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NOTIFICATION

No. A. 45018/1/08-JERC, 19th February, 2009 : In exercise of the powers conferred by Sections 181 (2) (z a) and (z b) read with Section 57, 59 and 86 (1)(i) of the Electricity Act, 2003 (36 of 2003), the Joint Electricity Regulatory Commission for the states of Manipur and Mizoram hereby makes the following Regulations regarding the Distribution and Transmission Standards of performance.

CHAPTER -1 GENERAL

1.1 Short Title, Commencement and Interpretation

- (1) These Regulations may be called "Joint Electricity Regulatory Commission for the States of Manipur and Mizoram (Standards of Performance for the Distribution and Transmission Licensees) Regulations, 2009.
- (2) These Regulations shall be applicable to all licensees engaged in Transmission and distribution of electricity in the States of Manipur and Mizoram.
- (3) These Regulations shall extend to the whole of the States of Manipur and Mizoram.
- (4) These Regulations shall come into force from the date of their notification in the official Gazettes of Manipur and Mizoram.

1.2 Definitions

In these Regulations, unless the context otherwise require:

- (i) **"Act"** means the Electricity Act 2003 (Central Act No. 36 of 2003);
- (ii) **"Applicant"** means a person, company, firm or establishment who makes an application for supply of electricity, increase or reduction in contract demand / sanctioned load, change of name, disconnection or restoration of supply or termination of agreement, as the case may be, in accordance with the provisions of the Act and the rules and regulations made thereunder;
- (iii) **"Authorised Representative"** refers to all officers, staff or representatives of the Distribution and Transmission Licensees, discharging functions under the general or specific authority of the Distribution Licensee;
- (iv) **"Availability"** in relation to a transmission system in a given period means times in hours during which the transmission system is capable to transmit electricity at its rated voltage from the supply point to the delivery point and shall be expressed in percentage of total hours in a given period.
- (v) **"Area of supply"** means the area within which a Distribution Licensee is authorized by his license to supply electricity;
- (vi) **"Commission"** means Joint Electricity Regulatory Commission for the states of Manipur and Mizoram.
- (vii) **"Consumer"** means any person who is supplied with electricity for his own use by a licensee or the Government or by any other person engaged in the business of supplying electricity to the public under this Act or any other law for the time being in force and includes any person whose premises are for the time being connected for the purpose of receiving electricity with the works of a licensee, the Government or such other person, as the case may be;
- (viii) **"Distribution Licensee"** means a Licensee authorised by the Commission to operate and maintain a distribution system for supplying electricity to the consumers in his area of supply.
- (ix) **"Distribution System"** means the system of wires and associated facilities between the delivery points on the transmission lines or the generating station connection and the point of connection to the installation of the consumers;
- (x) **"EHV/EHT"** means Extra High Voltage/Extra High Tension (voltage level above 33,000 volts);
- (xi) **"HV/HT"** means High Voltage (Voltage level above 650 Volts but does not exceed 33,000 Volts) under normal conditions.
- (xii) **"Electricity Supply Code"** means the Manipur and Mizoram State Electricity Supply Code, 2008 approved and as amended from time to time by the Commission;

- (xiii) **"Fuse-off call"** refers to a complaint by an individual consumer involving restoration of supply as per directions given in clause 4.1 of the Regulation;
- (xiv) **"Grievance"** means a complaint filed by the affected person.
- (xv) **"Grid"** means the high voltage backbone system of interconnected transmission lines, sub-stations and generating plants;
- (xvi) **"Grid Code"** means the grid code notified by the Joint Commission for the States of Manipur and Mizoram in accordance with the Section 86 (1) (h) of the Act;
- (xvii) **"Harmonics"** means a component of a periodic wave having frequency that is an integral multiple of the fundamental power line frequency of 50 Hz causing distortion to pure sinusoidal waveform of voltage or current, and as governed by IEEE STD 519- 1992, namely "IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems" and corresponding standard as may be specified by the commission from time to time.
- (xviii) **"IEGC"** means the Indian Electricity Grid Code approved by Central Electricity Regulatory Commission (CERC) and shall include any Grid Code specified by Central Commission under clause (h) of sub-section (1) of Section 79 of the Act;
- (xix) **"Licensee"** means a person who has been granted a license by the Commission under Section 14 of the Act and includes a deemed licensee;
- (xx) **"LT"** means Low Tension voltage that does not exceed 400 volts under normal conditions.
- (xxi) **"NERLDC"** means North-Eastern Regional Load Despatch Centre;
- (xxii) **"Rules"** means the Indian Electricity Rules, 1956 and/or any other rules made under the Act;
- (xxiii) **"Rural areas"** for the purpose of this Regulation means any area or areas comprising a village or a group of villages, located beyond 10 km from the State Capital/District Hqrs. in addition to the areas as defined under the Constitution (Seventy-Third Amendment) Act, 1992;
- (xxiv) **"States"** means the States of Manipur and Mizoram.
- (xxv) **"SLDC"** means the Load Dispatch centre to be established under Sub-section (1) of Section 31 of the Act by the State Government of Manipur and Mizoram and includes State Load Dispatch Centre, if any, already functioning in the State to ensure integrated operations of the power system in the States.
- (xxvi) **"State Transmission Utility"** means the Government Company specified as such by the State Government Sub-section (1) of the Section 39 of the Act;

(xxvii) **“Transmission Licensee”** means a licensee authorized to establish or operate transmission lines by the Commission and includes State Transmission Utility and any of its successor entity under the provisions of section 131 of the Act;

(xxviii) **“Transmission System”** means a line with associated Sub-section or a group of lines inter-connected together along with associated Sub-station.

Words and expressions used but not defined herein shall have meaning assigned to them in Electricity Act 2003 and Indian Electricity Rules, 1956.

(xxix) **“Towns and cities”** means areas other than Rural Areas.

(xxix) **“Remote Area”** means areas comprising villages or group of villages which can be reached only on foot.

Words and expressions used but not defined herein shall have meaning assigned to them in Electricity Act 2003, Indian Electricity Grid Code, Manipur and Mizoram Electricity Grid Code and Indian Electricity Rules, 1956.

1.3 Objective

(1) The standards specified in these regulations shall serve as guidelines for Transmission and Distribution Licensee to operate their Transmission and Distribution System in an efficient, reliable, coordinated and economical manner of electricity transmission, distribution and retail supply. The objectives of these standards are:-

- (a) to ensure that the Distribution System meets a minimum standard of performance laid down in these regulations.
- (b) to ensure that the grid performance meets minimum standards essential for the users system demand and proper functioning of equipment.
- (c) to ensure that the Users design their systems and equipment to meet the standards.
- (d) to ensure the quality and quantity of supply of power to meet the requirements of the consumers.

(2) The standards specified for transmission in these Regulations shall serve as guidelines for Transmission Utility to operate the Intra – State Transmission System for providing an efficient, reliable, coordinated and economical system of electricity supply and Transmission.

1.4 Guaranteed and overall standards of performance

The Standards of Performance are classified under the following two categories.

(a) Guaranteed Standards

(b) Overall Standards

(1) The standards specified in Chapters – 4 and 6 shall be the Guaranteed Standards of Performance, being the minimum standards of service that a licensee shall achieve and maintain in the discharge of his obligations as a licensee.

- (2) The standards specified in Chapters – 5 and 7 shall be the Overall Standards of Performance, which the licensee shall seek to achieve in the discharge of his obligation as a licensee.
- (3) The commission may from time to time add, alter, vary, modify or amend the content, of the Chapters – 4, 5, 6 and 7, by a general or specific order passed by the commission.

