POSOCO Presentation on IEGC Review 2019

Indian Electricity Grid Code – *Progress so far*

30-10-1999: IEGC Regulations, 1999 notified *(effective from 01-02-2000)*

CENTRAL E

No. L/68(84)/2006-

In exercise of powers conferred by section 178 of the Electricity Act, 2003 (36 of 2003), and of all other power enabling in this behalf, and after previous publication, the Central Electricity Regulatory Commission hereby specifies the Grid Code to be known as the Indian Electricity Grid Code, which shall come into force on and from 1.4.2006:-

CHAPTER I

GENERAL

1.1 Introduction

The Indian Power System is a conglomeration of a number of agencies. The Indian Electricity Grid Code (IEGC) lays down the rules, guidelines and standards to be followed by the various agencies and participants in the system to plan, develop, maintain and operate the power system, in the most efficient, reliable, economic and secure manner, while facilitating healthy competition in the generation and supply of electricity.

1.2 Objective

The IEGC brings together a single set of technical rules, encompassing all the Utilities connected to/or using the inter-State transmission system (ISTS) and provides the following:

- Documentation of the principles and procedures which define the relationship between the various Users of the inter-State transmission system (ISTS), as well as the Regional and State Load Despatch Centres
- [1][Facilitation of the operation, maintenance, development and planning of economic and reliable National / Regional Grid]
- Facilitation for beneficial trading of electricity by defining a common basis of operation of the ISTS, applicable to all the Users of the ISTS

1.3 Scope

i) All parties that connect with and/or utilize the ISTS are required to abide by the principles and procedures defined in the IEGC in so far as they apply to that party.

First Review *March 2002*

No. 1/14/2015-Reg.Aff.(PSDS)(I)/CERC - In exercise of powers conferred under clause (h) of sub-section (1) of Section 79 read with clause (g) of sub-section (2) of Section 178 of the Electricity Act, 2003 (36 of 2003), and all other powers enabling it in this behalf, the Central Electricity Regulatory Commission hereby makes the following regulations to amend the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 including the first and second amendments thereof (hereinafter referred to as "the Principal Regulations"), namely:-

1. Short title and commencement - (1) These regulations shall be called the Central Electricity Regulatory Commission (Indian Electricity Grid Code) (Third Amendment) Regulations, 2015,

   (2) These regulations shall come into force with effect from 1st November, 2015

2. **Amendment of Regulation 1 of Part 1 of Principal Regulations:** Sub-Regulation (v) under Regulation 1.4 of the Principal Regulations, shall be substituted as under:-

   "Part 6: Scheduling and Despatch Code: This section deals with the procedure to be adopted for scheduling and despatch of generation of the Inter-State Generating Stations (ISGS) and scheduling for other transactions through long-term access, medium-term and short-term open access including complementary commercial mechanisms, on a day-ahead and intra-day basis with the process of the flow of information between the ISGS, National Load Despatch Centre (NLDC), Regional Load Despatch Centre (RLDC), Power Exchanges and the State Load Despatch Centres (SLDCs), and other concerned persons.

   Most of the wind and solar energy generators are presently connected to intra-State network and in future are likely to be connected to the inter-state transmission system (ISTS) as well. Keeping in view the variable nature of generation from such sources and the effect such variability has on the inter-state grid, and in view of the large-scale integration of such sources into the grid envisaged in view of the Government of India's thrust on renewable sources of energy, scheduling of wind and solar generators which are regional entities, has been incorporated in this code."

3. **Amendment of Regulation 2 (Definitions) of Principal Regulations:**

   (i) Sub-Regulation (eee) of Regulation 2 of the Principal Regulations, shall be substituted as under:-

Indian Electricity Grid Code – *CERC empowered by EA 2003*

Section 178. (Powers of Central Commission to make regulations): --- (1) The Central Commission may, by notification make regulations consistent with this Act and the rules generally to carry out the provisions of this Act.

(2) In particular and without prejudice to the generality of the power contained in sub-section (1), such regulations may provide for all or any of following matters, namely:-

(g) Grid Code under sub-section (2) of section 28;

EA 2003: Section 178, Sub-section 2, Clause (g)

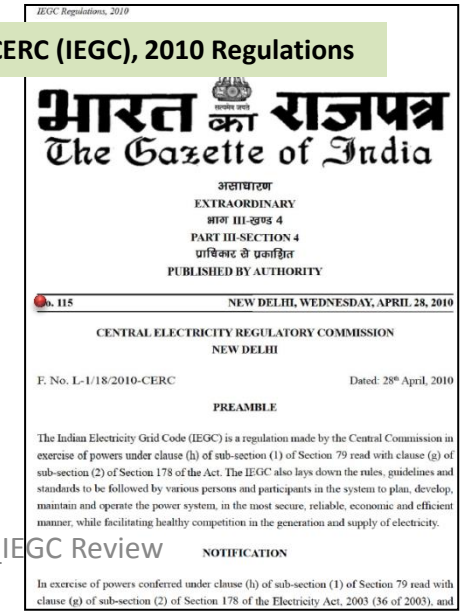
Section 79. (Functions of Central Commission): --- (1) The Central Commission shall discharge the following functions, namely:-

(h) to specify Grid Code having regard to Grid Standards;

EA 2003: Section 79, Sub-section 1, Clause (h)

Provisions under Electricity Act 2003 to empower CERC for issuing Grid Code

CERC (IEGC), 2010 Regulations



IEGC Regulations, 2010

भारत का राजपत्र
The Gazette of India

असाधारण
EXTRAORDINARY
भाग III-खण्ड 4
PART III-SECTION 4
प्राधिकार से प्रकाशित
PUBLISHED BY AUTHORITY

No. 115 NEW DELHI, WEDNESDAY, APRIL 28, 2010

CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

F. No. L-1/18/2010-CERC Dated: 28th April, 2010

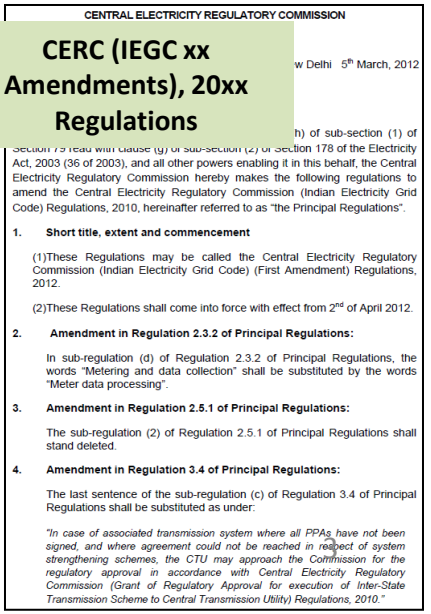
PREAMBLE

The Indian Electricity Grid Code (IEGC) is a regulation made by the Central Commission in exercise of powers under clause (h) of sub-section (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.

NOTIFICATION

In exercise of powers conferred under clause (h) of sub-section (1) of Section 79 read with clause (g) of sub-section (2) of Section 178 of the Electricity Act, 2003 (36 of 2003), and

CERC (IEGC xx Amendments), 20xx Regulations



CENTRAL ELECTRICITY REGULATORY COMMISSION

New Delhi 5th March, 2012

...h) of sub-section (1) of Section 79 read with clause (g) of sub-section (2) of Section 178 of the Electricity Act, 2003 (36 of 2003), and all other powers enabling it in this behalf, the Central Electricity Regulatory Commission hereby makes the following regulations to amend the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010, hereinafter referred to as "the Principal Regulations".

1. **Short title, extent and commencement**

(1)These Regulations may be called the Central Electricity Regulatory Commission (Indian Electricity Grid Code) (First Amendment) Regulations, 2012.

(2)These Regulations shall come into force with effect from 2nd of April 2012.

2. **Amendment in Regulation 2.3.2 of Principal Regulations:**

In sub-regulation (d) of Regulation 2.3.2 of Principal Regulations, the words "Metering and data collection" shall be substituted by the words "Meter data processing".

3. **Amendment in Regulation 2.5.1 of Principal Regulations:**

The sub-regulation (2) of Regulation 2.5.1 of Principal Regulations shall stand deleted.

4. **Amendment in Regulation 3.4 of Principal Regulations:**

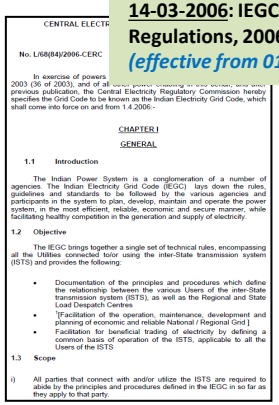
The last sentence of the sub-regulation (c) of Regulation 3.4 of Principal Regulations shall be substituted as under:

"In case of associated transmission system where all PPAs have not been signed, and where agreement could not be reached in respect of system strengthening schemes, the CTU may approach the Commission for the regulatory approval in accordance with Central Electricity Regulatory Commission (Grant of Regulatory Approval for execution of Inter-State Transmission Scheme to Central Transmission Utility) Regulations, 2010."

