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To  
The Secretary,  
Central Electricity Regulatory  
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Lr.No. CGM/Comml.&Legal/F.No 02/2022, D.No:105/22, Dt: 30.08.2022

Sir,

Sub: AP Transco – Central Electricity Regulatory Commission (Draft Indian Electricity Grid Code) Regulations, 2022 – Comments / Suggestions – Submitted – Reg.

Ref:- L-1/265/2022/CERC dated 07.06.2022.

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Adverting to the Hon'ble CERC's Public notice inviting comments/suggestions/objections from the stakeholders and interested persons on the proposed Draft Indian Electricity Grid Code, Regulations, 2022, the suggestions/comments from AP Transco are here with enclosed for kind consideration of the Hon'ble CERC during issuance of IEGC-2022.

Encl: As above.

  
Chief General Manager  
Commercial & Legal  
AP Transco

**AP Transco Comments/Suggestions on**  
**Draft Indian Electricity Grid Code – 2022**

- In many of the clauses in draft, GNA regulations are referred. Still the GNA regulations are not notified officially to effect. Hence IEGC draft referring GNA regulations are to be issued after GNA notification. It is reasonable to call for comments after notification of GNA regulations.

**CHAPTER 1 - PRELIMINARY**

**3.DEFINITIONS**

55. GATE CLOSURE: *The time at which the bidding for a specific delivery period closes at the power exchange and no further bidding or modification of already placed bids can take place for the said delivery period*

**Comments:**

In this CGS stations scheduling before six time blocks also to be added.

102. SECONDARY RESERVE: *means the maximum quantum of power which can be activated through Automatic generation control (AGC) to free the capacity engaged by the primary control. This reserve response shall come into service starting from 30 seconds and shall sustain up to 15 minutes.*

**Comments:**

Up to 15 minutes Sustaining time may not be sufficient to replace secondary reserves with tertiary reserves, hence this may be increased.

**CHAPTER 6 - OPERATING CODE**

**29. SYSTEM SECURITY**

(4) *Except under an emergency, or when it becomes necessary to prevent an imminent damage to a costly equipment, no user shall suddenly reduce its generating unit output by more than 100 (one*

*hundred) MW [20 (twenty) MW in case of NER] without prior permission of the respective RLDC.*

*(5) Except under an emergency, or when it becomes necessary to prevent an imminent damage to a costly equipment, no user shall cause a sudden variation in its load by more than 100 (one hundred) MW without prior permission of the respective RLDC.*

### **Comments:**

This particular clause of the regulation has no relevance and is ambiguous. It has not been defined what is the definition of “suddenly reduce”. As suddenly reduced is not defined, during real time operation it might be misinterpreted in many ways. Whether 100 megawatts can be reduced in a minute or in a second is widely been argued.

In AP control area, at least forty switching operations will be done per day in Sileru complex and Srisailem power house in agricultural load change overs to maintain load generation balance, time block wise exchange purchase variations, VRE generation (installed capacity 8000 MW) variation and peak, off peak load variations around 2000 MW causes 100MW or more variation frequently in demand or generation side. So, taking prior permission for 100MW continuous variation is difficult and has no advantage in operation.

## **30. FREQUENCY CONTROL AND RESERVES**

*(2) The NLDC, RLDC and SLDC shall ensure that the grid frequency remains close to 50 Hz. and ensure that the frequency is restored within the allowable band of 49.95- 50.05 Hz at the earliest.*

*(3) All users shall adhere to their schedule of injection or drawl, as the case may be, and take such action as required under these regulations and as directed by NLDC or respective RLDCs or respective SLDCs so that the grid frequency is maintained and remains within the allowable band.*

### **Comments:**

Reducing area control error (deviation) is the main responsibility by SLDC. However, at certain times, contradicting actions may be required like reducing generation to reduce control area under-drawl beyond IEGC limits and other side to improve national grid frequency, generation

may be required to be raised. Further commercial implications are also there due to costlier ancillaries. Hence SLDC action for ensuring frequency and stick on to schedules.

In this draft, under ancillaries, responsibility of ensuring frequency is on SLDC, RLDC and NLDC with a direction to maintain reserve ancillaries at all levels. Specific operating procedures may be required to decide whether SLDC / RLDC or NLDC to respond, to ensure frequency. Simultaneous multiple actions shall be avoided.