1.5 Compensation in case of under performance

(A) Distribution System:-

- (1) If a Licensee fails to meet the standards specified in chapters – 4 of these Regulations, without prejudice to any penalty, which may be imposed, he shall be liable to pay such compensation to the affected consumer through a rebate in the bill, upon written claim filed by any affected person and determined by the implementing authority. This rebate shall be admissible at a rate prescribed by the commission in **Appendix** to such consumers as have regularly paid their bills.
- (2) The Licensee shall compensate the person(s) affected not later than ninety days from the date of determination.
- (3) All payments of compensation determined by the Commission be made by way of adjustment against bills for supply of electricity.
- (4) The compensation claims should be made by aggrieved consumer within two months' time from the violation of the standards by the licensee.
- (5) The compensation shall be payable to a consumer only in such cases where such consumer has paid in full, the last amount billed to him by the Licensee.
- (6) The Licensee shall not be liable to pay compensation if it gets delayed in providing due services to the consumer due to non-accessibility of the premises and the licensee proves that it had served due notice, to consumer.
- (7) The Licensee shall maintain the record of compensation payable under Sub-clause (1) above showing the name and address of affected person, amount of compensation payable and actually paid, mode of adjustment of compensation in bill as per Sub-clause (2) in each case. The Licensee on demand shall furnish such records to the Commission in the prescribed format 2.

(B) Transmission System:-

- (1) The Licensee from the date as specified by the Commission by an Order issued in this behalf shall be liable to pay to the affected User(s) of the State Transmission System, the compensation as may be determined by the Commission by an order

for the Licensee's failure to meet the Guaranteed Standards of Performance specified in Chapter – 6.

- (2) While determining the compensation to the affected User(s) the Commission shall give a reasonable opportunity to being heard to the concerned Licensee and all affected User(s). The Commission may demand such additional information, evidence and summon records, logged data from the concerned Licensee and/or affected User(s) for determination of compensation.
- (3) The Licensee concerned shall pay the compensation determined as referred in Sub-clause (1) above within ninety days from the date of determination.
- (C) Failure by the Transmission and Distribution Licensees to pay the compensation in accordance with Regulations 1.5 (A) & (B) shall constitute Grievances which shall be dealt with in accordance with the procedures set out in the Grievances Redressal Regulations.

1.6 Information on Standards of Performance

(A) For Distribution:-

- (1) For Guaranteed Standards, the licensee shall furnish to the Commission, in a report for every quarter and in a consolidated annual report, the following information, in the prescribed format - 1.
 - (a) The levels of performance achieved by the Licensee with reference to the standards specified in Chapter – 4 to these Regulations;
 - (b) The number of cases in which compensation was paid under clause 1.5 above, and the aggregate amount of the compensation payable and amount paid by the Licensee.
 - (c) The measures taken by the Licensee to improve performance in the areas covered by Guaranteed Standards and Licensee's assessment of the targets to be imposed for the ensuing year.
- (2) The quarterly reports under sub-clause (1) shall be furnished to the Commission within 15 days of the close of the quarter and the annual report under the said Sub-clause (1) shall be furnished to the Commission within 30 days of the close of the financial year.
- (3) For Overall Standards, each Licensee shall furnish to the Commission, in a report for every quarter and in a consolidated annual report, the following information:
 - (a) The level of performance achieved with reference to the standards specified in Chapter – 5 to this Regulation;

- (b) The measures taken by the Licensee to improve performance in the areas covered by Overall Standards and Licensee's assessment of the targets to be imposed for the ensuing year.
- (4) The Quarterly reports under Sub-clause (3) shall be furnished to the Commission within 15 days of the close of the quarter and the annual report under the said Sub-clause (3) shall be furnished to the commission within 30 days of the close of the financial year in the prescribed format 3.

(B) For Transmission:-

- (1) State Transmission Utility shall furnish to the Commission half yearly reports in the prescribed Format – 5, by October 31st and April 30th of each year on actual performance viz, the performance standards laid down in these standards as modified from time to time.
- (2) The report shall contain all parameters irrespective of whether such parameters are applicable during the current reporting period or not.
- (3) The State Transmission Utility shall maintain the base data like Log Sheet, Complaint Registers and Interruption Register and relevant load flow studies in respect of system security etc. at Sub-station level for compilation of monthly report at circle level. The consolidation report shall be based on circle- wise compilation for whole State Transmission Utility. The Circle-wise compilation and base data at Sub-station level shall be subject to its scrutiny as considered necessary by the Commission.
- (4) For the purpose of this Regulation, these half-year periods would be as follows:
- (a) 1st Half Year: 1st April to 30th September
- (b) 2nd Half Year: 1st October to 31st March

- 1.6.1 The Commission may from time to time, modify the contents of the Formats or add new formats for additional information.
- 1.6.2 The Commission shall, at such intervals as it may deem fit and not inconsistent with the provisions of the Act, arrange for the publication of the information furnished by Licensees under this Regulation.

1.7 Exemption

- (1) The standards of performance specified in these regulations shall remain suspended during Force Majeure condition such as war, mutiny, civil commotion, riot, terrorist strike, flood, cyclone, lightning, earthquake or other force and strike, lockout, fire affecting the Licensee's installations and activities. All Force Majeure

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conditions should be reported to the Commission within 30 days from the date on which such condition first occurred.

- (2) Non-Compliance of a standard contained in this Regulation in respect of distribution shall not be treated as a violation, and the Distribution Licensee shall not be required to pay any compensation to affected consumer(s), if such default is caused due to grid failure, a fault on the Transmission Licensee's network or on account of instructions given by SLDC, over which the Distribution Licensee has no reasonable control.
- (3) The Commission may by a general or special order issued for the purpose and after hearing the Licensee and the affected consumer group release the Licensee from the liability to compensate the consumers for any default in the performance of any standard if the Commission is satisfied that such default is for reasons other than those attributable to the Licensee and further that the Licensee has otherwise made efforts to fulfill his obligations.

1.8 Issue of orders and practice directions

- (1) Subject to the provisions of the Electricity Act 2003 (36 of 2003) and these regulations, the Commission may, from time to time, issue orders and practice directions in regard to the implementation of the regulations and procedures to be followed and various matters, which the commission has been empowered by this Regulation to specify or direct.
- (2) In particular, the commission may authorize the commission staff or any independent agency to conduct periodical checks, monitor the compliance of the Standards by the licensee and report to the commission.

1.9 Power to remove difficulties

If any difficulty arises in giving effect to any of the provisions of these regulations, the Commission may, by general or special order, do or undertake or direct the licensees to do or undertake things, which in the opinion of the Commission are necessary or expedient for the purpose of removing the difficulties.

1.10 Power to Amend

- (1) The Commission may, at any time add, vary, alter, modify or amend any provisions of these regulations.
- (2) In particular the Commission may review these standards after a period of two years or at any other time, if considered necessary. These Regulations shall however continue to be in force till it is modified based on such review.

1.11 Savings of Inherent Power of the Commission

- (1) Nothing in these Regulations shall be deemed to limit or otherwise affect the inherent power of the Commission to make such orders as may be necessary to meet the ends of justice or to prevent abuses of the process of the Commission.
- (2) Nothing in these Regulations shall bar the Commission from adopting in conformity with the provisions of the Act a procedure, which is at variance with any of the provisions of these Regulations, if the Commission, in view of the special circumstances of a matter or class of matters and for reasons to be recorded in writing, deems it necessary or expedient for dealing with such a matter or class of matters.
- (3) Nothing in these Regulations shall, expressly or impliedly, bar the Commission dealing with any matter or exercising any power under the Act for which no Regulations have been framed, and the Commission may deal with such matters, powers and functions in a manner it thinks fit.
- (4) Nothing in these regulations shall affect the rights and privileges of the consumers under any other law including the Consumer Protection Act, 1986.