Indian Electricity Grid Code (IEGC) and subsequent amendments being issued by CERC from time-to-time

Indian Electricity Grid Code – *Progress so far*

14-03-2006: IEGC Regulations, 2006 notified
(effective from 01-04-2006)


CENTRAL ELECTR

No. L/68(84)/2006-CERC

In exercise of powers
2003 (36 of 2003), and of all
previous publication, the Central Electricity Regulatory Commission hereby
specifies the Grid Code to be known as the Indian Electricity Grid Code, which
shall come into force on and from 1.4.2006:-

CHAPTER I

GENERAL

1.1 Introduction

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agencies. The Indian Electricity Grid Code (IEGC) lays down the rules,
guidelines and standards to be followed by the various agencies and
participants in the system to plan, develop, maintain and operate the power
system, in the most efficient, reliable, economic and secure manner, while
facilitating healthy competition in the generation and supply of electricity.

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The IEGC brings together a single set of technical rules, encompassing
all the Utilities connected to/or using the inter-State transmission system
(ISTS) and provides the following:

- Documentation of the principles and procedures which define the relationship between the various Users of the inter-State transmission system (ISTS), as well as the Regional and State Load Despatch Centres
- [Facilitation of the operation, maintenance, development and planning of economic and reliable National / Regional Grid]
- Facilitation for beneficial trading of electricity by defining a common basis of operation of the ISTS, applicable to all the Users of the ISTS

1.3 Scope

i) All parties that connect with and/or utilize the ISTS are required to abide by the principles and procedures defined in the IEGC in so far as they apply to that party.


IEGC Regulations, 2010

भारत का राजपत्र
The Gazette of India

असाधारण
EXTRAORDINARY
भाग III—खण्ड 4
PART III—SECTION 4
प्राधिकार से प्रकाशित
PUBLISHED BY AUTHORITY

No. 115 NEW DELHI, WEDNESDAY, APRIL 28, 2010

CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

F. No. L-1/18/2010-CERC Dated: 28th April, 2010

PREAMBLE

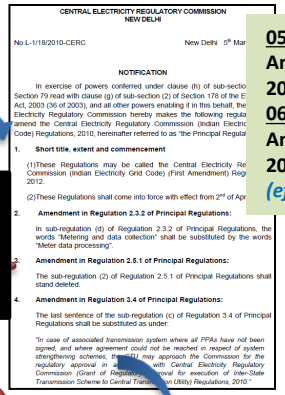
The Indian Electricity Grid Code (IEGC) is a regulation made by the Central Commission in exercise of powers under clause (h) of sub-section (1) of Section 79 read with clause (g) of sub-section (2) of Section 178 of the Act. The IEGC also lays down the rules, guidelines and standards to be followed 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.

NOTIFICATION

In exercise of powers conferred under clause (h) of sub-section (1) of Section 79 read with clause (g) of sub-section (2) of Section 178 of the Electricity Act, 2003 (36 of 2003), and

28-04-2010: CERC (IEGC) Regulations, 2010 gazetted
(effective from 03-05-2010)

Followed by:
Corrigendum dated 03-07-2010
Addendum dated 03-07-2010


CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

No.L-1/18/2010-CERC New Delhi 5th Mar

NOTIFICATION

In exercise of powers conferred under clause (h) of sub-sectio
Section 79 read with clause (g) of sub-section (2) of Section 178 of the E
Act, 2003 (36 of 2003), and all other powers enabling it in this behalf, the
Electricity Regulatory Commission hereby makes the following regula
amend the Central Electricity Regulatory Commission (Indian Electric
Code) Regulations, 2010, hereinafter referred to as "the Principal Regula

1. Short title, extent and commencement

(1)These Regulations may be called the Central Electricity Re
Commission (Indian Electricity Grid Code) (First Amendment) Reg
2012.

(2)These Regulations shall come into force with effect from 2nd of Apr

2. Amendment in Regulation 2.3.2 of Principal Regulations:

In sub-regulation (d) of Regulation 2.3.2 of Principal Regulations, the
words "Metering and data collection" shall be substituted by the words
"Meter data processing".

3. Amendment in Regulation 2.5.1 of Principal Regulations:

The sub-regulation (2) of Regulation 2.5.1 of Principal Regulations shall
stand deleted.

4. Amendment in Regulation 3.4 of Principal Regulations:

The last sentence of the sub-regulation (c) of Regulation 3.4 of Principal
Regulations shall be substituted as under:

"In case of associated transmission system where all PPAs have not been signed, and where agreement could not be reached in respect of system strengthening schemes, the...may approach the Commission for the regulatory approval in accordance with Central Electricity Regulatory Commission (Grant of Regulatory Approval for execution of Inter-State Transmission Scheme to Central Transmission Utility) Regulations, 2010."

05-03-2012: CERC (IEGC, 1st Amendment) Regulations, 2012 notified
06-03-2012: CERC (IEGC, 1st Amendment) Regulations, 2012 gazetted
(effective from 02-04-2012)

Substituted the IEGC Regulations 2006

Undergone several amendments till 2009

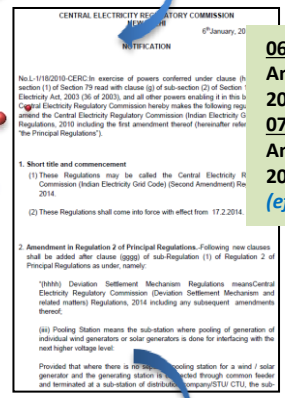
01st Amendment of IEGC by CERC

02nd Amendment of IEGC by CERC

03rd Amendment of IEGC by CERC

04th Amendment of IEGC by CERC

05th Amendment of IEGC by CERC


CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

6th January, 20

NOTIFICATION

No.L-1/18/2010-CERC.In exercise of powers conferred under clause (h
section (1) of Section 79 read with clause (g) of sub-section (2) of Section
Electricity Act, 2003 (36 of 2003), and all other powers enabling it in this b
Central Electricity Regulatory Commission hereby makes the following regu
amend the Central Electricity Regulatory Commission (Indian Electricity G
Regulations, 2010 including the first amendment thereof (hereinafter refer
"the Principal Regulations").

1. Short title and commencement

(1) These Regulations may be called the Central Electricity R
Commission (Indian Electricity Grid Code) (Second Amendment) Re
2014.

(2) These Regulations shall come into force with effect from 17.2.2014.

2. Amendment in Regulation 2 of Principal Regulations.-Following new clauses shall be added after clause (gggg) of sub-Regulation (1) of Regulation 2 of Principal Regulations as under, namely:

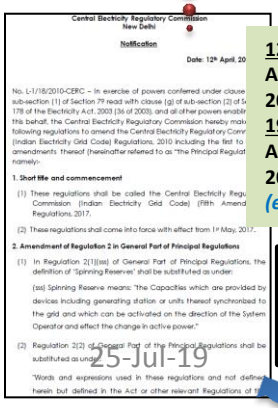
"(hhhh) Deviation Settlement Mechanism Regulations meansCentral Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) Regulations, 2014 including any subsequent amendments thereof;

(iii) Pooling Station means the sub-station where pooling of generation of individual wind generators or solar generators is done for interfacing with the next higher voltage level:

Provided that where there is no Sub-station/pooling station for a wind / solar generator and the generating station is connected through common feeder and terminated at a sub-station of distribution company/STU CTU, the sub-

06-01-2014: CERC (IEGC, 2nd Amendment) Regulations, 2014 notified
07-01-2014: CERC (IEGC, 2nd Amendment) Regulations, 2014 gazetted
(effective from 17-12-2014)

Followed by:
Corrigendum dated 21-02-2014


Central Electricity Regulatory Commission
New Delhi

Notification

Date: 12th April, 20

No. L-1/18/2010-CERC – In exercise of powers conferred under clause
sub-section (1) of Section 79 read with clause (g) of sub-section (2) of S
178 of the Electricity Act, 2003 (36 of 2003), and all other powers enabli
this behalf, the Central Electricity Regulatory Commission hereby mak
following regulations to amend the Central Electricity Regulatory Comr
(Indian Electricity Grid Code) Regulations, 2010 including the first to
amendments thereof (hereinafter referred to as "the Principal Regulat
namely:-

1. Short title and commencement

(1) These regulations shall be called the Central Electricity Regu
Commission (Indian Electricity Grid Code) (Fifth Amend
Regulations, 2017.

(2) These regulations shall come into force with effect from 1st May, 2017.

2. Amendment of Regulation 2 in General Part of Principal Regulations

(1) In Regulation 2(1)(ss) of General Part of Principal Regulations, the definition of 'Spinning Reserves' shall be substituted as under:

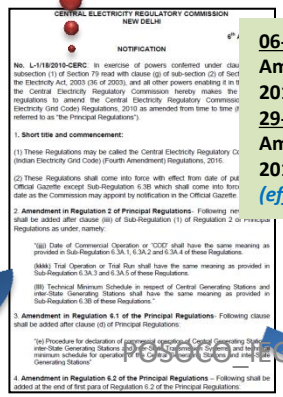
(ss) Spinning Reserve means: "the Capacities which are provided by devices including generating station or units thereof synchronized to the grid and which can be activated on the direction of the System Operator and effect the change in active power."

