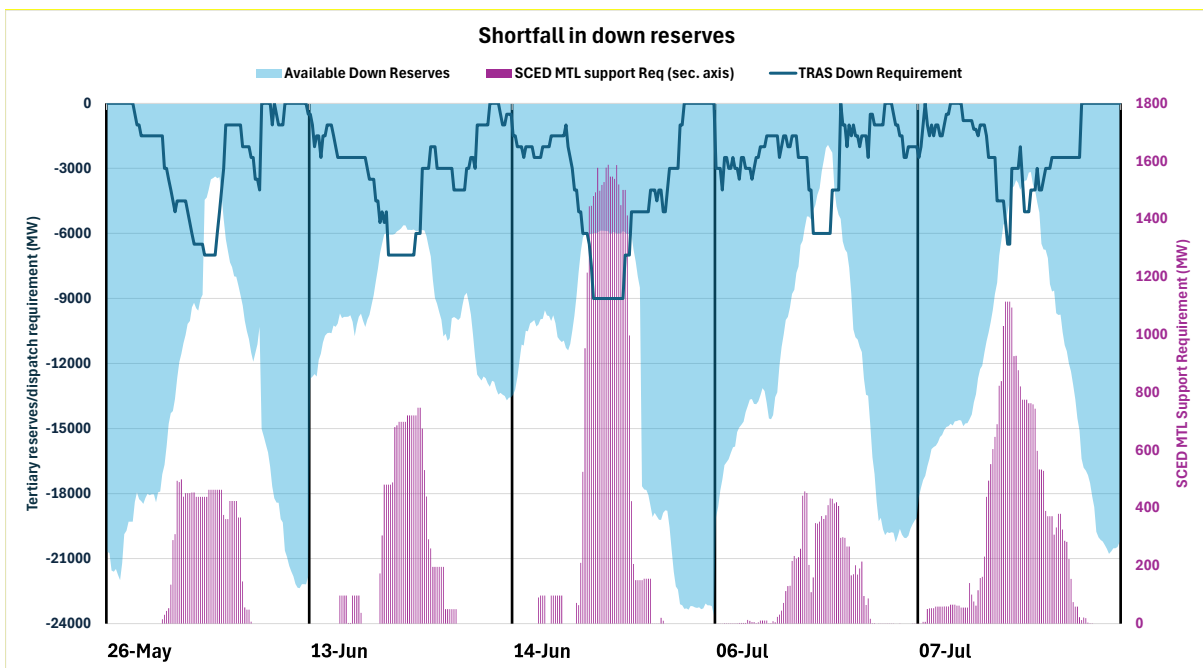


Figure 1: Days with down reserve shortfall

Ramp rate management is also another issue. For example, a 500 MW unit with 275 MW MTL is scheduled at 50 MW. Then SCED has to issue SCED-Up of 225 MW bypassing the ramp logic in the first time block, if MTL has to be ensured for all the blocks. Even if the ramp logic is not bypassed,

to provide a commensurate SCED-Down (of 225 MW), 225 MW ramp limited down reserves would be consumed from the system, which may lead to loss of economy and grid security.

**f) Transmission Congestion**

Further, the ability to dispatch down reserves may also be constrained by transmission congestion. In case a region is experiencing congestion in import, dispatch of TRAS down reserves within that region would aggravate the congestion. Thus, the effective available down reserves would be further reduced. The same down reserves would also exacerbate congestion if they were to be used under SCED to offset MTL support to plants outside the region.

**g) Responsibility of states to ensure MTL**

Draft Regulation 6(2)(b) reads as under:

**“the entity which has caused the schedule of the generating station or unit thereof below minimum turndown level.”**

It is submitted that identifying the entity responsible for causing the schedule to move below MTL is practically difficult, considering the continuous movement of requisitions until the gate closure of 7-8 time blocks before the delivery period. It is also incorrect to assume that only one entity would be responsible for all the blocks. Therefore, these responsible entities must be identified on a block-by-block basis.

For example, for 16<sup>th</sup> May 2024, Kudgi power plant is scheduled up to MTL in the day ahead and was brought below the MTL in the real-time in the 23-24,32-34,43-45 time blocks. For the sample 44<sup>th</sup> time block, the below table provides the requisition pattern. It could be seen that AP, Kerala and TN are responsible for the schedule to go below MTL. Here it creates a dilemma to identify responsibility of Telangana and Pondicherry’s in causing this MTL schedule at Kudgi, as both the states didn’t requisition at all and didn’t over draw from the grid in actual. It would have been a different case had these states relied on DSM (over draw). Similarly, the responsible entities vary every time block.

State	Requisition On D-1 Day @ 1500 hrs	Requisition on D Day @ gate closure	Decrease in Requisition
Andhra Pradesh	213	117	96
Karnataka	682	106 + (600) T-GNA	0 (23 increase)
Kerala	110	61	50
Tamil Nadu	354	195	159
Telangana	0	0	0
Pondicherry	0	0	0
Total	1359	1078	305 (decrease)

Presently, SCED accounting is done on a net basis for a month. Maintaining these details for every time block is a challenge from both a transparency and accounting perspective and has the potential for creating disputes.