1.12 Other Statutes

These Regulations should be read with relevant provisions of the Act and the Electricity Supply Code for Manipur and Mizoram notified by the commission as may be applied.

CHAPTER -2**SAFETY**

- 2.1** The construction, operation and maintenance of the transmission and distribution lines shall be carried out strictly in accordance with the Indian Electricity Rules, 1956 and other safety standards as may be in force from time to time specified by CEA in consultation with State Government under Section 53 of the Electricity Act, 2003.
- 2.2** The Licensee shall develop its own operation and Maintenance manual (including safety Regulations) taking into consideration the safety requirements for the construction, operation and maintenance of electrical plants and electrical lines as may be specified by CEA under clause (c) of Section 73 of the act.
- 2.3** The Licensee shall take all necessary actions to spread awareness among the consumers for safe usage of the electricity.
- 2.4** The grounding provided for the equipment and lines and earthing grid for substations shall be in accordance with IS: 3043 - Code of Practice for Earthing and it should also be maintained in a sound and healthy state at all times. The Licensee shall take all necessary steps for testing of the same and maintain the record of each test in accordance with Rules- 32, 51, 61, 62, 67, 69, 88(2) and 90 of the Indian Electricity Rules, 1956.
- 2.5** The licensee shall ensure that no live parts of any overhead line or Distribution transformer are so exposed as to cause danger. The licensee shall follow the provisions under Rules 50(2) of Indian Electricity Rules, 1956. The licensee shall also adhere with the provisions under Rules 77, 78,79 and 80 of Indian Electricity Rules, 1956 regarding clearances of overhead lines with respect to ground, trolley wires and buildings etc.
- 2.6** Leakage current means difference between phase current and return path. The Licensee shall take necessary steps to measure leakage current at various points in the system.
- 2.7** The earth wires and the earth electrodes provided in the Distribution System shall be maintained in good condition to ensure instantaneous operation of the Protective Equipment, either a Fuse or a Circuit Breaker as the case may be, in case of accidental snapping of conductor. In case of failure in the operation of the protective system during any accidental snapping of conductors, the circuit shall be de-energised manually immediately after it comes to the notice of the concerned employee of the Distribution Licensee. A detailed investigation shall be done to determine the cause for non-operation of the protective system and remedial measures shall be taken promptly.

- 2.8 The Licensee may disconnect supply to such consumer, in the event of any consumer's non-compliance which persists even after due notice, of any specific condition or direction if such non-compliance can reasonably be expected to affect system operations and safety. In cases of emergency, disconnection may be effected immediately in the interest of system operations and safety. The connection should be immediately restored as soon as the originating causes leading to the disconnection are removed or rectified.
- 2.9 **Accidents:** The records of all the fatal electrocution accidents shall be maintained along with the investigation report of the Chief Electrical Inspector (CEI)/Electrical Inspector. A copy of the action taken report with regard to the procedure prescribed by the CEI for safety measure for avoiding recurrence of such fatal accidents shall be submitted to the Commission every six months i.e., by 25th October and 25th April of each financial year in the prescribed format 4.

CHAPTER - 3
HANDLING OF COMPLAINTS

- 3.1** The Licensee is required to maintain standards of performance for supply of electricity to all consumers in the manner prescribed hereinafter. The limits prescribed in these standards refer to the maximum time permissible for performance of different activities of consumer services. It shall be the endeavour of the Licensee to provide the best possible services well within the time limits specified in these Regulations.
- 3.2** The Licensee shall register every complaint made by a consumer, either verbally or in writing, regarding failure/interruption of power supply, quality of power supply, meters/meter boxes/metering system's service line, payment of bills and other services relating to power supply, in a register / registers or in electronic format to be maintained for this purpose. **A unique number shall be allotted to each complaint. This complaint number shall be conveyed to the consumer** except in the case of postal complaints received. However the consumer may, subsequent to the delivery of postal complaint, inquire regarding the complaint number/ status telephonically or in person. The number shall be communicated to the complainant in such a case. In case of major failure of supply due to tripping of EHV or failure of upstream power systems, the reason needs to be communicated to the consumer in addition to the likely restoration time. The licensee shall ensure redressal of all complaints promptly.
- 3.3** Complaints in respect of supply of electricity covering metering, billing and payment, shall be made at specified offices of the licensee. Licensee shall convey information of the name of office(s), address(s) and telephone numbers where the consumer can lodge complaints, with the electricity bills and also display it at the sub-division offices or equivalent distribution unit designated by whatever name. If the phone services for recording complaints is outsourced by the Licensee, the phone numbers of such call centre shall be displayed in electricity bills and sub-divisional offices. The licensee shall also endeavor to publicize these contact details through local newspapers/TV/Radio.
- 3.4** The office where a complaint is registered shall dispose it of and if any instruction/sanction is to be obtained from a higher authority, it shall be obtained by the Licensee's staff/Officers. The complainant is not required to approach such higher authority. Similarly, in case an outsourced phone service is engaged for registering the complaints, such centre itself shall forward the complaints to the concerned officer. The licensee shall ensure proper compliance by the outsourced service by arranging visits of its officers to such canter to streamline responses.

- 3.5** Grievances regarding non-registration of complaints and failure to perform within the time limits and/or to meet the performance targets, as specified in these Regulations, shall be made to the concerned officer in-charge of the division or to equivalent distribution unit designated by any other name. In case of unsatisfactory disposal of grievances/complaint a reference should be made to the officer in-charge of the circle or equivalent similar functionary by whatever name designated.
- 3.6** The Licensee shall provide a toll free telephone connection at Central Fuse off Call centre of Licensee's Head Quarter to receive consumer complaints from the consumers situated in any area of the Licensee.
- 3.7** Every Authorized Representative of the Distribution Licensee shall visibly display his name-tag and, if so required by such consumer, produce for scrutiny, proof of identity and authorization of the Distribution Licensee for the purpose of any interaction with a consumer.
- 3.8** The Distribution Licensee shall maintain, in every town and city within the area of supply, at least one consumer service center which shall be open for not less than eight (8) hours a day, on all days of the week, for essential services to be provided to consumers and with a collection facility for collection of sums from consumers.

CHAPTER – 4**GUARANTEED STANDARDS OF PERFORMANCE FOR DISTRIBUTION****4.1 Restoration of Power Supply**

- (1) Fuse-off:** The Licensee shall restore power supply in the case of normal fuse-off calls (replacing Horn Gap (HG) fuses or Low Tension (LT) fuses at the distribution transformer or at the consumer premises) within 6 working hours of receiving the complaint in towns and cities, within 24 working hours of receiving the complaint in rural areas and 36 hours in remote areas. Individual fuse-off calls at consumer premises, wherever the fault is of such nature that it requires shutting down the power supply affecting other consumers also, shall not however be attended to between 5 PM and 8 AM except in case of essential services covered under the Essential Services Maintenance Act (ESMA).
- (2) Overhead Line/Cable Breakdowns:** In case of overhead line/cable breakdowns, the Licensee shall ensure restoration of power supply within 36 hours of occurrence of breakdown in towns and cities, within 48 hours of occurrence of breakdown in rural areas and within 96 hours in remote areas.
- (3) Underground Cable Breakdowns:** In case of breakdown of underground cable, the Licensee shall ensure restoration of power supply within 36 hours of occurrence of breakdown in towns and cities, within 72 hours of occurrence of breakdown in rural areas and 144 hours in remote areas.
- (4) Distribution Transformer failures:** The Licensee shall restore supply in the case of distribution transformer failures by replacement of transformer within 48 hours of receiving the complaint in towns and cities, within 5 days of receiving the complaint in rural areas and 10 days in remote areas.
- (5) Period of scheduled outages:** Interruption in power supply due to scheduled outages, other than the load-shedding, for duration of more than one hour shall be notified by the Licensee at least 24 hours in advance through newspapers, local TV networks and such interruption shall not exceed 12 hours in a day. In each such event, the Licensee shall ensure that the supply is restored by not later than 5:00 PM.
- (6) Street Lights:** The Licensee shall restore the street lights within 48 hours of receiving complaint from MAHUD subject to providing of the materials by the corporation in case of Manipur and from any consumer in case of Mizoram.