(2) Regulation 2(2) of General Part of the Principal Regulations shall be substituted as under:

"Words and expressions used in these regulations and not defined herein but defined in the Act or other relevant Regulations of t

12-04-2017: CERC (IEGC, 5th Amendment) Regulations, 2017 notified
19-04-2017: CERC (IEGC, 5th Amendment) Regulations, 2017 gazetted
(effective from 01-05-2017)

Followed by:
Corrigendum dated 03-05-2017


CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

6th

NOTIFICATION

No. L-1/18/2010-CERC In exercise of powers conferred under clau
subsection (1) of Section 79 read with clause (g) of sub-section (2) of Sect
the Electricity Act, 2003 (36 of 2003), and all other powers enabling it in t
the Central Electricity Regulatory Commission hereby makes the
regulations to amend the Central Electricity Regulatory Commissi
Electricity Grid Code) Regulations, 2010 as amended from time to time (
referred to as "the Principal Regulations").

1. Short title and commencement:

(1) These Regulations may be called the Central Electricity Regulatory C
(Indian Electricity Grid Code) (Fourth Amendment) Regulations, 2016.

(2) These Regulations shall come into force with effect from date of put
Official Gazette except Sub-Regulation 6.3B which shall come into forc
date as the Commission may appoint by notification in the Official Gazette.

2. Amendment in Regulation 2 of Principal Regulations.- Following ne
shall be added after clause (iiii) of Sub-Regulation (1) of Regulation 2 o
Regulations as under, namely:

"(jjjj) Date of Commercial Operation or 'COD' shall have the same meaning as provided in Sub-Regulation 6.3A.1, 6.3A.2 and 6.3A.4 of these Regulations.

(kkkk) Trial Operation or Trial Run shall have the same meaning as provided in Sub-Regulation 6.3A.2 and 6.3A.5 of these Regulations.

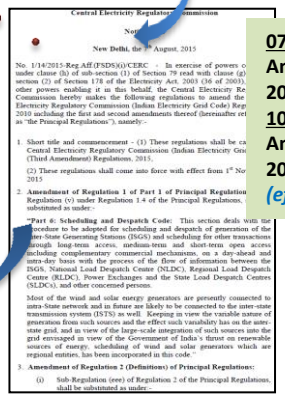
(lll) Technical Minimum Schedule in respect of Central Generating Stations and inter-State Generating Stations shall have the same meaning as provided in Sub-Regulation 6.3B of these Regulations."

3. Amendment in Regulation 6.1 of the Principal Regulations.- Following clause shall be added after clause (d) of Principal Regulations:

"(e) Procedure for declaration of commercial operation of Central Generating Stations, inter-State Generating Stations, inter-State Transmission Systems and technical minimum schedule for operation of the Central Generating Stations and inter-State Generating Stations"

4. Amendment in Regulation 6.2 of the Principal Regulations.- Following shall be added at the end of first para of Regulation 6.2 of the Principal Regulations:

06-04-2016: CERC (IEGC, 4th Amendment) Regulations, 2016 notified
29-04-2016: CERC (IEGC, 4th Amendment) Regulations, 2016 gazetted
(effective from 29-04-2016)


Central Electricity Regulatory Commission
New Delhi, the 7th August, 2015

No. 1/14/2015-Reg.Aff.(FSDS)(i)/CERC - In exercise of powers c
under clause (h) of sub-section (1) of Section 79 read with clause (g)
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other powers enabling it in this behalf, the Central Electricity Re
Commission hereby makes the following regulations to amend the
Electricity Regulatory Commission (Indian Electricity Grid Code) Reg
2010 including the first and second amendments thereof (hereinafter ref
as "the Principal Regulations"), namely:-

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Central Electricity Regulatory Commission (Indian Electricity Gri
(Third Amendment) Regulations, 2015.

(2) These regulations shall come into force with effect from 1st No
2015

2. Amendment of Regulation 1 of Part 1 of Principal Regulation
Regulation (v) under Regulation 1.4 of the Principal Regulations,
substituted as under:-

"Part 4: Scheduling and Despatch Code: This section deals with the procedure to be adopted for scheduling and despatch of generation of the inter-State Generating Stations (ISGS) and scheduling for other transactions through long-term access, medium-term and short-term open access including complementary commercial mechanisms, on a day-ahead and intra-day basis with the process of the flow of information between the ISGS, National Load Despatch Centre (NLDC), Regional Load Despatch Centre (RLDC), Power Exchanges and the State Load Despatch Centres (SLDCs), and other concerned persons.

Most of the wind and solar energy generators are presently connected to intra-State network and in future are likely to be connected to the inter-state transmission system (ISTS) as well. Keeping in view the variable nature of generation from such sources and the effect such variability has on the inter-state grid, and in view of the large-scale integration of such sources into the grid envisaged in view of the Government of India's thrust on renewable sources of energy, scheduling of wind and solar generators which are regional entities, has been incorporated in this code."

3. Amendment of Regulation 2 (Definitions) of Principal Regulations:

(i) Sub-Regulation (eee) of Regulation 2 of the Principal Regulations, shall be substituted as under:-

07-08-2015: CERC (IEGC, 3rd Amendment) Regulations, 2015 notified
10-08-2015: CERC (IEGC, 3rd Amendment) Regulations, 2015 gazetted
(effective from 01-05-2015)

Indian Electricity Grid Code – *Preparation for New IEGC 2019*

केन्द्रीय विद्युत विनियामक आयोग
CENTRAL ELECTRICITY REGULATORY COMMISSION

Sanoj Kumar Jha, IAS
Secretary

No. ENGG/2012/1/2019-CERC Dated :- 28th May,2019

NOTIFICATION

Subject: Constitution of Expert Group to review "Indian Electricity Grid Code and other related issues"

Central Electricity Regulatory Commission (CERC) has decided to constitute an Expert Group to review "**Indian Electricity Grid Code and other related issues**".

2. The Expert Group has been constituted having following members:-

a) Shri Rakesh Nath, Ex-Chairperson, CEA & Ex-Member (Tech) of APTEL - Chairman
b) Shri A.S.Bakshi, Ex-Chairperson, CEA & Ex-Member, CERC - Member
c) Shri Ravinder, Ex-Chairperson & Member (PS), CEA, Ex-Chief (E),CERC -Member
d) Shri Satish Shrivastava, Chief (Engg), CERC - Member, Convenor

3. The scope of work of the Group is as follows:-

a) To review the provisions of Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 based on past experience, recent developments in the power system of India, changes in market structure and the future challenges which includes high level of renewable penetration in the grid, introduction of new products in market etc.; and

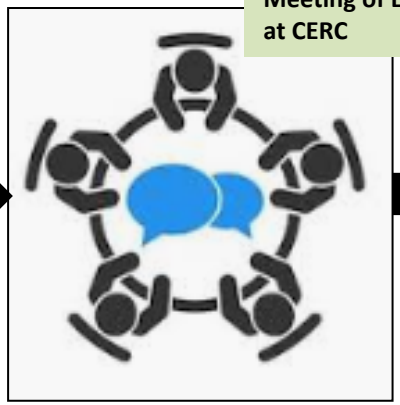
b) Suggest appropriate regulatory intervention and prepare draft IEGC making recommendation for proposed amendment or changes in the existing Grid Code.

4. While carrying out the task, the group may co-opt or invite any person / expert / institution / organization for advise or opinion in the subject matter. POSOCO is requested to provide necessary assistance to the group for any data and study. Secretarial assistance to the group will be provided by the Engg. Division of CERC.

5. The Group shall submit revised draft IEGC to the Commission within six months of issue of the notification.

Yours faithfully,

28-05-2019: Expert Group constituted by CERC to review IEGC



05-06-2019: First Meeting of Expert Group at CERC

केन्द्रीय विद्युत विनियामक आयोग
CENTRAL ELECTRICITY REGULATORY COMMISSION

S.C. Shrivastava
Chief (Engineering)
F.No.Engg/2012/1/2019-CERC Dated: 6th June, 2019

To,

The CMD,
Power System Operation Corporation Limited(POSOCO)
B-9 (1st Floor),
Qutab Institutional Area,
Katwaria Sarai,
New Delhi -110016

Subject: **Constitution of Expert Group to review "Indian Electricity Grid Code and other related issues"-nomination of an officer from POSOCO.**

It is to inform that Central Electricity Regulatory Commission (CERC) has constituted an Expert Group to review "Indian Electricity Grid Code and other related issues" vide letter dated 28.5.2019 under the Chairmanship of Shri Rakesh Nath, Ex-Member, APTEL and Ex-Chairman, Central Electricity Authority(Copy enclosed).

2. The first meeting of the Expert Group was held on 5.6.2019 wherein it was decided to Co-opt a Member each from Central Electricity Authority and POSOCO.