### **30. 11& 12:**

#### *(11) Secondary Control:*

*(r) If a State falls short of maintaining secondary reserve capacity as allocated to it in terms of clause (o) of this Regulation, the NLDC through RLDC shall procure such Secondary reserve capacity on behalf of the State and allocate the cost of procurement of such capacity on that State based on the methodology specified in the Ancillary Service Regulations.*

*(s) Secondary reserves shall be procured by the NLDC from a generating station or an entity having energy storage resource or an entity capable of providing demand response, on standalone or aggregated basis, connected to inter-State transmission system or intra-State transmission system in accordance with the Ancillary Services regulations.*

#### *(12) Tertiary Control:*

*(e) If a State falls short of maintaining tertiary reserve capacity as allocated to it in terms of sub-clause (d) of clause (12) of this Regulation, the NLDC through RLDCs shall procure such tertiary reserve capacity on behalf of this State and allocate the cost of procurement of such capacity to that State based on the methodology specified in the Ancillary Services Regulations.*

*(f) Tertiary reserves shall be procured by the NLDC from a generating station or an entity having energy storage resource or an entity capable of providing demand response, on standalone or aggregated basis, connected to inter-State transmission system or intra-State transmission system in accordance with the Ancillary Services regulations.*

To introduce secondary control in Indian power system, AGC implementation is mandatory for ancillary units in respective control area, hence implementation shall be deferred.

As per EA Act section 26.2 and 27.2, it is explicitly mentioned that NLDC and RLDC shall not involve in the business of **trading** electricity but in these clauses, it is proposed to procure power by NLDC and RLDC. Hence it may be reviewed

As mentioned in preamble, EA Act 2003 section 32 made SLDC responsible for secure and economic operation of State grid. Ownership on Reserves (URS can be used as an Ancillary of beneficiary) in the CGS contracts are transferred to NLDC before a day and sixteen hours but the responsibility of secure operation on SLDC. Hence these reserves concept is indirectly affecting secure and economic operation of state control area by reducing flexibility in operation.

## **CHAPTER 7: SCHEDULING AND DESPATCH CODE**

### **43. CONTROL AREA JURISDICTION OF LOAD DESPATCH CENTER**

*(5) Entities connected to both inter-State transmission system and intra-State transmission system shall be under control area jurisdiction of RLDC, if more than 50% of quantum of connectivity is with ISTS, and if more than 50% of the quantum of connectivity is with intra-State transmission system, then it shall be under control area jurisdiction of SLDC.*

#### **Comments:**

As per existing IEGC provisions, load despatch centres are coordinating Discom/beneficiary schedules but as per draft they are responsible for scheduling. There is no specific mention about Inter State Generating stations (ISGS) except for general mention as entities connected in control area.

Entities like NTPC Simhadri-1(ISGS) connected to AP intra state transmission system and supplying power to two or more states, whether scheduling responsibility by SLDC or RLDC, ambiguity is there.

Connectivity and evacuations are planned based on load flow study and economic way of connecting the transmission system, scheduling coordination is done by an agency based on share allocation to one state or multiple states. Hence to ensure smooth scheduling it should be based on the share of the power from a particular generating station to a distribution company rather than how it is connected to the IST system. The existing IEGC regulation, where demarcation of responsibility of control centres is defined is based-on share rather than connectivity.

*(8) Discrepancy in schedule (a) All regional entities, open access customers, injecting entities and drawee consumers may closely check their transaction Schedule and point out errors, if any, to the concerned LDC. (b) The final schedules issued by RLDC shall be open to all regional entities and other regional open access entities for any checking and verification, for a period of 5 days. In case any mistake or omission is detected, the RLDC shall make a complete check and rectify the same.*

### **Comments:**

It is a responsibility of the NLDC/RLDC to ensure that no discrepancy arises in the scheduling procedures as it is in the control of the NLDC/RLDC. SLDC or any other utility should be given ample time to verify any discrepancy arising out of the scheduling procedure carried out by NLDC/RLDC. SLDC and utilities should be given the privilege to approach NLDC/RLDC to point out any discrepancy unless and until regional energy account is finalised.