(1) Voltage fluctuations

- (i) The Licensee shall maintain the voltages at the point of commencement of supply to a consumer within the limits stipulated hereunder, with reference to declared voltage:
 - (i) In the case of Low Voltage, +6% and -6%;
 - (ii) In the case of High Voltage, +6% and -9%; and
 - (iii) In the case of Extra High Voltage, +10% and -10%.
- (ii) On receipt of a voltage fluctuation complaint, the Licensee shall verify if the voltage fluctuation is exceeding the limits specified in sub-paragraph (i) above and if confirmed, the Licensee shall
 - (a) Ensure that the voltages are brought within the said limits, within 15 days of original complaint if no expansion/enhancement of network is involved;
 - (b) Resolve the complaint within 120 days, if up-gradation of distribution system is required :

Provided that where a substation is required to be erected to resolve such complaints, the Licensee shall, within one month of the receipt of such complaint, submit to the Government a proposal for erection of the substation, together with the time required to complete erection and commissioning of such substation and get the same approved by the Government.

Provided further that where such substation is covered in the Licensee's investment plan approved by the Government, the Licensee shall complete the erection and commissioning of such substation within the time period specified in such investment plan.

Provided further that no compensation on account of voltage fluctuations shall be payable to industrial and agricultural consumers who do not provide capacitors to the prescribed extent.

(2) Harmonics

Harmonics is a sinusoidal voltage and current having frequency that are Integral multiple of the fundamental frequency. Many loads in power system produce current and voltages at frequencies in multiple of the fundamental frequency. These multiple frequency voltage and currents are called Harmonics and their ratio to the fundamental frequency is called Harmonic order. Harmonics affects system operation and reduces life of the equipment's. Some types of loads like Induction & Arc Furnace, electromagnetic equipment such as X-ray machines etc produce harmonics in supply voltages.

The licensee shall monitor Harmonics at regular intervals at strategic points which it considers prone to Harmonic voltage generation and as the user to comply with specific standards. Harmonic measurement shall conform to IEC Std: 1000-4-7 or IEE Std: 519. The Licensee shall take adequate measures to prevent harmonics induction in the distribution system from consumer load side equipment's like Induction & Arc Furnace, electromagnetic equipment such as X-ray machines etc.

(3) Neutral Voltage Displacement:-

Unbalance in loads on three phases cause shifting of neutral from earth potential. Neutral displacement is applicable for transformers with 'Star Point' solidly grounded. Under "solidly" grounded conditions, the potential of neutral should be equal to earth i.e. zero. But in such conditions when the earthing of the star point is imperfect the star to ground offers small resistance. This results in flow of negative sequence currents (because $I_R + I_Y + I_B \neq 0$) through neutral to ground, thereby causing shift of neutral from its earth potential, which is the neutral voltage displacement.

Unbalance voltages and displacement of neutral will result in decreased efficiency, negative torque, leakage currents, vibrations and overheating. Severe unbalance and neutral displacement could lead to malfunctioning of some equipment. Some types of loads like X-ray machines; electric traction; induction and arc furnace may induce unbalance in the supply voltages and shift the voltage of neutral from earth potential.

The Distribution Licensee shall ensure that the neutral point voltage of the all 33/11 kV and 11/0.4 kV transformers with respect to earth will not have potential greater than 2% and 5% respectively of the no load phase-phase voltage of the transformer.

(4) Frequency Deviation:-

The frequency band specified in the IEGC is normal operating range for efficient system operation. The Licensee shall monitor the frequency to ensure that frequency remains within the limits specified in IEGC and deviation in frequency beyond IEGC target range shall be taken up with the SLDC for appropriate corrective measures.

Target range as per IEGC		
Upper Limit	50.5 Hz	
Lower Limit	49.0 Hz	

4.3 Complaints about meters

- (1) The licensee shall inspect and check the correctness of the meter within 7 working days of receiving the complaint in cities and towns, within 15 working days in rural areas and within 20 days in remote areas. If the meter is not working (stuck up, running slow, fast or creeping), the licensee shall replace the meter at Licensee's own cost, within 15 days thereafter.
- (2) The Licensee shall replace at Licensee's own cost the burnt out meters within 7 days of complaint if the burning of meter is due to causes attributable to the Licensee like high voltage, loose contacts, aging of meter, etc. If the meter is burnt due to causes attributable to the consumer such as tampering, defect in consumer's installation, meter getting wet, connecting unauthorized additional load by the consumer, etc., the Licensee shall serve a notice to the consumer for recovery of cost of the meter within 7 days of detection and shall replace the meter within 7 days of receiving the payment from the consumer and after necessary corrective action is taken to avoid future damage to the meter.

4.4 Release of New connections/Additional Load

(1) Time frame for release of new connection

Regarding release of supply to new connections / additional load the relevant Regulations of the Electricity Supply Code shall apply. The licensee shall release supply to an applicant within the limit specified below after receipt of the complete application, prescribed fees and charges and Security deposit.

(a) Cases where power supply can be provided from the existing network.

(i) L.T Connections

Urban area	-	10 working days
Rural area	-	15 working days
Remote area	-	20 working days

(ii) H.T Connections - 30 working days

(iii) E.H.T Connections - 180 working days

(b) Cases where providing of power supply requires extension of lines.

(i) L.T Connections

Urban area	-	42 working days
Rural area	-	50 working days
Remote area	-	90 working days

(ii) H.T Connections

11 kv	-	100 working days
33 kv	-	120 working days

(c) Cases where providing of power supply requires installation of transformer.**(i) L.T Connections (Other than agricultural connections)**

Urban area	-	60 working days
Rural area	-	60 working days
Remote area	-	120 working days

(ii) Agricultural Connection

(a) Having approach road	-	75 working days
(b) Having no approach road	-	90 working days

(d) In cases of application for new connection, where extension of supply requires erection and commissioning of new 33/11 KV substation, the distribution Licensee shall submit to the Commission within 30 days of receipt of such application, a proposal of erection of such 33/11 KV substation together with the time required for erecting and commissioning the substation, and get the same approved by the Government. The Licensee shall commence power supply to the applicant within the time period so approved by the Government.

Provided that if the substation is meant to extend supply to an individual consumer, the Licensee shall commence erection of the substation only after the receipt of necessary security from the applicant.

(e) Temporary Supply

- (i) Consumers may requisition for temporary supply for construction and other purposes in the prescribed application form.
- (ii) The Licensee may collect deposit covering the cost of effecting temporary service connection and the cost of expected energy consumption.
- (iii) The Licensee shall release supply on the date if required by the consumer in case where Distribution lines are laid down on a supply connection.
- (iv) Where extension of distribution main is required the time schedule as mentioned in para 4.4 shall apply.
- (v) The Licensee shall refund the balance deposit, if any within three months from the date of dismantling the temporary service connection, after adjustment of the dues payable by the consumer.

(2) Delay in Supply of Electricity to New Premises

- (a) If the Licensee cannot supply electricity within the scheduled period as per Regulation 4.4, he shall promptly intimate the applicant the likely date of supply and the reasons for delay.