3. In the light of the above, it is requested that a suitable officer may kindly be nominated to Co-opt as Member of the Expert Group from POSOCO.

4. It is also requested that comments/suggestions on the changes/modifications to be made in the existing IEGC in the light of large scale integration of renewable and changing power sector scenario in the country may arranged to be provided by 21.6.2019.

Thanking you,

Yours faithfully,

06-06-2019: Nomination and comments from POSOCO sought by CERC

CENTRAL ELECTRICTY REGULATORY COMMISSION (CERC)
3rd & 4th Floor, Chanderlok Building, 36, Janpath, New Delhi – 110001.
Telephone/Fax No(s) :011-23753915/23753920

No. ENGG/2012/1/2019-CERC Dated 10th June, 2019

NOTICE

Subject: Constitution of Expert Group to review "Indian Electricity Grid Code and other related issues".

It is inform that Central Electricity Regulatory Commission (CERC) vide office order dated 28.5.2019 has constituted an Expert Group to review the Indian Electricity Grid Code (IEGC) and other related issues under the Chairmanship of Shri Rakesh Nath, Ex-Chairperson, CEA & Ex-Member (Tech) of APTEL . The office order dated 28.5.2017 is attached herewith.

2. All concerned stakeholders are requested to give their comments/suggestions on the changes / modifications to be made in the existing IEGC in light of large scale integration of renewable and changing power sector scenario in the country.

3. Your considered views and suggestions may be submitted latest by 21.6.2019 at mail id – scshrivastava@cercind.gov.in

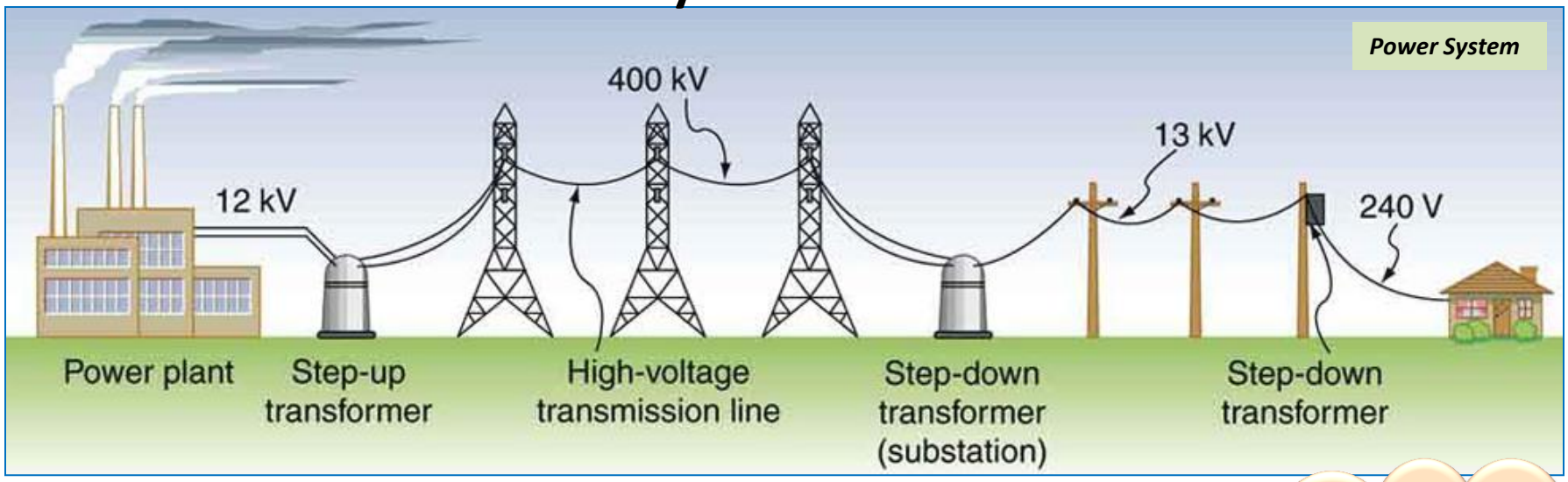
Sd/-
(Sanoj Kumar Jha)
Secretary, CERC

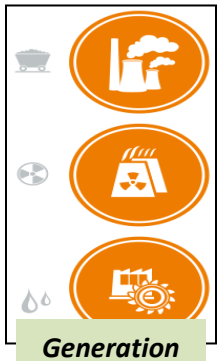
10-06-2019: CERC invited comments on IEGC from stakeholders

17-06-2019: 2nd meeting of Expert Group *(with participation from nominated members of POSOCO and CEA)*

20-06-2019: 2nd meeting of Expert Group *(with participation from nominated members of POSOCO and CEA)*

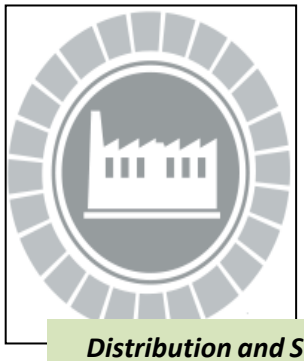
Indian Electricity Grid Code – *Introduction*





Generation

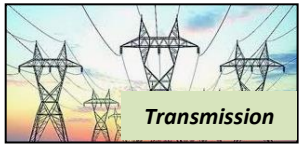
Transmission



Distribution and Supply of Electricity

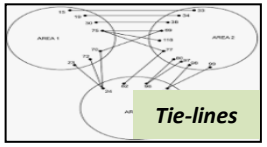
Conglomeration of number of agencies executing various tasks

Generation

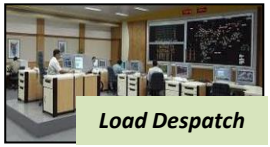


Transmission

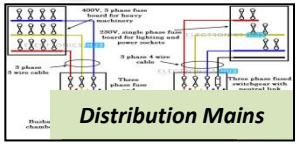
Substations



Tie-lines



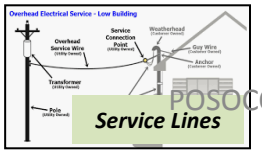
Load Despatch



Distribution Mains

Supply Lines

Overhead Lines



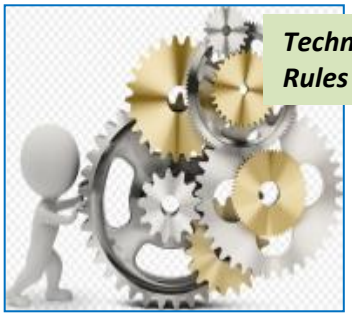
Service Lines

Works

Indian Electricity Grid Code – *Objective*

IEGC

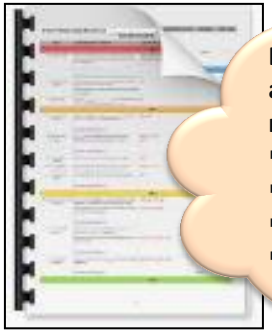

भारत का राजपत्र
The Gazette of India
EXTRAORDINARY
PUBLISHED BY AUTHORITY
No. 115 NEW DELHI, WEDNESDAY, APRIL 28, 2010
CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI
PREAMBLE
NOTIFICATION



Technical Rules

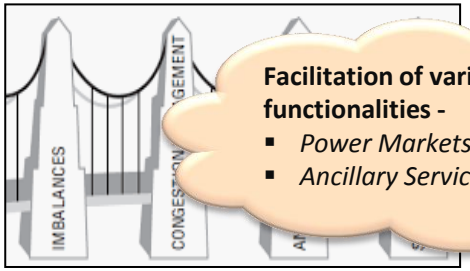
Financial Rules

Facilitates



Documentation of principles and procedures to define relationship between –
- *Users of ISTS*
- *NLDC*
- *RLDCs*
- *SLDCs*

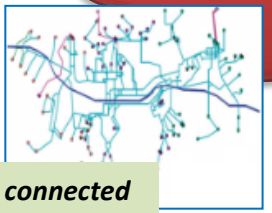
Facilitation of various aspects of grid –
- *Optimal operation*
- *Coordinated and optimal maintenance planning of gen./trans. facilities*
- *Development/Planning of economic and reliable grid*



Facilitation of various functionalities -
- *Power Markets*
- *Ancillary Services*

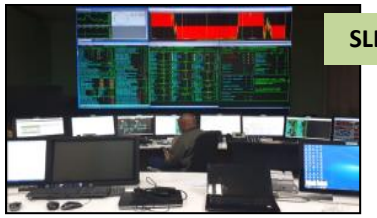
Facilitation of RE sources by specifying following for integration in grid -
- *Technical aspects*
- *Commercial aspects*

Applicable to all entities connected or using ISTS



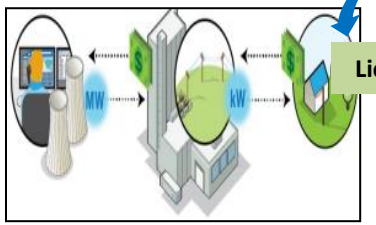
Entities connected to ISTS (or using it)