## **47. PROCEDURE FOR SCHEDULING AND DESPATCH FOR INTER-STATE TRANSACTIONS**

*(1) The following scheduling related activities shall be carried out on daily basis for regional entities, on day ahead basis, 'D-1' day, for supply of power on 'D' day, as follows:*

*(e) Requisition of schedule by buyers who are GNA grantees:*

*(i) Based on the entitlement declared in accordance with sub-clause (b) of clause (1) of Regulation 47 of these regulations, SLDC on behalf of intra-State entities which are drawee GNA grantees, shall furnish time block-wise requisition for drawal to concerned RLDC in accordance with the contracts, by **8 AM of 'D-1' day.***

*(ii) Other drawee GNA grantees who are regional entities shall furnish time blockwise requisition for drawal to the concerned RLDC in accordance with contracts, by 8 AM of 'D-1' day.*

*(iii) The SLDC on behalf of the intra-State entities which are drawee GNA grantees, as well as other drawee GNA grantees while furnishing time block-wise requisition under this Regulation shall duly factor in merit order of the generating stations with which it has entered into contract(s):*

*Provided that the renewable energy generating stations shall not be subjected to merit order despatch, and subject to technical constraints shall be requisitioned first followed by requisition from other generating stations in merit order.*

The PPA's are between generators and beneficiary states. For example, NTPC stations are having PPAs but in the name of SCED, NLDC is trading/procuring/scheduling the power after restricting beneficiaries to schedule power in fifth- and sixth-time blocks.

Further now in the name of IEGC revision, NLDC is restricting beneficiaries to schedule power before one day and sixteen hours i.e by D-1 day 8AM. Even though the generator is ready to accept revised schedule and the beneficiary state is required to revise the schedule for grid security and economy of the system then what is the necessity to restrict the revision by NLDC. It is reducing flexibility in system and causing deterioration in system security, economy and despatch of VRE generation.

*“(4) Revision of schedules on request of regional entities:*

*(a) SLDCs, regional entity generating stations, regional entity ESSs, beneficiaries, buyers or cross-border entities may revise their schedules under GNA as per clause (b) and clause (c) of this Regulation in accordance with their respective contracts.*

*Provided that scheduled transactions under T-GNA once scheduled cannot be revised other than in case of forced outage as per clause (7) of Regulation 47 of these regulations.*



*(b) The request for revision of scheduled transaction for 'D' day, shall be allowed to be made in any time block starting 2 PM on 'D-1' day subject to the following:*

*(i) In respect of a generating stations whose tariff is determined under Section 62 of the Act, upward revision of schedule shall be allowed starting 2 PM on 'D-1' day, only in respect of the remaining available quantum of unrequisioned surplus after finalization of schedules under day ahead market.*

*(ii) In respect of a generating stations whose tariff is not determined under Section 62 of the Act, revision of schedule shall be in terms of provisions of the respective contracts between the generating stations and beneficiaries or buyers.*

*(c) Based on the request for revision in schedule made as per sub-clauses (a) and (b) of Clause 4 of this Regulation, any revision in schedule made in odd time blocks shall become effective from 7th time block and any revision in schedule made in even time blocks shall become effective from 8th time block, counting the time block in which the request for revision has been received by the RLDCs to be the first one.*

*(d) While finalizing the drawal and despatch schedules, in case any congestion is foreseen in the inter-State transmission system or technical constraints of a 130 generating station, the concerned RLDC shall moderate the schedules as required, under intimation to the concerned regional entities ” ”*

#### **Interpretation:**

With the above clause, beneficiary's states intra-day down ward revision in CGS stations schedules during the day of operation cannot be done. Further up-ward revision gate closure also shifted from six-time blocks to 7(odd) / 8(even) time blocks.

#### **Comments:**

The above clause is like closing the scheduling before one day and sixteen hours to actual beneficiaries and reopening a new trading business by NLDC. It is like grabbing the flexibility of operation from



original beneficiaries. It is highly difficult for the beneficiaries to do load generation balance as the opportunity to revise CGS schedules during the day of operation is lost.

Further it is encouraging the beneficiary states to schedule less CGS power as upward revision is possible during the day of operation.