- (b) The Licensee shall not, however, be held responsible for the delay, if any, in extending supply, if the same is on account of problems relating to statutory clearances, right of way, acquisition of land, or the delay in consumer's obligation to obtain approval of Chief Electrical Inspector to Government for his High Tension or Extra High Tension installation, etc. over which Licensee has no reasonable control.
- (c) Additional period required on account of special circumstances mentioned above, shall be added to the normal period as per Regulation 4.4 i.e. the period within which the licensee has to release new supply.

(3) Extension of Time Limit

- (a) The Licensee may approach Commission for extension of time specified above in cases where the magnitude of work requires more time duly, furnishing the details in support of such extension. Such request shall be made soon, after the estimate is prepared.
- (b) The time limit shall be extended by the period by which the consumer delays to fulfill the following beyond the due date intimated by the licensee :-
- i. Payment of service connection charges and security deposit.
 - ii. Certificate that the internal wiring / consumer's electrical system including machinery, equipment and appliances are in good condition, comply with the standards including safety standards and the insulation resistance of the system is more than minimum stipulated value.
 - iii. Agreement between the licensee and the consumer is signed by the consumer.
 - iv. Filing ownership certificate of the premises.
 - v. Settlement of dues if the applicant had availed supply of electricity earlier.
 - vi. Providing of space for installation of transformer or metering equipment, if required.

(4) Waiting List

The Licensee should maintain a register of pending cases awaiting new service conditions.

4.5 Transfer of ownership and conversion of services

The Licensee shall give effect to transfer of ownership, change of category and conversion of the existing services from Low Tension to High Tension and vice-versa within the following time limits:

- | | | |
|--|---|--|
| (a) Title transfer of ownership | } | -within 7 days of receipt of application
with necessary documents and prescribed fee, if any. |
| (b) Change of category | | |
| (c) Conversion from Low Tension single phase to Low Tension 3-phase and vice-versa | | - within 30 days from the date of payment of necessary charges by the consumer |
| (d) Conversion from Low Tension to High Tension and | | - within 90 days from the date of payment of necessary charges by |

Provided that in case of conversion from Low Tension to High Tension and vice-versa, the Licensee shall not be held responsible for the delay if the same is on account of delay in consumer's obligation to obtain approval of Chief Electrical Inspector to Government, for such installation.

4.6 Complaints about consumer's bills

- (1) The Licensee shall acknowledge the consumer's complaint immediately, if received in person and within 2 working days, if received by post. The Licensee shall resolve the complaint regarding electricity bills within 24 working hours of its receipt, if no additional information is required to be collected and within 7 working days of receipt of complaint in case any additional information is required.
- (2) In case the complaint is genuine and revision of bill already issued becomes necessary, the due date for payment of bill shall be reckoned from the date of revised bill for the purpose of disconnection of supply or for levy of additional charges for belated payment.

4.7 Reconnection of supply following disconnection due to non-payment of bills

The Licensee shall restore power supply to a consumer, whose supply has been disconnected due to non-payment of electricity bills, within 4 working hours of receipt of an application and production of proof of payment by the consumer in towns and cities, and within 12 working hours of application and production of proof of payment by the consumer in rural areas.

- | | | | |
|-----|--|---|---|
| (a) | Title transfer of ownership | } | -within 7 days of receipt of application with necessary documents and prescribed fee, if any. |
| (b) | Change of category | | |
| (c) | Conversion from Low Tension single phase to Low Tension 3-phase and vice-versa | | - within 30 days from the date of payment of necessary charges by the consumer |
| (d) | Conversion from Low Tension to High Tension and | | - within 90 days from the date of payment of necessary charges by |

Provided that in case of conversion from Low Tension to High Tension and vice-versa, the Licensee shall not be held responsible for the delay if the same is on account of delay in consumer's obligation to obtain approval of Chief Electrical Inspector to Government, for such installation.

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**GUARANTEED STANDARDS OF PERFORMANCE AND COMPENSATION
TO CONSUMERS IN CASE OF DEFAULT**

Service Area	Guaranteed Standard Maximum time limit for rendering service	Compensation payable to affected consumers in case of violation of standards
Fuse-off		
Cities and towns	Within 6 working hours	Rs.5/- per consumer for every 1 hour subject to maximum Rs. 50/- per day
Rural areas	Within 24 working hours	Rs.20/- per consumer per day subject to Rs. 50/- beyond one day
Remote areas	Within 36 working hours	Rs.20/- per consumer per day subject to Rs. 50/- beyond one day
Overhead Line/cable breakdowns		
Cities and towns	Within 36 hours	Rs. 10/- per consumer per day for delay beyond 24 hours, if the number of affected consumers are less than 50, and Rs. 5/- per consumers per day for affected consumers 50 or more subject to maximum Rs. 50/- per consumer
Rural areas	Within 48 hours	Rs. 5/- per consumer per day for delay beyond three day subject to maximum Rs. 50/- per consumer
Remote areas	Within 96 hours	Rs. 5/- per consumer per day for delay beyond three day subject to maximum Rs. 50/- per consumer
Underground cable breakdowns		
Cities and towns	Within 36 hours	Rs. 10/- per consumer per day for delay beyond 24 hours, if the number of affected consumers are less than 50, and Rs. 5/- per consumers per day for affected consumers 50 or more subject to maximum Rs. 50/- per consumer
Rural areas	Within 72 hours	Rs. 5/- per consumer per day for delay beyond three day subject to maximum Rs. 50/- per consumer
Remote areas	Within 144 hours	Rs. 5/- per consumer per day for delay beyond three day subject to maximum Rs. 50/- per consumer
Distribution Transformer failure		
Cities and towns	Within 48 hours	Rs. 20/- per consumer/day for delay beyond 1 day to maximum Rs. 100/- per consumer.
Rural areas	Within 5 days	Rs. 10/- per consumer/day for delay beyond 5 days subject to maximum Rs. 100/- per consumer.
Remote areas	Within 10 days	Rs. 10/- per consumer/day for delay beyond 5 days subject to maximum Rs. 100/- per consumer.

Period of Scheduled Outage		
Maximum duration in a single stretch	Not to exceed 12 hours	Rs.100 in each case of default
Restoration of supply	By not later than 5:00 PM	
Voltage fluctuations		
No expansion/enhancement of network involved	Within 15 days	Rs.50 for each day of default
Up-gradation of distribution system required	Within 120 days	Rs.50 for each day of default
Erection of 33/11 kV Substation	Within the time period as approved by the Govt.	Rs.50 for each day of default
Meter complaints		
LT Consumers		
Testing, Checking & Calibration for Correctness of Meter		
Urban Area	7 days from lodging of complaint	Rs.50 per day for delay beyond 7 days subject to maximum Rs. 200/- per consumer.
Rural Area	Within 15 days	Rs.50 per day for delay beyond 15 days subject to maximum Rs. 200/- per consumer.
Remote Area	Within 20 days	Rs.50 per day for delay beyond 15 days subject to maximum Rs. 200/- per consumer.
Defective/Stopped/Burnt Meter Replacement		
Urban Area		
Replacement not attributable to consumer	7 days	Rs.50 per day for delay beyond specified period subject to maximum Rs. 200/- per consumer.
Where the cost of the meter is recoverable from the consumer	15 days after the receipt of payment	Rs.50 per day for delay beyond specified period subject to maximum Rs. 200/- per consumer.
Where the consumer is required to supply the metering equipment	15 days after supply of metering equipment	Rs.50 per day for delay beyond specified period subject to maximum Rs. 200/- per consumer.
Rural Area		
(a) Replacement not attributable to Consumer	15 days	Rs.50 per day for delay beyond specified period subject to maximum Rs. 200/- per consumer.
(b) Where the cost of the meter is recoverable from the consumer	30 days after the receipt of payment	Rs.50 per day for delay beyond specified period subject to maximum Rs. 200/- per consumer.
Remote area		
(a) Replacement not attributable to Consumer	30 days	Rs.50 per day for delay beyond specified period subject to maximum Rs. 200/- per consumer.
(b) Where the cost of the meter is recoverable from the consumer	45 days after the receipt of payment	Rs.50 per day for delay beyond specified period subject to maximum Rs. 200/- per consumer.
H.T. Consumers		
Replacement of stopped/defective meter or related equipments	Within 7 days after receipt of complaint provided meter is available with Licensee, otherwise within 3 months in any case.	Rs.200 per day for delay beyond specified period subject to maximum Rs. 2000/- per consumer.
Where the cost of the meter is recoverable from the consumer	Within 15 days after receipt of complaint provided meter is available with Licensee, otherwise within 3 months in any case.	Rs.200 per day for delay beyond specified period subject to maximum Rs. 2000/- per consumer.