Indian Electricity Grid Code – *Scope*



SLDCs

NLDC/ RLDCs



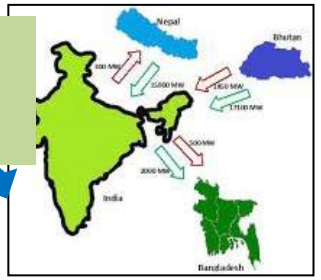
Licensees

CEA/ Regional Power Committees

Utilities need to abide by IEGC –

- ***Principles***
- ***Procedures***

Interconnection with Neighbouring Countries (treated as separate control area)



Sardar Sarovar Project

Bhakra Beas Management Board

Damodar Valley Corporation

Power Exchanges

Indian Electricity Grid Code – *Structure*

- Part 2: Role of Various Organizations and their linkages
- Part 3: Planning Code for Inter-State Transmission
- Part 4: Connection Code
- Part 5: Operating Code
  - Operating Philosophy
  - System Security Aspects
  - Demand Estimation for Operational purposes
  - Demand Management
  - Periodic Reports
  - Operational Liaison
  - Outage Planning
  - Recovery Procedures
  - Event Information
- Part 6: Scheduling and Despatch Code
- Part 7: Miscellaneous

Structure of the IEGC contains 07 parts

INDEX (POSOCO Suggestions)

INDEX

Part 5_ Operating Philosophy

Section 5.1 , Operating philosophy , 5.1(g)

Section 5.2 , System Security Aspects, 5.2(g), 5.2(l), 5.2(n), 5.2(r)

Part 6_ Scheduling and Despatch Code

Section 6.3 , Scope

Section 6.3.A Commercial operation of Central generating stations, 6.3.A.1.IV, 6.3.A.2.IV , 6.3.A.1.X, 6.3.A.3.i, 6.4.19, 6.4.20, 6.4.22

Section 6.5 Scheduling and Despatch procedure for long-term access, Medium –term and short- term open access , 6.5.19

Section 6.6 , Reactive Power and Voltage Control, 6.6.6, 6.6(7)

New Chapters

1) Frequency Control
2) Cyber Security
3) Forecasting & Reserve requirement

List of References

S.No.	Date	Document Name	Entity
1	Mar-19	Global Electricity Network Feasibility Study	CIGRE
2	Jul-19	South African Grid Code Requirements for Renewable Power Plants - Version 2 8	National Energy Regulator of South Africa (NERSA)
3	Apr-19	NERC_US_Reliability_Standards	North American Electric Reliability Corporation (NERC)
4	2016	IRENA_Grid_Codes_2016	International Renewable Energy Agency (IRENA)
5	Feb-18	Review of International Grid Codes	Electric Reliability Federal Energy Regulatory Commission
6	Nov-18	COORDINATION OF GRID CODES AND GENERATOR STANDARDS: Consequences of Diverse Grid Code Requirements on Synchronous Machine Design and Standards	IEEE Power & Energy Society
7	Oct-18	Best Practices for Grid Codes for Renewable Energy Generators	National Renewable Energy Laboratory & United States Agency for International Development
8	Jul-18	All TSOs' scenario definition and scenario description for the year 2019 CGM creation	European Network of Transmission System Operators for Electricity
9	Aug-17	Establishing a guideline on electricity transmission system operation	European Union
10	Aug-18	All CE TSOs' agreement on frequency estoration control error target parameters in accordance with Article 128 of the Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation	European Network of Transmission System Operators for Electricity

List of References

S.No	Date	Document Name	Entity
11	Jan-19	CONTINENTAL EUROPE SIGNIFICANT FREQUENCY DEVIATIONS	European Network of Transmission System Operators for Electricity
12	Feb-19	Energy Code Reviews	ELEXON
13	2015	Reliability Standards issued by North American Electric Reliability Corporation Ltd. (NERC) and corresponding provisions in CEA/CERC Regulations	North American Electric Reliability Corporation (NERC)
14	Sep-18	Guide on new generator-grid interaction requirements	CIGRE
15	May-19	National Electricity Rules	Australia
16	Oct-18	REPORT ON ASEAN GRID CODE COMPARISON REVIEW	ASEAN Centre for Energy (ACE)
17	May-19	THE GRID CODE- Revision 35	National Grid Electricity System Operator Limited
18	Nov-17	Report of the Expert Group to review and suggest measures for bringing power system operative closer to national reference frequency	CEA, POSOCO and CTU

Definitions

- "Control Centre" definition can be added (NLDC or RLDC or REMC or SLDC or Area LDC or Sub-LDC or DISCOM LDC including main and backup as applicable).
- Communication system may be defined
- Security Constrained Economic Despatch(SCED), Reference Frequency, Frequency Control 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 etc. may be defined
- Qualified coordinating Agency (QCA), Forecasting Service Provider (FSP), REMC, Energy Storage etc. may be defined

Part-2 Role of various organizations and their linkages

- Inclusion of Renewable Energy Management Center operation in Role of SLDC/RLDC/NLDC
- Protection setting database to be managed by RPC and shared to RLDC/NLDC Inclusion in role of RPC
- RPC to publish the certified monthly availability on its website, the practice of issuing provisional availability certificate may be discontinued
- Role of RLDC : Inclusion of “Verification of outage records”
- Managing Cross border connections may be included in NLDC role
- Role of National Power Committee (NPC) and its linkages to LDCs/RPCs may be added
- Role of NPC: NPC will harmonize the various meetings in RPC
- Role of CTU: to ensure development of an efficient, co-ordinated and economical system of inter-State transmission lines including reliable National backbone Communication System

Part-3 Planning code for inter-state transmission

- Planning Code , development of models and collection of data
- Data submitted by users for planning study should also be verified and validated by the CTU prior to using the same for planning study. Existing system may also be validated once every 24 months.*
- CTU shall perform the Generating plant Interconnection study to analyse the impact of individual new power plant on the grid and vice versa as per the Model Data provided by the Generator prior to actual commissioning of the power plant will share the report of interconnection with CEA/NLDC/RLDC/RPC/User along with the model data for feedback
- CTU shall carry out planning studies to analyse the impact of reduction in inertia in grid under high RE penetration scenario#
- The planning criterion must ensure that pre fault conditions reflect a credible system operating arrangement
- ISTS shall be capable of withstanding and be secured with sufficient active and reactive power reserves against the following contingency outages**

- **MOD-033: NERC , Document Data validation process*
- *#EU system operation guidelines: Section 39(3) (b)*
- *** EU system operation guidelines: Section 18(3) Classification of system states*

Part-3 Planning code for inter-state transmission(contd.)

- Under certain extreme circumstances for operation XLDC can take cognizance of (n-G-1) & (n-2) and may be considered as credible contingency
- Outage of single Bus at 220kV/400kV/765kV may also be included in n-1 criterion
- CTU shall carry out short circuit calculations where measured short circuit currents are close to equipment rating. Proper X/R ratio studies be carried out so that associated switchgear operate correctly.
- For RE integration planning, maximum renewable that can be connected to substation may be considered based on the Equivalent Short Circuit Ratio (ESCR)
- Special attention may be accorded for reactive exchange by RE sources. Further studies may be focussed on effect of large scale integration of inverter based resources
- Assess the probability and expected duration of an absence of adequacy and the expected energy not supplied as a result of such absence*

**EU system operation guidelines: Article 105(b), Control area adequacy analysis*

**NERC ,Resource Adequacy analysis, BAL-502-RF-03*

Part 4 Connection Code

- Model data submission by the user to RLDC six month prior to synchronisation
- The ISTS owner or assigned entity under site responsibility schedule shall maintain the evidence(in hard copy or electronic format) for time synchronisation of system recording instrument with adjacent stations
- A common communication guideline for SCADA, PMU, Meteorological Data and Forecast Data telemetered at respective RLDC shall be developed.
- These need to be specified along with accuracy, redundancy and resolution with alternate technology.
- 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. Availability of synchronisation display at operator console in all SAS substation may be ensured help resoration/recovery.
- CTU shall process the application for grant of connectivity in accordance with due considerations to provisions of Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2017.
- CTU/STU and the concerned Users shall be responsible availability of redundant channels for real time data.
- Data Acquisition system such as Remote Terminal Unit/ SAS Gateway, DC Power Supply System, Multiplexers, Battery Systems, Phasor Measurement Units, time synchronized HVDC measurement system shall always be kept in working condition.

Part 5 Operating Philosophy

- The updated copy of SLDC operating procedure shall be published on its website at the start of each financial year.
- Periodic testing by third party should be conducted at regular interval once in two years through independent agencies selected by RLDCs or SLDCs as the case may be for governor response/model validation/AVR/PSS and capability curve assessment. **
- Periodic third-party protection audit of all station above 132/110/100 kV shall be prepared by the protection Sub-Committee of the RPC at every three-year basis and compliance of the audit to be monitored by the respective RPC.
- All events discussed in RPC Protection sub-committee should come with various findings which need to be categorised under two parts: Category 1 (the ones which need additional finance) and Category 2 (the ones which do not need additional finance).
- RPC to share the compliance of both Category on Quarterly basis to NPC and CERC.
- Any operational issue in the grid affecting the system security and reliability adversely if could not be resolved within three months after discussion in the respective RPC Forum, shall be notified to the commission on priority by respective RPC or RLDC/NLDC

** *Reliability Standards for the Bulk Electric Systems of North America:* MOD-025,026,027

Part 5 Operating Philosophy (Contd.)

