SAARC Training for Professionals of Afghanistan on Pakistan’s Power Regulatory System

(Performance Standards & Monitoring)

19th September, 2019
Scheme of Presentation:

1. Part-I: Role of M&E Standards Department as per NEPRA Act, 1997

2. Part-II: Performance Standards
   - 2.1 Performance Standards (Generation) Rules (PSGR) - 2009
   - 2.2 Performance Standards (Transmission) Rules (PSTR) - 2005
   - 2.3 Performance Standards (Distribution) Rules (PSTR) - 2005

3. Part-III: Codes of Conduct
   - 3.1 Grid Code & Grid Code Addendas
   - 3.2 Distribution Code
   - 3.3 Safety Code

4. Part-IV: Monitoring of Performance Standards
Part-I
Role of M&E Standards Department as per NEPRA Act, 1997
Standards Department’s Mandate as per NEPRA Act

As per NEPRA Act, the Authority is required to develop/ prescribe/ encourage regulatory framework and ensure compliance through monitoring and enforcement of NEPRA rules, regulations, and applicable documents with respect to Standards and Codes of Conduct. Major provisions of the Act which describe these regulatory instruments:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Provision of Law</th>
<th>Section</th>
<th>Description</th>
<th>Remarks</th>
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</thead>
<tbody>
<tr>
<td>3</td>
<td>NEPRA Act</td>
<td>Section 47</td>
<td>The Authority may, make regulations not inconsistent with the provisions of this Act or the rules, for carrying out of its functions.</td>
<td>Net Metering/Distributed Generation Regulations, 2015</td>
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<tr>
<td>4</td>
<td>NEPRA Act</td>
<td>Section 27A &amp; 27B</td>
<td>Investigations, Fines/Penalties</td>
<td>SOP is being prepared</td>
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Part-II
Introduction to Performance Standards
- Development of Performance Standards

- Ensure Compliance & Enforcement/Implementation of Performance Standards
  - Annual Performance Reports /Quarterly Performance Reports

- Analysis of Annual/Quarterly Reports
  - Preparation of Performance Evaluation Reports (PERs)
  - Uploading of PERs on NEPRA web – Donor’s Requirement

- Review of Performance Standards
For Generation Licensees

- Performance Standards (Generation) Rules (PSGR) 2009
- Grid Code
- Safety Manuals by Generation Licensees
Performance Standards (Generation) Rules (PSGR) 2009

Key Performance Indicators

- De-rated Capacity
- Ref./Net Capacity
- Auxiliary Consumption
- Service Hours
- Reserve Shut Down/Standby Hours
- Planned/Unplanned Outages
- Reporting Requirement
- Quarterly Reports

National Electric Power Regulatory Authority (NEPRA)
Assignments

- Preparation of Performance Evaluation Reports of GENCOs and IPPS;
- Enforcement of Performance Standards (Generation) Rules 2009, through field visits and subsequent analysis/evaluation of data;
- Initiation of Legal Proceedings and subsequent imposition of Fines due to Excess Auxiliary Consumption and Higher Outages;
- Initiation of legal proceedings against NTDC/NPCC on account of issuing unfair instructions to put the machines of GENCOs on standby mode for unexplainably longer period – Grid Code;
- Review of Performance Standards (Generation) Rules into Regulations as per amended Act;
For Transmission Licensees

- Performance Standards (Transmission) Rules (PSTR) 2005
- Grid Code
- Safety Code & Development of Safety Manuals by NTDCL and K-Electric
Performance Standards (Transmission) Rules (PSTR) 2005

KEY PERFORMANCE INDICATORS

System Reliability
- Duration of Interruption
- Frequency of Interruption

System Security
- Energy Not Served (ENS)

Quality of Supply
- Voltage
- Frequency

Annual Performance Reports
- Database
- Monitoring, Fines & Penalties

National Electric Power Regulatory Authority (NEPRA)
Assignments

- Preparation of Performance Evaluation Report of Transmission Licensees;
- Enforcement of Performance Standards (Transmission) Rules 2005, through analysis/evaluation of data;
- Initiation of Legal Proceedings and subsequent imposition of Fines;
- Working on authenticity/correctness of data submitted by TRANSCOs;
- Review of Performance Standards (Transmission) Rules into Regulations as per amended Act;
- Development of Performance Standards for Electricity Traders as per amended Act.
For Distribution Licensees

- Performance Standards (Distribution) Rules (PSDR) 2005
- Distribution Code
- Safety Code & Development of Safety Manuals by DISCOs
Performance Standards (Distribution) Rules (PSDR) 2005

Guaranteed Standards
- GS1 - Interruption Restoration Time
- GS2 - No. of Unplanned Interruptions
- GS3 - Duration of Unplanned Interruption
- GS4 - No. of Planned Interruptions
- GS5 - Duration of Planned Interruption
- GS6 - No. of Short Interruptions

Overall Standards
- OS1 - SAIFI
- OS2 - SAIDI
- OS3 - New Connection
- OS4 - Nominal Voltage
- OS5 - Frequency
- OS6 - Load Shedding
- OS7 - Safety

Annual Performance Reports
- Database & Complaint Mechanism
- Monitoring, Fines & Penalties