Where the consumer is required to supply the meter/equipment	30 days after delivery of metering equipment to Licensee's office.	Rs.200 per day for delay beyond specified period subject to maximum Rs. 2000/- per consumer.
Restoration of Street lights		
Cities and towns	Within 48 hours of receipt of complaint	Rs.50/- per day
Application of new connection/additional load		
Connection feasible from existing network		
Release of L.T., H.T. & E.H.T. Supply	Within time frame given at cl. 4.4(i)	Rs. 50/- for each day of default
Network expansion/enhancement required to release supply		
Release of supply – Low Tension	Within time frame given at cl. 4.4 (i)	Rs. 50/- for each day of default
Release of supply – High Tension 11 KV	Within time frame given at cl. 4.4 (i)	Rs. 250/- for each day of default
Release of supply – High Tension 33 KV	Within time frame given at cl. 4.4 (i)	
Release of Supply – Extra High Tension	Within time frame given at cl. 4.4 (i)	
Erection of substation required for release of supply	Within the time period approved by the Govt.	Rs. 500 for each day of default
Transfer of ownership and conversion of services		
Title transfer of ownership	Within 7 days along-with necessary documents, clearance of outstanding dues and prescribed fee, if any.	Rs. 50/- for each day of default
Change of category	Within 7 days along-with necessary documents, clearance of outstanding dues and prescribed fee, if any.	
Conversion from LT 1-ph to LT 3-ph and vice-versa	Within 30 days of payment of charges by the consumer	
Conversion from LT to LT and vice-versa	Within 90 days of payment of charges by the consumer	
Resolving of complaints on consumer's bill		
If no additional information is required	Within 24 working hours of receipt of complaint	Rs. 25/- for each day of default
If additional information is required	Within 7 working days of receipt of complaint	
Reconnection of supply following disconnection due to non-payment of bills		
Cities and Towns	Within 10 working hours of production of proof of payment by consumer	Rs. 50/- in each case of default
Rural Areas	Within 16 working hours of production of proof of payment by consumer	
Remote Areas	Within 24 working hours of production of proof of payment by consumer	

CHAPTER – 5**OVERALL STANDARDS OF PERFORMANCE FOR DISTRIBUTION**

- 5.1 Fuse-off calls:** The Licensee shall ensure rectification of fuse off calls rectified within the time limits prescribed under sub-paragraph 4.1 of chapter - 4. The Licensee shall achieve the Standard of Performance in at least 95% of the cases.
- 5.2 Line Breakdowns:** The Licensee shall ensure restoration of power supply within the time limits prescribed in sub-paragraph 4.1 (2) of chapter - 4. The Licensee shall achieve this standard of performance in at least 95% of the cases.
- 5.3 Distribution Transformer Failures:** The Licensee shall maintain the percentage of distribution transformers replaced within the time limits prescribed in sub-paragraph 4.1(4) of Chapter – 4 to the total distribution transformers failed not less than 95%.
- 5.4 Period of scheduled outages:** As specified in the sub-paragraph 4.1(5) of chapter - 4, interruption in power supply due to scheduled outages, other than the load shedding, has to be notified in advance and shall not exceed 12 hours in a day and in each such event, the licensee has to ensure that the supply is restored by 5:00 Pm. The licensee shall achieve both of these standards of performance in at least 95% of the cases
- 5.5 Street Light Faults:** The licensee shall as soon as possible attend to complaints relating to non working of street lights or not operating properly to the extent the matter lies within the preview of the licensee. Atleast 90% of cases shall be complied within the prescribed time limit.
- 5.6 Frequency variations:** The rated frequency of the system shall be 50.0HZ. The Licensee shall achieve coordination with other network constituents such as State Transmission Utility, State Load Dispatch Center, distribution Licensees and other transmission Licensees in an endeavor to maintain the supply frequency within limits as per IEGC standards (Indian Electricity Grid Code).
- 5.7 Voltage Unbalance:** In distribution system unbalance in supply voltages should be minimized such that it does not affect the performance of consumers equipment like motors and other gadgets connected to distribution supply system. Voltage unbalance is

defined as the maximum deviation in voltage between two phases divided by average of the phase voltages of all three phases, expressed in terms of percent.

5.8

$$\text{Voltage Unbalance} = \frac{\text{Deviation between highest and lowest phase voltage}}{\text{Average voltage of three phases}} \times 100$$

The Licensee shall ensure that the voltage unbalance does not exceed 3% at the point of commencement of supply. The voltage unbalance shall be measured at sub stations provided with measuring instruments having accuracy class within 1% limit.

5.8.1 Billing mistakes: The Licensee shall maintain the percentage of bills requiring modifications following complaints to the total number of bills issued, not greater than 0.2%. Atleast 99% of the cases related to billing mistakes should be resolved within prescribed time limit.

5.9 Faulty meters: The Licensee shall maintain the percentage of defective meters to the total number of meters in service, at a value not greater than 3%. Atleast 95% cases in urban areas and 90% cases in rural areas should be resolved within prescribed time limit.

5.10 Service Reliability: Reliability of the distribution system operated by the Licensee shall be computed on the basis of number and duration of sustained interruptions in a year. In a power system, it may take a few minutes to restore power after transient faults or to reroute power in the network to restore supply to the affected area, where a large number of consumers are involved. Sustained interruptions of more than ten minutes duration shall be considered for judging the reliability of the system and temporary interruptions not exceeding ten minutes duration shall be ignored in computation.

Reliability standards of the Licensee shall be judged by the following two indices:

(a) Consumers Average Interruption Frequency Index (CAIFI)

Consumers average interruption frequency index, which shall be calculated by dividing the total number of sustained interruptions to consumers in a year by the total number of consumers served. An interruption in supply to a consumer shall be considered as one interruption to one consumer. In case of failure of a line or transformer, number of interruptions shall be equal to the number of consumers affected. The index shall be expressed as number of interruptions per consumer per year and shall be calculated annually.

$$CAIFI = \frac{\sum (I * K)}{N}$$

N

Where

- I = Number of interruptions exceeding 10 minutes at a time for the voltage class.
 K = Number of Consumers whose power supply remained 'off' as a result of such interruption.
 N = Total Number of Consumers in service at the beginning of year having that class of voltage supply.

* Multiplication sign

CAIFI shall be calculated for a sub-station, for a circle and for the Licensee as a whole. The index shall be expressed in number of interruptions per consumer per year.