Because of this clause economics cannot be achieved by SLDCs. Costlier CGS power cannot be backed down because of day ahead gate closure. Comprehensive merit order cannot be implemented. Why do NLDC restrict scheduling revisions before 42 Hours is clueless.

APSLDC control area is having around 8000MW installed capacity of VRE generation. Further 7000MW integration may be integrated to system according to national electricity policy. Through the above clause, CGS cannot be revised during the day of operation and whatever is scheduled becomes MUSTRUN. In these circumstances unnecessarily green power VRE generation is to be backed down which is not efficient or economy. Green energy despatch will be reduced due to imposition of this clause in the Grid code.

## **RESERVES**

As per draft, separate reserves are to be planned and kept in each and every control area independently.

In the concept of one nation one grid, total integrated national network is operated synchronously. All the advantages of integrated operation of different states' control area are not utilised. Main advantage of inter connection of Grid is to sustain variations in different parts of country and achieve integrated stable, secure and economical operation of National grid.

In real time operation of one of the world's huge networks, some facility shall be provided to gain from unutilised hot reserve of one control area to real time short fall of other control area. Main purpose of one grid defeated by not promoting real time inter control area transfers.

In the reserves concept in draft, unnecessarily other costlier sources are to be arranged for operation without properly using available spinning-reserve intra state sources.

The proposed scheme affect despatch of variable renewable generation (VRE). States cannot reduce CGS generation and accommodate renewable generation which is more than day ahead schedule.

Hence intra state available hot reserves are to be encouraged to operate as per grid requirements. These resources shall be given prior opportunity to meet contingency before calling in costlier ancillaries. The commercial mechanism like Availability based tariff with relaxed caps shall be in place as earlier.

The frequency band is already tightened to 49.95Hz to 50.05Hz. In the aspect of security also, inherent resources available in grid can be utilised to operate grid in the stipulated frequency band before taking ancillaries into service. SLDCs' are not able to support grid frequency due to limitations in deviation.

For a network with a power number around 15000MW, huge ancillaries are required. That too high cost generation. As per the frequency profile in 2021-22, 7.37% time frequency is below 49.90Hz and 16.74% of time frequency is beyond 50.05Hz. This can be minimised only to some extent. But, due to more VRE integration, operation of grid beyond frequency band may go beyond 24.41% (7.37+16.74) of time. To support the Grid for more than 24% of the time through Ancillaries amounts to huge additional cost.

If the national grid is in shortfall, all the generators connected to grid including intra state generators shall be given opportunity to increase generation and vice-versa. It will naturally implement economics of operation, avoid national waste and accommodate VRE generation variations. Already in the interest of nation, environment and national electricity policy some states became Renewable rich states. As per national RE policy targets, some states are commissioning solar and wind plants more than their control area load. In this transition phase of conventional energy to Green energy, these renewable rich states' consumers are already burdened through 100% penalty in DSM charges. This has been proven as per DSM payments. Now, it will become further burden through this Ancillaries policy. Presently, error in fore casting of RE generation is the major cause for all variations, uncertainties and more area control error. Accurate RE forecasting tools are still under development. Throughout the world these tools are under development.

As per national policy, commissioning of 150GW VRE generation is targeted whereas on the other side flexibility of operation is tightened.

Hence to encourage RE generation and economics of operation, all users of grid shall be given opportunity to contribute for contingency before taking reserve ancillaries into service. A similar commercial mechanism like earlier ABT with some relaxed capping to inject more at lower frequencies and to draw at higher frequencies shall be implemented. Grid Users contribution shall be allowed with suitable incentives. While Grid frequency is less than 49.90Hz under draw shall not be limited to 250MW for DSM payment. If not, at least renewable rich state shall be allowed to under draw and allow sign change exemption to utilise that power as ancillary for grid.

**Concluding request:** In view of the above, the existing scheduling procedure may be continued. The implementation of the draft regulations may be done after the following are ready in the Indian power system to avoid more curtailment of VRE generation and undue burden on common consumer.

- Implementation of AGC control for secondary reserves,
- Implementation of GNA regulation,
- VRE generation accurate forecasting tools ,
- Adequate readymade load / generation systems like pumped storage / Battery storage systems are available