National Electric Power Regulatory Authority (NEPRA)
Assignments

- Preparation of **Performance Evaluation Reports** of DISCOs and;
- **Enforcement of Performance Standards (Distribution) Rules 2005** through monitoring and Technical/Performance **Audit** of DISCOs;
- **Initiation of Legal** Proceedings and subsequent imposition of Fines;
- **Review** of Reliability Standards (Development of SAIFI & SAIDI targets for upcoming three years;
- Working on **authenticity/correctness** of data submitted by DISCOs;
- Implementation of **Safety Standards** by vigorously pursuing the compliance with respect to Safety Standards;
- Development of **Safety Manuals** as per approved Power **Safety Code**;
- Review of Performance Standards (Distribution) Rules into Regulations as per **amended Act** and development of Standards for **Electricity Suppliers**.
Part-III
Codes of Conduct
Grid Code,
Distribution Code,
Safety Code
Grid Code, 2005

- Covers day-to-day and long term principles, standards, procedures and guidelines for **Planning, Operation, Dispatch, and Connection** purposes for normal and abnormal NTDC transmission system conditions.

- To ensure that the NTDC’s transmission System can be developed, operated, and maintained in an efficient, safe, reliable and coordinated manner. The Code is expected to encourage competition between Generators, Distribution Companies, and BPCs as the Market Structure Develops.
National Electric Power Regulatory Authority (NEPRA)
NTDC shall establish and maintain the Review Panel, which shall be a standing body and shall:

a. keep the Grid Code and its working under review;

b. review all suggestions for amendments to the Grid Code;

c. publish recommendations to NEPRA for approval;

d. issue guidance on Grid Code and its implementation;

e. resolve disputes between NTDC and its Code Participants;

f. study and evaluate suggestions from different parts of the power market;

g. consider the modifications which are necessary to the Grid Code arising out of unforeseen circumstances and Force Majeure.
Grid Code Addendas

- Grid Code Addendum-I for grid integration of Wind Power Plants – 2010
  - Grid Code Addendum-I (Revision-1) for grid integration of Wind Power Plants – 2017
  - 5% of the total installed capacity

- Grid Code Addendum-II for grid integration of Solar Power Plants - 2014
  - Grid Code Addendum-II (Revision-1) for grid integration of Solar Power Plants – in process
  - 5% of the total installed capacity (finalized by GCRP)

- Revision of Grid Code (to be initiated) – as per amended act

- Development of Grid Code for HVDC (being developed)

- Implementation of Grid Code
Distribution Code, 2005

- To ensure that the Licensee’s networks are planned, developed, operated, and maintained in an efficient, safe, reliable and coordinated, and economical manner from technical standpoint.

- Distribution Code deals exclusively with technical and operational aspects concerning the distribution and supply of electricity, and the use of the licensee’s networks for the transport of electricity.

- Distribution Code Review Panel (DCRP) - 2014

- Development of Distribution Code Addendas for integration of small generators at distribution level such as Distributed Generators under Net Metering Regime

- Implementation of Distribution Code
All the Licensees shall jointly establish and maintain the Panel and shall:

a. keep the Distribution Code and its working under review;

b. review all suggestions for amendments to the Distribution Code;

c. publish recommendations to NEPRA for approval;

d. issue guidance on Distribution Code and its implementation;

e. resolve disputes between the licensees and its Users;

f. study and evaluate suggestions from different parts of the power market;

g. consider what changes are necessary to the Distribution Code arising out of unforeseen circumstances.

- To achieve the target of zero fatal accidents in the power sector, Power Safety Code was developed for transmission and Distribution Licensees.

- Development of detailed Safety Manual for distribution companies. Draft has been prepared and is in the process of approval by the Authority.

- Regular Monitoring of inquiries held, actions taken and compensation given by distribution companies in case of fatal accidents.

- Development & Implementation of Safety Manuals/Codes by all Transmission Licensees
Part-IV
Monitoring of Performance Standards
Monitoring of Performance Standards and Imposition of Fines/Penalties

To keep the performance of the licensees up to the mark, periodical monitoring is carried out and if found in violation of the performance standards rules, codes and other applicable documents, they are penalized accordingly.

A total of Rs. **76 million** fine has been imposed on the licensees. Detail of allegations/violations for all the licensees is given hereunder;

**Generation Licensees**
- Excess Auxiliary Consumption
- Higher Outages
- Underutilization of Power Plants

**Transmission Licensee(s)**
- Voltage Violations
- Frequency Violations
- Delay in Power Evacuation/Interconnection Schemes
Monitoring of Performance Standards and Imposition of Fines/Penalties Contd. . .

**Distribution Licensees**

- Incorrect data of tripping and its duration;
- Incorrect data of no. of complaints;
- Delay in restoration of Power Supply (repair of damaged transformer);
- Voltage beyond limits;
- Non-implementation of load shedding schedule;
- Discriminatory Load Shedding;
- Unannounced Load Shedding in Ramadan;
- Safety incidents;
- Underutilization of Investment Funds;
- Pendency of Ripe Connections;
- System constraints;
Liquidated Damages (LDs)

Apart from this, a total of Rs. 4.6 billion LDs were imposed by CPPA-G on GENOCs after the initiation of legal proceedings by the Standards Department.