(b) Consumers Average Interruption Duration Index (CAIDI)

Consumers average interruption duration index, which shall be calculated by dividing the total minutes of sustained interruptions to supply to consumers in a year by the total number of consumers served. The index shall be expressed as number of minutes of interruption per consumer per year and shall be calculated annually.

$$CAIDI = \frac{\sum (P * K)}{N}$$

N

Where

- P = Duration of interruptions exceeding 10 minutes at a time for the voltage class.
 K = Number of Consumers whose power supply remained 'off' as a result of such interruption.
 N = Total Number of Consumers in service at the beginning of year having that class of voltage supply.

* Multiplication sign

CAIDI shall be calculated for a sub-station, for a circle and for the Licensee as a whole. The index shall be expressed in interruption of minutes per consumer per year.

While calculating the CAIFI and CAIDI indices, the following types of interruptions shall not be taken into account:

- (a) Planned outages
- (b) Temporary interruptions of duration less than ten minutes
- (c) Outages due to failure of upstream power system including generation and transmission network
- (d) Outages due to Force Majeure reasons beyond the Licensee control like fire, earthquake, floods, storms and riots.

The Licensee shall compile above data at each sub-station for calculating reliability indices. The Licensee shall compile monthly data for each Circle to ascertain Circle wise reliability indices of the system.

The Commission shall fix benchmark for standards of reliability on the basis of data collected for one year and revise the levels to be achieved from time to time for ensuring improvement in the performance of the Licensee.

5.11 The Summary of Overall performance standards is as follows:

Service area	Overall Standard of Performance
fuse-off calls	At least 95% calls received should be rectified within prescribed time limits in both Cities and Towns and in Rural areas
Line Breakdowns	At least 95% of cases resolved within time limit in both Cities and Towns and in Rural areas
Distribution Transformer failures	At least 95% of failed DTRs to be replaced within prescribed time limits in both Cities and Towns and in Rural areas
Period of scheduled outage	At least 95% of cases resolved within time limit
Maximum duration in a single stretch	
Restoration of supply by 5:00 PM	
Street Light Faults	At least 90% cases should be complied within prescribed time limits
Rectification of line faults	
Replacement of fused/defective unit	
Frequency variations	To maintain supply frequency within range as per IEGC.
Voltage Unbalance	Maximum of 3% at point of commencement of supply
Percentage billing mistakes	Not exceeding 0.2% of total bills issued Atleast 99% of cases resolved within time limit
Percentage faulty meters	Not exceeding 3% of existing meters Atleast 95% of cases in urban areas and 90% of cases in rural areas resolved within time limit
Reliability Indices	To be laid down by the Commission based on the targets proposed by the Licensees. Licensees have to come up with proposals in a time frame fixed by the commission.
CAIFI	
CAIDI	

CHAPTER – 6**GUARANTEED STANDARDS OF PERFORMANCE FOR TRANSMISSION****(1) Voltage Variation**

- (i) Voltage Variation is defined as the derivation of the root – mean – square (RMS) value of the voltage from its nominal RMS value, expressed in terms of percentage. Voltage Variation may be either of short duration not exceeding one minute or of long duration for a time greater than one minute.
- (ii) For the purpose of these standards, the sustained variation in steady state voltage exceeding one minute duration shall be considered. The specified permissible limits of sustained voltage variation shall not apply in the cases where the circumstances are reasonably beyond the control of State Transmission Utility. e.g.: Major break-downs, grid failures, accidents, system distress conditions, etc.

State Transmission Utility shall make all possible efforts to ensure that the grid voltages remain within the following voltage levels at all points of its Transmission System.

Nominal Voltage (kV)	Maximum Value (kV)	Minimum Value (kV)
220	245	200
132	145	120
33	35	30
11*	11.67	10

* 11 kV voltages to be maintained by the transmission Licensee only in those cases where 11 kV supply is extended from the EHT sub-station.

(2) Frequency Variation

The State Transmission System operates as an integral part of the North-Eastern Regional Grid and frequency management is the joint responsibility of all the constituents in the North-Eastern Region.

The State Transmission Utility shall fulfill its obligation to enable to NERLDC to keep the frequency within specified ranges in accordance with provisions of IEGC:

The rated frequency of the system shall be 50.0 Hz.

Target Range (As per IEGC)	Variation (%)	Value (Hz)
Upper Limit	+ 1%	50.5 Hz
Lower Limit	- 2%	49.0 Hz
Statutory Acceptable Limit (As per IE Rules, 1956)	Variation (%)	Value (Hz)
Upper Limit	+ 3%	51.5 Hz
Lower Limit	- 3%	48.5 Hz
Extreme Conditions from System Security point of view	Variation (%)	Value (Hz)
Upper Limit	+ 5%	52.5
Lower Limit	- 5%	47.5

CHAPTER – 7**OVERALL STANDARDS OF PERFORMANCE FOR TRANSMISSION****(1) System Availability****(a) Feeder Availability:**

- (i) The feeder availability gives the percentage of time during which the feeder remained available for transmission. Feeder availability shall be calculated based on the following formula

$$\% \text{ Availability of Feeder} = \frac{(\text{No. of feeders} \times 8760 - \text{Annual outages in all feeder-hours}) \times 100}{\text{No. of Feeders} \times 8760}$$

Here, total availability in hours is equal to the number of hours in a year i.e., 8760 (non leap year)

- (ii) The State Transmission Utility shall achieve 95% feeder availability from the preliminary state itself.

(b) Sub-Station Availability:

- (i) The sub-station availability expressed in percentage is the measure of the extent the power transmission capacity remained available from a sub-station. Sub-station availability shall be calculated based on following formula:

$$\% \text{ Availability of SS} = \frac{(\text{Installed capacity in MVA} \times 8760 - \text{outage in MVA} \times \text{Hours}) \times 100}{\text{Installed capacity in MVA} \times 8760}$$

- (ii) The State Transmission Utility shall achieve 95% Sub-station availability from the preliminary stage itself.

(2) Voltage Unbalance

Voltage Unbalance is defined as the maximum deviation in voltage between two phases divided by the average of the phase voltages of all three phases, expressed in terms of percent:

$$\text{Voltage Unbalance} = \frac{\text{Deviation between highest and lowest phase voltage}}{\text{Average voltage of three phases}} \times 100$$

The phase voltages of a 3-phase supply should be of equal in magnitude and phase angle and the loads on each phase should be balanced. Deviations will result in decreased efficiency, negative torque, vibrations and overheating. Severe unbalance could lead to malfunctioning of some equipment. Some types of loads like X-ray machine, electric traction, induction & arc furnace may induce unbalance in the supply voltages.

The voltages unbalance at the inter-connection point with STU shall not exceed the values given below:

Voltage Level	Limit of Voltage unbalance
220 KV	2%
132 KV	3%

The voltage unbalance shall be measured from hourly Log Sheet Data reordered at sub-stations. Voltmeter having accuracy class not more than 1% shall be preferably used for recording hourly readings.

(3) Neutral Voltage Displacement

- (i) Unbalance in loads on three phases cause shifting of neutral from earth potential. Neutral displacement is applicable for transformers with 'Star Point' solidly grounded. Under "solidly" grounded conditions, the potential of neutral should be equal to earth i.e. zero. But in actual conditions, the earthing of the star point is imperfect and so the star to ground offers small resistance. This results in flow of negative sequence currents through neutral to ground. The neutral therefore shifts from earth potential.
- (ii) Unbalance voltages and displacement of neutral will result in decreased efficiency, negative torque, leakage currents, vibrations and overheating. Severe unbalance and neutral displacement could lead to malfunctioning of some equipment. Some types of loads like X-ray machines; electric traction; induction and arc furnace may induce unbalance in the supply voltages and shift the voltage of neutral from earth potential.
- (iii) The STU shall ensure that the neutral point voltage of the all EHV transformers with respect to earth will not have potential greater than 2% of the no load phase-phase voltage of the transformer.