- All users having control devices (FACTS, HVDC) will have their automatic controller in operation. These include the Power Oscillation Damping (POD), Reactive Power Controller (RPC),frequency controller or any other controller specific to these devices.
- If any of these devices is required to be operated without any of its controller in service, the RLDC shall be immediately intimated about the reason and duration, and its permission obtained.
- The control devices wherever provided shall be properly tuned by the respective user as per the plan prepared for the purpose by the CTU/RPC/RLDC/NLDC from time to time
- All the Users, STU/SLDC or entity assigned in site responsibility schedule shall upload the desired information(format agreed in respective RPC) on a dedicated portal managed by RLDC within [24 hours) for purpose of analysis of any grid disturbance/event. The monthly violations i.e. failure or delay in uploading the details in desired format will be reported by RLDC to the commission.*
- Mechanisms and facilities at SLDCs shall be created to facilitate on-line estimation of demand for daily operational use for each 15 minutes block

* *Reliability Standards for the Bulk Electric Systems of North America, DR trigger format*

** Reliability Standards for the Bulk Electric Systems of North America :EOP-004-4 , Event Reporting*

Part 5 Operating Philosophy (Contd.)

- Any Operation code provided by SLDC/RLDC will be valid for next 30 minutes.
- In case the specified switching operation could not be completed by the utility then they will take a new code from respective SLDC/RLDC and also provide details why the operation could not be completed in the previous code.
- RPC shall monitor the event and that resulted in system frequency excursions below the initializing set points of the UFLS program, shall carry out a joint assessment report, independent assessment reports and letters describing likely reasons for differences in conclusions and recommendations*
- The pump storage plants should be tripped if the frequency falls below say 49.6 Hz.
- SLDC shall also furnsih the import/export capability of their control area for esimation of inter-state Total Transfer Capability/Available Transfer Capability."
- SLDC/RLDC may direct a wind farm to vary its VAr drawl/injection as per reactive power capability curve for secure system operation of the grid.
- RLDC may direct a hydro generator to run in synchronous condensor mode for absorbing the Var from the grid for secure operation of the grid
- While performing RE curtailment, LDCs need to report the RPC whether it was balancing requirement or not
- Procedure shall be developed by each LDC for estimating RE curtailment

* *NERC Reliability Guidelines: PRC-006-3, Automatic Underfrequency Load Shedding*