**h) Certification and verification is difficult**



### **Draft Regulation 6(2)(d): “Generating station furnishes to the RLDC the efforts...”**

This clause is not in line with the earlier market-based mechanisms introduced by the Hon’ble CERC, where the confidentiality of the bids is also important. It is also difficult for NLDC to verify and quantify the efforts put forth by such generators given the tight timelines involved in the scheduling process. Additionally, as discussed above, it may shift the focus of grid operators away from their core functions of grid security and reliability.

## **2. Partial COD for Hydro Generating Stations**

**Clause 3.4 of the Draft CERC IEGC (First Amendment) Regulation-2024** provides provisions for partial COD by Hydro Generating Stations.

The draft mentions the following-

*Quote*

*The following proviso shall be inserted under sub-clause (f) of Clause (3) of Regulation 22 of the Principal Regulations:*

*“Provided that if it is not possible to demonstrate the design capabilities up to the rated water drawing levels due to insufficient reservoir levels, the COD may be declared after demonstrating the capabilities at available water drawing levels, subject to the condition that design capabilities up to the rated water drawing levels shall be demonstrated immediately when sufficient reservoir level is available after COD.*

*Provided further that if such a generating station is not able to demonstrate the design capabilities when sufficient water is available, the generating company shall have the option to either go for a repeat trial run or de-rate the capacity. If the generating company decides to de-rate the unit capacity in terms of sub clause (b) of Clause (2) of Regulation 22 of these Regulations, such de-rating shall be effective from the COD.”*

*Unquote*

**Suggestions:** In case any generating plants fails to demonstrate their maximum capability, a specific time period may be provided to demonstrate their maximum capability. A certificate may be sought from both conventional hydro plants and pumped storage hydro plants in case of insufficient reservoir level. Provision may be added that the generating station may not be permitted to submit DC more than 110% of their demonstrated capacity.

## **3. Declaration of COD by Generating Station/ Unit**

**Clause 4 of the Draft CERC IEGC (First Amendment) Regulation-2024** specifies date from which a generating station intimates the commercial operation of the generating station or unit.

The draft mentions the following-

*Quote*

*The bracket under Clause (2) of the of Regulation 27 of the Principal Regulations shall be substituted as under: “(where D is the date when a generating station intimates the commercial operation of the generating station or unit thereof) ”*

*Unquote*

Since scheduling of generating station can be done for infirm power also prior to COD, so clarity may be provided in the above clause as it appears that scheduling shall start only after commercial operation. Further, the intimation of commercial operation date by the generating station or unit thereof may be any date after 'D+2' day where D is the date when a generating station intimates the commercial operation.

**Suggestion:** The clause may be rephrased as:

*Quote*

*Scheduling of the generating station or unit thereof shall start from 0000 hours of D+2 or from the commercial operation date declared by the generating station or unit thereof whichever is later "(where D is the date when a generating station intimates the commercial operation of the generating station or unit thereof)*

*Unquote*

#### **4. Part load compensation for Section 62/63 Generating Stations**

**Clause 5.1 of the Draft CERC IEGC (First Amendment) Regulation-2024** provides provisions for part load compensation of section 62 and section 63 Generating Stations

The draft mentions the following-

*Quote*

*The Third and Fourth Proviso to Clause 12 of Regulation 45 of the Principal Regulations shall be substituted as follows:*

*"Provided further that the regional entity thermal generating stations whose tariffs are adopted under Section 63 of the Act shall be compensated for part load operation, that is, for generation below the normative level of operation, in terms of the provisions of the contract entered into by such generating stations with the beneficiaries or buyers, or in the absence of such provision in the contract, as per the mechanism already in force under the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010:*

*Provided further that the thermal generating stations whose tariffs are determined under Section 62 of the Act by the Commission, shall be compensated for part load operation as per the provisions of applicable Tariff Regulations."*

*Unquote*

**Suggestions:** As there is no mention of compensation under part load operation by generating stations in Tariff Regulations 2024, above clause may be suitably modified that till provision of Part load compensation is notified in Tariff Regulation, the existing mechanism under the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 shall be applicable for both section 62 & 63 generators.

#### **5. Validity of suo-motu orders namely Petition No. 14/SM/2023 and 18/SM/2023**

Hon'ble Commission has issued two suo-motu orders in Petition No. 14/SM/2023 and 18/SM/2023 dated 30.09.23 and 18.12.23 respectively under the Grid Code provisions on 'Power to Remove

Difficulties', Hon'ble Commission in the Explanatory Memorandum (EM) to draft IEGC (1<sup>st</sup> Amendment) Regulations, 2024 have stated that the relevant provisions of the Principal Regulations have been amended in light of the above two suo-motu orders. Relevant extracts from the EM are quoted under

*Quote*

*In light of the Suo-Motu Orders dated 30.09.2023 and 18.12.2023 in Petition No. 14/SM/2023 and 18/SM/2023, the relevant provisions of the Principal Regulations have been proposed to be amended.*

*Unquote*

However, it is observed that not all provisions of the suo- motu orders in Petition No. 14/SM/2023 and 18/SM/2023 have been incorporated in Draft IEGC (1<sup>st</sup> Amendment) Regulations, 2024.

**Suggestions:** Thus, it is humbly submitted that Hon'ble Commission may provide necessary clarification as to whether remaining provisions of the 14/SM/2023 and 18/SM/2023 orders will continue to prevail after notification of the first amendment. It is further submitted that a communication from Grid-India in this regard shall be sent separately for consideration of the Hon'ble Commission.

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