(4) Voltage Variation Index (VVI)

- (i) Voltage Variation Index representing the degree of voltage variation from nominal value over a specified period of time expressed as s standard deviation. The Voltage Variation Index (VVI) shall be computed from hourly Log Sheet Data reordered at sub-stations as per the following formula:

$$VVI = \sqrt{\frac{\sum_{i=1}^N (V_i - V_s)^2}{N}} \times \frac{100}{V_s}$$

Where,

V_i = RMS value of hourly measured voltage (in kV) at i^{th} hour in the period for which VVI is computed.

V_s = RMS value of the nominal system voltage i.e. 400 kV, 220 kV, 132 kV etc. as may be applicable at the interconnection point

N = Number of hourly measurements over the specified period of time

Note: The data from defective metering or any abnormal data shall be discarded from calculations.

- (ii) VVI shall be completed on monthly basis.
- (iii) The Commission shall fix benchmark for standards of VVI on the basis of data collected for at least one year and revise the levels to be achieved from time to time for ensuring improvement in the performance of STU. Generally the VVI on annual basis shall not exceed the limit of 1% for Voltage levels of 220 kV and 132 kV.

(5) Service Reliability:

The points where electric power is supplied from transmission system to the Users (Distribution Companies, another transmission system, EHV consumers) are called delivery points or interface points. Outage at these points directly affects the Users of the Grid. The reliability level at the delivery points is therefore an indication of quality of service provided by STU to its Users.

System reliability of the Grid is expressed in terms of:

- * Consumer Average Interruption Frequency Index (CAIFI)
- * Consumer Average Interruption Duration Index (CAIDI)

(a) Consumers Average Interruption Frequency Index (CAIFI)

This index gives number of interruptions in power supply to loads expressed as per year per EHV Sub-station for a voltage class. All interruptions except due to acts of nature (like earthquake, floods, storms etc.), fire. Orders of civil/military authorities, scheduled outage, load shedding to meet capacity shortage, failure of PGCIL transmission system or failure of generating units (leading to grid failure or system islanding) of duration exceeding ten (10) minutes at a time shall be counted in computing the index.

$$CAIFI = R I / N$$

Where,

R I = Sum of number of interruptions exceeding 10 minutes at a time duration in the year for the given voltage class

N = Number of EHV Sub-stations in service at the beginning of year having that class of voltage supply.

CAIFI shall be computed for each voltage class separately.

(b) Consumers Average Interruption Duration Index (CAIDI)

This index gives weighted average interruptions in a year with reference to the total connected load on the system. All interrupted loads for duration exceeding ten (10) minutes at a time in the year are counted in computing the index. Interruptions due to acts of nature, orders of civil/military authorities, schedules outage (including three shift operation of agriculture pump sets), load shedding to meet capacity shortage, failure of PGCIL transmission system or failure of generating units (leading to grid failure or

system islanding) shall be however excluded in the computation of this index. CAIDI gives the measure of average interruption time per EHV Sub-station on annual basis for a voltage class.

$$\text{CAIDI} = \text{R D} / \text{N}$$

Where,

R D = Sum of duration of all interruptions exceeding 10 minutes at a time in the year for the given voltage class

N = Number of EHV Sub-stations in service at the beginning of year having that class of voltage supply.

(6) System Adequacy

System adequacy is the ability of the power system to receive the generated power or supply the aggregate electrical demand and energy requirements at all times, taking into account scheduled and reasonably expected unscheduled outage of system elements.

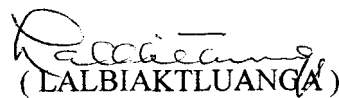
The STU shall observe the Transmission Planning Criteria specified by Central Electricity Authority for designing, developing the transmission network. The Transmission Licensee shall observe the operational standards laid down by CEA Manual for Transmission Planning.

The system voltage and frequency shall be close to the nominal values as possible and there shall be no overloading of any system element under normal conditions and different feasible load-generation conditions.

The system voltage and frequency and loading of system elements shall remain within prescribed limits and not necessitate load shedding or generation re-scheduling in the event of outage of any single system element over and above a pre-contingency system depletion of another element in another corridor.

The system shall remain in synchronism without necessitating load shedding or islanding in the event of single-phase ground fault or three-phase faults successful clearing of fault by isolating/opening of the faulted system elements. The system shall have adequate margins in terms of voltage and steady state oscillatory stability.

By Order of the Commission


(LALBIAKTLUANGA)
Assistant Secretary,
JERC (M&M)

**Format for Furnishing information on Achieving level of performance and
Guaranteed Standards for Distribution
(Under Regulation 5.1 to 5.10)**

Name of Licensee

Report for the quarter ending on / for Financial Year

Number and Type of Complaints attended and balance to be attended.

Sl.No	Type of complaints	Pending complaints of previous quarter	Complaints received during the Quarter year	Total Complaints	No. of complaints redressed during the quarter			
					In stipulated time	Beyond Stipulated time	Total	Balance complaints to be redressed
1	Interruption of Supply							
2	Voltage Related							
3	Meter Related							
4	New Connection where extension of distribution mains already exists							
5	New connection where extension of distribution mains was required							
6	New connection where commissioning of a new transformer was required.							
7	Transfer of ownership and conversion of service							
8	Complaints on Consumer's bill							
9	Reconnection of Supply							
10	Others							

Format for Furnishing information on Achieving level of performance and Guaranteed Standards for Distribution

Name of Licensee

Report for the quarter ending on/ for Financial Year

Number of cases where compensation paid & amount of compensation paid

Sl.No	Type of Complaints	No. of Cases where compensation was payable	No. of cases where compensation was paid	Total amount (in Rs. of the compensation paid)
1	Interruption of Supply			
2	Voltage Related			
3	Meter Related			
4	New Connection where extension of distribution mains already exists			
5	New connection where extension of distribution mains was required			
6	New connection where commissioning of a new transformer was required.			
7	Transfer of ownership and conversion of service			
8	Complaints on Consumer's bill			
9	Reconnection of Supply			
10	Others			

**Format for Furnishing information on Achieving level of performance
and Overall standards for Distribution**

Name of Licensee

Report for the quarter ending on / for Financial Year

(a) Percentage of performance achieved on overall standards

Sl.No	Service area covered under this standard	Targeted Performance	Performance Achieved
1	Fuse off calls	95%	
2	Line Break Downs	95%	
3	Replacement of failed distribution transformers	95%	
4	Period of scheduled outages	95%	
5	Street light faults	90%	
6	Resolving Billing Mistakes	99%	
7	Replacing of Faulty Meters	95%	
8	Reliability Indices	Target will be furnished separately	
	(a) CAIFI		
	(b) CAIDI		

(b) Measures taken to improve performance in the areas covered in Overall standards

Brief Note to be furnished by the Licensee

HALF YEARLY REPORT ON TRANSMISSION PERFORMANCE STANDARDS

NAME OF STATE TRANSMISSION UTILITY / _____

Report for half year ending:

Sl.No	Category of Standard	Implementing Stage/Level	Performance Standard (s)	Measurable Parameter	Value of Measurable Parameter specified by commission		Actual Achievement for half year
					Name of the parameter	Value specified	

Note:

1. The State Transmission Utility shall maintain the base data like Log Sheet, Complaint Register and Interruption Register etc. at sub-station level.
2. For compilation of monthly report at circle level base data of sub-stations shall be used,
3. The consolidated report for whole State Transmission Utility/Transmission Licensee shall be based on circle-wise compilation.
4. The Circle wise compilation and base data at sub-station level may be subject to Commission scrutiny as may be necessary.