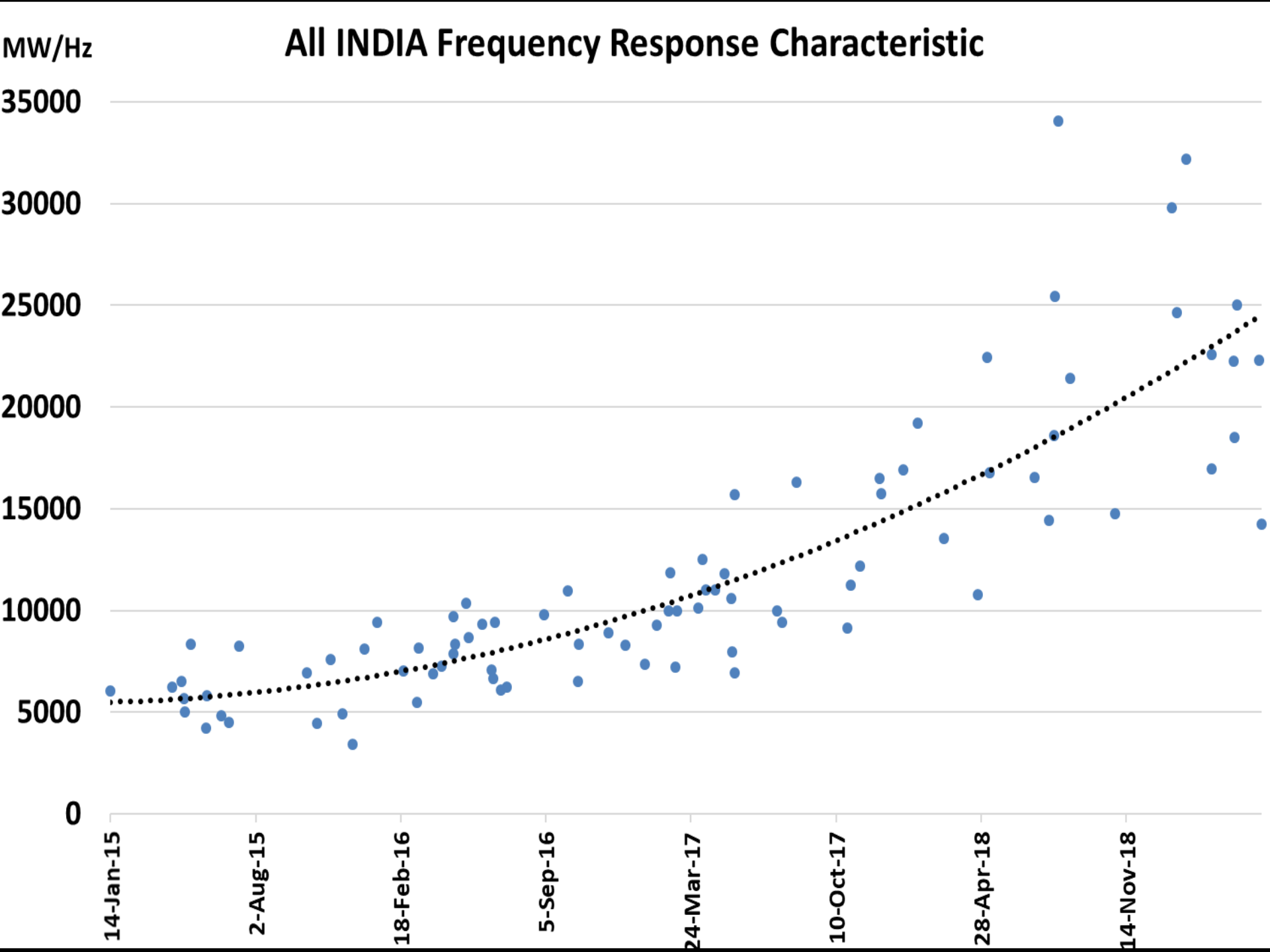
New Chapter- On Frequency Control

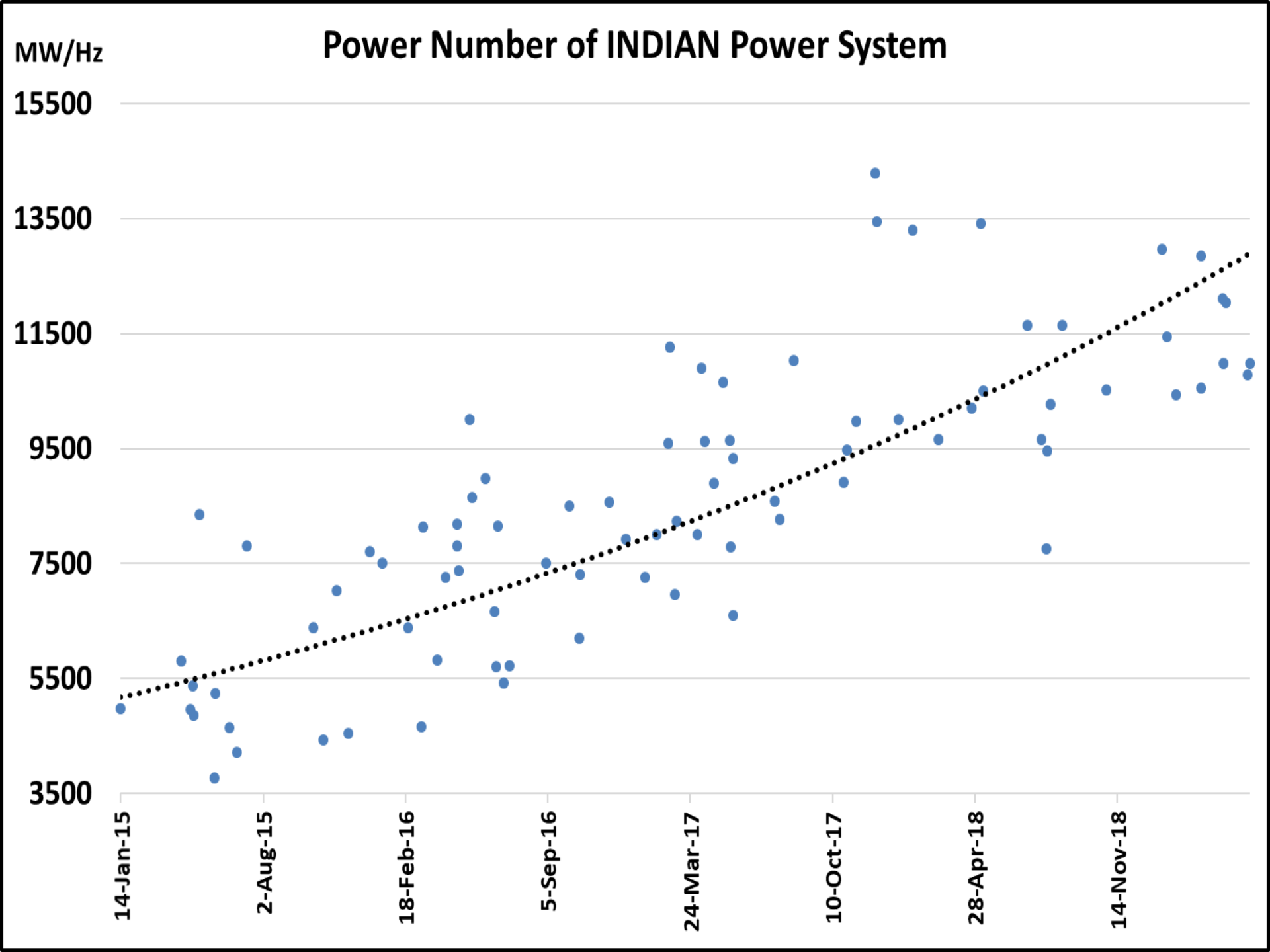
- Each state control area, region and the neighbouring countries shall work out the Area Control Error (ACE), display, monitor and archive the same.
- For the purpose of ACE calculation, the bias could be set as 4% of Area load per Hz which can be refined over time.
- The inter-state and inter-regional tie line values as well as frequency measurements should be treated as Class A telemetry values and updated at a faster rate than ten (10) seconds at SLDCs/RLDCs/NLDC.
- ACE data is also required to be stored every 10 seconds.
- The ACE, worked out as above, should cross zero value and change sign at least once every hour to start with which would be narrowed down to half an hour. Persistent violation of this condition would render the utility liable for penalties.
- The deviations from the schedule as worked out through Special Energy Meter (SEM) data and schedules shall be closely monitored for all time blocks where average frequency is below 49.95 Hz and above 50.05 Hz. On a monthly basis, the 90th percentile value of over-drawals below 49.95 Hz and under-drawals above 50.05 Hz shall be monitored. This should not exceed 150 MW.
- Any violation could render the utility liable for penalties.

New Chapter- On Frequency Control

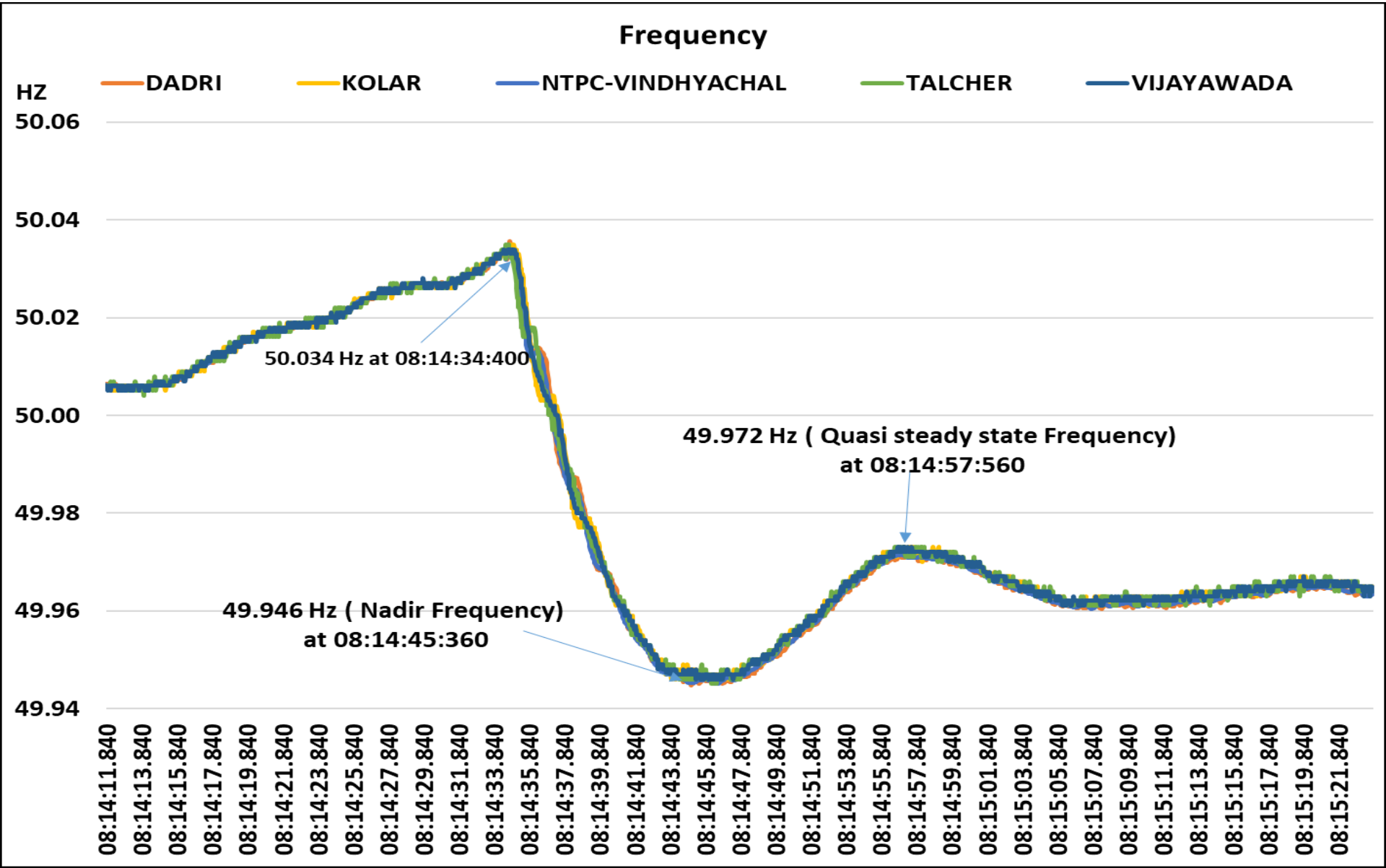
- All Users, SEB, SLDCs , RLDCs, and NLDC shall measure the grid frequency with a resolution of +/-0.001 Hz. The frequency data is expected to be stored at the rate of one sample every second as well as 10 seconds.
- Need to suitably replace the terms Free Governor Mode of Operation (FGMO) and Restricted Governor Mode of Operation (RGMO). There is no blanket waiver from primary response for wind and solar generators.
- The term Ripple Filter shall be removed from Grid code.
- Phase out the RGMO and instead have speed control with droop.
- AGC must be implemented throughout the country at the earliest in line with the Commission's recommendation of treating a region as a balancing.
- AGC at the intra state level, particularly for large states, can be implemented in line with directions by the Appropriate Commission(s).
- A procedure for Reserve Forecasting may be evolved
- Monitoring inertia of the system and inertial response
- To control Indian grid frequency within defined limits , compliance factors using ACE may be formulated, the formulation can be shared by POSOCO

** Reliability Standards for the Bulk Electric Systems of North America: BAL-001-2, Real Power Balancing Control Performance*


All INDIA Frequency Response Characteristic
MW/Hz
35000
30000
25000
20000
15000
10000
5000
0
14-Jan-15
2-Aug-15
18-Feb-16
5-Sep-16
24-Mar-17
10-Oct-17
28-Apr-18
14-Nov-18


Power Number of INDIAN Power System
MW/Hz
15500
13500
11500
9500
7500
5500
3500
14-Jan-15
2-Aug-15
18-Feb-16
5-Sep-16
24-Mar-17
10-Oct-17
28-Apr-18
14-Nov-18

On 10th July 2018, at 08:15 hrs 400 KV Rangpo – Binaguri I tripped on R-B phase fault & SPS –I operated resulting into tripping of one unit each at Dikchu, Chuzachen, Jorethang , Tashiding and bus Coupler at Teesta III. At the same time 400 KV Teesta 3- Rangpo line also tripped due to SPS-2 operation and then all units at Teesta III & Dikchu tripped due to loss of evacuation path. Total generation loss was 1025 MW.



New Chapter on Cyber security

- Proper guideline should be created for the exchange of information/data among RLDC-NLDC, Exchanges, CTU, SLDC, FSP etc. which shall ensure exchange of data/information as cyber secure to avoid unauthorized access.
- To identify and categorize Cyber Systems and their associated Cyber Assets for the application of cyber security requirements commensurate with the adverse impact that loss, compromise, or misuse of those Cyber Systems could have on the reliable operation of the grid. Identification and categorization of Cyber Systems support appropriate protection against compromises that could lead to misoperation or instability in the BES.*
- Responsible Entities may be identified for the requirement.
- All utilities shall carry out third party cyber security audits annually consisting of stage Vulnerability Assessment (VA) and Penetration Test (PT) and appropriate measures shall be implemented to comply with the findings of the audits. The audits shall be conducted by CERT-In certified third-party auditors. Preferably all utilities should strive to be certified in some International Standard for Cyber Security (Ex. ISO 27001 etc)

* *Reliability Standards for the Bulk Electric Systems of North America:* CIP-002-5.1(a)

Part 6 Scheduling and Despatch Code

- RE COD standard procedure may be notified
- Scheduling of power from the generating station or unit thereof shall commence from 0000 hrs of D+2 day considering D as the receipt day of COD declaration from generator at RLDC/RPC end along with share allocation from RPC if applicable.
- Ambiguity in Clause 6.3.A.3.i, Trail run procedure of generating stations : whether after short interruption of cumulative time more than 4 hours, generator has to wait for another trial run date with 7 day prior notice to the beneficiaries/RLDC as per the clause or Generator can again start its repeat trial run operation same day or any day effective from the time of machine synchronizes without any 7 day prior notice.
- Scheduling Procedure and time line for SCED,FRAS, RRAS and secondary reserve need to be added in the 6.4 and 6.5

Part 6_ Scheduling and Despatch Code

- Technical Minimum for state units may be specified in line with IEGC
- GT tap at Nominal at Generating bus to allow the units to regulate MVAR as per the grid requirement
- STOA revision for RE similar to existing provisions (unit tripping)
- Treatment of Infirm power for renewable
- The time taken by unit to bring on load under different circumstances (ex : Hot / Warm/ Cold Start)

Annexure

Ambiguities: Part 6_ Scheduling and Despatch Code

POSOCO comments on Part-6

Clarification in some clauses of Commissioning of Generator & Transmission Elements

Existing Clause : Section 6.3.A.1.IV & 6.3.A.2.IV Trail run procedure of generating stations:

"……the generating company shall submit approval of Board of Directors to the certificates as required under clause (iii) within a period of3 months of the COD to RPC/RLDC/CEA/CERC*."*

POSOCO comments on Part-6

Existing Clause : 6.3.A.1.X & 6.3.A.2.XI, Trail run procedure of generating stations:

"Scheduling of power from the generating station or unit thereof shall commence from 0000 hrs after declaration of COD."

Update:

"Scheduling of power from the generating station or unit thereof shall commence from 0000 hrs of D+2 day considering D as the receipt day of COD declaration from the generator at RLDC/SLDC/RPC end"

POSOCO comments on Part-6

Existing Clause : 6.3.A.3.i, Trail run procedure of generating stations:

"i) The short interruptions, for a cumulative duration of 4 hours, shall be permissible, with corresponding increase in the duration of the test. Cumulative Interruptions of more than 4 hours shall call for repeat of trial operation or trial run."

....

"iii) Where the beneficiaries have been tied up for purchasing power from the generating station, the trial run or each repeat of trial run shall commence after a notice of not less than seven days by the generating company to the beneficiaries and concerned RLDC or SLDC, as the case may be."

Comments:

In case cumulative short interruption more than 4 Hrs during trial run operation

Option -1:- Whether to start repeat trial run operation again with a new 7 day notice to Beneficiaries/RLDC/SLDC.

or

Option 2: To start repeat trial run operation again after 24 Hour or 2 day with the same trial run intimation

Need to be drafted clearly regarding repeat trial run process.

POSOCO comments on Part-6

Existing Clause : 6.4.2 Demarcation of responsibility section for scheduling of generator under RLDC control area or under SLDC

Comments

- Any generating station connected both to ISTS and state network, whether scheduling to be done by RLDC or SLDC?
- As on date the procedure of scheduling and loss application as the case may be is done on the basis of different CERC orders.
- This part need to be clearly drafted in the new IEGC.

POSOCO comments on Part-6

Existing Clause : 6.4.19 & 20 (DC demonstration by the Generator):

As per the 5th amendment of IEGC of clause 5.2.h

"For the purpose of ensuring primary response, RLDCs/SLDCs shall not schedule the generating station or unit(s) thereof beyond ex bus generation corresponding to 100% of the Installed capacity of the generating station or unit(s) thereof……"

Comments:

As per clause 5.2.h, schedules prepared by RLDC is restricted to the normative DC of the generating station. Accordingly whenever generator declared higher DC (more than normative DC), schedule is restricted to normative DC.

- As per clause 6.4.19 &20, if RLDC feels ISGS to demonstrate the Declared Capacity, then it should be up to the declared capacity as declared by the generator not as per DC scheduled by RLDC.
- During DC demonstration, whether schedule for the same generator shall be changed or not?

POSOCO comments on Part-6

Existing Clause : Clause 6.4.22:

"As per this clause weekly meter data to be forwarded by RLDC to RPC secretariat by each Thursday noon.

Thursday need to be replaced with Friday -- as meter data forwarded to RPC secretariat by each Friday as per the procedure in MoU & KPI."

New Points to be included on

"Scheduling Procedure and time line for SCED,FRAS, RRAS and secondary reserve need to be added in the 6.4 and 6.5."

POSOCO comments on Part-6

Existing Clause : Clause 6.5.19,

"Notwithstanding anything contained in Regulation 6.5(18), in case of forced outage of a unit for a Short Term bilateral transaction, where a generator of capacity of 100 MW and above is seller, the generator shall immediately intimate the same along with the requisition for revision of schedule and estimated time of restoration of the unit, to SLDC/RLDC as the case may be. With the objective of not affecting the existing contracts, the revision of schedule shall be with the consent of the buyer till 31.07.2010. Thereafter, consent of the buyer shall not be a pre-requisite for such revision of schedule. The schedule of the generator and the buyer shall be revised, accordingly. The revised schedules shall become effective from the 4th time block, counting the time block in which the forced outage is declared to be the first one.. The RLDC shall inform the revised schedule to the seller and the buyer. The original schedule shall become effective from the estimated time of restoration of the unit. However the transmission charges as per original schedule shall continue to be paid for two days.

Provided that the generator or trading licensee any other agency selling power from the generating station or unit(s) thereof may revise its estimated restoration time once in a day and the revision schedule shall become effective from the 4th time block, counting the time block in which the revision is advised by the generator to be the first one.

19.A. In case revision of a schedule of a generating unit, the schedules of all transactions under the long term access, medium-term open access and short term open access(except collective transactions through power exchange) shall be reduced on pro rata basis.

."

Comments on Clause 6.5.19

- Details Short-term transactions to be revised along with MW re-schedule quantum of each STOA to be submitted by the generator at the time of intimation to RLDC.
- No revision shall be allowed in case of planned shutdown.
- Transmission Charge refund procedure in detail for unit tripping and if reschedule of restoration time done.
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- New provision shall be introduced in this clause for PX curtailment.
- Provision of STOA revival considering ramp may be included.
- In Clause 6.5.19 A ---- generating units replaced with generating station.
- Pro-rata Reduction of STOA/MTOA/LTA in case of unit tripping shall be done by generator at their end and submitted to rldc along with unit tripping.

Clause 6.5.34

- While availability declaration by ISGS shall have a resolution of one decimal (0.1) MW and one decimal (0.1) MWh, all entitlements, requisitions and schedules shall be rounded off to the nearest six decimals at each control

New Clauses to be added for following issues

- In case schedule of the generator more than NOC or maximum scheduling limit – Provision of curtailment of the transaction to bring down schedule to NOC may be included.

- It has been observed that CTU is operationalizing LTA but the same is not getting scheduled due to various reasons such as readiness not received from the recipient state, operational LTA more than the installed capacity of a generating station etc.
  - In this regard clarification In IEGC is required whether that all the LTAs which have been operationalized shall be scheduled by RLDCs as soon as the confirmation is received from the CTU.
  - In case where the LTA is not getting scheduled due to reasons mentioned above or any other reason, then the scheduled quantum would be considered as zero. This must get reflected in the schedules issued by RLDCs.

POSOCO comments on Part-6

Existing Clause : 6.6.6:

"The ISGS and other generating stations connected to regional grid shall generate/absorb reactive power as per instructions of RLDC, within capability limits of the respective generating units, that is without sacrificing on the active generation required at that time. No payments shall be made to the generating companies for such VAr generation/absorption."

Comments:

- Recording provision of of 15 minute VAR to be included.
- In case, generating plant persistently do not absorb/inject Var as per the capability curve then RLDC based on non-performance details may ask generators to undergo the Reactive capability testing.
- Any deviation from the declared capability curve submitted by generators, constraints and variation from technical standards of CEA, to be notified after testing to CEA and Central commission.
- Reduction of ROE or provision for penalty to the generator for continuous failure of supply/absorb VAR as per the capability curve and grid requirement may be included.

Thank You